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**Intergovernmental Review Meeting on the
Implementation of the Global Programme of Action
for the Protection of the Marine Environment
from Land-based Activities**

Fourth session

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Item 10 of the provisional agenda*

**Programme of work of the Global Programme of Action
Coordination Office for the period 2018–2022**

**Draft programme of work of the Global Programme of Action
Coordination Office for the period 2018–2022**

Note by the secretariat

I. Scope and purpose

1. The Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, adopted in 1995 in Washington, D.C., is designed to be a source of conceptual and practical guidance on preventing, reducing, controlling and eliminating marine degradation resulting from land-based activities. It is the only global action programme that explicitly addresses the linkages between the freshwater, coastal and marine environments.
2. The present note sets out a draft programme of work for the further implementation of the Programme over the period 2018–2022. This work programme corresponds to the future direction of the Programme as presented under options B and C in document UNEP/GPA/IGR.4/3.
3. Overall, the draft programme of work is designed to continue the pursuit of internationally agreed goals and targets related to the sustainable development of coasts, oceans and islands, and their associated watersheds.

II. Goal

4. The overall goal of the programme of work for the period 2018–2022 is to strengthen modalities of cooperation through existing mechanisms such as the Regional Seas programmes, and to enhance the effectiveness of the implementation of the Global Programme of Action at the national, regional and international levels through harmonization with actions being taken to mitigate land-based marine pollution under the framework of the 2030 Agenda for Sustainable Development.

* UNEP/GPA/IGR.4/1.

III. Programme of work of the Global Programme of Action Coordination Office for the period 2018–2022

5. The programme of work for 2018–2022 outlines the intervention response of the Coordination Office to the priorities articulated by countries for combatting marine pollution. There are some key recent directives that underpin the programme of work. In paragraph 216 of its resolution 71/257, adopted in December 2016, the General Assembly of the United Nations called upon States:

As a matter of priority, to implement the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities and to take all appropriate measures to fulfil the commitments of the international community embodied in the Manila Declaration on Furthering the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities.

6. The new programme of work is substantially anchored in the 2030 Agenda and the directions set forth under the various Sustainable Development Goals, with specific focus on addressing target 14.1, “By 2025, prevent and significantly reduce marine pollution of all kinds, in particular from land-based activities, including marine debris and nutrient pollution”, and target 6.3, “By 2030, improve water quality by reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally”. A priority focus on these two targets is in line with the conceptual design and implementation of the work programme of the Global Programme of Action in applying integrated source-to-sea or ridge-to-reef approaches to address marine pollution.

7. This programme of work responds to requests made by Governments through the Manila Declaration and various United Nations Environment Assembly resolutions.

8. Further to the strategic directions set forth in the 2030 Agenda, in the Call for Action that emanated from the United Nations Conference to Support the Implementation of Sustainable Development Goal 14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development, held from 5 to 9 June 2017, countries highlighted three areas for action relevant to the programme of work of the Global Programme of Action:

(g) Accelerate actions to prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris, plastics and microplastics, nutrient pollution, untreated wastewater, solid waste discharges, hazardous substances, pollution from ships, and abandoned, lost or otherwise discarded fishing gear, as well as to address, as appropriate, the adverse impacts of other human-related activities on the ocean and on marine life, such as ship strikes, underwater noise and invasive alien species.

(h) Promote waste prevention and minimization, develop sustainable consumption and production patterns, adopt the 3Rs- reduce, reuse and recycle- including through incentivising market-based solutions to reduce waste and its generation, improving mechanisms for environmentally-sound waste management, disposal and recycling, and developing alternatives such as reusable or recyclable products, or products biodegradable under natural conditions.

(i) Implement long-term and robust strategies to reduce the use of plastics and microplastics, particularly plastic bags and single use plastics, including by partnering with stakeholders at relevant levels to address their production, marketing and use.

9. The programme of work builds on the work done over the past five-year implementation period and is informed by the lessons learned and the strategic directives that have emerged under the nutrient management, marine litter and wastewater technical work streams designated as priorities for the Global Programme of Action by the third session of the Intergovernmental Review Meeting and the resulting Manila Declaration.

10. In accordance with the proposed approach set out in the policy guidance for the implementation of the Programme, the programme of work is partitioned into two broad components: (A) strengthen the Global Programme of Action in delivering services to countries by bolstering coordinated action to address pollution and (B) enhance delivery of tailored technical and policy solutions to address marine pollution from nutrient excess, wastewater, marine litter discharge and emerging pollutants.

11. Under Component A, the programme of work aims to substantially strengthen the overarching functionality of the Coordination Office within the overall programme of work of the United Nations Environment Programme (UNEP) and its interface with external partners and programmes, in order to deliver coordinated global approaches for marine pollution control. Under a first track (A1), the

programme of work aims to close the implementation gap with other global conventions, with close attention paid to enhancing cooperation with the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, the Stockholm Convention on Persistent Organic Pollutants, and the United Nations Framework Convention on Climate Change, among others. Under a second track (A2), another critical element in this operational strengthening is the enhancement of the intersessional governance of the programme between the five-year intergovernmental review meetings.

12. Under Component B, the programme of work aims to replicate and expand the work done under the Programme over the past five years and earlier on the three technical work streams, namely nutrient management, wastewater and marine litter. In recent years, such work has been facilitated by global multi-sectoral partnerships: the Global Partnership on Nutrient Management, the Global Partnership on Marine Litter and the Global Wastewater Initiative. The primary modalities for delivery would be in-field capacity-building programmes, knowledge networking, provision of expert inputs to drive decision-making, and support for best available technology selection in mitigating land-based pollution. Linkages to various financing mechanisms would also be strengthened to support resource mobilization for assistance to countries.

