

# OzoNews

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

**Volume XXIII | 30 October 2023**

## In this issue:

1. Kigali Amendment latest ratifications
2. Summary of the 35<sup>th</sup> Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP35), 22–27 October 2023
3. The Montreal Protocol: multilateralism done right
4. Montreal Protocol delegates replenish the Multilateral Fund and address emerging challenges
5. Nationally Determined Contributions (NDC) Helpdesk for the Cooling Sector
6. Researchers Develop 'Cost-Effective' Ultrasonic Leak Detection System for Flammable Refrigerants in Smaller Equipment
7. Cooling and health experts join forces for African sustainable vaccine network
8. Vietnam strives to cut use of chemicals harmful to ozone layer
9. Delegación de Perú viaja a Colombia para fortalecer sus capacidades institucionales
10. Management of Certain Hydrofluorocarbons and Substitutes under Subsection (h) of the American Innovation and Manufacturing Act
11. New rules to tackle "refillable" cylinder loophole

## GLOBAL

### 1. Kigali Amendment latest ratifications

Congratulations to the latest countries which have ratified the Kigali Amendment:

**Belize, 3 October 2023**

**Kenya, 22 September 2023**

**Republic of Moldova, 22 September 2023**

**Egypt, 22 August 2023**



At the Twenty-Eighth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, held in Kigali from 10 to 15 October 2016, the Parties adopted, in accordance with the procedure laid down in paragraph 4 of article 9 of the 1985 Vienna

Convention for the Protection of the Ozone Layer, a further amendment to the Montreal Protocol as set out in Annex I to the report of the Twenty-Eighth Meeting of the Parties (Decision XXVIII/1).

Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Status of Ratification 15 October 2016 to [date](#).

**United Nations Treaty Collection**

Image: UN Treaty Collection website

**2. Summary of the 35<sup>th</sup> Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP35), 22–27 October 2023**

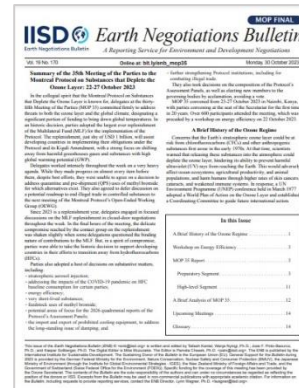
In the collegial spirit that the Montreal Protocol on Substances that Deplete the Ozone Layer is known for, delegates at the thirty-fifth Meeting of the Parties (MOP35) committed firmly to address threats to both the ozone layer and the global climate, designating a significant portion of funding to bring down global temperatures. In an historic decision, parties adopted the largest ever replenishment of the Multilateral Fund (MLF) for the implementation of the Protocol. The replenishment, just shy of USD 1 billion, will assist developing countries in implementing their obligations under the Protocol and its Kigali Amendment, with a strong focus on shifting away from harmful greenhouses gases and substances with high global warming potential (GWP).

Delegates worked intensely throughout the week on a very heavy agenda. While they made progress on almost every item before them, despite best efforts, they were unable to agree on a decision to address quarantine and pre-shipment (QPS) uses of methyl bromide for which alternatives exist. They also agreed to defer discussion on a potential roadmap to end illegal trade in controlled substances to the next meeting of the Montreal Protocol's Open-Ended Working Group (OEWG).

Since 2023 is a replenishment year, delegates engaged in focused discussions on the MLF replenishment in closed-door negotiations throughout the week. In the final hours of the meeting, the delicate compromise reached by the contact group on the replenishment was shaken slightly when some delegations questioned the binding nature of contributions to the MLF. But, in a spirit of compromise, parties were able to take the historic decision to support developing countries in their efforts to transition away from hydrofluorocarbons (HFCs).

Parties also adopted a host of decisions on substantive matters, including:

- stratospheric aerosol injection;
- addressing the impacts of the COVID-19 pandemic on HFC baseline consumption for certain parties;
- energy efficiency;
- very short-lived substances;
- feedstock uses of methyl bromide;



- potential areas of focus for the 2026 quadrennial reports of the Protocol's Assessment Panels;
- the import and export of prohibited cooling equipment, to address the long-standing issue of dumping; and
- further strengthening Protocol institutions, including for combating illegal trade.

They also took decisions on the composition of the Protocol's Assessment Panels, as well as electing new members to the governing bodies by acclamation, avoiding a vote. MOP 35 convened from 23-27 October 2023 in Nairobi, Kenya, with parties convening at the seat of the Secretariat for the first time in 20 years. Over 600 participants attended the meeting, which was preceded by a workshop on energy efficiency on 22 October 2023. [...]

