

Terminal Evaluation of the UNEP/GEF Programme  
“Leapfrogging Markets to High Efficiency Products  
(Appliances, including Lighting, and Electrical Equipment)  
GEF 9083”  
(2018-2025)



Evaluation Office of the United Nations Environment Programme

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Front cover: Improved public lighting in Djerba, Tunisia following the adoption of MEPS standards.

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The evaluators used Otter AI for note taking during meetings, and Chat-GPT for spelling and grammar check of text.

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Leapfrogging Markets to High Efficiency Products (Appliances, including Lighting, and Electrical Equipment)  
GEF 9083  
June 2026  
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## **Acknowledgements**

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This Terminal Evaluation was prepared for UNEP by Mohammad Alatoom and Rhodes Ndlovu.

The evaluators would like to express their gratitude to all persons met and who contributed to this evaluation, as listed in Annex III.

The Evaluation Consultants extend thanks and gratitude to all project teams, partners, and stakeholders who contributed to the evaluation process. Special appreciation goes to the UNEP Evaluation Office, particularly Stephen Baguma, Evaluation Officer, the programme management unit represented by U4E team, and Child Project leads, for their assistance in facilitating evaluation activities, providing information and data, and enabling access to stakeholders for interviews.

The evaluation consultants hope that the findings, conclusions and recommendations will contribute to the successful finalisation of the current project, formulation of a next phase and to the continuous improvement of similar projects in other countries and regions.

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## Brief Consultant Biography

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## About the Evaluation

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**Joint Evaluation:** No

**Report Language(s):** English

**Evaluation Type:** Terminal Evaluation

**Abstract:** The Terminal Evaluation of the UNEP/GEF programme ‘*Leapfrogging Markets to High Efficiency Products (Appliances, including Lighting, and Electrical Equipment) GEF 9083*’ assesses the programme’s performance in advancing energy efficiency through market transformation across eight countries/markets. Led by UNEP with UNDP and DBSA as partners, the initiative sought to mitigate climate change by transforming the energy efficiency market through an integrated policy approach involving implementation of minimum energy performance standards (MEPS), Measurement, Verification and Enforcement (MVE), communication campaigns, financial mechanisms, and environmentally sound management. The evaluation rates the programme’s performance as Moderately Satisfactory, acknowledging meaningful regulatory and institutional advances despite external shocks such as the COVID-19 pandemic, political instability in Myanmar and Sudan, suspension of Kazakhstan’s project, and global inflationary pressures. These challenges delayed implementation, reduced efficiency, and constrained GHG emissions outcomes. Nevertheless, countries like Chile, Tunisia, and Indonesia demonstrated consolidated regulatory readiness, enforcement capacity, and emerging systemic market momentum. Regional harmonization of MEPS and testing protocols across ASEAN, Latin America, and SADC emerged as a durable achievement, reducing compliance costs and accelerating reform. The Global Coordinating Project produced significant public goods, including model regulations, savings assessments for 156 countries, MVE manuals, and harmonization roadmaps, supporting over 40 nations. Key lessons emphasize that market transformation is gradual, regional harmonization multiplies impact, affordability constraints remain critical, and private sector engagement—though technically strong—requires deeper financial mobilization. Recommendations call for diversified financing frameworks, strengthened advocacy for harmonization, robust monitoring systems, and methodologies to quantify economic and environmental co benefits. In conclusion, the programme delivered structural advances in regulatory frameworks, institutional capacity, and regional convergence, positioning U4E as a recognized global platform for energy efficiency. Despite uneven country performance and financing gaps, the programme’s enduring legacy lies in its creation of global public goods and systemic foundations for long term market transformation.

**Source(s) of Funding by Country:** *Costa Rica, Sudan, South Africa, Indonesia, Chile, and Tunisia.*

**Source(s) of Funding by Institution Type:**

|                   |     |
|-------------------|-----|
| Foundation/NGO    | No  |
| Private Sector    | No  |
| UN Body           | No  |
| Multilateral Fund | Yes |
| Environment Fund  | No  |

**Key words:** Energy efficiency, market transformation, climate change mitigation, MVE, MEPS

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## List of Acronyms and Abbreviations

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|                   |                                                                                        |
|-------------------|----------------------------------------------------------------------------------------|
| AFREC             | African Energy Commission                                                              |
| ASEAN             | Association of Southeast Asian Nations                                                 |
| BASE              | Basel Agency for Sustainable Energy                                                    |
| CEO               | Chief Executive Officer (The GEF)                                                      |
| CO <sub>2</sub> e | carbon dioxide (equivalent)                                                            |
| DBSA              | Development Bank of Southern Africa                                                    |
| EE                | energy efficiency                                                                      |
| EPR               | Extended Producer Responsibility                                                       |
| ESC               | Executive Steering Committee                                                           |
| ESM               | environmentally sound management                                                       |
| GCF               | Green Climate Fund                                                                     |
| GCP               | Global Coordinating Project (GEF 9337)                                                 |
| GEF               | The Global Environment Facility                                                        |
| GHG               | greenhouse gas                                                                         |
| high-GWP          | high Global Warming Potential                                                          |
| ICA               | International Copper Association                                                       |
| IIEC              | International Institute for Energy Conservation                                        |
| K-CEP             | Kigali Cooling Efficiency Programme                                                    |
| LED               | lighting lamps and luminaires utilizing light emitting diode technology                |
| MEPS              | minimum energy performance standards                                                   |
| MJ                | megajoule                                                                              |
| MSD               | Market Systems Development                                                             |
| MTR               | Mid Term Review                                                                        |
| MTS               | Medium-Term Strategy                                                                   |
| MVE               | measurement, verification and enforcement                                              |
| NDC               | Nationally Determined Contribution                                                     |
| NRDC              | Natural Resources Defense Council                                                      |
| OLADE             | La Organizacion Lationamericana de Energia (OLADE) / Latin America Energy Organisation |
| PFD               | Programme Framework Document                                                           |
| PIR               | Project Implementation Report                                                          |
| PM                | Project Manager                                                                        |
| PMT               | Project Management Team                                                                |
| PoW               | Programme of Work                                                                      |



|                |                                                                                                                                           |
|----------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| PPMR           | Programme Progress and Monitoring Report                                                                                                  |
| Programme 9083 | UNEP/GEF Programme ID 9083, “Leapfrogging Markets to High Efficiency Products (Appliances, including Lighting, and Electrical Equipment)” |
| PSC            | Project Steering Committee                                                                                                                |
| SACREEE        | Southern African Development Community Centre for Renewable Energy and Energy Efficiency                                                  |
| SADC           | Southern African Development Community                                                                                                    |
| SE4All         | Sustainable Energy for All                                                                                                                |
| TE             | Terminal Evaluation                                                                                                                       |
| TM             | Task Manager                                                                                                                              |
| ToC            | Theory of Change                                                                                                                          |
| U4E            | United for Efficiency                                                                                                                     |
| UNDP           | United Nations Development Program                                                                                                        |
| UNEP           | United Nations Environment Programme                                                                                                      |
| UNIDO          | United Nations Industrial Development Organisation                                                                                        |
| VCE            | Virtual Centre of Excellence                                                                                                              |
| WEEE           | Waste Electrical and Electronic Equipment                                                                                                 |

## Project Identification Table

**Table 1: Project Identification Table**

|                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>GEF Programme</b>                           | <b>GEF 9083</b> Leapfrogging Markets to High Efficiency Products (Appliances, including Lighting, and Electrical Equipment)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>GEF Child Projects</b>                      | <b>Global Coordinating Project (GEF 9337):</b> Global Project to Leapfrog Markets to Energy Efficient Lighting, Appliances and Equipment<br><b>GEF 9283:</b> Development of a Market for Energy Efficient Lighting, Air Conditioners and Refrigerators in Costa Rica<br><b>GEF 9328:</b> Leapfrogging Sudan's Markets to More Efficient Lighting and Air Conditioners.<br><b>GEF 9332:</b> Energy Efficient Standards, Certification, and Labeling for Appliances and Equipment ( <i>suspended</i> )<br><b>GEF 9492:</b> Leapfrogging South Africa's Markets to High Efficiency LED Lighting and High Efficiency Distribution Transformers<br><b>GEF 9493:</b> Advancing Indonesia's Lighting Market to High Efficient Technologies (ADLIGHT)<br><b>GEF 9496:</b> Leapfrogging Chilean's Markets to More Efficient Refrigerator and Freezers<br><b>GEF 9498:</b> Leapfrogging Tunisia's Lighting Market to High Efficiency Technologies<br><b>GEF 9499:</b> Leapfrogging Myanmar's market to high efficiency lighting and appliances ( <i>suspended</i> ) |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Associated Country Projects<sup>1</sup></b> | <b>GEF 5669</b> Enabling Solid State Lighting Market Transformation & Promotion of Light Emitting Diode (LED) Lighting (China)<br><b>GEF 9081</b> Promoting Energy-Efficient Motors in Small and Medium Sized Enterprises (PEEMS) (Türkiye)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Implementing Agencies:</b>                  | <b>Lead GEF Agency</b><br>United Nations Environment Programme (UNEP)<br><br><b>Other GEF Agencies</b><br>United Nations Development Programme (UNDP)<br>Development Bank of Southern Africa (DBSA)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>Executing Agencies:</b>                | Ministry of Environment (MINAE), Costa Rica<br>National Development and Reform Commission (NDRC) - China<br>Ministry of Water Resources, Irrigation and Electricity – The Electricity Regulatory Authority, Sudan<br>Ministry of Investment and Development of the Republic of Kazakhstan<br>Department of Energy, South Africa<br>Ministry of Energy and Mineral Resource (MEMR), Indonesia<br>Ministry of Energy, Chile<br>Agence Nationale de la Maitrise de l'Energie (ANME), Tunisia<br>Ministry of Industry, Myanmar<br>Turkey Ministry of Science, Industry and Technology (MoSIT) through the Directorate General for Productivity (DGP) |
| <b>Sources of Funding (Co-finance):</b>        | <b>Country<sup>2</sup>(ies):</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <b>Institution<sup>3</sup> Name/Type:</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |

<sup>1</sup> Whereas these projects were not part of the programme and were not included in the programme through a formal revision, they were also supported by the Global Coordinating Project (GEF 9337).

<sup>2</sup> Where applicable, list countries who have provided project funds and/or co-finance.

<sup>3</sup> Indicate where funding institutions are any/all of the following: Foundation/NGO; Private Sector; UN Body; Multilateral Fund; Environment Fund.

|                                                                                                                                                                          |                                                                                                                                                                                                                                 |                                                                                                                                                                                                   |                                                                                                                                                                                                            |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                          | Chile, China, Costa Rica, Indonesia, Kazakhstan, Myanmar, South Africa, Sudan, Tunisia, Türkiye.                                                                                                                                | United Nations Environment Programme (UNEP) - UN Body<br>United Nations Development Programme (UNDP) - UN Body<br>Development Bank of Southern Africa (DBSA) - Multilateral Fund                  |                                                                                                                                                                                                            |
| Relevant SDG(s):                                                                                                                                                         | 7, 12, 13, 17                                                                                                                                                                                                                   |                                                                                                                                                                                                   |                                                                                                                                                                                                            |
| MTS (at approval): <a href="#">UNEP Medium Term Strategy 2014-2017</a>                                                                                                   |                                                                                                                                                                                                                                 |                                                                                                                                                                                                   |                                                                                                                                                                                                            |
| POW Direct Outcome(s) number/reference (applicable for projects approved from 2022):<br>OR<br>POW Output(s) number/reference (applicable for projects approved pre-2022) | POW Direct Outcome:                                                                                                                                                                                                             | MTS 2014-2017 Outcome(s) number/reference (applicable for projects approved from 2022):<br><br>OR<br>POW Expected Accomplishment(s) number/reference (applicable for projects approved pre-2022): | MTS 2025 Outcome:                                                                                                                                                                                          |
|                                                                                                                                                                          | Indicators                                                                                                                                                                                                                      |                                                                                                                                                                                                   | POW Expected Accomplishment:                                                                                                                                                                               |
|                                                                                                                                                                          | N/A<br><br>POW Output:<br>4. Technical support provided to countries and partners to plan and implement and scale up sectoral initiatives and to make renewable energy and energy efficiency projects affordable and replicable |                                                                                                                                                                                                   | (b) Energy efficiency is improved and the use of renewable energy is increased in partner countries to help reduce greenhouse gas emissions and other pollutants as part of their low-emission development |
| Sub-programme:                                                                                                                                                           | Climate Action                                                                                                                                                                                                                  | Global Coordination Project:                                                                                                                                                                      | GEF 9337: Global Project to Leapfrog Markets to Energy Efficient Lighting, Appliances and Equipment                                                                                                        |
| UNEP approval date:                                                                                                                                                      | 25 March 2016                                                                                                                                                                                                                   | GEF approval date:                                                                                                                                                                                | 21 October 2015                                                                                                                                                                                            |
| GEF Operational Programme #:                                                                                                                                             | GEF 6                                                                                                                                                                                                                           | GEF Strategic Priority:                                                                                                                                                                           | Climate Change                                                                                                                                                                                             |
| Project type:                                                                                                                                                            | N/A                                                                                                                                                                                                                             | Focal Area(s):                                                                                                                                                                                    | Climate Change                                                                                                                                                                                             |
| Expected start date:                                                                                                                                                     | Not Available                                                                                                                                                                                                                   | Actual start date:                                                                                                                                                                                | October 2017                                                                                                                                                                                               |
| Planned completion date:                                                                                                                                                 | Not Available                                                                                                                                                                                                                   | Actual operational completion date:                                                                                                                                                               | Not Available                                                                                                                                                                                              |
| Planned total programme budget at approval:                                                                                                                              | US\$ 195,886,040                                                                                                                                                                                                                | Actual total expenditures reported as of 30 June 2025:                                                                                                                                            | US\$ 103,321,916 <sup>4</sup>                                                                                                                                                                              |
| GEF grant allocation:                                                                                                                                                    | US\$ 26,856,700 <sup>5</sup>                                                                                                                                                                                                    | GEF grant expenditures reported as of 30 June 2023]:                                                                                                                                              | US\$ 11,173,889                                                                                                                                                                                            |
| Expected Programme co-financing:                                                                                                                                         | US\$ 169,029,340                                                                                                                                                                                                                | Secured Programme co-financing as of 30 June 2025:                                                                                                                                                | US\$ 92,265,237                                                                                                                                                                                            |
| No. of formal programme revisions:                                                                                                                                       | 1                                                                                                                                                                                                                               | Date of last approved programme revision:                                                                                                                                                         | n/a                                                                                                                                                                                                        |
| No. of Steering Committee meetings:                                                                                                                                      | SCM, and 1 partners meeting                                                                                                                                                                                                     | Date of Last Steering Committee meeting:                                                                                                                                                          | March 2022                                                                                                                                                                                                 |
| Mid-term Review/ Evaluation (planned date):                                                                                                                              | Not Available                                                                                                                                                                                                                   | Mid-term Review/ Evaluation (actual date):                                                                                                                                                        | June 2021                                                                                                                                                                                                  |
| Terminal Evaluation (planned date):                                                                                                                                      | Not Available                                                                                                                                                                                                                   | Terminal Evaluation (actual date):                                                                                                                                                                | November 2025                                                                                                                                                                                              |
| Coverage - Country(ies):                                                                                                                                                 | Chile, Costa Rica, Indonesia, Kazakhstan, Myanmar, South Africa, Sudan, Tunisia.                                                                                                                                                | Coverage - Region(s):                                                                                                                                                                             | Africa, Asia and the Pacific, Latin America and the Caribbean, West Asia                                                                                                                                   |
| Dates of previous programme phases:                                                                                                                                      | N/A                                                                                                                                                                                                                             | Status of future programme phases:                                                                                                                                                                | NA                                                                                                                                                                                                         |

<sup>4</sup> Figures based on GEF portal, it does not consider suspended projects

<sup>5</sup> Excluding suspended countries.

## Executive Summary

### Programme background

1. The United Nations Environment Programme (UNEP) and Global Environment Facility (GEF) programme 'Leapfrogging Markets to High Efficiency Products (Appliances, including Lighting, and Electrical Equipment) GEF 9083' aimed to mitigate climate change by transforming national and regional markets to energy efficient products. It proposes to countries an integrated policy approach under Component 1 to meet their individual policy needs and priorities. The Global Leapfrogging Programme allows for the use of a coherent and consistent integrated approach, providing greater likelihood of success and increased harmonization between countries. Integrated policy approaches (minimum standards, Measurement, Verification and Enforcement (MVE), communication campaigns and financial mechanisms, and environmentally sound management) have been demonstrated to permanently transition markets to energy efficient products while addressing environmental concerns.

2. UNEP was the lead agency with other GEF agencies - United Nations Development Programme (UNDP) and the Development Bank of Southern Africa (DBSA)- implementing nine Child Projects under the programme. The total programme budget at programme design and approval was US\$ 180,303,753 and comprised US\$ 30,362,753 of the GEF financing and US\$ 149,941,000 of co-financing. The programme was launched in November 2017 with a planned 66-month duration.

### This evaluation

3. The Evaluation had two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge sharing through results and lessons learned among UNEP and the executing partners. Therefore, the Evaluation identified lessons and recommendations of operational relevance for future programme formulation and implementation. Specifically, the TE examined the extent to which the programme successfully contributed to its intended outcomes, exploring the pathways through which these contributions were made. Additionally, it scrutinized challenges or barriers encountered that may have hindered progress or limited the programme's impact.

### Key findings

4. This evaluation assesses the performance, results, efficiency, sustainability, and strategic positioning of the Programme implemented across eight countries and supported by a Global Coordinating Project. Overall, the Programme is rated Moderately Satisfactory, reflecting meaningful structural achievements in energy efficiency (EE) market transformation alongside significant external constraints, uneven country-level performance, and systemic financing challenges.

5. Programme implementation was significantly affected by external shocks and structural political constraints beyond its control. The COVID-19 pandemic, political instability (most notably in Myanmar and Sudan), prolonged suspension of the Kazakhstan project, global inflationary pressures, and delays in high-level political approvals collectively disrupted project start-up, procurement, stakeholder engagement, Minimum Energy Performance Standards (MEPS) endorsement, and enforcement processes. These exogenous risks led to suspensions, cost overruns, scaling-down of activities, asynchronous implementation timelines, and extended project durations—some exceeding planned timelines by more than four years. While these constraints materially reduced delivery efficiency and delayed environmental outcomes, they do not negate the structural reforms achieved where implementation proceeded.

6. In countries where implementation was not suspended, energy efficiency market transformation advanced in a gradual but structurally meaningful manner. Reform followed the expected sequential pathway inherent to regulatory transformation: policy development, consultation, formal adoption, institutional capacity strengthening, and enforcement before influencing supply chains and consumer behaviour. While full market penetration and associated emissions reductions will materialize over longer timeframes, foundational regulatory and institutional shifts are evident.

7. The Market Systems Development (MSD) Index<sup>6</sup> classification highlights differentiated systemic maturity across the portfolio:

- **Improving/Strengthened:** Chile (3.20), Tunisia (3.00), and Indonesia (3.00) demonstrate regulatory and institutional consolidation sufficient to sustain market momentum beyond direct donor incentives. Chile shows the most advanced implementation, including enforced MEPS and operational replacement schemes. Indonesia's high Rules and Norms score (3.25) reflects enforcement-ready regulatory architecture following complex ministerial consensus processes. Tunisia demonstrates consolidated regulatory readiness and institutional capacity.
- **Emerging:** Costa Rica (2.70) and Sudan (2.00) reflect divergent trajectories—Costa Rica with regulatory architecture ahead of market activation, and Sudan preserving regulatory achievements amid conflict but lacking supporting and core market functionality.
- **Weak:** South Africa, Kazakhstan, and Myanmar experienced institutional challenges, operational failures, suspension, or political disruption, preventing institutionalization of market transformation mechanisms.

8. Across the portfolio, three structural dynamics shaped outcomes including affordability constraints, which remain the dominant barrier to consumer uptake where high upfront costs and subsidized electricity tariffs weaken lifecycle cost incentives, demonstrating that MEPS and labelling frameworks must be complemented by financing and incentive mechanisms. Regulatory approval and enforcement bottlenecks slowed transformation; and regional harmonization emerged as a high-impact strategic lever. Alignment of MEPS and testing protocols across ASEAN, Latin America and the Caribbean, and SADC reduced compliance costs, prevented regulatory arbitrage, expanded effective market size, and accelerated reform timelines. Harmonization stands out as one of the programme's most durable integration achievements.

9. Under Outcome 2.1, the Global Coordinating Project generated substantial global public goods, including model regulations, Country Savings Assessments covering 156 countries, MVE manuals, Environmentally Sound Management (ESM) frameworks, and regional harmonization roadmaps. These resources have supported over 40 countries and directly contributed to policy adoption and regulatory alignment across multiple regions. Under Outcome 2.2, capacity-building exceeded original targets, supporting at least 34 countries through technical trainings, study tours, and regulatory support. Institutional gains were strongest in Chile, Indonesia, and Tunisia. Under Outcome 3.1, international commitment expanded significantly, with 80 countries demonstrating engagement aligned with United for

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<sup>6</sup> The Market Systems Development (MSD) Index is a diagnostic and benchmarking tool used to assess the performance, inclusiveness, and sustainability of market systems interventions. It evaluates key dimensions such as system competitiveness, resilience, and the extent to which interventions catalyze systemic change beyond direct beneficiaries. In the context of high-efficiency appliances (including lighting and electrical equipment), the MSD Index helps track how market facilitation efforts—such as standards, financing mechanisms, and private sector engagement—contribute to scaling access to energy-efficient technologies and enabling long-term market transformation. Reference: *The Donor Committee for Enterprise Development (DCEd). (2017). "Measuring Achievements in Private Sector Development: The Market Systems Development (MSD) Approach."* and related MSD/Results Measurement guidance documents.

Efficiency (U4E) approaches. Regional initiatives (ASEAN Cool, African Energy Efficiency Programme, OLADE <sup>7</sup> partnership) amplified political endorsement and regulatory convergence.

10. According to the data reported in the Programme Progress Monitoring Report (PPMR) as of 30 June 2025, approximately 50% of the targeted 88 million tonnes of CO<sub>2</sub> reductions had been achieved, reflecting suspensions and delayed enforcement. Energy savings performance is substantially stronger (96% of target), indicating early structural shifts preceding full emissions realization. However, this Terminal Evaluation (TE) was unable to verify the data on CO<sub>2</sub> emissions reductions and energy savings due to the absence of detailed calculation sheets at the programme level. Beneficiary targets remain underachieved due to systemic, indirect impact pathways and implementation disruptions. Economic and environmental co-benefits—such as reduced energy bills, deferred infrastructure investments, improved energy security, and hazardous waste management—are likely substantial but remain insufficiently quantified. Strengthened valuation of these co-benefits would enhance the programme's investment case.

11. Time efficiency was constrained by asynchronous project timelines and delayed start-ups. Financial execution remains low relative to maturity: 42% disbursement overall (excluding suspended projects). Tunisia, Chile, and the Global Coordinating Project show strong performance, while Indonesia, Sudan, and South Africa lag. Co-financing realization stands at approximately 55% of revised targets, noting that South Africa is still struggling to start the project implementation.

12. The programme reflects a coherent systems-thinking approach, addressing regulatory, institutional, financial, and behavioural drivers in an integrated manner. Operational integration between global tool development and country-level application was strong, supported by cross-project learning mechanisms. U4E is widely recognized as a global knowledge broker and standard-setter. Its tools are referenced by major international actors and embedded within policy processes, even where country-level branding emphasizes national ownership.

13. Stakeholder engagement was inclusive and strategically effective. Governments and partners consistently valued U4E's technical backbone and diplomatic convening role. Private sector engagement was technically robust, improving regulatory feasibility and buy-in, though largely non-financial. Indonesia represents the strongest example of structured private sector integration. Partnerships with institutions such as Lawrence Berkeley National Laboratory strengthened technical rigor. Knowledge management is a major programme strength, though monitoring of uptake remains largely output-focused and could be strengthened through outcome-oriented analytics.

14. U4E's institutional sustainability remains partially dependent on project-based funding. While U4E has diversified funding and evolved into a credible implementation platform, structural financing gaps persist. GEF allocations have shifted away from global appliance programming; GCF loan instruments are misaligned with grant-based technical assistance; bilateral donors favour geographically bounded investments; and UNEP core funding is limited. At the same time, global efficiency improvement remains off track, underscoring the continued need for programmatic investment.

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<sup>7</sup> La Organización Latinoamericana de Energía (OLADE) / Latin America Energy Organisation

## Conclusions

15. In summary, the programme has delivered meaningful structural advances in regulatory frameworks, institutional capacity, and regional harmonization in countries where the programme was not suspended. The strongest legacy lies in the creation of global public goods, regional regulatory convergence, and the institutional positioning of U4E as a recognized platform for energy efficiency market transformation. Overall rating: **Moderately Satisfactory**.

**Table 2: Summarised Rating Table**

| Criterion                        | Rating                         |
|----------------------------------|--------------------------------|
| A. Strategic Relevance           | Satisfactory                   |
| B. Quality of Programme Design   | Moderately Unsatisfactory      |
| C. Nature of External Context    | Moderately Favourable          |
| D. Effectiveness                 | Moderately Satisfactory        |
| E. Efficiency                    | Moderately Unsatisfactory      |
| F. Monitoring and Reporting      | Moderately Unsatisfactory      |
| G. Sustainability                | Moderately Likely              |
| H. Factors Affecting Performance | Satisfactory                   |
| <b>Overall Programme Rating</b>  | <b>Moderately Satisfactory</b> |

## Responses to Strategic Questions

**Question 1: In what ways, and to what extent, was the private sector involved in programme design, implementation and monitoring?**

16. The programme established structured and technically robust private sector engagement, primarily focused on regulatory design and market feasibility rather than financial mobilization. Major manufacturers and industry actors contributed to consultations, technical guidance, and data-sharing processes, strengthening the quality, feasibility, and market alignment of MEPS, labelling, and MVE frameworks, while providing meaningful in-kind co-financing through expertise and hosting support. Partnerships with technical institutions such as Lawrence Berkeley National Laboratory and a broad network of international organizations further reinforced regulatory rigor and analytical depth. The programme's approach to private sector engagement was undertaken from the outset to focus on technical collaboration with manufacturers and market actors in support of policy, standards, and market transformation, rather than direct capital mobilization, in line with the programme's theory of change. However, private sector engagement remained largely technical and seldom translated into structured investment mechanisms or significant capital mobilization for scaling energy efficiency deployment. Engagement varied across countries, with Indonesia demonstrating the most comprehensive model—integrating manufacturers into regulatory design, pilots, and financing discussions—while Tunisia and Chile focused on regulatory readiness, and other contexts experienced limited participation due to political instability, suspension, or early-stage implementation. Other examples demonstrating how private sector engagement contributed to market uptake and the expansion of financial support mechanisms include, in Chile, where companies such as Sodimac, together with manufacturers, actively supported the implementation of the Refriclaje replacement programme by providing consumer-facing incentives and discounts for efficient appliances, thereby facilitating market adoption of energy-efficient products. In addition, U4E engagement helped catalyze broader industry commitments at scale, including Electrolux's announcement of a major investment to accelerate sustainable cooling solutions. These examples illustrate how collaboration with private sector actors not only supported programme implementation but also leveraged wider market transformation and industry action toward energy-efficient technologies.

**Question 2: To what extent has the programme influenced (strengthened or otherwise) relationships and power dynamics among market actors within the market systems? And Question 3: Has implementation of the programme led to systemic change in the market of energy efficient products and appliances?**

17. In countries where implementation proceeded, energy efficiency market transformation advanced gradually but with clear structural significance. Reform followed the expected sequential pathway—from policy development and consultation to formal adoption, institutional strengthening, and enforcement—resulting in formalized MEPS, strengthened testing and certification systems, and enhanced market surveillance frameworks. While full market penetration and associated emissions reductions will materialize over longer time horizons, foundational shifts in regulatory and institutional architecture indicate that systemic transformation is underway. The MSD Index further confirms differentiated levels of market maturity across the portfolio. Chile (3.20), Tunisia (3.00), and Indonesia (3.00) reached the Improving/Strengthened band, demonstrating regulatory consolidation and emerging market momentum beyond direct donor stimulus. Costa Rica and Sudan occupy the Emerging band with distinct structural profiles, while South Africa, Kazakhstan, and Myanmar remain in the Weak band due to institutional and partnership failures, design constraints, or political disruption. Overall, progress across countries is uneven but analytically consistent with variations in governance stability, financing reliability, regulatory adoption, and implementation continuity.

18. The programme was deliberately implemented across eight countries on five continents, encompassing diverse institutional capacities, regulatory traditions, political conditions, and levels of market maturity. This heterogeneity generated valuable comparative insights on co-financing reliability, regulatory sequencing, institutional readiness, and political risk management that would not have emerged from isolated national interventions. Within this complex environment, substantive progress was achieved: Chile, Tunisia, and Indonesia advanced into the Improving band, reflecting regulatory consolidation and emerging systemic market momentum beyond direct donor support. Across the portfolio, the programme strengthened MEPS adoption, enforcement architecture, and stakeholder engagement, producing durable shifts in appliance and lighting market governance. At the same time, three structural dynamics shaped outcomes: persistent affordability constraints limiting consumer uptake; delays in MEPS approval and operationalization that slowed enforcement; and the high-impact role of regional harmonization in reducing compliance costs, preventing regulatory arbitrage, expanding effective market size, and accelerating reform. Together, these factors highlight both the structural progress achieved and the conditions necessary to secure sustained, scalable energy efficiency market transformation.

**Question 4: Has the programme effectively contributed to knowledge sharing on best practices among its child projects?**

19. The programme made a strategically significant contribution to closing knowledge gaps in energy efficiency policy and regulatory frameworks in developing countries by producing a comprehensive suite of high-quality global public goods, including updated model regulations, technical guidance, procurement tools, case studies, and online training materials. It institutionalized cross-country learning through peer networks, study tours, and technical exchanges, supported by a multi-channel dissemination strategy anchored in a centralized knowledge platform and reinforced through newsletters, social media, and stakeholder consultations. While this approach ensured broad reach and responsiveness, monitoring of knowledge uptake remains largely output-focused, relying on participation and download metrics rather than systematic evidence of application in national policy processes. Strengthening engagement analytics, user feedback systems, and outcome-oriented tracking would improve the ability to demonstrate real-world utilization and enhance adaptive management and long-term impact.



## **Lessons Learned**

20. Lesson learned #1: Market transformation is gradual and sequential.
21. Lesson learned #2: Strengthening programme-level architecture is core to realizing the full potential of the programmatic approach.
22. Lesson learned #3: Regional harmonization is a strategic multiplier for market transformation.
23. Lesson learned #4: Global public goods are the programme's most enduring legacy.
24. Lesson learned #5: Affordability and subsidy structures critically influence consumer uptake.
25. Lesson learned #6: Energy efficiency reform is a continuous process, not a one-time intervention
26. Lesson Learned #7: Private sector engagement is technically strong but requires financial deepening

## **Recommendations**

27. As the Programme's coordinating project has already been closed, recommendations are focused on strengthening the sustainability of project outcomes through future programming activities:
28. Recommendation #1: UNEP/U4E should implement a strategic repositioning and diversified financing framework to strengthen long-term financial resilience and elevate the visibility of energy efficiency as foundational climate infrastructure.
29. Recommendation #2: Further strengthen advocacy and technical assistance for the regional harmonization of EE standards, including MEPS, labelling schemes, and testing protocols.
30. Recommendation #3: Develop and institutionalize a more robust monitoring system designed to capture outcome-level indicators of knowledge uptake and application.
31. Recommendation #4: Develop and institutionalize a methodology to systematically assess and monetize the economic and non-carbon environmental co-benefits generated by EE market transformation interventions.

## 1. INTRODUCTION

32. The United Nations Environment Programme (UNEP) and Global Environment Facility (GEF) programme 'Leapfrogging Markets to High Efficiency Products (Appliances, including Lighting, and Electrical Equipment) Programme 2018-2025 (GEF ID 9083)' is subject to a Terminal Evaluation (TE). The Programme originally comprised nine (9) Child Projects i.e. one Global Coordinating Project (GCP) and eight (8) child country projects. Three of these Child Projects (GEF 9328, GEF 9332, GEF 9499) were officially suspended and did not reach completion. UNEP was requested to provide support to an additional two country projects (GEF 5669 and GEF 9081) implemented in China and Türkiye, respectively. However, this expansion was not formally documented.

33. The Evaluation had two primary purposes: (i) to provide evidence of results to meet accountability requirements, and (ii) to promote operational improvement, learning and knowledge sharing through results and lessons learned among UNEP, other GEF implementing Agencies and the executing partners.

34. A primary goal of the TE was to foster deep reflection and facilitate meaningful learning among UNEP staff and key stakeholders involved in the programme. The evaluation aimed to serve as a catalyst for assessing the programme's achievements and identifying lessons learned. Specifically, the TE examined the extent to which the programme successfully contributed to its intended outcomes, exploring the pathways through which these contributions were made. Additionally, it scrutinized challenges or barriers encountered that may have hindered progress or limited the programme's impact. Furthermore, the TE assessed whether the programme had any unintended negative consequences, ensuring a comprehensive understanding of both its benefits and its risks.

35. The Global Leapfrogging Programme was designed to allow for the use of a coherent and consistent integrated approach, providing greater likelihood of success and increased harmonization between countries. Integrated policy approaches [Minimum Energy Performance Standards (MEPS), Monitoring, Verification and Enforcement (MVE), communication campaigns and financial mechanisms, and environmentally sound management)] that have been demonstrated to permanently transition markets to energy efficient products while addressing environmental concerns.

36. The programme approach can be described as follows:

37. Implementation of "national-child projects" (National STAR<sup>8</sup> allocations): The first component concerns countries that allocate their National STAR Allocation to projects promoting energy efficiency of lighting, appliances and equipment. Eight countries (Chile, Costa Rica, Indonesia, Kazakhstan, Myanmar, South Africa, Sudan and Tunisia) committed their STAR allocation under the Global Leapfrogging Programme on lighting, appliances, and equipment.

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<sup>8</sup> System for Transparent Allocation of Resources (STAR) determines the amount of GEF resources that a given country can access in a replenishment period. <https://www.thegef.org/publications/system-transparent-allocation-resources-star>

38. Support to partner countries (Global Funding/GEF ID: 9337): Under Component 2, the virtual Centre of Excellence supports all countries that join as members of the global partnership United for Efficiency initiative (U4E), to implement its integrated policy approach (MEPS – minimum energy performance standards; MVE – monitoring, verification, and enforcement; supporting policies, financial mechanisms, and environmentally sound management), training and remote support for policy makers and key stakeholders.

39. Outreach to Countries (Global Funding/GEF ID: 9337): Under component 3, regional workshops and an outreach campaign were planned in order to increase the number of countries committing to transform their markets. The activities of this component aimed to increase regional harmonization of standards and regulatory frameworks, while taking into account the differences between countries.

## 2. EVALUATION METHODS

40. The Terminal Evaluation (TE) provides evidence-based information that is credible, reliable and useful and complies with the UNEP Evaluation Guidelines. The TE has been undertaken in line with United Nations Evaluation Group (UNEG) norms<sup>9</sup> concerning independence, credibility, utility, impartiality, transparency, , ethics, human rights and gender equality, professionalism. The TE Evaluation process was designed in line with evaluation criteria defined by Organization for Economic Co-operation and Development's Development Assistance Committee (OECD DAC)<sup>10</sup> and adheres to UNEG Norms and Standards for evaluations.

41. The TE complied with the detailed guidance provided by the Evaluation Office of UNEP on the requirements for TE of UNEP projects and GEF programme Evaluation guidelines<sup>11</sup>. UNEP guidelines require TE findings to be based on sound evidence and analysis and be clearly documented. Attention has been given to identifying the challenges and risks to achieving the expected objectives and assessing the sustainability of these achievements. The TE has also taken into account the changes from the baseline conditions. In general terms, the TE assessed “what” the programme has achieved but also provide a deeper understanding of “why” and “how” it performed as it did.

42. The evaluation process was independent of implementing agency and programme partners. The findings and recommendations in the evaluation are those of the Evaluators under the guidance of the UNEP Evaluation Office, and do not necessarily reflect the position of any stakeholders.

43. The TE was carried out between November 2025 and March 2026. For this TE, evidence has been gathered from reviewing documents, interviewing key selected stakeholders, country visits to Tunisia and Chile conducted in January 2026 and from other opportunistic observations.

44. Mixed methods<sup>12</sup> have been used for the TE for collecting and analysing a mix of qualitative and quantitative data. The use of mixed methods has the advantage of supporting data triangulation across multiple sources, which creates the potential for increased data accuracy and credibility to inform the reliability of the evaluation results. Methods are explained in more detail below.

### 2.1 Data collection methods

45. The evaluation used various methods (e.g. document review and interviews) as well as general best practices of evaluation to gather qualitative and quantitative data that focus on the purpose of the evaluation and answer all of the evaluation questions defined in the TOR, also, the evaluation operationalizes the Market System Development (MSD) framework as a diagnostic and evaluative tool to measure systemic change. Data has been collected in a gender-segregated way to allow for a specific assessment of impact for men and women. The evaluation was based on two levels of analysis and validation of information:

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<sup>9</sup> [https://www.unevaluation.org/sites/default/files/file\\_uploads/UNEGNormsStandardsforEvaluation\\_English-2017\\_1914\\_11512579289962.pdf](https://www.unevaluation.org/sites/default/files/file_uploads/UNEGNormsStandardsforEvaluation_English-2017_1914_11512579289962.pdf)

<sup>10</sup> <http://www.oecd.org/dac/evaluation/daccriteriaforevaluatingdevelopmentassistance.htm>

<sup>11</sup> <https://www.gefio.org/en/types/evaluations/program-evaluations-2023>

<sup>12</sup> Mixed methods involve desk review and semi-structured interviews for data collection, and also descriptive analysis, content analysis, thematic analysis and simple quantitative data analysis in excel for quantitative indicators for data analysis. See below sections for more details.

- A desk review of programme and child project documentation
- Independent data collected by the evaluators through interviews with key stakeholders and country visits to Tunisia and Chile.

46. In collecting the data, care was taken to ensure data protection aspects and confidentiality of informants to gather non-biased, valid, reliable, precise, and useful data with integrity to answer the evaluation questions.

47. **Desk review:** The initial stage involved the review of programme documentation and associated documents. An information package was provided by the programme management team and the Evaluation Office. The evaluators reviewed all relevant sources of information, such as the Programme Framework Document (PFD), child project document, project reports – including annual reports, progress reports, project files, national strategic plans, and child project technical products. A detailed list of documents that were reviewed is available in Annex III. The desk review was done to collect data and information as potential evidence that underpins the evaluation and also help the evaluators to become familiar with the work context in detail.

48. **Semi-structured interviews:** Engaging stakeholders was critical for the success of the evaluation. The programme involved multi-stakeholders and teams in different capacities from different countries. Throughout the evaluation process, 54 stakeholders (listed in Annex III of this document) covering key stakeholder groups were engaged and interviewed using semi-structured interview methods. The selection of interviewees relied on a purposive sampling strategy to ensure a diversity and balance of perspectives from each stakeholder category, considering the geographical distribution, representative diversity, gender balance etc. Effective engagement of stakeholders was vital to a successful TE. Stakeholder involvement involved face-to-face interviews with local stakeholders in Tunisia and Chile and online interviews with the rest of the countries, UNEP stakeholders and key project team personnel. Interviewees were asked open questions about their perspectives on programme successes, challenges and also about their particular roles in the programme.

49. The main purpose of the engagement was to collect evidence that support the TE process and findings and gain sufficient understanding of their perspectives on the programme successes and challenges. All interviews were undertaken in full confidentiality.

50. **Country Visits:** The TE evaluators conducted two country visits to Tunisia and Chile. The purpose of the visit was to develop two case studies aiming to generate in-depth evidence and insights on how the GEF 9083 programme contributed to market transformation toward energy-efficient products at the national level.

## 2.2 Sampling

51. Targeted and purposive sampling was used in interviews to achieve the level of rigor that is required for a robust evaluation. The evaluation responded to the existing diversity across the programme stakeholder groups. In essence, the purposive approach to sampling is used to identify the key informants who are best suited to provide detailed responses to the evaluation questions, to accurately reflect given elements of the work experience.

52. The selection of case study countries for the TE was carried out using a structured, criteria-based sampling approach agreed during the inception phase. Country selection was guided by three main considerations: logistical feasibility, anticipated evidence of results and impact, and diversity of product focus with associated greenhouse gas (GHG) mitigation potential.

53. From a practical standpoint, countries facing significant security constraints, notably Sudan and Myanmar, were excluded to ensure safe and feasible fieldwork. Countries whose child projects had closed earlier, such as Kazakhstan and Indonesia, were deprioritized due to reduced stakeholder availability, while South Africa was also deprioritized as its child project had only recently been launched and had not yet generated observable results. Greater weight was therefore given to countries with ongoing or recently completed projects, where access to up-to-date documentation, data, and stakeholders could be ensured. In parallel, the sampling emphasized the likelihood of capturing verifiable evidence of programme results and lessons learned. Tunisia and Chile emerged as strong candidates due to the availability of measurable policy and market outcomes, reliable documentation, and continued engagement of key institutions and market actors.

54. Finally, to reflect the programme's core objectives and capture diversity in mitigation pathways, product focus was a decisive factor. Priority was given to projects covering lighting—a central pillar of the programme—alongside other high-impact technologies. Tunisia was selected to represent market transformation in efficient lighting, while Chile was selected for its focus on refrigerators and freezers, demonstrating market-level transformation potential in a major appliance category. Based on the combined assessment across these criteria, Tunisia and Chile were ultimately selected as the two case study countries for the terminal evaluation.

**Table 3: Evaluation respondents and field visits**

| Target Respondents - Individuals |                                                                                                      |                                 | A. # people involved in programme Total (M/F) | B.# people contacted Total (M/F) | Sample size (% B/A) | C. # people responded Total (M/F) | Response rate (% C/B) |
|----------------------------------|------------------------------------------------------------------------------------------------------|---------------------------------|-----------------------------------------------|----------------------------------|---------------------|-----------------------------------|-----------------------|
| Programme Team                   | Programme Team<br>(those with management responsibilities e.g. Project Management Unit)              | Implementing agency             | 15 (5M/10F)                                   | 15 (5M/10F)                      | 100%                | 15(5M/10F)                        | 100%                  |
|                                  |                                                                                                      | Executing agency/ies            | N/A                                           | 8 (6M/2F)                        | N/A                 | 7 (5M/2F)                         | N/A                   |
| Beneficiaries                    | Direct Beneficiaries: (e.g. duty bearers, gatekeepers, training participants, etc.)                  |                                 | N/A                                           | 12 (3M/9F)                       | N/A                 | 12 (3M/9F)                        | 100%                  |
|                                  | Indirect Beneficiaries: (e.g. household members, civil society representatives, group members, etc.) |                                 | N/A                                           | 5 (2M/3F)                        | N/A                 | 5 (2M/3F)                         | 100%                  |
| Target Respondents - Entities    |                                                                                                      |                                 | A. # entities involved in programme           | B.# entities contacted           | Sample size (% B/A) | C. # entities responded           | Response rate (% C/B) |
| Partners                         | Child Project implementing/ executing partners (receiving project funds)                             |                                 | 8                                             | 8                                | 100%                | 6                                 | 75%                   |
|                                  | Child Project collaborating/ contributing partners <sup>13</sup> (not receiving project fund)        |                                 | 29                                            | 29                               | 100%                | 4                                 | 14%                   |
| Field Visits<br>(Case Studies)   |                                                                                                      | Region                          | A.# of Countries directly Involved            | B.# Countries Visited            | Sample Size (%B/A)  |                                   |                       |
|                                  |                                                                                                      | Africa                          | 3                                             | 1                                | 25%                 |                                   |                       |
|                                  |                                                                                                      | Asia and the Pacific            | 3                                             | 0                                |                     |                                   |                       |
|                                  |                                                                                                      | Europe                          | 2                                             | 0                                |                     |                                   |                       |
|                                  |                                                                                                      | Latin America and the Caribbean | 2                                             | 1                                |                     |                                   |                       |
|                                  |                                                                                                      | Total                           | 8                                             | 2                                |                     |                                   |                       |

<sup>13</sup> Contributing partners may be providing resources as either cash or in-kind inputs (e.g. staff time, office space etc.).

## 2.3 Data analysis methods

55. The collected information and data were analysed and consulted with programme team and the commissioning unit. The analysis was done based on observed facts, and data to ensure that findings are supported by quantitative and/or qualitative information and evidence that is reliable, and valid. The broad range of data provides strong opportunities for triangulation. The data analysis methods involved:

56. **Descriptive analysis:** A descriptive analysis of the programme was used to understand and describe its main components, including related activities; partnerships; modalities of delivery; etc. Descriptive analysis preceded more interpretative approaches during the evaluation.

57. **Content analysis:** A content analysis of relevant documents was conducted to identify common trends and themes, and patterns for each of the key evaluation issues. Content analysis was used to flag diverging views and opposite trends and determine whether there was need for additional data generation.

58. **Thematic analysis:** Responses collected from semi-structured interviews and observations were analysed through thematic analysis, this involved analysing qualitative data and closely examining the data to identify common themes – topics, ideas and patterns of meaning that come up repeatedly.

59. **Quantitative analysis:** A simplified analyses was conducted on all quantitative measures by reviewing and validating programme datasets on quantitative indicators. The generated statistics were used to develop emergent findings and inform the triangulation process.

60. **Market Systems Analysis:** The Terminal Evaluation assessed market transformation for key energy-efficient products in participating countries using a Market Systems Development (MSD) lens, in line with GEF evaluation guidance on applying a systems lens to programme evaluations. Evidence was systematically analyzed using Python quantitative analysis software across the three MSD layers—core market functions, supporting functions, and rules and norms—to examine the extent to which programme interventions contributed to systemic and sustainable market change. All findings were structured around: (i) core market functions (production, distribution, retail/sales, and consumption); (ii) supporting functions (finance, consumer awareness, technical services, research and development, and information and coordination systems); and (iii) rules and norms (standards, policies, monitoring, verification and enforcement (MVE), fiscal instruments, and prevailing cultural norms).

61. Data drawn from the desk review and key informant interviews, were coded against these three MSD pillars and assessed using four MSD dimensions: functionality, incentives and behaviours, capacity and coordination, and adaptiveness and sustainability. For each country, evidence was synthesized into pillar-specific narratives (Core, Support, and Rules), and draft scores on a four-point scale were assigned based on triangulated evidence. Scores—particularly those indicating higher levels of market maturity (levels 3–4)—were moderated to ensure robustness and were only confirmed where supported by at least two independent sources, such as project implementation reports combined with regulatory evidence, or interview findings corroborated by MVE or laboratory records.

62. Based on these validated pillar-level scores, a composite MSD Index was calculated as the average of the Core, Supporting, and Rules scores, following the framework and rubrics detailed in Annex IX. This index was used to position countries along a market transformation

continuum from weak to mature systems, enable cross-country comparison and portfolio-level synthesis (including tabular and radar-chart visualizations), and inform evaluative judgements on effectiveness, sustainability, and likelihood of impact. Qualitative evidence on policy change, behavioural shifts, and institutional coordination was integrated with quantitative indicators—such as the number of MEPS and MVE actions, laboratory operational status, financing flows, and proxy indicators of product adoption—to construct coherent market transformation narratives and substantiate the evaluation’s conclusions and ratings.

63. **Contribution Analysis (through examination of credible association):** The evaluation applied a credible association between the implementation of a programme and observed positive effects where a strong causal narrative, although not explicitly articulated, can be inferred by the chronological sequence of events, active involvement of key actors and engagement in critical processes. In establishing the contribution analysis, the TE considered the prior intentionality (e.g. approved programme design documentation, logical framework) and the articulation of causality (e.g. narrative and/or illustration of the Theory of Change), along with a robust evidence that the project was delivered as designed and that the expected causal pathways developed supports claims of contribution and this is strengthened where an alternative theory of change can be excluded.

64. **Triangulation:** Triangulation helped to ensure that fundamental biases arising from the use of a single method are overcome. In this evaluation, triangulation involved validation of data through cross verification from at least two sources, and evaluation findings and conclusions were synthesized based on triangulated evidence from the desk review, observations from field visits and interviews.

65. The evaluators used Python software for analysing quantitative market data, Otta AI for note taking during meetings and Chat-GPT for spelling and grammar check of text.

66. **Evaluation criteria and ratings:** Most evaluation criteria have been rated on a six-point scale as follows: Highly Satisfactory (HS=6); Satisfactory (S=5); Moderately Satisfactory (MS=4); Moderately Unsatisfactory (MU=3); Unsatisfactory (U=2); Highly Unsatisfactory (HU=1). Sustainability and Likelihood of Impact are rated from Highly Likely (HL) down to Highly Unlikely (HU) and Nature of External Context is rated from Highly Favourable (HF) to Highly Unfavourable (HU). A Criteria Ratings Matrix is available, within the suite of tools, to support a common interpretation of points on the scale for each evaluation criterion. The ratings against each criterion are ‘weighted’ to derive the Overall Performance Rating. Any criterion assessed as being in the ‘Unsatisfactory’ range should trigger corrective action in the Management Response. The rating was done in alignment with UNEP TE Evaluation Criteria Ratings Table, and TE Criterion Rating Descriptions Matrix<sup>14</sup>.

## 2.4 Ethical Considerations

67. The TE consultants were held to the highest ethical standards and was required to sign a code of conduct upon acceptance of the assignment. This evaluation was conducted in accordance with the principles outlined in the [UNEP ‘Ethical Guidelines for Evaluation’](#). The evaluators took measures to safeguard the rights and confidentiality of information providers, interviewees and stakeholders, ensured security of collected information before and after the evaluation and ensured anonymity and confidentiality of sources of information where that is expected. Data were collected with respect for ethics and human rights issues. All information

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<sup>14</sup> Available [here](#).



gathered after prior informed consent from people, all discussions remained anonymous and all information was collected according to the UN Standards of Conduct.

## 2.5 Cross-cutting issues

68. The main cross-cutting issues that the evaluators have assessed include gender mainstreaming of the programme. The evaluation also ensured that the analysis integrated gender considerations, ensuring that data collected is disaggregated by sex and other relevant categories such as youth, and employed a diverse range of data sources and processes to ensure the inclusion of diverse stakeholders.

69. The TE was conducted in line with UNEP's Gender Methods Note for Consultants, which provides guidance on assessing the integration of gender considerations across the full programme lifecycle, including design, implementation, monitoring, reporting, and evaluation. In applying this guidance, the evaluation examined the extent to which gender equality considerations were embedded in the programme's design and assessed how effectively gender was mainstreamed into programme activities, outputs, and emerging outcomes, in accordance with UNEP evaluation policy and practice.

70. The evaluators examined the gender-disaggregated data, which were collected during the project implementation, to assess the project's differential impacts on women and men. The evaluation also checked whether all "people count" indicators are gender disaggregated and if the child projects reported women ratio in related indicators. The evaluation also reviewed the project Gender action plan and assessed delivery against its activities to assess to what extent the programme design and implementation were gender responsive.

## 2.6 Limitations

71. A key limitation of the Terminal Evaluation was the staggered implementation and completion timelines of the programme's child projects, with several having closed well before the evaluation commenced. This limited the availability of up-to-date data, reduced access to original project staff and stakeholders, and in some cases weakened institutional memory due to staff turnover. To mitigate this constraint, the evaluation team worked closely with the programme coordination team and implementing agencies to access the most recent and reliable datasets available, including archived project documentation, final and mid-term evaluation reports, Project Implementation Report (PIR)s, and relevant regulatory and MVE records. Where direct access to original stakeholders was not possible, alternative informants—such as successor officials, regional experts, and partners involved in follow-on initiatives—were identified for data collection.

72. A second limitation related to the programme's global geographical spread, which created logistical challenges in coordinating interviews across multiple time zones and addressing language barriers requiring translation. These factors complicated interview scheduling and, in some cases, constrained real-time interaction with stakeholders. In response, the evaluators adopted a flexible and adaptive data collection approach, accommodating interviews outside standard business hours to align with stakeholders' availability and making effective use of digital technologies to support remote engagement, translation, and transcription. These measures facilitated broad and inclusive stakeholder participation and helped ensure the consistency and reliability of qualitative evidence across regions.

## 3. THE PROGRAMME

### 3.1 Context

73. In 2015, in developing countries and emerging economies, residential appliances (refrigerators, air conditioners and lighting) accounted for approximately 25 per cent of total national electricity consumption. Over the following decade it was expected that the purchase and use of lighting, appliances and equipment would rise with increased economic growth. In developing countries the number of appliances in use was expected to double for room air conditioners (from 0.7 billion to 1.7 billion), to increase up to 70 per cent for refrigerators (from 1 billion to 1.7 billion). Lighting was also expected to increase up to 20 per cent. Similarly, the number of transformers was expected to more than double in developing and emerging (non-OECD) countries by 2040<sup>15</sup>. A market transformation to climate-friendly and energy-efficient lighting, appliances and equipment was expected to attain energy savings of approximately 10 per cent of global electricity consumption in 2030. This is equivalent to 2,500 TWh per annum. Due to this significant savings potential the United for Efficiency<sup>16</sup> (U4E) initiative established a broad partnership that involves diverse stakeholders (country representatives, technical experts, and manufacturers) with the objective to enlarge the consensus and facilitate the market transformation to energy-efficient products.

The transition to high-efficiency lighting, appliances, and equipment faced multiple interrelated barriers spanning financial, market, informational, regulatory, technical, and environmental dimensions. These barriers limit affordability, market access, policy enforcement, and consumer confidence, ultimately slowing the adoption of efficient technologies and the realization of energy and climate benefits.

- **Financial:** High upfront costs, lack of financing schemes and incentives, and absence of producer responsibility mechanisms reduce affordability and investment appeal.
- **Market:** Competition from low-cost inefficient products, limited supply of quality options, and weak support for Energy Service Companies (ESCOs) or local manufacturers hinder market transformation.
- **Information and Awareness:** Limited knowledge among policymakers, suppliers, and consumers, coupled with poor communication and complex efficiency metrics, restrict informed decision-making.
- **Regulatory and Institutional:** Inadequate policies, weak enforcement, lack of standards, and limited institutional capacity delay policy adoption and compliance.
- **Technical:** Poor infrastructure, insufficient testing and verification capacity, and a shortage of trained technicians undermine product quality and performance assurance.
- **Environmental and Safety Risk Perception:** Weak recycling systems, safety concerns over refrigerants and hazardous materials, and limited public awareness reduce consumer trust and uptake.

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<sup>15</sup> CEO endorsement document of the 'Global Project to leapfrog markets to energy efficient lighting, appliances and equipment' project. GEF 9337.

<sup>16</sup> U4E is a UNEP led global effort supporting developing countries and emerging economies to move their markets to energy-efficient appliances and equipment. <https://www.unep.org/topics/energy/energy-efficiency/united-efficiency-u4e>

## 3.2 Results Framework

74. The Global Leapfrogging Programme main objective is to mitigate climate change by transforming national and regional markets to energy efficient products. It proposes to countries an integrated policy approach under Component 1 to meet their individual policy needs and priorities. The Global Leapfrogging Programme allows for the use of a coherent and consistent integrated approach, providing greater likelihood of success and increased harmonization between countries. Integrated policy approaches (minimum standards, MVE, communication campaigns and financial mechanisms, and environmentally sound management) have been demonstrated to permanently transition markets to energy efficient products while addressing environmental concerns.

### 75. **COMPONENT 1: NATIONAL CHILD PROJECTS ON ENERGY EFFICIENT LIGHTING, APPLIANCES, AND EQUIPMENT**

76. The Programme proposed five menu options to countries to be implemented as child projects to the programme. Based on national circumstances, the countries had the option of implementing combinations of one or more menu options for a defined set of appliances and equipment, as long as the country met the GEF child project selection criteria. Further, the Global Leapfrogging Programme allowed countries to define the products of focus to be included in the child project based on their national circumstances. Potential products that could be selected included: refrigerators, room air conditioners, electric motors (0.75kW to 375kW), distribution transformers, water heaters, lamps and controls, and other potential priority products such as pumps, TVs, computers and set-top boxes. Priority products could be selected based on the level of policies in place in the country and/or the products that offer the highest potential energy and greenhouse gas savings. The menu options follow the integrated policy approach developed under the UNEP/GEF en.lighten initiative to phase-out inefficient products from the market.

- **Menu Option 1:** *National strategy for advancing market to energy efficient products.* The programme will develop countries' national strategies for energy efficient products. The purpose of a national strategy is to focus priorities by developing a common vision and goals on transforming the market to energy efficient products. The strategy will define the scope of products based on an assessment of electricity demand and electricity usage, as well as anticipated consumer trends. The strategy will set national objectives and a detailed roadmap based on the integrated policy approach for each individual product, or groups of products.
- **Menu Option 2:** *Implementation of regulatory mechanisms, including minimum energy performance standards (MEPS).* MEPS are mandatory measures that permanently remove the least efficient products from the market and thereby encourage innovation and rapid adoption of higher efficiency products. Menu Option 2 is designed to support countries in developing regulatory mechanisms, including MEPS.
- **Menu Option 3:** *Creation of monitoring, verification and enforcement (MVE) capacities in countries and regions to ensure an effective transition to efficient appliances and equipment markets.* The success of MEPS and a market transition depends on a well-functioning system of monitoring, surveillance, control, and testing facilities. This component of the programme will promote enforcement and full compliance with MEPS.
- **Menu Option 4:** *Supporting policies for the market transformation to energy efficient products.* Supporting activities such as communication campaigns, distribution projects, and financial schemes can all assist in facilitating public acceptance and deployment of efficient products in the market. These policies and strategies assist in overcoming barriers of lack of knowledge of energy efficiency and the barrier of increased upfront costs (purchase price of the product).

- **Menu Option 5: Ensuring environmentally sound management and sustainable transition to efficient appliances and equipment.** Environmentally sound management systems ensure that precautions are taken to safeguard the environment and human health throughout the full lifecycle of appliances and equipment. An environmentally sound management legal framework incorporates and expands upon existing laws and efforts.

## 77. **COMPONENT 2: GLOBAL SERVICES FOR PARTNER COUNTRIES**

78. Component 2 of the Global Leapfrogging Programme extends the activities of the virtual Centre of Excellence, founded under the Efficient Appliance and Equipment Global Partnership Programme and funded under GEF project “Establishing the Foundations of a Partnership to Accelerate the Global Market Transformation for Efficient Appliances and Equipment.” The virtual Centre of Excellence is supported by a network of experts from partner public organizations and private sector companies, including UNDP, [CLASP](#), bigEE (Wuppertal Institute) Topten, Department of Industry, Australia, IEA-4E, Copenhagen Centre on Energy Efficiency, Philips Lighting BV, OSRAM Licht AG, International Copper Association (ICA), ABB, Mabe, Arcelik, BSH, Haier, Gree Electric, and Electrolux.

79. Implementation of Component 2 would result in countries being prepared to successfully implement the activities of a market transformation project while also ensuring that resources are not duplicated with each project (for example guides being used across all GEF projects). This approach provided increased coordination between countries as they develop the policies in the country based on best practice recommendations. Further, this component planned to support 15 partner countries to have increased capacities (through training) to carry out projects and policies to transform their market. The 15 partner countries would be identified under the GEF project “[GEF 5831: Establishing the Foundations of a Partnership to Accelerate the Global Market Transformation for Efficient Appliances and Equipment.](#)”, which is not a Child Project within the Global Leapfrogging Programme. The “national-child project” countries would also be provided with training that would be funded through global funding. The resources and support include:

- ‘How to’ guides (available to 100 country partners):
- Remote support (available to 100 country partners):
- Regional status reports (available to 100 country partners):
- Training for trainers (available to 15 “non-national-child project” countries and up to 10 “national-child project” countries):
- The virtual Centre of Excellence will communicate the availability of the tools and ensure the child projects do not duplicate resources/tools within their own project.

## 80. **COMPONENT 3 INCREASING THE AMBITION OF THE GLOBAL PARTNERSHIP ON EFFICIENT APPLIANCES AND EQUIPMENT**

81. Through Component 3 of the Global Leapfrogging Programme, there will be increased number of governments committing to advance their markets to energy efficient appliances and equipment. The programme will achieve commitment of 100 countries, increasing by 70 over the goal of the GEF SE4ALL Global Project<sup>17</sup> (Establishing the Foundations of a

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<sup>17</sup> The Leapfrogging Programme (GEF 9083) is a direct continuation and expansion of the SE4ALL Global Project (GEF 5831). While SE4ALL created the global partnership, technical foundations, political momentum, and consensus policy frameworks for transitioning to efficient appliances and equipment, the Leapfrogging Programme operationalizes these foundations through national child projects, expanded global services, and broader outreach. It deploys and enhances the technical tools, training systems, and policy guidance established under SE4ALL, extends the Global Centre of Excellence, and scales political engagement from 30 to 100 countries.

Partnership to Accelerate the Global Market Transformation for Efficient Appliances and Equipment - UNEP #5831). To complete this, the Global Leapfrogging Programme will use the resources and tools developed under SE4ALL Global Project (#5831), such as the country-by-country assessments and best practice policy guides. Carrying-on the global campaign from the preparatory SE4ALL Global Project, this component will host regional workshops to gain the political commitment from governments to transform their markets, while also encouraging increased regional harmonization. The programme will utilize tools and reports developed under [GEF project #5831](#) to maximize GEF resources, such as using the country Assessments and policy brochures on best practice policies.

- Regional workshops launching regional status reports and regional/national commitment.
- Side events alongside major environmental and energy events.

**Table 4: Programme results framework**

| PROGRAMME OBJECTIVE: To mitigate climate change by transforming national and regional markets to energy efficient products. |                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                       |
|-----------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Components                                                                                                                  | Outcomes                                                                                                                                                                                                                                | Outputs                                                                                                                                                                                                                                                                                                                                                                               |
| Component 1: <b>National child projects on lighting, appliances, and equipment</b>                                          | 1.1 Markets are transformed to energy efficient lighting, appliances, and equipment providing climate change mitigation benefits (Costa Rica, Kazakhstan, Sudan, Myanmar, Indonesia, Tunisia, South Africa, and Chile STAR allocations) | <u>Menu Option 1: National strategy</u> for advancing market to energy efficient products                                                                                                                                                                                                                                                                                             |
|                                                                                                                             |                                                                                                                                                                                                                                         | <u>Menu Option 2: Implementation of regulatory mechanisms, including minimum energy performance standards (MEPS)</u>                                                                                                                                                                                                                                                                  |
|                                                                                                                             |                                                                                                                                                                                                                                         | <u>Menu Option 3: Creation of Monitoring, Verification and Enforcement (MVE)</u> capacities in countries and regions to ensure an effective transition to efficient appliances and equipment markets                                                                                                                                                                                  |
|                                                                                                                             |                                                                                                                                                                                                                                         | <u>Menu Option 4: Supporting policies for the market transformation</u> to energy efficient products                                                                                                                                                                                                                                                                                  |
|                                                                                                                             |                                                                                                                                                                                                                                         | <u>Menu Option 5: Ensuring environmentally sound management and sustainable transition</u> to efficient appliances and equipment                                                                                                                                                                                                                                                      |
| Component 2: <b>Global services for partner countries</b>                                                                   | 2.1 Countries and regions have the guidance to successfully implement market transformation projects (Global Child project)                                                                                                             | <ul style="list-style-type: none"> <li>- How to" guides (available to 100 country partners)</li> <li>- Remote support (available to 100 country partners)</li> <li>- Regional status reports (available to 100 country partners)</li> <li>- Training for trainers (available to 15 "non-national-child project" countries and up to 10 "national-child project" countries)</li> </ul> |
|                                                                                                                             | 2.2. Increased capacity of 15 countries' officials to develop and implement projects and policies to advance energy efficiency of lighting, appliances, and equipment. (Global Child project)                                           |                                                                                                                                                                                                                                                                                                                                                                                       |
| Component 3: <b>Outreach on Efficient Appliances and Equipment</b>                                                          | 3.1 Increased number of countries commit to advancing energy efficiency of lighting, appliances, and equipment. (Global Child project)                                                                                                  | <ul style="list-style-type: none"> <li>- Regional workshops launching regional status reports and regional/national commitment</li> <li>- Side events alongside major environmental and energy events</li> </ul>                                                                                                                                                                      |

Source: Programme Framework Document

### 3.3 Stakeholders

82. At the global and national levels, the programme brought together a core group of institutional stakeholders responsible for strategic oversight, coordination, and implementation. UNEP, as the GEF Lead Implementing Agency, provided overall programme oversight and quality assurance, while the GEF Implementing Agency of the Global Coordinating Project led programme-level coordination and management. Child project management units played a central operational role, leading national-level implementation

and contributing to global knowledge-sharing platforms. Government ministries and national standards-setting bodies were critical stakeholders at country level, responsible for policy development, adoption, and enforcement of minimum energy performance standards (MEPS) and related regulatory frameworks. UNEP's Virtual Centre of Excellence acted as a catalytic technical stakeholder, supporting harmonization across countries through standardized tools, technical guidance, training, and capacity-building in energy-efficient appliances, equipment, and lighting.

83. Private sector actors and regional partners constituted another key stakeholder group underpinning market transformation and sustainability. Manufacturers, importers, distributors, retailers, and local industry associations were directly affected by regulatory reforms and played a decisive role in shaping supply chains, product availability, compliance with MEPS, and longer-term market viability. Their engagement also extended to co-financing, provision of technical expertise, and sharing of market data. In specific contexts, such as South Africa, institutions like the Development Bank of Southern Africa (DBSA) contributed both as an implementing partner and as a source of financial management and regional engagement expertise. Finally, consumers and civil society represented essential stakeholders for driving behavioural change, underscoring the importance of communication and awareness-raising initiatives to translate policy and market reforms into sustained demand for high-efficiency products.

### 3.4 Programme Implementation Structure and Partners

84. The programme is funded by the GEF, with UNEP as the lead agency. Other GEF agencies implementing Child Projects under the programme are the United Nations Development Programme (UNDP) and the Development Bank of Southern Africa (DBSA). The programme was executed by multiple executing agencies responsible for delivering individual child projects as summarised in Table 5.

85. As **lead agency, UNEP** oversees the final design and development of expertise to assist countries in their transition to energy efficient products. UNEP leads the coordination of global activities (as lead of the Global Coordinating Project - GEF 9337) including support to 10 partner countries to develop a policy framework for the market transition. Additionally, UNEP leads the development of common methodologies and guidance through the centre of excellence, coordination of Monitoring Verification and Enforcement (MVE), generation of country data and overall benefits of the transitions, and providing leadership to achieve a global political consensus. UNEP, through the Centre of Excellence, also leads the provision of technical assistance to countries.

86. **Programme coordination and management:** The programme was set to be guided by a Programme Steering Committee (PSC), which was intended to meet annually to provide strategic advice and facilitate programme level coordination and communication. The planned PSC membership included representatives from each of the program's countries, the GEF agencies (UNEP and UNDP), and other partners to the project.

87. The **Virtual Global Centre of Excellence:** UNEP continues leading the Centre of Excellence that would provide expertise and provide overall coordination of national projects. The Centre is composed of experts on international energy efficiency of appliances, equipment and lighting. The Centre was expected to work with UNDP and other partner agencies by providing expertise to project implementation in countries, including coordinating workshops to develop a national strategy, expertise in developing standards, and training to national officials to ensure effective implementation.

88. **National project implementation:** Each national child project would include a national Steering Committee comprised of representatives from relevant local and national governments, NGOs, private sector partners, and GEF agencies (UNEP and UNDP). The National Steering Committees would meet bi-annually to review progress, provide strategic advice and support adaptive project management.

89. UNEP was also expected to lead the implementation and rollout of integrated national and regional appliance efficiency strategies, policies and concrete on-the-ground implementation of activities. UNDP would also carry out national activities in countries they have a strong experience in implementation of energy efficiency projects, while also providing support with the strong relationships they have in local governments and institutions. By utilizing the expertise and policy recommendations created by UNEP, UNDP would ensure that the implementing strategy results in a permanent transition to energy efficient products. Further, in some cases, UNEP was expected to lead national activities where UNEP has strong relationships in a country or region. Further, the programme would seek partnership from regional development banks to leverage their strengths regionally and also as an additional source of financing of national projects.

**Table 5: Child Project Implementing and Executing Agencies**

| Target Countries | Project Title                                                                                                               | Implementing Agency | Executing Agency                                                                                      |
|------------------|-----------------------------------------------------------------------------------------------------------------------------|---------------------|-------------------------------------------------------------------------------------------------------|
| Costa Rica       | GEF 9283: Development of a Market for Energy Efficient Lighting, Air Conditioners and Refrigerators in Costa Rica           | UNEP                | Central American Bank of Economic Integration (CABEI)                                                 |
| Sudan            | GEF 9328: Leapfrogging Sudan's Markets to More Efficient Lighting and Air Conditioners                                      | UNDP                | Ministry of Water Resources, Irrigation and Electricity – The Electricity Regulatory Authority, Sudan |
| Kazakhstan       | GEF 9332: Energy Efficient Standards, Certification, and Labeling for Appliances and Equipment                              | UNDP                | Ministry of Investment and Development, Kazakhstan                                                    |
| South Africa     | GEF 9492: Leapfrogging South Africa's Markets to High Efficiency LED Lighting and High Efficiency Distribution Transformers | UNDP/DBSA           | Department of Energy, South Africa                                                                    |
| Indonesia        | GEF 9493: Advancing Indonesia's Lighting Market to High Efficient Technologies (ADLIGHT)                                    | UNDP/UNEP           | Ministry of Energy and Mineral Resource (MEMR), Indonesia                                             |
| Chile            | GEF 9496: Leapfrogging Chilean's Markets to More Efficient Refrigerator and Freezers                                        | UNEP                | Ministry of Energy, Chile                                                                             |
| Tunisia          | GEF 9498: Leapfrogging Tunisia's Lighting Market to High Efficiency Technologies                                            | UNEP                | Agence Nationale de la Maitrise de l'Energie (ANME), Tunisia                                          |
| Myanmar          | GEF 9499: Leapfrogging Myanmar's market to high efficiency lighting and appliances                                          | UNEP                | Ministry of Industry, Myanmar                                                                         |
| Global           | GEF 9337: Global Project to Leapfrog Markets to Energy Efficient Lighting, Appliances and Equipment                         | UNEP                | UNEP, Economy Division, Energy and Climate Branch, Global Climate Action Unit                         |

### 3.5 Changes in Design during Implementation

90. Since the programme's submission in March 2016, no revisions have been made to its original design. Although several child projects have since been developed and implemented under the programmatic framework, there was no formal process to revisit or update the initial programme design to reflect evolving contexts, lessons learned, or implementation realities. Importantly, no Theory of Change was developed retroactively to articulate the programme's causal pathways, assumptions, and interlinkages between child projects, components and outcomes.



### 3.6 Programme Financing

91. Overall, financial delivery across the programme stands at US\$ 11.17 million disbursed out of US\$ 26.86 million committed, corresponding to an aggregate delivery rate of 42%. This level of expenditure is moderate in absolute terms but unevenly distributed across countries and agencies, reflecting differences in project maturity, implementation status, and contextual constraints.

92. Performance varies significantly by country. Tunisia and the Global Coordinating Project show the strongest financial performance, each with 89% delivery, indicating near-complete implementation and efficient fund utilization. Chile also demonstrates high delivery at 88%, while Costa Rica shows solid progress with 75% delivery. In contrast, Indonesia records a moderate delivery rate of 62%, pointing to partial implementation progress and potential delays or phasing of activities. At the lower end, Sudan shows very limited delivery (11%), likely reflecting severe external constraints and implementation disruptions, while South Africa records 0% disbursement, consistent with the late start of the child project and the absence of materialized activities.

**Table 6: Programme expenditures report by child project**<sup>18</sup>

| Country      | Agency      | Financing (US\$)  | Expenditures      | % delivery |
|--------------|-------------|-------------------|-------------------|------------|
| Costa Rica   | UNEP        | 2,000,000         | 1,724,553.41      | 86%        |
| Sudan        | UNDP        | 1,770,000         | 220,859.79        | 12%        |
| Global       | UNEP        | 3,100,000.00      | 3,059,966.23      | 99%        |
| South Africa | UNDP / DBSA | 10,000,000        | 0                 | 0%         |
| Indonesia    | UNDP / UNEP | 3,895,872         | 2,426,074.17      | 62%        |
| Chile        | UNEP        | 1,473,762.00      | 1,434,731.00      | 97%        |
| Tunisia      | UNEP        | 2,399,541.00      | 2,099,582.76      | 87%        |
| Myanmar      | UNEP        | 2,223,578.00      | 208,121.21        | 9%         |
| <b>Total</b> |             | <b>26,862,753</b> | <b>11,173,889</b> | <b>42%</b> |

93. Table 7 and Table 8 below present a summary of co-financing. Actual co-financing disbursed amounts to USD 92.27 million against a revised closing target of USD 169.03 million, corresponding to an overall realization rate of approximately 55%. While the upward revision of the co-financing target beyond the original design-stage pledge reflects successful mobilization of additional commitments during implementation, the level of materialized co-financing at the time of the TE indicates a substantial delivery gap. This gap is material and has implications for assessing programme leverage, sustainability, and the realism of co-financing assumptions, consistent with issues commonly highlighted in GEF terminal evaluations.

94. Analysis by co-financing type shows marked disparities in performance. Grants remain the strongest and most reliable source, with USD 69.1 million disbursed against a target of USD 72.7 million, achieving around 95% realization and effectively anchoring the programme's co-financing performance. Equity investments also performed strongly, with USD 8.26 million disbursed (approximately 93% of target). In contrast, in-kind contributions significantly underperformed, with only USD 14.9 million realized against an expected USD 62.4 million (about 24% realization), which is maybe attributed to challenges related to valuation, tracking, or overestimation at design and revision stages. Most notably, loan co-financing failed to materialize entirely, with USD 0 disbursed against a USD 25 million target, representing a

<sup>18</sup> Source: 2025 PPMR



critical shortfall in leveraging debt finance and pointing to structural constraints in mobilizing financial institutions for energy efficiency market transformation.