13. The programme of work recognizes not only continuing challenges but emerging ones that have not yet been substantially addressed where the science base suggests that urgent attention should be paid to designing policy and technical interventions. Such challenges include the stresses imposed by climate change, microplastics in the food supply chain, endocrine-disrupting chemicals and other hazardous substances in waste streams, harmful algal blooms, and wastes from the extractives sector, coastal sand mining and coastal ecosystem alterations.

14. At the present meeting, countries are invited to consider three possible options for the future operation of the Programme (UNEP/GPA/IGR.4/3), namely to substantially retain the current Programme configuration and governance, to modify the Programme to merge with the governance of the United Nations Environment Assembly, or to wind down the Programme. The programme of work as presented considers continued operation of the Programme.

A. Component A: Strengthen the Global Programme for Action

1. Deliver integrated, harmonized global approaches to marine pollution control through the Global Programme of Action framework

15. **Deliver policy and technical tools for decision-making:** The Coordination Office would continue to support the development of policy and technical tools for use by national governments and regional governance mechanisms, including approaches for economic valuation, higher resource efficiency and lower carbon and nutrient footprints, through contributions from the Global Programme of Action partnerships on nutrient management, wastewater and marine litter. The Coordination Office would also support processes for incorporating the tools into national and regional-level programmes of action.

16. **Track progress of implementation of national and regional actions:** The Coordination Office would strengthen capability to systematically track and report on national and regional-level efforts to address land-based marine pollution to include the original nine pollution-source categories and agency interventions by building on existing reporting mechanisms, primarily through the Regional Seas programmes (and associated land-based pollution protocols and mechanisms), with the specific purpose of seeking out knowledge, policy and technical capacity-building gaps and designing the interventions required to address those gaps in consultation with the Regional Seas Programme and countries. Closely linked would be the tracking of Sustainable Development Goal target indicators on pollution of freshwaters and the marine environment, jointly with the Intergovernmental Oceanographic Commission and UN-Water. This would include maintaining relevant online platforms such as the Marine Litter Network, as well as the Clean Seas campaign, the Global Partnership on Nutrient Management, and publications and toolboxes.

17. **Improve joint implementation with the chemicals and climate change conventions:** The Coordination Office would incorporate priority implementation elements of the Basel, Rotterdam and Stockholm Conventions of relevance to marine pollution through a closer working relationship with the Secretariat of the Basel, Rotterdam and Stockholm Conventions. A closer working relationship would also be developed with the secretariat of the United Nations Framework Convention on Climate Change to incorporate aspects of the Paris Agreement, in particular those linked to the pollution impacts of climate change in the marine environment. These relate to Article 6 on mitigation and Article 7 on adaptation, with particular reference to atmospheric emissions of reactive nitrogen as part

of the nutrient cycle, which have greenhouse gas warming potential and influence the health of the marine environment through deposition.

18. **Deepen private sector engagement and technology deployment:** The Coordination Office would launch a private sector forum on marine pollution to consolidate efforts across the Global Programme of Action partnerships. The forum would seek to transfer knowledge and best practices to developing countries, with particular emphasis on highly contaminated waste management and recycling operations that are contaminating coastal areas. This would be facilitated through expansion of the partnerships under the Programme and targeted cooperation under projects or campaigns such as the Clean Seas campaign.

19. **Expand learning opportunities:** The Coordination Office would work towards consolidation of its current distance learning efforts through massive open online courses and on-site capacity-building. The Action Platform for Source-to-Sea Management (S2S Platform), hosted by the Stockholm International Water Institute, is a highly relevant framework for the Programme in terms of enhancing knowledge exchange. The S2S Platform aims to facilitate contact between decision makers and experts to provide on-demand knowledge, support, advice and guidance to policy development and promote implementation of management priorities in “source-to-sea” systems. The Programme would remain a core partner in this platform to facilitate access to stakeholders.

20. **Widen advocacy and heighten visibility of the Programme:** The Coordination Office would broaden its communication and advocacy outreach by:

- (a) Building on the experiences and lessons learned from the ongoing Clean Seas campaign to combat marine litter;
- (b) Increasing the visibility of the Programme by organizing at least one side event per year at thematically relevant international events and disseminating regular newsletters;
- (c) Redesigning the Programme website as part of a UNEP-wide web overhaul;
- (d) Producing and disseminating relevant publications and other outreach products aimed at influencing policymakers and informing the general public;
- (e) Ensuring messaging consistency across different electronic platforms and undertaking a mapping exercise to optimize efforts and avoid duplication.

2. **Enable effective overall programme implementation through enhanced programme governance and financing**

21. **Programme hosting:** The Coordination Office would continue to be hosted by UNEP pursuant to the initial mandate from Governments. The programme of work of the Global Programme of Action has been mainstreamed within the UNEP programme of work and would be anchored jointly within the organization’s chemicals and waste and the ecosystems management subprogrammes.

22. **Strengthen intersessional governance:** The Coordination Office, with the endorsement of Governments, would commit to establishing a mechanism for maintaining active and effective intergovernmental involvement during the intersessional period between formal reviews of the Global Programme of Action. This mechanism would ensure that the Programme provides an effective platform for agreeing on and monitoring the work of the Global Programme of Action Coordination Office the work of the technical partnerships and other aspects of the programme of work. Depending on what countries decide at the present meeting, the five-year intergovernmental review meetings may remain as the major governance forum for the Programme, with intersessional meetings to monitor implementation, or the United Nations Environment Assembly could become the governance forum.

23. **Committed funding of GPA core staff and operational requirements:** With a mandate from the countries, the work of the programme is expected to continue to receive financial support, either through existing financing commitments or additional mechanisms.

