

OzoNews

A fortnightly electronic news update on ozone and climate protection and the implementation of the Montreal Protocol brought to you by OzonAction

Volume XXV | 15 March 2025

In this issue:

1. International Women's Day: Championing Gender Equality in Ozone & Climate Protection
2. Mentorship Programme to Strengthen Cooling Sector Launched on International Women's Day
3. International Women's Day
4. Why We Can't Ignore Nitrous Oxide - The Climate Threat You've Never Heard Of
5. HFC regulations and emission trends in Japan, Europe, and the US: An overview
6. SADC RAC country phase-out of HCFCs and HFCs in line with international protocols
7. La Tunisie met en place un système national de récupération et de recyclage des fluides frigorigènes
8. New study reveals methane's role in ozone layer recovery
9. Kyrgyzstan eliminates HCFCs a decade ahead of schedule
10. Driving Consistent and High-Quality Training on Alternative Refrigerants Across Europe
11. Mobile air conditioning in rail vehicles
12. Caribbean Countries Move Toward Energy Sustainability with New Regional Project
13. La protection de la couche d'ozone est promue à Holguín
14. IIR engages in key discussions at ASHRAE Winter Conference 2025

GLOBAL

1. International Women's Day: Championing Gender Equality in Ozone & Climate Protection

8 March 2025 - In commemoration of International Women's Day, we highlight both the significant progress and the ongoing challenges in achieving gender equality within the Refrigeration and Air Conditioning (RAC) sector, known globally as HVACR (Heating, Ventilation, Air Conditioning and Refrigeration).



Initiatives from around the world, including countries such as Grenada, North Macedonia, Sierra Leone, Armenia and Peru, are paving the way for a more inclusive and equitable industry.

The RAC sector, traditionally male-dominated, is undergoing a major transformation thanks to the dedication and talent of women. It is crucial to break down existing barriers and foster opportunities for women to thrive in this field through specialised training and the development of advanced skills.

For International Women's Day 2025, OzonAction produced a video showcasing good examples of national gender mainstreaming activities, initiatives, and campaigns that were organised as part of the implementation of Montreal Protocol projects and activities.



[Click here to view video](#)

Country highlights: Advancing Gender Equality in the RAC Sector

Grenada: Prioritises training for female RAC technicians, with particular focus on women's empowerment. One technician shared: "It is an amazing feeling to be part of a women's team installing an air conditioner for the Minister of the Environment."

North Macedonia: Has integrated a gender perspective into its efforts to protect the ozone layer, engaging women in training programmes, workshops, and events to share experiences and improve strategies.

Sierra Leone: Has seen a remarkable increase in female participation in the RAC sector, rising from just four women to 45 over the past three years, demonstrating the positive impact of inclusive policies and life-changing opportunities.

Armenia: Is developing a comprehensive strategy to tackle gender inequality, promoting female enrollment in vocational schools and creating visual resources to highlight women technicians in the field.

Peru: Peru is advancing gender equality in the RAC sector by providing specialized training for women technicians. These programs enhance their skills in refrigeration, new technologies, and sustainable refrigerant management, promoting a more inclusive workforce and supporting environmental protection.

Global challenges and effective strategies

Despite significant achievements, gender biases remain a major barrier. To overcome these challenges and advance towards full equality, the following global strategies are recommended:

- Implement training and mentorship programmes: Establish technical programmes specifically designed for women, alongside mentorship initiatives that connect experienced professionals with new generations.
- Increase visibility and recognition: Showcase the achievements of women in the RAC sector through awareness campaigns and public recognition, celebrating their contributions and successes.
- Promote strategic partnerships: Foster collaboration between international organisations, governments, businesses, and professional associations to create equal opportunities and cultivate an inclusive environment.
- Adapt educational programmes: Integrate a gender perspective into RAC-related curricula, raising awareness among students about the importance of gender equality and encouraging active participation from women.
- Build strong support networks: Establish women's networks within the RAC sector to facilitate knowledge exchange, experience sharing, and mutual support, fostering a global community of professionals.

On this International Women's Day, we call on governments, businesses, organisations, and society to join this global effort to achieve gender equality. By implementing these recommendations and driving cultural change, we can build a more inclusive, equitable, and sustainable future for all.

Happy International Women's Day!

VIEW VIDEO ON [OZONACTION YOUTUBE CHANNEL](#)

Source/Image: [UNEP OzonAction](#), 10, March 2025

2. Mentorship Programme to Strengthen Cooling Sector Launched on International Women's Day

Paris, France, 8 March 2025 — In celebration of [International Women's Day](#), the [International Network of Women in Cooling](#) (INWIC) officially launched its Mentorship Programme, a new online service designed to connect women professionals in the cooling sector across the world, encouraging knowledge exchange and career development in the industry.



Professionals in refrigeration, air-conditioning and heat pumps (RACHP) are invited to register as mentors or mentees and become part of the first cohort of this free service.

INWIC is an international network of organisations that promotes the role of women in the RACHP sector, contributes to improving the professional careers of women working or studying in cooling, promotes best practices including those related to the environment, and inspires future generations of women to join this important sector. UNEP OzonAction is a founding member of INWIC and supports the partnership in its role as an Implementing Agency of the Montreal Protocol's Multilateral Fund.

A skilled RACHP workforce is essential for the success of national Montreal Protocol compliance programmes, including those related to the phase out of hydrochlorofluorocarbons (HCFCs) and the phase down of hydrofluorocarbons (HFCs). With limited mentorship opportunities in the cooling sector worldwide, the Mentorship Programme aims to bridge the gap by providing an accessible platform for women and other professionals in the industry, including in developing countries. It is designed to be inclusive and accessible to professionals at all levels, including technicians, engineers, managers, and industry leaders. Recognizing that technical skills are critical in the cooling sector, the programme offers mentorship opportunities tailored to technicians seeking professional development and technical guidance, to gain insights into best practices, techniques, skills and career progression.