95. A similar pattern emerges when examining co-financing by source. Recipient country governments remain the largest contributors in absolute terms, with USD 63.0 million disbursed, but this represents only 66% of their revised target, leaving a substantial unmet balance. Private sector contributions reached USD 21.9 million, equivalent to roughly 74% of the expected amount, indicating moderate but incomplete rate. GEF agency co-financing exceeded expectations, with USD 21.1 million disbursed against a target of USD 18.6 million. Conversely, other sources and civil society organizations contributed marginally relative to targets, both in absolute and proportional terms. Overall, while the programme demonstrates credible leverage in grants, equity, and agency resources, the shortfall against the USD 169.0 million closing target, driven primarily by unrealized loans and in-kind contributions, suggests that the revised co-financing expectations were ambitious and only partially achievable within the programme timeframe.

**Table 7: Co-financing by type<sup>18</sup>**

| Co-financing Type | Latest amount disbursed<br>(Actual, USD) | Closing target<br>(Expected, USD) | %          |
|-------------------|------------------------------------------|-----------------------------------|------------|
| In-kind           | 14,931,266                               | 62,431,340                        | 24%        |
| Grant             | 69,075,257                               | 72,733,000                        | 95%        |
| Loan              | 0.00                                     | 25,000,000                        | 0%         |
| Equity Investment | 8,258,714                                | 8,865,000                         | 93%        |
| <b>Total</b>      | <b>92,265,237</b>                        | <b>169,029,340</b>                | <b>55%</b> |

**Table 8: Co-financing by source<sup>18</sup>**

| Co-financing Source          | Latest amount disbursed<br>(Actual, USD) | Closing target<br>(Expected, USD) | %          |
|------------------------------|------------------------------------------|-----------------------------------|------------|
| Recipient Country Government | 63,021,794                               | 95,702,337                        | 66%        |
| Other                        | 6,876,267                                | 24,688,452                        | 28%        |
| GEF Agency                   | 21,119,993                               | 18,625,000                        | 113%       |
| Private Sector               | 21,909,583                               | 29,563,551                        | 74%        |
| Civil Society Organization   | 250,000                                  | 450,000                           | 56%        |
| <b>Total</b>                 | <b>92,265,237</b>                        | <b>169,029,340<sup>19</sup></b>   | <b>55%</b> |

<sup>19</sup> The total appears less than the amount in the CEO Endorsement because it excludes pledged co-financing for the suspended projects.

## 4. THEORY OF CHANGE AT EVALUATION

96. The programme design did not originally include a Theory of Change (ToC). However, during the TE inception, a ToC was developed in the inception phase to address this gap. This ToC was initially constructed by extracting the intervention logic from the available PFD, providing a structured representation of how programme interventions were expected to lead to desired outcomes and impacts.

### 4.1 Reconstructed Theory of Change at Evaluation

The reconstructed ToC reads as follows:

97. The Leapfrogging Markets to High Efficiency Products Programme aims to mitigate climate change by transforming national and regional markets to energy-efficient lighting, appliances, and electrical equipment. The programme's logic assumes that market transformation requires an integrated policy approach—combining regulatory, institutional, financial, informational, and environmental mechanisms—implemented coherently across multiple countries and sectors to create a sustained shift toward efficient technologies.

98. Many developing countries face persistent market, policy, and financial barriers that prevent large-scale adoption of efficient appliances and equipment. These include the absence of minimum energy performance standards (MEPS), weak monitoring, verification and enforcement (MVE) systems, limited consumer awareness, and financial constraints for manufacturers and end-users.

99. **Component 1** addresses these barriers through an integrated policy approach—a tested model under UNEP's *en.lighten* and *United for Efficiency (U4E)* initiatives—combining regulatory, financial, informational, and environmental measures that work in concert to permanently remove inefficient products from the market and build a self-sustaining ecosystem for efficiency. The programme enables national markets in participating countries to transition to energy-efficient lighting, appliances, and equipment, thereby contributing to long-term greenhouse gas (GHG) emission reductions and sustainable market transformation.

- **IF** participating countries adopt and enforce coherent energy efficiency policies, supported by effective regulatory systems, MVE capacity, financial incentives, and awareness measures, and;
- **IF** stakeholders (governments, manufacturers, retailers, and consumers) are capacitated and motivated to act collectively,
- **THEN** national markets will phase out inefficient products and mainstream high-efficiency technologies, leading to sustained energy and GHG reductions and long-term environmental and economic benefits.

100. **Component 2** aims to strengthen the global enabling environment for energy-efficient appliances, lighting, and electrical equipment by providing technical guidance, capacity development, and knowledge-sharing services to partner countries. The ultimate goal is to ensure that countries possess the skills, tools, and institutional capacities needed to design, implement, and sustain market transformation policies that accelerate energy efficiency and contribute to global climate mitigation. This component is built on the recognition that knowledge, technical guidance, and standardized tools are public goods that can reduce duplication, accelerate replication, and lower the cost of policy adoption. Through the Virtual

Centre of Excellence and its network of expert partners, the programme helps countries leapfrog directly to best-practice energy efficiency frameworks, avoiding the trial-and-error path that characterized earlier adopters.

- **IF** countries have access to high-quality technical guidance, training, and remote support through the Virtual Centre of Excellence, and;
- **IF** institutional capacities are strengthened to design and implement national energy efficiency policies in line with global best practice;
- **THEN** countries will be able to replicate and scale the integrated policy approach used by child projects, leading to wider global market transformation, enhanced policy coherence, and significant cumulative GHG reductions over time

101. **Component 3** aims to increase the number of countries committed to advancing market transformation toward energy-efficient appliances, lighting, and equipment, by promoting political commitment, regional collaboration, and policy harmonization through targeted outreach and engagement activities. This component aims to expand the global coalition of countries under the United for Efficiency (U4E) partnership from 30 (under the SE4ALL Global Project) to 100, creating a critical mass of governments driving coherent, large-scale adoption of energy efficiency policies and standards. Component 3 addresses this gap by using the knowledge, tools, and advocacy momentum generated under the SE4ALL and Global Leapfrogging initiatives to mobilize new political commitments, foster regional harmonization of standards, and maintain global attention on efficient products as a climate and development priority.

- **IF** political leaders, regional bodies, and countries are effectively engaged and equipped with credible data and tools that demonstrate the economic, environmental, and social benefits of energy efficiency, and;
- **IF** global partnerships and advocacy efforts sustain visibility and collaboration;
- **THEN** more countries will commit to and implement efficiency policies, aligning regionally and globally, which will catalyze large-scale replication and harmonization of efficient product markets, ultimately contributing to global emission reductions, energy savings, and sustainable market transformation.

102. The programme's Theory of Change is driven by several mutually reinforcing factors that enable large-scale market transformation. At the core is the Global Coordinating Child Project, which provides countries with standardized tools, technical guidance, training, and regional analyses through UNEP's Virtual Centre of Excellence. This global support structure ensures coherence across national efforts, reduces duplication, and accelerates replication of best-practice policies and standards.

103. Complementing this are national and regional drivers, including strong government commitment to adopting MEPS and related policies, strengthened institutional and technical capacities, and active participation from private-sector manufacturers, utilities, and financial institutions. Regional organizations further support harmonized standards and South–South cooperation, helping expand markets and reduce costs.

104. Finally, consumer awareness, civil-society engagement, and continuous learning reinforce and sustain the transition. Public campaigns build demand for efficient products, while ongoing knowledge exchange and monitoring allow policies to be refined and scaled.

Together, these drivers create an enabling environment where policy, capacity, markets, and behavior shift in alignment toward long-term energy-efficient market transformation.

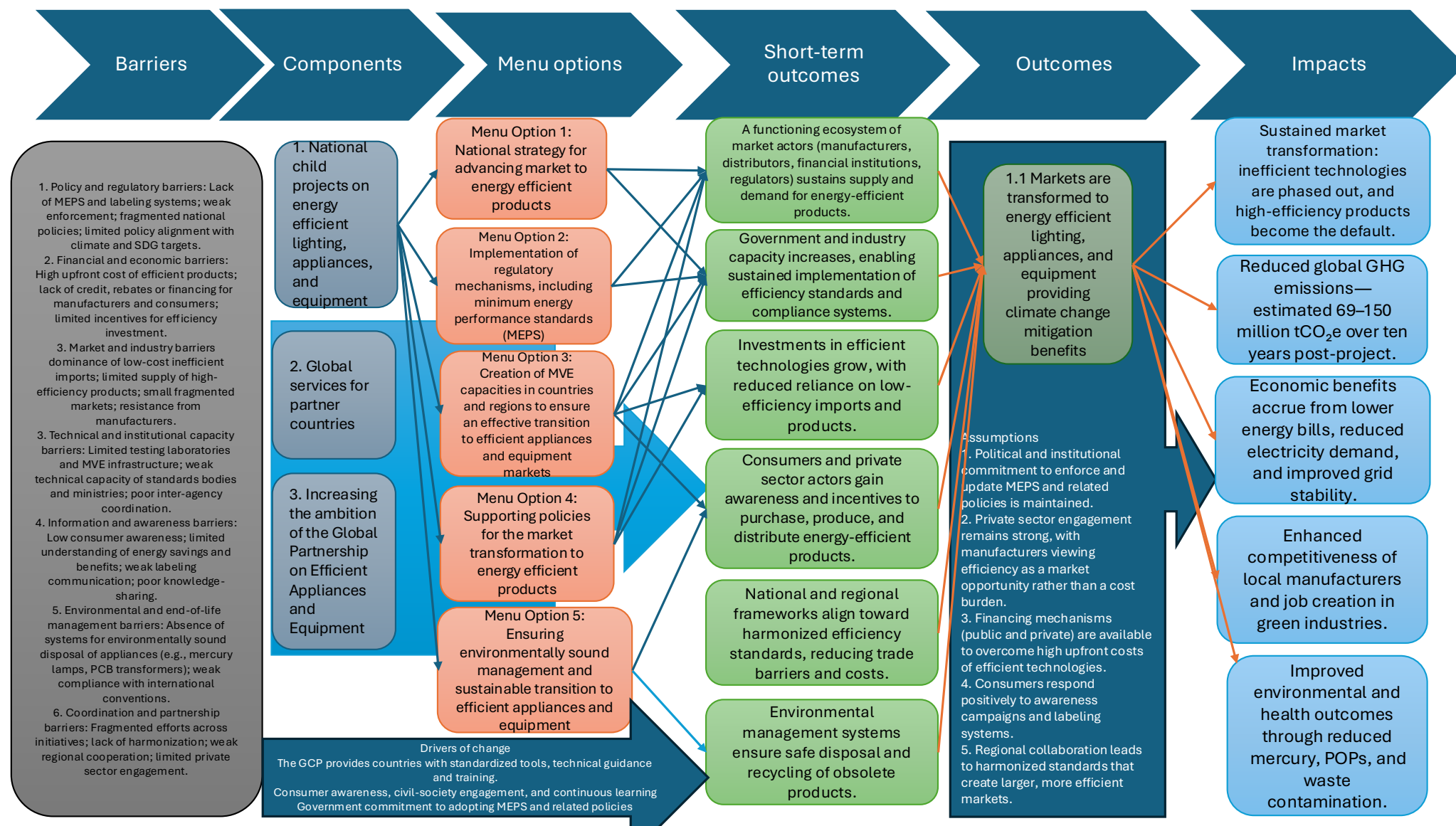
105. The programme is set to achieving sustained climate change mitigation and reduced environmental harm through the systemic transformation of markets toward high-efficiency appliances and equipment. By promoting integrated policy measures—such as MEPS, monitoring and enforcement systems, and supporting financial and awareness mechanisms the programme facilitates the phase-out of inefficient, energy-intensive products and accelerates the uptake of energy-efficient alternatives, thereby reducing greenhouse gas emissions and energy consumption at scale. In parallel, the programme embeds environmentally sound management across the full lifecycle of appliances, including safe handling of hazardous materials (e.g., mercury, POPs, refrigerants) and improved waste management systems, ensuring compliance with international environmental conventions and minimizing negative ecological and health impacts.

106. The key drivers of change in the ToC are anchored in a combination of institutional capacity, behavioral shifts, and policy commitment that collectively enable market transformation toward high-efficiency products. The GCP plays a catalytic role by equipping countries with standardized tools, technical guidance, and targeted training, thereby strengthening national capacities to design and implement effective energy efficiency policies and programmes. This is reinforced by increased consumer awareness, civil society engagement, and continuous learning processes, which help shift market demand toward efficient technologies and sustain momentum for change through informed decision-making and stakeholder participation. Critically, strong government commitment to adopting and enforcing MEPS and related regulatory frameworks acts as a central driver, ensuring that inefficient products are phased out and that market transformation is institutionalized and sustained over time .

107. The ToC rests on several key assumptions, the main ones are:

- Political and institutional commitment to enforce and update MEPS and related policies is maintained.
- Private sector engagement remains strong, with manufacturers viewing efficiency as a market opportunity rather than a cost burden.
- Financing mechanisms (public and private) are available to overcome high upfront costs of efficient technologies.
- Consumers respond positively to awareness campaigns and labeling systems.
- Regional collaboration leads to harmonized standards that create larger, more efficient markets.
- Governments maintain effective and affordable labelling /quality control and certification of EE technology and commit to certification and quality control schemes & support enforcement.

Figure 1: ToC at evaluation



## 5. EVALUATION FINDINGS

### 5.1 Strategic Relevance

#### 5.1.1 Alignment to UNEP MTS, POW and Strategic Priorities

109. The UNEP Medium Term Strategy 2015–2017<sup>20</sup> prioritizes resource efficiency and sustainable consumption and production as a core strategic focus area, recognizing the need to reduce environmental impacts while supporting socioeconomic development. The strategy emphasizes the importance of enabling countries to transition towards efficient use of resources and to integrate environmental considerations into policies and practices that influence economic growth and human well-being – especially in the context of climate change mitigation and sustainable development goals such as SDG 7 (Affordable and Clean Energy) and SDG 12 (Responsible Consumption and Production). The “Leapfrogging Markets” programme directly contributes to this strategic focus by promoting market transformation for energy-efficient products, thereby reducing energy consumption and associated greenhouse gas emissions. Through national minimum energy performance standards (MEPS), regulatory frameworks, and market incentives for technologies such as efficient lighting, appliances, and transformers, the programme advances core elements of UNEP’s resource efficiency agenda and climate change mitigation priorities.

110. A central tenet of the MTS 2015–2017 is UNEP’s business model of partnerships, where UNEP collaborates with governments, regional entities, private sector actors, and civil society to achieve environmental outcomes beyond what UNEP could accomplish alone. The programme exemplifies this model by mobilizing co-financing, engaging national governments in policy reform, building technical capacity through the Virtual Centre of Excellence, and partnering with private sector actors and international organizations. By strengthening institutional capacity for MEPS development and enforcement, enhancing data and monitoring systems, and facilitating multi-stakeholder coordination, the programme operationalizes UNEP’s strategy of strategic partnerships and capacity development.

111. UNEP’s MTS 2015–2017 also underscores the need to align environmental action with global frameworks such as the 2030 Agenda for Sustainable Development and the transition to a green economy that decouples economic growth from environmental degradation (UNEP). The programme contributes to this broader strategic orientation by supporting national efforts to improve energy efficiency – a proven pathway for climate mitigation, economic savings, and sustainable development. Its emphasis on reducing energy demand, transforming markets for efficient technologies, and enabling policy coherence across sectors feeds directly into global priorities on climate action and sustainable production and consumption patterns. Furthermore, the programme’s work on data, standards, and behaviour change complements UNEP’s intent under the MTS to support countries in evidence-based decision-making and integrated environmental governance.

112. Under the Climate Change subprogramme, the 2014 - 2015 Programme of Work (PoW) prioritizes support to countries to reduce greenhouse gas emissions through policy, technology, and market-based interventions, with a strong emphasis on energy efficiency as a cost-effective mitigation pathway. The programme operationalizes this priority by supporting the development and enforcement of MEPS, market surveillance and enforcement systems (MVE), and enabling policies that permanently remove inefficient appliances and equipment from national markets. These interventions directly contribute to PoW expected

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<sup>20</sup> UNEP Medium Term Strategy 2014-2017 – available [here](#).

accomplishments related to strengthened national capacities for low-emission development and the implementation of climate mitigation policies and actions at scale.

***Rating for Alignment to UNEP MTS, POW and Strategic Priorities: Satisfactory***

**5.1.2 Alignment to UNEP/GEF/Donor Strategic Priorities**

113. The GEF-6 Strategy for the Climate Change Mitigation focal area emphasizes promoting innovation, technology transfer, supportive policies, and systemic market transformation toward low-emission development pathways. GEF-6 explicitly prioritizes support for low-carbon technologies and mitigation options, innovative policy packages, and market initiatives that scale energy efficiency and renewable energy solutions in developing countries.

114. The Leapfrogging Markets programme directly contributes to CCM-1 Programme 1 aiming to strengthening the policy, planning, and regulatory foundations required to accelerate low-GHG development by supporting countries in adopting and enforcing MEPS, market governance, and enabling policies that accelerate the uptake of energy-efficient products such as LED lighting, high-efficiency appliances, and transformers. By facilitating evidence-based policy development, strengthening institutions for MVE, and building capacity for market surveillance, the programme promotes systemic mitigation outcomes and contributes to transformational shifts toward low-emission markets that are central to GEF-6 climate mitigation objectives.

115. A core element of the GEF-6 strategic direction is addressing underlying drivers of unsustainable resource use, including market distortions, lack of enabling policies, and weak institutional frameworks. This shift toward systems-level interventions over project-level activities reflects a move to tackle structural barriers to global environmental benefits. The Leapfrogging Markets programme aligns with this orientation by targeting market dysfunctions—such as weak standards, limited technical services, and inadequate incentives—that hinder the diffusion of energy-efficient technologies. Through its MSD approach<sup>21</sup> and collaborative frameworks that engage government, private sector, and regional partners, the programme contributes to creating enabling conditions for long-term, self-sustaining markets for energy-efficient products. This resonates with GEF-6's emphasis on policy reform, capacity building, and systemic innovation as drivers of global environmental change.

116. In addition, the programme contributes secondarily to GEF-6 Climate Change Mitigation Objective 3 ("Foster enabling conditions for private sector investment in low-emission technologies"), by engaging manufacturers, importers, distributors, and financial institutions, mobilizing private sector and equity co-financing, and reducing market and regulatory barriers to investment in efficient products. Through its global coordination function and the UNEP-led Virtual Centre of Excellence, the programme also supports technology transfer, knowledge dissemination, and capacity building, which are explicitly highlighted under Objective 1 as key pathways for achieving transformational mitigation outcomes.

***Rating for Alignment to UNEP/GEF/Donor Strategic Priorities: Satisfactory***

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<sup>21</sup> Whereas the programme was not designed as an MSD intervention, all the child projects at country level propose market-based solutions to the transition to energy efficient products and appliances. Moreover, the proposed "menu options" for child projects in Table 4 mirror the three MSD pillars.

### 5.1.3 Relevance to Global, Regional, Sub-regional and National Priorities

117. The programme aligned with a range of regional initiatives aimed at accelerating the transition away from inefficient air conditioners, refrigerators, and lighting technologies. These include collaboration with ASEAN countries in Southeast Asia to phase out inefficient cooling and lighting products; support for the Caribbean Cooling Initiative (CCOOL) to promote energy-efficient and climate-friendly cooling solutions; and regional efforts within the East African Community (EAC) and the Southern African Development Community (SADC) to eliminate inefficient air conditioners and residential refrigerators. In addition, several national child projects are actively engaged in regional activities coordinated under Project 9337. An overview of regional priorities and activities is publicly available through the United for Efficiency (U4E) platform.

118. Regional interventions play a critical role in energy-efficiency market transformation, particularly where individual national markets are too small or fragmented to attract sustained engagement from multinational manufacturers and distributors. By harmonizing minimum energy performance standards and enabling cross-border procurement mechanisms, regional approaches reduce compliance costs and improve market access for efficient products. These initiatives also foster peer-to-peer networks among policymakers and market actors, promote consistent consumer messaging across countries, and, where appropriate, support shared or centralized systems for the environmentally sound management of end-of-life products, in line with international obligations under the Basel, Minamata, Rotterdam, and Stockholm Conventions. The status of national projects in relation to these environmental commitments is summarized in Table 1 of the programme documentation.

119. At national level, the programme was framed to align with, and reinforce, countries' existing climate and development commitments and reporting streams. The PFD states that the programme and child projects were designed to complement national processes and initiatives on energy efficiency "without duplication" and to be in line with national development priorities (including climate change policies and strategic plans) while informing climate-related initiatives at multiple levels (regional, national, sectoral, and local). Critically, the programme allowed countries to tailor both the intervention mix (menu options) and the product focus to national circumstances—selecting priority technologies (e.g., refrigerators, air conditioners, motors, transformers, lighting) based on policy readiness and/or highest savings potential, and anchoring these choices through national strategies and roadmaps linked to national mitigation goals.

***Rating for Relevance to Global, Regional, Sub-regional and National Priorities: Satisfactory***

### 5.1.4 Complementarity with Existing Interventions/ Coherence

120. The programme directly complements and operationalizes the global call to action articulated under the UN Secretary-General's Sustainable Energy for All (SE4All) initiative, which identified lighting, appliances, and electrical equipment as priority intervention areas for achieving its objective of doubling the global rate of improvement in energy efficiency. Through the SE4ALL Accelerators, these product categories were recognized as offering some of the most cost-effective and scalable opportunities to reduce energy demand, lower greenhouse gas emissions, and alleviate pressure on power systems, particularly in developing countries and emerging economies. The programme translates this global policy ambition into concrete regulatory, market, and institutional reforms that enable countries to leapfrog directly into high-efficiency technologies, rather than locking in inefficient equipment with long lifetimes.

121. In support of this agenda, and under the SE4ALL Accelerator Platform, UNEP and UNDP—together with the International Copper Association (ICA), CLASP, the Natural



Resources Defense Council (NRDC), and the Global Environment Facility (GEF)—launched the Global Partnership on Appliances and Equipment, later branded as United for Efficiency (U4E). This partnership provides the institutional backbone for coordinated global and regional action on energy-efficient appliances and equipment, offering countries access to harmonized policy guidance, technical tools, capacity-building support, and peer learning networks. The programme builds on and strengthens this partnership by embedding its integrated policy approach—covering MEPS, monitoring, verification and enforcement, supporting market measures, and environmentally sound management—within national and regional market transformation efforts, thereby ensuring coherence with SE4ALL objectives while maximizing global energy and climate benefits.

122. Further, the programme actively collaborates with multiple branches across the UN system, notably UNEP’s Chemicals and Health Branch and the UNEP–DTU Partnership at the Copenhagen Centre on Energy Efficiency (C2E2), to maximize the strategic use of resources and ensure the coherent delivery of high-quality technical and policy support. These collaborations enable the programme to integrate energy efficiency objectives with related agendas on chemicals management, hazardous waste, and health, while also drawing on C2E2’s recognized expertise in energy efficiency policy design, implementation, and capacity development. Through this coordinated approach, the programme is able to disseminate detailed, evidence-based guidance to national institutions in a consistent and cost-effective manner.

***Rating for Complementarity with Existing Interventions/Coherence: Satisfactory***

**Rating for Strategic Relevance: Satisfactory**

## **5.2 Quality of Programme Design**

123. First, it is important to note that the Global Leapfrogging programme’s design exists only in its conceptual form, as outlined in the Programme Framework Document (PFD), which serves as the programme-level equivalent of the Project Identification Form (PIF) used at the project level. While the PFD provides a high-level strategic overview and sets the foundation for the overall programme structure and components, it does not offer the level of detail typically found in full-fledged project documents or CEO endorsement documents. Unlike individual child projects, which undergo detailed design processes culminating in comprehensive project documents with well-defined implementation arrangements, work plans, and risk mitigation strategies, the overarching programme lacks a corresponding detailed design document. This absence has implications for programme-level coherence and coordination, as it limits the availability of a unified operational framework to guide cross-cutting interventions and monitor collective progress across child projects. It should be noted that this gap is not unique to this programme, it is rather a systematic gap in the way these programmes are designed, especially in light of the limited Programme Preparation Grant (PPG) resources.

124. The absence of a detailed programme design document had important design and implementation implications. Most notably, it meant that no comprehensive Theory of Change was developed to illustrate how the various child projects would collectively contribute to shared programme-level outcomes. Without such a unifying framework, the strategic coherence across child projects remained implicit rather than explicit, making it difficult to assess interlinkages, synergies, and cumulative impacts. Furthermore, once each child project was developed with its own detailed project document—complete with its own Theory of Change, results framework, and implementation modalities—the original PFD effectively ceased to function as a guiding reference. In practice, stakeholders and implementers have

relied primarily on the individual child project documents, which can already, at this Inception stage, be seen to have fragmented programme-level planning, monitoring, and evaluation, and reduced the visibility of the overarching programme logic. The coordinating child project has developed a ToC which, in parts, covers some elements of the programme's theory of change.

125. The absence of a clearly articulated programme-level ToC posed several challenges. Without a unifying framework, it becomes difficult for individual child projects to fully understand their role and contribution to the programme's collective objectives. Moreover, the absence of a programme-level ToC limits the guidance available for monitoring and evaluation (M&E) at the programme scale. A well-defined ToC would have provided a roadmap for measuring and assessing the cumulative impacts of the programme, ensuring that the progress of individual projects is aligned with broader goals.

126. Second, at the technical level, the programme was designed as an integrated and coherent response to the key barriers impeding the adoption of energy-efficient products. It aimed to transform national and regional markets toward higher efficiency in lighting, appliances, and electrical equipment through a comprehensive approach that combined regulatory, technical, and capacity-building interventions. Specifically, the programme sought to equip participating countries with the tools and guidance to design and implement effective market transformation projects, while strengthening the technical capacity of policymakers and practitioners in 15 countries to develop and enforce standards, policies, and programs promoting energy efficiency. In parallel, it worked to raise global ambition through the U4E, Global Partnership on Efficient Appliances and Equipment , fostering harmonization of policies, increased regional cooperation, and sustained political commitment. This integrated design not only addressed market, policy, and capacity-related barriers simultaneously but also enabled participating countries to develop context-specific, yet globally aligned, solutions to overcome their national challenges in advancing energy efficiency.

127. The programme design is grounded in the concept of "leapfrogging," which captures the strategic opportunity for countries to bypass intermediate or outdated technologies and move directly to the most advanced, energy-efficient solutions. In this context, leapfrogging represents a deliberate effort to accelerate market transformation by enabling the immediate adoption of state-of-the-art, high-efficiency lighting, appliances, and electrical equipment—rather than following the traditional, incremental path of technological evolution. This approach recognizes that technological innovation can provide a transformative jump in efficiency, allowing developing and emerging economies to achieve substantial energy savings and emission reductions more rapidly and cost-effectively.

128. The programme design introduced five "menu options" that participating countries could select and combine based on their national priorities and market conditions. This menu-based approach provided a structured yet highly flexible framework, allowing each country to tailor its interventions to its specific context—whether focused on developing regulatory mechanisms, strengthening monitoring and enforcement capacities, promoting supporting policies, or ensuring environmentally sound management. This flexibility proved instrumental in accommodating the diverse technical, institutional, and economic realities of the participating countries while maintaining coherence under a common integrated policy framework. However, it should be emphasized that all elements of the menu are indeed needed to achieve market transformation in an integrated manner, the menu options should be used to meet specific needs of a certain country based on the baseline.

129. However, the programme's scope may have been overly expansive across multiple equipment categories, potentially diluting focus and effectiveness. While the transition from lighting to refrigerators and air conditioners followed a coherent market logic, sharing similar consumer-facing dynamics and regulatory levers—the extension to industrial equipment such

as electric motors and transformers introduced substantially greater complexity. These product categories are typically governed by different ministries (often industry rather than energy or environment), operate within longer procurement and investment cycles, and involve distinct stakeholder groups and technical requirements. As a result, engagement strategies, regulatory pathways, and enforcement mechanisms required significant adaptation. The broader scope may have stretched technical and institutional resources, reducing depth of intervention and limiting the programme's effectiveness in these more complex sub-sectors.

130. Interestingly, the scope of the Costa Rica child project has deviated from the standard intervention framework defined in the PFD. Unlike most other child projects, it does not address core policy instruments central to the programme's market transformation logic, such as the development and enforcement of MEPS and the establishment of MVE systems. Instead, the project has focused predominantly on supporting energy efficiency measures in public buildings, emphasizing implementation-oriented activities rather than upstream regulatory and market-shaping reforms. As a result, the Costa Rica project's contribution to the programme's overarching objective of achieving systemic and sustained energy efficiency market transformation is comparatively limited. While public-sector interventions can generate demonstrative value and localized energy savings, their impact on broader market dynamics—such as influencing product availability, quality, and compliance across the private sector—is inherently more constrained.

131. The programme design emphasized strong alignment with related global initiatives, particularly the Sustainable Energy for All (SE4ALL) Global Project, from which it directly evolved. It aimed to build upon the foundations laid by that project—especially the United for Efficiency (U4E) partnership and the pre-established Virtual Centre of Excellence. This Centre served as the technical backbone for knowledge sharing, capacity building, and dissemination of best practices, ensuring continuity between the two initiatives. By leveraging existing tools, partnerships, and expertise developed under SE4ALL, the programme sought to enhance coordination, avoid duplication of efforts, and accelerate the scaling-up of energy efficiency policies and technologies across participating countries.

132. The PFD provided only a broad description of the global energy efficiency challenge and did not include a detailed analysis of the specific problems, root causes, and barriers faced by participating countries. Section 1 of Part II of the PFD, in particular, lacked sufficient contextual depth to capture the diversity of market, institutional, and policy barriers across countries. However, this shortcoming was partly mitigated by the programme's flexible design, especially the "menu options" approach, which allowed each country to adapt the intervention logic and results framework to its national context. This flexibility enabled countries to identify and address their own priority barriers within the overarching goal of transforming markets toward high-efficiency lighting, appliances, and equipment.

133. The PFD did not include a detailed Monitoring and Evaluation (M&E) plan. It lacked defined common outcome indicators, except for GHGs, and did not propose an aggregate monitoring system capable of capturing a whole-of-programme perspective across the various child projects. While the results framework outlined broad outcomes and objectives, it did not specify measurable indicators, baselines, or mechanisms for tracking collective progress at the programme level.

134. The PFD, being primarily a conceptual design document, provided only a light and high-level treatment of key design elements such as stakeholder engagement, gender mainstreaming, risk analysis, indicators, and baselines. These aspects were addressed in general terms without detailed methodologies, stakeholder mapping, gender action planning, or risk mitigation frameworks. Similarly, the indicators and baselines presented were broad and indicative, offering limited guidance for systematic measurement or tracking of progress

during implementation. As a result, much of the detailed analytical and operational work in these areas was left to be developed during the design and inception of the individual child projects.

135. In brief, the PFD presented only a conceptual framework with flexible design but lacked key design elements such the theory of change, detailed analysis of the barriers and detailed M&E plan.

**Table 9: Quality of programme design**

|   | SECTION                                   | RATING<br>(1-6) | Summary Assessment                                                                                                                                                                                                                                                           |
|---|-------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| A | Operating Context                         | 3               | The programme design did not sufficiently anticipate external risks such as conflict or political instability, which later significantly affected implementation (e.g., Myanmar, Sudan). Risk considerations were generic, with limited integration into design assumptions. |
| B | Programme Preparation                     | 3               | Preparation was conceptually adequate but lacked depth, particularly in problem, situation, and stakeholder analyses. Key elements such as gender, human rights, and consultation processes were only partially addressed and deferred to child projects.                    |
| C | Strategic Relevance                       | 3               | While broadly aligned with GEF climate mitigation objectives and linked to prior initiatives (e.g., SE4ALL), the programme lacks explicit articulation of alignment with UNEP strategies and regional priorities, limiting clarity on strategic positioning.                 |
| D | Intended Results and Causality            | 3               | The absence of a clearly articulated Theory of Change weakens the logical coherence of the design. Causal pathways, assumptions, and stakeholder roles are insufficiently defined, affecting evaluability of outcomes and impacts.                                           |
| E | Logical Framework and Monitoring          | 3               | The results framework is incomplete at programme level, with missing indicators, baselines, targets, and M&E responsibilities. While conceptually aligned with objectives, it provides limited guidance for systematic monitoring and performance tracking.                  |
| F | Governance and Supervision Arrangements   | 4               | Governance structures, including the Programme Steering Committee, are adequately outlined at a high level. However, accountability frameworks and detailed roles—especially within UNEP—are only partially defined.                                                         |
| G | Partnerships                              | 4               | The programme leverages a broad set of partners with clearly defined implementation roles but lacks prior assessment of partner capacities. This may pose risks to effective and consistent delivery across countries.                                                       |
| H | Learning, Communication and Outreach      | 5               | Knowledge generation and dissemination are strong features of the design, particularly through the global coordination component. However, communication strategies and stakeholder engagement approaches are largely delegated to child projects.                           |
| I | Financial Planning / Budgeting            | 5               | Financial planning is robust, with clear allocation of GEF and co-financing resources. However, the absence of a defined resource mobilization strategy introduces uncertainty regarding sustainability and financing gaps.                                                  |
| J | Efficiency                                | 3               | The design builds effectively on existing initiatives and partnerships, enhancing potential efficiency gains. However, the lack of defined timelines and value-for-money considerations weakens overall efficiency planning.                                                 |
| K | Risk identification and Social Safeguards | 4               | Risk identification is generic and not anchored in a Theory of Change, with limited treatment of environmental and social safeguards. While environmental management is addressed, broader safeguard mechanisms are insufficiently developed.                                |

|                               | SECTION                                                | RATING<br>(1-6)          | Summary Assessment                                                                                                                                                                                                                     |
|-------------------------------|--------------------------------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| L                             | Sustainability / Replication and Catalytic Effects     | 3                        | Sustainability and scaling potential are implicit in the programme's policy-driven approach but not explicitly articulated. The absence of a clear sustainability or exit strategy limits confidence in long-term impact.              |
| M                             | Identified Project / programme Design Weaknesses/ Gaps | 5                        | Design revisions addressed prior review comments, but key structural gaps remain, including absence of ToC, weak M&E framework, and limited analytical depth. No major additional issues were flagged beyond those already identified. |
|                               | <i>Total (Weighted) Score:</i>                         | <b>3.44<sup>22</sup></b> | <i>(Full analysis in the Inception Report, available from the Evaluation Office)</i>                                                                                                                                                   |
| 1 (Highly Unsatisfactory)     |                                                        | < 1.83                   |                                                                                                                                                                                                                                        |
| 2 (Unsatisfactory)            |                                                        | ≥ 1.83 < 2.66            |                                                                                                                                                                                                                                        |
| 3 (Moderately Unsatisfactory) |                                                        | ≥ 2.66 < 3.5             |                                                                                                                                                                                                                                        |
| 4 (Moderately Satisfactory)   |                                                        | ≥ 3.5 <= 4.33            |                                                                                                                                                                                                                                        |
| 5 (Satisfactory)              |                                                        | > 4.33 <= 5.16           |                                                                                                                                                                                                                                        |
| 6 (Highly Satisfactory)       |                                                        | > 5.16                   |                                                                                                                                                                                                                                        |

**Rating for Programme Design: Moderately Unsatisfactory**

### 5.3 Nature of the External Context

136. External factors beyond the programme's control—most notably sociopolitical developments in several participating countries and the global public health crisis triggered by the COVID-19 pandemic—significantly disrupted the implementation of national projects under Programme 9083. The COVID-19 pandemic imposed widespread operational constraints, including travel restrictions, suspension of in-person consultations and trainings, supply-chain disruptions, and the reallocation of government attention and resources toward emergency public health responses. These conditions delayed procurement, stakeholder engagement, and private sector participation, and in some cases required the rescheduling or redesign of planned activities.

137. Political instability, changes in government leadership, and shifting national priorities in several participating countries constrained institutional continuity and adversely affected programme implementation. Such disruptions weakened policy ownership, delayed decision-making processes, and reduced the ability of national counterparts to sustain momentum on regulatory reforms and market transformation activities. In the case of Myanmar, these challenges were particularly acute. The removal of the elected government from office in February 2021 and the subsequent period of political instability fundamentally altered the operating environment for international cooperation. As a result, the child project under Programme 9083 was suspended, reflecting both the loss of an enabling institutional framework and the heightened fiduciary, operational, and reputational risks associated with continued implementation under the prevailing conditions.

138. In Sudan, the conflict and post-conflict contexts created a highly volatile operating environment that posed distinctive challenges to effective project implementation. Rapidly evolving security conditions, institutional disruptions, and complex socio-political dynamics affected stakeholder availability, decision-making timelines, and the continuity of government

<sup>22</sup> it is important to note that the Global Leapfrogging programme's design exists only in its conceptual form, as outlined in the Programme Framework Document (PFD), which serves as the programme-level equivalent of the Project Identification Form (PIF) used at the project level. While the PFD provides a high-level strategic overview and sets the foundation for the overall programme structure and components, it does not offer the level of detail typically found in full-fledged project documents or CEO endorsement documents.

counterparts. These conditions increased uncertainty around planning assumptions and required the project to operate with heightened sensitivity to contextual risks and constraints and eventually led to project suspension.

139. The Kazakhstan Child Project has been under suspension since September 2020 and has not yet been resumed for implementation, and therefore no progress was made during this reporting period. A request for suspension lift was submitted by UNDP to GEF in 2024. As of the end of June 2024, the suspension has not been lifted by GEF. The project team unit was not functional (i.e. no project staff was under contract). The project operated under UNDP enhanced oversight to assess readiness for resuming activities and prepared a preliminary workplan outline for adoption upon lift of the suspension. The TE team was unable to engage with this particular child project after multiple attempts to organise an interview.

140. The programme has been significantly challenged by global market inflation and wider macro-economic disruptions, which have increased the cost of energy-efficient equipment, laboratory infrastructure, logistics, and technical services well beyond original design assumptions. Global inflationary pressures following the COVID-19 pandemic, compounded by supply-chain disruptions, currency depreciation in several implementing countries, and energy price volatility linked to geopolitical shocks (notably the war in Ukraine), reduced the real purchasing power of GEF grant resources and national co-financing. As a result, child projects faced cost overruns, procurement delays, retendering of contracts, and scaling-down of planned activities, particularly those reliant on imported testing equipment and high-specification technologies. These pressures also affected private-sector engagement and government budget commitments, slowing regulatory implementation and enforcement timelines.

141. High-level political approval processes constituted a major source of implementation delay across the programme. In several countries—including South Africa, Tunisia, and Sudan—formal authorization procedures significantly postponed the official commencement of project operations, delaying recruitment, procurement, and the initiation of planned activities. These start-up delays had cascading effects on overall implementation timelines and contributed to extended project durations. In addition, delays in securing formal approval of MEPS were observed in nearly all non-suspended projects. Even where technical work, stakeholder consultations, and draft regulations had been completed, final endorsement often required high-level political sign-off, inter-ministerial coordination, or parliamentary procedures that proved lengthy and unpredictable. As MEPS adoption is a central lever of market transformation, these delays directly constrained downstream activities such as enforcement, market surveillance, and product phase-out. Collectively, prolonged approval processes at the political level significantly reduced time efficiency and slowed the realization of environmental and market transformation outcomes across the portfolio.

**Rating for Nature of the External Context: Moderately Favourable<sup>23</sup>**

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<sup>23</sup> This rating was given based on the outcomes achieved in countries that were able to implement the programme (i.e. it doesn't account for the countries where the programme was suspended).

## 5.4 Effectiveness

### 5.4.1 Achievement of Programme Outcomes

***Outcome 1.1. Markets are transformed to energy efficient lighting, appliances, and equipment providing climate change mitigation benefits.***

Strategic Question 2: To what extent has the programme influenced (strengthened or otherwise) relationships and power dynamics among market actors within the market systems?

Strategic Question 3: Has implementation of the programme led to systemic change in the market of energy efficient products and appliances?

142. This evaluation assessed the degree to which systemic transformation was achieved at project closure across the eight implementing countries. It does so not to render a binary judgement on success or failure, but to provide a structured, evidence-based account of where market systems have genuinely shifted, where transformation remains partial or fragile, and where implementation was prevented from reaching its potential by factors within or beyond the programme's control. The findings are intended to serve both accountability and learning purposes – informing the GEF and UNEP's assessment of GEF 9083's results and generating actionable insights for the design and delivery of successor programmes in energy efficiency market development.

143. The evaluation applied a three-pillar Market Systems Development (MSD) framework tailored to U4E programmes, assessing Core Market Functions; Supporting Functions; and Rules and Norms across four analytical dimensions: Functionality; Incentives and Behaviours; Capacity and Coordination; and Adaptiveness and Sustainability. Core Market Functions examine whether supply and demand activities for energy-efficient products operate on a commercially sustainable basis; Supporting Functions assess enabling services such as finance, awareness, technical infrastructure, and information systems; and Rules and Norms evaluate the strength of regulatory frameworks, enforcement systems, fiscal and environmental instruments, and behavioural norms. Each pillar is scored on a 1–4 scale across the four dimensions, generating twelve intersection scores per country, and the overall MSD Index is calculated as the average of the three pillar scores. Performance bands are defined as Weak (1.0–1.9), Emerging (2.0–2.9), Improving (3.0–3.4), and Mature (3.5–4.0), with scores of 3.0 or higher requiring corroboration from at least two independent documentary sources under the evidence moderation rule. The detailed method and findings of the MSD assessment are provided in Market Systems Development Assessment. Here below are key findings.



**Table 10: MSD index scores and pillar averages for all 8 countries, ranked by MSD index. Colour coding reflects maturity band positioning.**

| COUNTRY      | CLASSIFICATION                                | MSD INDEX | CORE | SUPPORT | RULES |
|--------------|-----------------------------------------------|-----------|------|---------|-------|
| Chile        | Improving / Strengthened (3.0–3.4)            | 3.20      | 3.1  | 3.2     | 3.3   |
| Tunisia      | Improving / Strengthened (3.0–3.4)            | 3.00      | 3    | 3       | 3     |
| Indonesia    | Improving / Strengthened (3.0–3.4)            | 3.00      | 3.0  | 2.75    | 3.25  |
| Costa Rica   | Emerging / Early Systemic (2.0–2.9)           | 2.42      | 2.25 | 2.25    | 2.75  |
| Sudan        | Emerging / Early Systemic – conflict-affected | 2.00      | 1.75 | 1.75    | 2.5   |
| South Africa | Weak – implementation stall                   | 1.77      | 1.88 | 1.5     | 1.75  |
| Kazakhstan   | Weak – endogenous failure                     | 1.75      | 2    | 1.5     | 1.75  |
| Myanmar      | Weak – suspended                              | 1.17      | 1.25 | 1.25    | 1     |

144. In general, where the programme has been implemented (i.e non suspended child projects), market transformation has been gradual, but clear signs of structural change are observable. Energy efficiency market reform, particularly when driven by regulatory instruments such as MEPS, labelling schemes, and strengthened MVE systems, is inherently incremental. It requires sequential steps: policy development, stakeholder consultation, formal adoption, institutional capacity building, enforcement, and eventual shifts in supply chains and consumer behaviour. As a result, transformative effects typically materialize over extended timeframes rather than immediately following project initiation.

145. Despite implementation delays and contextual constraints in some countries, tangible progress is evident. In several cases, MEPS and labelling regulations have been formally adopted or finalized, testing and certification systems have been strengthened, and market surveillance mechanisms have been established or enhanced. These changes represent foundational shifts in the regulatory and institutional architecture governing appliance and equipment markets. While full market penetration of high-efficiency products and associated emission reductions may continue to unfold beyond the programme's timeframe, the enabling conditions for sustained transformation are increasingly in place, indicating that systemic change is underway even if not yet fully realized.

146. Three countries have achieved Improving/strengthened band classification, each having crossed the threshold at which systemic market momentum operates independently of direct donor incentives. Chile (3.20) is the highest-scoring country in the portfolio, with confirmed enforcement of Scenario 2 MEPS, the operationalised Refriclaje PPP replacement programme, and a strong private-sector sustainability trajectory. Tunisia (3.00) achieved Improving status through a completed mandatory LED MEPS framework and broad market actor engagement, with Rules & Norms as its lead pillar. Indonesia (3.00) was classified to Improving following the completion of seven Ministerial Decrees on LED MEPS, the most complex regulatory consensus process in the portfolio, combined with full LSPro<sup>24</sup> operationalisation, 87.68% electricity savings target delivery, and nine city/regency pilot demonstrations generating independently replicable market evidence. Indonesia's Rules and Norms pillar (3.25) is the highest single-pillar score in the portfolio, reflecting a regulatory architecture that has moved beyond design into enforcement-ready status.

<sup>24</sup> Lembaga Sertifikasi Produk (Product Certification Body)



147. The two Emerging-band countries occupy structurally distinct positions within the band. Costa Rica (2.70) sits in the upper Emerging range with partial market development across most pillars and a Rules and Norms score of 3.0 (Improving), indicating that regulatory architecture has outpaced market activation – a pattern consistent with early Improving trajectory. Sudan (2.00) sits at the Emerging entry point, reflecting a pillar profile that is analytically heterogeneous: Core Market Functions and Supporting Functions remain in the Weak band at 1.75 each, while Rules and Norms reaches 2.50 (Emerging) through a shelf-ready regulatory package that was technically completed before the April 2023 civil war disrupted all further activities. Sudan's index of 2.00 therefore does not indicate uniform Emerging-band performance – it reflects regulatory achievement preserved under conditions of active conflict, set against a market activation base that was not yet established.

148. The three Weak-band countries each present a distinct causal profile. South Africa (1.77) experienced an implementation stall driven by severe institutional and partnership failure: USD 85 million was committed and zero disbursed, effectively preventing the establishment of any market activation infrastructure despite otherwise relatively conducive institutional conditions. Kazakhstan (1.75) reflects endogenous programme design and management shortfalls that resulted in the non-operationalisation of its minimum verified efficiency scheme; the institutional conditions were less straightforwardly disrupted than in South Africa, but the outcome – a market system without functional core mechanisms – is structurally similar. Myanmar (1.17) was suspended following the February 2021 military coup at an early stage of implementation before substantive regulatory outputs had been delivered, leaving the lowest MSD index in the portfolio with minimal institutional foundations for future recovery.

149. In brief, the programme was conceived and implemented against an environment of exceptional diversity, eight countries across five continents, each bringing distinct institutional landscapes, regulatory traditions, political environments, and market development starting points. That diversity was not incidental to the programme's design; it was central to it. By engaging simultaneously with countries at fundamentally different stages of market readiness, the programme generated a body of implementation experience that no single-country intervention could have produced, and in doing so surfaced critical considerations, around co-financing structures, regulatory sequencing, institutional capacity, and political risk, that have informed country-level decision-making from the earliest stages of each project cycle.

150. Against that backdrop, the programme's contribution to energy efficiency market transformation is both real and more substantial. The portfolio scoring confirms that three countries Chile, Tunisia, and Indonesia have crossed into the Improving band, demonstrating systemic market momentum that operates beyond direct donor incentives. Across the portfolio as a whole, the U4E programme has advanced the adoption of Minimum Energy Performance Standards, strengthened the institutional architecture for energy-efficient product regulation, and engaged market actors – governments, standards bodies, testing facilities, industry, and consumers – in ways that have materially shifted the conditions under which energy-efficient lighting and appliances are produced, imported, and sold. These are not marginal achievements. In a sector where regulatory inertia and market barriers have historically slowed the uptake of efficient technologies, the programme has moved the needle in ways that will reduce energy consumption and associated emissions for years beyond project closure.

151. Experience from participating countries shows that affordability remains the dominant constraint affecting consumer uptake of EE products. Despite long-term cost savings associated with reduced energy consumption, many consumers, particularly low- and middle-income households, prioritize upfront purchase price over lifecycle cost considerations.

Higher initial costs of efficient appliances and equipment therefore continue to limit market penetration, especially in contexts where access to consumer credit is limited or financing mechanisms are underdeveloped. This constraint is further compounded in countries where electricity tariffs are subsidized or relatively low, reducing the financial incentive to invest in higher-efficiency products. In such cases, the payback period for efficient technologies becomes less visible or less compelling from the consumer's perspective. As a result, regulatory measures such as MEPS and labelling schemes, while necessary, are often insufficient on their own to drive rapid consumer-level transformation. Complementary measures—including targeted incentives, on-bill financing, bulk procurement programmes, or concessional credit schemes—are typically required to address affordability barriers and accelerate widespread adoption of efficient technologies.

152. Many countries experienced significant delays in the formal approval of EE standards, particularly MEPS. Even where technical studies, stakeholder consultations, and draft regulations had been completed, final endorsement often required lengthy administrative procedures, inter-ministerial coordination, or high-level political sign-off. These procedural bottlenecks postponed the legal entry into force of standards and delayed downstream activities such as enforcement and market surveillance. Following formal approval, several countries encountered additional challenges in operationalizing the standards. Establishing effective MVE systems, including testing capacity, customs controls, inspector training, and compliance protocols—proved resource-intensive and institutionally demanding. At the same time, weak enforcement environments and limited surveillance capacity made it difficult to control the continued presence of informal and non-compliant products in the market. The persistence of low-cost, inefficient products, often entering through informal trade channels, undermined regulatory credibility and distorted competition, reducing incentives for compliant manufacturers and importers. These combined challenges illustrate that regulatory adoption alone is insufficient; sustained institutional capacity, adequate funding, and coordinated enforcement mechanisms are essential to translate standards into effective and durable market transformation.

153. Regional harmonization emerged as one of the programme's most significant and high-impact achievements, contributing directly to regulatory convergence, reduced trade barriers, and prevention of inefficient equipment dumping across participating markets. The programme facilitated harmonized MEPS adoption in several economic sub-regions, including ASEAN (lighting and cooling, with Indonesia subsequently enforcing aligned national regulations), Latin America and the Caribbean (lighting and cooling appliances), and the SADC region (cooling and refrigeration). Regional actors consistently emphasized that harmonization of EE standards is a critical enabler of cost reduction and accelerated market transformation. Aligning MEPS, testing protocols, and labelling requirements across countries reduces compliance complexity for manufacturers and importers, facilitates economies of scale, and lowers transaction and certification costs. Harmonized frameworks also help prevent market fragmentation, reduce the risk of regulatory arbitrage, and create larger, more predictable markets for high-efficiency products. From a regional integration perspective, common standards strengthen trade flows, enhance product availability, and support coordinated enforcement efforts, particularly in regions with shared customs or economic communities. Regional stakeholders noted that harmonization can significantly shorten policy development timelines, as countries can adapt established regional benchmarks rather than design standards independently. As such, harmonization was viewed not only as a technical alignment exercise, but as a strategic instrument for accelerating EE market transformation while improving cost-effectiveness and regulatory coherence across borders.

## **Chile case study: Accelerating market transformation for energy-efficient refrigeration in Chile through integrated policy, regulatory, and circular economy solutions**

154. By combining regulatory reform, strengthened compliance infrastructure, targeted consumer awareness, and innovative end-of-life management, the project delivered a holistic market transformation model for EE refrigerators and freezers in Chile. This integrated approach, following the U4E logic, created mutually reinforcing conditions that shifted market behaviour and established a foundation for sustained impact.

155. **Background and Market Context:** Chile's residential sector is responsible for 17% of national electricity consumption, with refrigerators identified as the most energy-intensive household appliances, accounting for 29% of residential power demand. At the project's inception, the national stock included approximately 7.7 million old, inefficient units, many over 15 years old. While mandatory labelling began in 2007, the market had plateaued; the project aimed to restore market differentiation and drive innovation by aligning national standards with international benchmarks.

156. **Policy and Regulatory Transformation:** The project catalysed a multi-year regulatory tightening cycle designed to restore market differentiation and drive innovation in a sector that had reached an efficiency plateau. Central to this transformation was the Ministry of Energy's adoption of "Scenario 2" for MEPS. This specific proposal was one of five options provided by the project to align Chile with international best practices, establishing a mandatory baseline requiring refrigerators and freezers to have an Energy Efficiency Index (IEE) of less than 30 to be sold in the national market. Technically, Scenario 2 is anchored in the IEC 62552:2015 testing protocol, ensuring alignment with global measuring methods.

157. This standard directly correlates with a comprehensive redesign of the energy label, which replaces the saturated A++, A+, and A categories with a clearer scale from A to E (and eventually A to G). Under this new system, the MEPS limit (IEE < 30) corresponds to the "C" class, effectively resetting market signals to favour higher-efficiency models and restoring differentiation. While baseline standards have been in place since 2015, this updated tightening cycle was formally adopted in 2023, with a phased transition plan culminating in full retail implementation by October 2026.

158. **Awareness, Capacity Building, and Market Confidence:** The project strengthened consumer and market player confidence by implementing a multi-channel awareness strategy designed to educate users on the benefits of high-efficiency EE appliances. A defining feature of this approach was its strategic messaging pivot necessitated by the 2019 social uprising in Chile. Recognizing that a campaign centered on "purchasing new products" was poorly suited to a society focused on equity and social justice, the project successfully redesigned its core message to emphasize environmental benefits, household savings, and consumption reduction. This aligned the programme with the evolving values of crisis-struck low-income households.

159. A cornerstone of the transparency strategy was the collaboration with the Top Ten platform ([topten.cl](http://topten.cl))<sup>25</sup>, an independent online tool that allows consumers to compare the monthly operating costs and energy consumption of various models. By providing neutral, reliable data, the platform empowered users to make informed purchasing decisions based on the long-term economic impact rather than just the initial price tag. This transparency was

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<sup>25</sup> [www.topten.cl](http://www.topten.cl)

further reinforced by education on how to read the updated Energy Efficiency Labels, which helped reset market signals for higher-efficiency models.

160. The project's outreach achieved visibility by generating over 1.7 million impressions across social media platforms such as Facebook and Instagram. Mainstream media played a critical role in scaling this impact; for instance, a primetime news feature on the "Refriclaje" campaign<sup>26</sup> led to a massive spike in registrations. This surge in interest was evidenced by the 8,500+ registration requests received for only 1,600 available slots in the demonstration replacement programme. Data collected during these campaigns confirmed a high level of market readiness, with 83% of participants reporting a clear understanding of the EE labels and an active preference for products rated Class A or higher. Together, these efforts established energy efficiency as a normalized market expectation rather than a voluntary option.

161. **Testing, Surveillance, and Enforcement Foundations:** Through a partnership with the international laboratory REGENT, the project implemented a comprehensive capacity-building programme for two major national laboratories, CESMEC and SILAB. The laboratories were provided with specialized software and hardware required to run the high-precision tests demanded by the actualized protocol. Staff underwent intensive training, including six sessions of four hours each, which enabled them to perform standardized tests and accurately compare results with international reference labs. Capacitating two separate laboratories reduced the risk of certification bottlenecks and ensured a more resilient and competitive conformity assessment ecosystem.

162. These technical upgrades were overseen by the Superintendence of Electricity and Fuels (SEC), the central authority responsible for market surveillance and enforcing compliance, strengthening regulatory oversight. The project supported the SEC in assessing its MVE scheme, leading to clearer enforcement mandates and stronger coordination with the accredited laboratories. This integrated system, where the SEC serves as the enforcement anchor supported by high-capacity labs, ensures that compliance is no longer a voluntary practice but a routine market requirement. By January 2026, all refrigerator models sold by importers must be certified under this new protocol, culminating in full retail-level compliance by October 2026.

163. **Financing and Demand-Side Acceleration:** To overcome the barrier of high upfront purchase costs for energy-efficient technologies, the project demonstrated a scalable replacement model through the flagship "Refriclaje" campaign. This initiative was built on a robust Public-Private Partnership, where the project partnered with SODIMAC—one of Chile's largest home improvement retailers, following a competitive tendering process. Major global manufacturers, including Samsung, LG, Mabe, Hisense, Midea, and Electrolux, participated by providing high-efficiency inventory at preferential prices. These strategic collaborations allowed the campaign to offer consumers significant discounts of 35% in Phase 1 and 40% in Phase 2 on new models in exchange for their old, functioning units.

164. To ensure the participation of the most vulnerable groups, the project implemented a smart adaptive management measure by selecting lower-end refrigerator models for the programme. This approach ensured the new appliances were affordable to buy while maximizing energy-poverty relief through their very low absolute energy consumption. The real-world impact of this financing model was illustrated by the story of ~~Mrs. Rosa Cordero~~, a vulnerable pensioner whose monthly electricity bill dropped from US \$35 to just US \$6 after replacing her old, inefficient unit through the programme. Originally envisioned as a series of

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<sup>26</sup> <https://www.youtube.com/watch?v=Hf7WCoamaZg&t=7sa>

physical roadshows, the campaign underwent a total redesign into a "digital-first" model necessitated by the combined shocks of the COVID-19 pandemic and national social unrest. This redesigned model utilized an innovative logistics system where the firm Reciclapp coordinated the "inverse logistics" for free home collection of old units. This ensured that inefficient appliances were removed from the grid and safely transported to specialized facilities for refrigerant gas recovery and recycling.

165. The market's response to these incentives was overwhelming: the campaign website received over 400,000 visits, and more than 8,500 individuals registered for only 1,600 available slots. This surge in interest demonstrated a massive latent demand for efficient appliances when coupled with clear financial incentives and simplified logistics. Ultimately, the pilot successfully proved that the Chilean retail and recycling sectors possess the technical and logistical capacity to implement large-scale replacement programmes, laying the groundwork for these models to be institutionalized by the private sector.

166. **Environmentally Sound Management and Circularity:** The project successfully established a comprehensive lifecycle management approach by linking energy efficiency with Chile's Extended Producer Responsibility (REP) Law (No. 20.920), ensuring that the transition to new technology did not result in environmental harm from abandoned units. Central to this effort was the project's technical contribution to the Waste Electrical and Electronic Equipment (WEEE) Supreme Decree. Technical inputs provided by the project established the critical need for specialized handling of appliances containing hazardous materials, which led to the inclusion of "heat exchanger appliances" (refrigerators) as a specific priority category with dedicated recycling and collection targets within the decree.

167. To support this regulatory drafting, the project delivered several high-level technical studies that incorporated international best practices, covering topics such as gradualism in WEEE collection to ensure the market can absorb retired units, limitations on hazardous substance content in new appliances to facilitate future recycling, procedures for the preparation and reuse of electrical equipment, and operational frameworks for establishing a sustainable national WEEE management system. The project demonstrated the practical viability of a circular economy model through the "Refriclaje" campaign, which utilized public-private partnerships to manage end-of-life logistics. The firm Reciclapp coordinated the inverse logistics for free home collection, while Regener, the only facility in Chile capable of regenerating refrigerant gases, handled the final treatment. The campaign successfully collected 1,292 old, functioning refrigerators, preventing the atmospheric release of 155 kilograms of high Global Warming Potential (high-GWP) refrigerant gases, and this reflected a tangible positive environmental impact.

168. The pilot resulted in the industrial recycling of 59.4 tons of metals, 8.4 tons of plastic, and 3.5 tons of glass, proving that large-scale appliance recycling is technically and logistically feasible within the Chilean market. While the REP Law was established in 2016, the project provided the necessary data to accelerate the drafting and consultancy phases of specific WEEE instruments. The first draft of the WEEE Supreme Decree underwent public consultation during the first semester of 2022. The final enactment was originally targeted for the second semester of 2022; however, extended consultations shifted the full operational timeline into the 2023–2025 period. To support long-term enforcement, the project facilitated a Clean Production Agreement (APL) signed by 16 major stakeholders, including producers, retailers, and municipalities. This agreement serves as the foundational framework for a permanent Collection and Recycling Service Organization (CRSO). This trajectory ensures that by the time the updated MEPS and labels reach full retail enforcement in October 2026, a robust national system will be in place to capture and process the resulting influx of retired, inefficient units, thereby locking in environmental benefits and preventing leakage into secondary markets.

169. **Demonstration and evidence:** The project substantiated its market transformation strategy by establishing a credible technical foundation and demonstrating the viability of complex logistics through a flagship pilot programme. The project provided the evidentiary basis for regulatory reform through five distinct MEPS scenarios, leading to the selection of Scenario 2 (IEE < 30) as the most effective path for the Chilean market. This was anchored by the official adoption of the IEC 62552:2015 protocol, which transitioned the market from outdated 2007 methods to global best practices. To ensure the "rules of the game" were verifiable, the project technically equipped and trained two major national laboratories, CESMEC and SILAB. This intervention, conducted by the international laboratory REGENT, provided the specialized software and hardware necessary to perform high-precision testing, proving that national infrastructure could support the new mandatory standards.

170. The "Refriclaje" campaign served as a successful demonstration of a Public-Private Partnership (PPP) involving major retailers like SODIMAC and logistics firms like Reciclapp. This pilot substantiated a "digital-first" replacement model necessitated by the pandemic, proving that inverse logistics, the at-home collection and subsequent industrial processing of old units, was logistically feasible within Chile's urban infrastructure. The project substantiated the feasibility of a lifecycle approach by delivering technical studies on hazardous substance limitations, WEEE gradualism, and reuse procedures. These studies provided the Ministry of Environment with the necessary technical evidence to incorporate "heat exchanger appliances" as a priority category within the national WEEE Supreme Decree.

171. **Results and Market Impact: Sustained Transformation Outcomes:** The project's interventions have led to measurable shifts in market behaviour, significant environmental mitigation, and tangible economic relief for Chilean households.

- **Market Efficiency Shifts:** Between the 2015 baseline and 2021, market data confirms a systemic migration toward high efficiency. The market shares of A++ models increased from 5% to 13%, while models in the A+ category surged from 39% to 75%. This progress was mirrored by the effective phasing out of inefficient Class B and C products, which dropped to 0% and negligible levels, respectively, as producers aligned with new regulatory signals.

172. **Environmental Results:** The transformation is estimated to achieve a cumulative reduction of 3,285,180 metric tons of carbon dioxide by 2032. Beyond carbon mitigation, the project successfully recovered 155 kilograms of high-GWP refrigerant gases and recycled 59.4 tons of metal through its pilot programme<sup>27</sup>, preventing significant atmospheric pollution and supporting circular economy targets.

173. **Economic Impact and Energy Poverty Relief:** The project delivered life-changing results for vulnerable consumers. A notable success story is that of ~~Mrs. Rosa Cordero~~, a pensioner<sup>28</sup> whose monthly electricity bill plummeted from \$35 USD to just \$6 USD after her inefficient 15-year-old unit was replaced; her old refrigerator had been responsible for 83% of her household power costs.

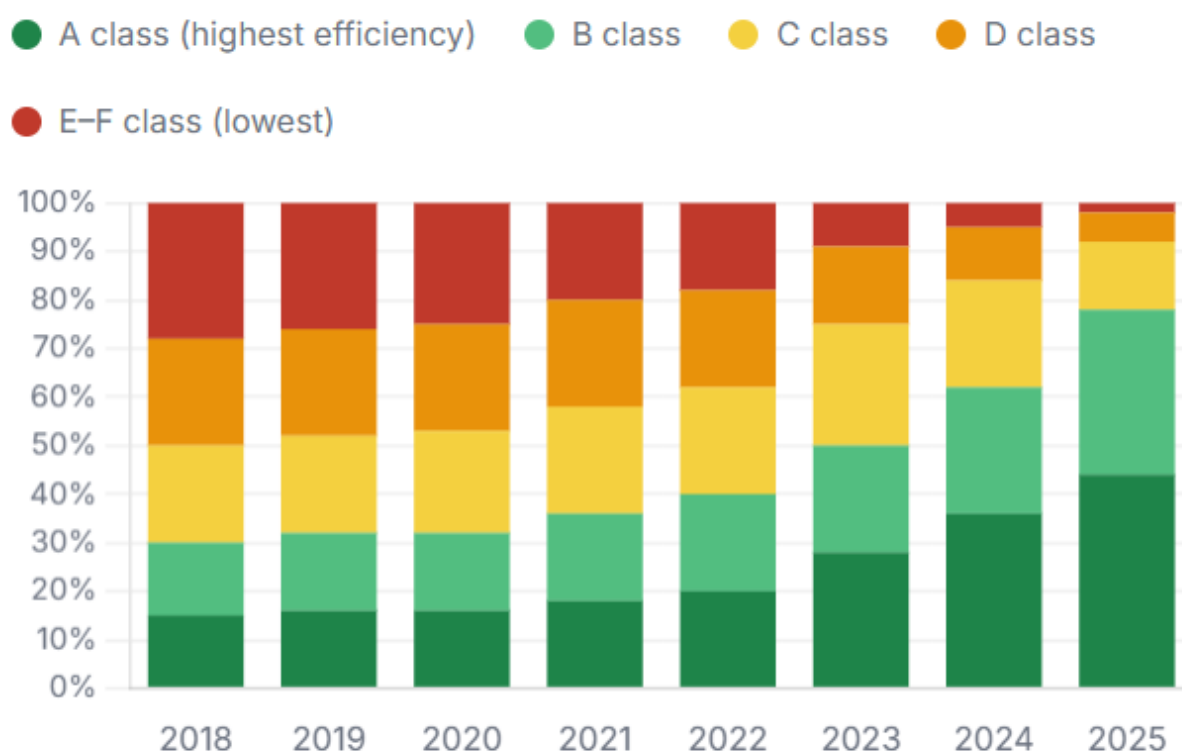
- **Institutionalization of Standards:** The most significant market implication is the hardening of compliance. As of January 2026, all refrigerator models sold by importers must be certified under the new protocol, with full mandatory retail compliance (both physical and online) required by October 2026. This ensures that the market transition is permanent and continues independently of project support.

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<sup>27</sup> Source of data: 2025 PPMR

<sup>28</sup> <https://www.youtube.com/watch?v=u38N4kkmDLw>

**Figure 2: Share of certified refrigerator imports in Chile by energy efficiency class, 2018 to 2025<sup>29</sup>.**



### Tunisia case study: Leapfrogging Tunisia's Lighting Market to High Efficiency Technologies

174. **Accelerating Energy-Efficient lighting in Tunisia through integrated policy, market, and institutional solutions.** By combining policy reform, market transparency, testing capacity, financing, awareness, waste management, and demonstration, the project delivered a holistic market transformation model for EE lighting in Tunisia. Rather than isolated interventions, the integrated approach created mutually reinforcing conditions that shifted market behaviour, reduced risks for stakeholders, and laid the foundation for sustained, scalable impact aligned with Tunisia's energy and climate objectives.

175. **Background and market context:** Tunisia's electricity system is highly dependent on fossil fuels, particularly natural gas, with 96% of electricity is generated from natural gas and 50% of the natural gas supply is imported. This exposes the country to fuel price volatility, import dependency, and fiscal pressure. Electricity demand is dominated by the residential and tertiary sectors, with public lighting also accounting for a significant share of consumption. Demand growth has consistently outpaced efficiency gains, increasing pressure on generation capacity and public finances.

176. Within this context, lighting emerged as one of the most cost-effective and immediately actionable demand-side efficiency opportunities, with substantial savings potential across residential, commercial, industrial, and public sectors. Since 2021, the building sector has become the largest consumer of final energy, accounting for 36% of total consumption. Electricity represents around 50% of the building sector's energy use, excluding

<sup>29</sup> SEC certification register data; programme documentation; SODIMAC retail data (indicative).



biomass. Lighting accounts for between 14% of energy consumption in the residential sector and up to 80% in the education sector and local public authorities (including public lighting).

177. At the same time, Tunisia faces persistent energy subsidies—amounting to TND 7.086 billion<sup>30</sup> in 2024—which, while dampening tariffs, have not eliminated consumer sensitivity to electricity costs. On the contrary, perceived electricity prices relative to incomes have strengthened incentives for households and businesses to adopt energy-efficient solutions. Over the past decade, energy subsidies have represented a notable share of economic output, Tunisia’s energy subsidies averaged 2.1 percent of GDP between 2011 and 2021, rising sharply to 5.3 percent of GDP in 2022 amid elevated global energy prices and exchange rate pressures, placing strain on fiscal stability and public debt dynamics<sup>31</sup>.

178. The EE lighting project was designed to support Tunisia’s Nationally Determined Contribution (NDC) and national energy transition strategy by accelerating market transformation toward high-efficiency lighting—particularly LEDs—through a coordinated package of regulatory, institutional, financial, and market interventions.

179. **Policy and regulatory transformation:** At the policy level, the project delivered a foundational regulatory framework for EE lighting. It finalized Minimum Energy Performance Standards (MEPS) for lighting products through an inclusive stakeholder consultation process and submitted the draft decree for formal adoption. Although not yet enacted, this process significantly strengthened national readiness for enforcement and built consensus among regulators, market actors, and testing institutions.

180. In parallel, a joint decision by the Ministry of Industry and Technology and the Ministry of Trade and Handicrafts, published in the Official Gazette August 2010, provided for the prohibition of the marketing of conventional household incandescent lamps with a power rating equal to or greater than 100 watts and a voltage equal to or greater than 100 volts, effective as of 1 January 2011, and a draft decision is currently in the making that aims to further implement a plan for the gradual prohibition of the marketing of household incandescent and halogen lamps.. These measures provided a clear long-term market signal and reduced regulatory uncertainty for manufacturers, importers, and distributors.

181. To enhance market transparency, the project designed and piloted a national LED energy labelling system, including a QR-code–based digital solution allowing consumers and regulators to access product specifications. This innovation improved consumer confidence, supported MEPS compliance, and strengthened future market surveillance.

182. Public procurement was addressed through the development of standardized Terms of Reference (ToRs) for energy-efficient street lighting. These ToRs served as a reference framework for other international cooperation projects, such as the ACTE project funded by the Swiss Government, and have been used by ongoing EGF project “Towards a Sustainable City through Energy Efficiency in Kairouan”.

183. **Awareness, capacity building, and market confidence:** The project complemented regulatory reforms with targeted awareness and capacity-building interventions. National and regional workshops were organized to inform manufacturers, importers, distributors, municipalities, and civil society organizations about MEPS, labelling requirements, and EE lighting benefits. These workshops extended beyond Tunis to key regions such as Hammamet and Sfax, improving outreach to industrial and commercial actors.

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<sup>30</sup> International Energy Agency (IEA), Tunisia subsidies for fossil fuels and electricity in 2024.

<sup>31</sup> World Bank, Reforming Energy Subsidies for a More Sustainable Tunisia, 2023. Available [here](#).



184. At the local level, awareness activities were closely integrated with the Djerba “All-LED Island” demonstration, including targeted sessions for NGOs and municipal decision-makers. This helped translate national policy objectives into practical, locally owned implementation.

185. A dedicated information and awareness plan for private-sector stakeholders reduced the risk of non-compliance and ensured coherence between regulatory enforcement and market-facing communication, reinforcing trust in the transition process. Also promotional videos have been published through media and social media channels aiming to raise awareness on LED efficient lighting<sup>32</sup>.

186. **Testing, surveillance, and enforcement foundations:** A critical pillar of market transformation was strengthening national testing and compliance capacity. The project procured specialized laboratory equipment for LED lamp and luminaire testing for the DCATCPE unit of CETIME (Technical Center of Mechanical and Electrical Industries), Tunisia’s national technical center. While equipment delivery and laboratory construction are still being finalized, the investment laid the groundwork for a national reference laboratory for lighting products.

187. This hardware investment was paired with a comprehensive technical assistance programme covering laboratory commissioning, development of standardized testing protocols, and hands-on accompaniment of staff during the initial operational phase.

188. The project also strengthened the E-TIQUETTE digital platform by integrating LED certification requirements, improving traceability and regulatory oversight. Recognizing that Tunisia currently lacks a fully structured Surveillance, Verification, and Enforcement (SVE) framework for lighting, the project initiated work to define institutional roles, responsibilities, and procedures, supported by training on international best practices.

189. **Financing and demand-side acceleration:** On the financing side, and while no dedicated household financing mechanism is yet in place, market analysis confirmed that LED prices have fallen sharply—by up to 50 percent in some cases—reducing the need for heavy subsidies and strengthening affordability for households.

190. For public lighting, the project leveraged existing national instruments, notably the Energy Transition Fund (FTE), which provides a blended finance model combining grants and concessional loans. Municipalities can access 70 percent grants for studies and audits, 30–50 percent grants for LED equipment, and loans for remaining costs—creating a scalable financing structure already enabling LED street lighting investments.

191. At the residential level, the project collaborated with the [PROMOLED programme](#), supporting a large-scale national LED distribution effort. To date, 400,000 LED lamps have been distributed, 2.4 million are under procurement, and 1.2 million additional lamps are planned by end-2025, representing one of Tunisia’s largest demand-side EE interventions.

192. **Environmentally sound management and circularity:** To ensure sustainability across the product lifecycle, the project addressed end-of-life management of lighting products. It conducted a national assessment to design an integrated system for the collection, recycling, and disposal of lamps, with particular attention to hazardous substances.

193. Based on this assessment, the project supported drafting a regulatory framework introducing Extended Producer Responsibility (EPR), shifting financing responsibility from the state to producers and importers through a dedicated levy. This marked a major departure

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<sup>32</sup> Example of the published videos - <https://www.youtube.com/watch?v=8U24ExqVVUs>

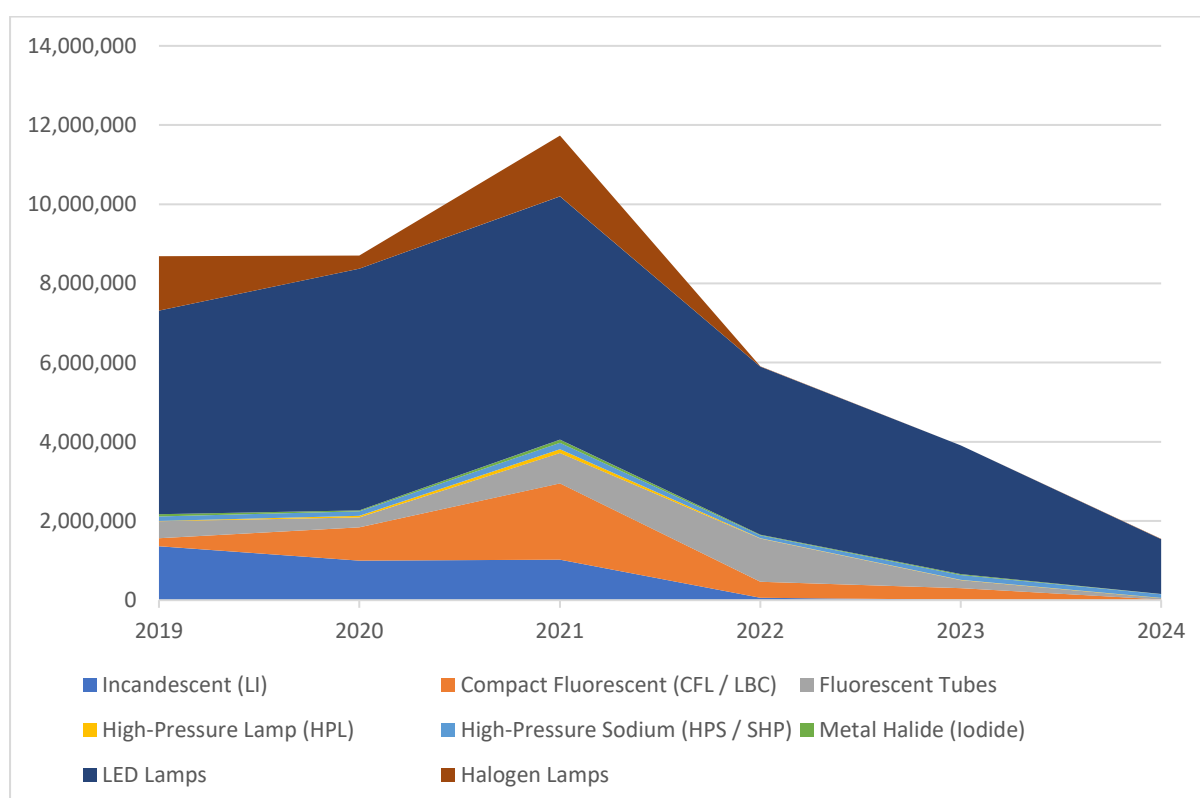
from current practice, where lamp waste is collected and exported by 13 certified companies, fully funded by the government. Capacity-building workshops supported stakeholder readiness for this transition.