24. **Secured extrabudgetary funding support for delivery of technical programme activities:** The programme would continue to seek out opportunities with donor partners to secure resources to assist countries in addressing critical marine pollution priorities through development and funding of project and programme-level initiatives.

B. Component B: Enhance delivery of tailored technical and policy solutions to address marine pollution from nutrient excess, wastewater, marine litter discharges and emerging pollutants

25. Under the Global Programme of Action's technical support programme, the Coordination Office would assist Governments to further commit to strengthening policies and measures at the national and regional levels through cooperative regional frameworks, in order to realize improvements in coastal water quality. This would be achieved through continued focus on the circular economy, higher resource efficiency, and lower carbon and nutrient footprint principles, among others, using ecosystem-based approaches for the management of wastewater, nutrients and marine litter. This would include advancement toward agreement on Sustainable Development Goal targets related to wastewater discharges, the use of nutrients, and the influx of litter, notably plastics, into the marine environment.

26. Technical delivery of the Global Programme of Action would continue to be supported by the global multi-stakeholder partnerships on nutrient management, marine litter and wastewater. These partnerships have provided robust policy and technical guidance for the design and implementation of national measures to address marine pollution, and have contributed to regionally and globally harmonized approaches, drawing on collective expertise. The Coordination Office would continue to provide support for the global partnerships and work toward strengthening their operational effectiveness, deepening their reach to country level, and expanding policy influence within the global community to address marine pollution. The partnerships would seek to affirm commitments by Governments relating to the aims, objectives and targets of each partnership.

27. The following are the elements of the programme of work under the three core technical work streams and the emerging issues to which the Programme would direct increased attention during the implementation period.

1. Nutrient pollution mitigation subprogramme

28. Governments are encouraged to commit to promoting the sustainable management of nutrients (nitrogen and phosphorous) by increasing the level of national awareness on the impact of excess nutrients in the natural environment and supporting the creation of appropriate policies and incentives to encourage more efficient use of nutrients across all relevant sectors, notably in the agricultural sector (through improved use of fertilizers and management of livestock waste), including the recovery of nutrients from wastewater. Governments are also encouraged to invest in national programmes to improve nutrient use efficiency to guard against land degradation (caused by over-exploitation of soil nutrient resources without replenishment). Atmospheric emissions from industry and agriculture, particularly volatile reactive nitrogen derivatives (including ammonia), are a significant contributor to environmental degradation, with notable health concerns. In this regard, Governments are further encouraged to work with the private sector to minimize harmful air emissions through cleaner production and nutrient recovery measures.

29. Governments are encouraged to make use of the policy and technical resources being developed through the Global Partnership on Nutrient Management, a multi-stakeholder partnership of Governments, the private sector, the scientific community, civil society organizations and United Nations entities that is committed to promoting effective nutrient management (with a focus on nitrogen and phosphorus) in order to achieve the twin goals of food security through increased productivity and conservation of natural resources and the environment.

30. The following are the main work areas of the nutrient pollution mitigation subprogramme, which also forms the basis for the work of the Global Partnership on Nutrient Management, with particular emphasis on countries faced with a high risk of coastal eutrophication and/or land degradation associated with nutrient mining.

(a) Increased use of knowledge products to support informed decision-making by policymakers, professionals, farmers and the private sector:

- (i) Develop and publish policy and best management practice guidelines on sustainable nutrient management for use by policy and technical specialists and practitioners in industry and agriculture to guide the creation of appropriate enabling environments and support capacity-building and knowledge transfer and uptake, in order to enhance nutrient use efficiency and reduce losses to the environment;

- (ii) Develop tools to support national assessments of nutrient use efficiency, reporting on nutrient pollution impacts and achievement of sustainable nutrient management targets: This is linked to monitoring of the indicator under Sustainable Development Goal target 14.1 associated with marine pollution and the indicators under target 6.3 associated with pollution of freshwater. Through this effort, Governments would be encouraged to consider setting targets for improved nutrient use efficiency and to strengthen regulatory guidelines;
 - (iii) Conduct region-specific economic valuations on the impacts of nutrient pollution and the benefits of sustainable nutrient management (including nutrient recycling) to assist countries in designing appropriate policy and fiscal incentive programmes to encourage improved practices in industry and agriculture;
 - (iv) Contribute to applied research on nutrient cycling and nutrient management at the global, regional and country levels to improve understanding of the complexity of global nutrient cycles and the potential for recycling organic nutrient sources, in order to develop practices that improve use efficiency and policy options based on sound science;
- (b) Expanded piloting and replication of appropriate on-the-ground solutions that demonstrate best practice for sustainable nutrient management and pollution reduction, with a focus on developing countries:
- (i) Develop project and programme proposals and secure resources for national initiatives on nutrient pollution mitigation and sustainable nutrient management with a focus on the agricultural sector and the sectors reliant on use of detergents: This would focus particularly on developing countries at high risk of ecosystem impairment and social and economic disruption due to coastal eutrophication and land degradation (from nutrient mining). Detergent manufacturers and allied industry would be engaged to contribute to these nutrient initiatives;
 - (ii) Support national, regional and international capacity-building initiatives on sustainable nutrient management with engagement of the private sector: The expertise of the Global Partnership on Nutrient Management would form the basis of capacity-building through its network of specialists, drawing on the resources of the Global Nutrient Management Toolbox, which serves as a knowledge repository and information hub. Other partnerships would be formed with affiliated agencies to facilitate these efforts;
 - (iii) Support access to and participation of policy and technical professionals in distance learning initiatives to enhance capacities: With the support of the Global Partnership on Nutrient Management network and deployment of the Global Nutrient Management Toolbox, this would build on the use of information communication technology tools such as massive open online courses and other web-based tools as a means of disseminating knowledge to reach local stakeholders where budgets and practical limitations preclude direct facilitator training. This effort would be harmonized with the wastewater portfolio of the Global Programme of Action through the Global Wastewater Initiative;
- (c) Heightened awareness of the nutrient challenge to influence farmers and other stakeholders to change their behaviours and practices:
- (i) Develop and execute a major global awareness campaign on the threat of nutrient excess in aquatic systems and the coastal environment (and other areas of the natural environment): this would take into account the lessons learned and successes of the Clean Seas campaign executed under the marine litter portfolio of the Global Programme of Action. The campaign would complement the technical interventions and contribute to the creation of enabling conditions to create policy and implement appropriate measures at the national level;
 - (ii) Publish experience notes based on successful practices and lessons learned for dissemination to practitioners to aid in uptake and replication in areas with