The global reach of the Mentorship Programme allows mentees to connect with experienced professionals from different countries, industries, and backgrounds, ensuring that expertise is shared across borders with fresh perspectives.

What is the INWIC Mentorship Programme?

The programme offers a three-month mentorship cycle, renewable, with an opportunity for mentees to gain insights from industry professionals and receive career guidance based on their goals. Mentors benefit from guiding the next generation of women professionals, expanding their own leadership skills, and contributing to the advancement of women in the field.

The mentorship can cover:

- Technical knowledge, including expertise in refrigeration, air conditioning, and heat pumps.
- Soft skills, such as leadership, communication and career development.
- Workplace challenges, including navigating career progression in a traditionally male-dominated industry.

Why join as a mentee?

The INWIC Mentorship Programme is free of charge and designed to support mentees at all career stages, whether they are early-career professionals, mid-career specialists, or individuals transitioning into leadership roles. Mentees can benefit from guidance and support from experienced professionals with key benefits:

Mentees will be matched with experienced mentors from around the world, providing exposure to different industry practices, insights, and career pathways in the cooling sector.

The mentorship is tailored to the mentee's specific needs, whether they seek guidance on technical knowledge, career progression, skills, or workplace challenges.

Through one-on-one mentorship, mentees receive valuable advice, encouragement, and professional insights, helping them navigate challenges, build confidence, and advance in their careers.

How does it work?

1. **Registration:** Participants sign up as a mentor, a mentee, or both.

- **Mentees:** The programme is open to INWIC members looking for guidance and support in their careers. If you're not yet a member, [join INWIC](#) today to participate! A link to register as a mentee will be accessible from your account.
- **Mentors:** INWIC members and INWIC affiliates, including male colleagues supporting gender diversity in the industry, can join the programme as mentors. [Join INWIC today](#) to participate! A link to register as a mentor will be accessible from your account.

2. **Matching process:** Mentees will be assigned a mentor automatically.

3. **Personalized mentorship:** Each mentorship relationship is tailored to the mentee's needs, with a personalized mentorship agreement. With a recommended three-month mentorship cycle (extendable), the frequency of meetings can be adjusted based on needs, accommodating different time zones and schedules.

Long-term change can be achieved through this initiative to ensure that women in cooling have the support and resources they need to thrive, to build a more inclusive, skilled, and empowered workforce. This in turn will help the cooling sector provide more societal benefits and contribute to the economy while ensuring strong environmental performance.

For more information: please contact Sonja Wagner: sonja.wagner@un.org

[Source/Image: UNEP Women](#) 7 March 2025

Equitable and equal access to resources, employment, remuneration and opportunities; some of the tools of empowerment to fulfil one's potential are not always available to everyone – especially women.



To mark this year's International Women's Day on 8 March, we spoke with five exceptional women in the field of ozone layer and environmental protection. Drawing on their personal experience, they spoke of what rights, equality and empowerment mean to them and whether, as a woman, they felt they had access to equal rights, equality and empowerment growing up and in their careers.

Mahnaz Sayahi, Ph.D research student at LSBU Heating and Cooling Research Group, former UNIDO Consultant on the Montreal Protocol

Pursuing a career in the energy sector as a young woman came with challenges. The industry has long been male-dominated, and early on, I encountered obstacles that many women in technical fields face. However, **I have always believed that women bring unique and sustainable perspectives to energy and environmental industries.**

My journey took a significant turn when I joined projects under the Montreal Protocol at UNIDO. Being part of a global effort to phase out ozone-depleting substances and improving energy efficiency was not just professionally rewarding but also personally empowering. I was fortunate to collaborate with both men and women who inspired me, helping me recognise my own capabilities and reinforcing the importance of gender inclusivity in engineering and environmental science in several countries.

Motivated by expertise and leadership of women in academia, I decided to deepen my knowledge in this field. Now, at the Heating and Cooling Group at London South Bank University (LSBU), I am studying strategies for decarbonising refrigeration systems in UK convenience stores, a sector where 65 per cent of staff are women. This representation is promising, and I hope my research helps create more sustainable business opportunities for them.

For me, ***rights, equality, and empowerment mean having the freedom to pursue one's passions without systemic barriers and being recognised for the value women bring.*** I am grateful for the women who paved the way and the colleagues who continue to support gender inclusivity in my field. I remain committed to advancing this path, ***ensuring that the next generation experiences even greater equality in energy and environmental sectors worldwide.***

Anastasia O'Rourke, Senior Managing Director, Carbon Containment Lab

As I write this, I realise that these days I tend to take it for granted that I have rights, I am treated equally, and I am empowered to take action – in my case, on climate change.

I am lucky to have grown up in a society and family that valued learning and that encouraged me to pursue my own opportunities and work on something that mattered to me. When I started working in sustainability in Australia in the late 1990s it wasn't even a "field", and there really wasn't a recognisable career path.

I've forged my own path and created opportunities for myself. Which was a lot of hard work that variously included fundraising, writing my own job descriptions, creating my own company, proposing classes to teach, and co-founding two different NGOs.

Of course, there have been set-backs, moments when people overlook my contributions or even present my ideas as their own. That is always a surprise, but I try to not get stuck in feeling bad or negatively about it and just keep moving on with grace and dignity. I also try to lead by example. At the Carbon Containment Lab and in teaching at Yale University, ***I try to infuse my team and my students with a spirit of self-empowerment, of continuous learning, and of creating opportunities both for ourselves and for others.***

Kylie Farrelley, General Manager Refrigerant Reclaim Australia

Women's right to access opportunities, resources, and recognition in our industry is crucial. My involvement with organisations like Refrigerant Reclaim Australia (RRA) and the United Nations Environment Programme's Technical Options Committee has reinforced my belief that ***when everyone has the right and opportunity to participate and lead, we create space for differing perspectives, driving improved outcomes.***

My career has shown me that rights are not about individual success but collective responsibility. Progress comes from ensuring that knowledge and opportunity, not gender, is the foundation of influence.