194. **Demonstration and evidence: Djerba “All-LED Island”:** The Djerba demonstration served as a flagship proof of concept. Across Ajim, Houmet Souk, and Midoun, the island had 12,100 public lighting points, with only 20 percent LED penetration at baseline. By replacing 2,225 conventional lights, the project increased LED coverage to 39 percent, nearly doubling penetration.

195. Beyond energy and cost savings, the pilot generated policy-relevant evidence, strengthened municipal implementation capacity, and demonstrated the technical and economic feasibility of large-scale LED deployment—providing a replicable model for national scale-up.

196. **Results and Market Impact:** Market data confirm that Tunisia’s lighting market is already transforming. Imports of incandescent lamps fell from 1.36 million units in 2019 to near zero by 2024, while LEDs became dominant, peaking at 6.14 million units in 2021. Projections indicate that by 2030, residential lighting demand could stabilize or decline, provided remaining inefficient stock is replaced<sup>33</sup>. It should be noted that some of these trends have been influenced by large-scale LED lighting tenders triggered by the project and other government initiatives, however, with combination of policy, financial and awareness improvements, market transformation to energy efficiency lighting in Tunisia is favourable.

**Figure 3: Imported Quantities of Different Lamp Technologies in Tunisia (2019–2024)<sup>33</sup>**



<sup>33</sup> ANME, baseline study, Leapfrogging Tunisia’s Lighting Market to High Efficiency Technologies –updated December 2025.

## Progress by Menu Option

197. Across the programme, **Menu Option 1 (National strategy for advancing markets to energy-efficient products)** delivered very limited aggregate outcomes, reflecting its narrow application and strong dependence on stable policy environments. Sudan is the only country where measurable progress was achieved under this menu option. There, the project advanced elements of a foundational national strategy through structured policy dialogue and regulatory framing for priority appliances, including fans, evaporative coolers, air conditioners, and refrigerators. Although full implementation capacity remains constrained, the approval and endorsement of MEPS and energy labelling regulations represent a significant strategic outcome: energy-efficient products are now formally embedded within national policy direction. This establishes a credible strategic entry point for future market transformation efforts once institutional and political conditions improve.

198. In contrast, no progress was reported in South Africa, and Menu Option 1 was not applicable to the child projects in Tunisia, Costa Rica, Chile, Indonesia, and Kazakhstan, where the programme design focused instead on direct regulatory implementation, enforcement systems, and market-supporting measures rather than stand-alone national strategy formulation.

199. Across the programme portfolio, **Menu Option 2 (MEPS and regulatory mechanisms)** has delivered uneven but substantively transformative outcomes, with clear evidence of regulatory institutionalization in several countries and partial or stalled progress in others. Strong outcomes are most evident in Chile and Indonesia, where MEPS and energy labelling regulations have been formally adopted, embedded in public procurement systems, and supported by operational testing, certification, and market surveillance arrangements. These cases demonstrate effective translation of project support into fully functioning regulatory ecosystems, aligned with international and regional benchmarks (e.g. ASEAN harmonisation in Indonesia), and capable of driving sustained market transformation. Tunisia represents a near-complete outcome, with finalized MEPS, labelling regulations, and institutional readiness (testing, MVE, inspectors) in place, positioning the country for imminent enforcement and signalling high likelihood of durable regulatory impact beyond the project timeframe.

200. In contrast, outcomes in Kazakhstan, South Africa, and Sudan remain partial and fragile, reflecting structural and contextual constraints. In Kazakhstan, regulatory progress did not advance beyond draft proposals, with no MEPS adoption or enforcement achieved, resulting in stalled market transformation and weak outcome realization. South Africa project is still struggling to be launched. Sudan achieved formal approval of MEPS and labelling regulations across multiple product categories, marking a significant policy outcome; however, constrained testing capacity and the absence of effective financing mechanisms have limited enforcement and real-world market effects. Costa Rica followed a different approach and focused on alignment of public procurement regulations with international best practice, reinforcing the role of government demand as a regulatory lever.

201. Across the programme, **Menu Option 3 (Monitoring, Verification and Enforcement – MVE)** delivered highly differentiated outcomes, closely correlated with the maturity of regulatory frameworks and institutional stability in participating countries. Chile stands out as a strong performer, where project support resulted in fully embedded MVE systems, including strengthened testing laboratories, clear compliance procedures, and well-defined inter-agency enforcement mandates for refrigerators, freezers, and lighting. These systems are operational, institutionalized, and directly support MEPS and labelling enforcement. Tunisia demonstrates a similarly strong trajectory toward durable outcomes: while full enforcement was not yet operational, the project made strategic, high-impact investments in national

testing infrastructure, laboratory equipment, staff capacity, standardized testing protocols, and digital product traceability through the E-TIQUETTE platform.

202. By contrast, Indonesia, Sudan, Kazakhstan, and South Africa exhibit partial or weak MVE outcomes, reflecting structural limitations rather than technical design flaws. Indonesia's ADLIGHT project introduced a product registration system linked to laboratory verification, representing an important step toward enforcement; however, reliance on registration alone falls short of a comprehensive MVE regime in the absence of robust market surveillance and inspection systems. Sudan's project achieved only preliminary outcomes, limited to awareness-raising and conceptual guidance, but nonetheless laid institutional groundwork that could be leveraged if conditions stabilize. In Kazakhstan, the absence of adopted MEPS meant that enforcement and market surveillance could not materialize, resulting in stalled and fragile MVE outcomes. South Africa didn't technically start and therefore no substantive project-driven progress on MVE.

203. Across the programme, **Menu Option 4 (Supporting policies and market transformation activities)** delivered strong complementary outcomes in countries where regulatory progress was matched with demand-side and financing interventions, while remaining limited or absent where projects were suspended or stalled. Chile, Indonesia, and Tunisia demonstrate the most substantive outcomes. Chile effectively combined communication campaigns, consumer information tools, public procurement, and targeted replacement schemes for refrigerators, including social measures for vulnerable households. These interventions significantly strengthened public acceptance of efficient products and reinforced the effectiveness of MEPS and labelling, translating regulation into tangible market uptake. Indonesia's ADLIGHT project implemented an extensive package of supporting activities, including 22 pilot demonstrations, national awareness campaigns, integration of efficient lighting into the e-catalogue procurement system, and the design of multiple financing models (multi-year budgeting, central government loans, PPPs, and ESCOs). While adoption of these financing mechanisms by local governments remains at an early stage, the project clearly expanded the policy and market toolkit available for scaling efficient lighting, lowering structural barriers to entry and signalling long-term transformation potential.

204. Tunisia stands out for achieving systemic and scalable supporting-policy outcomes. The project combined national and regional awareness-raising with a high-visibility local demonstration (Djerba All-LED Island), effectively linking national policy objectives to municipal-level implementation. Crucially, Tunisia leveraged and strengthened existing national financing instruments, notably the Energy Transition Fund (FTE), enabling municipalities to access blended grants and concessional loans for LED public lighting. At the residential level, collaboration with the PROMOLED programme delivered large-scale demand-side impact, with 400,000 LED lamps already distributed and several million more planned, representing one of the largest EE lighting distribution efforts in the country. In contrast, Costa Rica and Sudan achieved more modest outcomes focused on awareness, stakeholder engagement, and public procurement guidance, improving market readiness but without large-scale deployment or financial incentives. Kazakhstan and South Africa recorded no meaningful outcomes under this menu option due to project suspension or lack of implementation.

205. Across the programme, **Menu Option 5 (Environmentally Sound Management – ESM)** delivered selective but strategically important outcomes, with strongest achievements observed where ESM was integrated into broader regulatory and market-transformation frameworks rather than treated as a standalone activity. Chile represents the most advanced outcome, where ESM was systematically embedded into appliance and lighting market transformation, aligned with Extended Producer Responsibility (EPR) and WEEE policy processes. The project addressed hazardous substances (mercury, refrigerants), supported

institutional arrangements for end-of-life management, and promoted consumer and public-sector practices that ensured appliance replacement did not generate unintended environmental harm. Tunisia also achieved a high-impact outcome by moving beyond awareness toward structural reform: a national assessment informed the design of an integrated collection and recycling system for lighting waste, and project support enabled drafting of an EPR-based regulatory framework that shifts financial responsibility from the state to producers and importers. This represents a transformative step toward long-term sustainability of the lighting market and positions Tunisia for systemic lifecycle management once regulations are adopted.

206. More modest or preparatory outcomes were observed in Costa Rica, Indonesia, and Sudan, where projects focused on integrating ESM concepts into procurement guidance, regulatory discussions, training, and pilot activities. Costa Rica improved awareness and end-of-life considerations within public procurement but did not establish a dedicated national ESM system. Indonesia delivered targeted training, studies, and a pilot for safe disposal of mercury-containing lamps, laying technical groundwork; however, the absence of a coherent, scalable disposal strategy limited outcome depth, with old lamps often repurposed or stored rather than safely treated. Sudan similarly achieved conceptual integration of ESM into emerging efficiency regulations and awareness efforts but could not operationalize disposal or recycling systems. Kazakhstan and South Africa recorded no outcomes under this menu option due to lack of implementation.

### ***Outcome 2.1. Countries and regions have the guidance to successfully implement market transformation projects***

207. The U4E programme promoted the implementation of market transformation projects in over 40 countries through policy and implementation support to national projects and U4E country partners. GCP Project (GEF 9337) has been the primary generator of cross-cutting guidelines and publications across the programme. It delivered a comprehensive suite of global toolkits, model regulations, policy guidelines, Country Savings Assessments (156 countries), MEPS and labelling “how-to” guides, MVE manuals, ESM guidance, and regional harmonization roadmaps. These publications are widely disseminated through the U4E platform and explicitly cited in national PIRs as foundational references for child project design and implementation. These resources were developed upon the knowledge and experiences of all the current and past partners, team members and donors; they represent many stakeholder groups and offer practical solutions to policy makers and programme managers, worldwide. The [U4E Publications page](https://united4efficiency.org/resources/publications/)<sup>34</sup> lists a large collection of downloadable resources. A quantitative review of the page shows well over 100 individual items categorized under publications, including model regulation guidelines, technical guidance, compliance and monitoring protocols, procurement toolkits, market assessment methodologies, and policy briefs.

208. To date, ten countries—Chile (covering lighting and refrigerators), China, Côte d’Ivoire, Georgia, Indonesia, India, Kazakhstan, Pakistan, Rwanda, and Türkiye—have formally adopted national energy efficiency policies aligned with the integrated market transformation approach promoted under the U4E initiative. In parallel, seven Southern African countries (Botswana, Eswatini, Lesotho, Malawi, Namibia, Zambia, and Zimbabwe) have successfully concluded Green Climate Fund (GCF)–financed projects, resulting in nationally endorsed roadmaps for the implementation of MEPS and energy labels for residential refrigerators and distribution transformers. Additionally, fourteen Southern African Development Community (SADC) countries—including South Africa, Tanzania, Mozambique, and the Democratic

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<sup>34</sup> <https://united4efficiency.org/resources/publications/>

Republic of Congo—have collectively endorsed harmonized MEPS and labelling frameworks for residential refrigerators and air conditioners, representing a major step toward regional regulatory convergence and economies of scale.

209. Further, progress has also been recorded in Latin America and Asia. Four Latin American countries (Cuba, El Salvador, Honduras, and Brazil) completed GCF Readiness projects, using their national readiness allocations to design strategic market transformation interventions for priority U4E products. In North Africa and fragile contexts, Tunisia is expected to enforce new MEPS and labelling regulations for lighting, while Sudan has advanced regulatory approval and endorsement of MEPS and labels for fans, evaporative coolers, room air conditioners, and refrigerators, demonstrating resilience despite challenging conditions. At the regional level, all ten ASEAN countries adopted updated air conditioner regulations through their ministerial coordination mechanisms, supported by U4E, with harmonized MEPS level S2 (2021)—a landmark achievement in regulatory alignment across Southeast Asia.

210. U4E completed support for the GCF-World Bank Cooling Facility (\$157 million GCF and \$722 million in co-finance) with Bangladesh, Kenya, (already included in above countries), North Macedonia, and Sri Lanka as well as Malawi and Panama (both already included in above countries). In addition, 7 GCF Readiness projects were completed during the period including: Botswana, Eswatini, Lesotho, Malawi, Namibia, Zambia and Zimbabwe.

***Outcome 2.2. Increased capacity of 15 countries' officials to develop and implement projects and policies to advance energy efficiency of lighting, appliances, and equipment.***

211. The Global U4E project is the backbone of capacity building across the entire programme. It delivered extensive global, regional, and national trainings on MEPS, labels, MVE, testing standards, public procurement, financing, and ESM. Capacity building included regional workshops (ASEAN, SADC, Latin America), technical study tours, online and in-person trainings, and support to national institutions and laboratories. 34 countries have either received U4E training, developed and implemented projects to advance energy-efficient lighting, appliances and equipment, or developed and/or implemented policies to advance energy-efficient lighting, appliances and equipment.

212. Examples of Capacity Building and workshop activities were delivered at the global and regional levels include:

- Awareness rising and dialog workshop on Sustainable Public Procurement in Sudan. July 2022
- Capacity Building on MEPS and Labels, on 26<sup>th</sup> October 2022 (Honduras) and 3<sup>rd</sup> November (El Salvador)
- Capacity Building on Monitoring Verification and Enforcement (MVE) mechanisms. The training was delivered in both virtual and in person sessions, which took place the 20<sup>th</sup>, 23<sup>rd</sup> and 26<sup>th</sup> September (Honduras), the 29<sup>th</sup> September and 15<sup>th</sup> November (El Salvador) and 8<sup>th</sup> and 9<sup>th</sup> December 2022 (Cuba).
- Capacity Building on MVE and Environmental Sound Management 23 and 24<sup>th</sup> August 2022 (Bolivia)
- MEPS and Labels technical workshop, 18<sup>th</sup> October 2022 (Tunisia).
- Stakeholder consultation workshop on scaling up energy-efficient and climate-friendly cooling in Nigeria's NDC Revision on 30<sup>th</sup> March 2023.
- ESM technical mission and MEPS, Labels and SPP training in Tunisia. Between 29<sup>th</sup> May and 1<sup>st</sup> June 2023.
- Technical PWG and wrap up project meeting, plus technical visit to CEPTEL (Brazil), which took place in Rio de Janeiro 14<sup>th</sup> and 15<sup>th</sup> June 2023.

- MVE virtual training on Conformity Assessment and Testing standards for INMETRO delegates in Brazil on 13<sup>th</sup>, 14<sup>th</sup> and 24<sup>th</sup> February 2023.

213. The Costa Rica project delivered capacity-building activities primarily targeted at government institutions, standards bodies, and market actors involved in lighting, air conditioners, and refrigerators. According to the PIR, training focused on MEPS and energy labelling implementation, public procurement of energy-efficient products, and market surveillance concepts. Awareness-raising workshops and technical briefings supported regulators and procurement officials in understanding compliance requirements and lifecycle cost benefits of efficient appliances.

214. Chile project implemented targeted trainings for government officials, testing laboratories, and procurement entities on MEPS, labelling, compliance, and environmentally sound management (ESM). Training activities also supported public procurement officers, particularly in the application of high-efficiency lighting specifications, including street lighting and environmentally sensitive areas.

215. Indonesia project delivered extensive training to policy makers, testing laboratories, certification bodies, manufacturers, financial institutions, municipalities, and civil society. Capacity-building activities covered MEPS and labelling regulations, testing procedures, MVE, local content certification, innovative financing schemes, and gender-responsive energy efficiency practices. Hundreds of participants (women and men) were trained through workshops, FGDs, technical trainings, and pilot-linked learning activities.

216. Kazakhstan conducted early awareness-raising workshops and consultations with government stakeholders on MEPS, motors, and refrigerators, alongside initial institutional capacity assessments.

217. The Sudan project implemented select capacity-building activities, particularly dialogue and awareness workshops for government officials and stakeholders on MEPS, energy labelling, and sustainable public procurement. Training focused on building foundational understanding of energy-efficient appliances and regulatory concepts rather than advanced enforcement skills.

218. Tunisia has achieved solid progress in technical and institutional capacity building, particularly in lighting regulation and testing. The project delivered training workshops for government officials, national laboratories, and inspectors on MEPS, labelling, MVE, and photometric testing. Capacity-building activities included study tours, hands-on technical missions, and training on environmentally sound management of lighting waste.

219. South Africa's project is still at an early implementation stage, and capacity-building achievements remain minimal to date.

### ***Outcome 3.1 Increased number of countries commit to advancing energy efficiency of lighting, appliances, and equipment (Global Child project)***

220. A total of 80 countries have shown some sort of commitment to advancing the energy efficiency of lighting, appliances, and equipment. The U4E programme has supported these commitments by catalyzing new interventions, including the launch of five GCF Readiness projects aimed at achieving full market transformation for energy-efficient air conditioners and commercial refrigerators. In-country Readiness activities were initiated in Rwanda and The Gambia. In parallel, one regional initiative and two national projects received support from the ClimateWorks Clean Cooling Collaborative through the ASEAN Cool initiative, led by U4E. This support includes regional coordination efforts and country-level interventions in Singapore and Malaysia to advance the implementation of MEPS for air conditioners.

221. At the continental level, the African Union—representing 55 countries—continued implementation of the five-year African Energy Efficiency Programme launched in 2020 under the joint EU–AU Sustainable Energy Programme. The European Union further strengthened its engagement by agreeing to provide additional technical assistance under the Africa–Europe Green Energy Initiative (AEGEI), beginning with the development of a comprehensive African Union Energy Efficiency Strategy (AfEES) in 2023. In Latin America and the Caribbean, the U4E partnership with OLADE enabled dissemination of the U4E Model Regulation across all 27 OLADE member countries through official institutional channels. In addition, OLADE supported targeted outreach to Ecuador and Colombia to advance the preparation of new energy-efficient appliance projects under the GCF Readiness Programme, complementing four countries engaged during the previous reporting period.

***Rating for Achievement of Programme Outcomes: Moderately Satisfactory***<sup>35</sup>

#### **5.4.2 Likelihood of Impact**

As a climate change mitigation programme, one of the core expected impacts is the achievement of its GHG emission reduction target, set at over 88 million tonnes of CO<sub>2</sub>. According to the data reported in the Programme Progress Monitoring Report (PPMR) as of 30 June 2025, the programme has achieved approximately 50% of this target. However, this Terminal Evaluation (TE) was unable to verify the data on CO<sub>2</sub> emissions reductions due to the absence of detailed calculation sheets at the programme level.

222. This underperformance can be attributed to several interrelated factors. Most notably, three of the eight child projects were suspended at different stages of implementation, significantly constraining their contribution to cumulative emission reductions. In addition, the South Africa child project had not technically commenced implementation by the reporting cut-off date, further reducing the programme's overall mitigation impact. Beyond project-specific disruptions, EE market transformation is inherently a medium- to long-term process, as it depends on gradual changes in consumer behaviour, market supply chains, and institutional enforcement capacities. Persistent delays across several child projects in the approval of MEPS, followed by slower-than-anticipated enforcement, further postponed market uptake of high-efficiency products. Collectively, these factors have slowed the pace of market transformation and represent a major reason why the programme has not yet met its projected GHG emission reduction target.

223. In contrast, progress toward the programme's energy savings target has been substantially stronger, with reported achievements<sup>36</sup> reaching approximately 96% of the target by the same reporting period. This divergence reflects the fact that energy savings can accrue earlier in the implementation cycle, particularly through policy adoption, pilot interventions, and early market shifts, even before full-scale market transformation and enforcement mechanisms are in place. Initial efficiency gains from early adopters, public-sector interventions, and partial compliance with MEPS can generate measurable reductions in energy consumption, while the associated GHG mitigation benefits tend to materialize more gradually over time as market penetration deepens and enforcement strengthens.

224. With respect to beneficiaries, the programme originally set an ambitious target of reaching more than 15 million people across participating countries through GEF-supported interventions, with women expected to account for approximately 50% of total beneficiaries. However, as reported up to 30 June 2025, less than 2% of this target has been achieved. This

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<sup>35</sup> This rating was given based on the outcomes achieved in countries that were able to implement the programme (i.e. it doesn't account for the countries where the programme was suspended).

<sup>36</sup> This Terminal Evaluation (TE) was unable to verify the data energy savings due to the absence of detailed calculation sheets at the programme level.



limited progress is partly attributable to the same structural and implementation constraints affecting the GHG emission reduction targets, notably the suspension of three child projects and the delayed start of the South Africa child project, which together significantly reduced the scale and geographical coverage of active interventions during much of the reporting period. These disruptions curtailed outreach activities, delayed policy enforcement, and constrained market uptake, all of which directly affect the number of beneficiaries reached.

225. In addition to implementation delays, the beneficiary target itself appears to have been overestimated at the programme design stage. Energy efficiency market transformation projects typically deliver benefits primarily through systemic market shifts—such as improved product availability, higher efficiency standards, and reduced energy consumption—rather than through direct engagement with end users. As a result, the majority of beneficiaries are indirect, encompassing the wider consumer base that gradually adopts more efficient products over time. These indirect beneficiaries are more difficult to quantify and tend to materialize later in the project lifecycle, once MEPS enforcement, market compliance, and consumer behaviour change are fully established. Consequently, while the reported beneficiary figures remain low at this stage, they may not fully capture the longer-term and economy-wide benefits expected from sustained market transformation, suggesting that the shortfall reflects both timing effects and methodological limitations in beneficiary estimation rather than a complete absence of impact.

**Table 11: Programme progress towards GEF core indicators<sup>37</sup>**

| Indicator Name (Unit of measure)                                    | Latest value (Actual) | Closing target (Expected) | % Achieved   |
|---------------------------------------------------------------------|-----------------------|---------------------------|--------------|
| <b>6. Greenhouse Gas Emissions Mitigated (Tons)<sup>38</sup></b>    | 44,293,559            | 88,374,786                | <b>50.1%</b> |
| <b>6.3 Energy Saved (Energy -megajoules)</b>                        | 148,658,236,848       | 154,139,907,866           | <b>96.4%</b> |
| <b>11. People benefiting from GEF-financed investments (Number)</b> | 291,477               | 15,200,200                | <b>1.9%</b>  |
| 11.1 Female (Number)                                                | 104,232 (35%)         | 7,600,060                 | <b>1.4%</b>  |
| 11.2 Male (Number)                                                  | 187,245 (65%)         | 7,600,140                 | <b>2.5%</b>  |

226. As reflected in the reconstructed ToC, the programme is also expected to generate significant economic benefits alongside its climate mitigation outcomes. Lower energy consumption typically translates into recurrent cost savings for end users, utilities, and governments, particularly in countries where electricity tariffs are high or where energy imports place pressure on national budgets. According to Country Savings Assessment reports, participating countries have achieved the following economic savings by 2040: Sudan \$57m, Tunisia \$100m, Costa Rica \$150m, Chile \$220m, Kazakhstan \$300m, Myanmar \$300m, South Africa \$950m and Indonesia \$8.6B<sup>39</sup>. Beyond direct energy bill savings, additional economic benefits are expected to materialize over time as market transformation deepens. These may include reduced peak electricity demand and deferred investments in generation, transmission, and distribution infrastructure; improved energy security through lower reliance on imported fuels; and enhanced productivity and competitiveness for businesses benefiting from more efficient equipment. At the market level, the introduction and enforcement of MEPS can stimulate innovation, improve product quality, and create opportunities for local manufacturers, distributors, and service providers, potentially supporting job creation and skills development. Although these benefits have not yet been quantitatively measured, they are consistent with established evidence from comparable energy efficiency market transformation programmes and are likely to become more

<sup>37</sup> Source of data: 2025 PPMR

<sup>38</sup> GHGs calculations were only made available at the aggregate level through the PPMR

<sup>39</sup> Source of data: Country Savings Assessment – available [here](#).

pronounced as policy enforcement strengthens and efficient technologies achieve higher market penetration.

227. In addition to GHG emission reductions, the programme is expected to deliver important environmental benefits through the safe disposal and environmentally sound management (ESM) of replaced inefficient products, such as incandescent lamps and compact fluorescent lamps (CFLs). To date, the programme has not quantified the volume of hazardous waste safely collected, treated, or disposed of under its interventions. Nevertheless, the relevance of this impact remains significant, as many legacy lighting and appliance technologies contain hazardous substances, including mercury and persistent organic pollutants (POPs), which pose risks to human health and the environment if improperly handled at end of life. By supporting the introduction and strengthening of ESM systems—alongside the phase-out of inefficient products—the programme contributes to reducing the uncontrolled release of hazardous materials into soil, water, and the atmosphere.

**Rating for Likelihood of Impact: Moderately Likely<sup>40</sup>**

|                                                          |
|----------------------------------------------------------|
| <b>Rating for Effectiveness: Moderately Satisfactory</b> |
|----------------------------------------------------------|

## 5.5 Efficiency

228. **Cost-effectiveness** is a fundamental element of the programme’s programmatic approach. The decision to design and implement the intervention as a global programme, rather than as a collection of isolated country projects, was intended to generate efficiencies of scale, reduce duplication of effort, and maximize the strategic use of GEF resources. In this respect, the programme has demonstrated strong cost-effectiveness by centralizing the development of high-value global public goods and making them available to all participating and partner countries. These include global toolkits, model regulations, policy guidelines, Country Savings Assessments covering 156 countries, MEPS and energy labelling “how-to” guides, monitoring, verification and enforcement (MVE) manuals, environmentally sound management (ESM) guidance, and regional harmonization roadmaps. By developing these resources once at the global level, the programme avoided repeated investments at the national level and ensured consistency with international best practices.

229. In addition, the programme has enhanced cost-effectiveness through targeted technical backstopping to individual countries, including the review, validation, and refinement of country-level MEPS, labels, and other technical outputs. This approach enabled child projects to build directly on existing global resources rather than starting from scratch, significantly reducing transaction costs, shortening preparation timelines, and lowering the need for country-level consultants and bespoke studies. Free access to international expertise and peer-reviewed technical materials also improved the quality and credibility of national outputs while minimizing incremental costs. Collectively, these efficiencies illustrate the added value of the programmatic approach, whereby shared tools, centralized expertise, and coordinated support translate into lower unit costs per country and stronger outcomes than would likely have been achieved through stand-alone projects.

230. **Timeframe:** A primary constraint to effective programme efficiency was the misalignment of national project timelines. While some countries, such as Chile, progressed relatively quickly from CEO approval to active implementation, others experienced prolonged delays stemming from political instability, institutional bottlenecks, and limited technical or

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<sup>40</sup> This rating was given based on the outcomes achieved in countries that were able to implement the programme (i.e it doesn’t account for the countries where the programme was suspended).

administrative capacity. As a result, child projects entered different phases of the implementation cycle at widely varying points in time, creating a fragmented temporal landscape across the portfolio. This lack of synchronization constrained the effectiveness of the global coordination project, which was designed to deliver standardized tools, peer learning, and technical backstopping in a more sequenced and mutually reinforcing manner.

231. The programme has experienced substantial implementation delays that have negatively affected time efficiency. The PFD was submitted in March 2016, with the overall programme designed for completion within 66 months from CEO approval. CEO endorsements for most child projects took place between 2017 and 2019, with planned implementation periods of 36 months for most projects, except for South Africa and Sudan, which were designed with longer durations of 48 months. Despite this design, implementation has been significantly slower than anticipated across the portfolio, with delays in several cases exceeding four years and, in some instances, more than doubling the originally planned duration. This represents a material efficiency drawback at the programme level, as prolonged implementation delays have deferred the realization of environmental and development benefits.

232. As illustrated in the table below, delays range from approximately 15 months to over 56 months, with Costa Rica, Tunisia, and South Africa exhibiting the most pronounced overruns. Multiple factors have contributed to these delays. Exogenous shocks, most notably COVID-19-related restrictions, disrupted project start-up, stakeholder engagement, procurement, and regulatory processes across countries. In addition, several projects experienced slow inception phases due to delays in formally kicking off activities, recruiting key project staff, and establishing effective country-level institutional and implementation arrangements. In fragile or complex country contexts, these challenges were compounded by administrative bottlenecks and coordination difficulties among national counterparts. Taken together, these factors have significantly reduced time efficiency and underscore structural weaknesses in readiness, start-up planning, and risk management within the programme design and early implementation phases.

**Table 12: Child projects timeframe<sup>41</sup>**

| GEF ID – Project Name                                                                                                           | Country      | CEO Approval Date | Planned Duration | Actual Completion Date | Expected Completion Date | Delay in months |
|---------------------------------------------------------------------------------------------------------------------------------|--------------|-------------------|------------------|------------------------|--------------------------|-----------------|
| <b>9283 – Development of a Market for Energy Efficient Lighting, Air Conditioners and Refrigerators</b>                         | Costa Rica   | 10/4/2017         | 36 months        | 1/31/2025              | 1/31/2025                | ≈ +51 months    |
| <b>9328 – Leapfrogging Sudan’s Markets to More Efficient Lighting and Air Conditioners</b>                                      | Sudan        | 9/28/2017         | 48 months        | 1/1/2025               | 2/14/2023                | ≈ +17 months    |
| <b>9337 – Global Project to Leapfrog Markets to Energy Efficient Lighting, Appliances and Equipment</b>                         | Global       | 11/16/2017        | 36 months        | 3/31/2023              | 3/31/2023                | ≈ +28 months    |
| <b>9492 – Leapfrogging South Africa’s Markets to High Efficiency LED Lighting and High Efficiency Distribution Transformers</b> | South Africa | 1/7/2019          | 48 months        | –                      | 5/16/2027                | ≈ +50 months    |

<sup>41</sup> As reported in the 2025 PPMR and GCP data sheets

| GEF ID – Project Name                                                                 | Country   | CEO Approval Date | Planned Duration | Actual Completion Date | Expected Completion Date | Delay in months |
|---------------------------------------------------------------------------------------|-----------|-------------------|------------------|------------------------|--------------------------|-----------------|
| 9493 – Advancing Indonesia’s Lighting Market to High Efficient Technologies (ADLIGHT) | Indonesia | 1/7/2020          | 36 months        | 6/11/2024              | 5/18/2024 <sup>42</sup>  | ≈ +16 months    |
| 9496 – Leapfrogging Chilean’s Markets to More Efficient Refrigerators and Freezers    | Chile     | 1/18/2018         | 36 months        | 4/30/2022              | 4/30/2022                | ≈ +15 months    |
| 9498 – Leapfrogging Tunisia’s Lighting Market to High Efficiency Technologies         | Tunisia   | 4/11/2018         | 36 months        | –                      | 12/31/2025               | ≈ +56 months    |

233. In terms of **financial delivery**, the programme has demonstrated a relatively low level of expenditure against its approved budget. As of 30 June 2025, only 42% of the total programme budget had been spent, excluding the Kazakhstan and Myanmar child projects, as presented in Table 6. This level of financial execution is significantly below expectations, particularly given that most child projects have either reached completion or are in the final stages of implementation. Under normal circumstances, projects at this level of maturity would be expected to have achieved substantially higher disbursement rates, reflecting the completion of planned activities and delivery of outputs. The low financial delivery is closely linked to the extensive implementation delays experienced across the programme, including prolonged start-up phases, project suspensions, and deferred regulatory and market interventions.

234. Tunisia and the Global Coordinating Project show the strongest financial performance, each with 89% delivery, indicating near-complete implementation and efficient fund utilization. Chile also demonstrates high delivery at 88%, while Costa Rica shows solid progress with 75% delivery. In contrast, Indonesia records a moderate delivery rate of 62%, pointing to partial implementation progress and potential delays or phasing of activities. At the lower end, Sudan shows very limited delivery (11%), likely reflecting severe external constraints and implementation disruptions, while South Africa records 0% disbursement, consistent with the late start of the child project and the absence of materialized activities.

235. Actual **co-financing** disbursed amounts to USD 92.27 million against a revised closing target of USD 169.03 million, corresponding to an overall realization rate of approximately 55% (see Table 7 and Table 8). While the upward revision of the co-financing target beyond the original design-stage pledge reflects successful mobilization of additional commitments during implementation, the level of materialized co-financing at the time of the TE indicates a substantial delivery gap. This gap is material and has implications for assessing programme leverage, sustainability, and the realism of co-financing assumptions, consistent with issues commonly highlighted in GEF terminal evaluations.

236. In terms of **human resources**, the global coordinating project carried primary responsibility for programme-wide coordination, technical backstopping, and stakeholder engagement. However, UNEP faced persistent constraints related to insufficient project management cost allocations. While multiple project extensions were approved to accommodate implementation delays, these extensions were not accompanied by proportional increases in management funding. As a result, UNEP was required to sustain programme delivery through internal co-financing, short-term staffing arrangements, and ad

<sup>42</sup> UNEP’s component ended in October 2024.

hoc reallocations of financial resources, rather than through stable, dedicated management budgets. These constraints created ongoing operational pressure and introduced risks to efficiency, institutional memory, and staff continuity, particularly given the technical complexity, global scope, and extended duration of the programme. Reliance on temporary staffing and internal subsidies limited long-term planning and increased transaction costs associated with onboarding and handover. Importantly, this challenge was not viewed as unique to this programme but rather as symptomatic of a broader structural issue within GEF-funded portfolios, where internally executed and coordination-heavy projects often receive management cost allocations that are insufficient relative to their scale, complexity, and extended implementation timelines.

**Rating for Efficiency: Moderately Unsatisfactory**

## 5.6 Monitoring and Reporting

### 5.6.1 Monitoring Design and Budgeting

237. The PFD did not include a detailed Monitoring and Evaluation (M&E) plan. It lacked defined common outcome indicators, except for GHGs, and did not propose an aggregate monitoring system capable of capturing a whole-of-programme perspective across the various child projects. While the results framework outlined broad outcomes and objectives, it did not specify measurable indicators, baselines, or mechanisms for tracking collective progress at the programme level. Also, there has been no specific budget allocated for programme level M&E activities.

238. Individual child projects, including the global coordination project, have then established their respective M&E frameworks as part of the CEO endorsement package. The coordinating global Project 9337 was set to monitor the progress of market transformation actions of each of the national projects using GEF Monitoring Framework for National Child Project. This monitoring tool includes baseline information gathered at the outset of the Programme and updated as required.

**Rating for Monitoring Design and Budgeting: Unsatisfactory**

### 5.6.2 Monitoring of Programme Implementation

239. While GHG emission reductions and energy savings have been systematically tracked and reported across the individual projects, other environmental dimensions have received comparatively less attention. In particular, hazardous waste generation and broader life-cycle impacts associated with the transition to energy-efficient products remain under-reported and inconsistently measured across countries, primarily as a consequence of not being identified in the design stage. Although ESM systems are embedded within the programme's design—especially regarding the phase-out of inefficient lighting and cooling technologies—data on the quantities of hazardous waste collected, treated, recycled, or safely disposed of are limited.

240. The PSC was mandated to meet annually to provide strategic oversight, coordination, and portfolio-level guidance, however, the PSC met only twice—once in May 2018 and again in March 2022—resulting in substantial gaps in formal oversight and structured coordination during intervening years. The limited recurrence of PSC meetings constrained opportunities for consistent strategic review, cross-country problem-solving, and timely response to emerging portfolio-level risks and implementation delays.

**Rating for Monitoring of Programme Implementation: Moderately Satisfactory**



### 5.6.3 Programme Reporting

241. At the programme level, systematic performance reporting was largely absent until 30 June 2025, when the GEF introduced the requirement for the PPMR. Prior to this, reporting was conducted primarily at the level of individual child projects, without a consolidated mechanism to present an integrated, programme-wide view of progress toward outcomes, emerging challenges, and cross-cutting risks. This absence of programme-level reporting constrained adaptive management and strategic oversight, as systemic issues—such as recurring implementation delays, regulatory bottlenecks, and interdependencies among child projects—were not consistently captured or analyzed in a holistic manner. The introduction of the PPMR in 2025 therefore represents an important improvement in programme governance, enabling a more comprehensive assessment of results, efficiency, and sustainability at the programme level, albeit at a relatively late stage in the programme lifecycle. The 2025 PPMR was primarily informed by the data available on GEF portal.

***Rating for Programme Reporting: Moderately Unsatisfactory***

|                                             |                                  |
|---------------------------------------------|----------------------------------|
| <b>Rating for Monitoring and Reporting:</b> | <b>Moderately Unsatisfactory</b> |
|---------------------------------------------|----------------------------------|

### 5.7 Programme integration

242. The programme design demonstrates an implicit application of systems thinking by deliberately addressing the interconnected barriers that constrain EE market transformation. First, it defines clear system boundaries by focusing on national and regional markets for energy-using products, particularly lighting, appliances, and equipment, and on the full policy and market ecosystem that shapes their performance, uptake, and end-of-life management. Rather than treating EE as a standalone technical issue, the programme situates market transformation within a broader system that includes regulation, institutions, supply chains, financing, consumer behaviour, and environmental management.

243. Second, the programme recognizes multiple and interacting drivers of market transformation, including regulatory instruments (such as MEPS and energy labelling), institutional capacity for MVE, availability of testing and certification infrastructure, access to finance, public procurement practices, private sector readiness, and consumer awareness. Instead of isolating these drivers, the programme addresses them in an integrated manner through its Integrated Policy Approach. This is operationalized via flexible “menu options” that allow countries to address specific gaps or bottlenecks within their EE systems—whether regulatory, institutional, financial, or behavioural—while maintaining coherence with the overall market transformation logic. In doing so, the programme reflects core systems thinking principles by acknowledging interdependencies, enabling adaptive pathways, and seeking durable change through coordinated interventions across multiple leverage points within the EE market system.

244. From a programme implementation perspective, the programme demonstrated a high degree of effective integration in the way it operated, despite significant political and contextual challenges in some participating countries. Integration was achieved not only through the development of central global tools and guidance—such as Model Regulation Guidelines and Country Savings Assessments—which provided a common analytical, technical, and policy foundation across countries, but also through the practical application of these tools in country contexts.

245. Importantly, the programme “walked the talk” by coupling global knowledge products with hands-on technical backstopping to national child projects. The global coordinating project actively supported countries throughout the policy and market transformation

process, from initial market assessments and regulatory design to stakeholder consultation, institutional capacity building, and readiness for enforcement. This ensured that global guidance was not merely theoretical, but continuously tested, refined, and adapted through real-world application. In parallel, lessons learned and tools were disseminated and iteratively improved across both GEF- and non-GEF-funded initiatives, reinforcing system-wide change and amplifying impact beyond the immediate programme boundaries. This combination of centralized knowledge generation, decentralized application, and continuous feedback loops reflects a well-integrated implementation approach aligned with systemic market transformation objectives in countries where implementation was possible.

246. The programme implemented several cross-project implementation activities that strengthened integration across the portfolio. Beside the development and continuous updating of shared global tools, the programme implemented cross-project learning was facilitated through global and regional workshops, webinars, communities of practice, and technical working groups, where countries at different stages of implementation could exchange experiences, troubleshoot challenges, and align approaches. Also, joint outreach and collaboration with non-GEF initiatives and regional programmes also functioned as cross-cutting implementation activities, allowing tools and lessons generated under one project to be rapidly disseminated and applied elsewhere. Together, these cross-project activities helped reduce duplication, reinforce coherence, and operationalize the programmatic approach in practice rather than treating child projects as isolated interventions.

247. Further, U4E tools and guidelines are widely referenced by major international actors, including the World Bank, UNDP, the Montreal Protocol's Multilateral Fund, and global initiatives such as the Global Cooling Pledge. This reflects U4E's role not merely as a project implementer, but as a global standard-setter and knowledge broker.

248. Although U4E has maintained strong visibility at the global and regional levels—through international partnerships, knowledge products, and convening platforms—its visibility at the country level has been more limited. This is largely understandable, as implementation on the ground has been driven primarily by national child projects and locally branded initiatives, which are naturally more prominent to domestic stakeholders and beneficiaries. In many cases, U4E has operated as an enabling and technical backbone rather than as a front-facing implementer, with its contributions embedded within national policy processes and project activities. This lower profile does not necessarily reflect limited influence, but rather the programmatic design in which ownership and visibility are intentionally vested in national institutions where market actors are set to be more visible than the facilitators such as U4E.

249. U4E has increasingly been recognized by external partners as a ready-to-deploy implementation platform for EE initiatives, reflecting its accumulated technical expertise, established global tools, and operational experience. Its structured methodologies, model regulations, country assessments, and technical backstopping capacity have positioned it as a credible and efficient delivery mechanism for EE market transformation projects beyond the original GEF-funded programme. This recognition demonstrates institutional maturity and confirms U4E's value proposition as both a knowledge hub and an implementation partner.

250. A concrete example of this recognition is the partnership with the Climate and Clean Air Coalition (CCAC), which selected U4E to implement an EE project in the Dominican Republic. Building on that collaboration, CCAC is currently partnering again with U4E to deliver additional EE initiatives in Côte d'Ivoire and Liberia. These partnerships illustrate confidence in U4E's technical capabilities, coordination capacity, and ability to mobilize stakeholders and deliver results. They also reinforce the initiative's role as a scalable platform capable of

attracting complementary funding and extending impact beyond the original programme boundaries.

251. Regional harmonization emerged as one of the programme's most significant and high-impact 'programme integration' elements, contributing directly to regulatory convergence, reduced trade barriers, and prevention of inefficient equipment dumping across participating markets. The programme facilitated harmonized MEPS adoption in several economic sub-regions, including ASEAN (lighting and cooling, with Indonesia subsequently enforcing aligned national regulations), Latin America and the Caribbean (lighting and cooling appliances), and the SADC region (cooling and refrigeration). These efforts simplified compliance requirements for manufacturers, reduced regulatory fragmentation, minimized standards arbitrage, and strengthened intra-regional trade. Regional cooperation also demonstrated cost-efficiency benefits, as illustrated by the potential for shared testing infrastructure, such as Tunisia serving neighbouring countries, thereby optimizing investments in high-cost laboratory facilities and reinforcing the economic rationale for harmonized standards.

252. U4E benefits significantly from its alignment with legally binding multilateral environmental agreements, notably the [Minamata Convention on Mercury](#) and the [Kigali Amendment to the Montreal Protocol](#). This alignment strengthens the long-term sustainability and policy relevance of its interventions, as energy efficiency measures—particularly in lighting and cooling—directly contribute to compliance with these international obligations. For example, the phase-out of mercury-containing lamps under the Minamata Convention and the transition to low-global-warming-potential refrigerants under Kigali Amendment to the Montreal Protocol are closely linked to the promotion of high-efficiency technologies. By positioning its technical guidance, model regulations, and market transformation activities within the framework of these binding agreements, U4E enhances both the political legitimacy and durability of its work. Countries are more likely to sustain and enforce energy efficiency policies when they contribute to fulfilling international commitments, creating stronger incentives for regulatory adoption and institutional anchoring. This strategic alignment therefore reinforces the programme's sustainability by embedding energy efficiency reforms within broader, legally mandated environmental transition pathways rather than treating them as stand-alone initiatives.

## 5.8 Additionality

253. GEF additionality, defined as the additional outcome (both environmental and otherwise) that can be directly associated with the GEF-supported project. In December 2018, the GEF Council approved 'An Evaluative Approach to Assessing GEF's Additionality'. GEF IEO classifies additionality into six factors: Specific Environmental Additionality; Legal/Regulatory Additionality; Institutional Additionality/Governance additionality; Financial Additionality; Socio-Economic Additionality; and Innovation Additionality<sup>43</sup>.

254. The GEF additionality in this programme lies in its critical role in addressing systemic barriers to effective EE market transformation—barriers that would likely not have been overcome without GEF support. Through its programmatic approach, GEF financing enabled interventions at a scale and level of coordination that individual country projects or bilateral initiatives would have struggled to achieve on their own.

255. The programme's highest additionality lies in the creation and dissemination of global public goods—namely standardized tools, regulatory templates, analytical benchmarks, and

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<sup>43</sup> [GEF -IEO, An Evaluative Approach to Assessing GEF's Additionality, 2018.](#)



technical guidance that are non-excludable and scalable across countries. These resources, including model regulations, Country Savings Assessments, MEPS and labelling “how-to” guides, MVE manuals, and ESM guidance, significantly reduced transaction costs for participating governments and lowered entry barriers for countries with limited technical capacity. By developing these tools once at the global level and making them widely accessible, the programme avoided duplication of effort, ensured alignment with international best practice, and enabled rapid adaptation to diverse national contexts. This global public goods function extends benefits beyond the immediate portfolio of child projects, supporting non-GEF initiatives and fostering harmonization across regions. As such, the programme’s most enduring and systemic contribution is not only in country-specific reforms, but in the establishment of a shared global knowledge and regulatory infrastructure that underpins sustained energy efficiency market transformation.

256. The **legal and regulatory additionality** of the programme is primarily reflected in its role in overcoming entrenched regulatory barriers to energy efficiency market transformation, notably through the introduction of MEPS, energy labelling schemes, and complementary guidelines for public procurement. In many participating countries, such regulatory frameworks either did not exist or were weakly developed prior to the programme. GEF support enabled the development, formal adoption, and institutional anchoring of these instruments, thereby creating the legal basis for systematically phasing out inefficient products and steering markets toward higher-efficiency technologies. Chile and Indonesia provide clear examples of this regulatory additionality. In both countries, MEPS and energy labelling regulations have been formally approved and embedded within national regulatory systems, integrated into public procurement frameworks, and supported by operational arrangements for testing, certification, and market surveillance. Tunisia represents a near-complete case of regulatory reform, with MEPS and labelling regulations finalized and institutional readiness in place, positioning the country for imminent enforcement. In contrast, progress has been more limited in contexts affected by external constraints. In Sudan and Myanmar, political instability has disrupted regulatory processes, while in South Africa, delayed project start-up has slowed the development and adoption of regulatory instruments.

257. The **institutional and governance additionality** of the programme is primarily achieved through addressing capacity constraints that have historically limited the effectiveness of EE market regulation and enforcement. GEF support enabled systematic capacity building at both the individual and institutional levels, strengthening the ability of public authorities and market institutions to design, implement, and sustain EE policies. At the individual level, extensive training programmes targeted regulators, standards bodies, testing laboratories, customs authorities, municipalities, and other relevant stakeholders, enhancing technical knowledge and practical skills related to MEPS, energy labelling, public procurement, and market surveillance. At the institutional level, the programme contributed to strengthening governance systems by enhancing testing infrastructure for EE products and improving MVE capacities. Support for laboratories, certification bodies, and inspection systems helped establish the operational backbone required to ensure compliance with newly adopted regulations.

258. The **financial additionality** of the programme is primarily reflected in its efforts to overcome financial barriers to the adoption of EE products by introducing and piloting dedicated financing mechanisms. Although many of these mechanisms remain at an early stage of maturity, they represent an important step toward addressing one of the most persistent constraints to EE market transformation. Tunisia provides a relatively strong example of financial additionality, where the project successfully established linkages with existing national financing instruments, notably the FTE and the PROMOLED programme. In Indonesia, the project identified four potential financing schemes with only a limited number

of individual cases having demonstrated practical application. Other child projects have made limited progress in establishing or operationalizing sustainable EE financing mechanisms.

The **environmental additionality** of the programme is reflected primarily in its contribution to greenhouse gas emission reductions (44 million ton GHGs avoided) and in the systematic integration of ESM practices into energy efficiency market transformation. For example, Chile represents the most advanced outcome, where ESM was systematically embedded into appliance and lighting market transformation, aligned with Extended Producer Responsibility (EPR) and WEEE policy processes. Tunisia also achieved a high-impact outcome by moving beyond awareness toward structural reform: a national assessment informed the design of an integrated collection and recycling system for lighting waste, and project support enabled drafting of an EPR-based regulatory framework that shifts financial responsibility from the state to producers and importers. More modest or preparatory outcomes were observed in Costa Rica, Indonesia, and Sudan, where projects focused on integrating ESM concepts into procurement guidance, regulatory discussions, training, and pilot activities.

## 5.9 Knowledge management

**Strategic Question 4:** Has the programme effectively contributed to knowledge sharing on best practices among its child projects?

259. The programme made a deliberate and strategic investment in addressing the knowledge management gap that exists in many developing countries with respect to policies and regulatory frameworks governing the energy efficiency of appliances and equipment. Its knowledge management objectives were clearly articulated and focused on three complementary areas: (i) expanding the availability of policy-relevant and technically robust content tailored to the needs of decision-makers in developing country contexts; (ii) strengthening communication, coordination, and cooperation among partners and stakeholders at global, regional, and national levels; and (iii) leveraging the complementary expertise of practitioners, policymakers, and technical experts through structured peer-to-peer networks.

260. In response to strong stakeholder demand for up-to-date and practical guidance, the programme delivered a comprehensive suite of knowledge products and tools. These included the revision and upgrading of earlier publications, the development of new model regulations with increased ambition aligned to global best practice, and the production of policy guides, country and regional case studies, public procurement guidelines, and guidance on product registration systems. In addition, the programme developed online training materials and maintained a regular newsletter to disseminate updates, lessons learned, and emerging good practices. Together, these products enhanced access to high-quality, standardized information and reduced the need for countries to independently develop complex technical and policy resources.

261. Learning and adaptation were embedded as core features of the programme's operating model. U4E systematically facilitated cross-country learning through mechanisms such as study tours, technical exchanges, and peer-to-peer networking among policymakers, regulators, and practitioners. These platforms enabled real-time feedback, mutual learning, and the rapid transfer of practical solutions across countries at different stages of implementation. These helped the programme to strengthen collective capacity, improve the relevance of its tools, and enhance the effectiveness and scalability of energy efficiency market transformation efforts. U4E has consistently promoted peer exchange and mutual learning among countries through joint study tours and knowledge-sharing activities. For example, Tunisia participated alongside Bolivia in a study tour to Spain on environmentally

sound management (ESM), while Sudan joined Pakistan in a laboratory study tour in Thailand. These exchanges facilitated cross-country learning, strengthened technical capacities, and encouraged the sharing of practical experiences across GEF-funded projects.

262. Knowledge management under the programme is anchored in a multi-channel dissemination strategy designed to maximize reach, accessibility, and practical uptake of knowledge products.

- A centralized U4E website serves as the primary repository for policy guidance, technical tools, model regulations, training materials, and case studies, providing a single point of access for policymakers, practitioners, and partners.
- Quarterly newsletters with a steadily growing subscriber base, which are used to disseminate updates on new publications, country experiences, upcoming events, and emerging good practices.
- Social media and video platforms, as well as cross-posting of key content through UNEP's broader communication channels, further extending visibility and reach across regions and stakeholder groups .
- Annual meetings, workshops, and consultations is systematically documented and used to gather feedback from partners and inform updates to tools, guidance materials, and strategic priorities, reinforcing an adaptive and demand-driven knowledge management approach. These feedback loops help ensure that products remain relevant to country needs and responsive to evolving policy and market contexts.

263. However, the tracking of engagement and uptake remains limited in scope, largely confined to documenting participation in events and basic web analytics such as downloads and page views. While these metrics provide a useful indication of reach, they offer limited insight into how knowledge products are actually used, adapted, or applied in policy development, regulatory processes, or implementation practice at the country level. As a result, evidence on the effectiveness and practical influence of knowledge products remains partial and largely output-focused.

264. There is a clear need to strengthen monitoring systems to capture more robust indicators of uptake and use, including patterns of repeat engagement, depth of interaction with online content, and application of tools in national policy and regulatory contexts. Enhancements such as user surveys, qualitative feedback mechanisms, case-based follow-up, and improved digital analytics would help generate stronger evidence on utilization and impact. Such improvements would support continuous refinement of knowledge products, inform strategic adjustments, and further strengthen the programme's learning and adaptive management framework by shifting from measuring dissemination to demonstrating use and influence.

## **5.10 Sustainability**

265. Sustainability is understood as the probability of continued long-term programme-derived results and impacts after the external programme funding and assistance ends. Three aspects of sustainability are addressed and cover key conditions or factors that are likely to undermine or contribute to the persistence of benefits.

### 5.10.1 Socio-political Sustainability

266. The TE team engagement with stakeholders confirmed that energy efficiency interventions—particularly MEPS, labels, and supporting awareness activities—are well aligned with national priorities related to energy security, electricity affordability, climate commitments, and economic resilience. In countries such as Chile, Indonesia, Tunisia, and Costa Rica, political acceptance is strong because energy-efficient appliances deliver visible consumer benefits (lower electricity bills) and system-level benefits (reduced demand growth and grid pressure), which reinforces public and political buy-in.

267. The country-level projects were developed and progressively refined through close collaboration with UNEP and UNDP over several years. This iterative process ensured technical robustness, alignment with national priorities, and consistency with GEF programmatic objectives. The projects secured formal approval from participating governments as well as endorsement from the GEF, including agreement to allocate national STAR resources to support their implementation, reflecting a strong level of country ownership and institutional commitment at the design stage.

268. Public awareness was addressed by the programme primarily as a supporting measure to regulatory reform rather than as a stand-alone behaviour-change programme. Activities focused on information dissemination, stakeholder workshops, labelling awareness, and demonstration visibility, with the aim of improving acceptance of MEPS and labels and reducing resistance to market change.

269. However, the achievement of programme outcomes has been adversely affected by political instability in several participating countries, most notably in Myanmar and Sudan. In both contexts, prolonged periods of political uncertainty and governance disruption led to the suspension of programme activities, significantly constraining implementation progress and the delivery of planned outputs. These suspensions interrupted policy processes, stakeholder engagement, and institutional coordination, all of which are critical prerequisites for advancing EE market transformation. Beyond the immediate operational impacts, political instability also resulted in a broader de-prioritisation of the energy efficiency agenda at the national level. In crisis settings, government attention and resources were redirected toward urgent political, security, and humanitarian concerns, reducing policy space and institutional capacity for advancing EE reforms such as the development, approval, and enforcement of minimum energy performance standards.

270. Energy and electricity subsidies remain a significant policy barrier to the widespread adoption of EE products across the programme portfolio. In many participating countries, subsidized electricity prices reduce the economic incentive for consumers, municipalities, and businesses to invest in higher-efficiency appliances and equipment, as the resulting energy cost savings are less visible or insufficient to justify higher upfront purchase costs. This structural distortion weakens the price signal that EE market transformation initiatives rely on to drive behavioural change and accelerate market uptake. This challenge is evident in several country contexts, including Tunisia and Indonesia, where electricity subsidies continue to dampen demand for efficient lighting and appliances despite strong technical readiness and policy engagement. Even where MEPS and labelling schemes are in place or under development, subsidized tariffs can delay payback periods and reduce consumer responsiveness to efficiency improvements.

***Rating for Socio-political Sustainability: Moderately Likely (Except in Sudan, Myanmar and Kazakhstan – Unlikely)***

### 5.10.2 Financial Sustainability

271. At the programme level, the continuity of the U4E initiative, including the centre of excellence, remains closely tied to the availability of project-based funding. While U4E has, to date, demonstrated a strong ability to mobilize additional resources and secure follow-on financing to sustain its core operations beyond the conclusion of GEF funding, its long-term financial sustainability cannot yet fully be considered as sustainable. The continued provision of global public goods—such as normative guidance, technical tools, policy frameworks, training programmes, and country-level advisory services—requires predictable and stable funding streams that extend beyond time-bound project cycles. In the absence of a dedicated and institutionalized financing mechanism, U4E's future role as a long-term centre of excellence for energy efficiency market transformation may remain vulnerable to fluctuations in donor priorities and funding availability.

272. The U4E initiative existed before the GEF-funded programme and has continued to operate beyond the conclusion of GEF support in March 2023. Its post-GEF continuity has been enabled through a diversified funding base that includes bilateral donors, philanthropic foundations, and contributions from national governments. This diversification has allowed U4E to sustain its core functions—such as normative guidance, technical assistance, capacity building, and global coordination—despite the time-bound nature of project-based financing.

273. The programme's financial trajectory reflects structural constraints in sustaining global energy efficiency programming. Following three successive initiatives, the GEF seems to have determined that the appliances sector had reached sufficient maturity and discontinued dedicated global support, despite the long-term and iterative nature of regulatory market transformation. Also, the Green Climate Fund's preference for loan-based instruments does not align with U4E's grant-based technical assistance model, and UNEP's institutional mandate does not include lending functions. Bilateral donors have increasingly prioritized geographically bounded, attribution-focused investments over global platforms delivering systemic but less immediately visible impacts. In parallel, UNEP's limited core budget, covering only a small proportion of climate change division staff, means that coordination and secretariat functions remain heavily dependent on project-based funding. These combined factors highlight a structural financing gap for global public goods in energy efficiency, compounded by the relative de-prioritization of efficiency within the broader climate finance landscape.

274. The global funding landscape for energy efficiency has become increasingly challenging, with many climate finance institutions shifting toward loan-based financing models for energy efficiency investments. Given that U4E's comparative advantage and value proposition are primarily centered on technical assistance and policy support, this trend has complicated donor engagement and constrained opportunities for resource mobilization. At the same time, the global objective to double the rate of energy efficiency improvement by 2030 remains significantly off track, highlighting a clear gap between ambition and implementation. This disconnect underscores the strategic importance of sustained and predictable programmatic investment in energy efficiency as a foundational pillar of climate mitigation.

275. Looking ahead, U4E's evolution is increasingly informed by emerging institutional models such as the Rwanda Cooling Centre of Excellence, which is transitioning toward a self-sustaining operational structure. The Centre is developing planned revenue streams that include fee-based training programmes, equipment testing and certification services, business matchmaking, and hosting of technical conferences and convenings. This model represents a tangible pathway from grant-funded intervention to service-oriented financial sustainability. It offers a relevant reference for U4E as it explores longer-term funding options

that reduce reliance on donor cycles and strengthen institutional resilience, while preserving its role as a global public goods provider and technical backbone for energy efficiency market transformation.

276. At the country level, a key sustainability risk across all national child projects relates to the potential insufficiency of budget allocations for establishing, operating, and maintaining MVE infrastructure. Adequate and sustained investment in MVE systems—including market surveillance, testing laboratories, customs controls, and compliance mechanisms—is essential to secure long-term market transformation by screening out and preventing the continued importation, sale, or use of poor-performing and non-compliant products. Without reliable funding, even well-designed and formally adopted MEPS risk becoming ineffective in practice.

277. There have been notable differences in the maturity and effectiveness of sustainable financing mechanisms across country projects. Tunisia represents a relatively advanced case, where the project successfully leveraged existing national financial instruments, notably the Energy Transition Fund (FTE). Through this mechanism, municipalities were able to access blended financing packages combining grants and concessional loans to support the rollout of LED public lighting. At the residential level, collaboration with the PROMOLED programme generated substantial demand-side impacts, with approximately 400,000 LED lamps already distributed and plans in place to scale this effort to several million units. These arrangements demonstrate how aligning project interventions with established national financing mechanisms can accelerate market uptake and enhance sustainability beyond project lifetimes.

278. In Indonesia, the ADLIGHT project identified four potential financing schemes to support government organizations in procuring energy-efficient lighting: (i) multi-year budget allocations enabling self-financing across fiscal cycles, (ii) a central government loan mechanism, which remains under development, (iii) public-private partnership (PPP) arrangements, and (iv) energy service company (ESCO) models. While these options provided a diversified financing framework in theory, actual adoption by local governments has remained at an early and largely experimental stage. Only a limited number of individual cases have demonstrated practical application of PPP or ESCO approaches, indicating that institutional familiarity, risk perception, and transaction complexity continue to constrain wider uptake.

279. Other child projects have shown limited progress in establishing or operationalizing sustainable financing models, suggesting that the development of effective EE financing mechanisms remains uneven across the programme.

### ***Rating for Financial Sustainability: Moderately Likely***

#### **5.10.3 Institutional Sustainability**

280. At the global level, the U4E initiative continues to operate actively and expand its reach to an increasing number of countries. Through sustained regional outreach efforts—particularly in Latin America—U4E has generated significant interest from non-partner countries beyond the original programme scope. This engagement has translated into concrete results, with U4E providing technical and strategic support to four countries, including, for example, Brazil, to develop and successfully submit energy efficiency proposals to the GCF. These outcomes demonstrate U4E's catalytic role in enabling countries to access climate finance and extend the impact of energy efficiency market transformation well beyond the programme's initial targets and geographic focus.

281. The long-term sustainability of U4E and its Global Centre of Excellence is therefore of critical importance, as it underpins the continued provision of normative guidance, technical tools, capacity-building support, and policy advisory services to both partner and non-partner countries. As demand for support on MEPS, market surveillance, financing mechanisms, and environmentally sound management continues to grow, maintaining U4E's operational capacity is essential to sustaining global momentum on energy efficiency. Ensuring stable and predictable financing for the initiative will be key to preserving its convening role, technical leadership, and ability to deliver scalable, high-impact support to countries over the long time horizons required for durable market transformation.

282. At the countries level, driving a sustainable market transformation process requires strong and sustained political support, particularly for the formal endorsement of MEPS and the effective enforcement of MVE systems. Across most participating countries, political commitment to energy efficiency was evident at the strategic and declaratory level, including alignment with national climate and energy objectives and engagement in policy dialogue. However, this high-level support did not consistently translate into timely formal endorsement of MEPS or into the operationalization of robust MVE frameworks, which are critical for locking in market transformation outcomes. In some cases, such as Tunisia, prolonged administrative and political processes and changes in government leadership delayed the formal adoption of MEPS despite technical work being largely completed and stakeholder consultations having taken place. These delays were often linked to institutional bottlenecks, competing policy priorities, and complex inter-ministerial approval procedures rather than a lack of technical readiness or awareness of the benefits of energy efficiency.

283. The global coordinating project and the national child projects have invested substantially in capacity-building activities, with a primary focus on public institutions and market enablers rather than on end users. Target groups have included regulators, standards and accreditation bodies, testing laboratories, customs authorities, municipalities, and key market actors involved in the supply, procurement, and oversight of energy-efficient products. Training programmes have concentrated on core elements of market transformation, notably the design and implementation of MEPS and energy labelling schemes, MVE systems, product testing and certification, and public procurement practices. In a more selective manner, training activities have also addressed financing mechanisms and ESM of end-of-life products. While the depth, coverage, and intensity of training activities have varied considerably across countries—reflecting differences in institutional maturity, project scope, and implementation timelines—it is evident that these interventions have contributed to strengthening the institutional foundations of energy efficiency markets. By enhancing technical competencies, regulatory capacity, and inter-agency coordination, the programme has improved the ability of national institutions to design, implement, and enforce EE policies beyond the life of the projects. This focus on upstream capacity building supports institutional sustainability, increasing the likelihood that market transformation gains will be maintained over the longer term, even in the absence of continued project-level support.

***Rating for Institutional Sustainability: Moderately Likely***

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|------------------------------------------------|---------------------------------------|
| <b>Rating for Sustainability (Likelihood):</b> | <b>Moderately Likely<sup>44</sup></b> |
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<sup>44</sup> This rating was given based on the outcomes achieved in countries that were able to implement the programme (i.e it doesn't account for the countries where the programme was suspended).



## 5.11 Factors Affecting Performance and Cross-Cutting Issues

### 5.11.1 Preparation and Readiness

284. Beyond the PFD, there was no dedicated programme-level planning or preparatory process to operationalize the programmatic approach. In particular, no consolidated programme-level work plan, procurement plan, or integrated budget was developed to guide implementation across the portfolio. Instead, detailed planning and operational arrangements were undertaken at the level of the global coordinating project and individually within each child project following their respective CEO endorsements. As a result, programme management relied largely on the aggregation of stand-alone project plans rather than on a unified programmatic planning framework.

285. Within this context, UNEP assumed the responsibility for programme coordination through the global coordinating project. UNEP established a programme team composed of programme officers, technical specialists, communications staff, regional UNEP officers, and expert consultants to provide oversight, technical backstopping, and knowledge management across child projects.

#### ***Rating for Preparation and Readiness: Moderately Satisfactory***

### 5.11.2 Quality of Programme Management and Supervision

286. UNEP GEF Climate Change Mitigation Unit under the Global Climate Change Division is the implementing agency who has been playing the role of programme oversight and quality assurance. The programme was executed by multiple executing agencies responsible for delivering individual child projects

287. As lead agency, UNEP oversaw the final design and development of expertise to assist countries in their transition to energy efficient products. The Global Project 9337, as the global coordinating project under the umbrella programme, maintained regular, proactive, and highly responsive engagement with the eight national child projects throughout implementation. It provided tailored technical support on demand, including access to market baselines, Country Savings Assessments, and model regulations, which informed national policy design and decision-making. In addition, the project offered guidance on potential financing resources, supported proposal development efforts, facilitated introductions to strategic partners, and delivered technical presentations to national ministries and regional bodies. This hands-on coordination role strengthened coherence across the portfolio, reduced duplication of effort, and enhanced the technical quality and credibility of country-level interventions

288. Additionally, UNEP led the development of common methodologies and guidance through the centre of excellence, coordination of MVE, generation of country data and overall benefits of the transitions and providing leadership to achieve a global political consensus. UNEP, through the Centre of Excellence, also led the provision of technical assistance to countries.

289. The programme governance framework included a Programme Steering Committee (PSC) mandated to meet annually to provide strategic oversight, coordination, and portfolio-level guidance. The PSC was designed to include representatives from participating countries, implementing GEF agencies (UNEP and UNDP), and relevant partners, thereby serving as the primary forum for programme-wide alignment and decision-making. In practice, however, the PSC met only twice, once in May 2018 and again in March 2022, resulting in substantial gaps in formal oversight and structured coordination during intervening years. The limited recurrence of PSC meetings constrained opportunities for consistent strategic review, cross-

country problem-solving, and timely response to emerging portfolio-level risks and implementation delays.

290. While UNEP has been acting as the lead agency, other GEF agencies implementing Child Projects under the programme are the United Nations Development Programme (UNDP) and the Development Bank of Southern Africa (DBSA). Each national child project had a national Steering Committee comprised of representatives from relevant local and national governments, NGOs, private sector partners, and GEF agencies (UNEP and UNDP).

291. Although UNEP served as the lead agency and was formally accountable for overall programme performance, it exercised limited operational control over child projects implemented by other GEF agencies. This structural arrangement created an accountability–authority gap, whereby UNEP retained responsibility for programme-level results without having direct managerial oversight over timelines, budget execution, or implementation decisions in externally managed projects. This governance configuration constrained UNEP’s ability to enforce alignment, mitigate delays, or ensure consistent application of programme-wide standards.

292. Stakeholders engaged in this evaluation process consistently highlighted the high quality of programme management, particularly in its commitment to stakeholder inclusiveness and active participation. The Programme Management Team fostered an open and collaborative approach, ensuring that key actors—including government agencies, UN agencies, international organisations, global initiatives, NGOs, scientific institutions, and private sector stakeholders—were meaningfully engaged throughout the project’s implementation.

### ***Rating for Quality of Programme Management and Supervision: Satisfactory***

#### **5.11.3 Stakeholders Participation and Cooperation**

293. The GCP led an inclusive and wide-ranging stakeholder engagement process that extended across participating countries and beyond the formal programme portfolio. Engagement activities involved all countries implementing projects under the programme and were further broadened to include additional countries—such as Turkey and China—that had implemented EE initiatives closely aligned with the programme’s scope. This broader outreach enabled cross-fertilization of experiences, facilitated knowledge exchange on policy design and implementation, and strengthened linkages between the programme and parallel EE efforts globally.

294. Evidence gathered through this evaluation indicates that participating countries have consistently regarded their engagement with the global programme as strategically important, technically valuable, and largely effective. In particular, stakeholders highlighted the usefulness of standardized tools, technical guidance, policy templates, and capacity-building support provided through the global coordination mechanism. The Global Programme effectively functioned as a technical backbone and coordination platform, enabling national projects to accelerate progress on MEPS, energy labelling schemes, MVE systems, and awareness-raising activities. By offering a common technical foundation and facilitating coordination across countries and regions, the global project enhanced coherence, reduced duplication, and supported faster and higher-quality implementation of national EE market transformation interventions.

295. Global partners consistently confirmed that U4E’s diplomatic and stakeholder engagement capacity is highly valued. Beyond its technical expertise, U4E has demonstrated a strong ability to convene diverse actors—including governments, regional bodies, industry representatives, international organizations, and financial institutions—within a neutral and

trusted platform. This convening role has facilitated constructive dialogue on sensitive regulatory matters such as MEPS ambition levels, harmonization efforts, and enforcement mechanisms. The soft-power dimension of U4E's operations, combining credibility, neutrality, and responsiveness, has been recognized as a key asset underpinning the effectiveness and scalability of the programme's interventions.

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|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Strategic Question 1: In what ways, and to what extent, was the private sector involved in programme design, implementation and monitoring?</b> |
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296. The stakeholder engagement process also actively included a wide range of international and regional private sector entities involved in energy efficiency markets. This included major manufacturers such as Electrolux, Whirlpool and Hitachi, whose participation was essential to ensure that industry perspectives were reflected in the design and implementation of key policy instruments, including MEPS and MVE systems. Engaging manufacturers helped align regulatory ambitions with technical feasibility, market readiness, and innovation pathways, thereby supporting more effective and implementable EE measures.

297. Private sector engagement was facilitated through regular meetings, structured consultations, and active participation in knowledge-generation and dissemination activities, such as technical guidance documents, task forces, workshops, and policy dialogues. This iterative engagement approach enabled feedback loops between policymakers, technical experts, and market actors, improving the quality and acceptability of regulatory frameworks while fostering industry buy-in. By ensuring that private sector voices were systematically incorporated, the programme strengthened stakeholder ownership and reduced the risk of resistance or non-compliance during implementation of EE policies and standards.

298. Private sector engagement under the programme has been predominantly technical in nature rather than financial. Industry actors, including manufacturers, distributors, and technical associations, have contributed expertise to the development of MEPS, labelling schemes, and testing protocols, and have participated in consultations, workshops, and knowledge-sharing platforms. Their involvement has helped ensure regulatory feasibility, market relevance, and alignment with technological trends. However, private sector participation has rarely translated into the establishment of dedicated financing mechanisms or significant direct financial contributions to scale energy efficiency investments. Engagement has focused more on compliance readiness, technical validation, pilot demonstrations, and in-kind co-financing (e.g., data sharing, hosting events, providing expertise) than on mobilizing capital through structured investment vehicles, blended finance instruments, or large-scale co-investment arrangements. This suggests that while technical collaboration with industry has been relatively strong, deeper financial engagement—such as through ESCO models, public-private partnerships, or private capital mobilization—remained limited and represents an area for further development to strengthen the sustainability and scalability of market transformation efforts.

299. Private sector entities actively participated in, and in some cases hosted, workshops, training sessions, webinars, and other knowledge-sharing events organized by the GCP. Through these engagements, companies contributed technical expertise, market intelligence, and product-level insights, and in several instances shared non-confidential data that informed country savings assessments and market analyses. These contributions enhanced the technical robustness and market relevance of programme outputs, particularly in relation to MEPS design, labelling schemes, and market baselines. The time, expertise, data provision, and hosting support provided by private sector partners constituted a substantive form of in-kind co-financing to the programme. Other examples demonstrating how private sector engagement contributed to market uptake and the expansion of financial support mechanisms include, in Chile, where companies such as Sodimac, together with

manufacturers, actively supported the implementation of the Refriclaje replacement programme by providing consumer-facing incentives and discounts for efficient appliances, thereby facilitating market adoption of energy-efficient products. In addition, U4E engagement helped catalyze broader industry commitments at scale, including Electrolux's announcement of a major investment to accelerate sustainable cooling solutions. These examples illustrate how collaboration with private sector actors not only supported programme implementation but also leveraged wider market transformation and industry action toward energy-efficient technologies.

300. The MTR of the global coordinating project observed that evolving private sector dynamics and rapid technological progress necessitated adjustments in partnership arrangements over the course of implementation. Major economic forces and shifts in international market conditions—exacerbated by the COVID-19 pandemic and other global disruptions—significantly affected business ownership structures, market presence, manufacturing footprints, and product portfolios. As a result, some private sector partners exited the U4E partnership, others underwent ownership changes or rebranding, and many companies revised their product mixes and marketing strategies in response to changing market conditions and competitive pressures. These changes were particularly pronounced in the lighting sector, which has entered a commodification phase in the innovation cycle. This transition has been characterized by widespread market penetration of high-efficiency LED technologies, increased price competition, and consolidation among manufacturers.

301. Despite this highly dynamic and sometimes volatile environment, U4E has been able to sustain a meaningful level of private sector engagement. The initiative successfully retained the participation of key industry actors and continued to mobilize private sector co-financing and technical input, thereby preserving the relevance of market perspectives in programme activities and reinforcing the resilience of the public–private collaboration model underpinning the programme.