- similar conditions/circumstances: This would be done in partnership with the Global Environment Facility's International Waters Learning Exchange and Resource Network and its Large Marine Ecosystem knowledge networks associated with its investments to address land-based sources of marine pollution;
- (iii) Conduct national and regional-level awareness seminars and events: This would be carried out in collaboration with partners working on initiatives at the regional level (e.g., within the Regional Seas programmes) or with specific projects or programmes at the national level. The Global Partnership on Nutrient Management regional platforms would be the primary means of support for these events;
 - (iv) Facilitate participation of practitioners, partners and other Global Partnership on Nutrient Management stakeholders in major conferences/meetings to strengthen knowledge sharing: This would help to enhance the reach and profile of the Global Programme of Action and the Global Partnership on Nutrient Management and build networking and cooperation;
- (d) Expanded global and regional partnerships toward harmonized global and regional approaches:
- (i) Support interregional policy and technical exchanges for farmers and other industry practitioners and professionals to strengthen communities of practice: These would be facilitated by country visits so that expertise and experiences could be shared directly and effectively. These exchanges would be supported through the regional platforms, coordinated through the Global Partnership on Nutrient Management and the Secretariat;
 - (ii) Convene Global Partnership on Nutrient Management partnership dialogues to formulate harmonized policy approaches on nitrogen and phosphorus management in the light of regional and global convention frameworks such as the United Nations Environment Assembly and the Regional Seas conventions;
 - (iii) Support strengthening of Global Partnership on Nutrient Management regional nutrient platforms and enhance alignment to the Regional Seas programmes as advisory bodies on marine pollution: The regional platforms would be instrumental in building partnerships to facilitate national implementation of improved practices.

2. Wastewater management, safe reuse and recovery subprogramme

31. Governments are invited to consider increasing commitment to research, innovation and investment in wastewater management, consider policy options for addressing emerging issues in wastewater and provide actionable guidance for UNEP to support countries' implementation of sustainable wastewater management practices globally. The following are the main work areas of the wastewater management subprogramme, which also forms the basis for the work of the Global Wastewater Initiative:

- (a) Wastewater recognized as a resource in the global agenda, translating into policy decisions and investment to reduce the negative impact of wastewater discharges into the environment:
 - (i) Collaborate with partners such as the Water Environment and Reuse Foundation in partnership under the Global Wastewater Initiative to promote to Governments' technological innovations in wastewater management with regard to distributed and centralized wastewater treatment: This would also involve linking with organisations to conduct research to treat and recover beneficial materials from wastewater, including water, nutrients, energy and biosolids;
 - (ii) Define, in collaboration with partners, household and industrial wastewater strategies to reduce water usage and strategies for incorporating planning for wastewater management and reuse in community development and urban expansion;
 - (iii) Develop, with partners, a coordinated policy framework for wastewater management and establish clear lines of authority by involving public and

- private sector investors and managers, policymakers, government agencies and community organizations;
- (iv) Develop market-based approaches to promote sustainable financing of wastewater management that provides both long-term social benefits and profit in a sustainable manner;
 - (v) Foster collaborations with partners such as the Water Environment Federation to provide educational opportunities and access to cutting-edge technologies and services in the wastewater field, and networking through fora such as the Amsterdam International Water Week to connect industry, science, business, policy and technology;
 - (vi) Deepen cooperation with partners in the European Union on nutrient recovery from wastewater streams in the context of the European Union Water Framework Directive, and transfer lessons to other global regions;
- (b) Increased knowledge of emerging issues in wastewater management and innovative responses:
- (i) Engage academia in research on emerging issues, documenting health and environmental effects of pharmaceuticals in wastewater and defining strategies for minimizing risk from pharmaceuticals disposal;
 - (ii) Document experiences from pilot projects on greenhouse gas reduction in wastewater treatment plants around the world to determine the appropriate policy, regulation and investments needed to upscale and replicate pilots rapidly;
 - (iii) Promote the 'nexus approach', a way of considering linkages between water, energy, food and climate change, to decision makers in the development of strategies, policies that integrate wastewater management, and planning and implementation approaches in wider sustainable development agendas;
 - (iv) Provide capacity-building support on the use of non-conventional water to address water scarcity, employing innovative tools to illustrate how reuse of wastewater in multifunctional land-use systems can enhance soil productivity, reduce pollution and generate income;
- (c) Strengthened and sustained joint efforts to mobilize and share expertise in order to support the global achievement of sustainable wastewater management:
- (i) Strengthen support to water regulators across the globe, through the International Water Association, for improving wastewater regulations, building capacity and enhancing institutional response;
 - (ii) Expand collaboration with private sector stakeholders under the Global Wastewater Initiative in the development and implementation of innovative initiatives on wastewater management, and foster increased engagement in knowledge and technology transfer at the global level;
- (d) Expanded knowledge-generation, awareness-raising, communication and outreach on the impacts of wastewater on the marine environment and other water bodies:
- (i) Enhance access to expertise, experiences and innovation to increase societal awareness and build political will to address the wastewater problem through appropriate policy, regulation and investment;
 - (ii) Build cooperation with young water professional networks, universities and other youth forums to support broad-based action, particularly around Sustainable Development Goal target 6.3 on improving water quality by reducing pollution;
 - (iii) Collaborate with the World Youth Parliament for Water in advocating for youth participation in the water sector to foster concrete action for wastewater management.