Equality means dismantling barriers and fostering real opportunities for growth. This includes embracing flexible work, encouraging women to take on challenges, investing in education, and learning from successful international models.

I have been fortunate to work in an industry where I have been respected and supported from

the beginning, 25 years ago. I have never had to choose between my career and my children, thanks to flexible arrangements, trust, and understanding.

I feel empowered when my ideas are met with support and enthusiasm. Having mentors who have championed my success has reinforced the importance of lifting others up and fostering inclusive workplaces.

True equality is about reshaping structures to help employees take supported risks and step outside their comfort zones.

The Montreal Protocol community has been instrumental in encouraging women to step into leadership. I am proud to be part of a network, including amazing women, that uplift and support each other, ensuring we thrive in roles that challenge and empower us.

Mackenzie Dobson, Associate, Alliance for Responsible Atmospheric Policy

As a career-oriented woman, protecting and empowering my right to work and the rights of my fellow female workforce are of the utmost importance to me. Growing up, my mother was the breadwinner of the family – she worked in corporate America until she hit a glass ceiling and rather than stagnation, she elected to start her own small business in the science and technology fields, with my father supporting her as her vice president in the company.

She set an example for me and my siblings, with my older sister now becoming a young executive in her company as well. ***Without my mother's influence, I would never have the courage to stand up and assert my voice in the workplace or move beyond imposter syndrome.***

I have been fortunate enough to work in places that do not diminish the opinions of women and have had several bosses stand up for me and my work. Moving forward, ***I aim to assist the other women coming after me, who will do bigger and better things. Taking part in women's advocacy, like participating in the Women's March here in Washington, D.C., is an opportunity I will never take for granted.***

Avipsa Mahapatra, Climate Campaign Director, Environmental Investigation Agency US

Growing up in India, I learned that societal expectations and systemic barriers seldom allow every voice to carry the same resonance. Reflecting on my journey, ***I see rights, equality and empowerment as both the aspirations of a just society and the yardsticks by which we measure its shortcomings.*** Later, as a young brown woman working globally as an environmental activist, I have seen how the fight for climate justice amplifies these broader inequities.

I've come to view the climate crisis not just as a challenge, but as an opportunity to reshape our world in a more inclusive and sustainable way. ***When women of colour stand at the front lines of environmental advocacy, we are not simply demanding a healthier planet; we are calling for a shift in power structures that have historically disregarded our communities.*** Lived experience is expertise, and when we centre the voices of those most impacted, we unlock smarter community-driven solutions and just policy.

To me, this is where real empowerment flourishes. By openly acknowledging existing inequalities, we create space to imagine a better and more equitable future. ***True change requires that we work together—across race, gender, and class—to dismantle***

outdated hierarchies with systems that empower every individual to exercise their rights equally.

4. Why We Can't Ignore Nitrous Oxide - The Climate Threat You've Never Heard Of

Source/image: [Ozone Secretariat](#), 7 March 2025



David Kanter and A.R Ravishankara are Co-Chairs of the Global Nitrous Oxide Assessment, recently released by the United Nations Environment Programme, the Food and Agricultural Organization of the United Nations and Climate and Clean Air Coalition.

When we think about climate change, carbon dioxide and methane are often the first culprits that come to mind, responsible for a large share of global warming. But lurking in the background is a super pollutant that many of us have never heard of: nitrous oxide. It's a gas 270 times more potent than carbon dioxide when it comes to trapping heat, and it's quietly sabotaging our chances of keeping global warming under 1.5°C, the goal set by the Paris Agreement.

The new United Nations Global Nitrous Oxide Assessment delivers a wake-up call that we can't afford to hit the snooze button on. Nitrous oxide emissions are rising faster than expected, and unless we take urgent action, this little-known gas will cause considerable damage- not just to the climate but to human health and the ozone layer, too.

The good news is that practical, immediately implementable solutions exist today, which can reduce nitrous oxide emissions by over 40%.

Why Should You Care About Nitrous Oxide?

Put simply, if we don't tackle nitrous oxide, we make it much harder to keep the planet from overheating. This gas is responsible for around 10% of global warming since the industrial revolution and its emissions are still on the rise. It's now the most significant ozone-depleting substance being emitted, threatening to roll back years of progress made by the Montreal Protocol, the international agreement to heal the ozone layer.

But now, if nitrous oxide emissions keep growing, we could see increased UV radiation levels. That means more cases of skin cancer, cataracts, and other health impacts.

It's Not Just About Climate, It's About Your Health

Reducing nitrous oxide emissions isn't just about preventing a distant future climate disaster.

It's about improving our lives right now. Air quality affects us all, whether we live in a bustling city or a rural area. Nitrous oxide emissions go hand-in-hand with other nitrogen compounds that make air pollution worse, and cutting these emissions could prevent up to 20 million premature deaths by 2050, primarily due to respiratory and cardio-vascular problems caused by poor air quality.

Nitrous oxide emissions also contribute to nitrogen pollution in water, creating runoff that degrades soil health, contaminating waterbodies, and harming ecosystems. So, by addressing this problem, we're not just helping the climate, we're protecting our food systems, water, and natural habitats.

The Agricultural Elephant in the Room

Nitrous oxide emissions come mainly from agriculture and farming, through the production of fertilizers we rely on to grow our food.

But we can continue to grow enough food to nutritiously feed the world while reducing nitrous oxide, we just need smarter farming. Changes like improving how we manage fertilizers, using more efficient farming techniques, and adopting better manure management practices can make a huge difference. These aren't pie-in-the-sky ideas; they're proven methods that can be rolled out right now if we choose to prioritize them.

While agriculture is the main player, it's not the only one. Nitrous oxide is also released from certain industrial processes, particularly in the chemical industry. The good news? These emissions are "low-hanging fruit," and they can be reduced quickly and affordably with existing technology.