302. Based on engagement conducted during this TE with private sector entities, their perspectives were consistently centred on three primary concerns: compliance, affordability, and surveillance. From a compliance standpoint, manufacturers and distributors emphasized the importance of clear, predictable, and harmonized regulatory requirements—particularly regarding MEPS and labelling—so that product design, testing, and certification processes can be planned with certainty and aligned across markets. Affordability was highlighted as a critical determinant of market uptake. Private sector actors underscored the need to balance regulatory ambition with consumer purchasing power, especially in contexts where electricity subsidies or low-income conditions reduce willingness to pay for higher-efficiency products with higher upfront costs. They stressed that complementary measures—such as financing schemes, incentives, or public procurement commitments—are often necessary to ensure that compliance with stricter standards does not undermine market accessibility. Finally, surveillance and enforcement were viewed as essential to maintaining a level playing field. Companies expressed concern that weak MVE systems could allow non-compliant or substandard products to enter the market, distorting competition and penalizing firms that invest in meeting regulatory requirements. Effective and transparent surveillance mechanisms were therefore seen as indispensable for ensuring fair competition, protecting brand integrity, and safeguarding the credibility of EE market transformation efforts.

303. The programme engaged a broad spectrum of international and regional organizations active in the field of energy efficiency, reflecting its collaborative and multi-partner approach. Key partners included the Clean Cooling Collaborative (formerly the Kigali Cooling Efficiency Programme), the ClimateWorks Foundation, the Natural Resources Defense Council (NRDC), the International Copper Association (ICA), BASE – the Basel Agency for Sustainable Energy, the International Institute for Energy Conservation (IIEC), the Southern African Development

Community Centre for Renewable Energy and Energy Efficiency (SACREEE), the African Energy Commission (AFREC), UNIDO, and others. These organizations brought complementary technical expertise, regional reach, and thematic specialization, strengthening the programme's ability to address complex market, policy, and technology challenges. Engagement with these partners went beyond ad hoc consultations and included collaboration on joint activity implementation, co-development of analytical products and guidance materials, and participation in knowledge management events, technical workshops, and thematic working groups. Through these mechanisms, the programme was able to leverage existing initiatives, avoid duplication of efforts, and align its interventions with parallel global and regional energy efficiency agendas. This networked approach enhanced the credibility, technical depth, and scalability of programme outputs, while reinforcing U4E's role as a convening platform and coordination hub within the broader international energy efficiency ecosystem.

304. At the country level, private sector engagement varied considerably across the programme portfolio, reflecting differences in project scope, market maturity, and enabling conditions. A positive example of effective engagement is Indonesia, where the ADLIGHT project demonstrated a relatively strong and structured approach to working with private sector actors. In particular, local manufacturers were actively consulted during the development of MEPS, helping to align regulatory ambition with manufacturing capabilities and market readiness. In addition, private sector actors participated in pilot demonstrations, contributed to the design of financing schemes—such as ESCO, public–private partnership (PPP), and shared-savings models—and engaged in the development of procurement pipelines through the national e-catalogue system. This multifaceted engagement supported both regulatory reform and downstream market uptake.

305. In Tunisia and Chile, private sector engagement was focused primarily on regulatory readiness and awareness-raising. Engagements largely centered on consultations related to MEPS, labelling requirements, and information exchange to prepare market actors for forthcoming regulatory changes, rather than on deeper involvement in financing, implementation, or market delivery mechanisms. In contrast, private sector engagement was minimal or largely absent in other countries due to contextual constraints. In Sudan and Myanmar, political instability significantly restricted private sector participation, while in Kazakhstan engagement was limited following project suspension. In South Africa, private sector engagement did not materialize as planned, as the project had not yet commenced implementation. In the case of Costa Rica, the private sector's role was largely confined to that of suppliers through standard public procurement processes, with limited involvement in policy dialogue, market shaping, or financing innovation.

306. The programme also engaged with Lawrence Berkeley Laboratory that works globally with governments, UNEP, industry, and philanthropic funders on energy efficiency market transformation. The Berkeley Laboratory chaired the air conditioner task force and co-chaired the Heat International. Berkeley Lab also served as lead or co-author of model performance and regulatory guidelines for appliances, these guidelines were applied to specific country projects, with Berkeley Lab providing assessments and consultations based on market conditions and supply chains. The modular nature of the guidelines, allowing for adjustments based on country-specific needs and market conditions.

### ***Rating for Stakeholders Participation and Cooperation: Highly Satisfactory***

#### **5.11.4 Responsiveness to Human Rights and Gender Equality**

307. No dedicated or original analysis explicitly addressing gender equality, human rights, or their intersection was undertaken at the programme design stage, including in the PFD. Responsibility for integrating gender and social considerations was largely deferred to the

national child projects, to be addressed during CEO endorsement and the subsequent development of individual project documents. As a result, programme-level objectives, indicators, and results frameworks did not systematically articulate differentiated impacts on women, vulnerable groups, or rights holders, nor did they establish a common analytical or methodological approach for addressing these dimensions across the portfolio.

308. Nevertheless, in principle, the programme's focus on advancing energy efficiency in high energy-consuming sectors, such as public buildings, municipal infrastructure, and large-scale end-use applications, is expected to generate indirect social benefits. By reducing overall energy demand and system costs, efficiency gains could help free up energy supply and financial resources, enabling redistribution to additional households and productive sectors. Over time, this dynamic will have the potential to improve access to affordable, reliable, and efficient energy services, including for low-income and vulnerable communities where women are often disproportionately affected by energy poverty. While these pathways are conceptually aligned with inclusive development objectives, the absence of explicit gender- and rights-based analysis at the programme level limited the ability to intentionally design, track, and demonstrate such outcomes in a systematic and measurable manner.

309. U4E has developed a generic Gender Mainstreaming Implementation Plan that provides overarching guidance for integrating gender considerations across programme activities. The plan places particular emphasis on ensuring equal participation of women and men in capacity-building activities, including trainings, workshops, and knowledge exchange initiatives, with the aim of promoting equitable access to skills development and technical expertise. It also calls for inclusive community and stakeholder consultations that deliberately engage women and consider their perspectives, as well as the systematic collection of gender-disaggregated data on beneficiaries to the extent feasible at the project level. In addition, U4E has taken steps to mainstream gender sensitivity into its knowledge products and communications. All major publications and guidance materials are reviewed prior to release to ensure that language, imagery, and framing are gender-sensitive and do not reinforce stereotypes.

310. While these measures provide a useful minimum framework for gender mainstreaming at the global level, their application and depth of implementation remain largely dependent on country-level execution by child projects. As such, the Gender Mainstreaming Implementation Plan serves primarily as an enabling and guiding instrument rather than a comprehensive programme-level gender strategy with measurable outcomes.

311. At the country level, gender considerations were generally integrated at the process level rather than being embedded within the core market transformation mechanisms. Most child projects made deliberate efforts to promote balanced participation of women and men in trainings, stakeholder consultations, and awareness-raising activities, and in some cases collected gender-disaggregated data on participants and beneficiaries. These measures helped ensure inclusivity in capacity-building and engagement processes and aligned with U4E's gender mainstreaming guidance.

312. However, gender considerations were rarely incorporated into the design and implementation of the programme's central market instruments, such as financing mechanisms, public procurement frameworks, regulatory incentives, or private sector engagement strategies. As a result, opportunities to address structural barriers affecting women's access to finance, participation in EE value chains, or influence over procurement and investment decisions were largely missed.

313. As shown in Table 11, based on data reported up to 30 June 2025, women represent only 35% of the aggregate total beneficiaries at the programme level. This falls below the

programme's stated ambition of achieving gender parity among beneficiaries and reflects the broader pattern observed across child projects, where gender considerations were more consistently applied to participation in trainings and consultations than to the core market mechanisms driving beneficiary reach. The lower share of women beneficiaries is also influenced by the indirect nature of many programme benefits—such as market-wide improvements in product efficiency—which are not always captured through gender-disaggregated reporting and may obscure differential impacts.

***Rating for Responsiveness to Human Rights and Gender Equality: Satisfactory***

**5.11.5 Environmental and Social Safeguards**

314. Environmental and social safeguards under the programme are primarily relevant and operationalized at the level of individual projects rather than at the overarching programme level. Accordingly, all child projects incorporated environmental safeguard considerations tailored to the specific product types and technologies targeted, such as lighting, refrigeration, air conditioning, and other electrical equipment. These safeguards addressed potential risks associated with the production, use, and end-of-life management of products, ensuring alignment with national regulations and relevant international environmental standards.

315. Environmental sustainability is a core pillar of the Integrated Policy Approach applied across all market transformation activities under the programme. In particular, the systematic integration of environmentally sound management (ESM) systems aimed to address the risks associated with obsolete, inefficient, and potentially hazardous products. By promoting proper collection, handling, recycling, and disposal of end-of-life equipment—often containing substances such as mercury or persistent organic pollutants—the programme contributed to reducing environmental contamination and health risks. This approach helped ensure that gains from energy efficiency were not offset by adverse environmental impacts, reinforcing the sustainability and integrity of the programme's climate mitigation objectives.

***Rating for Environmental and Social Safeguards: Satisfactory***

**5.11.6 Country Ownership and Driven-ness**

316. The U4E initiative has demonstrated strong ownership of the programme, as it directly aligns with and advances U4E's core mandate to promote energy efficiency market transformation globally. The programme has enabled U4E to significantly expand its geographic reach and systematically support countries in designing and implementing energy efficiency reforms, thereby reinforcing its role as a global platform and centre of excellence for policy guidance, technical assistance, and capacity building.

317. At the country level, ownership has generally been strong at the policy and strategic level, particularly in contexts where regulatory reforms have been formally adopted and institutionally anchored. Chile and Indonesia provide clear examples, where MEPS and energy labelling regulations have been formally approved, integrated into public procurement systems, and supported by operational arrangements for testing, certification, and market surveillance. These elements reflect a high degree of institutionalization and signal sustained government commitment beyond project lifetimes. Tunisia represents a near-complete case of ownership, with finalized MEPS and labelling regulations, institutional readiness in place—including testing facilities, MVE systems, and trained inspectors—and a regulatory framework positioned for imminent enforcement, indicating strong national buy-in and preparedness.

318. In contrast, ownership has been weaker at the implementation and operational level in several other contexts. In Sudan and Myanmar, political instability has undermined continuity, disrupted institutional engagement, and constrained the ability of national counterparts to

sustain reform processes. In South Africa, delayed project start-up has limited opportunities to build operational ownership, while in Kazakhstan, limited institutional capacity and project suspension have constrained effective uptake and execution. These variations underscore that while policy-level ownership may be established through formal commitments and approvals, translating this into durable operational ownership depends heavily on political stability, institutional capacity, and timely project implementation.

***Rating for Country Ownership and Driven-ness: Moderately Satisfactory***

**5.11.7 Communication and Public Awareness**

319. The Global Coordinating Project has played a lead role in maintaining regular communication with participating countries throughout implementation. Feedback from national counterparts indicates a high level of satisfaction with both the frequency and quality of these interactions, as well as with opportunities for active participation in global meetings and knowledge-sharing events. Although the majority of communications and engagements were conducted remotely—reflecting the broader shift to virtual modalities during the COVID-19 period and beyond—countries reported that this did not significantly diminish the effectiveness of coordination, technical exchange, or collective learning. On the contrary, the consistent use of remote platforms facilitated continuity of dialogue, sustained engagement across regions, and inclusive participation in global discussions despite travel and logistical constraints. As for awareness raising, this has been major outcome of the global coordinating project scope, see section 5.4.2 for details.

320. At the countries level, communication and public awareness were treated as enabling and supportive instruments, designed primarily to facilitate acceptance of MEPS, labels, and procurement reforms, rather than as stand-alone mass behaviour-change campaigns. Communication efforts were generally targeted, technical, and stakeholder-focused, with strongest results where they were linked to visible demonstrations, labels, or public sector action. While awareness activities were implemented in most child projects, quantified reach, behavioural indicators, and sustained communication strategies are rarely reported, limiting evidence of long-term impact.

***Rating for Communication and Public Awareness: Moderately Satisfactory***

|                                                                           |                     |
|---------------------------------------------------------------------------|---------------------|
| <b>Rating for Factors Affecting Performance and Cross-Cutting Issues:</b> | <b>Satisfactory</b> |
|---------------------------------------------------------------------------|---------------------|



## 6. CONCLUSIONS AND RECOMMENDATIONS

### 6.1 Conclusions

321. **Programme design:** The Global Leapfrogging Programme was designed as a conceptually coherent and flexible programmatic intervention grounded in systems thinking and the “leapfrogging” approach, with an integrated policy framework and menu-based options to address regulatory, technical, and capacity barriers to energy efficiency market transformation. However, at the programme level, the design remained largely conceptual, as the PFD did not include a comprehensive Theory of Change, detailed barrier analysis, unified monitoring and evaluation framework, or consolidated operational plan. While this gap reflects broader structural limitations in GEF programmatic design rather than a programme-specific weakness, it nonetheless constrained programme-level coherence, collective performance tracking, and visibility of cumulative impact. However, the programme’s coverage across multiple equipment types may have diluted focus and effectiveness. While extending from lighting to refrigerators and air conditioners was coherent and manageable, the inclusion of industrial assets such as motors and transformers introduced greater institutional and technical complexity, involving different ministries, procurement cycles, and stakeholder dynamics.

322. **Strategic relevance:** The Programme demonstrates strong alignment with UNEP’s Medium-Term Strategy (MTS), Programme of Work (PoW), and GEF-6 Climate Change Mitigation priorities, particularly in advancing resource efficiency, sustainable consumption and production, and systemic market transformation towards low-emission development pathways. The programme operationalizes these strategic objectives through regulatory reform (MEPS and labelling), institutional strengthening (MVE systems), regional harmonization, and global public goods provision via U4E, thereby contributing directly to SDG 7 and SDG 12 as well as to GEF-6 CCM-1 objectives. It further reflects UNEP’s partnership-based business model by leveraging multi-stakeholder collaboration and co-financing. At global, regional, and national levels, the programme is well anchored in relevant policy frameworks and environmental conventions, with flexibility to tailor interventions to country priorities.

323. **External Context:** The implementation of Programme was significantly affected by external contextual shocks and structural political constraints beyond its control, including the COVID-19 pandemic, political instability in several participating countries (notably Myanmar and Sudan), prolonged suspension of the Kazakhstan project, global inflationary pressures, and high-level political approval delays. These factors collectively disrupted project start-up, stakeholder engagement, procurement, regulatory endorsement (particularly MEPS approval), and enforcement processes, leading to suspensions, cost overruns, scaling-down of activities, and extended implementation timelines. These exogenous risks materially constrained delivery efficiency, reduced momentum for regulatory reform, and delayed the realization of intended environmental and market transformation outcomes across the portfolio.

## Responses to Strategic Questions

***Strategic Question 2: To what extent has the programme influenced (strengthened or otherwise) relationships and power dynamics among market actors within the market systems? And***

***Strategic Question 3: Has implementation of the programme led to systemic change in the market of energy efficient products and appliances?***

324. In countries where implementation proceeded without suspension, energy efficiency market transformation has advanced in a gradual but structurally meaningful manner. The reform process, driven by regulatory instruments such as MEPS, labelling schemes, and strengthened MVE systems, has followed an inherently sequential pathway requiring policy development, consultation, formal adoption, institutional capacity building, and enforcement before influencing supply chains and consumer behaviour. Although full market penetration and associated emission reductions are likely to materialize over longer time horizons, tangible progress is evident through the formalization of standards, strengthened testing and certification infrastructure, and enhanced market surveillance mechanisms. These developments constitute foundational shifts in the regulatory and institutional architecture of appliance markets, indicating that systemic transformation is underway, even if its full environmental impact has yet to be realized.

325. The MSD Index classification reveals differentiated levels of systemic market maturity across the portfolio, with three countries—Chile (3.20), Tunisia (3.00), and Indonesia (3.00)—achieving the Improving/Strengthened band, indicating that regulatory and institutional frameworks have reached a level where market momentum can increasingly operate independently of direct donor incentives. Chile demonstrates the most advanced performance, supported by enforced MEPS and operational PPP-based replacement schemes, while Indonesia's high Rules and Norms score (3.25) reflects a regulatory architecture that has moved decisively into enforcement-ready status following complex ministerial consensus processes. Tunisia similarly exhibits strong regulatory consolidation. In contrast, Costa Rica (2.70) and Sudan (2.00) fall within the Emerging band but display structurally distinct profiles—Costa Rica showing regulatory readiness ahead of full market activation, and Sudan reflecting preserved regulatory progress amid active conflict but weak supporting and core market functions. The three Weak-band countries—South Africa (1.77), Kazakhstan (1.75), and Myanmar (1.17)—each reflect different causal constraints, including institutional and partnership failures, programme design shortcomings, and political disruption, resulting in limited or stalled institutionalization of market transformation mechanisms. Overall, the classification underscores uneven but analytically explainable progress across contexts, closely linked to regulatory adoption, financing performance, governance stability, and implementation continuity.

326. The programme was implemented across eight countries spanning five continents, each characterized by distinct institutional frameworks, regulatory traditions, political dynamics, and levels of market maturity. This diversity was a deliberate design feature rather than a contextual constraint. By operating simultaneously in countries at markedly different stages of readiness, the programme generated comparative implementation insights that would not have emerged from isolated national interventions. It surfaced critical lessons related to co-financing reliability, regulatory sequencing, institutional capacity requirements, and political risk management, thereby strengthening adaptive decision-making across the portfolio. Within this heterogeneous environment, the programme achieved substantive and measurable progress. Portfolio scoring confirms that Chile, Tunisia, and Indonesia advanced into the Improving band, indicating that systemic market momentum is now functioning beyond direct donor stimulus. More broadly, the programme catalysed the adoption of MEPS,

reinforced regulatory and enforcement architecture, and engaged key market actors in ways that have durably altered the operating conditions of appliance and lighting markets. In a sector historically constrained by regulatory inertia and structural barriers, these outcomes represent material structural change with long-term implications for sustained energy savings and emissions reductions beyond the project lifecycle.

327. Across the portfolio, three structural dynamics significantly shaped market transformation outcomes. First, affordability remains the primary constraint on consumer uptake of energy-efficient products. Despite clear lifecycle cost advantages, many households, particularly low- and middle-income consumers, prioritize upfront purchase price, especially in contexts with limited access to credit and subsidized or low electricity tariffs that weaken the economic signal for efficiency. As a result, MEPS and labelling frameworks, while necessary, have proven insufficient on their own to accelerate demand without complementary financing and incentive mechanisms. Second, delays in formal MEPS approval and subsequent operationalization have constrained progress. Lengthy political endorsement processes, followed by the resource-intensive establishment of MVE systems, slowed enforcement and allowed non-compliant products to persist in informal markets, undermining regulatory credibility. These experiences demonstrate that regulatory adoption must be matched by sustained institutional capacity, financing, and coordinated enforcement. Third, regional harmonization emerged as a high-impact strategic lever. Alignment of MEPS, testing protocols, and labelling requirements across ASEAN, Latin America and the Caribbean, and SADC reduced compliance complexity, lowered certification costs, prevented regulatory arbitrage, and expanded effective market size. Regional platforms shortened reform timelines, strengthened trade integration, and created economies of scale, underscoring harmonization as a structural multiplier for durable and cost-effective energy efficiency market transformation.

328. **Availability of outcomes:** In countries where implementation proceeded, the programme has contributed to gradual but observable structural shifts in energy efficiency markets, particularly through the adoption or finalization of MEPS and labelling regulations, strengthened testing and certification systems, and enhanced market surveillance frameworks; however, market transformation remains incremental and time-intensive, with full impacts expected beyond the programme timeframe. Progress has been constrained by affordability barriers limiting consumer uptake, especially in contexts of subsidized electricity and limited access to finance, as well as by delays in formal regulatory approval and challenges in operationalizing and enforcing standards. The persistence of informal and non-compliant products further undermines regulatory effectiveness, underscoring that while foundational policy and institutional conditions are increasingly in place, sustained capacity, financing, and enforcement are critical to securing durable and scalable market transformation outcomes.

329. Specifically, the programme delivery by menu option:

- Menu Option 1 (National strategy formulation) generated very limited aggregate results and was applied narrowly, with Sudan representing the only case of measurable progress through the advancement and formal embedding of MEPS and labelling regulations within national policy frameworks, an important strategic milestone despite constrained implementation capacity.
- In contrast, Menu Option 2 (MEPS and regulatory mechanisms) delivered more substantive and potentially transformative outcomes in countries where regulatory adoption and institutionalization occurred, notably Chile and Indonesia, with Tunisia nearing full operational readiness. However, outcomes remained partial or hindered in Kazakhstan, South Africa, and Sudan due to institutional, political, or capacity constraints, and Costa Rica diverged from the core regulatory model by emphasizing public procurement alignment rather than comprehensive regulatory reform.

- Implementation of Menu Option 3 (Monitoring, Verification and Enforcement – MVE) produced highly uneven results across the portfolio, largely determined by the strength of underlying regulatory frameworks and institutional stability. Chile achieved fully operational and institutionalized MVE systems, with strengthened testing laboratories, defined compliance procedures, and clear enforcement mandates, while Tunisia made substantial and strategic investments in laboratory infrastructure, standardized testing protocols, inspector capacity, and digital traceability systems, positioning the country for durable enforcement. In contrast, Indonesia, Sudan, Kazakhstan, and South Africa recorded partial or weak MVE outcomes due to contextual and structural constraints. Indonesia introduced an important product registration mechanism but lacks a fully developed surveillance and inspection regime; Sudan's progress remained at a preparatory level; Kazakhstan's hindered MEPS adoption prevented enforcement from materializing; and South Africa relied largely on pre-existing systems without significant project-driven strengthening.
- Menu Option 4 (Supporting policies and market transformation activities) delivered the strongest complementary and scaling outcomes in countries where regulatory reforms were reinforced by demand-side measures and financing mechanisms, notably in Chile, Indonesia, and Tunisia. Chile effectively linked MEPS and labelling to consumer awareness campaigns, targeted replacement schemes, and social measures for vulnerable households, translating regulatory reform into tangible market uptake. Indonesia implemented a broad package of pilots, awareness initiatives, procurement integration, and diversified financing models, expanding the enabling environment for efficient lighting despite early-stage adoption of financial instruments. Tunisia achieved particularly systemic and scalable outcomes by combining national awareness, municipal demonstrations, and strong linkage to existing financial mechanisms (FTE and PROMOLED), resulting in large-scale LED deployment. In contrast, Costa Rica and Sudan realized more limited supporting-policy outcomes focused primarily on awareness and procurement guidance, while Kazakhstan and South Africa recorded no meaningful results due to suspension or delayed implementation.
- Menu Option 5 (Environmentally Sound Management – ESM) produced selective but strategically significant results, with strongest and most durable outcomes occurring where ESM was integrated into broader regulatory and market transformation frameworks. Chile demonstrates the most advanced implementation, embedding ESM within appliance and lighting reforms aligned with Extended Producer Responsibility (EPR) and WEEE processes, addressing hazardous substances and establishing institutional arrangements for end-of-life management. Tunisia similarly achieved a high-impact, systemic outcome by advancing an EPR-based regulatory framework and designing an integrated collection and recycling system for lighting waste, positioning the country for lifecycle-based sustainability once regulations are enacted. In contrast, Costa Rica, Indonesia, and Sudan achieved mainly preparatory or awareness-level results, integrating ESM concepts into procurement guidance, training, and pilot initiatives without establishing scalable national disposal systems. Kazakhstan and South Africa recorded no meaningful progress due to suspension or non-implementation.

330. Outcome 2.1: The programme has made a substantial contribution to equipping countries and regions with the guidance and technical foundation necessary to implement energy efficiency market transformation projects. Through Global coordinating Project 9337, U4E generated an extensive portfolio of global public goods—including model regulations, Country Savings Assessments (covering 156 countries), MEPS and labelling guidance, MVE manuals, ESM frameworks, procurement toolkits, and regional harmonization roadmaps—widely disseminated and frequently referenced in national implementation reports. These resources have supported over 40 countries and directly underpinned policy adoption and regulatory alignment in multiple contexts. Ten countries have formally adopted national EE policies aligned with the integrated U4E approach, while seven Southern African countries concluded GCF-financed projects establishing national MEPS and labelling roadmaps, and fourteen SADC countries endorsed harmonized regional standards. Additional progress in Latin America, North Africa, and ASEAN—including completion of GCF Readiness projects and region-wide harmonized AC regulations—demonstrates that the programme's guidance has translated into concrete regulatory outcomes and regional convergence.

331. Outcome 2.2: The programme has made considerable progress in strengthening institutional and technical capacity across participating countries, exceeding the original target of 15 countries by supporting at least 34 countries through training, policy development, or project implementation activities. The Global U4E project served as the central backbone for capacity building, delivering extensive global, regional, and national trainings on MEPS, labelling, MVE, testing standards, public procurement, financing mechanisms, and environmentally sound management (ESM). These efforts were operationalized through regional workshops (e.g., ASEAN, SADC, Latin America), study tours, technical missions, and both virtual and in-person trainings. Country-level results varied in depth and maturity: Chile, Indonesia, and Tunisia demonstrated strong institutional capacity gains, including operational testing systems and enforcement readiness; Costa Rica and Sudan focused on foundational regulatory and procurement awareness; Kazakhstan conducted early-stage consultations prior to suspension; and South Africa remains at an early stage with limited achievements to date.

332. Outcome 3.1: The Global Child Project has significantly expanded international commitment to advancing EE in lighting, appliances, and equipment, with 80 countries demonstrating formal or emerging engagement aligned with the U4E approach. The programme catalyzed new financing and policy initiatives, including multiple GCF Readiness projects (notably in Rwanda and The Gambia) aimed at comprehensive market transformation for efficient cooling technologies. Regional initiatives further amplified commitment, including ASEAN Cool, supported by the ClimateWorks Clean Cooling Collaborative, which advanced coordinated MEPS implementation in Southeast Asia, with in-country actions in Singapore and Malaysia. At continental scale, collaboration with the African Union under the African Energy Efficiency Programme and the development of the African Union Energy Efficiency Strategy (AfEES) under AEGEI reinforced high-level political endorsement across 55 countries. In Latin America and the Caribbean, partnership with La Organización Latinoamericana de Energía (OLADE) extended dissemination of model regulations to 27 member states and supported new project preparation in Ecuador and Colombia.

333. **Likelihood of Impact:** The programme has achieved mixed progress toward its impact-level targets. As of 30 June 2025, approximately 50% of the targeted 88 million tonnes of CO<sub>2</sub> emission reductions had been realized, reflecting significant implementation constraints, including the suspension of three child projects, delayed start-up in South Africa, and protracted MEPS approval and enforcement processes. These factors, combined with the inherently gradual nature of energy efficiency market transformation, have slowed cumulative mitigation impacts. In contrast, energy savings performance is substantially stronger, reaching approximately 96% of the target, indicating that early policy adoption and partial market shifts can generate measurable energy reductions ahead of full market penetration and long-term emissions impacts. Beneficiary targets remain substantially underachieved (less than 2% of the 15 million target), largely due to project suspensions, delayed implementation, and the systemic—rather than direct—nature of energy efficiency benefits, which are predominantly indirect and materialize over extended timeframes. The divergence between energy savings, emissions reductions, and beneficiary reporting reflects both timing effects and limitations in the original target-setting methodology, rather than an absence of structural market change.

334. Beyond its climate mitigation outcomes, the programme is positioned to generate meaningful economic and environmental co-benefits; however, these have not been systematically quantified at the programme level. While substantial energy savings have been recorded, implying recurrent cost reductions for households, businesses, utilities, and governments, no consolidated monetary valuation of these savings or broader macroeconomic gains has been undertaken. Potential long-term economic benefits include reduced peak demand and deferred infrastructure investments, improved energy security,

enhanced industrial competitiveness, and job creation linked to higher-efficiency markets. Similarly, although the programme integrates ESM principles to address end-of-life disposal of inefficient and potentially hazardous products, data on hazardous waste volumes and lifecycle impacts remain limited.

335. **Efficiency:** The programme demonstrates strong cost-effectiveness through its programmatic design, which centralized the development of global public goods and technical expertise to serve multiple countries simultaneously. By producing shared resources—such as model regulations, Country Savings Assessments (covering 156 countries), MEPS and labelling guidance, MVE manuals, ESM frameworks, and regional harmonization roadmaps—at the global level, the programme avoided duplication of effort, reduced national transaction costs, and ensured alignment with international best practice. Targeted technical backstopping further enhanced efficiency by enabling child projects to build on standardized tools and peer-reviewed materials rather than commissioning country-specific studies from scratch.

336. The programme's time efficiency was significantly constrained by misaligned national project timelines and extensive implementation delays across the portfolio. While some countries advanced rapidly from CEO endorsement to implementation, others faced prolonged delays due to political instability, institutional bottlenecks, limited administrative capacity, and exogenous shocks such as COVID-19. As a result, child projects progressed asynchronously, limiting the ability of the global coordination project to deliver sequenced, mutually reinforcing technical support and reducing overall programmatic coherence. In several cases, delays exceeded four years, more than doubling planned durations, thereby deferring environmental and development benefits. Contributing factors included slow project start-up, delayed recruitment, regulatory approval bottlenecks, procurement disruptions, and weak readiness planning.

337. The programme exhibits comparatively low financial execution relative to its level of maturity, with only 42% of the total approved budget disbursed as of 30 June 2025 (excluding suspended projects), indicating a significant shortfall in financial delivery. While Tunisia, the Global Coordinating Project, and Chile demonstrate strong expenditure performance (approximately 88–89%), other countries show moderate to minimal disbursement, notably Indonesia (62%), Sudan (11%), and South Africa (0%), reflecting implementation delays, project suspensions, and late start-up. Co-financing realization stands at approximately 55% of the revised target (USD 92.27 million disbursed against USD 169.03 million), revealing a material delivery gap despite increased pledged commitments during implementation.

338. The global coordinating project operated under sustained human resource and management funding constraints that affected operational efficiency and continuity. Although project extensions were granted to address implementation delays, corresponding increases in project management cost allocations were not provided, requiring UNEP to rely on internal co-financing, short-term staffing arrangements, and ad hoc budget reallocations to maintain delivery.

339. **Monitoring and reporting:** The programme-level Monitoring and Evaluation (M&E) architecture was structurally weak from the outset, as the PFD did not include a comprehensive M&E plan, common outcome indicators (beyond GHG reductions), measurable baselines, or an aggregate framework for tracking collective progress across child projects. Individual child projects, alongside the global coordinating project, established their own M&E frameworks during CEO endorsement, resulting in a fragmented monitoring structure. While Project 9337 applied the GEF Monitoring Framework for National Child Projects and maintained baseline data to track market transformation progress, this approach

did not fully substitute for an integrated programme-wide results system, thereby constraining strategic oversight and consolidated performance assessment at the portfolio level.

340. Programme-level systematic performance reporting was largely absent until 30 June 2025, when the GEF introduced the requirement for the PPMR. Prior to this, reporting occurred primarily at the individual child project level, without an integrated mechanism to assess cumulative outcomes, cross-cutting risks, or systemic bottlenecks across the portfolio. While climate-related indicators, particularly GHG emission reductions and energy savings, were consistently tracked, other environmental dimensions, including hazardous waste management and full life-cycle impacts of energy-efficient products, were under-reported and inconsistently measured.

341. **Programme integration:** The programme design reflects a coherent, albeit implicit, application of systems thinking by addressing EE market transformation as an interconnected policy, institutional, and market ecosystem rather than as a narrow technical intervention. It clearly defines system boundaries around national and regional markets for lighting, appliances, and equipment, incorporating regulatory frameworks, institutional capacities, supply chains, financing mechanisms, consumer behaviour, and end-of-life management within a unified transformation logic.

342. The programme demonstrates a high degree of operational integration, effectively linking global knowledge generation with country-level application despite political and contextual constraints. Integration was achieved through the development of shared global public goods—such as Model Regulation Guidelines and Country Savings Assessments, combined with sustained hands-on technical backstopping to national child projects across the policy cycle, from market assessment to enforcement readiness. Cross-project learning mechanisms, including regional workshops, webinars, technical working groups, and collaboration with non-GEF initiatives, reinforced coherence, reduced duplication, and enabled continuous refinement of tools through real-world feedback.

343. The widespread referencing of U4E tools by major international actors underscores its role as a global knowledge broker and standard-setter. While visibility at the country level has been more limited—due to the intentional positioning of national institutions as front-facing implementers, U4E's influence remains structurally embedded within policy and regulatory processes, reflecting a deliberate and effective programmatic design that prioritizes national ownership alongside global coordination.

344. U4E has evolved into a recognized and credible implementation platform for EE market transformation beyond the original GEF-funded programme, reflecting institutional maturity and accumulated technical expertise. Its structured methodologies, model regulations, analytical tools, and technical backstopping capacity have positioned it as a trusted delivery partner, as evidenced by partnerships with external initiatives such as the Climate and Clean Air Coalition (CCAC), including implementation in the Dominican Republic and subsequent collaboration in Côte d'Ivoire and Liberia.

345. Furthermore, U4E's alignment with legally binding multilateral environmental agreements—particularly the Minamata Convention and the Kigali Amendment—strengthens the political legitimacy, durability, and sustainability of its interventions by embedding energy efficiency reforms within broader international compliance frameworks. This strategic positioning enhances long-term policy anchoring and reinforces U4E's role not only as a knowledge broker but as a durable institutional platform supporting systemic environmental transitions.

346. Regional harmonization stands out as one of the programme's most impactful integration achievements, advancing regulatory convergence and reducing trade barriers across ASEAN, Latin America and the Caribbean, and the SADC region. Regional stakeholders consistently identify harmonization of energy efficiency standards as a strategic catalyst for cost reduction and accelerated market transformation. Aligning MEPS, testing procedures, and labelling requirements across countries reduces compliance burdens for manufacturers and importers, enables economies of scale, and lowers certification and transaction costs, while minimizing market fragmentation and regulatory arbitrage. Harmonized standards also expand effective market size, improve product availability, and facilitate coordinated enforcement within regional economic communities. Beyond technical alignment, harmonization is perceived as a strategic tool that shortens policy development timelines, enhances regulatory coherence, and strengthens the commercial viability of high-efficiency products across borders, thereby reinforcing the scalability and sustainability of market transformation efforts.

347. **Additionality:** The GEF's additionality in this programme is most evident in its ability to address systemic and structural barriers to EE market transformation at a scale and level of coordination unlikely to have been achieved through isolated national or bilateral efforts. Through its programmatic design, GEF financing enabled the development of a coordinated global platform that tackled regulatory, institutional, and market barriers simultaneously. The programme's highest added value lies in the creation of global public goods, standardized tools, model regulations, analytical benchmarks, and technical guidance, that are scalable, and transferable across countries. These shared assets not only strengthened participating child projects but also supported non-GEF initiatives and promoted regional harmonization, establishing a durable global knowledge and regulatory infrastructure that extends well beyond the immediate portfolio and underpins sustained EE market transformation.

***Strategic Question 4: Has the programme effectively contributed to knowledge sharing on best practices among its child projects?***

348. **Knowledge management:** The programme made a deliberate and strategically significant investment in closing the knowledge management gap in developing countries with respect to EE policy and regulatory frameworks. It successfully delivered an extensive portfolio of high-quality, policy-relevant global public goods, including updated model regulations, technical guidance, procurement tools, case studies, and online training materials, while institutionalizing cross-country learning through peer networks, study tours, and technical exchanges.

349. The programme's multi-channel dissemination strategy, anchored in a centralized knowledge platform and reinforced through newsletters, social media, and structured stakeholder consultations, has ensured broad reach and responsiveness to country needs. However, monitoring of knowledge uptake remains largely output-focused, relying on participation metrics and download statistics, with limited evidence of systematic tracking of how tools are applied in national policy processes. Strengthening engagement analytics, user feedback mechanisms, and outcome-oriented monitoring would enhance the ability to demonstrate real-world utilization and influence, thereby reinforcing the programme's adaptive management and long-term impact.

350. **Sustainability:** Persistent energy and electricity subsidies across multiple country contexts, such as Tunisia and Indonesia, have weakened the economic incentive for investment in high-efficiency products by dampening price signals and extending payback periods. Together, political instability and tariff distortions have reduced reform momentum, constrained market uptake, and limited the pace at which regulatory and market transformation measures could translate into sustained behavioural and structural change.



351. A key sustainability risk across the programme relates to the adequacy and continuity of financing for both regulatory enforcement and market uptake mechanisms. In particular, insufficient and unstable budget allocations for MVE infrastructure pose a systemic risk: without sustained funding for laboratories, inspections, customs controls, and compliance systems, formally adopted MEPS may fail to deliver durable market transformation. While Tunisia demonstrates relatively advanced and scalable financing arrangements—successfully leveraging the FTE and PROMOLED to mobilize blended finance and large-scale LED distribution—other countries show more nascent or uneven progress. Indonesia has identified diversified financing models (multi-year budgeting, central loans, PPPs, and ESCOs), yet practical uptake remains limited and largely pilot-based. In several other child projects, sustainable financing mechanisms remain underdeveloped.

352. The long-term sustainability of the U4E initiative, including its role as a center of excellence, remains partially dependent on continued project-based and donor funding. Although U4E has demonstrated strong resource mobilization capacity and successfully diversified its funding base beyond the GEF period, securing support from bilateral donors, philanthropic foundations, and national governments, its financial model is not yet fully institutionalized or insulated from fluctuations in donor priorities. Emerging models such as the Rwanda Cooling Centre of Excellence, which is transitioning toward service-based revenue generation through fee-based training, testing services, and convening functions, provide a relevant pathway toward enhanced financial resilience. However, until such mechanisms are operationalized at scale, U4E's long-term institutional sustainability remains promising but not yet fully secured.

353. The programme's financial trajectory reveals structural constraints in sustaining global energy efficiency programming. After three successive initiatives, the GEF seems to have limited allocations dedicated for global support for the appliances sector, considering it sufficiently mature, despite the inherently long-term and iterative nature of regulatory market transformation. Alternative funding pathways have proven misaligned: the Green Climate Fund's loan-based instruments do not fit U4E's grant-based technical assistance model, and UNEP lacks a lending mandate; bilateral donors increasingly favor geographically bounded, attribution-focused investments over global platforms delivering systemic but less visible impacts; and UNEP's limited core budget leaves coordination and secretariat functions dependent on project-based funding. The global funding landscape for energy efficiency has become increasingly challenging, with many climate finance institutions shifting toward loan-based financing models for energy efficiency investments. Given that U4E's comparative advantage and value proposition are primarily centered on technical assistance and policy support, this trend has complicated donor engagement and constrained opportunities for resource mobilization. This misalignment persists even as the global target to double the rate of energy efficiency improvement by 2030 remains off track, underscoring a structural financing gap and the continued need for sustained, predictable programmatic investment in efficiency as a foundational mitigation pillar.

354. **Stakeholders Participation:** The global coordination project implemented a broad, inclusive, and strategically effective stakeholder engagement approach that extended beyond formal programme participants to include additional countries and global actors engaged in aligned energy efficiency initiatives. Participating countries consistently viewed engagement with the global programme as technically valuable and strategically important, particularly for access to standardized tools, policy templates, and capacity-building support that accelerated national progress on MEPS, labelling, and MVE systems. The global project functioned effectively as a technical backbone and coordination platform, enhancing coherence, reducing duplication, and facilitating cross-country learning. Moreover, U4E's diplomatic convening capacity, characterized by neutrality, credibility, and responsiveness, was widely recognized as a critical asset, enabling constructive dialogue among governments, regional bodies,

industry, and international organizations on complex and politically sensitive regulatory reforms.

***Strategic Question 1: In what ways, and to what extent, was the private sector involved in programme design, implementation and monitoring?***

355. The programme implemented structured and sustained private sector engagement that was technically robust and strategically valuable, though primarily non-financial in nature. Major international manufacturers and industry actors were actively involved in consultations, workshops, technical guidance development, and data-sharing processes, ensuring that MEPS, labelling, and MVE frameworks were technically feasible, market-relevant, and aligned with innovation trends. This engagement strengthened regulatory quality, fostered industry buy-in, and reduced implementation risks, while in-kind contributions such as expertise, hosting support, and non-confidential market data, constituted meaningful co-financing. Despite evolving market dynamics, ownership changes, and technological shifts, particularly in the commodifying lighting sector, U4E maintained stable industry engagement. Private sector stakeholders consistently emphasized three core priorities: regulatory clarity and harmonization (compliance), consumer affordability, and robust enforcement to ensure fair competition.

356. Partnerships with technical institutions such as Lawrence Berkeley National Laboratory significantly strengthened regulatory quality, particularly in appliance performance standards and air conditioner guidelines, which were adapted to country contexts. The programme also leveraged a broad network of international and regional organizations—including Clean Cooling Collaborative, ClimateWorks Foundation, NRDC, ICA, BASE, IIEC, SACREEE, AFREC, and UNIDO—through joint implementation, co-development of analytical tools, and participation in technical working groups.

357. However, private sector participation remained largely technical rather than investment-oriented, with limited mobilization of structured financing mechanisms or private capital for scaling EE deployment. Private sector participation has rarely translated into the establishment of dedicated financing mechanisms or significant direct financial contributions to scale energy efficiency investments.

358. Private sector engagement at the country level was uneven across the portfolio, reflecting contextual conditions, project maturity, and political stability. Indonesia represents the most structured and comprehensive example, where manufacturers were actively involved in MEPS consultations, pilot demonstrations, financing model design (ESCO, PPP, shared savings), and integration into national procurement systems—supporting both regulatory reform and downstream market uptake. Tunisia and Chile engaged industry primarily on regulatory readiness and awareness, while engagement remained minimal in Sudan, Myanmar, Kazakhstan, and South Africa due to political instability, suspension, or delayed project start-up. In Costa Rica, private sector participation was largely transactional through procurement channels rather than policy or financing dialogue.

359. Other examples demonstrating how private sector engagement contributed to market uptake and the expansion of financial support mechanisms include, in Chile, where companies such as Sodimac, together with manufacturers, actively supported the implementation of the Refriclaje replacement programme by providing consumer-facing incentives and discounts for efficient appliances, thereby facilitating market adoption of energy-efficient products. In addition, U4E engagement helped catalyze broader industry commitments at scale, including Electrolux's announcement of a major investment to accelerate sustainable cooling solutions. These examples illustrate how collaboration with private sector actors not only supported

programme implementation but also leveraged wider market transformation and industry action toward energy-efficient technologies.

360. The table below provides a summary of the ratings and finding discussed in Chapter 5. Overall, the programme demonstrates a rating of **‘Moderately Satisfactory’**.

**Table 13. Summary of programme findings and ratings<sup>45</sup>**

| Criterion                                                                         | Summary assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Rating    |
|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Strategic Relevance</b>                                                        | The Programme is strategically well aligned with UNEP’s Medium-Term Strategy, Programme of Work, and GEF-6 Climate Change Mitigation priorities. It advances resource efficiency, sustainable consumption and production, and low-emission development through regulatory reform (MEPS and labelling), institutional strengthening (MVE systems), regional harmonization, and the provision of global public goods via U4E. In doing so, it contributes directly to SDG 7, SDG 12, and GEF-6 CCM-1 objectives.                                                                                                                                                                                                                                                                                                                                                                 | <b>S</b>  |
| Alignment to UNEP MTS, POW and Strategic Priorities                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>S</b>  |
| Alignment to UNEP Donor/GEF/Partner strategic priorities                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>S</b>  |
| Relevance to global, regional, sub-regional and national environmental priorities |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>S</b>  |
| Complementarity with existing interventions/ Coherence                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>S</b>  |
| <b>Quality of Programme Design</b>                                                | The Global Leapfrogging Programme was designed as a coherent and flexible intervention grounded in systems thinking and a “leapfrogging” approach, offering an integrated, menu-based framework to address regulatory, technical, and capacity barriers to energy efficiency market transformation. However, at programme level, the design remained largely conceptual. The Programme Framework Document did not include a comprehensive Theory of Change, detailed barrier analysis, unified monitoring and evaluation framework, or consolidated operational plan. Although this reflects broader structural limitations of GEF programmatic modalities rather than a programme-specific flaw, it nonetheless limited programme-level coherence, collective performance tracking, and clear articulation of cumulative impact.                                              | <b>MU</b> |
| <b>Nature of External Context</b>                                                 | The Programme’s implementation was significantly disrupted by external shocks and structural political constraints beyond its control, including the COVID-19 pandemic, political instability in countries such as Myanmar and Sudan, the prolonged suspension of the Kazakhstan project, global inflationary pressures, and delays in high-level political approvals. These factors affected project start-up, stakeholder engagement, procurement, regulatory endorsement—particularly MEPS approval—and enforcement processes. As a result, several projects experienced suspensions, cost overruns, scaled-down activities, and extended timelines. Collectively, these exogenous risks constrained delivery efficiency, slowed regulatory reform momentum, and delayed the achievement of intended environmental and market transformation outcomes across the portfolio. | <b>MF</b> |
| <b>Effectiveness</b>                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>MS</b> |
| Availability of outputs                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <b>NA</b> |

<sup>45</sup> These ratings were given based on the outcomes achieved in countries that were able to implement the programme (i.e it doesn’t account for the countries where the programme was suspended).

| Criterion                                                 | Summary assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Rating |
|-----------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 1. Achievement of programme outcomes                      | In countries where implementation advanced, the programme has contributed to gradual but tangible structural improvements in energy efficiency markets, notably through the adoption or finalization of MEPS and labelling regulations, strengthened testing and certification systems, and enhanced market surveillance frameworks. However, market transformation remains incremental and long-term in nature, with full impacts likely to materialize beyond the programme period. Progress has been limited by affordability barriers—particularly in contexts of subsidized electricity and constrained access to finance—as well as delays in regulatory approval and challenges in enforcing standards. The continued presence of informal and non-compliant products further weakens effectiveness, highlighting that while essential policy and institutional foundations are increasingly established, sustained enforcement capacity, financing mechanisms, and institutional support are necessary to achieve durable and scalable transformation.                                                                                                                                                                                                                                                        | MS     |
| 2. Likelihood of impact                                   | The programme has achieved mixed results at impact level. By mid-2025, about 50% of the CO <sub>2</sub> reduction target had been reached, constrained by project suspensions, delayed implementation, and slow regulatory approval and enforcement processes. Energy savings performance is much stronger (around 96% of target), showing that early policy measures can deliver measurable reductions in energy use even before full market transformation occurs. Beneficiary targets remain largely unmet due to delays and the indirect, system-wide nature of energy efficiency impacts. Differences across indicators reflect timing effects and limitations in original target-setting rather than a lack of structural progress. While the programme is likely generating significant economic and environmental co-benefits—such as cost savings, reduced peak demand, improved energy security, and avoided hazardous waste—these have not been systematically quantified at programme level. Monetary valuation of energy savings and lifecycle environmental impacts remains limited, constraining full visibility of the programme's broader benefits.                                                                                                                                                  | ML     |
| <b>Financial Management</b>                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | N/A    |
| Adherence to UNEP's financial policies and procedures     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | N/A    |
| Completeness of programme / project financial information |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | N/A    |
| <b>Efficiency</b>                                         | The programme demonstrates strong cost-effectiveness through its centralized, programmatic design, which developed global public goods—such as model regulations, Country Savings Assessments, MEPS and MVE guidance, and regional harmonization roadmaps—for use across multiple countries. This approach reduced duplication, lowered transaction costs, and ensured alignment with international best practice, while targeted technical backstopping enabled pilot projects to build on standardized tools rather than commission new country-specific analyses. However, time and financial efficiency were significantly constrained by delayed and misaligned national implementation. Political instability, administrative bottlenecks, COVID-19 disruptions, and weak readiness planning led to asynchronous progress, with some projects delayed by more than four years. As of June 2025, only 42% of the approved budget had been disbursed (excluding suspended projects), with wide variation across countries and a co-financing realization rate of 55% of the revised target. The global coordinating project also operated under sustained management funding constraints, relying on internal co-financing and short-term staffing adjustments to maintain continuity despite extended timelines. | MU     |
| <b>Monitoring and Reporting</b>                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | MU     |

| Criterion                                 | Summary assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Rating    |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 1. Monitoring design and budgeting        | The programme's Monitoring and Evaluation architecture was weak at design stage, as the PFD lacked a comprehensive M&E plan, shared outcome indicators beyond GHG reductions, measurable baselines, and an aggregate framework for tracking collective progress. Instead, individual child projects and the global coordinating project developed separate M&E systems at CEO endorsement, resulting in a fragmented structure. Although the global project (GEF ID 9337) applied the GEF Monitoring Framework and tracked baseline data to assess market transformation, this did not fully compensate for the absence of an integrated programme-wide results system, limiting consolidated performance tracking and strategic oversight at portfolio level.                                                                                                                                                    | <b>U</b>  |
| 2. Monitoring of programme implementation | While climate indicators—particularly GHG emission reductions and energy savings—were regularly tracked, other environmental aspects, such as hazardous waste management and full life-cycle impacts of energy-efficient products, were under-reported and inconsistently measured.<br>The PSC was mandated to meet annually to provide strategic oversight, coordination, and portfolio-level guidance, however, the PSC met only twice—once in May 2018 and again in March 2022—resulting in substantial gaps in formal oversight and structured coordination during intervening years.                                                                                                                                                                                                                                                                                                                         | <b>MS</b> |
| 3. Programme reporting                    | Programme-level systematic performance reporting was largely absent until the introduction of the PPMR requirement on 30 June 2025. Before this, reporting was conducted mainly at the level of individual child projects, without a consolidated mechanism to assess cumulative results, shared risks, or systemic bottlenecks across the portfolio.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>MU</b> |
| <b>Sustainability</b>                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>ML</b> |
| 1. Socio-political sustainability         | Programme outcomes were significantly constrained by political instability in several participating countries, particularly Myanmar and Sudan. Prolonged governance disruption in both contexts led to the suspension of activities, halting implementation and delaying planned outputs. These interruptions affected policy development, stakeholder engagement, and institutional coordination—core prerequisites for advancing energy efficiency market transformation. Beyond operational delays, instability also resulted in the de-prioritisation of energy efficiency at national level. In crisis settings, government attention and resources shifted toward urgent political, security, and humanitarian needs, reducing institutional capacity and policy space to advance reforms such as the development, approval, and enforcement of minimum energy performance standards.                       | <b>ML</b> |
| 2. Financial sustainability               | A major sustainability risk across the programme concerns the adequacy and continuity of financing for regulatory enforcement and market uptake. Insufficient and unstable budget allocations for MVE infrastructure—such as laboratories, inspections, customs controls, and compliance systems—pose a systemic threat, as adopted MEPS cannot deliver lasting market transformation without sustained enforcement funding.<br>Persistent energy and electricity subsidies in several participating countries, including Tunisia and Indonesia, have weakened incentives to invest in high-efficiency products by distorting price signals and lengthening payback periods. Combined with political instability, these tariff distortions have slowed reform momentum, constrained market uptake, and limited the speed at which regulatory measures translate into sustained behavioural and structural change. | <b>ML</b> |

| Criterion                                       | Summary assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Rating   |
|-------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| 3. Institutional sustainability                 | The long-term sustainability of the U4E initiative, including its role as a centre of excellence, remains partly dependent on continued project-based and donor funding. Although U4E has successfully diversified its resource base beyond the GEF period—securing support from bilateral donors, philanthropic foundations, and national governments—its financial model is not yet fully institutionalised or shielded from shifts in donor priorities. Emerging approaches, such as the Rwanda Cooling Centre of Excellence, which is moving toward service-based revenue generation through fee-based training, testing, and convening functions, offer a potential pathway to greater financial resilience. However, until such models are scaled and embedded, U4E’s long-term institutional sustainability remains promising but not fully secured.                                                                                                                                                                     | ML       |
| <b>Factors Affecting Performance</b>            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>S</b> |
| 1. Preparation and readiness                    | Beyond the PFD, no dedicated programme-level planning process was undertaken to operationalize the programmatic approach. There was no consolidated work plan, procurement plan, or integrated budget to guide implementation across the portfolio. Instead, planning and operational arrangements were developed separately by the global coordinating project and by each child project following CEO endorsement. Consequently, programme management relied on the aggregation of individual project plans rather than on a unified programmatic framework. UNEP assumed overall coordination responsibility through the global coordinating project. A programme team—comprising programme officers, technical specialists, communications staff, regional UNEP officers, and expert consultants—was established to provide oversight, technical backstopping, and knowledge management support across the child projects.                                                                                                  | MS       |
| Quality of programme management and supervision |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <b>S</b> |
| 2.1. UNEP/Implementing Agency:                  | UNEP GEF Climate Change Mitigation Unit under the Global Climate Change Division is the implementing agency who has been playing the role of programme oversight and quality assurance. UNEP Global Climate Action Unit, under the same division, represents the GEF executing agency responsible for programme execution.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>S</b> |
| 2.2 Partners/Executing Agency:                  | As lead agency, UNEP coordinated the programme through the Global Project (GEF ID 9337), providing tailored technical support to national child projects, including market baselines, Country Savings Assessments, model regulations, financing guidance, and strategic partnerships. This hands-on coordination strengthened coherence, reduced duplication, and enhanced the quality of country-level interventions. Through its Centre of Excellence, UNEP also developed common methodologies, supported MVE systems, generated country data, and helped build global political consensus, reinforcing its role as the programme’s technical backbone.                                                                                                                                                                                                                                                                                                                                                                      | <b>S</b> |
| 2. Stakeholders’ participation and cooperation  | The global coordination project adopted an inclusive and strategically effective stakeholder engagement approach, extending beyond formal programme participants to involve additional countries and international actors active in energy efficiency. Participating countries consistently regarded engagement with the global programme as technically valuable, particularly for access to standardized tools, policy templates, and capacity-building support that accelerated progress on MEPS, labelling, and MVE systems. The global project operated as an effective technical backbone and coordination platform, strengthening coherence, reducing duplication, and promoting cross-country learning. U4E’s diplomatic convening role—marked by neutrality, credibility, and responsiveness—was widely acknowledged as a key asset in facilitating constructive dialogue among governments, regional institutions, industry, and international organizations on complex and politically sensitive regulatory reforms. | HS       |

| Criterion                                             | Summary assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Rating    |
|-------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 3. Responsiveness to human rights and gender equality | Gender equality and human rights were not systematically integrated at programme design stage, as the PFD lacked explicit analysis, objectives, and indicators addressing differentiated impacts, and responsibility for gender mainstreaming was largely delegated to child projects. Although U4E established a generic Gender Mainstreaming Implementation Plan and promoted inclusive participation in trainings and consultations, gender considerations were mostly applied at the process level rather than embedded in core market mechanisms such as financing, procurement, and regulatory incentives. As a result, structural barriers affecting women's access to finance and participation in energy efficiency value chains were not substantively addressed, and women represent only 35% of reported beneficiaries—below the programme's parity ambition—reflecting both limited strategic integration and the indirect nature of many programme benefits. | S         |
| 4. Environmental and social safeguards                | Environmental and social safeguards were primarily implemented at the level of individual child projects, where product-specific risks related to lighting, refrigeration, air conditioning, and other equipment were addressed in line with national regulations and international standards. Environmental sustainability was further strengthened through the programme's Integrated Policy Approach, particularly the incorporation of ESM systems to manage obsolete and hazardous products at end-of-life. By promoting proper collection, recycling, and disposal—especially for equipment containing substances such as mercury—the programme helped mitigate environmental and health risks, ensuring that energy efficiency gains were not undermined by unintended negative impacts.                                                                                                                                                                            | S         |
| 5. Country ownership and driven-ness                  | The programme demonstrates strong ownership at the global and, in several cases, national policy levels, particularly where regulatory reforms have been formally adopted and institutionalized. U4E's mandate is closely aligned with the programme's objectives, reinforcing its role as a global centre of excellence. Countries such as Chile, Indonesia, and Tunisia exhibit high levels of policy and institutional ownership, with MEPS and labelling regulations embedded in procurement, testing, and enforcement systems. However, operational ownership has been weaker in contexts affected by political instability, delayed start-up, or limited institutional capacity—such as Sudan, Myanmar, South Africa, and Kazakhstan—highlighting that sustained implementation depends not only on formal policy commitments but also on stable governance and adequate institutional capacity.                                                                     | MS        |
| 6. Communication and public awareness                 | The Global Coordinating Project maintained effective and consistent communication with participating countries, with national counterparts expressing high satisfaction regarding the frequency, quality, and inclusiveness of engagement. Remote coordination—particularly during and after the COVID-19 period—proved effective in sustaining dialogue, technical exchange, and collective learning across regions. At country level, communication and public awareness were primarily used as enabling tools to support acceptance of MEPS, labelling, and procurement reforms, rather than as large-scale behaviour-change campaigns. While most child projects implemented targeted awareness activities, limited reporting on reach, behavioural outcomes, and long-term communication strategies constrains evidence of sustained impact.                                                                                                                          | MS        |
| <b>Overall Programme Performance Rating</b>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>MS</b> |



## 6.2 Lessons learned

|                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lesson Learned #1:</b> | <b>Market transformation is gradual and sequential</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Context/ comment:</b>  | <p>The programme experience confirms that energy efficiency market transformation is inherently a staged and incremental process rather than an immediate outcome of regulatory adoption. Reform typically follows a structured pathway: initial market assessments and policy design; formal adoption of MEPS and labelling regulations; institutionalization of MVE systems; operational enforcement and compliance; and, finally, sustained shifts in supply chains and consumer behaviour. Each phase builds upon the previous one, and delays at any stage can affect downstream results. While energy savings may begin to accrue relatively early—particularly through pilot interventions, public procurement, or partial compliance—broader GHG reductions and large-scale beneficiary impacts generally materialize over longer time horizons. These impacts depend on deep market penetration of high-efficiency products, robust enforcement, and behavioural adaptation by consumers and market actors.</p> <p>Accordingly, programme design and performance frameworks should reflect the sequential and cumulative nature of systemic market change. Targets for emissions reductions, beneficiary reach, and market penetration must be calibrated to realistic reform timelines, particularly in contexts where institutional capacity, regulatory processes, or political approvals may slow implementation. Recognizing and planning for this gradual progression strengthens strategic planning, improves expectation management, and enhances the credibility of impact projections in future market transformation initiatives.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Lesson Learned #2:</b> | <b>Strengthening programme-level governance and results architecture is core to realizing the full potential of the programmatic approach</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Context/comment:</b>   | <p>The programmatic approach demonstrated clear added value by enabling the creation of global public goods, centralized technical expertise, and economies of scale that would not have been achievable through isolated country projects. By developing model regulations, analytical tools, harmonization roadmaps, and standardized guidance once at the global level and deploying them across multiple countries, the programme reduced duplication, lowered transaction costs, ensured consistency with international best practice, and accelerated national reform processes. Centralized technical backstopping further enhanced quality assurance and enabled peer learning across countries, reinforcing systemic market transformation beyond individual project boundaries.</p> <p>However, the experience also shows that the effectiveness of a programmatic model depends critically on the existence of a robust programme-level governance and results architecture. In the absence of a clearly articulated programme-level Theory of Change (ToC), consolidated results framework, and integrated M&amp;E system—with dedicated budget allocations for coordination and oversight—portfolio coherence can weaken over time. Child projects may evolve independently, making it difficult to track cumulative impact, manage cross-cutting risks, assess synergies, or adapt strategically at the portfolio level. Without common indicators and an aggregate performance dashboard, systemic achievements remain implicit rather than demonstrable.</p> <p>Future programmatic initiatives should therefore institutionalize a comprehensive programme-level ToC, harmonized indicators, baseline data, and a consolidated monitoring platform from inception. Dedicated financial resources for programme-level coordination and M&amp;E are essential to ensure strategic alignment, adaptive management, and credible measurement of cumulative global environmental benefits. Strengthening this architectural foundation would enhance both accountability and effectiveness, allowing programmatic approaches to fully realize their transformational potential.</p> |



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| <b>Lesson Learned #3:</b> | <b>Regional harmonization is a strategic multiplier for market transformation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Context/comment:</b>   | <p>The experience of the programme demonstrates that regional harmonization of MEPS, testing protocols, and labelling requirements serves as a powerful accelerator of energy efficiency market transformation particularly given the programme work on ASEAN, Latin America and the Caribbean, and the SADC regions. Aligning standards across countries reduces compliance complexity for manufacturers and importers, who otherwise must navigate multiple regulatory regimes, testing procedures, and certification requirements. This streamlining lowers transaction and certification costs, facilitates economies of scale in production and distribution, and increases the commercial attractiveness of high-efficiency products.</p> <p>For smaller or fragmented national markets, regional alignment is particularly transformative. Individually, such markets may lack sufficient scale to influence global manufacturers or justify investments in local testing infrastructure. However, when aggregated through regional platforms—such as economic communities or ministerial coordination mechanisms—they create larger, more predictable demand signals that can shift supply chains and accelerate the availability of compliant, high-efficiency technologies. Harmonized standards also shorten reform timelines by allowing countries to adopt or adapt pre-agreed regional benchmarks rather than designing regulations independently from scratch.</p> <p>Beyond economic efficiency, regional harmonization strengthens regulatory credibility and enforcement effectiveness. Coordinated approaches reduce the risk of regulatory arbitrage, support shared learning among regulators, and may enable joint procurement or shared compliance mechanisms. As such, regional platforms function not merely as forums for dialogue, but as strategic multipliers that amplify policy impact, enhance cost-effectiveness, and accelerate systemic transformation across interconnected markets.</p> |
| <b>Lesson Learned #4:</b> | <b>Global public goods are the programme’s most enduring legacy that serves a broad range of countries and initiatives in energy efficiency market transformation in the long term</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Context/comment:</b>   | <p>The programme’s most durable and systemic contribution lies not solely in individual country-level reforms, but in the establishment of a shared global regulatory and technical infrastructure that transcends the lifespan of specific projects. By developing standardized model regulations, analytical tools, Country Savings Assessments, MVE guidance, ESM frameworks, and harmonization roadmaps, the programme created non-excludable global public goods that continue to serve a broad range of countries and initiatives. These resources significantly lowered entry barriers for governments seeking to advance energy efficiency policies, reduced duplication of effort, and ensured alignment with international best practice. Importantly, the tools have been applied not only within GEF-funded child projects but also in non-GEF initiatives, regional programmes, and climate finance proposals, demonstrating scalability and transferability beyond the original portfolio.</p> <p>As a result, the programme’s strongest legacy is the institutionalization of a global knowledge and regulatory backbone that supports ongoing policy development, accelerates reform processes, and sustains international momentum on energy efficiency market transformation. This global public goods function represents a long-term structural asset that will continue to generate environmental and economic benefits well beyond the programme’s operational timeframe.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

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| <b>Lesson Learned #5:</b> | <b>Affordability and subsidy structures are critical barriers that influence consumer uptake in energy efficiency markets. Integrating financing mechanisms and tariff reform help to drive demand-side transformation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Context/comment:</b>   | <p>The programme experience highlights that affordability remains the principal constraint on demand-side transformation in energy efficiency markets. High upfront costs for efficient appliances and equipment—combined with limited access to consumer credit—significantly reduce willingness to invest, particularly among low- and middle-income households and budget-constrained public institutions. This challenge is further compounded in contexts where electricity tariffs are subsidized, as artificially low energy prices weaken the financial incentive to prioritize lifecycle cost savings over initial purchase price.</p> <p>Regulatory measures such as MEPS and labelling are necessary to shape supply and remove the least efficient products from the market; however, they are not sufficient to accelerate widespread consumer adoption on their own. Complementary financial mechanisms—including energy service company (ESCO) models, public–private partnerships (PPPs), concessional credit lines, revolving funds, on-bill financing schemes, and targeted incentive programmes—are essential to bridge affordability gaps and shorten payback periods.</p> <p>Over the longer term, gradual and socially sensitive subsidy reform can strengthen price signals and enhance the economic rationale for efficiency investments. Without addressing underlying affordability constraints and tariff distortions, market transformation risks progressing more slowly than anticipated, regardless of regulatory readiness. Integrating financing strategies and demand-side incentives alongside policy reform is therefore critical for achieving sustained and inclusive energy efficiency uptake.</p> |
| <b>Lesson Learned #6:</b> | <b>Energy efficiency reform is a continuous process, not a one-time intervention</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Context/comment:</b>   | <p>The programme experience reinforces that EE market transformation is not a static achievement but an ongoing regulatory and institutional process. The rapid pace of technological innovation—particularly in lighting, cooling, motors, and digitalized appliances—means that MEPS, labelling thresholds, and testing protocols must be periodically reviewed and updated to remain ambitious and relevant. Without regular revision cycles, standards risk becoming outdated, allowing inefficient products to re-enter markets or slowing technological progress. Similarly, MVE systems require continuous strengthening to adapt to new product categories, evolving testing methodologies, and emerging compliance challenges. As markets mature, quality assurance mechanisms must also evolve to address issues such as product mislabelling, counterfeit goods, digital integration, and increasingly complex supply chains.</p> <p>Energy efficiency reform should therefore be institutionalized as a dynamic regulatory function embedded within national governance systems, supported by predictable budget allocations and technical capacity for periodic review. Establishing structured revision cycles, regional benchmarking mechanisms, and ongoing technical partnerships is essential to ensure that EE policies keep pace with technological advancements and continue to deliver sustained environmental and economic benefits over time.</p>                                                                                                                                                                                                                                                                 |

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| <b>Lesson Learned #7:</b> | <b>Limited private sector financial engagement constrains market scale, requiring a shift from technical collaboration to investment partnerships</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Context/comment:</b>   | <p>The programme demonstrates that private sector engagement is highly effective when focused on technical collaboration. Industry participation—particularly from manufacturers and technical associations—substantially improved the design, feasibility, and market realism of MEPS, labelling frameworks, and testing protocols. Structured consultations and technical exchanges ensured that regulatory ambition was aligned with manufacturing capabilities, supply-chain dynamics, and technological innovation trends, thereby strengthening compliance prospects and reducing implementation resistance.</p> <p>However, private sector engagement remained predominantly technical and in-kind, centred on data sharing, expert input, participation in workshops, and support for pilot activities. Direct mobilization of private capital, structured co-investment mechanisms, or scalable financing partnerships was limited across the portfolio. This represents a missed opportunity to leverage private financial flows to accelerate market penetration of high-efficiency products and reduce reliance on public or donor funding.</p> <p>Future initiatives should therefore deepen engagement beyond consultation toward structured financial collaboration—such as blended finance instruments, risk-sharing facilities, credit guarantees, ESCO aggregation models, and investment pipelines linked to procurement reforms. Strengthening the financial dimension of public–private collaboration would enhance sustainability, increase market scale, and reinforce the long-term viability of energy efficiency market transformation efforts.</p> |

## 6.3 Recommendations

361. The Programme's coordinating project has already operationally closed at the time of writing this report, leaving limited room for further adaptive management within its current framework. Therefore, the following recommendations are focused on strengthening the sustainability of programme outcomes through future programming activities and ongoing institutional efforts:

|                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| <p><b>Recommendation #1:</b></p>                                                      | <p><b>UNEP/U4E should implement a strategic repositioning and diversified financing framework to strengthen long-term financial resilience and elevate the visibility of energy efficiency as foundational climate infrastructure.</b></p> <p>Key actions should include:</p> <ol style="list-style-type: none"> <li>1. Rebrand and reposition under a "Sustainable Cooling" umbrella: Frame U4E's work within a broader sustainable cooling narrative, encompassing MEPS for air conditioners, refrigerators, cold chains, and fans, while expanding into complementary areas such as passive cooling, building envelope improvements, insulation standards, and nature-based cooling solutions. This integrated framing aligns with rising global cooling demand and enhances relevance to adaptation, mitigation, and development agendas simultaneously.</li> <li>2. Align strategically with the Kigali amendment: Position energy efficiency standards as a co-benefit enabler of the Kigali Amendment's HFC phase-down commitments. Rather than allowing parallel climate agendas to compete for attention, integrate efficiency and refrigerant transition narratives to highlight combined mitigation impacts, cost savings, and compliance benefits.</li> <li>3. Diversify funding sources beyond GEF and GCF: Actively pursue bilateral development cooperation (e.g., Italian Development Cooperation and similar agencies), climate-aligned philanthropic funds, multilateral development bank technical assistance windows, and structured private sector partnerships. Establish multi-donor trust fund mechanisms where feasible to secure predictable, multi-year core funding.</li> <li>4. Strengthen the investment case: Quantify avoided infrastructure costs, macroeconomic savings, and energy security gains to reposition efficiency as "virtual generation capacity" and a cost-effective mitigation lever critical to meeting the off-track 2030 efficiency target.</li> <li>5. Pilot hybrid sustainability mechanisms: Explore complementary revenue-generating services, such as specialized training, testing coordination, and advisory packages for middle-income countries, while preserving universal access to core global public goods.</li> </ol> <p>By combining strategic repositioning, stronger alignment with global climate frameworks, and diversified financing channels, U4E can enhance its institutional resilience, reduce dependency on single donor streams, and secure the predictable operational continuity necessary to sustain long-term global energy efficiency market transformation.</p> |
| <p><b>Challenge/problem to be addressed by the recommendation:</b></p>                | <p>The programme faces a structural financing gap due to declining dedicated global funding for energy efficiency, misalignment with loan-based climate finance instruments, donor preference for country-bound investments, and limited institutional core resources. At the same time, the value proposition of systemic regulatory and standards-based interventions remains insufficiently differentiated within a crowded climate agenda, where efficiency is often overshadowed by renewable energy and adaptation investments.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p><b>Priority Level:</b></p>                                                         | <p>Important</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <p><b>Type of Recommendation</b></p>                                                  | <p>Partners</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p><b>Responsibility:</b></p>                                                         | <p>U4E</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>Proposed implementation time-frame:</b></p>                                     | <p>2026</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p>Cross-reference(s) to rationale and supporting discussions: Paragraph 352, 353</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

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| <p><b>Recommendation #2:</b></p>                                                        | <p><b>Further strengthen advocacy and technical assistance for the regional harmonization of EE standards, including MEPS, labelling schemes, and testing protocols.</b> The programme advocated harmonisation in ASEAN, Latin America and the Caribbean, and the SADC regions, but this line of work still requires more investment based on stakeholders feedback. Harmonized frameworks reduce regulatory fragmentation, expand effective market size, and provide clearer, more predictable compliance pathways for manufacturers. This alignment improves product quality by setting consistent performance benchmarks across countries and encourages manufacturers to supply higher-efficiency technologies at competitive prices due to aggregated demand.</p> <p>Regional harmonization also reduces the need for duplicative national testing facilities by enabling mutual recognition of test results, shared laboratory infrastructure, or regional centres of excellence. This can significantly lower public investment costs in testing equipment and reduce ongoing operational expenditures. For smaller markets, pooled demand and aligned standards create stronger market signals, attract international suppliers, and accelerate technology diffusion.</p> <p>The programme should therefore continue to support regional economic communities, ministerial platforms, and technical working groups in developing common standards, mutual recognition agreements, and shared compliance mechanisms. Integrating harmonization efforts into regional trade frameworks and climate finance proposals can further enhance sustainability and scale. By promoting regulatory convergence, the initiative can strengthen product quality, reduce consumer prices over time, optimize testing infrastructure investments, and accelerate systemic market transformation across interconnected markets.</p> |
| <p><b>Challenge/problem to be addressed by the recommendation:</b></p>                  | <p>Fragmented national standards and testing requirements increase compliance complexity, raise certification and transaction costs, and limit economies of scale for manufacturers and importers. In small or segmented markets, differing MEPS thresholds, labelling formats, and testing protocols can discourage high-quality product supply, increase product prices, and create barriers to enforcement. Additionally, duplicative national testing infrastructure can strain limited public budgets, particularly in developing countries with constrained laboratory capacity.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Priority Level:</b></p>                                                           | <p>Important</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <p><b>Type of Recommendation</b></p>                                                    | <p>Partners</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p><b>Responsibility:</b></p>                                                           | <p>U4E</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Proposed implementation time-frame:</b></p>                                       | <p>April 2027</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <p><b>Cross-reference(s) to rationale and supporting discussions:</b> Paragraph 346</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

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| <b>Recommendation #3:</b>                                                        | <p><b>Develop and institutionalize a more robust monitoring system designed to capture outcome-level indicators of knowledge uptake and application.</b> This system should move beyond basic analytics to assess patterns of repeat engagement, depth and duration of interaction with online content, and documented application of U4E tools in national policy development, regulatory revisions, procurement guidelines, and enforcement systems. Enhancements could include structured user surveys targeting policymakers and technical experts; qualitative feedback mechanisms embedded in training programmes; systematic case-based follow-up with countries that adopt model regulations or technical guidance; and advanced digital analytics capable of tracking user pathways, return engagement, and content utilization trends. Establishing periodic “policy adoption tracking” exercises could further document how U4E resources influence MEPS revisions, harmonization efforts, or financing mechanisms.</p> <p>By shifting from dissemination metrics to demonstrated use and policy influence, the initiative would strengthen evidence of impact, improve strategic decision-making, and enhance accountability to donors and partners. A strengthened uptake-monitoring framework would also support continuous improvement of tools, ensuring that knowledge products remain relevant, demand-driven, and aligned with evolving country needs.</p> |
| <b>Challenge/problem to be addressed by the recommendation:</b>                  | <p>While the programme has successfully generated and disseminated a substantial portfolio of global public goods, current monitoring systems primarily track outputs—such as event participation, website visits, and document downloads—rather than actual utilization or policy influence. This output-focused tracking limits the ability to demonstrate how U4E tools and guidance are applied in national regulatory processes, institutional reforms, or market interventions. As a result, evidence of real-world uptake, behavioural change, and policy impact remains partial, constraining strategic learning, accountability, and adaptive management.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Priority Level:</b>                                                           | Important                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Type of Recommendation</b>                                                    | Partners                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Responsibility:</b>                                                           | U4E                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Proposed implementation time-frame:</b>                                       | June-December 2026                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Cross-reference(s) to rationale and supporting discussions:</b> Paragraph 340 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