3. Marine litter subprogramme

32. The marine litter subprogramme also forms the basis for the work of the Global Partnership on Marine Litter. The aim is to assist countries in strengthening evidence-base policymaking, raising

awareness and building national capacity by providing advisory services through integrated, full life cycle, ecosystem-based management and resource efficiency objectives and policies. This also includes approaches such as the '6Rs' (remove, reduce, reuse, recycle, re-design, recover) that recognize waste as a resource and highlight the strong linkage between ecosystem services and human well-being. The programme of work also includes the implementation of relevant United Nations Environment Assembly resolutions, including resolution 1/6 on marine plastic debris and microplastics and resolution 2/11 on marine plastic litter and microplastics.

33. At its first session, the United Nations Environment Assembly requested the Executive Director to present a study on marine plastic debris and microplastics to the second session of the United Nations Environment Assembly in May 2016, and to provide support to countries upon request to develop marine litter action plans. The second session of the United Nations Environment Assembly called for an assessment of and support for the development of marine litter action plans. The third session of the United Nations Environment Assembly will consider the options presented in the assessment and decide on the way forward. The outcome of that session will inform the programme of work, which currently focuses on the following aspects:

- (a) Strengthened knowledge base for addressing marine litter, with a focus on marine plastic litter and microplastics, and the normative basis for preventing, managing and monitoring the impacts of marine litter on the marine environment:
 - (i) Conduct studies to fill the gaps identified in the assessment report presented to the Second Session of the United Nations Environment Assembly;
 - (ii) Collect best available technologies and best environmental practices;
 - (iii) Identify emerging issues, in particular to address the "myths" and misconceptions of marine litter through the publication of a series of short papers;
 - (iv) Harmonize monitoring methods and marine litter reduction targets;
 - (v) Carry out regional assessments and desk studies on marine litter;
 - (vi) Develop regional and national action plans;
- (b) Strengthened Global Partnership on Marine Litter, supported by the expanded online Marine Litter Network and regional nodes:
 - (i) Convene Global Partnership on Marine Litter steering committee meetings, members' webinars and partnership dialogues to formulate harmonized approaches on prevention and management of marine litter;
 - (ii) Establish and expand the reach of the regional nodes of the partnership to support the implementation of regional and national action plans on marine litter;
 - (iii) Expand the online Marine Litter Network and prepare partnership workplans and a revised framework document;
- (c) Increased awareness of marine litter prevention:
 - (i) Implement the five-year Clean Seas campaign and promote commitments by countries, the private sector and citizens to prevent marine litter;
 - (ii) Implement the Marine Litter Innovation Challenge for universities;
 - (iii) Develop massive open online courses on marine litter in all the official languages of the United Nations;
 - (iv) Hold events at marine litter prevention and management events, including the Sixth International Marine Debris Conference;
- (d) Promotion and demonstration of innovative, low-cost solutions, technologies and practices through demonstration projects in line with the waste hierarchy:
 - (i) Develop, with partners, demonstration projects that pilot test innovative approaches and technologies;
 - (ii) Collect and share lessons learned, best available technologies and best environmental practices with the aim of upscaling and replicating them;
 - (iii) Provide institutional support through UNEP mechanisms and programmes to help mobilize financial resources, notably working with Governments and

other stakeholders to support the implementation of demonstration projects and partnership commitments.

4. Programme response to new challenges and emerging issues

34. Chemicals and compounds that have only recently been identified as potential threats to the environment and are not yet widely regulated by national or international law are known as emerging pollutants. They are classified as “emerging” not because the contaminants themselves are new, but because of the rising level of concern. Effective management of emerging pollutants is important for the realization of several of the Sustainable Development Goals, including Goal 2 (zero hunger), Goal 3 (good health and well-being), Goal 6 (clean water and sanitation), Goal 12 (responsive consumption and production), Goal 13 (climate action), Goal 14 (life below water) and Goal 17 (partnerships for the goals).

35. Wastewater: Five hundred and fifty-nine pharmaceuticals have been detected globally in wastewater treatment plant effluent, influent and sludge (aus der Beek et al., 2016). Emerging pollutants such as phthalates, polychlorinated biphenyls, microbeads, polycyclic aromatic hydrocarbons, bisphenol A and pharmaceuticals used for human health, as well as disinfectants and hormones, are of increasing concern (Deblonde et al., 2011). The threats posed to human health by these endocrine-disrupting chemicals can affect any and all hormonal systems, causing problems ranging from infertility to obesity, immune disorders and cardiovascular diseases (Inter-Organization Programme for the Sound Management of Chemicals, 2012).

36. Nutrients: The dimension of climate change interactions with harmful algal blooms is an emerging issue where warmer fresh waterbodies and oceans signal conditions potentially more conducive to the development, expansion and persistence of harmful algal blooms.¹ One example that seems to typify this interaction is the proliferation of pelagic Sargassum seaweed in the central Atlantic Ocean, which has had an adverse economic impact on Caribbean and West African countries.² More research is needed, however, to determine the linkages between nutrient loading, harmful algal blooms and climate change. Atmospheric emissions from crop and livestock production also have atmospheric pollution dimensions related to volatilized reactive nitrogen and derivatives.