The Time to Act is Now

If we don't act on nitrous oxide, our chances of limiting global warming to 1.5°C shrink considerably. A warmer world means more intense heat waves, wildfires, floods, and storms. It means food shortages, migration, and economic instability. It also means greater health impacts, as more people are exposed to UV radiation and polluted air.

But it's not all doom and gloom. While the Assessment raises the alarm, it also offers a roadmap for solutions. The tools to address nitrous oxide are already in our hands. What we need is the will to use them. Farmers can adopt more efficient practices, industries can implement existing emission-reduction technologies, and policymakers can create incentives for these changes to happen faster, including through encouraging dietary shifts towards less animal protein intake.

Whether you're concerned about the planet your children will inherit, the food you eat, the air you breathe, or even your risk of skin cancer, nitrous oxide matters. And addressing nitrous oxide emissions provides positive benefits on each of these fronts.

Let's make sure nitrous oxide is no longer the climate and health threat that nobody talks about. It's time to put it front and center, where it belongs.

Source/image: [CCAC](#), 24 February 2025

5. HFC regulations and emission trends in Japan, Europe, and the US: An overview

Explore the recent developments in HFC regulations and refrigerant emissions in Japan, Europe, and the USA, according to the January 2025 edition of JARN.

In Japan, the government aims to reduce HFC consumption to about 11 million tons of CO₂ equivalent by 2026. While progress has been steady, primarily through the development of equipment using low-GWP refrigerants, further stringent measures will be needed to meet future targets.



Refrigerant recovery rates have improved over the years, and in 2022 the estimated refrigerant emissions from commercial systems slightly decreased, aligning with the country's compliance with laws.

Europe has made significant strides since the implementation of the F-Gas regulation in 2006. Notable amendments in 2015 and in March 2024 emphasize stricter controls on HFC and HFO blends. These regulations also include mandatory certification for technicians working with low-GWP refrigerants and a ban on certain refrigerants with a GWP over 2500 for maintenance. According to JARN, these measures are expected to continue raising operational standards across the EU. [More information about the F-Gas regulation](#).

In the USA, the American Innovation and Manufacturing Act (AIM) of 2020 set an ambitious goal to reduce HFC production and consumption by 85% by 2036. Specific deadlines have been established for refrigerant transition in air conditioning and supermarket refrigeration systems. The Environmental Protection Agency (EPA) has made significant progress in HFC recovery, with a notable increase in recovery volumes, particularly in 2023, as reported by JARN. These steps are critical for reducing CO₂ emissions and supporting the transition to more sustainable refrigerants. [More information about the HFC regulations in the USA](#)

Source/Image: [IIR](#), 3 March 2025

AFRICA

6. SADC RAC country phase-out of HCFCs and HFCs in line with international protocols

In a presentation delivered to the SADC RAC, president Caign Manyukwa outlined the progress and challenges among member NOUs.

In a presentation delivered to the Southern African Development Community Refrigeration and Air Conditioning (SADC RAC) members, Manyukwa, reviewed progress in the phase-out of hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs) in line with international protocols.



SADC RAC, president Caign Manyukwa. All images supplied by © Cold Link Africa

This effort is part of a broader strategy to reduce the environmental impact of refrigerants, particularly in alignment with the Montreal Protocol and its subsequent Kigali Amendment.

“By December 2024, SADC RAC countries are committed to reducing their HCFC consumption by 60%, based on a baseline of 5 120 ozone depleting potential tons. This target has already been exceeded ahead of schedule, with the region already achieving substantial reductions. This sets a strong foundation for the target of a 67.5% reduction in HCFC consumption by 2025, which is in line with the Montreal Protocol’s objectives,” he says.

In the long-term, the SADC region is set to allow only 2.5% of HCFCs to be imported by 2026, a significant step toward the complete phase-out of HCFCs by 2030. The 2.5% import ceiling will be maintained from 2026 through to 2030, after which the goal is to eliminate HCFC consumption entirely.

Manyukwa noted that the reduction targets present significant challenges, particularly for countries that rely on neighbouring nations for access to refrigerants. He explained that, while South Africa has taken on a major role in supplying refrigerants to the region, the 2.5% import ceiling means that neighbouring countries will face limited quantities of refrigerants in the years ahead.

This restriction, while crucial for environmental protection, poses logistical and operational challenges. Manyukwa stressed the need for regional collaboration to overcome these barriers, especially in light of resource constraints and the growing demand for refrigerants in the region.

One key solution proposed to address these challenges is reclamation and recovery. Manyukwa emphasised that through intensified efforts in refrigerant recovery, SADC RAC countries can mitigate the effects of limited refrigerant supplies. By recovering and recycling refrigerants, countries can continue to maintain their refrigeration and air conditioning equipment without relying on imports of new refrigerants.

Manyukwa also shared positive updates from specific countries within the region. For example, Botswana achieved a remarkable 35% reduction in HCFC consumption by 2020. The country also made significant strides in building local capacity by training 115 technicians. Meanwhile, eSwatini has reached an impressive milestone of being 100% HCFC-free and has fully transitioned to the use of hydrocarbons as refrigerants.

However, Manyukwa cautioned that financial and technical constraints remain major hurdles for many countries in the region. As such, there is a pressing need for international support, both in terms of funding and technical expertise, to ensure that SADC nations can continue their progress toward the complete phase-out of HCFCs and HFCs. [Read more...](#)

Source/image: [Cold Link Africa](#), 1 March 2025

7. La Tunisie met en place un système national de récupération et de recyclage des fluides frigorigènes

Un système national de récupération, recyclage et régénération des fluides frigorigènes fluorés, régulés par le Protocole de Montréal, est en cours de mise en œuvre par l'Unité Nationale d'Ozone (UNO) au sein de l'Agence Nationale de Protection de l'Environnement (ANPE), en collaboration avec l'Organisation des Nations Unies pour le Développement Industriel (ONUDI).