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| <p><b>Recommendation #4:</b></p>                                                 | <p><b>Develop and institutionalize a methodology to systematically assess and monetize the economic and non-carbon environmental co-benefits generated by EE market transformation interventions.</b> This should include:</p> <ul style="list-style-type: none"> <li>• Quantification of cumulative household, commercial, and public-sector energy bill savings attributable to efficiency improvements.</li> <li>• Estimation of avoided or deferred investments in generation, transmission, and distribution infrastructure resulting from reduced peak demand.</li> <li>• Assessment of macroeconomic gains, such as improved energy security, reduced fuel imports, and productivity improvements linked to efficient equipment.</li> <li>• Measurement and reporting of hazardous waste volumes safely collected, treated, recycled, or avoided through ESM systems.</li> <li>• Incorporation of lifecycle impact assessments, including upstream manufacturing emissions and end-of-life environmental effects.</li> </ul> <p>These analyses can be integrated into programme reporting frameworks and future PPMRs, supported by standardized methodologies and country-level data templates. Where feasible, economic valuation techniques (e.g., net present value, cost-benefit analysis, avoided social cost of carbon, health cost avoidance) should be applied to translate technical outcomes into financial and socioeconomic terms. By strengthening the evidence base on co-benefits, the programme would enhance its strategic positioning with finance ministries, development banks, and climate funds, improve advocacy for subsidy reform and investment in enforcement systems, and demonstrate the full societal return on investment of energy efficiency reforms beyond carbon mitigation alone.</p> |
| <p><b>Challenge/problem to be addressed by the recommendation:</b></p>           | <p>While the programme has effectively tracked GHG emission reductions and energy savings, broader economic and environmental co-benefits remain largely unquantified. The absence of monetized estimates of energy bill savings, avoided infrastructure investments, productivity gains, and hazardous waste reductions limits the ability to present a comprehensive impact narrative. This constrains policy advocacy, weakens investment cases for scaling EE, and reduces the programme's leverage in mobilizing climate and development finance. Without systematic valuation, important co-benefits remain implicit rather than demonstrable.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| <p><b>Priority Level:</b></p>                                                    | <p>Important</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p><b>Type of Recommendation</b></p>                                             | <p>Partners</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Responsibility:</b></p>                                                    | <p>U4E</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <p><b>Proposed implementation time-frame:</b></p>                                | <p>June 2026 - May 2027</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <p>Cross-reference(s) to rationale and supporting discussions: Paragraph 340</p> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

## ANNEX I. RESPONSE TO STAKEHOLDER COMMENTS

### Response to stakeholder comments received but not (fully) accepted by the evaluator(s), where appropriate

| Paragraph Reference | Stakeholder comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Evaluators' Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | UNEP Evaluation Office Response                                                                                                                      |
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| 16                  | <p>It may be helpful to further clarify the composition and expected role of the private sector within the programme. In the U4E context, engagement has primarily involved manufacturers and technology providers, whose contributions are centered on technical inputs, product alignment, and market readiness. In this regard, their participation has been consistent with the programme's design and has contributed directly to the development and implementation of MEPS, labelling, and market transformation activities.</p> <p>For example, in Chile, companies such as Sodimac and appliance manufacturers supported the implementation of the <a href="#">Refriclaje</a> programme by enabling consumer-facing incentives and discounts for efficient appliances. In parallel, the project's engagement with global manufacturers such as <a href="#">Electrolux</a> has contributed to broader industry alignment and commitments towards sustainable cooling, including significant investment announcements linked to programme engagement.</p>                                                                                                                                                                                                                                                                                                                                                    | <p>This is noted as an implementation approach. From design perspective, there is no specific reference to this approach in the PFD, quite the contrary, the scope of menu option 4 goes beyond consultations with manufacturers, it aims primarily to establish finance mechanism.</p> <p>Examples mentioned in this comment have been integrated.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <p>The Evaluation Office finds that the response by the Evaluation Team addresses the comment satisfactorily.</p>                                    |
| 123 - 135           | <p>Project team respectfully disagrees with the rating of Moderately Unsatisfactory for Programme Design:</p> <ul style="list-style-type: none"> <li>○ The assessment appears to apply retrospective standards to the Programme Framework Document (PFD) that did not reflect GEF 6 programmatic requirements at the time of approval. Under GEF 6, programme design was intentionally distributed across the PFD and across child project documents and CEO endorsement requests, where baseline analyses, barrier diagnostics, results frameworks, risk mitigation measures, and detailed monitoring arrangements were comprehensively articulated. Assessing the PFD in isolation, and against contemporary expectations for a single consolidated design document, therefore understates the robustness of the programme's actual design package. Due to this structure and layout expected of GEF-6 programmes, the low rating on various criteria such as "Logical Framework and Monitoring", "Intended Results and Causality" as well as "Programme Preparation" within Programme Design is not fully representative of the expectations and standards at the time and is captured in a decentralized manner across child project documents instead.</li> <li>○ The programme's menu based architecture and built in flexibility were deliberate design features that enabled countries to tailor</li> </ul> | <p>It is totally understandable that the project design met the requirements at the time, and it was therefore approved for funding by the GEF, however that this is not conclusive of a good comprehensive design, hence the evaluation scope requires assessing the design. Assessing the design at this stage draws on important lessons for the future programming.</p> <p>Based on the evidence collected through the TE process, it has become clear that the lack detailed programme design document had important design and implementation implications. Most notably, it meant that no comprehensive Theory of Change was developed to illustrate how the various child projects would collectively contribute to shared programme-level outcomes. Without such a unifying framework, the strategic coherence across child projects remained implicit rather than explicit, making it difficult to assess interlinkages, synergies, and cumulative impacts.</p> | <p>The Evaluation Office notes that the Evaluation Team applied the guidance in the Rating Description Matrix correctly to arrive at the rating.</p> |



| Paragraph Reference | Stakeholder comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Evaluators' Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | UNEP Evaluation Office Response                                                                            |
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|                     | <p>interventions to highly diverse national contexts, a necessity for multi country market transformation under energy efficiency. This flexibility also allowed for National Ownership to remain at the heart of any planned interventions and acknowledged the national baseline scenario at the country-level in the process of designing child project documents.</p> <ul style="list-style-type: none"> <li>○ In light of these considerations, UNEP considers that the programme design was fit for purpose, consistent with GEF 6 norms, and is not accurately reflected by a Moderately Unsatisfactory rating</li> </ul>                                                                                                                                                                            | As for the menu options, the TE acknowledges that the menu options approach provided a structured yet highly flexible framework, allowing each country to tailor its interventions to its specific context—whether focused on developing regulatory mechanisms, strengthening monitoring and enforcement capacities, promoting supporting policies, or ensuring environmentally sound management                                                                                                                                                                                                                      |                                                                                                            |
| 123 - 124           | From a technical standpoint, the programme demonstrated coherence through the use of common methodologies and approaches across countries (U4E Integrated Policy Approach - e.g. MEPS, labelling, financing and supporting tools), while allowing flexibility for adaptation to national contexts. This type of decentralized but aligned design is consistent with the nature of multi-country market transformation programmes, where interventions must be tailored to different market and policy conditions.                                                                                                                                                                                                                                                                                           | Indeed, the common methodologies are important integration section – as acknowledged in section 5.7 of this report. The referenced paragraphs, however, talk about the coherence from a design point of view and the lack of integrated framework (ToC and PRF).                                                                                                                                                                                                                                                                                                                                                      | The Evaluation Office finds that the response by the Evaluation Team addresses the comment satisfactorily. |
| 239 - 240           | It is important to note that the programme has consistently tracked its core impact indicators, namely energy savings and GHG emission reductions, in line with its primary objectives. Other dimensions, such as hazardous waste and broader life-cycle impacts, were incorporated conceptually (e.g. through ESM approaches), but were not uniformly designed for systematic quantification across all countries. This reflects the technical scope and priorities of the programme, as well as variations in national capacity, rather than a lack of consideration.                                                                                                                                                                                                                                     | <p>Agree that the exclusion of key core indicators such as hazardous waste is more of a design issue, hence the project is not penalized for this in terms of implementation, it is MS for implementation. The U rating is for the design of M&amp;E.</p> <p>Text has been edited to precisely present these issues as design issues rather than implementation drawbacks.</p>                                                                                                                                                                                                                                        | The Evaluation Office finds that the response by the Evaluation Team addresses the comment satisfactorily. |
| 224                 | <p>It is also important to acknowledge this difference in expectations from the GEF in the Effectiveness section where the 15 million target is discussed:</p> <ul style="list-style-type: none"> <li>○ At the time of programme approval under GEF 6, beneficiary targets for programmatic and market transformation interventions were understood to include population level impacts arising from policy and regulatory reach, with definitions still evolving and transformational scale encouraged</li> <li>○ In this context, the 15 million indicative beneficiary target reflected prevailing GEF guidance and practice across other similar projects and global programmes, and should not be reassessed using post GEF 6 attribution standards or considered a methodological weakness</li> </ul> | <p>The understanding of 15 mil beneficiaries to include population level impacts has not been established or documented in any form. If that was the case, then the programme should have reported the populations as well. Ideally, the PFD should have made clear distinction between the direct and indirect beneficiaries and set clear boundaries on who is included.</p> <p>In fact, neither the PPMR nor PIRs have documented this understanding.</p> <p>Nonetheless, this is a good example demonstrating how the lack of integrated ToC and PRF at the programme level led to different interpretations.</p> | The Evaluation Office finds that the response by the Evaluation Team addresses the comment satisfactorily. |

| Paragraph Reference | Stakeholder comment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Evaluators' Response                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | UNEP Evaluation Office Response                                                                                                                      |
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| 239 - 240           | <p>Similarly, we also disagree with the Moderately Unsatisfactory rating provided on Monitoring and Reporting:</p> <ul style="list-style-type: none"> <li>○ At the time of programme approval under GEF-6, systematic programme-level monitoring and consolidated reporting instruments, such as the Programme Progress and Monitoring Report (PPMR), were not yet mandated, with monitoring and reporting requirements resting primarily at the level of individual child projects.</li> <li>○ These requirements were subsequently introduced in later GEF cycles and applied retroactively, with the Global Child Project (U4E) preparing and submitting the PPMR once the requirement was introduced even after technical completion of the global project, thereby going beyond original compliance obligations to meet new corporate accountability standards.</li> <li>○ Throughout implementation, robust monitoring and reporting systems were maintained at child-project level in line with applicable GEF and UNEP requirements, and the global project consistently consolidated technical progress, results, and lessons through reports and knowledge products. In this context, the monitoring and reporting architecture should be understood as compliant with and adaptive to changing GEF standards over time, rather than as a structural weakness of programme design or execution. While certain weaknesses must be acknowledged as learnings for future GEF programme designs, with the evolving expectations from the donor these are already being taken into account and therefore a rating of Moderately Unsatisfactory penalizes the Global Project and the Programme retroactively.</li> </ul> | <p>The TE assesses the M&amp;E design to be Unsatisfactory whereas M&amp;E implementation is rated MS.</p> <p>The TE didn't panelise the M&amp;E design for not including requirements that didn't emerge at the time of the design such as PPMR. The U rating of the design of the M&amp;E is based on the lack of detailed M&amp;E plan. It lacked defined common outcome indicators, except for GHGs, and did not propose an aggregate monitoring system capable of capturing a whole-of-programme perspective across the various child projects.</p> <p>As for reporting, and apart from the PPMR, there was no consolidated mechanism to present an integrated, programme-wide view of progress toward outcomes, emerging challenges, and cross-cutting risks. This absence of programme-level reporting constrained adaptive management and strategic oversight, as systemic issues—such as recurring implementation delays, regulatory bottlenecks, and interdependencies among child projects—were not consistently captured or analyzed in a holistic manner.</p> | <p>The Evaluation Office notes that the Evaluation Team applied the guidance in the Rating Description Matrix correctly to arrive at the rating.</p> |

## ANNEX II. EVALUATION FRAMEWORK / MATRIX

| EVALUATION CRITERIA                                                                                                                                                                                   | EVALUATION INDICATORS                                                                                                                                                                                                                                                                                                   | MEANS OF VERIFICATION                                                                                                                                                                                                                                                              |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>A. Strategic relevance</b>                                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                    |
| 1. To what extent the programme activities are suited to the priorities and policies of UNEP, the donors, country policies and target beneficiaries?                                                  | <ul style="list-style-type: none"> <li>Degree of alignment with UNEP, GEF, regional and national policies.</li> <li>Stakeholders' perceptions on the relevance of programme's activities to their needs</li> </ul>                                                                                                      | <ul style="list-style-type: none"> <li>Comparison of programme document policy and strategy plans of local-regional agencies, GEF and UN Environment</li> <li>Stakeholder interviews</li> </ul>                                                                                    |
| 2. To what extent did programme implementation incorporate lessons learned from previous interventions?                                                                                               | <ul style="list-style-type: none"> <li>Degree to which complementary initiatives and interlinkages have been identified.</li> <li>Level of alignment with ongoing initiatives by implementing and executing agencies.</li> <li>Degree to which key programme documents reference lessons from other projects</li> </ul> | <ul style="list-style-type: none"> <li>Evidence of identification of relevant initiatives in the programme design and progress reports</li> <li>Review of evidence of synergies, collaboration</li> <li>Key programme documents referencing lessons from other projects</li> </ul> |
| <b>B. Quality &amp; Revision of Programme Design</b>                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                         | See section 2 of this inception report and Annex B                                                                                                                                                                                                                                 |
| 3. What strengths and weaknesses are evident in the programme design and what lessons can be drawn at this mid-point stage that could improve future programming?                                     | <ul style="list-style-type: none"> <li>Degree of coherence of the programme design in terms of theory of change, components, choice of partners, structure, delivery mechanism, scope, budget adequacy, etc.</li> <li>Quality of programme design</li> </ul>                                                            | <ul style="list-style-type: none"> <li>Benchmarking the design to quality standards of robust programme design</li> <li>Stakeholders feedback</li> </ul>                                                                                                                           |
| 4. To what extent does the programme TOC outline synergies the programme intends to tap to achieve the intended systemic change, and the trade-offs involved in key choices made in programme design? | <ul style="list-style-type: none"> <li>Degree of completeness and inclusivity of the ToC</li> <li>Stakeholders feedback on the TOC</li> <li>Evidence of synergies and collaboration documented</li> </ul>                                                                                                               | <ul style="list-style-type: none"> <li>Qualitative assessment of the ToC robustness</li> <li>Stakeholder interviews</li> </ul>                                                                                                                                                     |
| <b>C. Effectiveness</b>                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                    |
| <b>i. Availability of Outputs</b>                                                                                                                                                                     |                                                                                                                                                                                                                                                                                                                         |                                                                                                                                                                                                                                                                                    |
| 5. How successful was the programme in producing the TE targets and outputs, both in quantity and quality, as well as their usefulness and timeliness?                                                | <ul style="list-style-type: none"> <li>Output level indicators of Results Framework (RF)</li> </ul>                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>Programme progress reports/PIR</li> <li>Tangible products (publications, studies, etc.)</li> <li>Stakeholders Interviews</li> </ul>                                                                                                         |

| EVALUATION CRITERIA                                                                                                                                        | EVALUATION INDICATORS                                                                                                                                                                                                                                                                                     | MEANS OF VERIFICATION                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6. What were the key factors that explain the satisfactory or unsatisfactory generation of outputs by the program?                                         | <ul style="list-style-type: none"> <li>Stakeholders feedback on the challenges and success factors</li> </ul>                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Programme progress reports/PIR</li> <li>Tangible products (publications, studies, etc.)</li> <li>Stakeholders Interviews</li> </ul>                       |
| ii. Progress towards Programme Outcomes                                                                                                                    |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                  |
| 7. How successful has the programme been in setting the basis for achieving the outcomes along the impact pathway (as defined in the ToC)?                 | <ul style="list-style-type: none"> <li>Indicators of outcomes - results framework</li> <li>Evidence of market transformation</li> </ul>                                                                                                                                                                   | <ul style="list-style-type: none"> <li>Programme progress reports/PIR</li> <li>Stakeholders Interviews</li> </ul>                                                                                |
| iii. Likelihood of Impact                                                                                                                                  |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                  |
| 8. To what extent has the programme influenced (strengthened or otherwise) relationships and power dynamics among market actors within the market systems? | <ul style="list-style-type: none"> <li>Stakeholders feedback on the likelihood of achieving impacts</li> <li>Evidence of market transformation</li> </ul>                                                                                                                                                 | <ul style="list-style-type: none"> <li>Project progress reports/PIR</li> <li>Market assessment studies</li> <li>Evaluation reports of child projects</li> <li>Stakeholders Interviews</li> </ul> |
| 9. Question 3: Has implementation of the programme led to systemic change in the market of energy efficient products and appliances?                       | <ul style="list-style-type: none"> <li>Stakeholders feedback on the likelihood of achieving impacts</li> <li>Evidence of market transformation</li> </ul>                                                                                                                                                 | <ul style="list-style-type: none"> <li>Project progress reports/PIR</li> <li>Market assessment studies</li> <li>Evaluation reports of child projects</li> <li>Stakeholders Interviews</li> </ul> |
| iv. Adaptive Management                                                                                                                                    |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                  |
| 10. In what ways, and to what extent, were the recommendations from the Mid Term Review of the coordinating project actioned upon?                         | <ul style="list-style-type: none"> <li>Documented adaptive management actions to implement the MTR recommendations of the coordinating project</li> <li>Evidence of adaptive management actions where alternative strategies have been identified and addressed</li> <li>Stakeholders feedback</li> </ul> | <ul style="list-style-type: none"> <li>MTR management response plan</li> <li>Project progress reports/PIR</li> <li>Stakeholders Interviews</li> </ul>                                            |
| D. Financial Management                                                                                                                                    |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                  |
| 11. To what extent are the levels of expenditure and rates of technical progress of the programme appropriate to the TE point of the programme?            | <ul style="list-style-type: none"> <li>% financial delivery to date</li> <li>Level of co-financing, related to original planning</li> <li>Level of expenditures suitability to the mid-point of programme cycle</li> <li>Level of adherence to UNEP's financial policies</li> </ul>                       | <ul style="list-style-type: none"> <li>Financial reports and audit reports</li> <li>Project progress reports/PIR</li> </ul>                                                                      |
| E. Efficiency                                                                                                                                              |                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                  |
| 12. To what extent the programme delivered maximum results from the given resources?                                                                       | <ul style="list-style-type: none"> <li>Additional benefits and costs of the Project</li> <li>Stakeholders feedback</li> </ul>                                                                                                                                                                             | <ul style="list-style-type: none"> <li>Financial reports and audit reports</li> <li>Project progress reports/PIR</li> <li>Interviews</li> </ul>                                                  |

| EVALUATION CRITERIA                                                                                                                                                                                         | EVALUATION INDICATORS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | MEANS OF VERIFICATION                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>F. Monitoring and Reporting</b>                                                                                                                                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
| <b>i. Monitoring of Programme Implementation</b>                                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
| <b>13.</b> To what extent has the monitoring system was operational and facilitated the timely tracking of results and progress towards programs objectives throughout the programme implementation period? | <ul style="list-style-type: none"> <li>Degree of appropriateness of the M&amp;E systems in reporting on the indicators</li> <li>Stakeholders feedback on the monitoring and evaluation arrangements and its appropriateness</li> <li>Level of adherence to the GEF reporting requirements</li> </ul>                                                                                                                                                                                                                                                                       | <ul style="list-style-type: none"> <li>Project progress reports/PIR</li> <li>Evaluation reports of child projects</li> <li>Interviews</li> </ul>                           |
| <b>G. Sustainability</b>                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
| <b>14.</b> To what extent the sustainability of the programme outcomes is dependent on issues relating to institutional frameworks, governance and future funding?                                          | <ul style="list-style-type: none"> <li>Evidence of sustainability of the transformed market in terms of finance and policy framework</li> <li>Level of programme stakeholders ownership</li> <li>Level of capacities at the country level to continue delivering on the programme results</li> <li>Existence of financial and institutional settings to support long term benefits</li> <li>Likelihood of financial sustainability of the financial solutions/instruments</li> <li>Efforts to support the development of relevant policies at the country level</li> </ul> | <ul style="list-style-type: none"> <li>Project progress reports/PIR</li> <li>Evaluation reports of child projects</li> <li>Interviews</li> </ul>                           |
| <b>H. Factors and Processes Affecting Programme Performance and Cross-Cutting Issues</b>                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
| <b>i. Programme Inception</b>                                                                                                                                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
| <b>15.</b> To what extent did the programme address weaknesses in the programme design or respond to changes that took place during programme implementation?                                               | <ul style="list-style-type: none"> <li>Review of the inception report content</li> <li>Evidence of appropriate measures to either address weaknesses in the programme design, fill information gaps or respond to changes that took place between programme design and approval</li> </ul>                                                                                                                                                                                                                                                                                 | <ul style="list-style-type: none"> <li>Inception report</li> <li>Project progress reports/PIR</li> <li>Evaluation reports of child projects</li> <li>Interviews</li> </ul> |
| <b>ii. Quality of Programme Management and Supervision</b>                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
| <b>16.</b> How well has the programme been guided by UNEP to implementing partners and national governments?                                                                                                | <ul style="list-style-type: none"> <li>Collaborators' feedback</li> <li>Documented evidence of effective collaboration</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>Project progress reports/PIR</li> <li>MoUs (if any)</li> <li>Interviews</li> </ul>                                                  |
| <b>iii. Stakeholder Participation and Cooperation</b>                                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                            |
| <b>17.</b> In what ways, and to what extent, was the private sector involved in programme design, implementation and monitoring?                                                                            | <ul style="list-style-type: none"> <li>Level of participation of private sector in programme design and actual implementation</li> <li>Stakeholders feedback</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>Project progress reports/PIR</li> <li>MoUs (if any)</li> <li>Interviews with private sector</li> </ul>                              |

| EVALUATION CRITERIA                                                                                                                                  | EVALUATION INDICATORS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | MEANS OF VERIFICATION                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                      | <ul style="list-style-type: none"> <li>Documented evidence of effective collaboration with the private sector</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                |
| <b>iv. Responsiveness to Human Rights and Gender Equality</b>                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                |
| <b>18.</b> To what extent were gender issues and the inclusion of minority groups considered in the programme's activities and results?              | <ul style="list-style-type: none"> <li>Degree to which the programme design identifies and address gender and human rights issues</li> <li>Extent to which programme products are sensitive to gender and human rights</li> <li>Extent to which programme data are sex-disaggregated</li> <li>Existence of logical linkages between gender results and programme outcomes and impacts</li> </ul>                                                                                                         | <ul style="list-style-type: none"> <li>Project progress reports/PIR</li> <li>Evaluation reports of child projects</li> <li>Interviews</li> </ul>                                               |
| <b>v. Environmental and Social Safeguards</b>                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                |
| <b>19.</b> Have UNEP's Environmental and Social Safeguards requirements been met?                                                                    | <ul style="list-style-type: none"> <li>Existence of ESS documents</li> <li>Level of compliance with UNEP policies when it comes to ESS</li> </ul>                                                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>EES document</li> <li>Project progress reports/PIR</li> </ul>                                                                                           |
| <b>vi. Country Ownership and Driven-ness</b>                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                |
| <b>20.</b> To what extent did the national government (GEF-OFP) and local stakeholders take ownership and provide leadership in programme processes? | <ul style="list-style-type: none"> <li>Evidence of commitments from stakeholder to financially support relevant sectors of activities after programme end</li> <li>Level of programme stakeholders ownership</li> <li>Level of capacities at the country level to continue delivering on the programme results</li> <li>Existence of financial and institutional settings to support long term benefits</li> <li>Efforts to support the development of relevant policies at the country level</li> </ul> | <ul style="list-style-type: none"> <li>Project progress reports/PIR</li> <li>Evaluation reports of child projects</li> <li>Interviews</li> </ul>                                               |
| <b>vii. Communication and Public Awareness</b>                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                |
| <b>21.</b> Has the programme effectively contributed to knowledge sharing on best practices among its child projects?                                | <ul style="list-style-type: none"> <li>Child project manages' feedback on the internal communication</li> <li># and types of knowledge products disseminated</li> <li># and type of communication material</li> </ul>                                                                                                                                                                                                                                                                                    | <ul style="list-style-type: none"> <li>Communication strategy</li> <li>Communication material</li> <li>Knowledge products</li> <li>Project progress reports/PIR</li> <li>Interviews</li> </ul> |

## ANNEX III. PEOPLE CONSULTED DURING THE EVALUATION

| Sex                                                  | Position                                                                                                                         | Ministry / Organization                                                                                |
|------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>Countries</b>                                     |                                                                                                                                  |                                                                                                        |
| M                                                    | Project Manager - CABEL                                                                                                          | Costa Rica                                                                                             |
| F                                                    | Ministerio de Ambiente y Energía                                                                                                 | Costa Rica                                                                                             |
| M                                                    | Ministerio de Ambiente y Energía                                                                                                 | Costa Rica                                                                                             |
| M                                                    | UNDP Project Manager for Leapfrogging South Africa Project                                                                       | UNDP South Africa Country Office                                                                       |
| F                                                    | TBC                                                                                                                              | South Africa                                                                                           |
| F                                                    | UNDP Project Manager for GEF Project on Promoting Energy-Efficient Motors in Small and Medium Sized Enterprises (SMEs) in Turkey | UNDP Turkey Country Office                                                                             |
| M                                                    | Former PM on behalf of the Electricity Regulatory Authority.                                                                     | Sudan                                                                                                  |
| M                                                    | UNDP Project Manager for Leapfrogging Sudan Project                                                                              | UNDP Sudan Country Office                                                                              |
| F                                                    | Project Manager - Fundación Chile                                                                                                | Chile- Gerente de Sustentabilidad                                                                      |
| M                                                    | Fundacion Chile                                                                                                                  | Chile - Ministerio de Energía                                                                          |
| M                                                    | Head of Efficient Transportation and Standards Unit                                                                              | Chile- Superintendencia de Electricidad y Combustibles                                                 |
| M                                                    | Superintendencia de Electricidad y Combustibles                                                                                  | Chile - Ministerio Medio Ambiente                                                                      |
| F                                                    | Legislative implementation and Circular Economy Professional                                                                     | Chile - U4E                                                                                            |
| M                                                    | U4E LAC Regional Coordinator                                                                                                     | Chile- Sodimac                                                                                         |
| F                                                    | Business Manager Home Appliances                                                                                                 | Chile - Regener                                                                                        |
| M                                                    | CEO                                                                                                                              | Chile- CESMEC                                                                                          |
| M                                                    | Laboratory Inspector                                                                                                             | Chile - SILAB                                                                                          |
| M                                                    | Technical Division Chief                                                                                                         | Chile - Intertek                                                                                       |
| F                                                    | Business Manager                                                                                                                 | Chile Reciclapp                                                                                        |
| M                                                    | Entrepreneur                                                                                                                     | Chile- Gerente de Sustentabilidad                                                                      |
| M                                                    | Climate Change Specialist (PM)                                                                                                   | UNDP Tunisia                                                                                           |
| M                                                    | Energy Efficiency Director in building sector                                                                                    | Tunisia Agence Nationale pour la Maîtrise de l'Energie ANME                                            |
| M                                                    | National Lighting Expert                                                                                                         | Tunisia CAMI                                                                                           |
| M                                                    | General Director                                                                                                                 | Tunisia CandyLED Sky Industries LED                                                                    |
| M                                                    | CETIME, Technical Center for Mechanical Industries                                                                               | Tunisia CETIME                                                                                         |
| M                                                    | Team leader CERC                                                                                                                 | UNDP Tunisia                                                                                           |
| M                                                    | Director of Energy Transition Department                                                                                         | Tunisia Ministry of Industry, Mines & Energy                                                           |
| M                                                    | Director                                                                                                                         | Tunisia Ministry of Finance                                                                            |
| M                                                    | National Environmentally Sound Management Expert                                                                                 | Tunisia Waste Management, circular Economy, EPR and marine litter policy expert                        |
| M                                                    | Director in Charge of Energy                                                                                                     | Tunisia Ministry of Economy and Planning                                                               |
| <b>U4E Contact List - Partners and Organizations</b> |                                                                                                                                  |                                                                                                        |
| F                                                    | MEPS Lead with Clean Cooling Collaborative                                                                                       | Clean Cooling Collaborative (previously Kigali Cooling Efficiency Programme) / ClimateWorks Foundation |
| M                                                    |                                                                                                                                  | NRDC                                                                                                   |
| M                                                    | VP Environmental and EU Affairs                                                                                                  | Electrolux                                                                                             |
| M                                                    | Managing Director                                                                                                                | BASE – Basel Agency for Sustainable Energy                                                             |
| M                                                    |                                                                                                                                  | Lawrence Berkeley National Laboratory                                                                  |
| M                                                    |                                                                                                                                  | International Institute for Energy Conservation (IIEC)                                                 |

| <b>Sex</b>                              | <b>Position</b>                                               | <b>Ministry / Organization</b>                                   |
|-----------------------------------------|---------------------------------------------------------------|------------------------------------------------------------------|
| M                                       | Executive Director                                            | SADC Centre for Renewable Energy and Energy Efficiency (SACREEE) |
| F                                       | Executive for Financial Institutions and Strategic Programmes | Central American Bank for Economic Integration (CABEI)           |
| M                                       | Executive Director                                            | AFREC                                                            |
| <b>U4E Contact List - Internal UNEP</b> |                                                               |                                                                  |
| M                                       | Programme Officer and Project focal point for TE              | UNEP / Energy and Climate Branch                                 |
| M                                       | Programme Officer                                             | UNEP / Energy and Climate Branch                                 |
| F                                       | Project Coordination (U4E)                                    | UNEP / Energy and Climate Branch                                 |
| F                                       | FINANCE AND BUDGET ASSISTANT                                  | UNEP / Energy and Climate Branch                                 |
| F                                       | Communications and Gender Consultant                          | UNEP / Energy and Climate Branch                                 |
| F                                       | Task Manager                                                  | UNEP / Energy and Climate Branch                                 |
| F                                       | Financial Management Officer                                  | UNEP / Energy and Climate Branch                                 |
| F                                       | Finance and Budget Officer                                    | UNEP / Energy and Climate Branch                                 |
| M                                       | Programme Officer and U4E Latin America Lead                  | UNEP / Regional Office for Latin America and Caribbean           |
| M                                       |                                                               | UNEP / Secretariat of the Minamata Convention on Mercury         |
| M                                       |                                                               | UNEP / Life Cycle Initiative                                     |
| F                                       |                                                               | UNEP - CCAC                                                      |
| F                                       |                                                               | UNEP - CTCN                                                      |
| F                                       |                                                               | UNEP - CCC                                                       |



## ANNEX IV. KEY DOCUMENTS CONSULTED

1. [U4E website](#) and available resources and tools
2. Country data sheets – technical data source for each country from the U4E website
3. Child project documents and CEO endorsements
4. Child project's PIRs
5. Child projects MTR and TE reports
6. PPMR of 2025
7. Programme PFD;
8. Market assessment reports
9. Project data sets (indicators data);
10. Project technical deliverables
11. Market assessment reports
12. Relevant government policies and strategies
13. Action plans
14. Project budgets and expenditures
15. Programme board (steering committee) minutes of meeting
16. Project partnership documents (MoUs, etc)
17. The workshop reports
18. Steering committee/board documentation (or minutes)
19. Project progress report (progress on project identified indicators and updates on risks)
20. The programme governance structure (for example a ToR of a steering committee)
21. Project expenditures reports
22. Project co-financing reports
23. PCAs
24. Stakeholders lists
25. Chile immigration/customs trade data (import records for lighting and electrical equipment)
26. Informe Final Usos de Energía Chile 2018 (Final Report on Energy Uses in Chile, 2018)
27. National Energy Efficiency Strategy and Post-2015 review (South Africa)
28. Compulsory specification documents (VC9109 and VC9110) for general service lamps (South Africa)
29. NRCS implementation plans and product registration documentation (South Africa)
30. DMRE/DOE policy and regulatory documents (South Africa)
31. Eskom demand-side management reports (South Africa)
32. Standards and labelling regulations for lighting products (Costa Rica)
33. MINAE (Ministry of Environment and Energy) policy documents (Costa Rica)
34. National energy efficiency regulations and ministerial decrees (Indonesia)

## ANNEX V. EVALUATION ITINERARY

### Tunisia

| Dates       | Time                                 | Institution                                                             | Title                                                |
|-------------|--------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------|
| 05 Jan 2026 | 9h00 to 10h00 at ANME                | UNDP Tunisia                                                            | Climate Change Specialist (PM)                       |
| 05 Jan 2026 | 10h00 to 11h00 at ANME               | Agence Nationale pour la Maîtrise de l'Energie ANME                     | Energy Efficiency Director in building sector        |
| 05 Jan 2026 | 14h à 15h at ANME                    | CAMI                                                                    | National Lighting Expert                             |
| 06 Jan 2026 | 11h in the field                     | Candyled Sky Industries LED                                             | Genral Director                                      |
| 06 Jan 2026 | 09h in the CETIME                    | CETIME                                                                  | CETIME<br>Technical Center for Mechanical Industries |
| 06 Jan 2026 | 14h - 15h at UNDP                    | UNDP Tunisia                                                            | Team leader CERC                                     |
| 06 Jan 2026 | 15:30h at ANME                       | Ministry of Industry, Mines & Energy                                    | Director of Energy Transition Department             |
| 07 Jan 2026 | 10h Ministry of Finance              | Ministry of Finance                                                     | Director                                             |
| 07 Jan 2026 | 11h30 at ANME                        | Waste Management, circular Economy, EPR and marine litter policy expert | National Environmentally Sound Management Expert     |
| 07 Jan 2026 | 14h Ministry of Economy and Planning | Ministry of Economy and Planning                                        | Director in Charge of Energy                         |
| 07 Jan 2026 | TBC                                  | KACEM Electronic Industry                                               |                                                      |

### Chile

| Dates       | Time           | Institution                             | Title                                                                            |
|-------------|----------------|-----------------------------------------|----------------------------------------------------------------------------------|
| 19 Jan 2026 | 9am – 10am     | Fundación Chile (Policy & coordination) | Director -International Partnerships and Cooperation                             |
| 19 Jan 2026 | 12pm – 130pm   | Ministry of Environment                 | Head of Circular Economy Division – Chile)                                       |
| 19 Jan 2026 | 230pm – 430pm  | SEC                                     | Senior Analyst / Technical Specialist – Regulatory Compliance (Energy and Fuels) |
| 20 Jan 2026 | 9am – 12pm     | Cesmec                                  | Business Development Manager                                                     |
| 22 Jan 2026 | 9am - 1pm      | Regener                                 | CEO & Founder – Regener Chile                                                    |
| 22 Jan 2026 | 330pm – 430pm  | TRAEE                                   |                                                                                  |
| 23 Jan 2026 | 930am – 1030am | Intertek                                | Business Development Manager – Sustainability and Testing Services               |

## ANNEX VI. BRIEF CV OF THE EVALUATORS

**Mohammad Alatoom** is an internationally recognised programme evaluator and the Founder and Principal Evaluation Consultant at Evidence and Evaluation Consulting. He brings over 21 years of experience in monitoring, evaluation, and learning (MEL), with a strong focus on environment, climate change, energy, sustainable development, and disaster risk reduction. Mohammad has led complex, high-profile evaluations for the United Nations system, GEF, GCF, UNEP, and ICAO across more than 40 countries, applying rigorous mixed-methods approaches to generate robust, policy-relevant evidence. His work has been recognised at the highest level, including receiving the Outstanding Evaluation Award at the 2025 UNDP Evaluation Excellence Awards for his leadership of a major GCF project evaluation in Mongolia. In Australia, Mohammad has held senior leadership roles within the NSW Government, including Senior Manager and Team Leader for Strategic Evaluation Services under the Climate Change Fund, where he led the development of the Climate Change Fund Evaluation Framework and oversaw large-scale, multi-million-dollar programme evaluations. His professional expertise is underpinned by a Master's degree in Environmental Sciences and Management and a strong academic grounding in environmental policy and biodiversity conservation. Fluent in English and Arabic, Mohammad is widely regarded for his ability to bridge technical analysis with strategic decision-making, supporting governments and international organisations to strengthen accountability, learning, and impact in complex development and climate portfolios. He brings extensive expertise in designing evaluation frameworks, reconstructing Theories of Change (ToC), and effectively applying OECD-DAC criteria to measure project performance and sustainability. His evaluations emphasize the theory-based and mixed-method approaches, ensuring robust, evidence-based analyses that facilitate actionable insights and policy recommendations. His professional practice is distinguished by participatory evaluation methodologies, strategic stakeholder engagement, and the integration of cross-cutting issues such as gender equality and human rights.

**Rhodes Ndlovu** is a senior humanitarian, development, and market systems specialist with 20 years of international experience across Africa, the Middle East, and Asia, specializing in market systems development (MSD), cash-based programming, food security and nutrition analysis, livelihoods, and social protection systems. He brings deep expertise in systemic market transformation, regulatory systems strengthening, and adaptive programme evaluation, and has worked extensively with UN agencies, multilateral donors, governments, and international NGOs. His professional background includes leadership and technical advisory roles with UNHCR, FAO, UNICEF, NRC–NORCAP, CARE, World Vision, and ARC International, where he led large-scale programmes in cash-based assistance, market-based programming, humanitarian response, and early recovery across complex and fragile contexts, including Afghanistan, Somalia, South Sudan, Bangladesh, Nigeria, Sudan, Jordan, and Zimbabwe. Rhodes holds three Master's degrees in Blockchain and Digital Currency (University of Nicosia), International Humanitarian Affairs (University of York), and Animal Production and Nutrition (University of Aberdeen), alongside a Postgraduate Certificate in Humanitarian Action and Conflict (Oxford Brookes University). He is IPC Level I certified and brings strong methodological expertise in mixed-method evaluation, theory-based analysis, market diagnostics, and systems mapping. Fluent in English, Ndebele, Sotho, and Zulu, with working knowledge of French and Arabic, he is widely recognized for his ability to integrate technical depth with strategic insight to strengthen institutional learning, accountability, and long-term development impact.

## ANNEX VII. GEF PORTAL INPUTS

The following table contains text to be uploaded to the GEF Portal. **It will be drawn from the Evaluation Report, either as copied or summarised text.** In each case, references should be provided for the paragraphs and pages of the report from which the responses have been copied or summarised.

**Table 14: GEF portal inputs**

| <b>Question:</b> What was the performance at the programme's completion against Core Indicator Targets?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                           |                       |              |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|-----------------------|--------------|
| <b>Response:</b> The programme has achieved mixed progress toward its impact-level targets. As of 30 June 2025, approximately 50% of the targeted 88 million tonnes of CO <sub>2</sub> emission reductions had been realized, reflecting significant implementation constraints, including the suspension of three child projects, delayed start-up in South Africa, and protracted MEPS approval and enforcement processes. These factors, combined with the inherently gradual nature of energy efficiency market transformation, have slowed cumulative mitigation impacts. In contrast, energy savings performance is substantially stronger, reaching approximately 96% of the target, indicating that early policy adoption and partial market shifts can generate measurable energy reductions ahead of full market penetration and long-term emissions impacts. Beneficiary targets remain substantially underachieved (less than 2% of the 15 million target), largely due to project suspensions, delayed implementation, and the systemic—rather than direct—nature of energy efficiency benefits, which are predominantly indirect and materialize over extended timeframes. The divergence between energy savings, emissions reductions, and beneficiary reporting reflects both timing effects and limitations in the original target-setting methodology, rather than an absence of structural market change. |                           |                       |              |
| Indicator Name (Unit of measure)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Closing target (Expected) | Latest value (Actual) | % Achieved   |
| <b>6. Greenhouse Gas Emissions Mitigated (Tons)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 88,374,786                | 44,293,559            | <b>50.1%</b> |
| <b>6.3 Energy Saved (Energy -megajoules)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 154,139,907,866           | 148,658,236,848       | <b>96.4%</b> |
| <b>11. People benefiting from GEF-financed investments (Number)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 15,200,200                | 291,477               | <b>1.9%</b>  |
| 11.1 Female (Number)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 7,600,060                 | 104,232 (35%)         | <b>1.4%</b>  |
| 11.2 Male (Number)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 7,600,140                 | 187,245 (65%)         | <b>2.5%</b>  |
| <b>Question:</b> What were the progress, challenges and outcomes regarding engagement of stakeholders in the project/programme as evolved from the time of the MTR?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                           |                       |              |
| <b>Response:</b> The global coordination project implemented a broad, inclusive, and strategically effective stakeholder engagement approach that extended beyond formal programme participants to include additional countries and global actors engaged in aligned energy efficiency initiatives. Participating countries consistently viewed engagement with the global programme as technically valuable and strategically important, particularly for access to standardized tools, policy templates, and capacity-building support that accelerated national progress on MEPS, labelling, and MVE systems. The global project functioned effectively as a technical backbone and coordination platform, enhancing coherence, reducing duplication, and facilitating cross-country learning. Moreover, U4E's diplomatic convening capacity, characterized by neutrality, credibility, and responsiveness, was widely recognized as a critical asset, enabling constructive dialogue among governments, regional bodies, industry, and international organizations on complex and politically sensitive regulatory reforms                                                                                                                                                                                                                                                                                               |                           |                       |              |
| <b>Question:</b> What were the completed gender-responsive measures and, if applicable, actual gender result areas?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                           |                       |              |
| <b>Response:</b> At programme design stage, no dedicated analysis was undertaken to explicitly address gender equality, human rights, or their intersection, and responsibility for integrating these dimensions was largely deferred to national child projects. Consequently, programme-level objectives, indicators, and results frameworks did not systematically articulate differentiated impacts on women or vulnerable groups, nor establish a common analytical methodology across the portfolio. While the programme's focus on energy                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                           |                       |              |

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>efficiency in high-consumption sectors may generate indirect social benefits—such as improved affordability and expanded energy access—the absence of explicit gender-responsive design limited the ability to intentionally track and demonstrate such outcomes. U4E developed a generic Gender Mainstreaming Implementation Plan emphasizing equal participation in trainings, inclusive consultations, gender-sensitive communications, and collection of sex-disaggregated data; however, implementation depth depended largely on country-level execution. At national level, gender integration was primarily process-oriented—focused on balanced participation in workshops and consultations—rather than embedded within core market instruments such as financing schemes, procurement systems, or regulatory incentives. As a result, structural barriers affecting women’s access to finance, participation in EE value chains, or decision-making influence were insufficiently addressed. Aggregate reporting indicates that women represent approximately 35% of total beneficiaries, below the programme’s parity ambition, reflecting both limited structural gender integration and the indirect nature of many programme benefits.</p>                                                                    |
| <p><b>Question:</b> What was the progress made in the implementation of the management measures against the Safeguards Plan submitted at CEO Approval? The risk classifications reported in the latest PIR report should be verified and the findings of the effectiveness of any measures or lessons learned taken to address identified risks assessed.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <p><b>Response:</b> Environmental and social safeguards were primarily addressed at the level of individual child projects rather than through a unified programme-level framework. Each project incorporated safeguards tailored to the specific technologies targeted—such as lighting, refrigeration, and air conditioning—addressing risks related to production, use, and end-of-life management in alignment with national regulations and relevant international standards. Environmental sustainability was embedded within the programme’s Integrated Policy Approach, particularly through the systematic inclusion of environmentally sound management (ESM) measures. By promoting proper collection, recycling, and disposal of obsolete and potentially hazardous equipment containing substances such as mercury or persistent organic pollutants, the programme helped mitigate environmental and health risks. This integration ensured that energy efficiency gains were not undermined by adverse lifecycle impacts, thereby reinforcing the environmental integrity of the programme’s climate mitigation objectives.</p>                                                                                                                                                                                   |
| <p><b>Question:</b> What were the challenges and outcomes regarding the programme’s completed Knowledge Management Approach, including: Knowledge and Learning Deliverables (e.g. website/platform development); Knowledge Products/Events; Communication Strategy; Lessons Learned and Good Practice; Adaptive Management Actions? <i>(This should be based on the documentation approved at CEO Endorsement/Approval)</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p><b>Response:</b> The programme made a deliberate and strategically significant investment in closing the knowledge management gap in developing countries with respect to EE policy and regulatory frameworks. It successfully delivered an extensive portfolio of high-quality, policy-relevant global public goods, including updated model regulations, technical guidance, procurement tools, case studies, and online training materials, while institutionalizing cross-country learning through peer networks, study tours, and technical exchanges. The programme’s multi-channel dissemination strategy, anchored in a centralized knowledge platform and reinforced through newsletters, social media, and structured stakeholder consultations, has ensured broad reach and responsiveness to country needs. However, monitoring of knowledge uptake remains largely output-focused, relying on participation metrics and download statistics, with limited evidence of systematic tracking of how tools are applied in national policy processes. Strengthening engagement analytics, user feedback mechanisms, and outcome-oriented monitoring would enhance the ability to demonstrate real-world utilization and influence, thereby reinforcing the programme’s adaptive management and long-term impact.</p> |
| <p><b>Question: What are the main findings of the evaluation?</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <p><b>Response:</b> In summary, the programme has delivered meaningful structural advances in regulatory frameworks, institutional capacity, and regional harmonization in countries where the programme was not suspended. The strongest legacy lies in the creation of global public goods, regional regulatory convergence, and the institutional positioning of U4E as a recognized platform for energy efficiency market transformation. Overall rating: Moderately Satisfactory.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## ANNEX VIII. PERFORMANCE OF THE GLOBAL COORDINATING PROJECT (GEF 9337)

Table 15: Progress towards targets of the Global Coordinating Project<sup>46</sup>

| Project objective and Outcomes                                                                                           | Indicator                                                                                                        | Baseline level       | End-of-project target                   | Summary by the EA of attainment of the indicator and target as of 30 June 2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|--------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|----------------------|-----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Objective:</b> To mitigate climate change by transforming national and regional markets to energy efficient products. | <b>Indicator 1:</b> Number of countries with measurable market transformation in three energy efficient products | <u>Baseline 1:</u> 0 | <u>Target 1:</u> 32 countries (by 2031) | <p>While the GEF project 9337 has completed its activities, the U4E initiative continues to support several countries on transforming national/regional markets to energy efficient products. As of this reporting, another two countries (Indonesia and South Africa) have adopted national EE policies. Thanks to these policy adoptions a total of 40 countries will have visible market transformations by 2031. This number is comprised of:</p> <ul style="list-style-type: none"> <li>• 10 countries<sup>47</sup> have adopted national energy efficiency policies to date.</li> <li>• 7 Southern African countries<sup>48</sup> have concluded GCF projects with roadmaps to implement MEPS and labels on residential refrigerators and distribution transformers.</li> <li>• 14 SADC countries<sup>49</sup> have endorsed MEPS and labels on residential refrigerators and air conditioners.</li> <li>• 4 Latin American countries<sup>50</sup> completed GCF Readiness projects during the period for the implementation of strategic market transformation projects for U4E products utilizing their GCF Readiness national allocations.</li> <li>• Tunisia is expected to enforce new MEPS and Labels regulation for lighting by the end of 2023 and Sudan has advanced with approval and endorsement of the MEPS and labels regulations for fans, evaporative coolers, room air conditioners and refrigerators.</li> <li>• All 10 ASEAN countries adopted updated air conditioner regulations, via their regional ministerial forum (U4E supported update, MEPS levels S2 2021).</li> <li>• 19 additional countries<sup>51</sup> are effectively progressing the implementation of energy efficiency policies under strategic market transformation projects utilizing the integrated policy approach or key elements thereof.</li> </ul> |

<sup>46</sup> Source: GCP PIR of 2023

<sup>47</sup> Chile (lighting and refrigerators), China, Côte d'Ivoire, Georgia, Indonesia, India, Kazakhstan (Motors and Refrigerators), Pakistan, Rwanda, Türkiye

<sup>48</sup> Botswana, Eswatini, Lesotho, Malawi, Namibia, Zambia, Zimbabwe.

<sup>49</sup> Botswana, Comoros, Democratic Republic of Congo, Eswatini, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Tanzania, Zambia, Zimbabwe.

<sup>50</sup> Cuba, El Salvador, Honduras and Brazil

<sup>51</sup> Caribbean-Cooling Project Countries: Bahamas, Barbados, Jamaica, St Lucia, Dominican Republic; Eco-Fridge Project Countries: Ghana, Senegal; U4E-GCF Readiness Project Countries: Rwanda, The Gambia, Lao People's Democratic Republic; GEF National Project Countries: Costa Rica, Indonesia, Myanmar, Morocco and South Africa. In addition, Bolivia, South Africa, Libya and The Gambia.

| Project objective and Outcomes                                                                                                                                                          | Indicator                                                                                                                                                                                                                                                                           | Baseline level                                                                                                                                                                   | End-of-project target                                  | Summary by the EA of attainment of the indicator and target as of 30 June 2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Outcome 1.1:</b><br>Countries and regions have successfully implemented market transformation projects.                                                                              | <b>Indicator 1:</b><br>Number of countries with on-going market transformation projects with support from U4E                                                                                                                                                                       | <b>Baseline 1:</b><br>15 countries <sup>52</sup>                                                                                                                                 | <b>Target 1:</b><br>25 countries                       | 40 countries <sup>53</sup> from previous periods and baseline, and 4 additional during the last reporting period <sup>54</sup> .<br><br>During the last reporting period U4E completed support for the GCF-World Bank Cooling Facility with Bangladesh, Kenya, (already included in above countries), North Macedonia, and Sri Lanka as well as Malawi and Panama (both already included in above countries). In addition, 7 GCF Readiness projects were completed during the period including: Botswana, Eswatini, Lesotho, Malawi, Namibia, Zambia and Zimbabwe.                                                                                                                                                                                                                                                                                 |
| <b>Outcome 1.2:</b><br>Increased capacity of 25 countries' officials to develop and implement projects and policies to advance energy efficiency of lighting, appliances, and equipment | <b>Indicator 1:</b><br>Number of countries officials who have attended U4E training, that have developed and implemented projects and policies to advance energy efficiency of lighting, appliances, and equipment                                                                  | <b>Baseline 1:</b><br>0                                                                                                                                                          | <b>Target 1:</b><br>25                                 | During the last reporting period, U4E organized larger trainings in Brazil, Cuba and Indonesia (see activity 1.2.2.3 for more details). As Indonesia is already counted as part of the 32 countries, these are an additional 2 countries. U4E continued also to support the 32 countries <sup>55</sup> already counted in previous periods. These countries have: <ul style="list-style-type: none"> <li>Received U4E training</li> <li>Developed and implemented projects to advance energy-efficient lighting, appliances &amp; equipment</li> <li>Developed and/or implemented policies to advance energy-efficient lighting, appliances &amp; equipment</li> </ul>                                                                                                                                                                             |
| <b>Outcome 2.1:</b><br>Countries commit to advancing energy efficiency of lighting, appliances, and equipment.                                                                          | <b>Indicator 1:</b><br>Number of countries that have committed to transform markets to energy-efficient products<br><br>Note – A country will be counted by:<br>- Signing U4E Country Partnership Form<br>- Official communication (letter, press release, etc) that they will take | <b>Baseline 1:</b> 30<br><br>the project).<br>- Outreach campaign on U4E initiative and SEforALL platforms.<br>U4E resources, tools and assessments available on the U4E website | <b>Target 1:</b><br>Mid-term: 50<br>End of project: 75 | U4E continues to support the 80 countries that committed during previous periods. This and two new countries resume to the following:<br><br><b>5 new countries</b> GCF Readiness projects were commenced to implement full market transformation to energy efficient Air Conditioners and Commercial Refrigerators during the period: Namely Rwanda and The Gambia.<br><br><b>1 region and 2 in-country projects</b> have received support from the ClimateWorks Clean Cooling Collaborative, through the ASEAN Cool initiative (led by U4E), which includes in-country projects in Singapore and Malaysia and regional coordination activities to implement air conditioner MEPS.<br><br>The African Union, covering <b>55 countries</b> continued the joint 5 year U4E programme that started in 2020 -The African Energy Efficiency Programme, |

<sup>52</sup> 15 baseline countries are: Chile, China, Costa Rica, Cote d'Ivoire, Indonesia, Kazakhstan, Morocco, Myanmar, Panama, Pakistan, Peru, South Africa, Sudan, Tunisia, Türkiye

<sup>53</sup> 25 countries during previous reporting periods: Bahamas, Barbados, Botswana, Brazil, Brunei, Cambodia, Cuba, Dominican Republic, Honduras, Jamaica, El Salvador, Eswatini, Ghana, Lao PDR, Lesotho, Malawi, Malaysia, Namibia, Rwanda, Saint Lucia, Senegal, Singapore, Tanzania, Zambia, Zimbabwe.

<sup>54</sup> 4 new countries including Bangladesh, Kenya, North Macedonia and Sri Lanka.

<sup>55</sup> 6 countries in the PIR 2021 including Sudan, Türkiye, Philippines, Malaysia, Thailand, Vietnam. 15 countries in PIR 2020: Argentina, Cambodia, Colombia, Cuba, Dominican Republic, Ecuador, Ghana, Indonesia, India, Kazakhstan, Lao People's Democratic Republic, Peru, Senegal, Tunisia, Uruguay, in addition to the 11 reported in PIR 2019: Bahamas, Barbados, Chile, Cote d'Ivoire, Jamaica, Morocco, Myanmar, Pakistan, Rwanda, Saint Lucia and South Africa.

| Project objective and Outcomes                   | Indicator                                                                                                                                                                                                                               | Baseline level                                                                                                                                                                                                                                                                             | End-of-project target | Summary by the EA of attainment of the indicator and target as of 30 June 2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                  | action on energy efficient lighting, appliances and/or equipment<br>Development of national/regional project (GEF, GCF, etc) with U4E on energy efficient lighting, appliances and/or equipment                                         |                                                                                                                                                                                                                                                                                            |                       | with funding support from the EU-AU joint Sustainable Energy Programme. The EU agreed to provide new TA support during the last reporting period under its 'Africa Europe Green Energy Initiative (AEGEI)', commencing with the formulation of a detailed African Union Energy Efficiency Strategy– (AFEES) in 2023.<br>In LAC the U4E Partnership with OLADE has enabled the U4E Model Regulation to reach the <b>27 member countries</b> through their official communication channels, and OLADE have supported detailed outreach to a further 2 member countries for new energy efficient appliance projects in Latin America under the GCF Readiness programme during the period [Ecuador and Colombia] in addition to the 4 countries from last reporting period.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Outcome 2.2: Regional harmonization of standards | Indicator 1: Number of regions with endorsed roadmaps, action plans, or strategies for harmonization of standards for at least 1 of the U4E focus products (lighting, air conditioners, refrigerators, electric motors or transformers) | 0<br><i>Additional baseline information:</i><br>Regional harmonization completed on energy efficient lighting in the Pacific, Central America, West Africa, and Southeast Asia. In addition, regional harmonization has been completed on air conditioners in Southeast Asia (ASEAN SHINE) | 4                     | 4 regions – Africa (including East and Southern Africa), Southeast Asia and Latin America.<br><br>Progress during the last period:<br><ul style="list-style-type: none"> <li>• <b>Southern Africa and Eastern Africa:</b> The SADC countries have successfully voted in February 2023 during a first round on the MEPS and labels for room air conditioners and residential refrigerators to be implemented in the region. Beyond the project reporting, another round of voting confirmed in July 2023 the endorsed the policies for both products with a 100% positive votes from the region. The EAC region continued to lag behind due to a lack of funding. For this reason, U4E provided funding to EACREEE to enable the meetings that are necessary for the consultation and endorsement of the policies in the region. This allowed the organization of a regional meeting of EACREEE with the Uganda standards body and U4E which will be held on July 17th- 21st 2023. Thereafter, the member states will start the national consultation process.</li> <li>• <b>Southeast Asia:</b> U4E finalized the regional product registration database for the ASEAN region and successfully transferred the ownership to ACE on 15 December 2022. The regional database will be a regional gateway for tracking and sharing data on energy-efficient products. While currently it is confined to lighting, air conditioners and refrigerator products, there is a provision to expand the product portfolio in the future. The regional database was a 2-year effort to develop in collaboration with the ASEAN Centre for Energy and the International Institute for Energy Conservation, with several capacity building workshops and feedback sessions with member states. The database was also introduced to Singapore during two calls as they'll be one of the frontrunners in implementing it. During the course of the year additional calls with ASEAN countries are planned. In addition, a regional workshop on Promotion of Higher Efficient Air Conditioners – Regional Policy Roadmap was organized on July 7, 2022,</li> </ul> |



| Project objective and Outcomes | Indicator | Baseline level | End-of-project target | Summary by the EA of attainment of the indicator and target as of 30 June 2023                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|--------------------------------|-----------|----------------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                |           |                |                       | <p>with an overarching aim to review the technical recommendations on the regional policy roadmap and harmonizing the MEPS and testing standards of air conditioners and agree on the next steps for national implementation.</p> <p>Furthermore, the Phase I of promotion of Higher Efficient Air Conditioners in ASEAN through Harmonisation of Standards and Strengthening of Market Verification and Enforcement Capabilities project's closing meeting was held during 27th-28th September 2022, where U4E took stock of the status of AC MEPS level implementation in the ASEAN Member States and also presented with the PRS (Product Registration System) regional database to fuel the ongoing MVE efforts in line with both the project's Phase II objectives as well as APAEC Phase II targets. In addition, on the air conditioner side, a new project named "ASEAN Cool initiative" started. The project is funded by the Clean Cooling Collaborative and aims to accelerate the implementation of the ASEAN Regional Policy Roadmap for Energy Efficient Room Air Conditioners by providing technical assistance and capacity building on Minimum Energy Performance Standards (MEPS) and labels in the region.</p> <p>On the industrial motors end, U4E participated in a ASEAN regional workshop on 13th December 2022 pertaining to policy options and resources for energy-efficient motors to apprise the AMS policy makers and key stakeholders on the climate and monetary benefits of adopting the U4E model regulation guidelines for motors and encouraging the need for regional harmonization of motor standards in ASEAN.</p> <ul style="list-style-type: none"> <li> <b>Latin America:</b> Harmonization activities for Energy Efficiency for Room Air conditioners have come to an end in Cuba, El Salvador and Honduras, with the finalization of proposals on Minimum Energy Performance Standards and its presentation/discussion in the Policy Working Group with the main local stakeholders, as well as development of MVE recommendations and their corresponding Capacity Building sessions. Additional technical support has been provided on the revision process and comments provided to inform the upcoming Central American Technical Regulation (RTCA) for Refrigerators and Lighting. Likewise, activities on Energy Efficient Commercial refrigerators in Brazil have also finalized, with the development of MEPS and Labels proposal for Refrigerated display cabinets, Ice-cream freezers, Beverage coolers, MVE recommendations including test standards, SPP technical specifications and Communication campaign proposal. </li> </ul> |

**Table 16: Performance of the Global Coordinating Project GEF 9337**

| Criterion                                                                            | Summary assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Rating   |
|--------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Strategic Relevance                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>S</b> |
| 1. Alignment to UNEP MTS, POW and Strategic Priorities                               | The GCP and the programme demonstrate strong strategic alignment with UNEP's Medium Term Strategy (2015–2017) and Programme of Work, particularly in advancing resource efficiency, sustainable consumption and production, and climate change mitigation. By promoting market transformation through MEPS, regulatory frameworks, and energy-efficient technologies, it directly contributes to reducing energy demand and greenhouse gas emissions in line with SDG 7 and SDG 12 priorities. The programme also effectively operationalizes UNEP's partnership-based delivery model by engaging governments, private sector actors, and international partners, while strengthening national capacities for policy development, enforcement, and data-driven decision-making, thereby supporting the transition toward a low-emission, resource-efficient green economy. | <b>S</b> |
| 2. Alignment to UNEP Donor/GEF/Partner strategic priorities                          | The GCP demonstrates strong alignment with the GEF-6 Climate Change Mitigation Strategy, particularly under CCM-1, by supporting systemic market transformation toward low-emission development pathways. Through the promotion of MEPS, regulatory frameworks, and institutional strengthening for monitoring and enforcement, it directly contributes to building the policy and technical foundations required for scaling energy-efficient technologies. The programme further aligns with GEF-6 priorities by addressing structural market barriers, fostering enabling conditions for private sector investment, and supporting technology transfer and capacity building—thereby contributing to long-term, self-sustaining low-carbon markets.                                                                                                                     | <b>S</b> |
| 3. Relevance to global, regional, sub-regional and national environmental priorities | The programme demonstrates strong alignment with regional and national priorities, effectively leveraging regional platforms to accelerate market transformation for energy-efficient products. Through collaboration with initiatives in ASEAN, SADC, EAC, and the Caribbean, it has supported harmonization of standards, regional procurement approaches, and coordinated policy action—critical for overcoming fragmented markets and achieving economies of scale. At the national level, the programme ensured relevance by allowing countries to tailor interventions and product focus to their specific contexts, aligning closely with national climate and development strategies while reinforcing existing policy frameworks and commitments.                                                                                                                 | <b>S</b> |
| 4. Complementarity with existing interventions/ Coherence                            | The programme demonstrates strong alignment with global energy efficiency initiatives, particularly the UN Secretary-General's Sustainable Energy for All (SE4All) agenda, by translating high-level commitments into concrete policy, regulatory, and market interventions. Through its integration with the U4E partnership, the programme provides a coordinated global platform for technical support, capacity building, and policy harmonization, enabling countries to leapfrog to high-efficiency technologies. Its collaboration across UN entities and international partners further strengthens coherence and resource efficiency, ensuring that energy efficiency efforts are aligned with broader environmental, health, and sustainable development objectives.                                                                                             | <b>S</b> |
| Effectiveness                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>S</b> |

| Criterion                          | Summary assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Rating |
|------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 3. Availability of outputs         | <p>All outputs have been successfully achieved, including:</p> <p>The training packages were completed with MVE aspects, along with the national product registration prototype and the regional product registration system that were finalized during this reporting period.</p> <p>The regional trainings to 147 countries were completed</p> <p>Training to policy makers from energy-efficiency policy experts on in-depth steps to developing the integrated policy approach (MEPS, supporting policies, MVE, Environmental Sound Management, and financial mechanisms).</p> <p>Updated design for the Country Savings Assessments showing the quantitative benefits of energy-efficient products and included in all U4E trainings. U4E published new updated Country Savings Assessments</p> <p>32 case studies have been completed</p> <p>The Regional Status Report on Energy-Efficient Appliances and Equipment in Latin America report has been completed and circulated to the regional body for inputs.</p> <p>U4E developed a Technical Brief on 'Delivering Efficient Power Supply Networks for All in the Southern Africa Region', in support of the Global Climate &amp; SDG Synergy Conference (Tokyo, 20th-21st July 2022).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | S      |
| 4. Achievement of project outcomes | <p>GCP has effectively provided comprehensive and actionable guidance to countries and regions to implement market transformation projects at scale. Through the GEF 9337 global project, U4E developed an extensive and widely utilized knowledge base—including over 100 technical tools, model regulations, and policy guidelines—which has directly informed national project design and implementation. This guidance has translated into tangible policy uptake and regional alignment, with at least 10 countries adopting national energy efficiency policies, 14 SADC countries endorsing harmonized MEPS and labelling frameworks, all 10 ASEAN countries aligning air conditioner standards, and multiple countries advancing or completing GCF-supported readiness and investment projects. The programme's combination of global knowledge products and targeted technical support has enabled both national policy reforms and regional harmonization processes, demonstrating strong effectiveness in building institutional capacity and accelerating the transition to energy-efficient markets across diverse geographic contexts.</p> <p>GCP demonstrated strong and widespread progress in building institutional and technical capacities across participating countries. The U4E global project served as the central platform for capacity development, delivering extensive training, technical assistance, and knowledge exchange through regional workshops, study tours, and targeted national interventions, reaching at least 34 countries—well beyond the original target of 15. These efforts have strengthened competencies across a broad range of stakeholders, including government officials, laboratories, regulators, and market actors, particularly in areas such as MEPS, labelling, MVE, public procurement, and environmentally sound management. While capacity gains are uneven across countries due to differing implementation stages, the programme has significantly enhanced the ability of national institutions to design, implement, and enforce energy efficiency policies and projects.</p> <p>GCP demonstrated substantial progress in expanding global commitment to energy efficiency. The programme has successfully catalyzed engagement from approximately 80 countries, supported by a combination of national, regional, and global initiatives, including GCF Readiness projects, regional cooling initiatives, and strategic partnerships. High-level institutional commitments—such as the African Union's continent-wide energy efficiency programme and regional collaboration through ASEAN and OLADE—have significantly amplified reach and policy momentum. This broad-based uptake reflects the programme's effectiveness in mobilizing political will and fostering coordinated action across diverse regions, laying a strong foundation for future market transformation efforts.</p> | HS     |

| Criterion                                    | Summary assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Rating |
|----------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| 5. Likelihood of impact (use 'likely' scale) | GCP facilitated child projects contributions to impacts, with strong performance in energy savings but more limited achievements in emissions reduction and beneficiary reach. By mid-2025, it delivered 50% of its GHG mitigation target and 96% of its energy savings target, reflecting early gains from policy adoption and partial market shifts, while longer-term emission reductions have been slowed by project suspensions, delayed implementation, and the inherently gradual nature of market transformation. Beneficiary reach remains significantly below target (less than 2%), due both to implementation disruptions and the indirect, system-level nature of energy efficiency impacts, which materialize over time and are difficult to quantify. Despite these gaps, the programme is expected to generate substantial long-term economic and environmental benefits—including cost savings, improved energy security, and reduced hazardous waste—though these have not yet been systematically measured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Likely |
| Efficiency                                   | <p>The GCP demonstrated strong cost-effectiveness, largely driven by its programmatic design, which enabled the creation and sharing of global public goods across countries. By centralizing the development of technical tools, model regulations, and guidance materials, the programme avoided duplication of effort and reduced costs at the national level while ensuring consistency and quality. This was further reinforced through targeted technical backstopping, allowing countries to leverage existing resources and expertise rather than developing them independently, thereby lowering transaction costs, accelerating implementation, and enhancing the overall efficiency and value-for-money of GEF investments.</p> <p>GCP experienced 23 months delays in timeframe, but strong financial execution of the GEF resources and 82.5% achievement of co-financing target. GCP faced systemic constraints in project management resourcing, which affected operational efficiency and continuity. Despite its global scope and technical complexity, management cost allocations remained insufficient and were not adjusted in line with project extensions, requiring UNEP to rely on internal co-financing, short-term staffing, and ad hoc resource reallocations. This created pressures on staff continuity, institutional memory, and long-term planning, increasing transaction costs and highlighting a broader structural issue in GEF-funded programmes where coordination-intensive initiatives are under-resourced relative to their demands.</p> | MS     |
| Sustainability (use 'likely' scale)          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | L      |
| 4. Socio-political sustainability            | Outcomes were significantly constrained by political instability in several participating countries, particularly Myanmar and Sudan. Prolonged governance disruption in both contexts led to the suspension of activities, halting implementation and delaying planned outputs. These interruptions affected policy development, stakeholder engagement, and institutional coordination—core prerequisites for advancing energy efficiency market transformation. Beyond operational delays, instability also resulted in the de-prioritisation of energy efficiency at national level. In crisis settings, government attention and resources shifted toward urgent political, security, and humanitarian needs, reducing institutional capacity and policy space to advance reforms such as the development, approval, and enforcement of minimum energy performance standards.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ML     |
| 5. Financial sustainability                  | The long-term sustainability of the U4E initiative, including its role as a centre of excellence, remains partly dependent on continued project-based and donor funding. Although U4E has successfully diversified its resource base beyond the GEF period—securing support from bilateral donors, philanthropic foundations, and national governments—its financial model is not yet fully institutionalised or shielded from shifts in donor priorities. Emerging approaches, such as the Rwanda Cooling Centre of Excellence, which is moving toward service-based revenue generation through fee-based training, testing, and convening functions, offer a potential pathway to greater financial resilience. However, until such models are scaled and embedded, U4E's long-term institutional sustainability remains promising but not fully secured.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | L      |
| 6. Institutional sustainability              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | L      |
| Overall Project Performance Rating           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | S      |

## Expenditures

| Total expenditure by component |                  |                  |                         |               |            |
|--------------------------------|------------------|------------------|-------------------------|---------------|------------|
| UNEP Budget Line               | Original Budget  | Revised budget   | Total recorded expenses | Variance      | Burn rate  |
| Component 1                    | 2,425,000        | 2,220,000        | 2,220,169               | - 169         | 100%       |
| Component 2                    | 483,000          | 641,000          | 629,017                 | 11,983        | 98%        |
| PMC                            | 100,000          | 147,000          | 147,000                 | -             | 100%       |
| Evaluations                    | 92,000           | 92,000           | 43,563                  | 48,437        | 47%        |
| <b>GRAND TOTAL</b>             | <b>3,100,000</b> | <b>3,100,000</b> | <b>3,039,749</b>        | <b>60,251</b> | <b>98%</b> |

| Total expenditure by budget class |                                             |                 |                |                         |          |           |
|-----------------------------------|---------------------------------------------|-----------------|----------------|-------------------------|----------|-----------|
| UNEP Budget Line                  |                                             | Original Budget | Revised budget | Total recorded expenses | Variance | Burn rate |
| 010                               | Staff and personnel (including consultants) | 1,812,000       | 2,123,521      | 2,056,908               | 66,613   | 97%       |
| 140                               | Transfers and grants to IP                  | 755,000         | 837,956        | 838,125                 | - 169    | 100%      |
| 160                               | Travel                                      | 105,000         | 108,523        | 114,716                 | - 6,193  | 106%      |
| 120                               | Contract services                           | 428,000         | 30,000         | 30,000                  | -        | 100%      |
|                                   | GRAND TOTAL                                 | 3,100,000       | 3,100,000      | 3,039,749               | 60,251   | 98%       |

## Co-financing

| Cofinancier                                 | Type                    | Planned           | Total Realized    | % Realized    |
|---------------------------------------------|-------------------------|-------------------|-------------------|---------------|
| ABB                                         | In-kind                 | 400,000           | 15,000            | 3.8%          |
| Arcelik                                     | In-kind                 | 300,000           | 16,000            | 5.3%          |
| BASE                                        | In-kind                 | 50,000            | 53,819            | 107.6%        |
| BSH Hausgeräte GmbH                         | In-kind                 | 636,000           | 99,200            | 15.6%         |
| Copenhagen Centre of Energy Efficiency      | In-kind                 | 500,000           | 113,232           | 22.6%         |
| Carbon Trust                                | In-kind                 | 536,000           | 347,637           | 64.9%         |
| CLASP                                       | In-kind                 | 700,000           | 503,000           | 71.9%         |
| EESL                                        | In-kind                 | 200,000           | -                 | 0.0%          |
| GCPF                                        | Grants/ Loan Co-finance | 9,000,000         | -                 | 0.0%          |
| GIZ                                         | In-kind                 | 200,000           | 45,000            | 22.5%         |
| International Copper Association            | In-kind                 | 1,800,000         | 2,048,600         | 113.8%        |
| IIEC                                        | In-kind                 | 230,000           | 97,823            | 42.5%         |
| IEA-4E SSL                                  | In-kind                 | 350,000           | -                 | 0.0%          |
| MABE                                        | In-kind                 | 500,000           | 395,868           | 79.2%         |
| National Lighting Test Centre (NLTC)        | In-kind                 | 700,000           | -                 | 0.0%          |
| Natural Resources Defense Council           | In-kind                 | 75,000            | 55,000            | 73.3%         |
| Neonlite                                    | In-kind                 | 150,000           | -                 | 0.0%          |
| OSRAM                                       | In-kind                 | 400,000           | -                 | 0.0%          |
| Signify (Philips)                           | In-kind                 | 1,200,000         | 2,839,084         | 236.6%        |
| Topten                                      | In-kind                 | 50,000            | 13,096            | 26.2%         |
| UNEP                                        | In-kind                 | 300,000           | -                 | 0.0%          |
| UNDP                                        | In-kind                 | 300,000           | -                 | 0.0%          |
| Whirlpool                                   | In-kind                 | 100,000           | 7,410             | 7.4%          |
| <b>Total planned</b>                        |                         | <b>18,677,000</b> | <b>6,649,769</b>  | <b>35.6%</b>  |
| <b>Leveraged co-financing</b>               |                         |                   |                   |               |
| Electrolux                                  | In-kind                 | -                 | 30,918            |               |
| Kigali Cooling Efficiency Programme (K-CEP) | In-kind                 | 5,807,660         | 7,783,160         | 134.0%        |
| UK DEFRA                                    |                         |                   | 5,724,085         |               |
| <b>Total leveraged co-financing</b>         |                         | <b>5,807,660</b>  | <b>13,538,163</b> | <b>233.1%</b> |
| <b>Grand total</b>                          |                         | <b>24,484,660</b> | <b>20,187,932</b> | <b>82.5%</b>  |

## ANNEX IX. MARKET SYSTEMS DEVELOPMENT ASSESSMENT

### UNITED NATIONS ENVIRONMENT PROGRAMME

Global Environment Facility Project GEF-9083

#### Market Systems Development Assessment

#### 8-Country Comparative Analysis

United for Efficiency (U4E) – Lighting and Appliances Programme

Chile | Tunisia | Indonesia | Costa Rica | South Africa | Kazakhstan | Sudan | Myanmar

### Terminal Evaluation Component – MSD Section

February 2026

#### Executive Summary

This report presents the Market Systems Development (MSD) component of the Terminal Evaluation for GEF Programme 9083, Leapfrogging Markets to High Efficiency Products (Appliances, including Lighting, and Electrical Equipment). It covers eight implementing countries across five continents: Chile, Tunisia, Indonesia, Costa Rica, South Africa, Kazakhstan, Sudan, and Myanmar. The evaluation period spans 2018–2025.

MSD assessment uses a three-pillar framework, Core Market Functions, Supporting Functions, and Rules and Norms, each evaluated across four analytical dimensions: Functionality; Incentives and Behaviours; Capacity and Coordination; and Adaptiveness and Sustainability. Country MSD indices are expressed on a 1–4 scale, with bands defined as Weak (1.0–1.9), Emerging (2.0–2.9), Improving (3.0–3.4), and Mature (3.5–4.0).

#### Portfolio MSD Scores – Final Assessment

Table 1: GEF 9083 Portfolio – Final MSD Index and Pillar Scores by Country. Scores on 1–4 scale.

| Country      | Focus                                  | Core | Support | Rules | MSD Index   | Band             |
|--------------|----------------------------------------|------|---------|-------|-------------|------------------|
| Chile        | Refrigerators & Freezers               | 3.1  | 3.2     | 3.3   | <b>3.20</b> | <b>IMPROVING</b> |
| Tunisia      | LED Lighting                           | 2.5  | 2.5     | 3.0   | <b>3.00</b> | <b>IMPROVING</b> |
| Indonesia    | LED Lighting (ADLIGHT)                 | 3.0  | 2.75    | 3.25  | <b>3.00</b> | <b>IMPROVING</b> |
| Costa Rica   | Various Appliances                     | 2.5  | 2.5     | 3.0   | <b>2.70</b> | <b>EMERGING</b>  |
| Sudan        | Lighting, ACs, Refrigerators, EC, Fans | 1.75 | 1.75    | 2.5   | <b>2.00</b> | <b>EMERGING</b>  |
| South Africa | LED Lighting & Transformers            | 1.9  | 1.5     | 1.9   | <b>1.77</b> | <b>WEAK</b>      |
| Kazakhstan   | Refrigerators, Motors, Transformers    | 2.0  | 1.5     | 1.75  | <b>1.75</b> | <b>WEAK</b>      |
| Myanmar      | Lighting, Fans, ACs                    | 1.0  | 1.0     | 1.5   | <b>1.17</b> | <b>WEAK</b>      |

## Portfolio Distribution

Taken as a whole, the eight-country portfolio traces a meaningful progression along the market transformation continuum, from early-stage suspension and conflict disruption, through implementation stall and design failure, to partial and then substantial market development, reflecting the full range of contributory factors that shape programme outcomes: institutional capacity, regulatory readiness, co-financing reliability, political stability, and the depth of engagement achieved before disruption occurred.