**IISD, Earth Negotiations Bulletin (ENB), Vol. 19 No. 170, 30 October 2023**

*Image: IISD*

**See also >>> [Ozone Secretariat website related to the Thirty-Fifth Meeting of the Parties](#)**



### **3. The Montreal Protocol: multilateralism done right**

Speech delivered by Inger Andersen, UNEP Executive director for the Opening of high-level segment, 35<sup>th</sup> Meeting of the Parties to the Montreal Protocol (MOP35), 26 October 2023, Nairobi, Kenya

Excellencies, colleagues, and friends,

Welcome to Nairobi, Kenya, the home of the United Nations Environment Programme (UNEP) since 1972.

This 35<sup>th</sup> Meeting of the Parties to the Montreal Protocol (MOP35) is part of the growing emergence of Nairobi as an environmental hub. A hub that unites action across the whole triple planetary crisis: the crisis of climate change, the crisis of nature and biodiversity loss, and the crisis of pollution and waste.

MOP35 here comes hot on the heels of an important meeting of the Convention on Biological Diversity. Just before next month's negotiations on the deal to end plastic pollution. Ahead of February's 6<sup>th</sup> UN Environment Assembly, where we will seek effective, inclusive, and sustainable multilateral actions across the triple planetary crisis.

The Montreal Protocol is, of course, a hugely important part of this united action. In fact, this agreement has been a trailblazer for over three decades. As you, the Parties know, the Montreal Protocol has protected human health and ecosystems by phasing out harmful ozone-depleting substances. And the Protocol has delivered huge climate benefits: many of these substances were also greenhouse gases and the ecosystems you protected now store carbon that would otherwise be in the atmosphere. My thanks for your hard work and commitment.

My thanks also to the assessment panels of the Montreal Protocol. Let me appreciate Paul Newman and John Pyle, in particular, two SAP Co-Chairs for whom this is their last meeting, and Keiichi Ohnishi, Co-Chair of Medical and Chemicals Committee, who is also leaving.

The 2022 quadrennial assessment reports the panels have produced raised important emerging issues for the Protocol to address, such as increasing HFC-23, very short-lived substances and some CFCs in atmosphere, and addressing the feedstock uses of controlled substances that are exempted from controls. The significance of N<sub>2</sub>O as ozone depleting substance not controlled by the Protocol, is also increasing.

These emerging issues demonstrate the importance of science. And they show how the Montreal Protocol delivers impact beyond its mandate. These findings, as well as the Montreal Protocol's assessment process itself, are linked with important UNEP-led processes – such as the Global Environment Outlook 7, an important UNEP assessment on the need for caution around geoengineering, and negotiations on the science-policy panel on chemicals, waste and pollution.

So, friends, you have indeed achieved much. And the packed agenda at this MOP shows that there is a lot more work to be done. Please allow me to mention three out of the many challenges that I believe you can meet.

**One, decisive replenishment of Multilateral Fund.**

The funding estimate for the 2024-2026 triennium, at US\$1 billion, is the highest in history. With good reason. These funds are needed to support action on phasing out hydrochlorofluorocarbons (HCFCs) and phasing down hydrofluorocarbons (HFCs) – the latter of which is the central goal of the Kigali Amendment and crucial to slowing climate change. I ask you to deliver a decisive decision.

**Two, full ratification of the Kigali Amendment.**

A strong decision on funding will increase confidence and bolster ratifications of the Kigali Agreement. And make no mistake: we are aiming for universal ratification, the power of which was demonstrated during the phase-down of ozone-depleting substances. As of earlier this month, 43 nations still had not ratified the Kigali Amendment. Regardless of what happens with replenishment, I call on every nation that has not done so to close this critical gap by ratifying the amendment.

**Three, a hard push on energy efficiency.**

We know where the world stands on climate change. Climate impacts are becoming more frequent, intense and deadly every year. It is often the very poorest or those who have contributed the very least to climate change who suffer the most. At the same time, global efforts to cut greenhouse gas emissions under the Paris Agreement are still not strong enough. As a result, the Kigali Amendment is becoming ever more important.

Yes, phasing down HFCs could avoid warming of up to 0.5°C by 2100, which would be a huge win. But you have the chance to double these benefits by taking advantage of the shift to new gases to design cooling equipment that is more energy efficient.

You held a workshop on the issue prior to this MOP and discussed how this is not just about slowing climate change. We need to increase the availability of, and access to, affordable and sustainable cooling: to protect vulnerable communities against intense heat and reduce food losses across value chains in developing nations.

So, I ask you to seize this opportunity with both hands.

I would also like to draw your attention to the Global Cooling Pledge, which is being championed by the United Arab Emirates and will feature at COP28.