Selon l'UNO, « ce système permettra à la Tunisie de récupérer ces réfrigérants et de les réutiliser dans les systèmes de réfrigération et de climatisation. Il aura un impact positif tant sur le plan environnemental qu'économique, tout en favorisant la transition vers une économie circulaire. » Les fluides frigorigènes sont des substances utilisées dans les systèmes de refroidissement (réfrigération et climatisation) en raison de leurs propriétés thermodynamiques. Ces fluides se déclinent en plusieurs catégories, selon leur composition chimique.

Les chlorofluorocarbures (CFC), les hydrochlorofluorocarbures (HCFC) et les hydrofluorocarbures (HFC) font l'objet d'une réglementation stricte au niveau mondial, notamment sous l'égide du Protocole de Montréal. Ces fluides frigorigènes fluorés ont des effets nocifs sur l'environnement. Lorsqu'ils sont émis dans l'atmosphère, les gaz chlorés (CFC et HCFC) contribuent à l'appauvrissement de la couche d'ozone. De plus, les CFC, HCFC et HFC sont des gaz à effet de serre (GES) puissants, dont le potentiel de réchauffement global (PRG) peut être jusqu'à 10 000 fois supérieur à celui du dioxyde de carbone (CO₂), participant ainsi au réchauffement climatique. [Lire la suite...](#)

Source/image : [La Presse](#), 9 mars 2025

ASIA AND THE PACIFIC

8. New study reveals methane's role in ozone layer recovery

BEIJING -- Chinese researchers have revealed that increases in methane emissions could have an unexpected positive impact on future ozone recovery, shedding new light on climate governance.

The study, led by researchers from Beijing Normal University, was recently published in the journal *Advances in Atmospheric Sciences*.

The ozone layer acts as Earth's protective shield, blocking harmful ultraviolet radiation. While international efforts have helped curb ozone-depleting substances, the future recovery of the ozone layer faces new uncertainties due to global warming and human activities.

The research highlights the dual role of methane in ozone recovery. On one hand, methane is a potent greenhouse gas that contributes to global warming, while on the other hand, it has complex chemical interactions in the atmosphere that can help the recovery of the stratospheric ozone layer, explained Xie Fei, a professor at Beijing Normal University.

"Just as ozone can be harmful at ground level but beneficial in the stratosphere, methane and

other ozone precursors exhibit similar dual characteristics," Xie said.

"Understanding these dual effects is critical for predicting future ozone recovery and its implications for climate," he added.

The research team conducted experiments to analyze the impacts of methane, carbon dioxide, and sea surface temperature on stratospheric ozone under the Representative Concentration Pathway (RCP) 8.5 scenario in 2050. The RCP 8.5 scenario is a future climate pathway that assumes high greenhouse gas emissions and limited climate mitigation efforts, leading to significant global warming by the end of the century.

The results revealed that rising methane emissions could have a particularly strong positive impact on ozone recovery in both the Arctic and Antarctic regions.

"Our ultimate goal is to provide a comprehensive understanding of ozone recovery pathways and their broader implications," said Xie, adding that they will further refine their models to account for additional factors influencing ozone recovery.

"This will help policymakers and scientists make better decisions to address both ozone layer restoration and climate change," he added.

Source/image: [Xinhua](#), 11 March 2025

EUROPE AND CENTRAL ASIA

9. Kyrgyzstan eliminates HCFCs a decade ahead of schedule

In 2011, Kyrgyzstan stood at a critical crossroads. With economic growth accelerating, demand for cooling systems was surging, and with it, the country's reliance on hydrochlorofluorocarbons (HCFCs)—ozone-depleting substances used in refrigeration and air-conditioning. Projections indicated that without intervention, HCFC consumption could increase by 40 percent within five years.



Recognizing the urgent need for action, Kyrgyzstan took a decisive step that year when it submitted a Hydrochlorofluorocarbon Phase-Out Management Plan (HPMP) for approval at the 63rd meeting of the Executive Committee of the Multilateral Fund. The plan set out a two-stage strategy aimed at limiting future consumption, introducing alternative technologies, and ensuring compliance with international commitments.

Laying the foundation: Stage I of the HCFC phase-out

While not a domestic producer of HCFCs, Kyrgyzstan imported the substances—in particular, HCFC-22—for servicing commercial and industrial equipment, air-conditioning systems, and refrigerated trucks. The first stage of the HPMP focused on establishing regulatory controls to manage HCFC imports and providing the technical capacity needed to support their eventual phase-out. A quota system was introduced to regulate both bulk HCFC substances and pre-filled refrigeration and air-conditioning (RAC) equipment entering the country. In addition, training was provided for customs and border officers to monitor and control HCFC trade.

RAC technicians received training in proper servicing practices and refrigerant management, and refrigerant recovery equipment and service tools were distributed to training centers and vocational schools to support continued capacity-building.

By 2015, these efforts led to a significant reduction in HCFC consumption, exceeding the country's initial commitment far surpassing the target of a 10 percent reduction required under the Montreal Protocol.

Accelerating the transition: Stage II of the HCFC phase-out

Building on this early success, Kyrgyzstan embarked on the second phase of the HPMP in 2015, with an ambitious plan for accelerated phase-out. The government committed to reducing HCFC consumption by 35 percent in 2016, 67.5 percent in 2018, and 97.5 percent in 2020, leaving only a limited servicing tail of 2.5 percent per year until 2025 for the maintenance of existing equipment.

During this phase, efforts focused on expanding the regulatory framework, introducing tighter restrictions on HCFC imports, and banning the use of specific HCFC substances, including HCFC-141b and HCFC-142b. The phase-out strategy also included the roll-out of an end-user incentive program to support businesses transitioning to R-290-based refrigeration.

Kyrgyzstan also continued strengthening technical expertise with training in the safe handling of flammable and toxic refrigerants such as ammonia and CO₂.