37. Marine litter: Microplastics and microfibres: Microplastic particles are found in a large variety of marine organisms, including species we consume as seafood. The current sparse knowledge of levels and effects does not indicate a health risk to humans, but the uncertainty is high. The smallest plastic particles, nanoplastics, are of even greater concern. They are so small that some can enter organs and body fluids of organisms, and due to their high surface/volume ratio they can carry larger amounts of environmental toxicants. Plastic debris breaks down very slowly in the marine environment, especially under cold and dark conditions. Levels of nanoplastics in the oceans, and how much of the plastic is ultimately fully degraded, are not known.

38. Sediment loading and coastal habitat alteration: The release of mine tailings from ocean and land-based mining operations and the effects of large-scale sand mining in coastal environments is becoming of increasing concern to countries. These operations result in high volumes of sedimentation, sometimes with toxic residues, in near-shore and deeper water environments that have significant impacts on marine ecosystems. Coral reefs are particularly vulnerable. Sand mining operations are resulting in coastal alterations, making coastal zones prone to accelerated degradation due to natural erosive processes and storm inundation that over time could be exacerbated by sea level rise.

39. The Coordination Office would continue to expand collaborations with partners in building the evidence base for action through the existing Programme partnership networks, in order to support countries in building awareness on these emerging issues and to assist, develop and direct appropriate policy and on-the-ground interventions to minimize risks to human and ecosystem health. Partnerships with entities such as the World Health Organization, the Food and Agriculture Organization of the United Nations, the International Atomic Energy Agency, the International Maritime Organization and the Secretariat of the Basel, Rotterdam and Stockholm conventions would be strengthened.

¹ United States Environmental Protection Agency, 2016. <https://www.epa.gov/arc-x/climate-adaptation-and-harmful-algal-blooms>

² UNEP fact sheet. Available from [http://www.cep.unep.org/content/factsheets/sargassum_fact_sheet_-final.pdf/@download/file/Sargassum_fact_sheet_\(final\).pdf](http://www.cep.unep.org/content/factsheets/sargassum_fact_sheet_-final.pdf/@download/file/Sargassum_fact_sheet_(final).pdf)

Annex

Programme of work 2018–2022: key outcomes, indicators and means of verification for measuring success

Main programme component	Subprogramme	Expected outcomes (by December 2022)	Indicators and targets (by December 2022)	Means of verification
Component A: Strengthen the Global Programme of Action	Subcomponent A1: Deliver integrated, harmonized global approaches to marine pollution control through the GPA framework	A1.1: Delivery of policy and technical tools (economic valuation, ecosystem approaches for pollution) for decision-making by countries and active uptake and application by stakeholders	At least 2 policy and technical tools in active use by at least 10 countries	- Policy briefs - Guidance notes
		A1.2: Enhanced tracking of progress by countries of implementation of national and regional actions to address marine pollution	- Updated tracking template that is Agenda 2030-compliant (with a focus on SDG targets 6.3 and 14.1) with at least 60% of countries providing information - At least 2 compiled reports on status of implementation, the first by 2020	Status reports on activity implementation
		A1.3: Improved joint implementation with the chemicals and climate change conventions of shared priority aspects for marine pollution	- Joint GPA/BRS secretariat activities on priority themes - Collaboration on implementation of at least 2 priority activities - Joint GPA/UNFCCC secretariat activities - Collaboration on at least 1 priority activity	Joint activity plans prepared between GPA and BRS and UNFCCC secretariats
		A1.4: Deepened private sector engagement in the deployment of appropriate technologies to combat marine pollution	At least 1 private sector forum and technology exposition on solutions to combat marine pollution convened by December 2020 in cooperation with the IETC and other partners	- MOUs with collaborating partners - Private sector forum proceedings and commitments for action
		A1.5: Expanded certified learning opportunities offered under the GPA and active uptake of training offerings by stakeholders	- Launch of consolidated GPA-branded training programmes - Delivery of at least 2 global combined-topic MOOCs on land-based pollution - Delivery of at least 4 regional train-the-trainer courses on integrated source-to-sea approaches to support national planning and policy development	- Training programme and course content - Online MOOC course content hosting and execution of course material with key partners such as UCC-Water, the Regional Seas Programme, the S2S Platform, Ocean Teacher Global Academy, UN-Water and IW:LEARN
		A1.6: Widened advocacy on marine pollution issues and heightened visibility of the GPA at the national level	- Suite of GPA-branded communications materials: at least 4 short videos; updated website; quarterly newsletter launched - Feedback survey initiated and executed twice during the implementation period	- Communications resources - Audience survey results
	Sub-component A2: Enable effective overall programme implementation through enhanced programme governance and financing	A2.1: Continued hosting of the GPA by UNEP	Commitment of funding for the GPA with the overall programme of work	Approved programme of work budget
		A2.2: Strengthened mechanism for intersessional governance of the GPA	<i>Pending country policy guidance at IGR-4</i> Intersessional bureau and/or United Nations Environment Assembly oversight mechanism constituted, with first meeting by December 2019 and	- Intersessional bureau proceedings - Reporting to the United Nations Environment Assembly - Reporting to the Global Meeting of