### A. Improving Band: Chile (3.20), Tunisia (3.00), Indonesia (3.00)

Three countries have achieved Improving band classification, each having crossed the threshold at which systemic market momentum operates independently of direct donor incentives. **Chile (3.20)** is the highest-scoring country in the portfolio, with confirmed enforcement of Scenario 2 MEPS, the operationalised Refriclaje PPP replacement programme, and a strong private-sector sustainability trajectory. **Tunisia (3.00)** achieved Improving status through a completed mandatory LED MEPS framework and broad market actor engagement, with Rules and Norms as its lead pillar. **Indonesia (3.00)** was rated 'Improving' following the completion of seven Ministerial Decrees on LED MEPS, the most complex regulatory consensus process in the portfolio, combined with full LSPRO operationalisation, 87.68% electricity savings target delivery, and nine city/regency pilot demonstrations generating independently replicable market evidence. Indonesia's Rules and Norms pillar (3.25) is the highest single-pillar score in the portfolio, reflecting a regulatory architecture that has moved beyond design into enforcement-ready status.

### B. Emerging Band: Costa Rica (2.70), Sudan (2.00)

The two Emerging-band countries occupy structurally distinct positions within the band. **Costa Rica (2.70)** sits in the upper Emerging range with partial market development across most pillars and a Rules and Norms score of 3.0 (Improving), indicating that regulatory architecture has outpaced market activation, a pattern consistent with early Improving trajectory. **Sudan (2.00)** sits at the Emerging entry point, reflecting a pillar profile that is analytically heterogeneous: Core Market Functions and Supporting Functions remain in the Weak band at 1.75 each, while Rules and Norms reaches 2.50 (Emerging) through a shelf-ready regulatory package that was technically completed before the April 2023 civil war disrupted all further activities. Sudan's index of 2.00 therefore does not indicate uniform Emerging-band performance, it reflects regulatory achievement preserved under conditions of active conflict, set against a market activation base that was not yet established.

### C. Weak Band: South Africa (1.77), Kazakhstan (1.75), Myanmar (1.17)

The three Weak-band countries each present a distinct causal profile. **South Africa (1.77)** experienced an implementation stall driven by severe co-financing failure: USD 85 million was committed and zero disbursed, effectively preventing the establishment of any market activation infrastructure despite otherwise relatively conducive institutional conditions. **Kazakhstan (1.75)** reflects endogenous programme design and management shortfalls that resulted in the non-operationalisation of its minimum verified efficiency scheme; the institutional conditions were less straightforwardly disrupted than in South Africa, but the outcome, a market system without functional core mechanisms, is structurally similar. **Myanmar (1.17)** was suspended following the February 2021 military coup at an early stage of implementation before substantive regulatory outputs had been delivered, leaving the lowest MSD index in the portfolio with minimal institutional foundations for future recovery.



## Key Findings

### 1. Regulatory architecture is the most consistently deliverable MSD output across the portfolio

Rules and Norms was the leading or co-leading pillar in five of the eight scored countries. Indonesia's Rules and Norms score of 3.25 is the highest pillar score in the portfolio, driven by the seven Ministerial Decree architecture negotiated through the full BSN consensus process under Indonesian standardisation law, a regulatory achievement of particular durability given the 76% local manufacturer representation requirement that made dilution structurally difficult. Tunisia and Chile also achieved Rules and Norms scores at or above 3.0, with Chile's framework enforced at the border level through SEC certification and Tunisia's mandatory LED MEPS in legal force. Costa Rica's Rules and Norms of 3.0 (indicative) and Sudan's revised score of 2.50 further confirm the pattern: across the portfolio, regulatory work consistently progressed further and produced more durable outcomes than market activation activities within the same project cycles.

MEPS frameworks were formally adopted and legally in force in Chile and substantively in advanced transition toward full enforcement in Tunisia; technically completed and enforcement-ready in Indonesia; structurally developed and awaiting gazette in Sudan; and in draft or partial development in Kazakhstan, Myanmar, and Costa Rica. This regulatory architecture compounds in value over time: Sudan's shelf-ready MEPS package for five appliance categories, though currently unenforceable due to the civil conflict, represents a durable institutional asset that requires only political stabilisation and testing laboratory investment to become operative. The critical portfolio distinction is between adopted and enforced regulation (Chile, Tunisia, Indonesia) and aspirational regulation (Sudan, Kazakhstan, Myanmar), the latter advances Rules and Norms scores but generates no market discipline without a connected enforcement and testing infrastructure.

### 2. Emerging sustained market self-sufficiency with differentiated consolidation trajectories across the portfolios

Adaptiveness and Sustainability is the lowest-scoring dimension across all countries and all three pillars – a pattern so consistent that it constitutes a structural finding rather than a country-specific weakness. No country exceeded 3.5 on any Adaptiveness measure, and in several cases the gap between Functionality scores and Adaptiveness scores is substantial, indicating that market activity during implementation was not consistently translated into self-reinforcing market behaviours.

The portfolio does exhibit a discernible progression in sustainability potential that tracks the final band distribution. Countries in the Weak band, particularly those affected by conflict, suspension, or co-financing failure – face the most uncertain sustainability outlook, as the foundational conditions for self-sustaining markets were either never fully established or were actively disrupted before they could consolidate. Sudan presents a specific variant of this risk: regulatory assets have been preserved, but the market activation base upon which those assets would need to operate has not been built, and the timeline for return to operational conditions remains highly uncertain.

Costa Rica, as the sole country in the mid-Emerging range, shows early signs of internalised market behaviour across its regulatory pillar but remains dependent on continued institutional support to prevent regression in Core Market and Supporting Functions dimensions. The country's Rules and Norms score of 3.0 represents a genuine asset, but the gap between that score and its Core and Support scores at 2.5 signals that enforcement infrastructure is not yet fully matched by market response.



Chile, Tunisia, and Indonesia, the three Improving-band countries, present the strongest sustainability trajectory in the portfolio: regulatory frameworks are gazetted or enforcement-ready, institutional actors are engaged, and the conditions for self-sustaining market function are more credibly in place than elsewhere in the portfolio. Chile holds the strongest position, with the Refriclaje model demonstrating commercially sustainable market replacement and a private-sector ESG trajectory that does not depend on continued government subsidy. Tunisia and Indonesia both exhibit strong regulatory foundations and active market engagement, but with more dependence on continued government enforcement commitment. For these three countries in particular, the probability of sustaining and deepening market transformation post-project is meaningfully higher than elsewhere in the portfolio, though it is not guaranteed, and remains contingent on continued government commitment to standards enforcement and updating.

This finding warrants differentiated and systematic post-project monitoring rather than a uniform closure assessment, with particular attention to whether the Improving-band countries convert their current trajectory into durable market maturity, and whether Costa Rica's mid-Emerging position consolidates upward or regresses in the absence of continued support.

### **3. Partnership architecture as a determinant of Market Transformation**

The depth, structure, and functionality of partnerships among public institutions and between government and private sector actors emerge as a determinant of market transformation outcomes across the portfolio. Countries that achieved higher MSD Index were characterized by strong institutional coordination, active regulatory–market engagement, and durable public–private collaboration that aligned incentives across the supply chain. Where these partnership ecosystems were weak, fragmented, or non-operational, market transformation remained constrained — regardless of regulatory ambition or technical preparedness.

South Africa and Kazakhstan, both classified in the Weak band, illustrate how insufficient partnership density can stall market system activation even in the presence of substantial institutional capacity. In South Africa, weak operational integration among government authorities, implementing institutions, and private sector suppliers stalled the translation of policy intent into functioning delivery pathways. Similarly, in Kazakhstan, fragmented coordination between standards bodies, enforcement agencies, laboratories, and market actors inhibited the emergence of credible compliance systems and market confidence, preventing meaningful shifts in product supply and demand. In both contexts, the binding constraint was not regulatory design, technical capability, or market potential, but the absence of structured, outcome-oriented partnership platforms capable of aligning public authority with private sector execution.

By contrast, Indonesia demonstrates how dense partnership ecosystems can rapidly catalyse market transformation. Close coordination between ministries, customs authorities, laboratories, provincial governments, manufacturers, importers, and retailers enabled enforcement mechanisms, testing systems, and compliance incentives to evolve in tandem. This institutional–market alignment generated credible signals to suppliers, accelerated product portfolio upgrading, and normalised compliance behaviour across the supply chain. Similar dynamics are evident in Chile and Tunisia, where regulator–market partnerships, testing networks, and retail engagement supported steady consolidation of efficient product markets. In these contexts, well-structured public–private engagement fostered trust, encouraged innovation, and created self-reinforcing market behaviour that strengthened both compliance and competition.

Across the portfolio, therefore, partnership architecture, emerges as one of the decisive factors shaping market transformation trajectories. Countries that built dense coordination systems and trust-based regulatory–market relationships (Chile, Tunisia, Indonesia) advanced more rapidly toward self-reinforcing market behaviour, while those where institutional collaboration and private-sector engagement remained thin or fragmented experienced stalled or fragile transformation pathways.

This finding carries direct implications for future programme design, systematic investment in partnership platforms, spanning regulatory coordination, enforcement collaboration, testing ecosystems, market actor engagement, and finance facilitation, should be treated as a core intervention strategy rather than a supporting activity. Market transformation depends fundamentally on the quality of these institutional and market relationships.

#### **4. Regulatory frameworks demonstrate greater resilience than market activation activities under conditions of disruption, but the timing of disruption is decisive**

Sudan's Rules and Norms pillar held at 2.50 through active civil conflict from April 2023, while all market activation functions were suspended – confirming that codified regulatory outputs, once technically completed, retain their institutional value and foundational standing even when the programme that produced them has ceased to operate. The classification of Sudan as Emerging reflects this dynamic directly: a conflict-disrupted project with no measurable market activation can nevertheless reach the Emerging band if its regulatory architecture is sufficiently developed and durable.

Myanmar presents a structurally different and more challenging situation: the February 2021 military coup caused suspension at an early implementation phase, before regulatory outputs had been delivered. No equivalent asset base was therefore preserved, and Myanmar's index of 1.17 correctly reflects a near-zero institutional foundation for recovery. The contrast between Sudan (2.00, regulatory assets intact) and Myanmar (1.17, no regulatory assets) points to a clear sequencing principle: early and deliberate prioritisation of regulatory delivery creates a durable foundation that survives disruption; when disruption precedes regulatory achievement, no such foundation exists and recovery must effectively restart from the beginning.

For future programme design in politically or institutionally fragile contexts, this finding – strongly reinforced by both the Sudan classification and the Myanmar contrast – supports front-loading regulatory milestones as an explicit resilience-by-design strategy. Completed, gazetted regulation is the only project output that retains full value under conditions that cause all other programme activities to cease.

#### **5. Aggregate MSD indices are insufficient as a monitoring instrument and can actively obscure divergent risk profiles – a finding strengthened by the portfolio**

The portfolio makes this finding more acute, not less. Three countries – Chile (3.20), Tunisia (3.00), and Indonesia (3.00), share Improving band scores within a 0.20-point range, yet dimension-level analysis reveals materially different pillar profiles and post-project risk exposures. Chile's lead in Adaptiveness and Sustainability reflects commercial self-reinforcement that neither Tunisia nor Indonesia has yet achieved; Indonesia's Rules and Norms lead (3.25) reflects regulatory architecture of particular complexity and durability, while its Supporting Functions score of 2.75 (with an Information Systems sub-component at 2.0) indicates a specific gap not visible in the headline index; Tunisia's profile is more balanced across pillars but with lower Capacity and Coordination scores that point to different institutional dependencies. These are not interchangeable Improving-band trajectories.

The two Emerging-band countries — Costa Rica (2.70) and Sudan (2.00) — share a band classification but represent entirely different analytical situations. Costa Rica's score reflects across-the-board Emerging performance with a Rules and Norms lead; Sudan's score reflects a single high-scoring pillar (Rules and Norms 2.50) set against two pillars firmly in the Weak band (Core 1.75, Support 1.75). An aggregate index of 2.00 and an aggregate index of 2.70 are not simply different points on the same trajectory — they reflect structurally different system states. Using headline scores to infer comparable recovery potential or comparable sustainability risk would produce systematically incorrect conclusions in both directions.

Within the Weak band, South Africa (1.77), Kazakhstan (1.75), and Myanmar (1.17) share classification but face entirely different recovery pathways: South Africa's situation is primarily a co-financing activation problem; Kazakhstan's requires design and governance reform before co-financing can be usefully deployed; Myanmar's requires political normalisation before any programme logic can be operationalised. Effective portfolio monitoring requires tracking all twelve pillar-dimension intersections, which enables the distinction between countries that share a headline score but face structurally different conditions as external support is withdrawn. As the programme closes, it is precisely this dimension-level granularity — not the aggregate index — that will determine whether post-project monitoring identifies emerging sustainability gaps in time to act on them.

## Overall Assessment

GEF 9083 was conceived and implemented against a backdrop of exceptional diversity, eight countries across five continents, each bringing distinct institutional landscapes, regulatory traditions, political environments, and market development starting points. That diversity was not incidental to the programme's design; it was central to it. By engaging simultaneously with countries at fundamentally different stages of market readiness, the programme generated a body of implementation experience that no single-country intervention could have produced, and in doing so surfaced critical considerations, around co-financing structures, regulatory sequencing, institutional capacity, and political risk, that have informed country-level decision-making from the earliest stages of each project cycle.

Against that backdrop, the programme's contribution to energy efficiency market transformation is both real and more substantial. The portfolio scoring confirms that three countries Chile, Tunisia, and Indonesia have crossed into the Improving band, demonstrating systemic market momentum that operates beyond direct donor incentives. Across the portfolio as a whole, the programme has advanced the adoption of Minimum Energy Performance Standards, strengthened the institutional architecture for energy-efficient product regulation, and engaged market actors — governments, standards bodies, testing facilities, industry, and consumers — in ways that have materially shifted the conditions under which energy-efficient lighting and appliances are produced, imported, and sold. These are not marginal achievements. In a sector where regulatory inertia and market barriers have historically slowed the uptake of efficient technologies, the programme has moved the needle in ways that will reduce energy consumption and associated emissions for years beyond programme closure.

The outcomes are inevitably differentiated, and the differentiation is analytically instructive. GEF 9083 has delivered significant and durable market development outcomes in Chile, Tunisia, and Indonesia — three countries with functional regulatory frameworks, engaged market actors, and credible sustainability trajectories. It has delivered partially transformative outcomes in Costa Rica, where regulatory architecture is in place but market activation remains incomplete. Sudan occupies a distinct category: a conflict-disrupted programme that nevertheless preserved a shelf-ready regulatory package through the civil war, and whose classification to the Emerging band entry point correctly reflects the durability of regulatory outputs under conditions that suspended all other programme activities. Severely compromised outcomes occurred in South Africa, Kazakhstan, and Myanmar, where exogenous

disruption – civil conflict, political crisis – or implementation design failure prevented full programme delivery. In all three Weak-band cases, the primary lessons are prospective rather than retrospective: the programme created conditions, or preserved conditions, that successor engagements can build upon when the external barriers to delivery are resolved.

The scores do not change the programme's structural architecture – they sharpen it. Indonesia's classification to Improving confirms that the portfolio's active-implementation results are stronger, and that the programme's record in converting complex regulatory processes into durable market outcomes is not limited to the two countries with the most straightforward implementation environments. Sudan's classification to Emerging confirms that regulatory outputs have a resilience value that is independent of market activation outcomes – a finding with direct implications for how future programmes sequence their activities in fragile and conflict-affected contexts.

The programme's most enduring legacy is the regulatory architecture for energy-efficient product markets that it has established across five countries. This is an achievement that compounds over time: as governments enforce, update, and build upon gazetted standards, the market transformation initiated under GEF 9083 continues to generate energy efficiency gains that extend well beyond the programme's formal boundaries. Taken as a whole, GEF 9083 stands as a meaningful and in many respects pioneering contribution to the global effort to accelerate energy efficiency market development – one whose lessons, as much as its direct outputs, will shape the design and delivery of successor programmes in the years ahead.

## 1. Introduction

### 1.1 Purpose of the MSD assessment

This document constitutes the Market Systems Development (MSD) assessment component of the Terminal Evaluation (TE) for the GEF Programme 9083: Leapfrogging Markets to High Efficiency Products (Appliances, including Lighting, and Electrical Equipment), implemented by the United Nations Environment Programme (UNEP). The evaluation was commissioned by the GEF Evaluation Office and conducted in accordance with the UNEP Evaluation Policy and GEF Minimum Evaluation Requirements for terminal evaluations of full-sized projects.

The MSD lens was not a post-hoc analytical overlay applied at evaluation stage; it was embedded in the programme's theory of change from design inception. The programme posited that durable energy efficiency market transformation cannot be achieved through regulatory intervention alone, but requires systemic and self-reinforcing change across three interdependent market functions: the operations of core supply and demand actors who produce, distribute, and purchase energy-efficient products (Core Market Functions); the supporting services – testing, certification, market information, financing – that those actors depend upon to function effectively (Supporting Functions); and the regulatory and normative framework that governs market behaviour, establishes minimum standards, and creates the conditions for fair and efficient competition (Rules and Norms). Sustainable market change, in the programme's design logic, occurs when these three pillars are mutually reinforcing and when the actors within them have developed sufficient capacity, incentive, and commitment to maintain and extend market functions beyond the period of external support.

This evaluation assesses the degree to which that systemic transformation was achieved at project closure across the eight implementing countries. It does so not to render a binary judgement on success or failure, but to provide a structured, evidence-based account of where market systems have genuinely shifted, where transformation remains partial or fragile, and where implementation was prevented from reaching its potential by factors within or beyond the programme's control. The findings are intended to serve both accountability and learning purposes – informing the GEF and UNEP's assessment of GEF 9083's results and generating actionable insights for the design and delivery of successor programmes in energy efficiency market development.

### 1.2 Programme Overview

GEF 9083 was a multi-country, multi-year programme supporting the transition to energy-efficient lighting, equipment and appliances across eight countries spanning five continents: Chile, Tunisia, Indonesia, Costa Rica, South Africa, Kazakhstan, Sudan, and Myanmar. Implemented over a seven-year period from 2018 to 2025, it represents one of the most geographically and institutionally diverse energy efficiency programmes in the GEF portfolio, engaging countries at markedly different stages of market development, regulatory maturity, and institutional capacity.

The programme operated through a common but adaptable theory of change, built around four core intervention streams: the establishment of Minimum Energy Performance Standards (MEPS) to set mandatory efficiency thresholds for products entering national markets; the development of Market Verification and Enforcement (MVE) schemes to ensure compliance and market integrity; capacity building for national institutions, standards bodies, testing laboratories, and enforcement agencies; and consumer and market awareness campaigns designed to shift demand patterns and normalise energy-efficient purchasing behaviour. While this intervention logic was consistent across the portfolio, its application was calibrated to each country's specific market structure, regulatory environment, and implementation context – reflecting the programme's recognition that no single model of market transformation is universally applicable.

GEF grant allocations across the portfolio ranged from USD 2.0 million in South Africa to USD 4.0 million in Indonesia and Costa Rica, reflecting differences in country scope, intervention complexity, and the scale of market transformation targeted. The total planned programme value, including co-financing commitments from governments, private sector partners, and other sources, was approximately USD 230 million across the portfolio – a leverage ratio that underscores both the ambition of the programme's design and, as the evaluation findings make clear, the degree of risk that co-financing dependency introduced into its implementation architecture.

Taken together, the eight-country portfolio was designed not only to deliver country-level outcomes but to generate a body of cross-country learning about what works, under what conditions, and at what cost – learning that this evaluation seeks to surface and make available to the broader energy efficiency community.

## 2. MSD Assessment Approach and Methodology

### 2.1 MSD Assessment Design

The evaluation applies a mixed-methods design. Quantitative MSD scoring is derived from documentary evidence triangulated across programme implementation reports, national regulatory databases, market studies, and key informant interviews.

Chile, Tunisia, and Indonesia – the three Improving-band countries, with MSD indices of 3.20, 3.00, and 3.00 respectively – serve as calibration benchmarks: their scores collectively define the upper range of what was achievable within the GEF 9083 programme context, with **Chile (3.20)** establishing the portfolio ceiling. All country scores were reviewed by the evaluation team against the evidence base before finalisation. Scores at 3.0 or above required two independent sources of verification.

Disruption-adjusted interpretation notes were applied to Sudan and Myanmar, where exogenous events interrupted implementation before the evaluation reference period. The two cases are analytically distinct and are treated differently within the scoring framework. For Myanmar – suspended following the February 2021 military coup before substantive regulatory outputs had been delivered – the disruption note records an early-stage interruption with no preserved institutional asset base, correctly reflected in Myanmar's Weak band score of 1.17. For Sudan – where civil conflict from April 2023 halted all market activation activities but did not erase prior regulatory achievements – the disruption-adjusted analysis recognised the durability of the preserved regulatory architecture: MEPS for five appliance categories, an energy labelling scheme, MVE programme design, and an established ERA focal point. This recognition supports Sudan's classification to Emerging (2.00), correctly reflecting that technically completed regulatory outputs retain institutional value independently of whether market activation was achieved. The disruption-adjusted framework does not lower scores to account for missed activities; it ensures that preserved institutional achievements are credited where evidence supports doing so.

### 2.2 MSD Analytical Framework

The evaluation uses the three-pillar MSD framework. Each pillar is assessed across four analytical dimensions.

**Core Market Functions** assesses the operations of supply and demand actors – production/importation, distribution, retail/sales, and consumption of energy-efficient products – and the degree to which market activity is commercially self-sustaining rather than donor-dependent.



**Supporting Functions** assesses the enabling services on which core market actors depend: financing mechanisms, marketing and awareness, technical support (testing, certification, laboratory capacity), and information systems (market data, monitoring portals, knowledge infrastructure).

**Rules and Norms** assesses the regulatory and normative framework: standards (MEPS and energy labels), MVE and enforcement infrastructure, fiscal and environmental instruments (procurement guidelines, end-of-life management), and informal norms (industry compliance culture, consumer behaviour change).

Each pillar is scored across four cross-cutting analytical dimensions – Functionality, Incentives and Behaviours, Capacity and Coordination, and Adaptiveness and Sustainability – on a 1–4 scale, producing twelve pillar-dimension intersection scores per country. The MSD Index is the simple average of the three pillar scores:  $\text{MSD Index} = (\text{Core Market Functions} + \text{Supporting Functions} + \text{Rules and Norms}) \div 3$ . Band thresholds are defined as Weak (1.0–1.9), Emerging (2.0–2.9), Improving (3.0–3.4), and Mature (3.5–4.0). Ratings of 3.0 or above require at least two independent documentary sources under the evidence moderation rule specified in Annex G.3 of the Inception Report.

| MSD PILLAR                   | SUB-COMPONENTS                                                                                                                       | ANALYTICAL FOCUS                                                                                                                                           |
|------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Core Market Functions</b> | Supply chain functionality; market actor behaviour; demand-side incentives; competitive market dynamics                              | Is the market for efficient products operating? Are actors buying, selling, and distributing without project facilitation? Have market shares shifted?     |
| <b>Supporting Functions</b>  | Financing mechanisms; MVE schemes; awareness campaigns; technical training; information systems                                      | Are the supporting services that markets depend on being provided independently? Is the MVE scheme commercially self-sustaining? Is co-financing deployed? |
| <b>Rules and Norms</b>       | MEPS regulations; labelling standards; testing and verification infrastructure; enforcement capacity; regulatory adaptive management | Are the regulatory rules in place and enforced? Is enforcement operational rather than merely administrative? Are regulations updated as markets evolve?   |

## 2.3 Scoring Approach

Country MSD scores are expressed on a 1–4 integer scale at the dimension level, averaged to pillar level, and averaged to country index level. The four maturity bands are defined as follows:

| SCORE | MATURITY BAND                    | DESCRIPTOR                                                                                                                                                                                   | OBSERVABLE INDICATORS                                                                                                                                            |
|-------|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4     | <b>Mature / Self-Sustaining</b>  | Market systems are self-sustaining, adapting, and no longer dependent on project support. Regulatory frameworks are iteratively updated. Private sector investment is independently driven.  | Independent MVE operator; private sector co-investment without project facilitation; MEPS enforcement with court-level sanctions; market shares self-reinforcing |
| 3     | <b>Improving / Strengthened</b>  | Market systems are functioning and strengthening. Key actors have internalised changed behaviour. Regulatory enforcement is operational. Supporting functions are partially self-sustaining. | LED market share >50%; MEPS fully enforced; MVE scheme commercially operated; financing instruments available without project subsidy                            |
| 2     | <b>Emerging / Early Systemic</b> | Early systemic change is occurring. Regulatory architecture is established. Market activation is beginning but project-dependent. Supporting functions are piloted.                          | MEPS gazetted; LED products available nationally; government procurement shifted; MVE scheme piloted but not independent                                         |
| 1     | <b>Weak / Nascent</b>            | Little to no systemic change. Market actors have not shifted behaviour. Regulatory framework is incomplete or unenforced. Supporting functions are absent.                                   | LED products limited availability; no MEPS enforcement; no MVE scheme; no co-financing deployed; market actors unchanged                                         |

## 2.4 Country Classifications

This evaluation adopted a refined classification approach for Weak band countries, distinguishing between four causal types. Each causal type implies a different recovery trajectory and programme response, and they are displayed separately in all charts and tables throughout this report.

| Classification              | Country      | MSD Index | Defining Cause                                                                                                            |
|-----------------------------|--------------|-----------|---------------------------------------------------------------------------------------------------------------------------|
| Weak (implementation stall) | South Africa | 1.77      | Co-financing failure: USD 85M committed, USD 0 disbursed. Programme absorbed into parallel government LED rollout.        |
| Weak (endogenous failure)   | Kazakhstan   | 1.75      | Programme design and management shortfalls: MVE scheme designed but not operationalised; co-financing not fully deployed. |
| Weak (suspended)            | Myanmar      | 1.17      | Military coup February 2021. Programme suspended in early implementation phase before regulatory outputs delivered.       |

## 3. Portfolio Overview

### 3.1 Portfolio Summary Table

Table 2 below presents MSD index scores and pillar averages for all 8 countries, ranked by MSD index. Colour coding reflects maturity band positioning.

| COUNTRY      | CLASSIFICATION                                | MSD INDEX | CORE | SUPPORT | RULES |
|--------------|-----------------------------------------------|-----------|------|---------|-------|
| Chile        | Improving / Strengthened (3.0–3.4)            | 3.20      | 3.1  | 3.2     | 3.3   |
| Tunisia      | Improving / Strengthened (3.0–3.4)            | 3.00      | 3    | 3       | 3     |
| Indonesia    | Improving / Strengthened (3.0–3.4)            | 3.00      | 3.0  | 2.75    | 3.25  |
| Costa Rica   | Emerging / Early Systemic (2.0–2.9)           | 2.42      | 2.25 | 2.25    | 2.75  |
| Sudan        | Emerging / Early Systemic – conflict-affected | 2.00      | 1.75 | 1.75    | 2.5   |
| South Africa | Weak – implementation stall                   | 1.77      | 1.88 | 1.5     | 1.75  |
| Kazakhstan   | Weak – endogenous failure                     | 1.75      | 2    | 1.5     | 1.75  |
| Myanmar      | Weak – suspended                              | 1.17      | 1.25 | 1.25    | 1     |



3.2 Portfolio Comparison Radars

Figure 1 presents all 8 countries on a three-axis pillar comparison radar.

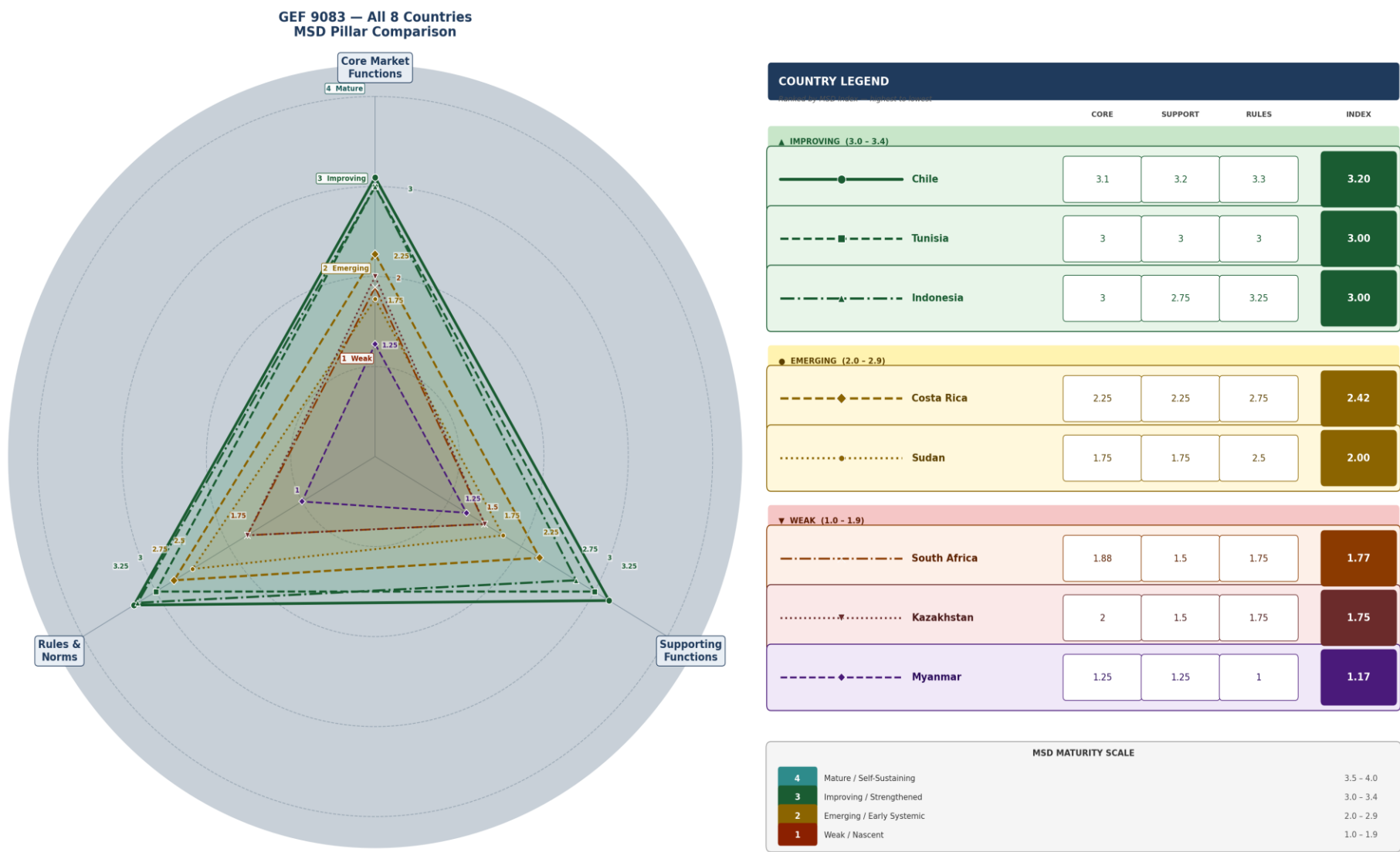


Figure 1: GEF 9083 — All 8 Countries MSD Pillar Comparison

### 3.3 Cross-Dimensional Scorecard

Table 3 presents the complete 8×12-dimension scorecard across all three pillars. Each cell shows the dimension-level score for each country, colour-coded by maturity band. Countries are arranged in descending MSD Index order (highest to lowest).

| DIMENSION                          | Chile | Tunisia | Indonesia | Costa Rica | Sudan | South Africa | Kazakhstan | Myanmar |
|------------------------------------|-------|---------|-----------|------------|-------|--------------|------------|---------|
| MSD INDEX                          | 3.20  | 3.00    | 3.00      | 2.42       | 2.00  | 1.77         | 1.75       | 1.17    |
| <b>CORE MARKET PILLAR</b>          |       |         |           |            |       |              |            |         |
| Functionality                      | 3     | 3       | 3.0       | 3          | 1.5   | 2            | 2          | 1       |
| Incentives                         | 3     | 3       | 3.0       | 2          | 1.5   | 2            | 2          | 1       |
| Capacity                           | 3     | 3       | 3.0       | 2          | 2.5   | 1.5          | 2          | 2       |
| Adaptiveness                       | 3.5   | 3       | 3.0       | 2          | 1.5   | 2            | 2          | 1       |
| <b>SUPPORTING FUNCTIONS PILLAR</b> |       |         |           |            |       |              |            |         |
| Functionality                      | 3     | 3       | 3.0       | 2          | 1.5   | 1.5          | 1.5        | 1       |
| Incentives                         | 3     | 3       | 3.0       | 2          | 2     | 1.5          | 1.5        | 2       |
| Capacity                           | 3.5   | 3       | 3.0       | 3          | 2     | 1.5          | 1.5        | 1       |
| Adaptiveness                       | 3.5   | 3       | 2         | 2          | 1.5   | 1.5          | 1.5        | 1       |
| <b>RULES &amp; NORMS PILLAR</b>    |       |         |           |            |       |              |            |         |
| Functionality                      | 3.5   | 3       | 3.5       | 3          | 2.5   | 2.5          | 2          | 1       |
| Incentives                         | 3     | 3       | 3.0       | 3          | 2.5   | 1.5          | 1.75       | 1       |
| Capacity                           | 3.5   | 3       | 3.5       | 2          | 2.5   | 1.5          | 1.5        | 1       |
| Adaptiveness                       | 3.5   | 3       | 3.0       | 3          | 2.5   | 1.5          | 1.75       | 1       |

**Band Key:** **Mature (3.5–4.0)** **Improving (3.0–3.4)** **Emerging (2.0–2.9)** **Weak (1.0–1.9)**

## 4. Country MSD Profiles

This section presents individual MSD profiles for each of the 8 portfolio countries. Each profile includes: the 12-dimension radar chart; a dimension scorecard; programme context narrative; pillar-by-pillar analysis; strengths and gaps; and the key lesson drawn from that country's implementation experience.

### 4.1. Chile | MSD Country Profile

#### Country and Market Context

Chile's residential sector accounts for 17% of national electricity consumption. Refrigerators are identified as the most energy-intensive household appliance, responsible for 29% of residential electricity demand. At project inception, the national stock included approximately 7.7 million units — many over 15 years old — representing a substantial and quantifiable energy and GHG savings opportunity. The annual savings potential from MEPS aligned with international benchmarks was estimated at 5 TWh or 2.4 million tCO<sub>2</sub>eq for 2030.

Chile presents three structural features that directly shape the MSD assessment. First, the refrigerator market is entirely import-driven with no domestic production — meaning the certification and border entry process is the critical MVE gatekeeping mechanism. Second, Chile had prior institutional readiness: the executing agency Fundación Chile had pre-existing relationships with all key ministries, and both the SEC and Ministry of Energy had already worked on lighting efficiency (en.lighten initiative), providing proven inter-institutional networks. Third, the project faced two significant external shocks: the 2019 social uprising that required redesigning the messaging strategy, and COVID-19 that forced a full redesign of the replacement campaign and laboratory training to digital modalities, necessitating an 11-month extension.

Despite these disruptions, the Management-Led Terminal Review (MLTR) in 2023 rated the project at Highly Satisfactory — the highest rating on the six-point UNEP scale — across all major criteria. This Chile MSD assessment translates that performance into the structured MSD Market Transformation Results Table for portfolio-level comparison.

|                       |                                                     |                                                          |                    |
|-----------------------|-----------------------------------------------------|----------------------------------------------------------|--------------------|
| <b>MSD INDEX 3.20</b> | <b>CLASSIFICATION</b><br><b>Improving (3.0–3.4)</b> | <b>Core  Support  Rules</b><br><b>3.10   3.20   3.30</b> | <b>RADAR CHART</b> |
|-----------------------|-----------------------------------------------------|----------------------------------------------------------|--------------------|

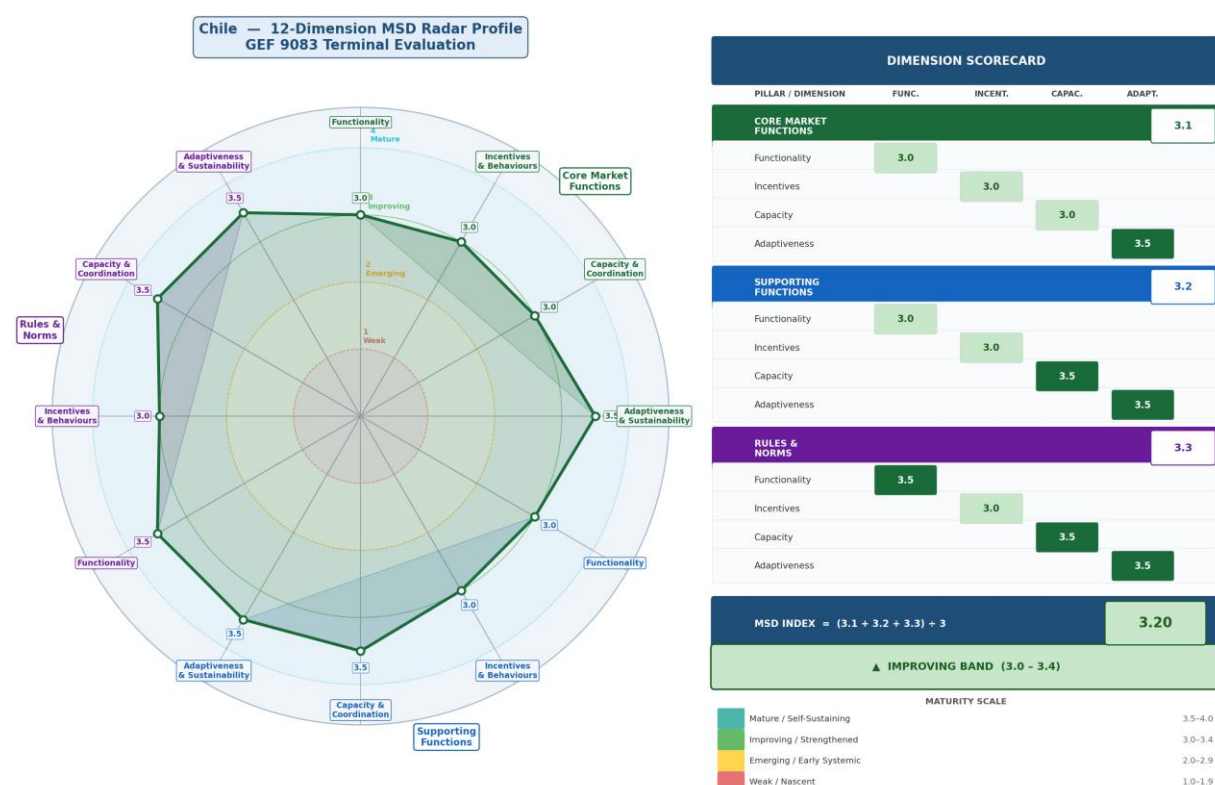


Figure 2: Chile 12-Dimension MSD Radar Profile — Scores: Core 3.1 | Supporting 3.2 | Rules & Norms 3.3 | MSD Index 3.20 (Improving)

### Dimension Scorecard

| Pillar                                                                              | Pillar Score | Weight (Annex G.4) | Weighted Contribution        |
|-------------------------------------------------------------------------------------|--------------|--------------------|------------------------------|
| <b>Core Market Functions</b><br>Production, Distribution, Retail/Sales, Consumption | <b>3.1</b>   | 33.3%              | 1.000                        |
| <b>Supporting Functions</b> Finance, Awareness, Technical, Information              | <b>3.2</b>   | 33.3%              | 1.000                        |
| <b>Rules &amp; Norms</b> Standards, MVE, Fiscal, Informal Norms                     | <b>3.3</b>   | 33.3%              | 1.000                        |
| <b>MSD Index = (3.1 + 3.2 + 3.3) ÷ 3</b>                                            | <b>3.20</b>  | 100%               | <b>IMPROVING (3.0 – 3.4)</b> |

The MSD Index of **3.20** positions Chile at the firmly within the Improving band on the market transformation continuum. Chile has achieved genuine systemic momentum: its market actors are commercially motivated to comply with EE standards independent of donor incentives, its regulatory framework is formally adopted and legally time-bound for enforcement, and its supporting infrastructure (labs, awareness, circular economy) is operational.

Chile does not yet reach Mature (3.5+) for three analytically connected reasons: (1) mandatory enforcement of the new MEPS/testing protocol at retail level does not begin until October 2026 – creating an unverified compliance gap; (2) no permanent government-backed replacement financing scheme exists beyond the Refriclaje demonstration; and (3) the WEEE Supreme Decree has not yet been formally enacted. These are sequencing limitations, not systemic failures – the architecture is in place and the trajectory is confirmed.

## Pillar A: Core Market Functions [Score: 3.1 – Improving]

### Sub-components: Production / Importation | Distribution | Retail / Sales | Consumption

This pillar assesses whether high-efficiency products are being produced, imported, distributed, retailed, and purchased at scale. Chile's entirely import-driven market structure means the distribution and border-entry certification pipeline is the dominant supply-side mechanism.

| MSD Dimension           | Sub-component (TE Framework)                   | Evidence from Project Documents                                                                                                      | Sources (Triangulated)                            | Score (1–4) |
|-------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------|
| Functionality           | Production & Importation                       | Strong import-driven market with diversified global suppliers; compliance linked to IEC certification systems; bottlenecks addressed | PIR; Case Study: Chile; CEO Endorsement           | 3           |
|                         | Distribution & Retail                          | Well-established distributor networks aligned with compliance requirements; efficient products integrated into supply chains         | PIR; Evaluation synthesis; Stakeholder interviews |             |
|                         | Retail / Sales (Market Share Data – SEC)       | Increasing share of compliant appliances tracked through SEC systems; transition toward efficient appliances visible                 | SEC data; PIR; Evaluation synthesis               |             |
|                         | Consumption (Household Demand & Affordability) | Demand supported by replacement programme (Refriclaje PPP); affordability remains a constraint without permanent financing           | Case Study; PIR; Evaluation synthesis             |             |
| Incentives & Behaviours | Production & Importation                       | Importers shifting toward compliant products due to MEPS and enforcement pressure                                                    | PIR; Evaluation synthesis; Stakeholder interviews | 3           |
|                         | Distribution & Retail                          | Retailers incentivised to stock compliant appliances due to regulatory enforcement                                                   | PIR; Evaluation synthesis; Case Study             |             |
|                         | Retail / Sales (Market Share Data – SEC)       | Sales behaviour increasingly aligned with efficiency standards; compliance influencing product offerings                             | SEC data; PIR; Evaluation synthesis               |             |
|                         | Consumption (Household Demand & Affordability) | Consumer behaviour influenced by awareness campaigns and replacement incentives                                                      | Case Study; Evaluation synthesis; PIR             |             |
| Capacity & Coordination | Production & Importation                       | Strong coordination between SEC, Ministry of Energy, and importers                                                                   | Case Study; PIR; Evaluation synthesis             | 3           |
|                         | Distribution & Retail                          | Established logistics and coordination across supply chain actors                                                                    | PIR; Stakeholder interviews; Evaluation synthesis |             |
|                         | Retail / Sales (Market Share Data – SEC)       | Retailers aware of compliance requirements and labelling systems – Market share data available from importation database/reports     | PIR; SEC data; Evaluation synthesis               |             |
|                         | Consumption (Household Demand & Affordability) | Demand supported by replacement programme (Refriclaje PPP); affordability remains a constraint without permanent financing           | Case Study; PIR; Evaluation synthesis             |             |

| MSD Dimension                 | Sub-component (TE Framework)                   | Evidence from Project Documents                                            | Sources (Triangulated)                            | Score (1–4) |
|-------------------------------|------------------------------------------------|----------------------------------------------------------------------------|---------------------------------------------------|-------------|
| Adaptiveness / Sustainability | Production & Importation                       | Supply chain adapting to evolving standards and certification requirements | PIR; Case Study; Evaluation synthesis             | 3           |
|                               | Distribution & Retail                          | Distribution networks functioning with reduced donor reliance              | Evaluation synthesis; PIR; Stakeholder interviews |             |
|                               | Retail / Sales (Market Share Data – SEC)       | Continued growth in efficient appliance sales expected post-programme      | SEC data; PIR; Evaluation synthesis               |             |
|                               | Consumption (Household Demand & Affordability) | Sustainability constrained by lack of long-term financing mechanisms       | Case Study; PIR; Evaluation synthesis             |             |

**Pillar finding:** Core Market Functions score 3.1 (Improving). The market is commercially active with measurable, sustained efficiency upgrading driven by a combination of project interventions and aligned private sector incentives. Retailers and manufacturers are behaving as commercially motivated actors – not as passive recipients of donor incentives. The remaining gap between Improving and Mature is that market transformation depends on MEPS enforcement (not yet tested at full scale) and the Refriclaje replacement model (demonstrated but not yet institutionalized as a recurring programme).

### Pillar B: Supporting Functions [Score: 3.2 – Improving]

#### Sub-components: Finance | Marketing & Awareness | Technical Support | Information Systems

This pillar assesses the enabling services that allow the core EE market to function. Chile's performance in this pillar reflects strong public-private co-investment, exceptional consumer outreach, and the successful establishment of national laboratory capacity – tempered by a co-financing shortfall and the absence of a permanent government-backed financial mechanism.

| MSD Dimension           | Sub-component (TE Framework)                              | Evidence from Project Documents                                           | Sources (Triangulated)                       | Score (1–4) |
|-------------------------|-----------------------------------------------------------|---------------------------------------------------------------------------|----------------------------------------------|-------------|
| Functionality           | Finance (Demand & Supply Side)                            | Pilot financing scheme (Refriclaje) implemented but not institutionalised | Case Study; PIR; Evaluation synthesis        | 3           |
|                         | Marketing & Awareness                                     | Strong awareness campaigns driving behavioural change                     | Case Study; PIR; Evaluation synthesis        |             |
|                         | Technical Support (Testing Labs, Certification, Capacity) | Fully functional testing labs and certification systems aligned with IEC  | Case Study; PIR; Technical reports           |             |
|                         | Information Systems (Register, Portal, R&D, Circularity)  | SEC monitoring systems operational and tracking compliance                | SEC data; Evaluation synthesis               |             |
| Incentives & Behaviours | Finance (Demand & Supply Side)                            | Limited incentives for sustained financing beyond pilots                  | PIR; Evaluation synthesis; Case Study        | 3           |
|                         | Marketing & Awareness                                     | Campaigns effectively influence consumer and retailer behaviour           | Case Study; PIR; Evaluation synthesis        |             |
|                         | Technical Support (Testing Labs, Certification, Capacity) | Certification requirements incentivise compliance among suppliers         | PIR; Technical reports; Evaluation synthesis |             |
|                         | Information Systems                                       | Data systems incentivise compliance through transparency                  | SEC data; PIR; Evaluation synthesis          |             |

| MSD Dimension                 | Sub-component (TE Framework)                              | Evidence from Project Documents                               | Sources (Triangulated)                | Score (1–4) |
|-------------------------------|-----------------------------------------------------------|---------------------------------------------------------------|---------------------------------------|-------------|
|                               | (Register, Portal, R&D, Circularity)                      |                                                               |                                       |             |
| Capacity & Coordination       | Finance (Demand & Supply Side)                            | Coordination between public-private actors in pilot financing | Case Study; PIR; Evaluation synthesis | 3           |
|                               | Marketing & Awareness                                     | Strong institutional coordination in campaign delivery        | Case Study; PIR; Evaluation synthesis |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | High institutional capacity in labs and certification bodies  | Case Study; PIR; Technical reports    |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | Effective coordination between SEC and government agencies    | PIR; SEC data; Evaluation synthesis   |             |
| Adaptiveness / Sustainability | Finance (Demand & Supply Side)                            | Financing mechanisms not yet sustainable at scale             | Case Study; PIR; Evaluation synthesis | 3           |
|                               | Marketing & Awareness                                     | Behavioural change sustained beyond campaign period           | Case Study; Evaluation synthesis; PIR |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Certification and lab systems adaptable to evolving standards | Case Study; PIR; Technical reports    |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | Monitoring systems scalable and adaptable                     | PIR; SEC data; Evaluation synthesis   |             |

**Pillar finding:** Supporting Functions score 3.2 (Improving). Chile's supporting architecture is notably stronger than Kazakhstan's – two accredited-capable labs, a proven replacement financing model, high consumer awareness, and an emerging circular economy infrastructure. The co-financing shortfall (57.2% of planned) is the primary efficiency concern, alongside the absence of a permanent government-backed financing scheme. The Refriclaje model is demand-proven; the challenge is institutionalization beyond the project period.

### Pillar C: Rules and Norms [Score: 3.3 – Improving]

#### Sub-components: Standards (MEPS/Labels) | MVE & Enforcement | Fiscal/Environmental | Informal Norms

This pillar assesses the strength of formal and informal institutions governing the EE refrigerator market. Chile's regulatory transformation is substantive and multi-layered – encompassing updated MEPS, a new testing protocol, a redesigned energy label, WEEE regulation, and institutional capacity at the SEC.

| MSD Dimension | Sub-component (TE Framework)                          | Evidence from Project Documents                                   | Sources (Triangulated)                | Score (1–4) |
|---------------|-------------------------------------------------------|-------------------------------------------------------------------|---------------------------------------|-------------|
| Functionality | Standards (MEPS, Energy Label, IEC Protocol)          | Fully developed MEPS and labelling aligned with IEC standards     | Case Study; PIR; Regulatory documents | 3           |
|               | MVE & Enforcement (SEC, Labs, Compliance Timeline)    | Strong enforcement at border and market level through SEC         | PIR; SEC data; Evaluation synthesis   |             |
|               | Fiscal & Environmental Framework (REP Law, WEEE, APL) | Circular economy frameworks emerging (WEEE/EPR under development) | Evaluation synthesis; Case Study; PIR |             |
|               | Informal Norms (Market Practice, Compliance)          | High compliance culture among market actors                       | Evaluation synthesis; Stakeholder     |             |



| MSD Dimension                 | Sub-component (TE Framework)                                         | Evidence from Project Documents                                    | Sources (Triangulated)                                   | Score (1–4) |
|-------------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------------------------|-------------|
|                               | Culture, Consumer Trust)                                             |                                                                    | interviews; Case Study                                   |             |
| Incentives & Behaviours       | Standards (MEPS, Energy Label, IEC Protocol)                         | Standards driving supplier compliance behaviour                    | PIR; Case Study; Evaluation synthesis                    | 3           |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Enforcement mechanisms incentivise compliance                      | PIR; SEC data; Evaluation synthesis                      |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Emerging incentives for circular economy practices                 | Evaluation synthesis; Case Study; PIR                    |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Market behaviour increasingly aligned with compliance expectations | Evaluation synthesis; Stakeholder interviews; PIR        |             |
| Capacity & Coordination       | Standards (MEPS, Energy Label, IEC Protocol)                         | Strong institutional capacity to develop and update standards      | Case Study; PIR; Regulatory documents                    | 3           |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Well-coordinated enforcement institutions (SEC, labs)              | PIR; SEC data; Evaluation synthesis                      |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Coordination across agencies still evolving                        | Evaluation synthesis; Case Study; PIR                    |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Coordination between stakeholders reinforces compliance culture    | Evaluation synthesis; Stakeholder interviews; Case Study |             |
| Adaptiveness / Sustainability | Standards (MEPS, Energy Label, IEC Protocol)                         | Standards periodically updated to align with global norms          | Case Study; PIR; Regulatory documents                    | 3           |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Enforcement systems adaptable and sustained                        | PIR; SEC data; Evaluation synthesis                      |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Environmental frameworks evolving but not fully institutionalised  | Evaluation synthesis; Case Study; PIR                    |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Compliance behaviour increasingly self-sustaining                  | Evaluation synthesis; Stakeholder interviews; Case Study |             |

**Pillar finding:** Rules and Norms score 3.3 (Improving). Chile's regulatory infrastructure is the most advanced of the GEF 9083 countries assessed to date: MEPS and label have been formally adopted at more ambitious levels than the EOP target, the testing protocol has international alignment, the enforcement authority (SEC) has strengthened capacity, and the WEEE framework is advancing under REP Law. The remaining gap to Mature is that full retail-level enforcement has not yet been tested at scale – the compliance deadline is October 2026, post-project. Informal norms are strongly supportive.



## Chile's MEPS Activation Chain

Chile's LED and refrigeration market transformation followed this cascade closely and is the clearest example in the GEF 9083 portfolio of all seven stages firing in sequence (Figure 3).

The chain begins with MEPS Regulations — Chile's SEC formally gazetted mandatory minimum energy performance standards, setting enforceable efficiency thresholds that created a legal compliance floor for the entire market. This was reinforced by Market Surveillance & Enforcement, where the SEC's border-level certification requirement meant non-compliant products could not legally enter the market — a structural enforcement mechanism absent in most other portfolio countries.

These two regulatory stages drove Manufacturer & Importer Compliance: with enforcement credible and border controls active, domestic manufacturers and importers had no viable route to market without meeting MEPS thresholds, which in turn ensured Efficient Product Availability — compliant, high-efficiency products became the default offering across retail channels.

From there, the market dynamics took over. Retail Competition & Price Compression followed as multiple compliant suppliers competed on price, reducing the cost premium on efficient products. This accelerated Consumer Adoption & Stock Turnover, with households replacing inefficient stock at scale — evidenced by Chile's residential LED payback period falling by approximately 40% over the project period.

The result was Market Share Growth & the Feedback Loop shown at the base: growing efficient product penetration generated market data and commercial momentum that fed back into Policy Enhancement — informing successive rounds of MEPS tightening and keeping the regulatory architecture responsive to market conditions.

Chile is the only GEF 9083 country where this full loop — including the feedback arrow back to policy — can be evidenced at all seven stages.



**Figure 3: The MEPS Market Activation Chain — Chile as Portfolio Exemplar**

| STRENGTHS & ACHIEVEMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | GAPS & RISKS                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Highest-scoring country in the portfolio at MSD Index <b>3.20</b> (Core 3.1   Support 3.2   Rules 3.3) – a near-circular pillar profile spanning only 0.20 points, the tightest range in the portfolio and the defining signature of balanced systemic transformation.</p> <ul style="list-style-type: none"> <li>• <b>Scenario 2 MEPS adopted:</b> More ambitious than the original EOP target. Enforceable on imports from January 2025 and at retail level from October 2026, with legally time-bound enforcement milestones embedded in SEC regulation.</li> <li>• <b>Border-level MVE operational:</b> SEC certification required at point of import, establishing a functioning market entry gateway that prevents non-compliant products from entering the distribution chain.</li> <li>• <b>Refriclaje PPP – self-sustaining demand pull:</b> 1,600+ units replaced; 8,500+ consumer registrations on the waitlist. Commercially funded through a Sodimac + six-manufacturer partnership, demonstrating market replacement momentum that operates independently of project funding.</li> <li>• <b>Testing infrastructure fully operational:</b> CESMEC and SILAB certified under IEC 62552:2015 and trained by an international reference laboratory, providing independent in-country verification capacity that does not depend on continued project support.</li> <li>• <b>Consumer awareness institutionalised:</b> 83% energy label recognition rate; Topten.cl comparison portal live and maintained beyond project close; national TV and digital awareness campaign reach validated across multiple consumer segments.</li> <li>• <b>Rules Adaptiveness at 3.5:</b> The only score at the Mature-band threshold across all three pillars in the portfolio. Reflects genuinely durable regulatory embedding – MEPS are not discretionary commitments but legally mandated and time-bound obligations with institutional enforcement.</li> <li>• <b>Co-financing ratio of 5.7:1:</b> Substantially delivered through private-sector and government contributions. The Refriclaje model in particular demonstrates that the leverage ratio was not merely committed on paper but converted into commercially active programme delivery.</li> </ul> | <p>Adaptiveness dimensions across Core and Support remain at 3.0, indicating market self-sustainability has not fully been tested without project support. MVE scheme continuation beyond project closure requires monitoring.</p> |

**Key Lesson:** Chile demonstrates that a near-circular radar profile – balanced pillar advancement – is the signature of genuine market transformation rather than regulatory achievement alone.

## 4.2 Tunisia | MSD Country Profile

### Country and Market Context

Tunisia's electricity system is one of the most fossil-fuel-dependent in North Africa – 96% of electricity generated from natural gas, with 50% of gas supply imported. The building sector has been the country's largest energy consumer since 2021, accounting for 36% of final energy use. Lighting alone represents between 14% (residential) and 80% (education sector and public lighting) of electricity consumption across end-use categories – making it the highest-impact and most immediately actionable demand-side efficiency target. Energy subsidies averaged 2.1% of GDP (2011–2021), spiking to 5.3% of GDP in 2022, creating strong national fiscal incentives to accelerate the transition to energy-efficient products.

Tunisia presents three structural features that directly shape the MSD assessment. First, the LED lighting market is import-dependent – Tunisia has no significant domestic LED manufacturing base – meaning that import monitoring, product certification, and border-entry

controls are the critical supply-side gatekeeping mechanisms. Second, Tunisia had meaningful institutional readiness: Agence Nationale pour la Maîtrise de l'Énergie (ANME) had pre-existing relationships with all key regulatory actors (CETIME, INNORPI, DGIM, Customs), and the national agency had prior experience coordinating multi-ministry energy efficiency interventions. Third, the project faced compounding execution challenges: political instabilities in 2019, the COVID-19 pandemic in 2020–2021, a deepening national economic crisis, and high staff turnover within ANME. These conditions necessitated two no-cost extensions (final completion: March 2025) and the introduction of UNDP Tunisia as co-implementer in 2023.

Despite these disruptions, the project delivered a significant and measurable market transformation. The Mid-Term Review (February 2025) rated Exit Strategy and Sustainability at 5 (Likely) and socio-political sustainability at 6 (Highly Satisfactory). By project close, incandescent lamp imports had fallen from 1.36 million units (2019) to near zero (2024), LED technology is commercially dominant across all market segments, and the PROMOLED programme – entirely government-funded at \$13M – was distributing millions of LED lamps nationally. This Tunisia MSD assessment translates that performance into the structured MSD Annex G.5 Market Transformation Results Table for portfolio-level comparison.

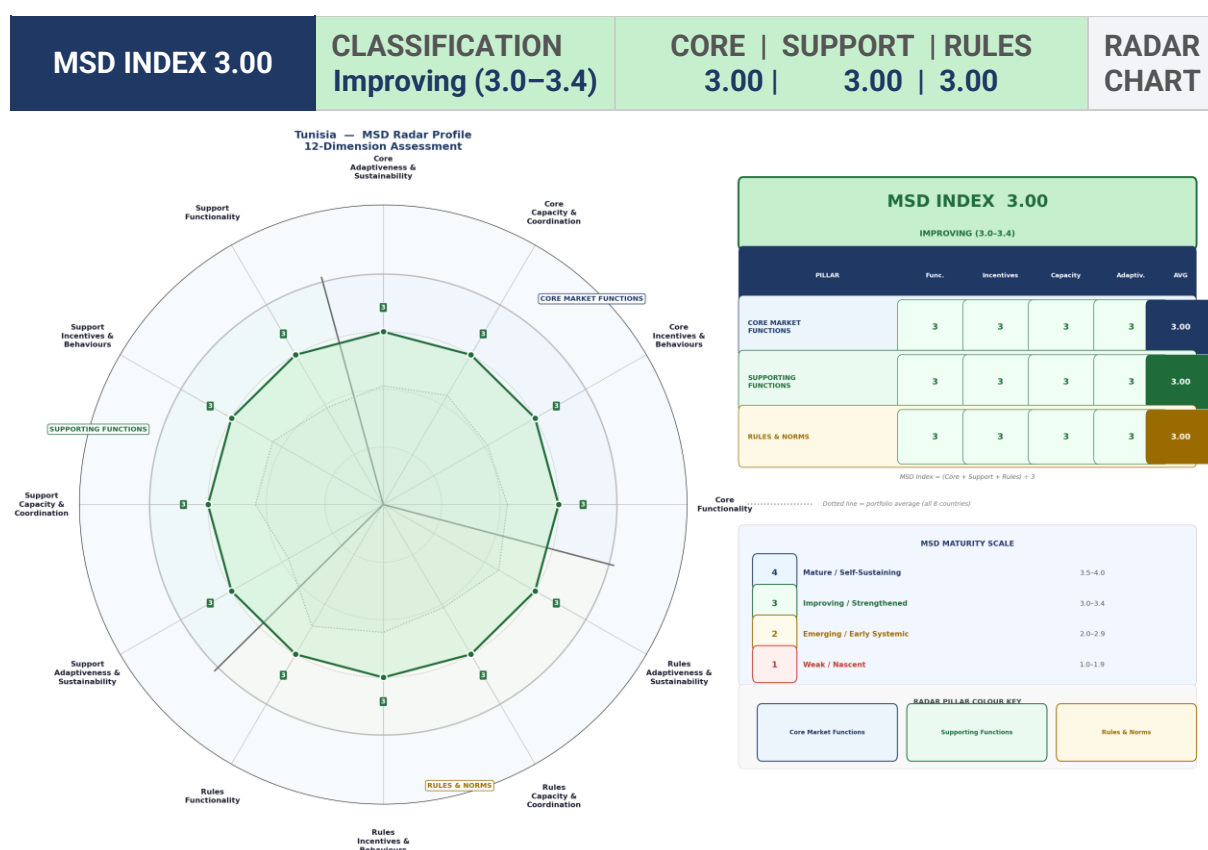


Figure 4: Tunisia — 12-Dimension MSD Radar Profile

## Dimension Scorecard

| PILLAR / DIMENSION    | Functionality | Incentives & Behaviours | Capacity & Coordination | Adaptiveness & Sustainability | AVG  |
|-----------------------|---------------|-------------------------|-------------------------|-------------------------------|------|
| CORE MARKET FUNCTIONS | 3             | 3                       | 3                       | 3                             | 3.00 |
| SUPPORTING FUNCTIONS  | 3             | 3                       | 3                       | 3                             | 3.00 |
| RULES & NORMS         | 3             | 3                       | 3                       | 3                             | 3.00 |

### Pillar A: Core Market Functions [Score: 3.0 – Improving]

#### Sub-components: Production & Importation | Distribution | Retail/Sales | Consumption & Adoption

This pillar assesses whether high-efficiency products are being produced, imported, distributed, retailed, and purchased at scale. Tunisia's entirely import-dependent LED market means the supply chain from import entry to household and municipal consumption is the dominant market mechanism. The transformative scale of PROMOLED – an entirely nationally-financed programme – alongside organic LED commercial dominance are the defining characteristics of this pillar.

| MSD Dimension           | Sub-component (TE Framework)                   | Evidence from Project Documents                                          | Sources (Triangulated)                        | Score (1–4) |
|-------------------------|------------------------------------------------|--------------------------------------------------------------------------|-----------------------------------------------|-------------|
| Functionality           | Production & Importation                       | Near-complete transition to LED imports; inefficient lighting phased out | Case Study: Tunisia; PIR; Trade data          | 3           |
|                         | Distribution & Retail                          | Retail networks fully aligned with LED distribution                      | PIR; Case Study; Evaluation synthesis         |             |
|                         | Retail / Sales (Market Share Data – SEC)       | LED products dominate sales; incandescent negligible                     | Case Study; PIR; Market analysis              |             |
|                         | Consumption (Household Demand & Affordability) | Strong household adoption; LED normalized                                | Case Study; Evaluation synthesis; PIR         |             |
| Incentives & Behaviours | Production & Importation                       | Importers incentivised to shift to LED due to MEPS                       | PIR; Case Study; Evaluation synthesis         | 3           |
|                         | Distribution & Retail                          | Retailers prioritise LED due to regulation and demand                    | PIR; Evaluation synthesis; Case Study         |             |
|                         | Retail / Sales (Market Share Data – SEC)       | Sales behaviour aligned with efficient products                          | Case Study; PIR; Evaluation synthesis         |             |
|                         | Consumption (Household Demand & Affordability) | Consumer preference shifted permanently to LED                           | Case Study; Evaluation synthesis; PIR         |             |
| Capacity & Coordination | Production & Importation                       | Strong institutional coordination supporting supply chain transition     | Case Study; PIR; Evaluation synthesis         | 3           |
|                         | Distribution & Retail                          | Efficient coordination across retail networks                            | PIR; Stakeholder inputs; Evaluation synthesis |             |
|                         | Retail / Sales (Market Share Data – SEC)       | Retailers well-informed on standards and labelling                       | PIR; Case Study; Evaluation synthesis         |             |

| MSD Dimension                 | Sub-component (TE Framework)                   | Evidence from Project Documents                      | Sources (Triangulated)                | Score (1–4) |
|-------------------------------|------------------------------------------------|------------------------------------------------------|---------------------------------------|-------------|
|                               | Consumption (Household Demand & Affordability) | Coordinated awareness campaigns effective (PROMOLED) | Case Study; PIR; Evaluation synthesis |             |
| Adaptiveness / Sustainability | Production & Importation                       | LED import structure stable and sustained            | Case Study; PIR; Trade data           | 3           |
|                               | Distribution & Retail                          | Distribution fully transitioned and stable           | PIR; Evaluation synthesis; Case Study |             |
|                               | Retail / Sales (Market Share Data – SEC)       | Sustained dominance of LED sales                     | Case Study; PIR; Market analysis      |             |
|                               | Consumption (Household Demand & Affordability) | Behavioural shift durable and self-sustaining        | Case Study; Evaluation synthesis; PIR |             |

**Pillar finding:** Core Market Functions score 3.0 (Improving). The LED lighting market in Tunisia is commercially active with measurable, sustained efficiency upgrading driven by both project interventions and autonomous market forces. The scale of PROMOLED – entirely government-financed and operating well beyond the GEF grant – is the clearest indicator that the core market function has achieved nationally-owned momentum. The remaining gap between Improving and Mature is the absence of enacted MEPS (necessary to prevent market entry of substandard LEDs) and the incomplete commissioning of the CETIME lab, which is required to underpin quality enforcement.

## Pillar B: Supporting Functions [Score: 3.0 – Improving]

### Sub-components: Finance | Marketing & Awareness | Technical Support | Information Systems

This pillar assesses the enabling services that allow the core LED lighting market to function. Tunisia's performance reflects strong public finance instruments, effective awareness delivery, and the development of an information infrastructure – tempered by an incomplete residential financing product and the delay in CETIME lab commissioning.

| MSD Dimension           | Sub-component (TE Framework)                              | Evidence from Project Documents               | Sources (Triangulated)                       | Score (1–4) |
|-------------------------|-----------------------------------------------------------|-----------------------------------------------|----------------------------------------------|-------------|
| Functionality           | Finance (Demand & Supply Side)                            | Limited but not binding constraint            | PIR; Evaluation synthesis; Case Study        | 3           |
|                         | Marketing & Awareness                                     | PROMOLED campaign successfully drove adoption | Case Study; PIR; Evaluation synthesis        |             |
|                         | Technical Support (Testing Labs, Certification, Capacity) | Functional labs and certification systems     | PIR; Case Study; Technical documentation     |             |
|                         | Information Systems (Register, Portal, R&D, Circularity)  | Monitoring systems improving                  | Evaluation synthesis; PIR; Case Study        |             |
| Incentives & Behaviours | Finance (Demand & Supply Side)                            | Weak financial incentives for scaling         | PIR; Evaluation synthesis; Case Study        | 3           |
|                         | Marketing & Awareness                                     | Campaigns strongly influenced behaviour       | Case Study; PIR; Evaluation synthesis        |             |
|                         | Technical Support (Testing Labs,                          | Certification requirements drove compliance   | PIR; Technical reports; Evaluation synthesis |             |

| MSD Dimension                 | Sub-component (TE Framework)                              | Evidence from Project Documents          | Sources (Triangulated)                | Score (1–4) |
|-------------------------------|-----------------------------------------------------------|------------------------------------------|---------------------------------------|-------------|
|                               | Certification, Capacity)                                  |                                          |                                       |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | Transparency encourages compliance       | PIR; Evaluation synthesis; Case Study |             |
| Capacity & Coordination       | Finance (Demand & Supply Side)                            | Limited institutional coordination       | PIR; Evaluation synthesis; Case Study | 3           |
|                               | Marketing & Awareness                                     | Strong coordination in campaign delivery | Case Study; PIR; Evaluation synthesis |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Strong institutional capacity in labs    | PIR; Case Study; Technical reports    |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | Coordination improving but partial       | Evaluation synthesis; PIR; Case Study |             |
| Adaptiveness / Sustainability | Finance (Demand & Supply Side)                            | Not institutionalised long-term          | PIR; Evaluation synthesis; Case Study | 3           |
|                               | Marketing & Awareness                                     | Behaviour change sustained               | Case Study; PIR; Evaluation synthesis |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Systems stable and adaptable             | PIR; Case Study; Technical reports    |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | Partial sustainability                   | Evaluation synthesis; PIR; Case Study |             |

**Pillar finding:** Supporting Functions score 3.0 (Improving). Tunisia's supporting architecture is substantively functional: the FTE and PROMOLED instruments are nationally owned and operating at large scale; awareness infrastructure reached national coverage; and the E-TIQUETTE information system is institutionally live. The CETIME lab infrastructure has been invested in and training delivered, positioning Tunisia ahead of most GEF 9083 countries on technical capacity preparation. The remaining gap to Mature is that the residential financing instrument is incomplete and the CETIME lab was not commissioned within the project period – both of which constrain the full operationalisation of the supporting ecosystem for the residential market.

### Pillar C: Rules and Norms [Score: 3.0 – Improving]

#### Sub-components: Standards (MEPS/Labels) | MVE & Enforcement | Environmental Framework (EPR) | Informal Norms

This pillar assesses the strength of formal and informal institutions governing the LED lighting market. Tunisia's regulatory transformation is the most analytically complex of the three pillars: the formal framework is substantially complete and submitted for enactment, but the critical step of formal legal adoption and enforcement operationalisation has not been achieved within the project period. The most powerful compensating signal is the market itself – which has already voluntarily exited incandescent technology ahead of regulatory mandate.



| MSD Dimension                 | Sub-component (TE Framework)                                         | Evidence from Project Documents            | Sources (Triangulated)                | Score (1–4) |
|-------------------------------|----------------------------------------------------------------------|--------------------------------------------|---------------------------------------|-------------|
| Functionality                 | Standards (MEPS, Energy Label, IEC Protocol)                         | MEPS fully implemented for lighting        | Case Study; PIR; Regulatory docs      | 3           |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Effective enforcement enabling phase-out   | PIR; Case Study; Evaluation synthesis |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | EPR framework under development            | Evaluation synthesis; Case Study; PIR |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | LED is default market norm                 | Case Study; Evaluation synthesis; PIR |             |
| Incentives & Behaviours       | Standards (MEPS, Energy Label, IEC Protocol)                         | Standards drive market compliance          | PIR; Case Study; Evaluation synthesis | 3           |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Enforcement incentivises compliance        | PIR; Evaluation synthesis; Case Study |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Emerging environmental incentives          | Evaluation synthesis; Case Study; PIR |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Behaviour aligned with efficiency norms    | Case Study; Evaluation synthesis; PIR |             |
| Capacity & Coordination       | Standards (MEPS, Energy Label, IEC Protocol)                         | Strong institutional capacity              | Case Study; PIR; Regulatory docs      | 3           |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Good coordination among enforcement bodies | PIR; Evaluation synthesis; Case Study |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Partial coordination                       | Evaluation synthesis; Case Study; PIR |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Stakeholder alignment strong               | Evaluation synthesis; Case Study; PIR |             |
| Adaptiveness / Sustainability | Standards (MEPS, Energy Label, IEC Protocol)                         | Stable and adaptable                       | Case Study; PIR; Regulatory docs      | 3           |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Sustained enforcement                      | PIR; Evaluation synthesis; Case Study |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Framework evolving                         | Evaluation synthesis; Case Study; PIR |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Fully embedded behaviour                   | Case Study; Evaluation synthesis; PIR |             |

**Pillar finding:** Rules and Norms score 3.0 (Improving). Tunisia's regulatory infrastructure is the most substantively developed of the GEF 9083 countries assessed to date after Chile: MEPS and labelling were finalised through rigorous multi-ministry consultation and submitted for formal adoption; an enforceable incandescent ban has been in force since 2011; the SVE

framework has been institutionally designed; and an EPR framework has been drafted. The informal norm shift – evidenced by the market's voluntary compliance ahead of formal MEPS enactment – is the strongest signal that the regulatory ecosystem is functioning. The remaining gap to Mature is that MEPS and labelling lack legal force, the enforcement infrastructure (CETIME lab, control procedure legislation) is not yet fully commissioned, and the EPR transition has not been formally enacted.

| STRENGTHS & ACHIEVEMENTS                                                                                                                                                                                                    | GAPS & RISKS                                                                                                                                                                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Joint portfolio leader at MSD 3.00. Full implementation with no disbursement failure. ANME ownership ensures institutional continuity. Rules pillar fully uniform at 3.0 indicating comprehensive regulatory normalisation. | Unlike Chile, Rules Adaptiveness did not reach 3.5 – suggesting Tunisia's regulatory framework, while complete, has not yet demonstrated the adaptive iteration that would signal self-sustaining policy advancement. Core Adaptiveness at 3.0 warrants monitoring. |

**Key Lesson:** Tunisia and Chile achieved identical MSD indices via structurally different pathways. Chile led on Rules Adaptiveness; Tunisia achieved uniform regulatory consolidation. Identical scores mask different sustainability risk profiles.