As a result, by 2020, Kyrgyzstan had completely eliminated HCFC consumption, successfully phasing out 66.6 metric tonnes (4.1 ODP tonnes) at an accelerated pace, well ahead of the 2030 deadline set by the Montreal Protocol.

A future focused on energy efficiency

With the phase-out successfully completed, Kyrgyzstan turned its attention to enhancing energy efficiency in the refrigeration, air-conditioning, and heat pump (RACHP) sector. In 2023, the government launched a new initiative aimed at ensuring that the transition away from HCFCs also contributed to broader climate mitigation and sustainable energy use.

A case study in commitment and implementation

Kyrgyzstan's successful and accelerated phase-out of HCFCs demonstrates how structured policy interventions, strong regulatory frameworks, and investment in technical capacity can drive significant environmental progress. By meeting its commitments well ahead of schedule—and going beyond what was required—the country has set a strong example of how proactive action can yield lasting benefits.

Source/image: [Multilateral Fund for the Implementation of the Montreal Protocol](#), 3 March 2025

10. Driving Consistent and High-Quality Training on Alternative Refrigerants Across Europe



Photo 1: The Stakeholder group at the last Stakeholder Meeting, 24th February 2025 at IKKE, Duisburg (Germany)

Real Alternatives is an official European Training Programme providing training and a certification system on low GWP alternative refrigerants (HFOs, Hydrocarbons, Carbon dioxide and Ammonia). The trainings are constantly delivered to both European trainers and professionals and the training materials are available in over 20 languages and implemented in 23 countries, ensuring widespread accessibility.

In the past 7 years, the Project has achieved significant milestones, establishing a strong network of stakeholders that actively contribute to developing updated and standardized training across nearly all EU Member States.

Today, we represent 25 associations including International and European bodies such as IIR (International Institute of Refrigeration) and AREA (Air conditioning and Refrigeration European Association for contractors) along with numerous training providers. Please refer to the Annex to consult the full list of partners.

As the refrigeration and air conditioning sector transitions to the phase out of fluorinated gases, the Real Alternatives initiative continues to play a crucial role in harmonizing training and certification across Europe. With the adoption of the Implementing Regulation (EU) 2024/2215, the need for consistent, high-quality training has never been more critical.

A Ready-to-Use Framework for National Decrees

By providing structured training materials, certification schemes, and guidance for national implementation, the initiative ensures that technicians and trainers are equipped with the necessary knowledge, skills, and tools to safely handle low-GWP refrigerants. This includes risk assessment, minimum distances for safe operations, necessary tools, and standardized procedures—all critical components ensuring safety and efficiency in real world applications.

As Member States work toward the implementation of EU Reg. 2024/2215, Real Alternatives provides a valuable model for national training and certification schemes. Many of our partners are directly engaged with institutional bodies and regulatory authorities, actively contributing to the development of national laws that will shape the future of refrigeration training in their respective countries

Since 2019, we have been providing this training, with nearly 3,000 certificates already issued, demonstrating the widespread adoption and effectiveness of our approach across Europe.

The structured approach provided by Real Alternatives offers a ready-to-adopt framework that can be applied at a national level to ensure compliance with EU requirements.



Photo 2: Practical Session at the TOT at IKKE, Duisburg (Germany)

The Real Alternatives training and assessment schemes is on line with the Annex I of the new EU F-gas Certification Implementing Act 2024/2215 for HC and CO2 and fulfils the criteria of Art 10 point “a” of the same regulation.

Harmonizing Training Through the Train-the-Trainer Program

A key component of this work is the Train-the-Trainer program, which focuses on harmonizing teaching methodologies and certification standards. This initiative is essential in supporting countries as they draft their national certification schemes, ensuring alignment with EU regulations and fostering a uniform approach to refrigerant training.

The currently ongoing Train-the-Trainer session at IKKE training centre in Duisburg, Germany which will run from the 24th of February to the 28th, serves as an excellent opportunity for partners to experience first-hand well established training structures that can be replicated in their own countries. By seeing exemplary training facilities, methodologies, and best practices in action, stakeholders can gain valuable insights into how to implement similar programs within their national frameworks.

Call to Action: A Resource for EU Decision Makers

With its continued success and growing impact, Real Alternatives stands as a cornerstone in the industry's transition towards sustainable and safe refrigerant best practices. By working closely with partners and stakeholders, the initiative is shaping the future of refrigeration training across Europe, reinforcing both environmental goals and workforce development.

We urge EU decision-makers, particularly those in the Ministries of Environment of the 27 EU Member States, to incorporate REAL Alternatives' training materials when drafting their national decrees for the following equivalences:

- the Real Alternatives HC certificate as evidence for the additional training that existing F-Gas certified personnel will have to undergo to comply with the provisions of A1/A2 certification
- the Real Alternative CO2 certificate as evidence for obtaining certification B under regulation 2025/2215

11. Mobile air conditioning in rail vehicles



The air-conditioning systems in the ICE 3 class 403 train use ambient air for cooling.

Source: Deutsche Bahn AG

Rail vehicles include local and long-distance trains, suburban fast trains, underground trains and trams. The energy for heating is provided electrically or with diesel fuel. Mobile air conditioning systems in rail vehicles are usually charged with HFC refrigerants. HFCs, or hydrofluorocarbons, are very potent greenhouse gases.

Rail vehicle heating and cooling systems both produce greenhouse gas emissions. In Germany, some 24 tonnes of the refrigerant R134a leaked from rail vehicle air conditioning systems in 2022, which is equivalent to the greenhouse effect of 34,700 tonnes of CO₂. The European Union intends to gradually reduce the production and use of HFCs and replace them with less harmful substances in a phase out approach regulated by the [EU F-gas Regulation Nr. 2024/573](#). In some systems the combination of cooling with a heat pump function is possible which can reduce the energy needed for heating and therefore reduce CO₂ emissions as well.