Main programme component	Subprogramme	Expected outcomes (by December 2022)	Indicators and targets (by December 2022)	Means of verification
Component B: Enhance deliver of tailored technical and policy solutions to address marine pollution from nutrient excess, wastewater, marine litter discharge and emerging pollutants			second meeting by December 2021 OR • Successful hosting of IGR-5 with the participation of at least 75% of countries	Regional Seas Conventions and Action Plans • Country host agreement
		A2.3: Committed funding of GPA core staff and operational requirements	• Commitment of at least \$5 million in funding through the Environment Fund or appropriate earmarked sources • Positions within the Coordination Office staffed	• Approved programme of work budget
		A2.4: Secured extra-budgetary funding support for delivery of technical programme activities to countries	• At least 1 major cross-cutting project/programme proposal developed and approved by December 2018 • Commitment of at least \$20 million from donors through direct financing and co-financing	• Approved proposal • Funding commitments
	Subcomponent B1: Nutrient pollution mitigation subprogramme	B1.1: Increased use of knowledge products to support informed decision-making by policymakers, professionals, farmers and the private sector	• At least 10 guidelines/policy briefs	• Guidelines/policy briefs
			• Funded joint work programme between the GPA and IOC-UNESCO on ICEP, the SDG 14.1 indicator for nutrient pollution, by March 2018 • Funded national pilot testing of ICEP assessment in at least 5 countries; • National application guidelines for ICEP • Funded national pilot testing on NUE assessment in agricultural systems in at least 5 countries • National application guidelines for NUE	• Joint work programme with IOC-UNESCO • Pilot project reporting and country feedback • Guidelines for ICEP and NUE assessment
			• At least 3 impact studies in 3 countries (region-specific) on economic valuation methodologies for sustainable nutrient management	• Study reports • Methodology guideline documents
			• At least 10 applied research publications on nutrient cycling and nutrient management	• Publications
		B1.2: Expanded piloting and replication of appropriate on-the-ground solutions that demonstrate best practice for sustainable nutrient management and pollution reduction, with a focus on developing countries	• At least 2 funded initiatives secured for projects in developing countries • At least 5 beneficiary countries involved with public and private sector engagement	• Financing agreements with implementation partners • Project implementation reports
			• At least 5 course programmes developed • At least 2 major capacity-building initiatives held annually • At least 5 countries involved in capacity-building efforts annually • At least 100 professionals involved in training activities annually	• Course content and associated resources • Training reports
			• At least 2 MOOC revised roll-outs on sustainable nutrient management topics • Participation of at least 500 professionals annually with certification	• Online MOOC content • Evaluation reports

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		B1.3: Heightened awareness of the nutrient challenge to influence farmers and other stakeholders to change behaviours and practices	1 major global awareness campaign on the threat of nutrient excess in aquatic systems and the coastal environment; - At least 3 associated signature events - Express commitments from major private sector stakeholders in the fertilizer and detergent sectors	- Suite of awareness resources - Media/publicity resources - Signature event proceedings - Expressions of commitment/collaboration
			At least 5 experience notes on successful practices generated annually	Experience notes
			At least 5 national and regional-level awareness seminars and events held annually	Seminar events and proceedings
			Participation of practitioners, partners and other GPNM stakeholders in at least 1 major conference/meeting annually	Conference/meeting proceedings
		B1.4: Expanded global and regional partnerships toward harmonized global and regional approaches	- At least 5 inter-region/country exchange events for 10 farmers and other industry practitioners and professionals annually - At least 5 countries involved	Exchange programme reports
			- At least 8 GPNM steering committee meetings - At least 2 major GPNM partnership dialogues to formulate harmonized policy approaches on nitrogen and phosphorus management	- Steering committee meeting reports - Dialogue meeting reports - Decisions from meetings/dialogues
			At least 5 consultations with 4 global regions engaged in strengthening of GPNM regional nutrient platforms	Consultation/meeting proceedings
	Subcomponent B2: Wastewater management, safe reuse and recovery subprogramme	B2.1: Wastewater recognized as a resource in the global agenda, translating into policy decisions and investment to reduce the negative impact of wastewater discharges into the environment.	- At least 3 capacity-building workshops based on the wastewater and nutrients massive open online course, as well as available UNEP outreach material (publications, reports) on sustainable wastewater management - At least 1 compiled document on innovations in wastewater management - Elaborated strategy for treatment and recovery of beneficiary materials from wastewater - At least 5 workshops on strategies for addressing household wastewater and industrial wastewater - Compiled market-based approaches for sustainable financing of wastewater developed and compiled for dissemination - At least 5 collaborations with partners to push for resource recovery, access to cutting edge technologies, organization of water week events to disseminate knowledge	- Number of requests to join the Global Wastewater Initiative - MOUs for collaboration publications - Workshop proceedings/reports - Reports

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		B2.2: Increased knowledge of emerging issues in wastewater management and innovative responses	- Set of communication materials on health and environmental effects of pharmaceuticals in wastewater developed and shared - At least 1 compiled document on experiences from greenhouse gas emission pilot projects developed and shared - At least 5 capacity-building workshop on the use of non-conventional water to address water scarcity as well as the nexus approach in wastewater management	- Communication tools: flash cards, fliers, story maps - Workshop proceedings - Reports
		B2.3: Strengthened and sustained joint efforts to mobilize and share expertise in order to support the global achievement of sustainable wastewater management	- At least 1 framework of collaboration with the International Water Association with regard to strengthening support to water regulators across the globe - Various commitments from the private sector, fostering engagement in knowledge and technology transfer - The number of Global Wastewater Initiative members has reached 100 - At least 3 engagements with the youth on various aspects of sustainable wastewater management	- MOUs for interagency collaboration - Policy recommendations - Reports - Event reports - Partner enrolment tracking
		B2.4: Expanded knowledge-generation, awareness-raising, communication and outreach on the impacts of wastewater on the marine environment and other water bodies	- At least 1 celebrity engaged as a champion for wastewater management and sanitation - At least 1 high-level business and policy event for outreach and advocacy activities for wastewater management - A wastewater atlas developed and promoted globally - At least 7 communication and awareness-raising activities and outputs uploaded on the UNEP citizen science platform	- Partners meeting reports - Media/ publicity resources - Commitments for action - Wastewater atlas for Africa - Story maps, flash cards
	Subcomponent B3: Marine Litter subprogramme	B3.1: A strengthened knowledge base for addressing marine litter, with a focus on marine plastic litter and microplastics, and normative basis for preventing, managing and monitoring the impacts of marine litter on the marine environment	- At least 5 studies on marine plastic debris and microplastics produced - At least 50 BAT and BEP collected - At least 5 summaries for decision makers produced - At least 6 short papers on demystification of marine litter-related issues produced and made available - At least 5 workshops organized for harmonization of monitoring methodologies and target setting linked to the SDG 14.1 target - At least 3 desk studies undertaken at a regional level - At least 10 regional/national action plans on marine litter	- Guidelines/policy briefs - Studies on marine plastic debris and microplastics - An online database of BAT and BEP - Reports on workshops organized - Desk studies on marine litter at a regional level - Monitoring and target setting methodology - Action plans
		B3.2: A strengthened GPML supported by the expanded online Marine Litter	At least 400 Governments, organizations, private sector entities, agencies and institutions join the GPML	- Guidelines/policy briefs - Letters of intent/forms to join the