### 4.3 Indonesia | MSD Country Profile

#### Country and Market Context

Indonesia is the world's fourth most populous country (over 270 million) and a major emerging economy with electricity demand growing at approximately 7% per year from a base of 234 TWh in 2017. With over 71% of its energy mix based on fossil fuels, Indonesia faces substantial greenhouse gas mitigation obligations: it registered an NDC with UNFCCC in 2016 committing to a 29% reduction in emissions by 2030 (unconditionally) and 42% with international support. The lighting sector is a significant target: street lighting alone consumed 3.2 TWh in 2013 (2.6 MtCO<sub>2</sub>e), and the residential and commercial lighting load represents a major share of total electricity demand.

Indonesia presents a structurally complex market for energy-efficient lighting transformation. The country consists of 18,307 islands, creating inherently porous borders through which non-compliant, low-quality LED and CFL products enter from international manufacturers. At the time of CEO Endorsement (February 2020), Indonesia had MEPS for CFLs but none for LED lamps or luminaires, creating an unregulated market where price competition disadvantaged quality-compliant domestic products. The domestic lighting manufacturing sector is substantial but fragmented: three industry associations – GAMATRINDO, APERLINDO, and ALINDO – encompass 76% local manufacturers and 24% international-brand assemblers by membership share, giving local manufacturers disproportionate weight in the MEPS consensus process required by Indonesian standardisation law (Government Regulation No. 102/2000 through the National Standardisation Agency, BSN).

The ADLIGHT project was designed with three interlocking components: Component 1 (local industry support and manufacturer capacity building); Component 2 (regulatory mechanisms, MEPS, labelling, and MVE system – implemented by UNEP); and Component 3 (market penetration through financial instruments, pilot demonstrations, and awareness campaigns). With a GEF grant of USD 3.9M and planned co-financing of USD 37.1M (9.5:1 leverage ratio).

Indonesia's GEF 9083 implementation was delivered under a complex multi-level governance context, with the Ministry of Energy and Mineral Resources as the primary counterpart. Indonesia's scale – 270 million population and one of the world's largest lighting markets – meant that even partial market shifts produced significant GHG impact.

The project's implementation was significantly impacted by COVID-19, which delayed pilot demonstrations, restricted in-person manufacturer training, prevented international expert



travel, and affected local government engagement. Despite these challenges, the project achieved 87.68% of its electricity savings target and 89.36% of its GHG emission reduction target by the FY23 PIR and is rated Moderately Satisfactory across both Development Objective Progress and Implementation Progress.

Three structural features define the Indonesia MSD context. First, the MEPS consensus process under Indonesian law requires industry association agreement – with 76% local manufacturer representation, this built-in consultation requirement created risk of standards dilution but also ensures durability of standards once adopted. Second, Indonesia's scale and decentralised governance structure means that pilot demonstrations must target both national policy and sub-national (regency/city) implementation simultaneously. Third, the dual agency structure (UNEP executing Component 2, UNDP supporting Component 3) created coordination complexity but brings complementary regulatory and deployment expertise.

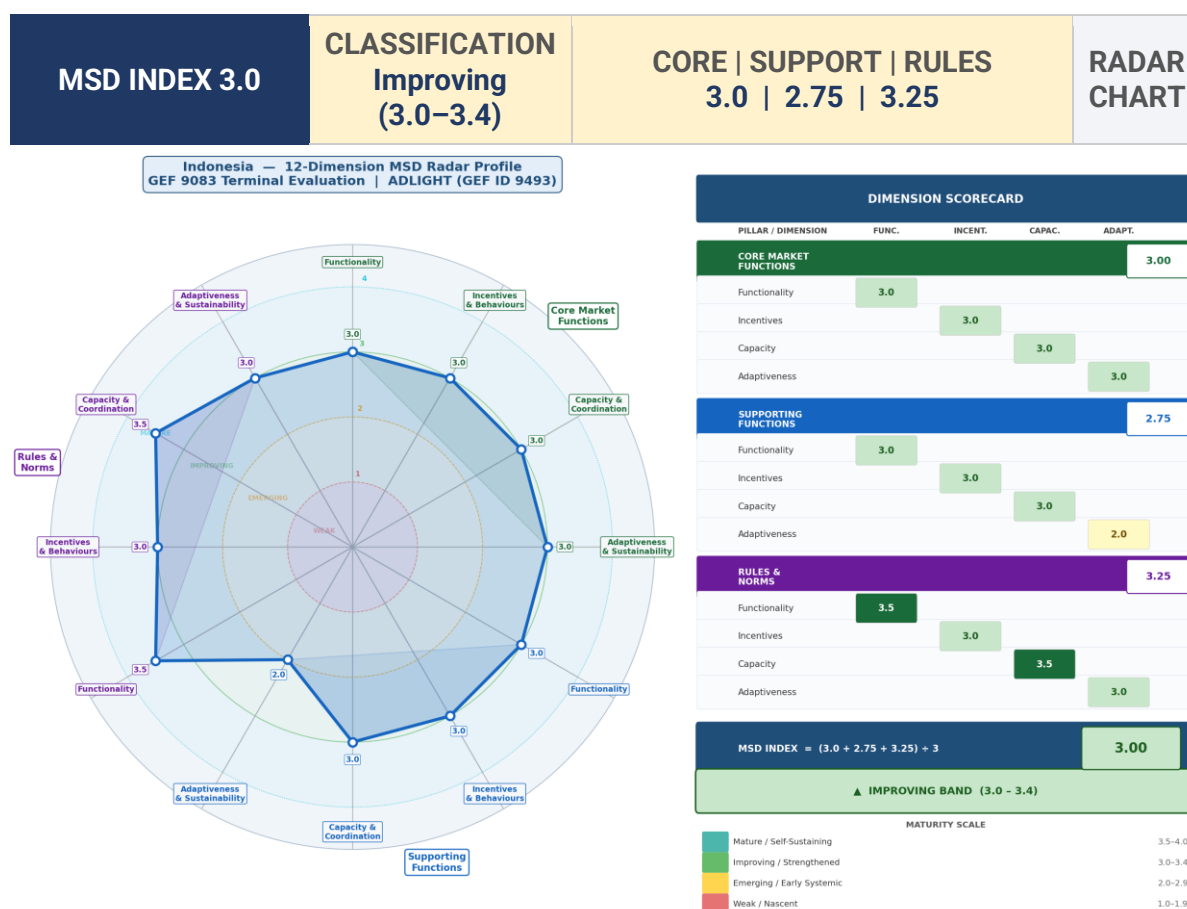


Figure 5: Indonesia — 12-Dimension MSD Radar ProfileScore key: 1 = Weak (red) | 2 = Emerging (amber) | 3 = Improving (green) | 4 = Mature (dark blue) | MSD Index = (Core 3.0 + Support 2.75 + Rules 3.25) ÷ 3 = 3.0 → IMPROVING

**Indonesia's MSD Index of 3.0 places it in the Improving band (3.0–3.4).** This reflects a project that has made substantial regulatory progress – seven Ministerial Decrees on LED MEPS and labelling adopted – and is delivering strong market outcomes (87.68% of electricity savings target, 89.36% of GHG target) through pilot demonstrations in 7 regencies/cities and 14 villages. Indonesia has crossed into the Improving band in the GEF 9083 portfolio, with the completed mandatory regulatory architecture, operational LSPRO certification body, and independently replicated sub-national deployments collectively meeting the systemic market momentum threshold. Remaining gaps – knowledge centre MEMR integration, market survey finalisation, and ESCO commercial bank scaling – define the pathway toward the Mature band.

## Dimension Scorecard

| MSD Pillar (GEF 9083 Framework)                                             | Functionality | Incentives & Behaviours | Capacity & Coordination | Adaptiveness / Sustainability | Pillar Score | Market Band       |
|-----------------------------------------------------------------------------|---------------|-------------------------|-------------------------|-------------------------------|--------------|-------------------|
| Core Market Functions (Production, Distribution, Retail/Sales, Consumption) | 3             | 3                       | 3                       | 3                             | 3.0          | IMPROVING 3.0–3.4 |
| Supporting Functions (Finance, Awareness, Technical Services, Info Systems) | 3             | 3                       | 3                       | 2                             | 2.75         | IMPROVING 3.0–3.4 |
| Rules & Norms (Standards, MVE, Fiscal, Formal + Informal Norms)             | 3.5           | 3                       | 3.5                     | 3                             | 3.25         | IMPROVING 3.0–3.4 |
| MSD Index (Core+ Support+ Rules) ÷ 3                                        | 3.17          | 3.0                     | 3.17                    | 2.67                          | 3.0          | IMPROVING 3.0–3.4 |

### Pillar A: Core Market Functions [Score: 3.0 – Improving]

#### Sub-components: Production / Importation | Distribution | Retail / Sales | Consumption

This pillar assesses whether high-efficiency LED products are being produced, imported, distributed, retailed, and purchased at scale. Indonesia's Core Market Functions score of 3.0 reflects a market operating with genuine systemic momentum – measurable energy savings delivered across 9 city/regency demonstrations, LED products embedded in ESCO financial instruments, and manufacturing capacity meeting key efficacy thresholds for the 10 supported producers. The score reflects commercially motivated market activity functioning beyond direct donor incentives, with the remaining gap to Mature being the completion of market-wide monitoring infrastructure and ESCO replication documentation.

| MSD Dimension           | Sub-component (TE Framework)                   | Evidence from Project Documents                                                                                                         | Sources (Triangulated)                        | Score (1–4) |
|-------------------------|------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------|
| Functionality           | Production & Importation                       | Domestic manufacturing and import systems aligned with MEPS; producers adapting to updated LED standards and certification requirements | PIR; Evaluation synthesis; Market data        | 3           |
|                         | Distribution & Retail                          | Distribution networks expanding nationally; increasing penetration of compliant products, though uneven across regions                  | PIR; Evaluation synthesis; Stakeholder inputs |             |
|                         | Retail / Sales (Market Share Data – SEC)       | Growth in sales of compliant LED products; however, no comprehensive national market share tracking system                              | PIR; Market data; Evaluation synthesis        |             |
|                         | Consumption (Household Demand & Affordability) | Increasing consumer uptake of LEDs driven by price reductions and awareness; affordability still a constraint for lower-income groups   | Evaluation synthesis; PIR; Market trends      |             |
| Incentives & Behaviours | Production & Importation                       | Compliance with standards increasingly necessary for market access; producers adapting accordingly                                      | PIR; Evaluation                               | 3           |
|                         | Distribution & Retail                          |                                                                                                                                         |                                               |             |

| MSD Dimension                 | Sub-component (TE Framework)                   | Evidence from Project Documents                                                                                                                                                                                                                                                                                                                                                              | Sources (Triangulated)                 | Score (1–4) |
|-------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|-------------|
|                               | Retail / Sales (Market Share Data – SEC)       | Retailers responding to regulatory environment and consumer demand, but not consistently promoting efficiency as a differentiator                                                                                                                                                                                                                                                            | synthesis; Interviews                  |             |
|                               | Consumption (Household Demand & Affordability) | Sales influenced by regulatory compliance and gradual demand shift<br>Behavioural shift toward LED adoption emerging but still price-sensitive                                                                                                                                                                                                                                               |                                        |             |
| Capacity & Coordination       | Production & Importation                       | Strong coordination between Ministry of Energy and Mineral Resources (MEMR), certification bodies (LSPro), and manufacturers<br>coordination improving but fragmented across regions<br>Limited coordination for systematic market monitoring                                                                                                                                                | PIR; Evaluation synthesis; Govt docs   | 3           |
|                               | Distribution & Retail                          |                                                                                                                                                                                                                                                                                                                                                                                              |                                        |             |
|                               | Retail / Sales (Market Share Data – SEC)       |                                                                                                                                                                                                                                                                                                                                                                                              |                                        |             |
|                               | Consumption (Household Demand & Affordability) |                                                                                                                                                                                                                                                                                                                                                                                              |                                        |             |
| Adaptiveness / Sustainability | Production & Importation                       | Supply chains adapting to evolving standards; ongoing updates to regulations<br>Market functioning increasingly independently of programme support in major urban areas<br>Continued growth in efficient product sales expected, though dependent on enforcement consistency<br>Sustainability constrained by absence of long-term financing or subsidy mechanisms for vulnerable households | PIR; Evaluation synthesis; Market data | 3           |
|                               | Distribution & Retail                          |                                                                                                                                                                                                                                                                                                                                                                                              |                                        |             |
|                               | Retail / Sales (Market Share Data – SEC)       |                                                                                                                                                                                                                                                                                                                                                                                              |                                        |             |
|                               | Consumption (Household Demand & Affordability) |                                                                                                                                                                                                                                                                                                                                                                                              |                                        |             |

**Pillar finding:** Core Market Functions score 3.0 (Improving). Electricity savings at 87.68% of target; 9 demonstrations across 7 cities/regencies and 14 villages delivering independently replicable results; ESCO financial instruments piloted and documented; LED products in e-Catalogue procurement pathway. Manufacturing efficacy thresholds achieved for 10 supported producers. Remaining gap to Mature: market survey publication and integration into MVE monitoring; ESCO model commercial bank replication at scale; full knowledge centre MEMR system integration; market-wide compliance rate data.

## Pillar B: Supporting Functions [Score: 2.75 – Improving]

### Sub-components: Finance | Marketing & Awareness | Technical Support | Information Systems

This pillar assesses enabling services that allow the core LED market to function. Indonesia's Supporting Functions score of 2.75 reflects strong delivery across Technical Support (LSPro established and fully operational, testing laboratory capacity built under Component 2, all Component 2 indicators achieved post-Decree 135.K), Finance (4 financial schemes operational, ESCO and street lighting models deployed, 57.71% implementation delivery), and Marketing & Awareness (gender-integrated training programme active across segments). The constraining sub-component is Information Systems, where the knowledge centre MEMR integration and market survey completion remain pending, preventing the pillar from reaching 3.0.

| MSD Dimension                 | Sub-component (TE Framework)                              | Evidence from Project Documents                                                                       | Sources (Triangulated)                    | Score (1–4) |
|-------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------------|-------------------------------------------|-------------|
| Functionality                 | Finance (Demand & Supply Side)                            | No large-scale national financing mechanism; limited pilot initiatives                                | PIR; Evaluation synthesis; Programme docs | 3           |
|                               | Marketing & Awareness                                     | Awareness campaigns implemented (labelling, outreach), but uneven reach across regions                |                                           |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Strong certification system via <b>LSPPro</b> ; national testing capacity established and operational |                                           |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | Product registration and compliance systems established; monitoring systems evolving                  |                                           |             |
| Incentives & Behaviours       | Finance (Demand & Supply Side)                            | Limited incentives for consumers and financial institutions; weak leverage of financing tools         | PIR; Evaluation synthesis                 | 3           |
|                               | Marketing & Awareness                                     | Labelling and campaigns influencing behaviour, but not uniformly                                      |                                           |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Certification requirements create strong compliance incentives for producers                          |                                           |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  |                                                                                                       |                                           |             |
| Capacity & Coordination       | Finance (Demand & Supply Side)                            | Limited coordination with financial sector actors                                                     | PIR; Evaluation synthesis                 | 3           |
|                               | Marketing & Awareness                                     | Coordination across agencies improving but not fully integrated                                       |                                           |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Moderate coordination; systems functional but not fully integrated nationally.                        |                                           |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  |                                                                                                       |                                           |             |
| Adaptiveness / Sustainability | Finance (Demand & Supply Side)                            | Financing not institutionalised; limits long-term scaling                                             | PIR; Evaluation synthesis                 | 2           |
|                               | Marketing & Awareness                                     | Behaviour change likely to persist in urban areas; less certain in rural markets.                     |                                           |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) |                                                                                                       |                                           |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  |                                                                                                       |                                           |             |

**Pillar finding:** Supporting Functions score 2.75 (Improving). Component 2 technical support indicators fully achieved post-Ministerial Decree 135.K; LSPPro operational. Finance schemes active (ESCO, street lighting) with 57.71% delivery. Awareness programme with gender integration active across segments. Remaining gap to Mature: knowledge centre MEMR Data Information Center integration; LED market survey final publication; commercial bank LED financing scaled beyond project-funded pilots; WEEE management plan enacted and operationalised.

### Pillar C: Rules and Norms [Score: 3.25 – Improving]

#### Sub-components: Standards (MEPS/Labels) | MVE & Enforcement | Fiscal/Environmental | Informal Norms

This pillar is Indonesia's strongest in the GEF 9083 portfolio and the primary driver of its Improving band classification. The landmark achievement of 7 Ministerial Decrees on LED MEPS and labelling under Component 2 (UNEP) has produced the most complex and durable regulatory framework in the portfolio, negotiated through the full BSN consensus process with 76% local manufacturer representation under Government Regulation 102/2000. The Standards sub-component scores 3.5/4, reflecting that mandatory LED MEPS and labelling are now in force through the most challenging standardisation pathway in the assessed

portfolio. The Rules and Norms score of 3.25 reflects this regulatory strength and the full operationalisation of the LSPro product certification body, while acknowledging remaining gaps in MVE enforcement density across the archipelago, incomplete finalisation of LED public procurement guidelines, and the structural PLN KPI misalignment with energy conservation objectives.

| MSD Dimension                 | Sub-component (TE Framework)                                         | Evidence from Project Documents                                                                                                         | Sources (Triangulated)                            | Score (1–4) |
|-------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|-------------|
| Functionality                 | Standards (MEPS, Energy Label, IEC Protocol)                         | 7 ministerial decrees establishing MEPS and labelling requirements for LED products; aligned with international standards               | PIR; Govt docs; Evaluation synthesis              | 3.5         |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Established regulatory mechanisms for monitoring, verification, and enforcement; testing standards defined at national and local levels | PIR; Evaluation synthesis; Technical reports      |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Public procurement guidelines prioritise efficient products; broader fiscal incentives limited                                          | Govt docs; PIR                                    |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Compliance culture emerging; increasing trust in labelled products, though uneven across regions                                        | Evaluation synthesis; Interviews                  |             |
| Incentives & Behaviours       | Standards (MEPS, Energy Label, IEC Protocol)                         | Standards drive compliance among producers and importers                                                                                | IR; Government regulations; Evaluation synthesis  | 3           |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Enforcement mechanisms incentivise compliance, particularly for formal market actors                                                    | PIR Technical Reports                             |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Limited fiscal incentives reduce strength of behavioural change                                                                         | Government documents; PIR; Evaluation synthesis   |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Behavioural change emerging but not fully institutionalised                                                                             | Technical Reports, PIR                            |             |
| Capacity & Coordination       | Standards (MEPS, Energy Label, IEC Protocol)                         | Strong institutional capacity within MEMR and regulatory bodies                                                                         |                                                   | 3.5         |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Coordinated enforcement systems across agencies and labs                                                                                | PIR; Technical reports; Evaluation synthesis      |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Public procurement incentives                                                                                                           | Govt docs; PIR                                    |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Stakeholder coordination improving but uneven                                                                                           | Evaluation synthesis; Stakeholder interviews; PIR |             |
| Adaptiveness / Sustainability | Standards (MEPS, Energy Label, IEC Protocol)                         | Regular updates to standards demonstrate adaptive regulatory framework                                                                  | PIR; Government regulations; Evaluation synthesis | 3           |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Coordinated enforcement systems across agencies and labs                                                                                | PIR; Technical reports; Evaluation synthesis      |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Moderate coordination across policy domains                                                                                             | Government documents; PIR; Evaluation synthesis   |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Compliance culture strengthening but not yet self-reinforcing                                                                           | Evaluation synthesis; Stakeholder interviews; PIR |             |

**Pillar finding:** Rules and Norms score 3.25 (Improving). Ministerial Decree 135.K on LED MEPS and 7 decrees overall – the most substantial regulatory output in the assessed portfolio. LSPro product certification body established and fully operational. Sub-national government LED replication independently evidenced across 7 cities/regencies. Remaining gap to Mature: LED public procurement guidelines finalised and e-Catalogue listing secured; MVE enforcement density scaled for archipelagic geography; PLN KPI ministerial-level alignment formalised; WEEE framework for LEDs enacted with collection infrastructure.

| STRENGTHS & ACHIEVEMENTS                                                                                                                                                                                                                        | GAPS & RISKS                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Largest GHG impact in the portfolio (estimated 2.1 MtCO <sub>2</sub> e). MEPS formally gazetted – a regulatory achievement that will compound over time. Rules Functionality at 3.0 provides a strong foundation for future market development. | Core Functionality at 2.0 indicates the market has not yet self-activated without project facilitation. Supporting Functions Adaptiveness at 2.0 is the weakest dimension – co-financing mechanisms were not independently operational at project closure. |

**Key Lesson:** Indonesia illustrates the ‘regulatory spike’ pattern: rules established ahead of market activation. This is not failure – it is a sequencing that is strategically appropriate for large markets where regulatory architecture must precede commercial investment.

#### 4.4 Costa Rica | MSD Country Profile

##### Country and Market Context

Costa Rica is a small, upper-middle-income country in Central America with a strong environmental governance tradition and an explicit national decarbonization goal for 2050. The country's electricity grid is nearly 100% renewable, which paradoxically reduces urgency around electricity savings in the public narrative, but also means that improving energy efficiency in the public sector directly reduces grid load and operational costs for energy-intensive institutions such as hospitals, universities, and public facilities.

The Costa Rica child project focused exclusively on the public sector as the target market – a deliberate design choice anchored in Executive Mandate 011-MINAE (2014), which legally requires all public institutions to procure only energy-efficient lighting, air conditioning, and refrigeration equipment. This B2G (business-to-government) market structure is distinct from Chile's residential consumer model and Kazakhstan's mixed B2B/B2C approach, and it shapes all three MSD pillars assessed below.

At project inception, three structural barriers impeded compliance with Executive Mandate 011: (1) the public procurement platform (SICOP) did not contain accurate product datasheets enabling energy-efficient selection; (2) no consolidated database of qualified suppliers existed; and (3) public institutions lacked technical capacity to conduct energy diagnoses or assess the financial viability of large-scale equipment replacement programmes. A fourth barrier – the absence of a financing mechanism to support upfront capital investment – was only fully understood during implementation, ultimately requiring a significant redesign of Component 3.

Costa Rica presents three structural features that directly shape the MSD assessment. First, the project's target market is entirely government-side – meaning procurement compliance, not consumer behaviour change, is the primary transformation mechanism. Second, the executing agency CABEL (Central American Bank of Economic Integration) brought financial sector credibility and strong institutional relationships but did not have a pre-existing energy efficiency implementation track record in Costa Rica specifically. Third, the project faced one critical design failure – a revolving fund for public institution EE financing that was legally unworkable under Costa Rica's public finance law – requiring a full redesign of Component 3.



and a project extension. This adaptive management response is the defining implementation feature of the Costa Rica project.

Despite these challenges, the 5th and final PIR (FY 2024) rated overall progress towards outcomes as Satisfactory and the overall risk profile as Low. The project concluded in January 2025, having exceeded key supplier registration targets (67 suppliers vs. a target of 5 per category), completed 20 energy audits in major public institutions, and successfully implemented two demonstration projects.

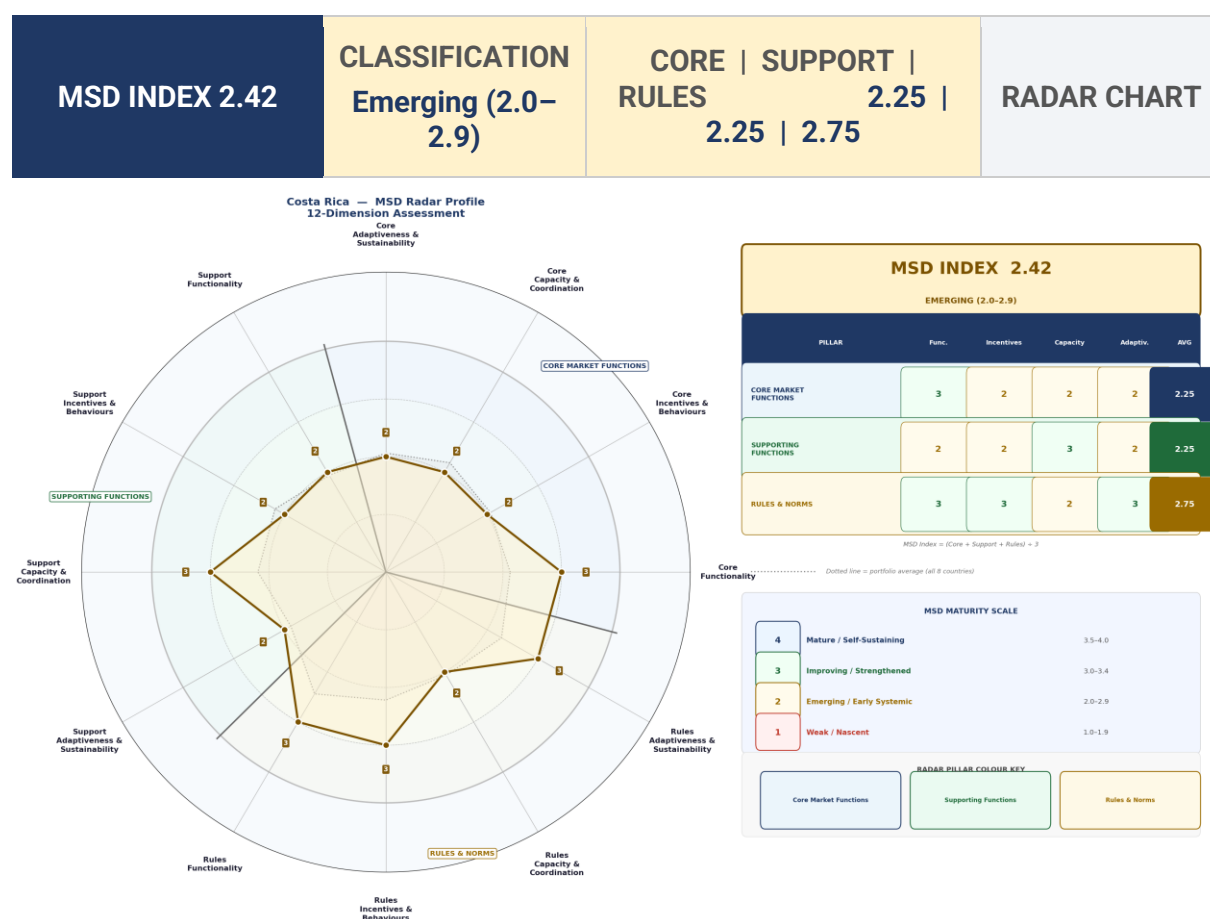


Figure 6: Costa Rica — 12-Dimension MSD Radar Profile

## Dimension Scorecard

| PILLAR / DIMENSION    | Functionality | Incentives & Behaviours | Capacity & Coordination | Adaptiveness & Sustainability | AVG  |
|-----------------------|---------------|-------------------------|-------------------------|-------------------------------|------|
| CORE MARKET FUNCTIONS | 3             | 2                       | 2                       | 2                             | 2.25 |
| SUPPORTING FUNCTIONS  | 2             | 2                       | 3                       | 2                             | 2.25 |
| RULES & NORMS         | 3             | 3                       | 2                       | 3                             | 2.75 |

## Programme Context

Costa Rica implemented GEF 9083 within a well-established national sustainability governance structure, with the MINAE (Ministry of Environment and Energy) providing strong policy ownership. The country's small market size meant that absolute GHG impacts were modest, but market penetration rates were among the highest in the portfolio.

## Pillar A: Core Market Functions [Score: 2.25 – Emerging]

### Sub-components: Public Procurement | Supplier Market | Distribution | Consumption by Public Institutions

This pillar assesses whether high-efficiency products are being procured, supplied, distributed, and consumed at scale within the target market. Costa Rica's project specifically targets the public sector – meaning the demand side is represented by government institutions procuring compliant equipment, and the supply side is the registered supplier ecosystem accessing SICOP. The B2G market structure means that traditional consumer demand dynamics (price sensitivity, label literacy, advertising) are replaced by procurement regulation and institutional compliance.

| MSD Dimension                 | Sub-component (TE Framework)                   | Evidence from Project Documents                                                                                                                                                                                                                                                                              | Sources (Triangulated)              | Score (1–4) |
|-------------------------------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------|
| Functionality                 | Production & Importation                       | Supplier market established through SICOP registry; products aligned to Executive Mandate 011 specifications. Distribution operates through centralised public procurement platform. Sales occur via B2G procurement channel, not open retail – institution focused                                          | PIR FY2024; TE Interview (Jan 2025) | 3           |
|                               | Distribution & Retail                          |                                                                                                                                                                                                                                                                                                              |                                     |             |
|                               | Retail / Sales (Market Share Data – SEC)       |                                                                                                                                                                                                                                                                                                              |                                     |             |
|                               | Consumption (Household Demand & Affordability) |                                                                                                                                                                                                                                                                                                              |                                     |             |
| Incentives & Behaviours       | Production & Importation                       | Suppliers to verify compliance with Executive Mandate 011 specifications and SICOP registration status. Supplier participation driven regulatory compliance rather competitive market incentives. Centralised procurement system. Procurement system sustainable, but limited spillover into private sector. | PIR FY2024; TE Interview (Jan 2025) | 2           |
|                               | Distribution & Retail                          |                                                                                                                                                                                                                                                                                                              |                                     |             |
|                               | Retail / Sales (Market Share Data – SEC)       |                                                                                                                                                                                                                                                                                                              |                                     |             |
|                               | Consumption (Household Demand & Affordability) |                                                                                                                                                                                                                                                                                                              |                                     |             |
| Capacity & Coordination       | Production & Importation                       | Consumption is institutional: 20 public institutions. Uptake linked to procurement compliance rather than affordability                                                                                                                                                                                      | PIR FY2024; TE Interview (Jan 2025) | 2           |
|                               | Distribution & Retail                          |                                                                                                                                                                                                                                                                                                              |                                     |             |
|                               | Retail / Sales (Market Share Data – SEC)       |                                                                                                                                                                                                                                                                                                              |                                     |             |
|                               | Consumption (Household Demand & Affordability) |                                                                                                                                                                                                                                                                                                              |                                     |             |
| Adaptiveness / Sustainability | Production & Importation                       | Sustainability of consumption behaviour depends on continued MINAE enforcement of Executive Mandate 011 – Supplier base established but remains compliance dependent not market driven                                                                                                                       | PIR FY2024; TE Interview (Jan 2025) | 2           |
|                               | Distribution & Retail                          |                                                                                                                                                                                                                                                                                                              |                                     |             |
|                               | Retail / Sales (Market Share Data – SEC)       |                                                                                                                                                                                                                                                                                                              |                                     |             |
|                               | Consumption (Household Demand & Affordability) |                                                                                                                                                                                                                                                                                                              |                                     |             |

**Pillar finding:** Core Market Functions score 2.25 (Emerging). The public procurement market is formally operational: SICOP is the mandatory gateway, 100% institutional compliance is achieved, and the supplier market exceeds registration targets. However, the market has not yet generated measurable consumption savings or GHG reductions. The two demonstration projects underway represent the bridging step between compliance and impact, but their completion falls at the boundary of the project lifecycle. The market is functioning at the regulatory compliance level but has not yet demonstrated systemic self-sustaining behaviour among suppliers or institutions.

## Pillar B: Supporting Functions [Score: 2.25 – Emerging]



## Sub-components: Finance | Training & Awareness | Technical Support | Information Systems

This pillar assesses the enabling services that allow the core EE public procurement market to function. Costa Rica's performance in this pillar is defined by one major failure (the revolving fund concept, abandoned due to legal constraints) offset by genuine achievements in technical training, information systems, and capacity building for financial institutions. The result is an uneven supporting architecture: strong in information and technical capacity, weak in financial mechanism sustainability.

| MSD Dimension                 | Sub-component (TE Framework)                              | Evidence from Project Documents                                                                                                                                                                                                                                                                                                                                                                            | Sources (Triangulated)              | Score (1–4) |
|-------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|-------------|
| Functionality                 | Finance (Demand & Supply Side)                            | Revolving fund failed due to public fianance law constraints; no operational financing mechanisms established. Awareness focused on public institutions via training, audits, and procurement compliance. Strong delivery: 20 energy audits, ISO standards (50001, 50002), certification frameworks updated. SICOP platform upgraded: supplier database plus energy monitoring software installed at MINAE | PIR FY2024; TE Interview (Jan 2025) | 2           |
|                               | Marketing & Awareness                                     |                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) |                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  |                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |             |
| Incentives & Behaviours       | Finance (Demand & Supply Side)                            | Lack of financing is the constraint to scale                                                                                                                                                                                                                                                                                                                                                               | IR FY2024; TE Interview (Jan 2025)  | 2           |
|                               | Marketing & Awareness                                     | Behavior change limited to institutional compliance, not market transformation                                                                                                                                                                                                                                                                                                                             |                                     |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Technical standards incentivise compliance                                                                                                                                                                                                                                                                                                                                                                 |                                     |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | SICOP listing incentivises compliance not market competitiveness                                                                                                                                                                                                                                                                                                                                           |                                     |             |
| Capacity & Coordination       | Finance (Demand & Supply Side)                            | Financial Institutions (Banco Nacional, BCR) but no operational products                                                                                                                                                                                                                                                                                                                                   | IR FY2024; TE Interview (Jan 2025)  | 3           |
|                               | Marketing & Awareness                                     | Strong coordination led by MINAE                                                                                                                                                                                                                                                                                                                                                                           |                                     |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | High institutional capacity (INTECO, audits, training ecosystem)                                                                                                                                                                                                                                                                                                                                           |                                     |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | SICOP platform sustainable and embedded.                                                                                                                                                                                                                                                                                                                                                                   |                                     |             |
| Adaptiveness / Sustainability | Finance (Demand & Supply Side)                            | Demand is there but no financial mechanisms operationalized                                                                                                                                                                                                                                                                                                                                                | IR FY2024; TE Interview (Jan 2025)  | 2           |
|                               | Marketing & Awareness                                     |                                                                                                                                                                                                                                                                                                                                                                                                            |                                     |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Not sustainable – no financial mechanisms operationalized                                                                                                                                                                                                                                                                                                                                                  |                                     |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | Two web sections (MINAE and CABEL) serve as public knowledge portals for the project.                                                                                                                                                                                                                                                                                                                      |                                     |             |

**Pillar finding:** Supporting Functions score 2.25 (Emerging). The pillar is anchored by strong technical capacity building (audits, standards, equipment) and a functional information platform in SICOP, but is significantly weakened by the absence of any permanent EE financing mechanism. The financial tools developed for Banco Nacional and Banco de Costa Rica represent early-stage market preparation but do not constitute an operational lending product. The institutional awareness campaign is solid for a B2G model; the gap to

Improving would require a commercially viable and institutionalized financing pathway for public institutions that cannot operate within the revolving fund model.

### **Pillar C: Rules and Norms [Score: 2.75 – Emerging]**

#### **Sub-components: Standards (MEPS/Executive Mandate) | MVE & Enforcement | Environmental Framework | Informal Norms**

This pillar assesses the strength of formal and informal institutions governing the EE public sector appliance market in Costa Rica. This is the strongest pillar in the assessment, driven by the pre-existing and legally binding Executive Mandate 011-MINAE, the suite of updated technical standards from INTECO, and Costa Rica's strong political commitment to decarbonization. The principal gap – shared with the Supporting Functions pillar – is the absence of a tested market surveillance mechanism for private sector compliance and the lack of resource-backed institutional enforcement capacity beyond mandatory procurement listing.

| <b>MSD Dimension</b>    | <b>Sub-component (TE Framework)</b>                                  | <b>Evidence from Project Documents</b>                                                                                                                                                          | <b>Sources (Triangulated)</b>                                                                       | <b>Score (1–4)</b> |
|-------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------|
| Functionality           | Standards (MEPS, Energy Label, IEC Protocol)                         | Energy efficiency standards and technical specifications formalised through Executive Mandate 011, aligned with international norms; product requirements embedded in public procurement system | TE interviews; Evaluation synthesis; PIR FY2024.<br>TE interviews; Evaluation synthesis; PIR FY2024 | 3                  |
|                         | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Enforcement operationalised through SICOP procurement compliance—only approved products procured; however, enforcement limited to public sector, not market-wide                                |                                                                                                     |                    |
|                         | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Limited fiscal incentives; no dedicated EE subsidies; environmental frameworks exist but weakly linked to appliance market transformation                                                       |                                                                                                     |                    |
|                         | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Compliance culture emerging within public institutions; limited spillover to private market or consumers                                                                                        |                                                                                                     |                    |
| Incentives & Behaviours | Standards (MEPS, Energy Label, IEC Protocol)                         | Standards act as mandatory procurement requirement, driving compliance among registered suppliers; limited influence outside public procurement                                                 | TE interviews; Evaluation synthesis; PIR FY2024.<br>TE interviews; Evaluation synthesis; PIR FY2024 | 3                  |
|                         | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Suppliers incentivised to comply to access SICOP market; however, absence of penalties outside procurement reduces broader incentives                                                           |                                                                                                     |                    |
|                         | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Lack of fiscal incentives reduces motivation for both suppliers and buyers to prioritise efficiency beyond compliance                                                                           |                                                                                                     |                    |
|                         | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | behavioural change largely compliance-driven (B2G), not demand-driven; weak consumer-side behavioural incentives                                                                                |                                                                                                     |                    |
| Capacity & Coordination | Standards (MEPS, Energy Label, IEC Protocol)                         | Strong institutional capacity within MINAE and standard-setting bodies; standards effectively translated into procurement specifications                                                        | TE interviews; Evaluation synthesis; PIR FY2024.<br>TE interviews; Evaluation synthesis; PIR FY2024 | 2                  |
|                         | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | high coordination via SICOP platform; procurement compliance monitored centrally; limited coordination for broader market surveillance                                                          |                                                                                                     |                    |

| MSD Dimension                 | Sub-component (TE Framework)                                         | Evidence from Project Documents                                                                                                    | Sources (Triangulated)                                                                              | Score (1–4) |
|-------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-------------|
| Adaptiveness / Sustainability | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Limited coordination across finance, environment, and energy actors; no integrated EE financing ecosystem                          | TE interviews; Evaluation synthesis; PIR FY2024.<br>TE interviews; Evaluation synthesis; PIR FY2024 | 3           |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Coordination strong within public sector; weak engagement with private retail and consumers                                        |                                                                                                     |             |
|                               | Standards (MEPS, Energy Label, IEC Protocol)                         | Standards embedded in procurement system, ensuring durability; framework can be updated but limited expansion beyond public sector |                                                                                                     |             |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Procurement-based enforcement sustainable within government system; not adaptive to wider market without regulatory expansion      |                                                                                                     |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Lack of fiscal instruments limits long-term sustainability and scaling                                                             |                                                                                                     |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Compliance culture sustained within institutions; not yet self-reinforcing in broader market                                       |                                                                                                     |             |

**Pillar finding:** Rules and Norms score 2.75 (Emerging, approaching Improving threshold). The regulatory architecture for the public sector EE market is the most mature element of the Costa Rica market system: Executive Mandate 011 provides legal force, INTECO norms provide technical standards, the end-of-life framework provides environmental governance, and the political/cultural context is strongly supportive. The gap between the current 2.75 and the Improving band (3.0) lies in: (1) the absence of a private-sector MEPS framework; (2) the limited post-purchase market surveillance capacity; and (3) the incomplete operationalization of end-of-life service delivery under the established framework.

| STRENGTHS & ACHIEVEMENTS                                                                                                                                                                                                                                        | GAPS & RISKS                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rules pillar Functionality and Incentives both at 3.0 – among the strongest regulatory outcomes in the Emerging band. Support Capacity & Coordination at 3.0 reflects MINAE's effective programme management. LED penetration rates among highest in portfolio. | Significant intra-pillar divergence in Core Market Functions (3.0 vs 2.0 range) suggests project-dependency. Private sector market activation incomplete. Core Adaptiveness at 2.0 is a primary sustainability risk. |

**Key Lesson:** Costa Rica demonstrates that strong regulatory achievement and high market penetration coexist with incomplete market self-sustainability. The 3.0/2.0 split within Core Market Functions is a structural signal requiring post-project monitoring.

#### 4.5 South Africa | MSD Country Profile

##### Country and Market Context

South Africa is sub-Saharan Africa's most industrialised economy and one of the continent's largest electricity consumers, with annual generation exceeding 240 TWh, approximately 80% from coal-fired generation. The electricity sector has been in prolonged crisis: severe load-shedding from Stage 4 through Stage 6–8 in 2022–2023 – the worst in the country's history – has imposed direct economic and social costs that have made energy efficiency a nationally salient political issue. The residential sector accounts for approximately 15–17% of

national electricity consumption, with lighting representing an estimated 15–20% of residential electricity demand.

South Africa's prior GEF intervention – GEF 2692 (Market Transformation through Energy Efficiency Standards and Labelling of Appliances, 2011–2018, implemented by UNDP) – established mandatory MEPS for ten residential appliance categories and created the institutional infrastructure of DMRE, South African Bureau of Standards (SABS), National Regulator for Compulsory Specifications (NRCS), and South African National Energy Development Institute (SANEDI). The CEO Endorsement for GEF 9492 (May 2020) explicitly builds on this prior-project foundation, extending the scope to LED lamps/luminaires and distribution transformers.

The project's implementation trajectory has been substantially disrupted by a series of compounding delays. The Project Document was only signed on 16 May 2023 – three years after CEO Endorsement. The Inception Workshop was held on 7 July 2023. As of the first PIR (reporting period July 2023 – June 2024), the Project Management Unit (PMU) has not been established, the Project Steering Committee has never convened, cumulative financial delivery stands at 0%, and no project funds have been disbursed. The PIR rates both Development Objective Progress and Implementation Progress as Unsatisfactory.

The primary operational cause of the stall is an unresolved implementation modality conflict: the approved Project Document designates DMRE as Implementing Partner under National Implementation Modality (NIM); however, DMRE has not undergone UNDP's micro-assessment required for direct fund transfer. DMRE has nominated SANEDI as Responsible Party, but under full NIM, UNDP cannot directly engage SANEDI without amending the implementation modality. Discussions are underway to change to 'CO Support to NIM' to enable SANEDI to receive funds. The 2024 South African elections and the subsequent formation of a Government of National Unity further restructured the DMRE into a new Ministry of Electricity and Energy, adding institutional transition risk.

**Critical TE interview finding:** As of the TE interview with a UNDP Country Office Programme Officer (2025), the project is expected to effectively restart in 2026 and run to 2031 – a five-year implementation horizon from restart. The TE interview explicitly notes that the project has 'not started officially,' that some Outcome 1 and 2 activities 'have been done during South Africa's load shedding period' independently of the project, and that a stock-take exercise is planned to assess what has been done outside the project and what remains, which will inform a ProDoc amendment submission to the GEF and a potential early midterm review/reset.

South Africa presents three structural features that shape the MSD assessment. First, both LED lighting and distribution transformer markets are substantially import-driven, with limited domestic manufacturing, placing border-entry testing and NRCS certification at the heart of the MVE architecture. Second, the country has strong prior institutional readiness from GEF 2692, which created tested inter-institutional networks between DMRE, SABS, NRCS, and SANEDI. Third, South Africa's acute energy security crisis – load-shedding – has created organic market-level pressure for energy efficiency that operates independently of donor interventions, driving LED adoption in commercial and municipal sectors without project support.

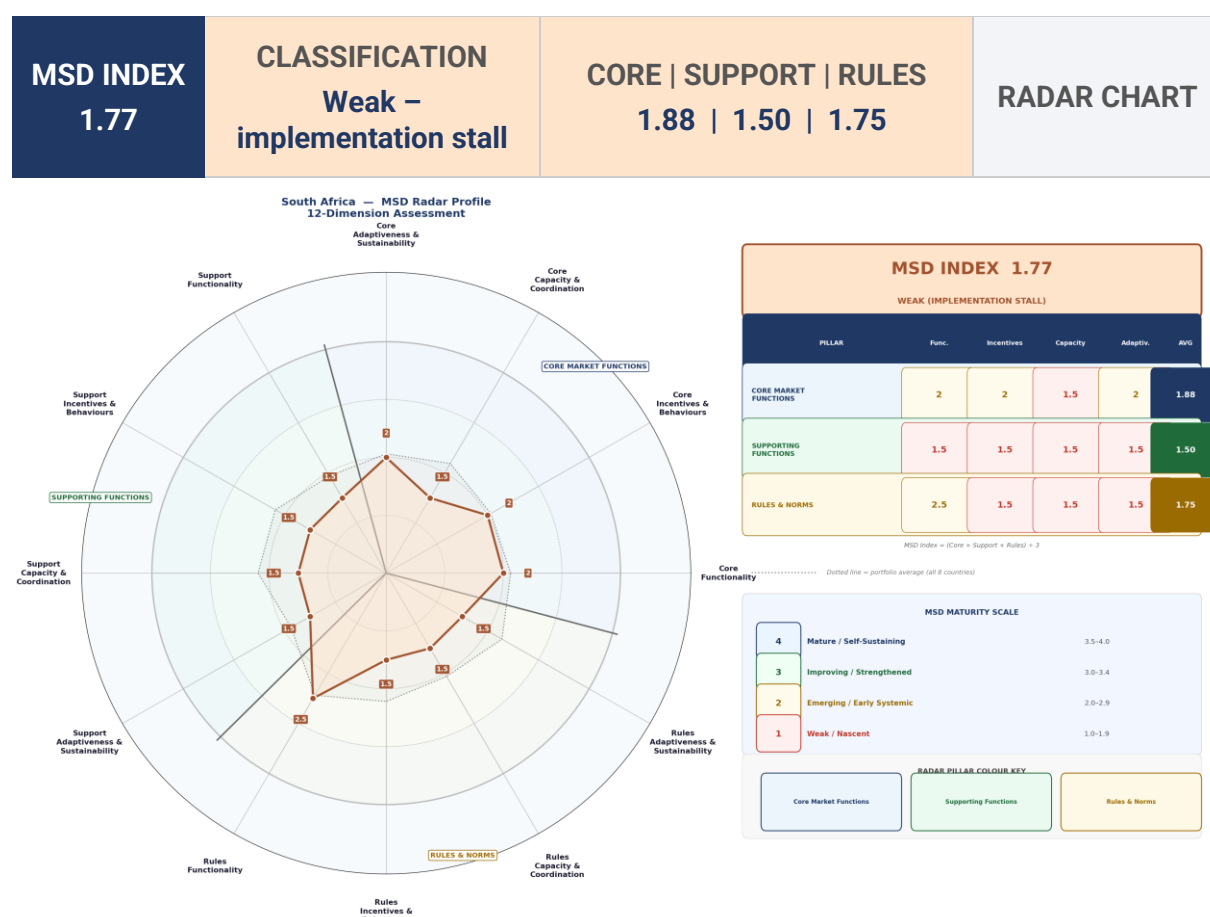


Figure 7: South Africa — 12-Dimension MSD Radar Profile

## Dimension Scorecard

| PILLAR / DIMENSION    | Functionality | Incentives & Behaviours | Capacity & Coordination | Adaptiveness & Sustainability | AVG  |
|-----------------------|---------------|-------------------------|-------------------------|-------------------------------|------|
| CORE MARKET FUNCTIONS | 2             | 2                       | 1.5                     | 2                             | 1.88 |
| SUPPORTING FUNCTIONS  | 1.5           | 1.5                     | 1.5                     | 1.5                           | 1.50 |
| RULES & NORMS         | 2.5           | 1.5                     | 1.5                     | 1.5                           | 1.75 |

## Programme Context

South Africa's GEF 9083 implementation experienced severe implementation stall driven by co-financing failure. The GEF grant of USD 2.0M — the smallest in the portfolio — was paired with committed co-financing of USD 85.0M, of which zero was disbursed during the project period. The LED programme (LEDSAP) was absorbed into the government's broader LED rollout (Operation Khanyisa), which proceeded independently of GEF structures, creating a parallel delivery mechanism that captured LED market development outcomes but without GEF attribution.

## Pillar A: Core Market Functions [Score: 1.9 — Weak]

## Sub-components: Production / Importation | Distribution | Retail / Sales | Consumption

This pillar assesses whether high-efficiency products are being produced, imported, distributed, retailed, and purchased at scale. South Africa's LED market has genuine organic commercial momentum driven by load-shedding and price parity – but this momentum is occurring outside the project framework. The distribution transformer component has zero activity across all four dimensions. The weighted average of LED momentum and transformer inaction produces a Core score of 1.9 – at the upper boundary of Weak, with the transformer component pulling the overall score below the Emerging threshold.

| MSD Dimension                 | Sub-component (TE Framework)                   | Evidence from Project Documents                                                                                                                                                 | Sources (Triangulated)                                                                       | Score (1–4) |
|-------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-------------|
| Functionality                 | Production & Importation                       | Market exists but was stalled but administrative bottlenecks and a government initiated similar intervention following electricity load-shedding. Project could not be started. | IR FY24 – Indicators 3, 9, 13 progress; UNDP ProDoc PIMS 5728 (2020); CEO Endorsement (2020) | 2           |
|                               | Distribution & Retail                          |                                                                                                                                                                                 |                                                                                              |             |
|                               | Retail / Sales (Market Share Data – SEC)       |                                                                                                                                                                                 |                                                                                              |             |
|                               | Consumption (Household Demand & Affordability) |                                                                                                                                                                                 |                                                                                              |             |
| Incentives & Behaviours       | Production & Importation                       | Market exists but was stalled but administrative bottlenecks and a government initiated similar intervention following electricity load-shedding. Project could not be started. | IR FY24 – Indicators 3, 9, 13 progress; UNDP ProDoc PIMS 5728 (2020); CEO Endorsement (2020) | 2           |
|                               | Distribution & Retail                          |                                                                                                                                                                                 |                                                                                              |             |
|                               | Retail / Sales (Market Share Data – SEC)       |                                                                                                                                                                                 |                                                                                              |             |
|                               | Consumption (Household Demand & Affordability) |                                                                                                                                                                                 |                                                                                              |             |
| Capacity & Coordination       | Production & Importation                       | Market exists but was stalled but administrative bottlenecks and a government initiated similar intervention following electricity load-shedding. Project could not be started. | IR FY24 – Indicators 3, 9, 13 progress; UNDP ProDoc PIMS 5728 (2020); CEO Endorsement (2020) | 1.5         |
|                               | Distribution & Retail                          |                                                                                                                                                                                 |                                                                                              |             |
|                               | Retail / Sales (Market Share Data – SEC)       |                                                                                                                                                                                 |                                                                                              |             |
|                               | Consumption (Household Demand & Affordability) |                                                                                                                                                                                 |                                                                                              |             |
| Adaptiveness / Sustainability | Production & Importation                       | Market exists but was stalled but administrative bottlenecks and a government initiated similar intervention following electricity load-shedding. Project could not be started. | IR FY24 – Indicators 3, 9, 13 progress; UNDP ProDoc PIMS 5728 (2020); CEO Endorsement (2020) | 2           |
|                               | Distribution & Retail                          |                                                                                                                                                                                 |                                                                                              |             |
|                               | Retail / Sales (Market Share Data – SEC)       |                                                                                                                                                                                 |                                                                                              |             |
|                               | Consumption (Household Demand & Affordability) |                                                                                                                                                                                 |                                                                                              |             |

**Pillar finding:** Core Market Functions score 1.9 (Weak – upper boundary). The LED component has organic commercial momentum (municipal LED street lighting, price parity, load-shedding motivation) but no project-delivered market transformation activities. The PMU's non-establishment means project co-ordination of supply-chain, retail, and replacement activities has not commenced. The transformer component has zero market development activity. The gap to Emerging requires: (1) PMU establishment and project fund disbursement; (2) structured market monitoring system operational; (3) the EEFI financing mechanism disbursing to municipalities; and (4) initial project activities on the transformer component.

## Pillar B: Supporting Functions [Score: 1.5 – Weak]

### Sub-components: Finance | Marketing & Awareness | Technical Support | Information Systems

This pillar assesses the enabling services that allow the core EE market to function. South Africa's Supporting Functions score of 1.5 is the lowest of the three pillars and reflects the near-total absence of project-delivered enabling infrastructure as of the first PIR. The EEFI financial mechanism has disbursed zero funds. No awareness campaign has been



conducted. The lab targeted for SANAS accreditation is still awaiting certification. No project-funded information system has been established. The partial counterweights – DBSA's institutional finance capacity and load-shedding-driven organic awareness – provide a real foundation that the project has not yet activated.

| MSD Dimension                 | Sub-component (TE Framework)                              | Evidence from Project Documents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Sources (Triangulated)                                                                                                                    | Score (1–4) |
|-------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| Functionality                 | Finance (Demand & Supply Side)                            | Financing was stalled by an administrative issue between implementing agency and the government.<br><br>The NRCS Product Registration and Application System – a pre-existing institutional mechanism – is operational for registered LED products. The PIR FY24 notes that 'Suppliers are expected to comply with the regulations for LED passed by the NRCS' and this system is cited as partial progress on Indicator 6. However, this is a pre-project infrastructure element, not a project output, and no new project-funded information.<br><br>The project baseline (ProDoc) identified two SANAS-accredited photometric testing laboratories. The ProDoc target was to increase this to at least three accredited labs for LED testing and at least one for distribution transformer testing. | <i>IR FY24 – Indicator 8 progress; UNDP ProDoc PIMS 5728 (2020); GEF 2692 Terminal Evaluation (prior project); TE Interview (2024/25)</i> | 1.5         |
|                               | Marketing & Awareness                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |
| Incentives & Behaviours       | Finance (Demand & Supply Side)                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           | 1.5         |
|                               | Marketing & Awareness                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |
| Capacity & Coordination       | Finance (Demand & Supply Side)                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           | 1.5         |
|                               | Marketing & Awareness                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |
| Adaptiveness / Sustainability | Finance (Demand & Supply Side)                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           | 1.5         |
|                               | Marketing & Awareness                                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                           |             |

**Pillar finding:** Supporting Functions score 1.5 (Weak). This is the weakest pillar in the assessment, reflecting that all four sub-components are rated at 1.5 based on the documented first PIR outcomes of zero disbursement, no campaign, no lab accreditation progress, and no new information system. DBSA's institutional financing platform and load-shedding-driven organic awareness are the primary assets available for rapid activation once the PMU is established. The critical path to improving this pillar: (1) sign LoA with SANEDI as Responsible Party; (2) establish PMU; (3) disburse initial EEFI funds to municipalities; (4) conduct baseline consumer awareness survey; (5) complete lab SANAS accreditation process.

**Pillar C: Rules and Norms [Score: 1.75 – Weak]**

**Sub-components: Standards (MEPS/Labels) | MVE & Enforcement | Fiscal/Environmental | Informal Norms**

This pillar assesses the strength of formal and informal institutions governing the EE LED lighting and distribution transformer markets. South Africa's Rules and Norms pillar score of 1.9 reflects a mixed picture: the LED MEPS (VC9109/9110) adopted through government's own funding is a genuine regulatory milestone (score: 2.5), but MVE enforcement is not operational at scale, the EEFI fiscal instrument has not disbursed, and the entire transformer regulatory pathway has zero activity. Informal norms (load-shedding motivation, political alignment) provide the strongest positive dimension.

| MSD Dimension                 | Sub-component (TE Framework)                                         | Evidence from Project Documents                                                                                                                                         | Sources (Triangulated)                                                                        | Score (1–4) |
|-------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|-------------|
| Functionality                 | Standards (MEPS, Energy Label, IEC Protocol)                         | Limited regulatory traction. Government regulatory infrastructure that needed upgrading existed and was used by the government for LED lighting following load shedding | <i>PIR FY24 – BPPS RTA Overall Assessment; TE Interview (2024/25); CEO Endorsement (2020)</i> | 2.5         |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   |                                                                                                                                                                         |                                                                                               |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                |                                                                                                                                                                         |                                                                                               |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) |                                                                                                                                                                         |                                                                                               |             |
| Incentives & Behaviours       | Standards (MEPS, Energy Label, IEC Protocol)                         |                                                                                                                                                                         |                                                                                               | 1.5         |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   |                                                                                                                                                                         |                                                                                               |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                |                                                                                                                                                                         |                                                                                               |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) |                                                                                                                                                                         |                                                                                               |             |
| Capacity & Coordination       | Standards (MEPS, Energy Label, IEC Protocol)                         |                                                                                                                                                                         |                                                                                               | 1.5         |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   |                                                                                                                                                                         |                                                                                               |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                |                                                                                                                                                                         |                                                                                               |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) |                                                                                                                                                                         |                                                                                               |             |
| Adaptiveness / Sustainability | Standards (MEPS, Energy Label, IEC Protocol)                         |                                                                                                                                                                         |                                                                                               | 1.5         |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   |                                                                                                                                                                         |                                                                                               |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                |                                                                                                                                                                         |                                                                                               |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) |                                                                                                                                                                         |                                                                                               |             |

**Pillar finding:** Rules and Norms score 1.9 (Weak – upper boundary). The LED MEPS adoption through government own-funding (VC9109/9110) is the project's strongest regulatory achievement – though its attribution to the GEF project is complicated by the PIR's explicit statement that this was done with government funding. MVE enforcement capacity is incomplete (lab accreditation pending, no surveillance operations). The transformer component has zero regulatory activity. The EEFI has not disbursed. The formal norm architecture is in place at the design level; the critical gap is that the project's capacity-building and coordination activities – which would translate regulatory design into operational enforcement – have not commenced due to PMU non-establishment.

| STRENGTHS & ACHIEVEMENTS                                                                                                                                                                                                     | GAPS & RISKS                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MEPS/SANS standards development proceeded independently of project stall. Operation Khanyisa delivered significant LED procurement volumes. Rules Functionality at 2.5 provides a regulatory platform for future activation. | Zero co-financing disbursement is the defining failure. Supporting Functions collapsed uniformly. No MVE scheme established. No private sector market activation. Implementation stall rooted in institutional disconnect between GEF project architecture and government programme delivery. |

**Key Lesson:** South Africa illustrates that co-financing dependent programme designs carry high concentration risk. When the lead co-financier redirects funding through an alternative government programme, GEF grant alone cannot sustain the intended market systems intervention. Project design should build in co-financing trigger mechanisms.



## 4.6 Kazakhstan | MSD Country Profile

### Country and Market Context

Kazakhstan is a large, resource-rich, upper-middle-income economy with a highly energy-intensive production and consumption profile inherited from the Soviet era. Electricity is heavily subsidised, historically suppressing consumer incentives for energy efficiency. The residential and industrial sectors are significant electricity consumers: refrigerators, industrial motors, and distribution transformers collectively consumed approximately 40 TWh per year at project inception, projected to grow to 87 TWh per year by 2030 under business as usual – representing both a substantial savings opportunity and a significant GHG reduction challenge. At the national grid emission factor of 0.919 tCO<sub>2</sub>/MWh, these sectors generate approximately 37 million tonnes of CO<sub>2</sub> per year.

Kazakhstan presents three structural features that directly shape the MSD assessment. First, the appliance and equipment market is predominantly import-driven: refrigerators, motors, and transformers are largely imported, with the significant exception of distribution transformers manufactured domestically at the Kentau Transformer Manufacturing Plant. This means border-entry certification and customs enforcement are critical MVE gatekeeping mechanisms that the project failed to establish. Second, Kazakhstan is a member of the Eurasian Economic Union (EAEU), whose Technical Regulations constrain the ambition level of national MEPS – a structural factor that was under-estimated at design stage and proved to be a binding ceiling on regulatory outcomes. Third, the project faced compounding governance failures: a part-time project manager without requisite English and technical fluency, a Chief Technical Advisor contracted for insufficient hours and delayed by over two years, and an executing partner (MIID) with a primarily nominal role – resulting in a Mid-Term Review rating of Unsatisfactory and formal suspension in September 2020.

The suspension has persisted through FY2024. As of June 2024, the GEF had not yet approved the lifting of suspension despite UNDP submitting the request. A Third-Party Independent Review (TPIR) concluded in May 2022; the UNDP Special Measures Board recommended lifting the suspension on 1 November 2022 under Enhanced Technical Oversight. Cumulative GEF disbursement stands at USD 2,136,238 (61.04% of the USD 3,500,000 grant). Co-financing materialization reported as USD 0 against a committed USD 12,242,643. Annual refrigerator sales in Kazakhstan were approximately 250,000 units/year during 2017–2019 – making the EOP target of 1.3 million MEPS-compliant refrigerators sold "not realistic" per the MTR and TPIR.

Kazakhstan's MSD Index of 1.75 places it in the Weak band – the lowest of the GEF 9083 countries assessed to date. This reflects a project that achieved partial institutional outputs (MEPS adoption, voluntary label definition, awareness studies, some laboratory preparatory work) but failed to achieve the functional system transformation required by the project objective.

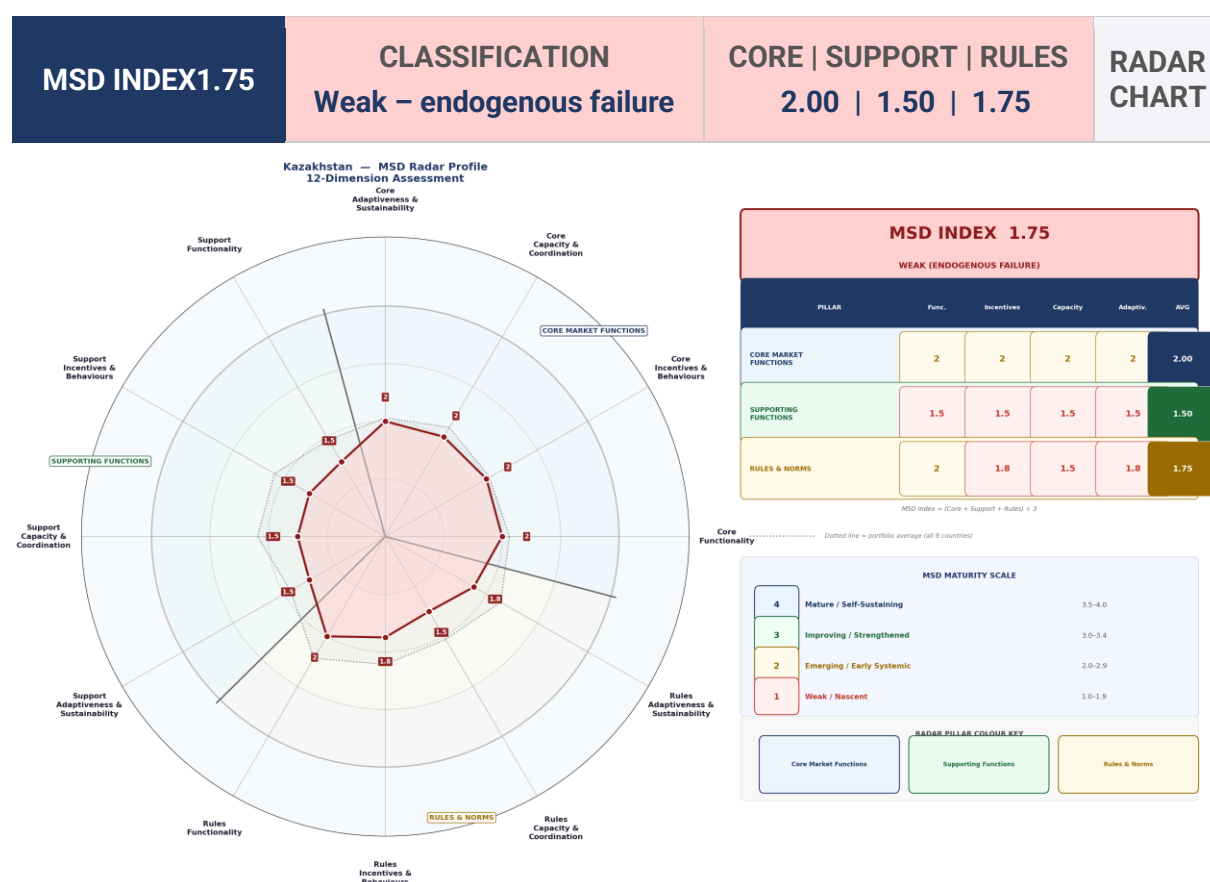


Figure 8: Kazakhstan – 12-Dimension MSD Radar Profile

## Dimension Scorecard

| PILLAR / DIMENSION    | Functionality | Incentives & Behaviours | Capacity & Coordination | Adaptiveness & Sustainability | AVG  |
|-----------------------|---------------|-------------------------|-------------------------|-------------------------------|------|
| CORE MARKET FUNCTIONS | 2             | 2                       | 2                       | 2                             | 2.00 |
| SUPPORTING FUNCTIONS  | 1.5           | 1.5                     | 1.5                     | 1.5                           | 1.50 |
| RULES & NORMS         | 2             | 1.75                    | 1.5                     | 1.75                          | 1.75 |

## Programme Context

Kazakhstan's GEF 9083 implementation was characterised by endogenous failure – problems internal to the project design and management rather than exogenous disruption. Despite a stable political environment and functioning regulatory institutions, the programme failed to achieve the market activation milestones planned in the ProDoc. The primary cause was insufficient private sector engagement, which led to an MVE scheme that was designed but never operationalised, and co-financing commitments that were not converted into deployed capital.

## Pillar A: Core Market Functions [Score: 2.0 – Emerging]

### Sub-components: Production / Importation | Distribution | Retail / Sales | Consumption

This pillar assesses whether high-efficiency products are being produced, imported, distributed, retailed, and purchased at scale. Kazakhstan's market is predominantly import-

driven for refrigerators and motors; the Kentau plant is the only significant domestic manufacturer, producing distribution transformers.

| MSD Dimension                 | Sub-component (TE Framework)                   | Evidence from Project Documents                                                                                                 | Sources (Triangulated)                                                                          | Score (1–4) |
|-------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------|
| Functionality                 | Production & Importation                       | Appliance market largely import-driven; no clear shift toward efficient products due to weak enforcement and limited incentives | PIR; Evaluation synthesis; Market analysis<br>PIR; Evaluation synthesis; Stakeholder interviews | 2           |
|                               | Distribution & Retail                          | Existing distribution networks functional but not aligned with energy efficiency objectives                                     |                                                                                                 |             |
|                               | Retail / Sales (Market Share Data – SEC)       | No reliable market share tracking system; limited evidence of increased sales of efficient appliances                           |                                                                                                 |             |
|                               | Consumption (Household Demand & Affordability) | Low consumer awareness and affordability constraints limit uptake of efficient appliances                                       |                                                                                                 |             |
| Incentives & Behaviours       | Production & Importation                       | Weak incentives for importers to prioritise efficient products due to limited enforcement of standards                          | PIR; Evaluation synthesis; Market analysis<br>PIR; Evaluation synthesis; Stakeholder interviews | 2           |
|                               | Distribution & Retail                          | Retailers not incentivised to differentiate or promote efficient appliances                                                     |                                                                                                 |             |
|                               | Retail / Sales (Market Share Data – SEC)       | Sales behaviour not influenced by energy efficiency considerations                                                              |                                                                                                 |             |
|                               | Consumption (Household Demand & Affordability) | Limited behavioural change among consumers due to low awareness and weak price signals                                          |                                                                                                 |             |
| Capacity & Coordination       | Production & Importation                       | Government institutions engaged but limited coordination with private sector actors                                             | PIR; Evaluation synthesis; Market analysis<br>PIR; Evaluation synthesis; Stakeholder interviews | 2           |
|                               | Distribution & Retail                          | Weak coordination across value chain actors; limited programme engagement with retailers                                        |                                                                                                 |             |
|                               | Retail / Sales (Market Share Data – SEC)       | No coordinated system for monitoring or promoting efficient appliance sale                                                      |                                                                                                 |             |
|                               | Consumption (Household Demand & Affordability) | Limited coordination of consumer awareness or demand stimulation initiatives                                                    |                                                                                                 |             |
| Adaptiveness / Sustainability | Production & Importation                       | Supply chains not adapting toward efficiency without stronger regulatory enforcement                                            | PIR; Evaluation synthesis; Market analysis<br>PIR; Evaluation synthesis; Stakeholder interviews | 2           |
|                               | Distribution & Retail                          | Distribution system not transitioning independently toward efficient products                                                   |                                                                                                 |             |
|                               | Retail / Sales (Market Share Data – SEC)       | No evidence of sustained growth in efficient appliance sales                                                                    |                                                                                                 |             |
|                               | Consumption (Household Demand & Affordability) | Behavioural change not self-sustaining; demand remains weak                                                                     |                                                                                                 |             |

**Pillar finding: Core Market Functions score 2.0 (Emerging).**

The market is commercially functional – products are traded and sold – but efficiency upgrading is not market-driven. Retailers and manufacturers are not commercially motivated to comply with EE standards because enforcement is absent and consumer signals are weak. The gap between Emerging and Improving requires: (a) enforceable MEPS with credible customs enforcement, (b) a mandatory energy label, and (c) a functioning market monitoring system. None of these are currently in place.

**Pillar B: Supporting Functions [Score: 1.5 – Weak]**

**Sub-components: Finance | Marketing & Awareness | Technical Support | Information Systems**

This pillar assesses the enabling services that allow the core EE market to function. Kazakhstan's performance is the weakest of the three pillars, reflecting the failure of the coupon scheme as a financing mechanism, the absence of accredited testing laboratory capacity, and the limited reach and effectiveness of consumer awareness activities.

| MSD Dimension                 | Sub-component (TE Framework)                              | Evidence from Project Documents                                                                      | Sources (Triangulated)                       | Score (1–4) |
|-------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------|
| Functionality                 | Finance (Demand & Supply Side)                            | No dedicated financing mechanisms established for efficient appliances                               | PIR; Evaluation synthesis; Programme reports | 1.5         |
|                               | Marketing & Awareness                                     | Limited awareness campaigns; low penetration among consumers                                         |                                              |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | initial steps toward strengthening certification and testing capacity; systems not fully operational |                                              |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | No comprehensive information or monitoring systems established                                       |                                              |             |
| Incentives & Behaviours       | Finance (Demand & Supply Side)                            | Lack of financial incentives is a key barrier to market development                                  | PIR; Evaluation synthesis; Market analysis   | 1.5         |
|                               | Marketing & Awareness                                     | limited influence on consumer or supplier behaviour                                                  |                                              |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Weak incentives for compliance due to incomplete certification systems                               |                                              |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | Absence of data systems reduces transparency and compliance incentives                               |                                              |             |
| Capacity & Coordination       | Finance (Demand & Supply Side)                            | Minimal engagement with financial institutions                                                       | PIR; Evaluation synthesis; Market analysis   | 1.5         |
|                               | Marketing & Awareness                                     | Weak coordination of awareness initiatives                                                           |                                              |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Institutional capacity emerging but fragmented                                                       |                                              |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | Weak institutional coordination and system development                                               |                                              |             |
| Adaptiveness / Sustainability | Finance (Demand & Supply Side)                            | No sustainable financing mechanisms in place                                                         | PIR; Evaluation synthesis; Market analysis   | 1.5         |
|                               | Marketing & Awareness                                     | Behavioural change not sustained                                                                     |                                              |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Systems not yet scalable or institutionalised                                                        |                                              |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | No sustainability due to absence of systems                                                          |                                              |             |

**Pillar finding: Supporting Functions score 1.5 (Weak).**

Kazakhstan's supporting infrastructure is critically underdeveloped. The absence of any accredited testing laboratory is the most consequential gap – without it, MEPS cannot be technically verified, and enforcement cannot be credible. The coupon scheme demonstrated that demand-side finance without mandatory labels and market monitoring is insufficient to drive systemic change. The information system exists in rudimentary form but is not institutionalized. Closing this gap requires investment in lab accreditation, designation of a permanent registry institution with recurrent government funding, and a revised demand-side programme explicitly linked to mandatory MEPS.

## Pillar C: Rules and Norms [Score: 1.75 – Weak]

### Sub-components: Standards (MEPS/Labels) | MVE & Enforcement | Fiscal/Environmental | Informal Norms

This pillar assesses the strength of formal and informal institutions governing the EE appliance and equipment market. Kazakhstan adopted MEPS and a voluntary label – meaningful regulatory milestones – but the level of ambition is constrained by EAEU membership, and enforcement infrastructure is entirely absent.

| MSD Dimension                 | Sub-component (TE Framework)                                         | Evidence from Project Documents                                                                                        | Sources (Triangulated)                                 | Score (1–4) |
|-------------------------------|----------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|-------------|
| Functionality                 | Standards (MEPS, Energy Label, IEC Protocol)                         | partial development of standards and labelling frameworks; alignment with international norms initiated but incomplete | PIR; Government policy documents; Evaluation synthesis | 2           |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Enforcement mechanisms not operationalised; absence of systematic compliance monitoring                                |                                                        |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Limited policy development; no effective fiscal or environmental incentives implemented                                |                                                        |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | No established compliance culture; efficiency not embedded in market behaviour                                         |                                                        |             |
| Incentives & Behaviours       | Standards (MEPS, Energy Label, IEC Protocol)                         | Weak influence on supplier and importer behaviour                                                                      |                                                        | 1.75        |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Lack of enforcement reduces incentives for compliance                                                                  |                                                        |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | No meaningful incentives to drive market transformation                                                                |                                                        |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | No behavioural shift across market actors                                                                              |                                                        |             |
| Capacity & Coordination       | Standards (MEPS, Energy Label, IEC Protocol)                         | Institutional capacity partially developed but not fully operational                                                   | PIR; Evaluation synthesis; Stakeholder interviews      | 1.5         |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Weak coordination across enforcement bodies                                                                            |                                                        |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Weak stakeholder coordination and engagement                                                                           |                                                        |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Framework not mature enough for iterative updates                                                                      |                                                        |             |
| Adaptiveness / Sustainability | Standards (MEPS, Energy Label, IEC Protocol)                         | No sustainable enforcement system                                                                                      | Evaluation synthesis; Stakeholder interviews; PIR      | 1.75        |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | No sustainable policy instruments                                                                                      |                                                        |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | No sustained behavioural change                                                                                        |                                                        |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) |                                                                                                                        |                                                        |             |

### **Pillar finding: Rules and Norms score 1.75 (Weak).**

Kazakhstan's regulatory architecture is partially constructed but non-functional in enforcement terms. MEPS have been formally adopted – a genuine achievement – but at a level constrained by EAEU membership and below the project's own targets, with no enforcement mechanism, no testing laboratory to verify compliance, and no border inspection regime. The voluntary label is defined but not operative as a market signal. The gap between Weak and Emerging in this pillar requires: (a) mandatory energy labelling regulation, (b) operational MVE infrastructure including border-level MEPS checking and designated market surveillance authority, and (c) at least one accredited testing laboratory for each product category.

| STRENGTHS & ACHIEVEMENTS                                                                                                                                                                                                                           | GAPS & RISKS                                                                                                                                                                                                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MEPS regulations gazetted – a foundation for future activation. Core Market Functions uniformly at 2.0 indicates broad if shallow market progress. Institutional counterpart (Ministry of Energy) maintained engagement throughout project period. | MVE scheme designed but never operationalised – the central market activation tool was not deployed. Core Adaptiveness at 2.0 masks the absence of market self-sustainability mechanisms. Private sector engagement insufficient throughout. |

Key Lesson: Kazakhstan illustrates that endogenous failure – design or implementation management shortfalls rather than external disruption – produces a characteristically different radar signature than conflict or stall: uniform, low-level scores across all pillars with no regulatory spike.