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The Pledge intends to raise ambition through targets on reducing cooling-related emissions, improving energy efficiency alongside the HFC phase-down, and increasing access to sustainable cooling.

Achieving the Pledge's targets would cut emissions by approximately 78 billion tonnes of CO<sub>2</sub> equivalent between 2022-2050, improve the lives of hundreds of millions of people and realize huge financial savings for governments.

UNEP is supporting the pledge through the Cool Coalition. As such, I ask everyone to consider joining the pledge and mobilizing your peers on the road to COP28.

Friends,

I am asking a lot of you. But you, the Parties, have shown you are up to the task. You know how much we hold up the Montreal Protocol as an example to other conventions and treaties. When I attended negotiations for the new Global Framework on Chemicals in Bonn, I told chemicals manufacturers reticent to change their business models to look to the cooling industry for inspiration. I will make the same point next month here in Nairobi at INC-3, when negotiations on the zero draft of the legally binding agreement to end plastic pollution begin.

When industries use chemicals that kill and make people sick, harm the planet and damage their own long-term profits, they must change. It's a case of adapt or die. Nations and industry, under the Montreal Protocol, showed the benefits of embracing and driving change.

So, I ask you to keep leading the way. Pass strong decisions this week. Show the world how multilateralism done right delivers big. And ensure that the Montreal Protocol continues to protect people and planet and be that shining example of what multilateralism can deliver.

In closing, let me extend my deep thanks to the chair and president of this MOP period for extraordinary leadership and wish all the very best to the incoming chair.

Thank you.

**[The United Nations Environment Programme, 26 October 2023](#)**

*Image: IISD*

**See also >>>**

- [Ozone Secretariat website related to the Thirty-Fifth Meeting of the Parties](#)
  - [IISD, Earth Negotiations Bulletin \(ENB\), Vol. 19 No. 170, 30 October 2023](#)
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#### 4. Montreal Protocol delegates replenish the Multilateral Fund and address emerging challenges

**NAIROBI, 30 OCTOBER 2023** - Parties and other stakeholders convened for the Thirty-Fifth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP35) in Nairobi, Kenya, from 23 to 27 October 2023, the first MOP in more than 20 years to take place at the home of the United Nations Environment Programme. Despite a heavy agenda, the parties successfully concluded the meeting with a number of key decisions reached after rounds of lengthy negotiations.



Main issues for discussion included the replenishment of the Multilateral Fund (MLF) for 2024-2026 to support implementation of the Montreal Protocol by developing countries. At nearly US\$ 1 billion, this is the highest level approved in the Fund's history. This amount is necessary to support developing countries (also referred to as "Article 5 parties") during a period when they continue to phase-out hydrochlorofluorocarbons (HCFCs) and start to phase down highly climate-warming hydrofluorocarbons (HFCs). The parties also agreed on the terms of reference for the 2026 quadrennial assessment by the three scientific panels to the Montreal Protocol to chart the paths for the Montreal Protocol.

Other discussions included the import and export of prohibited cooling equipment, the potential revision of the HFC baseline for some Article 5 parties as a result of COVID-19, critical-use exemption for one party requesting the continued use of small quantities of methyl bromide in agriculture where alternatives are not feasible, as well as assessing the processes for the effective implementation of the Montreal Protocol and identification of gaps in the global coverage of atmospheric monitoring of controlled substances and options for improvement. Parties also discussed and took decisions on emerging issues such as stratospheric aerosol injections (geoengineering), very short-lived substances, increasing emissions of HFCs and carbon tetrachloride that affect ozone levels.

The three assessment panels to the Montreal Protocol updated the parties on the latest information in the synthesis report of the 2022 quadrennial assessment reports by the three Assessment Panels.

The high-level segment was opened on Thursday 26 October with statements from Inger Andersen, Executive Director, United Nations Environment Programmes (UNEP) urging the parties to push for universal ratification of the Kigali Amendment to reduce HFCs, enhancing energy efficiency at the same time and thus continue to contribute to avoidance of global warming.

Soipan Tuya, Cabinet Secretary, Environment, Climate Change & Forestry of the Republic of Kenya pressed on the need for continued financial support to developing countries through the Multilateral Fund.

On the margins of the meeting a total of 22 side events and 5 exhibitions also took place, including a side event by a youth delegation keen to connect with the work of the Montreal Protocol and a presentation by the Scientific Assessment Panel on geoengineering and combined with the Technical and Economic Assessment Panel on HFC-23 – a very potent greenhouse gas – which attracted many of the delegates. The assessment panels also used the opportunity while in Nairobi to meet separately with the UNEP Executive Director

to discuss concerns around emerging challenges potentially impacting ozone recovery and linkages with other processes relevant to science and assessment.