Alternatives to HFC air conditioning in the rail sector are refrigerant cycles with CO₂ or systems based on air cycle technology. For CO₂-based cycles, there were only a few tests in rail vehicles, whereas systems based on air cycles have been already in regular service for a number of years in one class of the ICE high-speed train. Reliable data on the economic efficiency of these techniques is now available. In a [research project](#), optimized air conditioning system based on air-cycle technology had been tested in a train in regular service over a period of two years. Air conditioning systems based on air-cycle technology show advantages over usual air conditioning systems with fluorinated refrigerants in terms of energy efficiency and life cycle costs.

Currently, the German rail industry is investigating air conditioning systems based on hydrocarbons. One project focussed on air conditioning systems using propane as a refrigerant. A local train was equipped with a propane air conditioning system. The system was operated for over a year in parallel with a conventional air conditioning system using the fluorinated refrigerant R134a. The propane air conditioning system worked safely and was at least as efficient as the one using R134a. The report on the project can be found [here](#). This type of system with propane is now being used in the long-distance train ICE 3neo.

LATIN AMERICA AND THE CARIBBEAN

12. Caribbean Countries Move Toward Energy Sustainability with New Regional Project

Washington, D.C., February 28, 2025: The World Bank's Board of Executive Directors approved today a new project designed to improve energy efficiency and expand the use of renewable energy across three Caribbean countries: Grenada, Guyana and Saint Lucia. The \$131.87 million project will partner with the Organization of Eastern Caribbean States and the Caribbean Centre for Renewable Energy and Energy Efficiency to address the region's critical energy challenges and drive economic growth by reducing dependence on imported fossil fuels.

The Caribbean is highly dependent on imported petroleum products for electricity generation and imports account for around 90% of petroleum consumed, far exceeding the global average of 21%. The region's aging infrastructure, with 96% of power generation relying on diesel-fired plants, further complicates matters, in addition to small, isolated grids being at risk from hurricanes, floods, and droughts. In Grenada, many generating units will reach the end of their economic life in the next two to four years. Additionally, the cost of rebuilding infrastructure after natural disasters, such as the 6% of GDP spent to restore Grenada's grid after Hurricane Ivan (2004), highlights the economic burden of these challenges.

The new Caribbean Efficient and Green Energy Buildings Project will focus on two key goals: reducing energy consumption in public buildings and increasing the adoption of renewable energy systems. It will retrofit buildings with energy-efficient technologies and integrate renewable energy systems such as rooftop solar panels into public infrastructure. Approximately 500 public buildings will be retrofitted to enhance energy efficiency, reducing energy consumption by at least 20%, delivering both economic savings and environmental benefits. These efforts will not only decrease reliance on imported fossil fuels but will also build resilience against power outages, which are common in the region due to extreme weather events like hurricanes and floods.

The project will also provide assistance for participating countries in developing and implementing regulatory frameworks that encourage green energy investments, including guidelines for energy performance standards, net billing for solar power, and policies to integrate electric vehicles and charging infrastructure. Harmonizing regulations across countries will allow for greater economies of scale and cost savings, as well as strengthen the region's collective energy security. A key component of the project will emphasize capacity-building, including increasing female participation in the energy sector.

"This project is structured to foster regional cooperation, allowing participating countries to benefit from shared resources and collaboration. By working together, Saint Lucia, Grenada, and Guyana can address energy sector constraints and prepare for a sustainable, low-carbon future," said Lilia Burunciuc, World Bank Director for the Caribbean. "The Caribbean stands to gain significant economic benefits from this project, including the creation of green jobs, lower electricity bills for citizens, and enhanced energy resilience."

The project is funded by a combination of donors and mechanisms. The World Bank's International Development Association is providing concessional financing of \$40 million to

Grenada, \$30 million to Guyana, and \$30 million to Saint Lucia. Additionally, grants of \$3.3 million will be provided to the Organization of Eastern Caribbean States Commission to support pooled procurement at the regional level, and \$0.7 million to the Caribbean Centre for Renewable Energy and Energy Efficiency which will provide technical assistance. The Global Environment Facility is contributing a US\$1.791 million grant to Saint Lucia and Grenada will receive a loan of US\$8.5 million from the Clean Technology Fund, while a US\$8.2 million loan and US \$0.38 million grant is provided to Guyana from the Canada Clean Energy and Forest Climate Facility.

Source/image: [World Bank Group](#), 28 February 2025

13. La protection de la couche d'ozone est promue à Holguín



Le ministère des Sciences, de la Technologie et de l'Environnement de la province d'Holguín met en œuvre un vaste programme de protection de la couche d'ozone, qui comprend la réduction des gaz réfrigérants et l'éducation écologique.

Norkis Ochoa Aguilera, chef du département des instruments et politiques environnementaux et spécialiste de ce programme, a déclaré à l'ACN que depuis 2020, 29 entités ont reçu le prix national sans substances appauvrissant la couche d'ozone (SAO), y compris des industries et des hôtels.

Elle a déclaré que 76 entreprises ont également signé la déclaration volontaire pour la réduction des hydrofluorocarbures (HFC) et l'élimination des hydrochlorofluorocarbures (HCFC), qui intègre l'utilisation de la science et de l'innovation technologique avec des pratiques respectueuses de l'environnement.

L'expert a souligné que ces projets comprennent des activités d'éducation environnementale avec des enfants et des jeunes de différents niveaux d'éducation, qui participent à des journées de nettoyage de l'environnement, à la plantation d'arbres, à la collecte de matières premières, à des concours pour enfants, entre autres activités.

En outre, les secteurs public et privé sont formés grâce à des cours sur les bonnes pratiques de réfrigération, dispensés à l'Institut technologique de Holguín, qui visent à élever la culture de conservation de l'environnement des techniciens, des travailleurs et des gestionnaires de cette activité.

En 2025, le programme de protection de la couche d'ozone à Cuba célèbre son 30e anniversaire et la province se consacre à la mise à jour de l'inventaire des équipements contenant des HFC et des HCFC et de leurs alternatives de remplacement conformément aux normes internationales en vigueur.