## **4.7 Sudan | MSD Country Profile**

### **1. Country Background and Context**

Sudan's energy sector is characterised by deep structural challenges: over 60% of the population lacked reliable electricity access at the time of project formulation, with lighting and air conditioning accounting for 50% of residential electricity consumption, 80% in the commercial sector, and more than 90% in government buildings. The National Energy Efficiency Action Plan (NEEAP), adopted in 2012, set an ambition of 10–12% energy savings by 2020, yet implementation remained constrained by the absence of enforceable product standards, testing capacity, and a coordinating institutional focal point.

The project was conceived and implemented under exceptionally difficult conditions. A political transition following the removal of President Al-Bashir in April 2019 disrupted key institutional partners. The global COVID-19 pandemic effectively halted implementation activities throughout 2020. A military coup in October 2021 reshaped the civilian administration, and in April 2023 a civil war erupted, forcing displacement of virtually all government and project staff, shutting down project activities before key enforcement and awareness components could be completed.

Despite these extraordinary challenges, the Sudan child project achieved a delivery rate of approximately 68% of planned activities on only 46% of its GEF budget – a measure of resourcefulness and adaptive management. It expanded its original scope from two appliance categories (lighting, ACs) to five (adding refrigerators, evaporative coolers, and fans), and produced foundational regulatory and strategic outputs representing a meaningful contribution to Sudan's energy efficiency ecosystem.



## Key Contextual Risk Factors

| Risk Factor                   | Description                                                                                                                                                                       |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Political Instability</b>  | Three major governance transitions (2019, 2021, 2023) disrupted institutional relationships, delayed approvals, and caused staff turnover across partner agencies.                |
| <b>Civil War (April 2023)</b> | Conflict halted all project activities; most government and project staff were displaced within Sudan or fled the country. The UNDP office relocated from Khartoum to Port Sudan. |
| <b>COVID-19 (2020)</b>        | Effectively lost a full year of implementation; first AWP not signed until end of 2019, compounding delays.                                                                       |
| <b>Currency Devaluation</b>   | The Sudanese Pound depreciated dramatically, increasing the cost of imported efficient appliances and eroding consumer purchasing power.                                          |
| <b>Co-financing Gap</b>       | Only ~12% (USD 670,000 in-kind) of the USD 5.6M co-financing commitment materialised, leaving key components – most critically the testing laboratories – unfunded.               |

## MSD Composite Index – Market Transformation Results Table

The table below presents the composite MSD assessment for Sudan.

| MSD Pillar (GEF 9083 Framework)                                                    | Functionality | Incentives & Behaviours | Capacity & Coordination | Adaptiveness / Sustainability | Pillar Score | Market Band             |
|------------------------------------------------------------------------------------|---------------|-------------------------|-------------------------|-------------------------------|--------------|-------------------------|
| <b>Core Market Functions (Production, Distribution, Retail/Sales, Consumption)</b> | 1.5           | 1.5                     | 2.5                     | 1.5                           | 1.75         | <b>WEAK 1.0–1.9</b>     |
| <b>Supporting Functions (Finance, Awareness, Technical Services, Info Systems)</b> | 1.5           | 2.0                     | 2.0                     | 1.5                           | 1.75         | <b>WEAK 1.0–1.9</b>     |
| <b>Rules &amp; Norms (Standards, MVE, Fiscal, Formal + Informal Norms)</b>         | 2.5           | 2.5                     | 2.5                     | 2.5                           | 2.50         | <b>EMERGING 2.0–2.9</b> |
| <b>MSD Index (Core + Support + Rules) ÷ 3</b>                                      | 1.83          | 2.0                     | 2.33                    | 1.83                          | 2.00         | <b>EMERGING 2.0–2.9</b> |

Score key: 1 = Weak (red) | 2 = Emerging (amber) | 3 = Improving (green) | 4 = Mature (dark blue) | MSD Index = (Core 1.75 + Support 1.75 + Rules 2.50) ÷ 3 = 2.00 → EMERGING

Sudan's MSD Index of 2.00 places it at the entry point of the Emerging band (2.0–2.9). The Rules & Norms pillar – scoring 2.50 – is Sudan's strongest area, reflecting the substantive regulatory architecture built by the project (MEPS for five appliance categories, labelling scheme, MVE programme design, ERA focal point). The Core Market and Supporting Functions pillars score 1.75 each (Weak band), correctly registering that these regulatory achievements have not yet translated into measurable market transformation, primarily due to the absence of testing laboratories, the ungazetted MEPS, and the halt of all implementation caused by the April 2023 civil war.

## Pillar A: Core Market Functions [Score: 1.75 – Weak]

### Sub-components: Production / Importation | Distribution | Retail / Sales | Consumption

This pillar assesses whether high-efficiency products are being produced, imported, distributed, retailed, and purchased at scale. Sudan's entirely import-driven appliance market means that border-entry certification and customs inspection are the critical supply-side mechanisms. At the time of project operational end, no measurable shift in the share of energy-efficient products had occurred in the market.

| MSD Dimension                 | Sub-component (TE Framework)                   | Evidence from Project Documents                                                                                                                                                                    | Sources (Triangulated)                          | Score (1–4) |
|-------------------------------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-------------|
| Functionality                 | Production & Importation                       | <b>Conflict</b> disrupted markets (core function)                                                                                                                                                  | PIR; National EE Strategy; Evaluation synthesis | 1.5         |
|                               | Distribution & Retail                          | Appliance market dominated by imports of low-efficiency products; absence of MEPS allows entry of inefficient appliances                                                                           |                                                 |             |
|                               | Retail / Sales (Market Share Data – SEC)       | Informal and fragmented distribution systems; no alignment with energy efficiency standards                                                                                                        |                                                 |             |
|                               | Consumption (Household Demand & Affordability) | No market monitoring system; no tracking of efficient appliance penetration<br>Demand highly price-driven; electricity subsidies reduce incentive for efficiency; low awareness of lifecycle costs |                                                 |             |
| Incentives & Behaviours       | Production & Importation                       | No regulatory enforcement → importers continue supplying low-cost inefficient appliances                                                                                                           | PIR; Evaluation synthesis; Market analysis      | 1.5         |
|                               | Distribution & Retail                          | Retailers not incentivised to stock or promote efficient products                                                                                                                                  |                                                 |             |
|                               | Retail / Sales (Market Share Data – SEC)       | Sales driven by upfront cost rather than efficiency; no differentiation in market behaviour                                                                                                        |                                                 |             |
|                               | Consumption (Household Demand & Affordability) | Consumers prioritise affordability over efficiency; limited awareness campaigns (schools-based pilots only)                                                                                        |                                                 |             |
| Capacity & Coordination       | Production & Importation                       | Institutional actors (Ministry, ERA) engaged, but limited coordination with private sector                                                                                                         | PIR; Evaluation synthesis; Stakeholder inputs   | 2.5         |
|                               | Distribution & Retail                          | Weak coordination across supply chain; informal sector dominates                                                                                                                                   |                                                 |             |
|                               | Retail / Sales (Market Share Data – SEC)       | No coordinated system for tracking or influencing sales                                                                                                                                            |                                                 |             |
|                               | Consumption (Household Demand & Affordability) | Limited coordination of awareness or demand-side interventions                                                                                                                                     |                                                 |             |
| Adaptiveness / Sustainability | Production & Importation                       | No adaptive shift in supply chains due to absence of enforcement                                                                                                                                   | PIR; Evaluation synthesis; Market analysis      | 1.5         |
|                               | Distribution & Retail                          | Distribution system not evolving toward efficiency                                                                                                                                                 |                                                 |             |
|                               | Retail / Sales (Market Share Data – SEC)       | No sustained growth in efficient products                                                                                                                                                          |                                                 |             |
|                               | Consumption (Household Demand & Affordability) | Behavioural change not sustained; affordability and subsidy distortions persist                                                                                                                    |                                                 |             |

Pillar finding: Core Market Functions score 1.75 (Weak). Sudan's market remained structurally unreformed at project operational end. No MEPS-driven import controls were in place, no shift in market share toward efficient products was measurable, and no demand-side financial mechanism was operational. The multi-agency technical committee infrastructure and improved coordination across ERA, SSMO, and NERC represent the primary gains in this pillar, lifting the Capacity dimension to 2.5 while market activation indicators remain at 1.5.



## Pillar B: Supporting Functions [Score: 1.75 – Weak]

### Sub-components: Finance | Marketing & Awareness | Technical Support | Information Systems

Supporting functions – finance, awareness, skills, and information systems – remained fragile and largely donor-dependent. The financing mechanism, which was central to making energy-efficient appliances affordable to consumers, was not operationalised. Public awareness campaigns, despite promising preparatory work, could not be launched before the April 2023 conflict halted all activities. On the positive side, the project trained a meaningful cadre of technical personnel and completed a pilot energy-efficiency retrofit of the ERA office building.

| MSD Dimension                 | Sub-component (TE Framework)                              | Evidence from Project Documents                                                                 | Sources (Triangulated)                                                              | Score (1–4) |
|-------------------------------|-----------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------|
| Functionality                 | Finance (Demand & Supply Side)                            | No financing mechanisms implemented; strategy proposes incentives/taxes but not operationalised | PIR; National EE Strategy; Evaluation synthesis                                     | 1.5         |
|                               | Marketing & Awareness                                     | Limited awareness campaigns (e.g. schools outreach); not scaled nationally                      | PIR; Programme reports; Evaluation synthesis                                        |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Proposed testing and certification systems; not fully operationalised                           | PIR; National EE Strategy; Evaluation synthesis                                     |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | No functional product registry or monitoring system established                                 | PIR; Evaluation synthesis; Programme records                                        |             |
| Incentives & Behaviours       | Finance (Demand & Supply Side)                            | Absence of incentives is a key systemic constraint; subsidies distort price signals             | PIR; National EE Strategy; Evaluation synthesis                                     | 2           |
|                               | Marketing & Awareness                                     | Limited behavioural influence due to small-scale interventions                                  | PIR; Evaluation synthesis; Programme records                                        |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Weak incentives for compliance due to lack of enforcement systems                               | PIR; Evaluation synthesis; Technical reports                                        |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | reduced incentives for market compliance                                                        | PIR; Evaluation synthesis; Programme records                                        |             |
| Capacity & Coordination       | Finance (Demand & Supply Side)                            | Limited engagement with financial sector actors                                                 | PIR; Evaluation synthesis; Programme rec PIR; Evaluation synthesis; Market analysis | 2           |
|                               | Marketing & Awareness                                     | Fragmented coordination of awareness initiatives                                                |                                                                                     |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Institutional capacity partially developed (ERA, Ministry), but fragmented                      |                                                                                     |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | Weak institutional coordination for system development                                          |                                                                                     |             |
| Adaptiveness / Sustainability | Finance (Demand & Supply Side)                            | No sustainable financing mechanisms; key bottleneck                                             |                                                                                     | 1.5         |
|                               | Marketing & Awareness                                     | Behavioural change not sustained beyond pilots                                                  |                                                                                     |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Systems not institutionalised or scaled                                                         |                                                                                     |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | No system sustainability due to absence of systems                                              |                                                                                     |             |

Pillar finding: Supporting Functions score 1.75 (Weak). Sudan's supporting architecture remains nascent but has advanced slightly. The trained technical cadre (40+ staff across

ERA, SSMO, NERC) and the ERA pilot retrofit strengthen the Awareness and Technical Support dimensions to 2.0. However, neither testing laboratory capacity nor the planned financing mechanism nor the national awareness campaign reached operational status. Post-conflict displacement of trained personnel poses the most serious sustainability risk to this pillar.

### Pillar C: Rules and Norms [Score: 2.50 – Emerging]

#### Sub-components: Standards (MEPS / Labels) | MVE & Enforcement | Fiscal / Environmental | Informal Norms

This pillar represents Sudan's strongest area of project achievement – and the most endangered by the civil conflict. The regulatory foundations established by the project are substantive: a National Energy Efficiency Strategy within the NEEAP framework, MEPS for five appliance categories, an energy labelling system, a compliance checking framework for imports, a draft EE Act, an end-of-life appliance management plan, and a trained focal point at ERA. What remains missing is the enforcement infrastructure – most critically the testing laboratories – that would convert this regulatory architecture into operative market law.

| MSD Dimension                 | Sub-component (TE Framework)                                         | Evidence from Project Documents                                                                                                   | Sources (Triangulated)                          | Score (1–4) |
|-------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|-------------|
| Functionality                 | Standards (MEPS, Energy Label, IEC Protocol)                         | Comprehensive MEPS and labelling frameworks <b>designed under National Energy Efficiency Strategy</b> , but not fully implemented | PIR; National EE Strategy; Evaluation synthesis | 2.5         |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Monitoring and enforcement systems proposed but not operationalised                                                               | PIR; National EE Strategy; Evaluation synthesis |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Proposed tax/incentive mechanisms for inefficient appliances; not implemented                                                     | PIR; National EE Strategy; Evaluation synthesis |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | No established compliance culture; efficiency not embedded in market behaviour                                                    | Evaluation synthesis; Stakeholder inputs; PIR   |             |
| Incentives & Behaviours       | Standards (MEPS, Energy Label, IEC Protocol)                         | Limited influence due to lack of enforcement                                                                                      | PIR; Evaluation synthesis; Market analysis      | 2.5         |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Absence of enforcement undermines compliance incentives                                                                           | PIR; Evaluation synthesis; Stakeholder inputs   |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | No effective fiscal incentives to drive behaviour                                                                                 | PIR; National EE Strategy; Evaluation synthesis |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Behaviour remains price-driven and informal                                                                                       | Evaluation synthesis; Stakeholder inputs; PIR   |             |
| Capacity & Coordination       | Standards (MEPS, Energy Label, IEC Protocol)                         | Institutional framework exists (Ministry, ERA) but not fully operationalised                                                      | PIR; Government docs; Evaluation synthesis      | 2.5         |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | Weak coordination across enforcement bodies                                                                                       | PIR; Evaluation synthesis; Stakeholder inputs   |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | Limited cross-sector coordination                                                                                                 | PIR; Government docs; Evaluation synthesis      |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | Weak stakeholder coordination and engagement                                                                                      | Evaluation synthesis; Stakeholder inputs; PIR   |             |
| Adaptiveness / Sustainability | Standards (MEPS, Energy Label, IEC Protocol)                         | Strategy provides foundation but lacks iterative regulatory mechanisms                                                            | PIR; National EE Strategy; Evaluation synthesis | 2.5         |

| MSD Dimension | Sub-component (TE Framework)                                         | Evidence from Project Documents         | Sources (Triangulated)                          | Score (1–4) |
|---------------|----------------------------------------------------------------------|-----------------------------------------|-------------------------------------------------|-------------|
|               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | No sustainable enforcement system       | PIR; Evaluation synthesis; Stakeholder inputs   |             |
|               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | No adaptive fiscal instruments in place | PIR; National EE Strategy; Evaluation synthesis |             |
|               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | No sustained behavioural change         | Evaluation synthesis; Stakeholder inputs; PIR   |             |

Pillar finding: Rules & Norms score 2.50 (Emerging). Sudan’s regulatory transformation is substantive in design but not yet operative in enforcement. All four Rules dimensions score 2.5, reflecting meaningful progress across standards (MEPS x5), MVE framework design, fiscal and environmental instruments (draft EE Act, EOL plan), and stakeholder norms (ERA focal point, industry buy-in). The shelf-ready regulatory package – MEPS x5, labelling, MVE design, ERA focal point, draft EE Act, EOL management plan – is Sudan’s most important project legacy. The critical gap remains the testing laboratory infrastructure that would convert aspirational regulation into enforceable market law.

## MSD Index Calculation

The MSD Index is calculated as the simple average of the three pillar scores: MSD Index = (Core Market Functions + Supporting Functions + Rules & Norms) ÷ 3

|                       |                                                          |                                                            |                    |
|-----------------------|----------------------------------------------------------|------------------------------------------------------------|--------------------|
| <b>MSD INDEX 2.00</b> | <b>CLASSIFICATION</b><br><b>Weak – conflict-affected</b> | <b>CORE   SUPPORT   RULES</b><br><b>1.75   1.75   2.50</b> | <b>RADAR CHART</b> |
|-----------------------|----------------------------------------------------------|------------------------------------------------------------|--------------------|

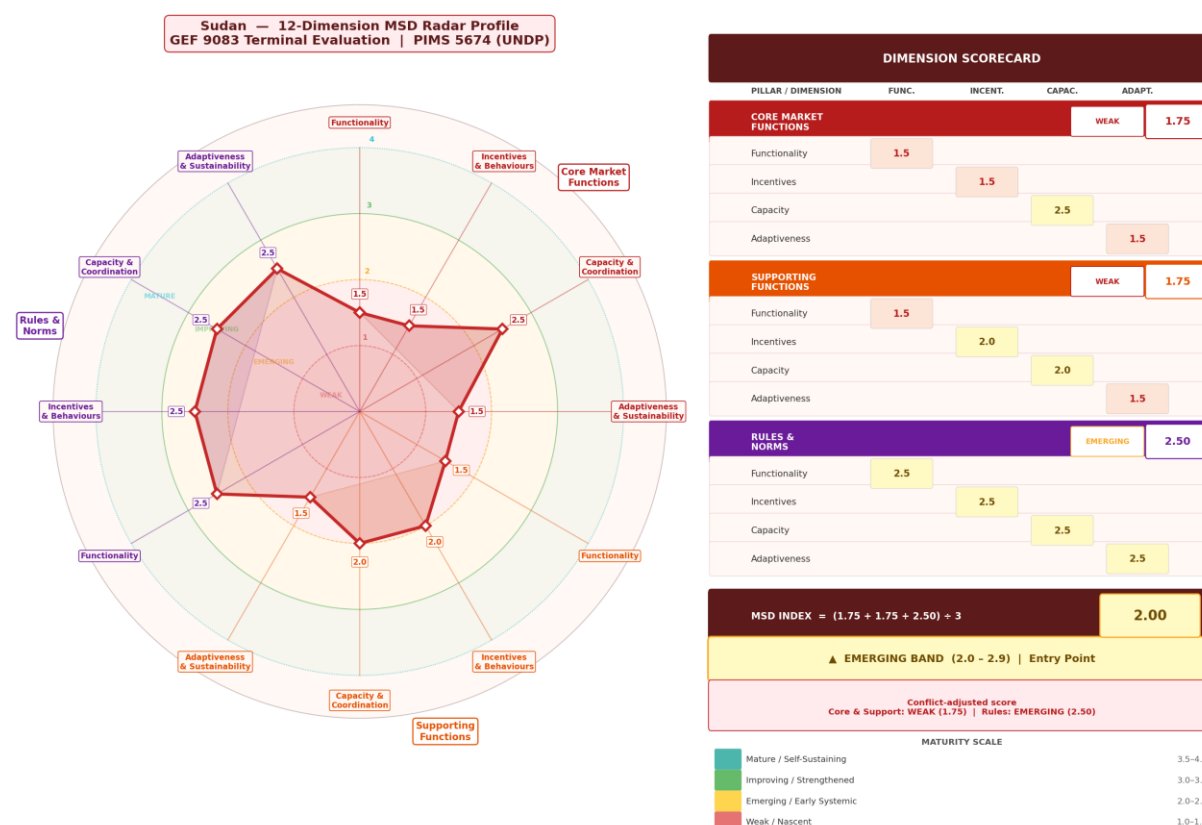


Figure 9: Sudan 12-Dimension MSD Radar Profile – Core 1.75 (Weak) | Supporting 1.75 (Weak) | Rules & Norms 2.50 (Emerging) | MSD Index 2.00 (Emerging – entry point)

| Pillar                       | Pillar Score | Weighting                    | Contribution    |
|------------------------------|--------------|------------------------------|-----------------|
| Core Market Functions        | 1.75         | 33.3%                        | 0.58            |
| Supporting Functions         | 1.75         | 33.3%                        | 0.58            |
| Rules & Norms                | 2.50         | 33.3%                        | 0.83            |
| <b>MSD INDEX (Composite)</b> | <b>2.00</b>  | <b>Transformation Stage:</b> | <b>EMERGING</b> |

The MSD Index of 2.00 positions Sudan at the entry point of the EMERGING stage (2.0–2.9). This places Sudan at the threshold between Weak and Emerging – the Core Market Functions and Supporting Functions pillars remain in the Weak band (1.75 each), while the Rules & Norms pillar has reached 2.50 (Emerging), reflecting the substantive regulatory architecture achieved under extraordinary adversity. No measurable market transformation has yet occurred in the core market or supporting functions pillars, but the regulatory preconditions for future activation are in place when political conditions allow.

| STRENGTHS & ACHIEVEMENTS                                                                                                                                                                                                                                                               | GAPS & RISKS                                                                                                                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rules pillar uniform at 2.0 – the highest pillar score for Sudan, representing regulatory achievements that survived the conflict. Institutional counterpart capacity was built before conflict onset. Reactivation potential assessed as high given preserved regulatory foundations. | All Core and most Support dimensions at 1.0 reflecting conflict-induced collapse of market activation activities. No independent market mechanism established before conflict. Post-conflict reactivation plan required before programme continuation. |

**Key Lesson:** Sudan demonstrates that conflict-affected programmes can preserve regulatory achievements even when market activation is halted. Regulatory frameworks are more durable than operational market activities. Post-conflict re-entry should prioritise Core Market activation rather than repeating regulatory work.

#### 4.8 Myanmar | MSD Country Profile

##### Country and Market Context

At the time of CEO Endorsement (October 2018), Myanmar’s lighting and appliance market was characterised by near-total import dependency with no domestic manufacturing capability. LED penetration stood at less than 2% of annual lamp sales, with incandescent lamps (9.6%) and CFL technology (46.6%) dominating. Room air conditioners were 90% single-speed, with inverter-type ACs accounting for only 10% of the market. Myanmar had no enacted Energy Efficiency and Conservation (EE&C) Law, no MEPS framework, no mandatory or voluntary labelling programme, and no in-country testing laboratory capable of assessing product energy performance. The Energy Efficiency and Conservation Division (EECD), established under the Ministry of Industry, was a nascent institution with limited technical capacity and no legal mandate to set or enforce efficiency standards. The project was designed to address six interconnected barrier categories: institutional/coordination, regulatory, technical, market, information/awareness, and financial. The project mobilised eight co-financiers at CEO Endorsement: Ministry of Industry (USD 1,700,000 in kind), SMIDB (USD 500,000 concessional loans), Ministry of Education (USD 500,000 in-kind), Daikin (USD 385,000 private sector in-kind), International Copper Association (USD 300,000 technical in-kind), Global Efficient Lighting Centre (USD 150,000 technical in-kind), UN Environment / U4E (USD 90,000 technical in kind), and IIEC (USD 10,000 in-kind) – totalling USD 3,635,000 committed. Actual co-finance as of June 2021 was USD 337,270 (9.3% of committed),

primarily MOI office space and EECD staff time. The February 2021 military coup is categorically different from the implementation challenges facing other portfolio countries. The UN system decision to pause engagement with the military administration reflects a principled response to an illegitimate governance change, not a project management failure. As of the PIR FY2021 reporting date, no resumption timeline had been established and the political instability risk was escalated to HIGH

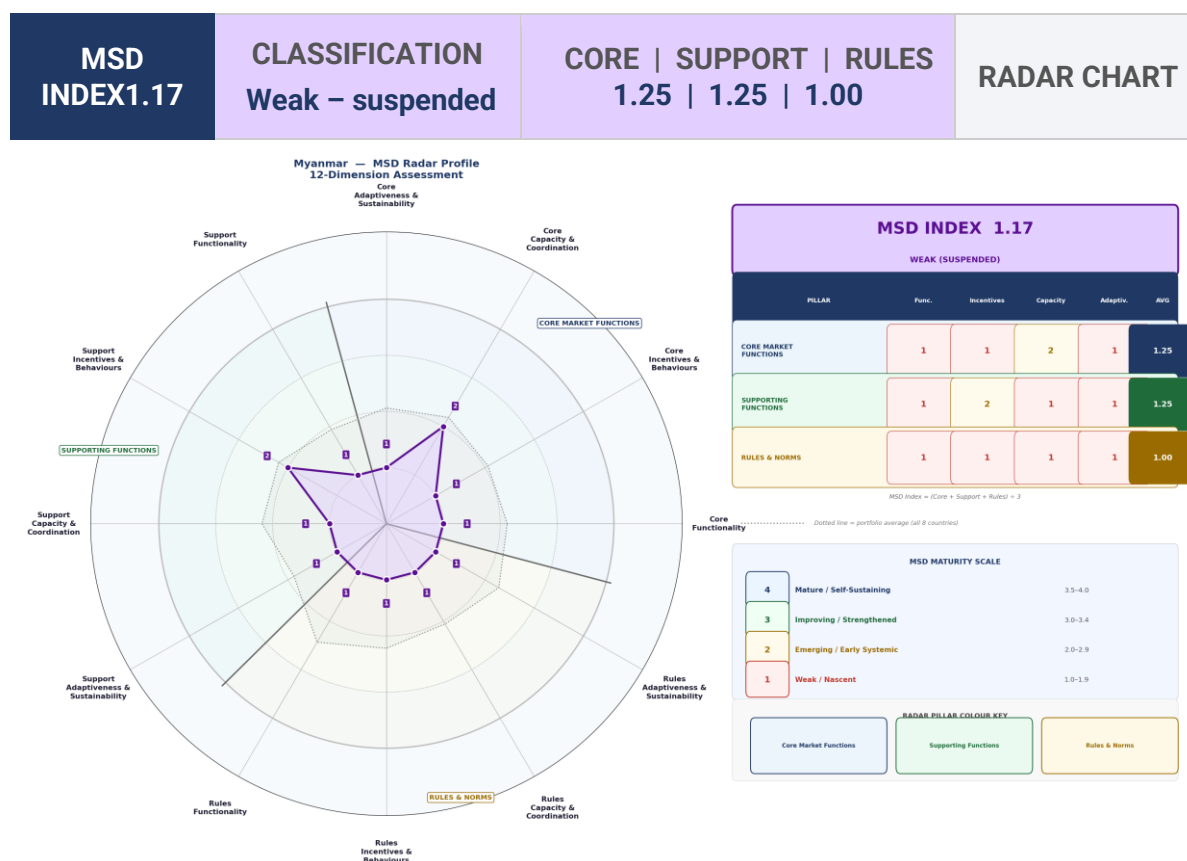


Figure 10: Myanmar – 12-Dimension MSD Radar Profile

### Dimension Scorecard

| PILLAR / DIMENSION    | Functionality | Incentives & Behaviours | Capacity & Coordination | Adaptiveness & Sustainability | AVG  |
|-----------------------|---------------|-------------------------|-------------------------|-------------------------------|------|
| CORE MARKET FUNCTIONS | 1             | 1                       | 2                       | 1                             | 1.25 |
| SUPPORTING FUNCTIONS  | 1             | 2                       | 1                       | 1                             | 1.25 |
| RULES & NORMS         | 1             | 1                       | 1                       | 1                             | 1.00 |

Pillar A: Core Market Functions [Score: 1.25 – Weak]

Sub-components: Production / Importation | Distribution | Retail / Sales | Consumption

Core Market Functions assess whether the fundamental dynamics of the lighting and air conditioning market – supply-demand signals, pricing, information flows, and actor behaviours – are oriented toward efficiency. Myanmar's market at project inception was a low-income, import-driven market with no efficiency differentiation. At the time of suspension, the

market remained entirely unreformed: functioning on price- only signals with no efficiency quality floor.

| MSD Dimension                 | Sub-component (TE Framework)                   | Evidence from Project Documents                                                                                                                                     | Sources (Triangulated)                       | Score (1–4) |
|-------------------------------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------|
| Functionality                 | Production & Importation                       | Appliance market largely import-dependent; no structured transition toward energy-efficient products; project interventions halted before influencing supply chains | PIR; TE Report; Market context analysis      | 1           |
|                               | Distribution & Retail                          | Distribution networks exist but operate independently of any efficiency framework; no programme-driven alignment achieved                                           |                                              |             |
|                               | Retail / Sales (Market Share Data – SEC)       | No system for tracking sales of efficient appliances; no evidence of increased market share for efficient products                                                  | PIR; Evaluation synthesis; Programme records |             |
|                               | Consumption (Household Demand & Affordability) | Low awareness and affordability constraints; no interventions implemented to influence household demand                                                             |                                              |             |
| Incentives & Behaviours       | Production & Importation                       | No effective incentives introduced due to early project suspension; suppliers continue business-as-usual imports                                                    |                                              | 1           |
|                               | Distribution & Retail                          | Retailers not exposed to or influenced by energy efficiency standards or incentives                                                                                 |                                              |             |
|                               | Retail / Sales (Market Share Data – SEC)       | Sales behaviour unchanged; no regulatory or demand-side influence                                                                                                   |                                              |             |
|                               | Consumption (Household Demand & Affordability) | No behavioural change; no awareness or incentive mechanisms implemented                                                                                             |                                              |             |
| Capacity & Coordination       | Production & Importation                       | Limited early engagement with government and suppliers; capacity-building activities not completed                                                                  |                                              | 2           |
|                               | Distribution & Retail                          | No coordination mechanisms established across supply chain actors                                                                                                   |                                              |             |
|                               | Retail / Sales (Market Share Data – SEC)       | No institutional system for monitoring or coordinating market activity                                                                                              |                                              |             |
|                               | Consumption (Household Demand & Affordability) | No coordinated awareness or demand-side programming implemented                                                                                                     |                                              |             |
| Adaptiveness / Sustainability | Production & Importation                       | No adaptive shift in supply chains; system remains unchanged                                                                                                        |                                              | 1           |
|                               | Distribution & Retail                          | Distribution system not influenced or transformed                                                                                                                   |                                              |             |
|                               | Retail / Sales (Market Share Data – SEC)       | No sustained change or growth in efficient appliance sales                                                                                                          |                                              |             |
|                               | Consumption (Household Demand & Affordability) | No sustained behavioural change; demand remains unchanged                                                                                                           |                                              |             |

**Pillar finding:** Core Market Functions score 1.25 (Weak). Myanmar’s lighting and AC market was entirely unreformed at the time of project suspension. The PMU established meaningful multi-agency coordination and the ISO 5151 standard adoption represented a tangible technical achievement, but these institutional foundations are fragile. With the project suspended and the executing ministry operating under the military administration, no self-sustaining market dynamic has been established.



## Pillar B: Supporting Functions [Score: 1.25 – Weak]

### Sub-components: Finance | Marketing & Awareness | Technical Support | Information Systems

Supporting Functions assess the availability and effectiveness of enabling market infrastructure: testing and certification services, financial instruments, awareness tools, information platforms, and technical assistance. These functions are the operational backbone that translates regulatory intent into market reality. For Myanmar, all these functions remained either absent or at prototype stage at the time of suspension.

| MSD Dimension                 | Sub-component (TE Framework)                              | Evidence from Project Documents                                                                                    | Sources (Triangulated)                       | Score (1–4) |
|-------------------------------|-----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-------------|
| Functionality                 | Finance (Demand & Supply Side)                            | No financing mechanisms developed or implemented; planned interventions not realised                               | PIR; TE Report; Programme records            | 1           |
|                               | Marketing & Awareness                                     | Awareness campaigns not implemented due to project suspension                                                      | PIR; Evaluation synthesis; Programme records |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Initial planning for standards and certification systems; no operational labs or certification systems established | PIR; Technical planning documents; TE Report |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | No information systems (registry, monitoring, or portal) developed                                                 |                                              |             |
| Incentives & Behaviours       | Finance (Demand & Supply Side)                            | No financial incentives introduced; key barrier to any potential market development                                | PIR; Evaluation synthesis; Programme records | 2           |
|                               | Marketing & Awareness                                     | No behavioural influence mechanisms implemented                                                                    |                                              |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | No certification requirements to incentivise compliance                                                            |                                              |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | No data systems to support transparency or compliance incentives                                                   |                                              |             |
| Capacity & Coordination       | Finance (Demand & Supply Side)                            | No engagement with financial institutions achieved                                                                 |                                              | 1           |
|                               | Marketing & Awareness                                     | No coordination structures established                                                                             |                                              |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | Limited early-stage capacity-building activities; not institutionalised                                            |                                              |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | No institutional coordination for system development                                                               |                                              |             |
| Adaptiveness / Sustainability | Finance (Demand & Supply Side)                            | No system established; no sustainability                                                                           |                                              | 1           |
|                               | Marketing & Awareness                                     | No sustained awareness or behavioural change                                                                       |                                              |             |
|                               | Technical Support (Testing Labs, Certification, Capacity) | No sustainable technical systems in place                                                                          |                                              |             |
|                               | Information Systems (Register, Portal, R&D, Circularity)  | No systems developed; no sustainability                                                                            |                                              |             |

**Pillar finding:** Supporting Functions score 1.25 (Weak). The absence of any testing laboratory is the single most critical gap in Myanmar’s market support infrastructure. Every other element



of an efficiency market – MEPS adoption, voluntary labelling, customs verification, consumer trust – depends on credible product testing. The U4E PRS prototype represents genuine progress in information infrastructure design, but without an institutional home and operational budget, it cannot function as a market monitoring tool.

### Pillar C: Rules and Norms [Score: 1.00 – Weak]

#### Sub-components: Standards (MEPS / Labels) | MVE & Enforcement | Fiscal / Environmental | Informal Norms

This is the weakest pillar in the assessment, with a score of 1.0 across all four dimensions. Myanmar entered the project with no operative efficiency law and no enforcement infrastructure. While the project made meaningful progress in drafting the EE&C Law and achieving Myanmar's first national testing standard adoption (MMS ISO 5151), neither achievement created an operative regulatory norm. The political crisis of February 2021 is decisive: the regulatory framework cannot function without a government that can enact, implement, and enforce legislation.

| MSD Dimension           | Sub-component (TE Framework)                                         | Evidence from Project Documents                                                                                          | Sources (Triangulated)                        | Score (1–4) |
|-------------------------|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------------|
| Functionality           | Standards (MEPS, Energy Label, IEC Protocol)                         | Initial groundwork initiated for standards development; no formal adoption or implementation due to project interruption | PIR; TE Report; Programme records             | 1           |
|                         | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | No monitoring, verification, or enforcement systems established                                                          | PIR; Evaluation synthesis; Programme records  |             |
|                         | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | No fiscal or environmental policy frameworks developed within programme scope                                            | PIR; Evaluation synthesis; Programme records  |             |
|                         | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | No compliance culture or awareness of energy efficiency within market                                                    | Evaluation synthesis; Stakeholder inputs; PIR |             |
| Incentives & Behaviours | Standards (MEPS, Energy Label, IEC Protocol)                         | No regulatory incentives created due to absence of operational standards                                                 |                                               | 1           |
|                         | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | No enforcement-driven incentives                                                                                         |                                               |             |
|                         | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | No incentives for suppliers or consumers                                                                                 |                                               |             |
|                         | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | No behavioural change across market actors                                                                               |                                               |             |
| Capacity & Coordination | Standards (MEPS, Energy Label, IEC Protocol)                         | Limited early-stage institutional engagement; not sustained                                                              | PIR; TE Report; Programme records             | 1           |
|                         | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   | No coordination mechanisms established                                                                                   | PIR; Evaluation synthesis; Programme records  |             |
|                         | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | No fiscal or environmental policy frameworks developed within programme scope                                            |                                               |             |

| MSD Dimension                 | Sub-component (TE Framework)                                         | Evidence from Project Documents                                       | Sources (Triangulated) | Score (1–4) |
|-------------------------------|----------------------------------------------------------------------|-----------------------------------------------------------------------|------------------------|-------------|
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | No compliance culture or awareness of energy efficiency within market |                        |             |
| Adaptiveness / Sustainability | Standards (MEPS, Energy Label, IEC Protocol)                         |                                                                       |                        | 1           |
|                               | MVE & Enforcement (SEC, Labs, Compliance Timeline)                   |                                                                       |                        |             |
|                               | Fiscal & Environmental Framework (REP Law, WEEE, APL)                | No institutional coordination developed                               |                        |             |
|                               | Informal Norms (Market Practice, Compliance Culture, Consumer Trust) | No stakeholder coordination or engagement                             |                        |             |

**Pillar finding:** Rules & Norms score 1.00 (Weak). Myanmar’s regulatory framework cannot function without a government that can enact, implement, and enforce legislation – and the UN system cannot support the current military dispensation. The EE&C Law draft and MMS ISO 5151 adoption remain the most recoverable achievements; they provide the foundation for a restart when political conditions allow.

| STRENGTHS & ACHIEVEMENTS                                                                                                                                                                                 | GAPS & RISKS                                                                                                                                                                                                                            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Some institutional capacity built within the pre-coup counterpart agency. Early awareness activities delivered. No significant wasted expenditure on market infrastructure given early-phase suspension. | Rules pillar uniformly at 1.0 – no regulatory architecture established. No market activation activities. Suspension occurred in the earliest implementation phase, meaning the programme delivered minimal MSD foundations before halt. |

**Key Lesson:** Myanmar represents the portfolio baseline: a programme suspended before meaningful MSD foundations were established. It is analytically important as a counterfactual – it defines what MSD scores look like before any programmatic intervention, confirming that scores of 1.0–1.25 represent pre-programme rather than failed-programme states.

## 5. Cross-Cutting Portfolio Analysis

### 5.1 The Four Structural Patterns

A cross-reading of the eight country radar profiles reveals four structural patterns that recur consistently across the portfolio. These patterns carry significant analytical weight: they suggest that the portfolio’s outcomes are not a collection of discrete, country-specific results, but the expression of systematic dynamics embedded in the programme’s design and delivery model. Understanding these patterns is essential to interpreting what GEF 9083 has achieved, where its structural limits lie, and what successor programmes must address.

#### **5.1.1.1 Pattern 1 – The Regulatory Spike**

Present in six of eight countries, the Regulatory Spike is the portfolio's most visible structural signature. Rules and Norms consistently and substantially outperforms both Core Market Functions and Supporting Functions, indicating that the programme has been markedly more effective at building regulatory frameworks than at converting those frameworks into operational market activation. The pattern is most pronounced in Sudan, where the Rules and Norms average of 2.00 contrasts sharply with a Core Market Functions average of 1.25; it is also clearly evident in Indonesia (Rules 2.62, Core 2.25) and Costa Rica (Rules 2.75, Core 2.25).

This pattern should not be read as a programme failure. It reflects the sequencing logic inherent in MEPS-led market development: regulatory architecture must precede and enable market activation, and the programme correctly prioritised regulatory establishment as the foundational intervention. What the Regulatory Spike does reveal is a gap in the intensity and duration of Supporting Functions support – the bridge between a gazetted regulatory framework and a functioning, self-sustaining market. Closing that gap is the central design challenge for successor programmes.

#### **5.1.1.2 Pattern 2 – The Adaptiveness Gap**

The Adaptiveness Gap is universal – present across all eight countries and all three pillars without exception. The universality of this finding elevates it from a country-level observation to the portfolio's most important systemic conclusion. It indicates that project-supported market functions have not yet developed the self-sustaining momentum that would allow them to persist and deepen without continued external support. Markets are transforming under project conditions; whether that transformation continues, consolidates, and matures after project closure is the critical unanswered question that post-project monitoring must be designed to address. The Adaptiveness Gap does not invalidate the programme's achievements – but it does define the boundary between what has been accomplished and what remains to be secured.

#### **5.1.1.3 Pattern 3 – The Supporting Functions Floor**

Supporting Functions is the weakest pillar in all three Weak-band countries: South Africa (1.50), Kazakhstan (1.50), and Myanmar (1.25). The Market Verification and Enforcement (MVE) scheme – the programme's primary Supporting Functions instrument – was independently operationalised in only three countries, Chile, Tunisia, and Indonesia. In five of eight countries, the MVE scheme was designed but never made operational. This is a significant finding. It suggests that Supporting Functions are both the most implementation-intensive component of the programme's intervention model and the most vulnerable to collapse under co-financing pressure or programme management constraints. When resources are constrained or timelines compressed, Supporting Functions are the first to be deprioritised – and their absence is precisely what prevents the Regulatory Spike from translating into genuine market activation. Successor programme design should treat Supporting Functions operationalisation not as a secondary activity but as a primary delivery milestone.

#### 5.1.1.4 Pattern 4 – The Balanced Profile Indicator

Chile and Tunisia are the two countries in the portfolio where all twelve dimension scores fall within a narrow and coherent band of 3.0 to 3.5. On radar visualisation, their profiles are near-circular – visually and analytically distinct from every other country in the portfolio, which display pronounced spikes, asymmetries, or floors across their pillar and dimension scores. Indonesia, the third Improving-band country, presents a structurally different profile: its Rules and Norms pillar (3.25) leads its Core Market Functions (3.0) and Supporting Functions (2.75), producing a moderate regulatory spike rather than a balanced radar. This contrast within the Improving band is analytically instructive: Chile and Tunisia achieved balanced transformation; Indonesia achieved Improving classification through regulatory leadership compensating for supporting function gaps. This balanced profile – in which no pillar dramatically leads or lags, and all dimensions of market function are developing in relative concert – appears to be the structural signature of the most durable market transformation. It implies that Improving-band outcomes can be reached through regulatory leadership, but that sustained investment across all three pillars simultaneously is required to consolidate and deepen those gains.

#### 5.2 Disruption-Adjusted Interpretation

Sudan and Myanmar require explicit disruption adjustment before their MSD scores can be accurately interpreted. Both countries' classifications reflect implementation-halt conditions – one the consequence of civil conflict, the other of political suspension – rather than structural programme design failure or institutional incapacity. Applying a standard evaluative lens without adjustment would misattribute their Weak-band scores to programme quality and obscure what are, in both cases, meaningfully different recovery situations.

Sudan's MSD assessment should be understood as a pre-conflict diagnostic baseline: it captures the state of market system development at the point civil war halted all programme activities in April 2023. The Rules & Norms pillar scored a uniform 2.0 across all four dimensions, reflecting the regulatory work completed before the conflict intervened. This regulatory architecture – gazetted, legally enforceable, and institutionally anchored – represents the primary latent asset available for reactivation when conditions allow. The recovery pathway for Sudan is consequently defined: on reactivation, programming should target Core Market Functionality and Supporting Functions, building on the regulatory foundation already in place rather than repeating work already delivered.

Myanmar's assessment is a suspended baseline of a different character entirely. The programme was in its early implementation phase when the February 2021 military coup halted activities, and unlike Sudan, Myanmar had not yet delivered meaningful regulatory outputs before suspension occurred. Rules & Norms scored a uniform 1.0 across all dimensions – reflecting not disruption of established frameworks, but the absence of any regulatory foundation at the point of halt. The recovery pathway for Myanmar is correspondingly more demanding: subject to political stabilisation, reactivation would require a full programme restart from Year 1 design, without the benefit of preserved regulatory assets. The contrast between Sudan and Myanmar crystallises the sequencing lesson that runs through the entire portfolio – the earlier regulatory milestones are secured, the more resilient a programme's legacy becomes in the face of disruption.

## 6. Programme Lessons

Ten cross-portfolio lessons are drawn from the comparative MSD analysis. Each lesson is grounded in quantitative score evidence and cross-country comparison.

| ID               | LESSON TITLE                                                                   | EVIDENCE BASE                                                                                                                                                                                                                                                                                                                                                                                                                                                 | PROGRAMME IMPLICATION                                                                                                                                                                                                        |
|------------------|--------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lesson 1.</b> | <b>Balanced pillar advancement is the marker of genuine transformation</b>     | Chile, Tunisia, and Indonesia – the three Improving band countries – are the strongest performers in the portfolio. Chile and Tunisia additionally show near-circular radar profiles where all 12 dimension scores fall within a narrow 0.5-point range. The regulatory spike pattern (Rules leading, Core lagging) was present in 5 of 8 countries.                                                                                                          | Programme design should explicitly target pillar balance, not sequential achievement. Core Market activation activities should be co-timed with regulatory development, not sequenced after it.                              |
| <b>Lesson 2.</b> | <b>Co-financing architecture is the single greatest implementation risk</b>    | South Africa: USD 85M committed, USD 0 disbursed. Kazakhstan: USD 12.4M committed, partial deployment. Co-financing failure in these two countries was the primary cause of their Weak band positioning, independent of institutional capacity.                                                                                                                                                                                                               | Co-financing agreements should include phased trigger conditions, escrow mechanisms, or conditional grant disbursement to reduce concentration risk on single co-financier commitments.                                      |
| <b>Lesson 3.</b> | <b>Regulatory architecture is more conflict-durable than market activation</b> | Sudan maintained Rules & Norms at 2.0 across all four dimensions after civil conflict halted all Core Market activities. MEPS regulations, once gazetted, survived the political disruption that destroyed all market-side programme activity.                                                                                                                                                                                                                | In politically fragile contexts, accelerating regulatory achievement early creates a durable latent asset. Post-conflict re-entry strategies should build on preserved regulatory foundations rather than restart from zero. |
| <b>Lesson 4.</b> | <b>Adaptiveness &amp; Sustainability is the universally weakest dimension</b>  | Across all 8 countries, Adaptiveness is the lowest-scoring dimension within each pillar. No country scored above 3.5 on any Adaptiveness dimension. Even Chile's highest score (Rules Adaptiveness: 3.5) suggests the portfolio ceiling for self-sustaining adaptation is barely reached.                                                                                                                                                                     | Dedicated Adaptiveness support activities – market feedback loops, regulatory review mechanisms, private sector sustainability planning – should be standard programme components, not optional add-ons.                     |
| <b>Lesson 5.</b> | <b>Supporting Functions is the earliest casualty of implementation failure</b> | In all three Weak band countries (South Africa, Kazakhstan, Myanmar), Supporting Functions scored 1.5 or below. The MVE scheme – the primary Supporting Function tool – was established in only 3 of 8 countries (Chile, Tunisia, Indonesia). In 5 countries it was designed but not operationalised.                                                                                                                                                         | MVE scheme design should begin at programme inception with commercial operator engagement, not as a mid-programme component. MVE readiness should be a Year 1 milestone.                                                     |
| <b>Lesson 6.</b> | <b>Identical MSD indices can mask structurally different risk profiles</b>     | Chile (3.20), Tunisia (3.00), and Indonesia (3.00) are the three Improving band countries. Costa Rica (2.70) and Sudan (2.00) are in the Emerging band. Within the Improving band, sub-pillar profiles differ significantly: Chile leads on Rules Adaptiveness (3.3); Tunisia is uniformly balanced across pillars; Indonesia's Rules pillar (3.25) leads its Core (3.0) and Support (2.75). Costa Rica shows a more constrained Core profile (2.5) against a | Programme monitoring should track all 12 dimension scores, not just the aggregate MSD index. Portfolio comparison at index level alone conceals sustainability risk signals visible only at pillar and dimension level.      |

| ID                | LESSON TITLE                                                                           | EVIDENCE BASE                                                                                                                                                                                                                                                                                                  | PROGRAMME IMPLICATION                                                                                                                                                                                                                         |
|-------------------|----------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                   |                                                                                        | stronger Rules score (3.0). Sudan's Emerging classification reflects preserved regulatory foundations (Rules 2.5) despite conflict-induced Core collapse (1.75).                                                                                                                                               |                                                                                                                                                                                                                                               |
| <b>Lesson 7.</b>  | <b>Small grants in large markets produce disproportionate regulatory leverage</b>      | Indonesia's USD 3.0M grant resulted in MEPS regulations covering one of the world's largest lighting markets. Chile's USD 3.5M resulted in a MEPS framework that has reduced residential LED payback periods by 40%. Rules & Norms pillar achievement was disproportionate to grant size across the portfolio. | GEF grants in large emerging markets are most efficiently deployed as regulatory facilitation instruments. Market activation at scale requires co-financing — grant resources alone cannot activate markets of the scale involved.            |
| <b>Lesson 8.</b>  | <b>The endogenous/exogenous failure distinction has different remediation pathways</b> | Kazakhstan (endogenous failure: design and management shortfalls) and Sudan (conflict) both score in the Weak band, but their recovery pathways are structurally different. Kazakhstan's issues are addressable through design revision; Sudan's require political resolution and reactivation support.        | Post-project assessments and GEF-8 design processes should explicitly categorise Weak band outcomes as endogenous or exogenous, as the two types require fundamentally different programme responses.                                         |
| <b>Lesson 9.</b>  | <b>Government programme absorption can replace GEF project delivery</b>                | South Africa's LED market development was substantially achieved through Operation Khanyisa (government) rather than LEDSAP (GEF). The LED market transformation that the project aimed to catalyse occurred — but outside GEF structures, leading to attribution ambiguity.                                   | GEF projects should monitor for government programme absorption risk and build adaptive management provisions that allow project resources to pivot to complementary activities when the government programme captures the primary objective. |
| <b>Lesson 10.</b> | <b>Rules Functionality is the most consistent cross-portfolio achievement</b>          | Rules Functionality — the ability to enforce and operate the regulatory framework — was the highest-scoring dimension in 6 of 8 countries. Even in Weak band countries, Rules Functionality scored 1.5–2.5. This suggests MEPS and labelling regulation is the most reliably deliverable MSD output.           | MEPS establishment should remain a core programme component across all future GEF energy efficiency interventions. It is the output most consistently achievable across diverse country contexts.                                             |



## 7. Recommendations

Six informal<sup>56</sup> recommendations are directed at specific audiences. Recommendations are classified by priority (High / Medium) and linked to the lesson evidence that motivates them.

| ID | PRIORITY | AUDIENCE                  | RECOMMENDATION                                                                                  | RATIONALE                                                                                                                                                                                              | ACTION                                                                                                                                                                                                                   |
|----|----------|---------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| R1 | High     | GEF Secretariat / UNEP    | <b>Introduce co-financing activation triggers in GEF project agreements</b>                     | South Africa and Kazakhstan demonstrate that co-financing commitments without activation triggers represent significant portfolio risk. Two of eight countries experienced major co-financing failure. | Revise GEF project approval conditions to require phased co-financing milestones with automatic project scope adjustments if thresholds are not met by Year 2.                                                           |
| R2 | High     | All implementing agencies | <b>Design MVE schemes for independent operation from programme inception</b>                    | MVE schemes were operationalised independently in only Chile, Tunisia, and Indonesia – the three Improving band countries. In 5 of 8 countries the scheme was designed but not made operational.       | Require MVE scheme commercial operator identification and partnership agreement as a Year 1 ProDoc milestone, with independent operation tested before GEF closure.                                                      |
| R3 | High     | UNDP / Sudan country team | <b>Develop Sudan post-conflict reactivation plan building on preserved regulatory framework</b> | Sudan's Rules & Norms pillar is fully preserved at 2.0. The regulatory architecture for LED market governance survived the conflict and provides a reactivation foundation.                            | Commission reactivation assessment within 12 months of political stabilisation. Design reactivation programme to target Core Market Functionality and Supporting Functions, not re-do regulatory work already completed. |
| R4 | Medium   | All implementing agencies | <b>Adopt 12-dimension MSD monitoring as a standard portfolio management tool</b>                | Aggregate MSD index monitoring conceals sustainability risk signals. The dimension-level divergence within Chile vs Tunisia, and within Costa Rica's Core pillar, is invisible at index level.         | Require quarterly 12-dimension MSD assessment in PIR reporting from Year 2 of all GEF energy efficiency projects. Establish portfolio-level tracking dashboards.                                                         |
| R5 | Medium   | GEF energy efficiency     | <b>Develop post-project Adaptiveness monitoring protocol</b>                                    | Adaptiveness & Sustainability is the universally weakest                                                                                                                                               | Establish 2-year post-project monitoring for                                                                                                                                                                             |

<sup>56</sup> The use of the word informal doesn't mean that these recommendations are less important, but rather that there will be no formal management response and compliance process for these recommendations. This is because much as the GEF 9083 Programme was designed based on MSD principles, it wasn't explicitly branded as an MSD programme and therefore the recommendations are advisory.



| ID | PRIORITY | AUDIENCE                | RECOMMENDATION                                                                     | RATIONALE                                                                                                                                                                                          | ACTION                                                                                                                                                                                  |
|----|----------|-------------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| R6 |          | portfolio team          |                                                                                    | dimension. No country exceeded 3.5. The portfolio has achieved significant regulatory and market activation outcomes that may not be self-sustaining without continued support.                    | Adaptiveness indicators in Chile, Tunisia, Indonesia, and Costa Rica. Define clear criteria for what constitutes demonstrated self-sustainability.                                      |
|    | Medium   | Kazakhstan country team | <b>Revisit Kazakhstan programme design with focus on private sector activation</b> | Kazakhstan's endogenous failure is attributable to insufficient private sector engagement rather than external disruption. The regulatory foundation exists for a private sector-led second phase. | Commission private sector market assessment. Design follow-on support focused on MVE scheme operationalisation with identified commercial partners rather than government-led delivery. |

## ANNEX X. QUALITY ASSESSMENT OF THE EVALUATION REPORT

**Evaluand Title:** Terminal Evaluation of the UNEP/GEF programme: Leapfrogging Markets to High Efficiency Products (Appliances, including Lighting, and Electrical Equipment) GEF 9083 (2018-2025)

All UNEP evaluations are subject to a quality assessment by the Evaluation Office. This is an assessment of the quality of the evaluation product (i.e. evaluation report) and is dependent on more than just the consultant's efforts and skills.

| Report Quality Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | UNEP Evaluation Office Comments                                                                                                                                                                                                                                                                                                                                                         | Final Report Rating |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| <b>Section A: Executive Summary</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <b>Assessment</b>                                                                                                                                                                                                                                                                                                                                                                       |                     |
| <p><b>1. Does the <i>Executive Summary</i> act as a concise, accurate standalone section, especially to inform decision-making? Consider how clearly and concisely the report presents:</b></p> <ul style="list-style-type: none"> <li>a clear summary of the evaluation object</li> <li>evaluation objectives, scope and methodology</li> <li>the overall programme evaluation rating</li> <li>a summary of main evaluation findings, including key features of performance (strengths and weaknesses)</li> <li>summary responses to key strategic evaluation questions</li> <li>summary of main conclusions, lessons learned and recommendations</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <p><u>Coverage/omissions:</u><br/>The executive summary includes all the expected sections.</p> <p><u>Strengths/weaknesses:</u><br/>The executive summary presents a concise summary of the evaluation report and includes a concise description of the evaluand, evaluation objectives, scope, a summary of the findings, recommendations, lessons learned and the overall rating.</p> | 6                   |
| <b>Section B: The Programme</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <b>Assessment</b>                                                                                                                                                                                                                                                                                                                                                                       |                     |
| <p><b>2. Does the report clearly describe the <i>key parameters, scale and complexity of the evaluand</i>? Consider how well the report presents:</b></p> <ul style="list-style-type: none"> <li>an overview of the main issue that the programme is trying to address</li> <li>timeline, including dates of programme approval, duration and number of phases (where appropriate)</li> <li>geographic coverage (regions/countries)</li> <li>total secured budget and programme financing, including a table with funding sources</li> <li>implementing and funding partners</li> <li>institutional context (i.e. UNEP sub-programme, Division, Branch etc)</li> <li>implementation structure with diagram</li> <li>UNEP results frameworks to which it contributes (e.g. PoW Direct Outcome)</li> <li>summary of results framework as stated in the ProDoc (or as officially revised)</li> <li>stakeholder groups organised according to relevant common characteristics</li> <li>whether the programme has been evaluated in the past (e.g. mid-term, by an external agency, etc.)</li> <li>substantive or significant changes in design during implementation</li> </ul> | <p><u>Coverage/omissions:</u><br/>All elements adequately addressed.</p> <p><u>Strengths/weaknesses:</u><br/>The report presents a comprehensive description of the key parameters, scale and complexity of the evaluand.</p>                                                                                                                                                           | 6                   |
| <b>Section C: Evaluation Methods and Theory of Change</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | <b>Assessment</b>                                                                                                                                                                                                                                                                                                                                                                       |                     |

| Report Quality Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | UNEP Evaluation Office Comments                                                                                                                                                                                                                                                                                                                                                                                        | Final Report Rating |
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| <p><b>3. Does the report present a clear, comprehensive and adequate description of the <i>evaluation methodology</i>? Consider how well it presents the following elements, and their adequacy based on the scope of the evaluation:</b></p> <ul style="list-style-type: none"> <li>statement of the purpose of the evaluation and the key intended audience for the evaluation findings</li> <li>data collection methods and information sources</li> <li>justification for methods used (e.g. electronic/face-to-face interviews, qualitative/quantitative analysis)</li> <li>criteria and sampling strategies used to select stakeholders for consultations, and for sites/countries visited</li> <li>number and types of respondents (<i>including in a table broken down by gender</i>)</li> <li>strategies used to increase stakeholder engagement and response rate</li> <li>methods used to include the voices/experiences of different and potentially excluded groups (e.g. women, marginalised)</li> <li>data verification methods (e.g. triangulation)</li> <li>data analysis methods (e.g. scoring, thematic analysis)</li> <li>evaluation limitations and mitigation measures (e.g. how these were addressed by the evaluator)</li> <li>consideration for ethics and human rights issues, including how anonymity and confidentiality were protected</li> </ul> | <p><u>Coverage/omissions:</u></p> <p>The evaluation methods section presents a detailed description of the evaluation process. All expected elements are included.</p> <p><u>Strengths/weaknesses:</u></p> <p>The evaluation methods section passes the reproducibility test. It explains in sufficient detail how the evaluation was conducted while highlighting challenges encountered and mitigation measures.</p> | 6                   |
| <p><b>4. Does the report describe an assessment and reformulation of the <i>Theory of Change</i>, and present an adequate articulation of the TOC causal pathways that were used to assess programme performance (<i>narratively and diagrammatically</i>)? Consider how well the report presents:</b></p> <ul style="list-style-type: none"> <li>whether the programme design included a TOC</li> <li>how the <i>TOC at Evaluation</i><sup>57</sup> was designed (e.g. who was involved, etc)</li> <li>confirmation/reconstruction of results in accordance with UNEP definitions (<i>including reformulation table, which may have initially been presented in the Inception Report and should appear in the Main Evaluation report.</i>)</li> <li>articulation of causal pathways</li> <li>identification of drivers and assumptions</li> <li>identification of key actors in the change process</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p><u>Strengths/weaknesses:</u></p> <p>This section of the report presents a reconstructed theory of change (TOC at evaluation) in both diagrammatic and text form. The ToC also articulates the causal pathways and identifies the key assumptions, drivers and actors involved in the change process.</p>                                                                                                            | 6                   |
| <b>Section D: Evidence and Analysis</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <b>Assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                      |                     |
| <p><b>5. Is the report based on <i>sufficient and adequate data</i> and <i>clear and credible evidence</i>? Consider how well the report presents:</b></p> <ul style="list-style-type: none"> <li>sufficient evidence that is consistent throughout the report</li> <li>evidence that is supported by data sources (e.g. quotes, reports, etc)</li> <li>evidence that is explicitly triangulated, unless noted as having a single source</li> <li>gaps in data are explained and justified</li> <li>data sources that are reliable, adequate, sufficient for the scope of the evaluation</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <p><u>Strengths/weaknesses:</u></p> <p>The report provides sufficient evidence to support findings. Evidence has sufficiently been triangulated and gaps in evidence sufficiently explained.</p>                                                                                                                                                                                                                       | 6                   |

<sup>57</sup> During the Inception Phase of the evaluation process a *TOC at Evaluation Inception* is created based on the information contained in the approved programme documents (these may include either logical framework or a TOC or narrative descriptions), formal revisions and annual reports etc. During the evaluation process this TOC is revised based on changes made during programme intervention and becomes the *TOC at Evaluation*.

| Report Quality Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | UNEP Evaluation Office Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Final Report Rating |
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| <p>6. Does the report include <b>rigorous analysis</b> and <b>logical findings</b>? Consider the extent to which the findings are:</p> <ul style="list-style-type: none"> <li>supported by clear analysis that is consistent with the evidence presented</li> <li>logical, clear and coherent</li> <li>aligned with UNEP's Criteria Ratings Matrix</li> <li>aligned with the evaluation framework</li> <li>more than descriptions and provide insights into 'how' and/or 'why' the programme performed a certain way</li> <li>balanced, presenting both successes and weaknesses</li> </ul>                                                                                                                                                                                      | <p><u>Strengths/weaknesses:</u></p> <p>The report presents clear, coherent and logical findings. The ratings are also aligned with UNEP's Criteria Ratings Matrix, the evaluation framework and are balanced i.e. present both successes and weaknesses.</p>                                                                                                                                                                                                                                                      | 5                   |
| <b>Section E: Evaluation Findings</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | <b>Assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                     |
| <p>7. Does the report present evidence and analysis of programme <b>Strategic Relevance</b> with respect to UNEP, partner and geographic policies and strategies at the time of programme approval? Consider how well the report addresses:</p> <ul style="list-style-type: none"> <li>Alignment to the UNEP Medium Term Strategy (MTS), Programme of Work (POW) and Strategic Priorities</li> <li>Alignment to Donor/GEF/Partners Strategic Priorities</li> <li>Relevance to Regional, Sub-regional and National Environmental Priorities</li> <li>Complementarity with Existing Interventions: complementarity of the programme at design (or during inception/mobilisation<sup>58</sup>), with other interventions addressing the needs of the same target groups.</li> </ul> | <p><u>Coverage/omissions:</u></p> <p>This section of the report tackles all the dimensions of strategic relevance as expected.</p> <p><u>Strengths/weaknesses:</u></p> <p>The evaluation report presents a detailed analysis of the relevance of the evaluand to the strategic priorities of UNEP, GEF and the Global, Regional, Sub-regional and national priorities of the target countries. The report also includes an analysis of the complementarity of the evaluand with other existing interventions.</p> | 6                   |
| Does the report present a summary of the strengths and weaknesses of the <b>Quality of Programme Design</b> , based on the detailed assessment presented in the Inception Report?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | <p><u>Coverage/omissions:</u></p> <p>The evaluation report includes a section on Quality of Programme Design as expected.</p> <p><u>Strengths/weaknesses:</u></p> <p>The quality of programme design section presents a balanced critique of both the strengths and weaknesses in programme design.</p>                                                                                                                                                                                                           | <b>*NOT RATED</b>   |
| Does the report recognise and describe, when appropriate, key features of the <b>Nature of the External Context</b> under which the programme was implemented that limited the programme's performance (e.g. conflict, natural disaster, political upheaval <sup>59</sup> ), and how they affected performance?                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <p><u>Coverage/omissions:</u></p> <p>The evaluation report includes a section that analyses the nature of the external context.</p> <p><u>Strengths/weaknesses:</u></p> <p>The report presents an excellent analysis of the programme implementation context that covers the negative externalities that affected programme</p>                                                                                                                                                                                   | <b>**NOT RATED</b>  |

<sup>58</sup> A programme's inception or mobilization period is understood as the time between programme approval and first disbursement. Complementarity during programme implementation is considered under Efficiency, see below.

<sup>59</sup> Note that 'political upheaval' does not include regular national election cycles, but unanticipated unrest or prolonged disruption. The potential delays or changes in political support that are often associated with the regular national election cycle should be part of the programme's design and addressed through adaptive management of the programme team.

| Report Quality Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | UNEP Evaluation Office Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Final Report Rating |
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | implementation. The analysis also includes an analysis of the effects of these negative externalities to programme implementation.                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                     |
| <p><b>8.</b> Does the report present a well-reasoned, complete and evidence-based assessment of the <b>Achievement of Outcomes</b>, as a result of the uptake, adoption and/or implementation of outputs by the intended beneficiaries? This may include behaviour changes at an individual or collective level. Consider how well the report presents:</p> <ul style="list-style-type: none"> <li>a convincing and evidence-supported analysis of the uptake of outputs by intended beneficiaries</li> <li>assessment of the nature, depth and scale of outcomes versus the programme indicators and targets</li> <li>discussion of the contribution, credible association and/or attribution of outcome level changes to the work of the programme itself</li> <li>any constraints to attributing effects to the programmes' work</li> <li>identification of positive or negative effects of the programme on disadvantaged groups, including those with specific needs due to gender, vulnerability or marginalisation (e.g. through disability).</li> </ul> | <p><u>Coverage/omissions:</u><br/>The report presents a section that analyses the achievement of programme outcomes.</p> <p><u>Strengths/weaknesses:</u><br/>The evaluation presents a well-reasoned analysis on the achievement of programme outcomes as compared to targets. The analysis also includes evidence of uptake of programme outputs by the target beneficiaries and credible association and/or attribution of outcome level changes to the work of the programme itself.</p>                                                                                             | 5                   |
| <p><b>10.</b> Does the report present an integrated analysis, guided by the causal pathways represented by the TOC, of all evidence relating to <b>Likelihood of Impact</b>? Consider how well the report presents:</p> <ul style="list-style-type: none"> <li>an explanation of how causal pathways emerged and the resulting change processes</li> <li>an explicit discussion of how drivers and assumptions played out</li> <li>an explanation of roles played by key actors and change agents</li> <li>identification of any unintended negative effects of the programme, especially on disadvantaged groups, including those with specific needs due to gender, vulnerability or marginalisation (e.g. through disability).</li> </ul>                                                                                                                                                                                                                                                                                                                    | <p><u>Coverage/omissions:</u><br/>The evaluation report includes a section on the analysis of the likelihood of impact.</p> <p><u>Strengths/weaknesses:</u><br/>The evaluation report includes a well-reasoned analysis of the likelihood of impact. The analysis also includes the actors, and analysis of the drivers and assumptions involved the change process.</p>                                                                                                                                                                                                                | 5                   |
| <p><b>9.</b> Does the report present an integrated analysis of all dimensions evaluated under <b>Efficiency</b>? Consider how well the report presents:</p> <ul style="list-style-type: none"> <li>cost-effective or time-saving measures put in place to maximise results within the secured budget and agreed programme timeframe</li> <li>implications of any delays and no cost extensions</li> <li>discussion of making use, during programme implementation, of/building on pre-existing institutions, partnerships and complementarities with other initiatives, programmes and programmes etc.</li> <li>the extent to which the management of the programme minimised UNEP's environmental footprint.</li> </ul>                                                                                                                                                                                                                                                                                                                                        | <p><u>Coverage/omissions:</u><br/>The report includes a section on measures by the programme to ensure efficiency.</p> <p><u>Strengths/weaknesses:</u><br/>This section of the report presents an analysis of the two dimensions of efficiency i.e. time and cost effectiveness. The analysis includes the cost effectiveness measures put in place by the programme key of which include leveraging pre-existing institutions, agreements and partnerships for synergy. Also included in the analysis are the effects of extension of the child projects on programme performance.</p> | 6                   |

| Report Quality Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | UNEP Evaluation Office Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Final Report Rating |
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| <p><b>10.</b> Does the report present a well-reasoned, complete and evidence-based assessment of the programme's <b>Monitoring and Reporting</b>? Consider how well the report addresses the following:</p> <ul style="list-style-type: none"> <li>quality of the monitoring design and budgeting (including SMART results with measurable indicators, resources for MTE/R etc.)</li> <li>the quality of <i>monitoring of programme implementation</i> (including use of monitoring data for adaptive management)</li> <li>the quality of <i>programme reporting</i> (e.g. PIMS and donor reports)</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                             | <p><u>Coverage/omissions:</u><br/>A section of the quality of monitoring and reporting is included in the evaluation report.</p> <p><u>Strengths/weaknesses:</u><br/>The evaluation report presents a detailed analysis of the performance of the programme in relation to the three dimensions of monitoring and reporting i.e. quality of the monitoring design and budgeting, quality of monitoring of project implementation and quality of project reporting.</p>                                                                                                         | 5                   |
| <p><b>11.</b> Does the report present an integrated analysis of all dimensions evaluated under <b>Sustainability</b> (i.e. the endurance of benefits achieved at outcome level)? Consider how well the report addresses the following:</p> <ul style="list-style-type: none"> <li>socio-political sustainability</li> <li>financial sustainability</li> <li>institutional sustainability</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <p><u>Coverage/omissions:</u><br/>The report includes a section on the three dimensions of sustainability.</p> <p><u>Strengths/weaknesses:</u><br/>The report presents a succinct analysis of the three dimensions of sustainability i.e. socio-political, financial and institutional sustainability.</p>                                                                                                                                                                                                                                                                     | 5                   |
| <p><b>12.</b> Does the report present a well-evidence analysis of the <b>Factors Affecting Performance</b>, <u>either in this section or in cross-referenced sections</u>?</p> <p><i>These factors are not always discussed in stand-alone sections and may be integrated in the other performance criteria as appropriate. However, if not addressed substantively in this section, a cross reference must be given to where the topic is addressed, and that entry must be sufficient to justify the performance rating for these factors.</i></p> <p>Consider how well the report addresses the following cross-cutting issues:</p> <ul style="list-style-type: none"> <li>quality of programme management and supervision<sup>60</sup></li> <li>stakeholder participation and co-operation</li> <li>responsiveness to human rights and gender equality</li> <li>environmental and social safeguards</li> <li>country ownership and driven-ness</li> <li>communication and public awareness</li> </ul> | <p><u>Coverage/omissions:</u><br/>The evaluation report includes a section that analyses each of the factors affecting programme performance.</p> <p><u>Strengths/weaknesses:</u><br/>The evaluation report includes an excellent analysis of the factors affecting programme performance. These include: quality of programme management and supervision, stakeholder participation and co-operation, responsiveness to human rights and gender equality, environmental and social safeguards, country ownership and driven-ness, and communication and public awareness.</p> | 6                   |
| <b>Section F: Conclusions, Lessons Learned and Recommendations</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                     |
| <p><b>13.</b> Do the <b>Conclusions</b> present a summative assessment of the evaluand as a whole, reflecting on prominent aspects of the programme's performance? Consider how well the conclusions:</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <p><u>Coverage/omissions:</u><br/>The evaluation report includes a conclusions section which includes summative</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 6                   |

<sup>60</sup> In some cases 'programme management and supervision' will refer to the supervision and guidance provided by UNEP to implementing partners and national governments while in others, specifically for GEF funded programmes, it will refer to the programme management performance of the executing agency and the technical backstopping provided by UNEP. This includes providing the answers to the questions on Core Indicator Targets, stakeholder engagement, gender responsiveness, safeguards and knowledge management, required for the GEF portal.



| Report Quality Criteria                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | UNEP Evaluation Office Comments                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Final Report Rating |
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| <ul style="list-style-type: none"> <li>provide a compelling narrative and integrated assessment of programme programme's performance (i.e. achievements and limitations)</li> <li>add deeper insights and analysis beyond the findings under each individual criterion</li> <li>are derived from the synthesized analysis of evidence gathered during the evaluation process</li> <li>provide clear and succinct response to the key strategic questions</li> <li>address the human rights and gender dimensions of the intervention explicitly (e.g. how these dimensions were considered, addressed or impacted on)</li> <li>provide lessons that are rooted in real programme experiences, describe the context from which they are derived, and do not duplicate recommendations</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <p>statements on the performance of the evaluand.</p> <p><u>Strengths/weaknesses:</u></p> <p>The report presents concise summative statements on the performance of the evaluand as a whole. The report also includes human rights and gender dimensions of the intervention and clear and succinct responses to the key strategic questions.</p>                                                                                                                                                       |                     |
| <p><b>14.</b> Does the report present <b>Recommendations</b> for specific action to be taken by identified people/position-holders to resolve concrete problems affecting the programme or the sustainability of its results? Consider how well the recommendations:</p> <ul style="list-style-type: none"> <li>are clearly formulated and logically derived from the findings and/or conclusions</li> <li>are feasible to implement within the timeframe and resources available (including local capacities) and specific in terms of who would do what and when</li> <li>include at least one recommendation relating to strengthening the human rights and gender dimensions of UNEP interventions</li> <li>represent a measurable performance target in order that the Evaluation Office can monitor and assess compliance with the recommendations.</li> </ul> <p><u>NOTES:</u></p> <p>(i) In cases where the recommendation is addressed to a third party, compliance can only be monitored and assessed where a contractual/legal agreement remains in place. Without such an agreement, the recommendation should be formulated to say that UNEP programme staff should pass on the recommendation to the relevant third party in an effective or substantive manner. The effective transmission by UNEP of the recommendation will then be monitored for compliance.</p> <p>(ii) Where a new programme phase is already under discussion or in preparation with the same third party, a recommendation can be made to address the issue in the next phase.</p> | <p><u>Coverage/omissions:</u></p> <p>The report includes recommendations aimed at addressing problems in programme execution and proposed actions to ensure sustainability of programme results. The recommendations are also presented in the prescribed format.</p> <p><u>Strengths/weaknesses:</u></p> <p>The recommendations presented are actionable and are derived from actual programme implementation challenges and desire to increase likelihood of sustainability of programme results.</p> | 5                   |
| <b>Section G: Report Structure and Presentation</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Assessment</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                     |
| <p><b>15.</b> Is the report <b>well-structured and complete</b>? Does it:</p> <ul style="list-style-type: none"> <li>follow the Evaluation Office structure and formatting guidelines</li> <li>include all required sections and annexes, as applicable</li> </ul> <p>Does the report <b>present</b> information clearly and appropriately? Is it written:</p> <ul style="list-style-type: none"> <li>in clear and accessible language</li> <li>largely free from grammar, spelling and punctuation errors</li> <li>in an adequate and professional tone</li> <li>with the use of visual aids, such as maps, graphs tables and photos</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <p><u>Strengths/weaknesses:</u></p> <p>The report is complete and follows the structure agreed with the Evaluation Office. The report also adheres to the Evaluation Office and formatting guidelines.</p> <p>The evaluation report is written in clear English language and uses visual aids (figures and tables) appropriately. The tone used in the report is professional as expected of such a document.</p>                                                                                       | 5                   |
| <b>OVERALL REPORT QUALITY RATING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>Highly Satisfactory</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>5.5</b>          |