Main programme component	Subprogramme	Expected outcomes (by December 2022)	Indicators and targets (by December 2022)	Means of verification
		Network and regional nodes	• GPML online Marine Litter Network upgraded twice during the period • At least 200 datasets/projects uploaded to the online Marine Litter Network by new partners • At least 8 regional nodes of the GPML launched • At least 5 of GPML events held on marine litter prevention and management • At least 3 related initiatives associated with the GPML organized • Revisions to the GPML framework document finalized • GPML workplan prepared • At least 5 steering committee meetings organized per year • At least 4 webinars organized for members per year	• partnership • Steering committee meeting reports • GPML workplan • Website statistics on members, uploads, downloads, visits, comments • Project documents and reports • Regional nodes, letter of intent • Revised GPML framework document • Steering committee meeting report • Webinar recordings
		B3.3: Increased awareness of marine litter prevention	• At least 100 countries join the Clean Seas campaign with commitments • At least 75 private sector entities join the Clean Seas campaign with commitments • At least 1 million citizens make personal commitments • At least 200 submissions received in the Marine Litter Innovation Challenge for university students • At least 50,000 people participate in the MOOCs • At least 100 projects are registered on the Marine Litter Network, where governments, organizations, private sectors, agencies and institutions share actions they have taken to reduce marine litter • At least 5 annual/biannual events held on marine litter prevention and management with communication support provided • At least 100 outreach materials, including audio-visual products, brochures, policy briefs, publications, posters, apps, fact sheets and press materials, produced, published and shared • At least 5,000 media articles generated/produced • At least 50 tweets and social media messages disseminated with global reach	• Website and app statistics on commitments (cleanseas.org) • Letters of intent to join the Clean Seas campaign • Proposals received through the Marine Litter Innovation Challenge platform • Registrations for massive open online courses
		B3.4: Promotion and demonstration of innovative, low-cost solutions, technologies and practices through demonstration projects in line with the waste hierarchy	• At least 5 demonstration projects implemented • At least 100 best practices collected and shared • At least 6 demonstration projects designed and implemented by partners • At least 2 feasibility studies produced for demonstration projects in small island developing state regions	• Project documents and reports • Project documents, guidelines and monitoring reports • Report and studies on demonstration projects • Feasibility studies

Main programme component	Subprogramme	Expected outcomes (by December 2022)	Indicators and targets (by December 2022)	Means of verification
			- At least 2 compilation documents on lessons learned from the demonstration projects produced - At least 1 forum held to share lessons learned from demonstration projects to assist upscaling and replication - At least 3 reports and case studies prepared and disseminated on emerging issues related to marine litter	- Document on lessons learned from the demonstration projects - Report of the forum - Reports and case studies
	Subcomponent B4: Emerging pollutants	B4.1 Expanded knowledge on the human-ecosystem health interface from emerging pollutants	- At least 1 focus study on the coastal and marine environmental impacts of sand mining and other mining operations at the global level and contribution to national policy recommendations - At least 1 trans-Atlantic study to understand the linkages between land-based pollution, climate change drivers and the proliferation of Sargassum seaweed, and definition of priority strategic investments to address key pollution sources (linked to the nutrients and wastewater management subprogrammes) - At least 1 investigative study on the human-ecological health linkages associated with endocrine-disrupting chemicals discharged into aquatic environments and development of demonstrative approaches to mitigate discharges in at least 2 developing countries - At least 1 study to expand the knowledge base on microplastics and the human and ecosystems impacts with a focus on sensitive ecosystems in at least 2 developing countries	- Study reports, case studies - Scientific papers - Conference proceedings - Research partner cooperative agreements

Abbreviations: BAT, best available technologies; BEP, best environmental practices; BRS, Basel, Rotterdam and Stockholm; GPA, Global Programme of Action; GPML, Global Partnership on Marine Litter; GPNM, Global Partnership on Nutrient Management; IETC, International Environmental Technology Centre; IGR, Intergovernmental Review Meeting on the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities; ICEP, Index of Coastal Eutrophication Potential; IOC-UNESCO, Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization; IW:LEARN, International Waters Learning Exchange and Resources Network; MOOC, massive open online course; MOU, memorandum of understanding; NUE, nutrient use efficiency; S2S Platform, Action Platform for Source-to-Sea Management; SDG, Sustainable Development Goals; UCC-Water, UNEP Collaborating Centre on Water and Environment; UNFCCC, United Nations Framework Convention on Climate Change.