Cuba est l'un des pays signataires du protocole de Montréal, approuvé le 16 septembre 1987 dans cette ville canadienne, dans le but de promouvoir le remplacement progressif des produits chimiques et industriels nocifs pour la nature. (Source : ACN)

Source/image : [jahora](#), 3 mars 2025

NORTH AMERICA

14. International Institute of Refrigeration (IIR) engages in key discussions at ASHRAE Winter Conference 2025



The IIR took an active role in the 2025 ASHRAE Winter Conference, where global refrigeration and HVAC leaders gathered to explore advancements in sustainable technologies, industry challenges, and future opportunities for collaboration.

The 2025 ASHRAE Winter Conference, held on 8-12 February in Orlando, Florida, brought together global leaders in refrigeration and HVAC to discuss advancements in sustainable technologies, industry challenges, and future opportunities for collaboration. Organised by ASHRAE, the event provided a platform for knowledge-sharing and international cooperation, with a strong focus on innovation and inclusivity in the sector.

The IIR played an active role in these discussions, with Director General Yosr Allouche engaging in key meetings and panel sessions. Notably, the conference featured interactions with the US National Committee to the International Institute of Refrigeration and continued partnership with the organisation. A key part of the event was the ASHRAE Associate Society Alliance, where refrigeration associations from around the world shared their unique challenges and priorities. As part of the new strategy, the IIR has introduced new services available to associations from member countries and emphasised its commitment to providing them with open access to information. The IIR has also actively participated in the ASHRAE Refrigeration Technology Committee for Comfort, Process, and Cold Chain, sharing international perspectives and IIR activities worldwide. This collaboration aims to foster cross-pollination of ideas with the American Society and advance critical knowledge in the field.

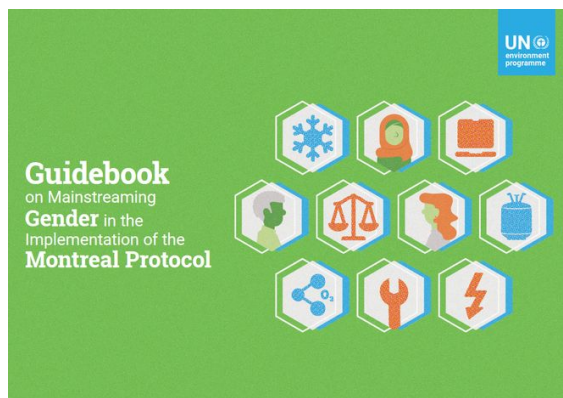
Further highlighting the importance of inclusivity in the industry, Dr Allouche took part in the panel **“Stronger Together: How Male Allies Help Advance Women in HVAC”** moderated by **Colleen Keyworth** from INWIC. This discussion underscored the urgent need to create more opportunities for women in refrigeration and HVAC, with female industry leaders sharing their experiences and emphasising the importance of mentorship in attracting and retaining diverse talent. The panel, which included Carrier Enterprises’ Director of Product Management **Kristin Gallup**, U-3ARC President **Madi Sakandé**, former AREA President **Marco Buoni**, AIRAH President **Mikaila Ganado**, and World Refrigeration Day founder **Steve Gil**, explored the critical role of male allies in fostering gender equity. The session concluded with a Q&A, offering attendees practical insights on how to promote inclusivity in the workplace.

Building on this commitment to diversity, the IIR reaffirmed its dedication to securing a skilled workforce for the future. Dr Allouche presented a study by former IIR intern Rebecca Dalphin (Hamilton University) on [women in North America's RACHP industry](#), based on insights from 400 professionals already making a significant impact in the field. By promoting inclusivity and raising awareness, the IIR supports industry growth and a sustainable future.

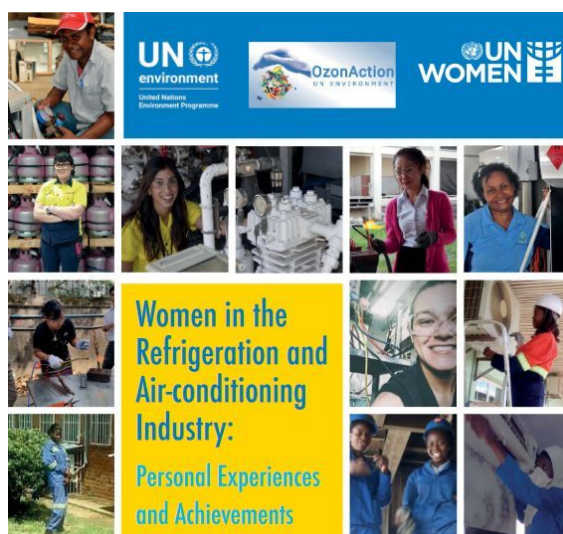
These discussions reaffirmed the shared commitment to advancing refrigeration technologies in a way that is both sustainable and inclusive. Through active collaboration and innovation, the IIR continues to play a pivotal role in shaping the future of the refrigeration science and industry.

Source/image: [IIR](#), 21 February 2025

PUBLICATIONS



[Guidebook on Mainstreaming Gender in the Implementation of the Montreal Protocol](#) : This Guidebook on Mainstreaming Gender in the Implementation of the Montreal Protocol has been developed to help advance the agenda of gender equality and women's empowerment under the implementation of Montreal Protocol by means of the National Ozone Units and national stakeholders mainstreaming gender issues into their daily works and operations.



[Women in the Refrigeration and Air-conditioning Industry: Personal Experiences and Achievements](#) :

UNEP OzonAction, in cooperation with UN Women, has compiled this booklet to raise awareness of the opportunities available to women and to highlight the particular experiences and examples of women working in the sector and to recognise their successes. Being aware of these experiences and the opportunities available can encourage and inspire other women to consider similar careers and support girls to seek to follow a career path in this fast growing and important sector.

FEATURED

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