The workshop on energy efficiency to promote the transition to energy efficient and low- or zero-global-warming-potential technologies as requested by the parties was also held on 22 October and its outcomes were presented to the MOP35 for discussion.

The decision on energy efficiency requests the Technology and Economic Assessment Panel to continue to update information on energy efficient technologies and relevant information for 2024, and a decision on the life-cycle refrigerant management included a request for the Ozone Secretariat to organize a workshop on the matter in 2024 to share experiences and assess challenges.

The parties worked late into the final night of the meeting into Saturday to find consensus on many important issues. In total, the parties adopted a total of 27 decisions.

**For more information, please contact:**

**Stephanie Haysmith**, Communications & Public Information Officer, Ozone Secretariat

*Image: Ozone Secretariat*

## 5. Nationally Determined Contributions (NDC) Helpdesk for the Cooling Sector

The NDC Helpdesk is a resource for expert guidance in the field of Green Cooling. Its mission is to assist policymakers in designing and implementing ambitious Nationally Determined Contributions (NDCs) in the cooling sector. The NDC helpdesk for the cooling sector is a specialized support service designed to assist individuals and organizations in navigating the complexities of Green Cooling-related tools and methods.

### Areas of Support

The team provides technical assistance on the following topics:

- Development and implementation of national cooling action plans
- NDC cooling sector integration and formulation of trackable mitigation targets
- HFC emission calculation and reporting under the UNFCCC (Tier 1 and Tier 2), making the most of available data
- GHG Inventories in the cooling sector
- Development of a Monitoring, Reporting and Verification (MRV) system in the cooling sector
- Any question concerning the provided tools and guidelines

### Who Can Benefit?

The NDC Helpdesk for the cooling sector accepts requests from Global South countries and government agencies. Technical and other institutions and organisations that are working directly with national governments to plan and implement their NDCs, may also



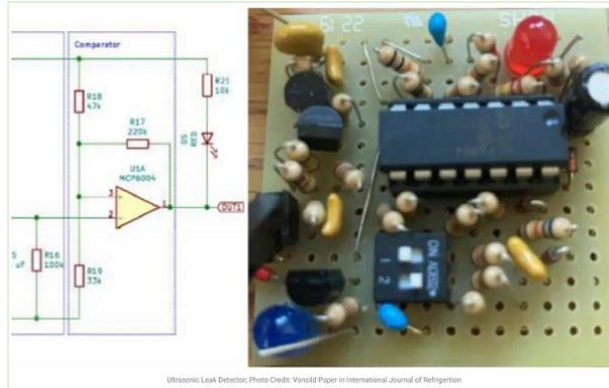
request support, if endorsed by the national UNFCCC focal point or the Ministry of Environment.

GIZ, PROKLIMA, October 2023

Image: GIZ/PROKLIMA

## 6. Researchers Develop 'Cost-Effective' Ultrasonic Leak Detection System for Flammable Refrigerants in Smaller Equipment

Asbjørn Vonsild, Owner of Denmark-based Vonsild Consulting, has announced the development – in conjunction with Daniel Colbourne – of a “cost-effective” and “robust” ultrasonic leak detection system for smaller equipment using flammable refrigerants.



“We tested it with R290 [propane] leaks and published our findings in a [free-to-download paper available until November 14](#),” Vonsild said in a LinkedIn post. He indicated that the system would apply to residential units, including heat pumps, air conditioners and similar applications.

According to the published paper, conventional leak detectors using infra-red gas concentration sensors cost “tens to hundreds of euros” and “are susceptible to poisoning and other contamination that can negatively affect their performance.”

The ultrasonic leak detector (ULD) detects leaks based on airborne high-frequency sound waves generated from a leak exiting an orifice and hitting a transducer that functions as a receiver and sensor and transposes the waves into electrical signals for communication. “Since the noise from a leak travels at sonic velocity, acknowledgment [by ULD] is effectively instantaneous,” the paper noted, citing that gas sensors rely on “significantly” slower mass transfer to reach the sampling point.

The researchers built the ULD using off-the-shelf components, including low-cost (less than €1/US\$1.05) transducers. “Transducer response does not drift appreciably with aging and is [not] vulnerable to contamination,” the paper said, with research that found transducers have a mean 27-year life span. As such, the ULD could outlast the 15-year life span of most small- and medium-sized refrigeration, air-conditioning and heat pump equipment.

A further ULD advantage over gas sensors is that a second transducer can regularly prove proper detection system functioning via an ultrasonic signal.

### Tests

The researchers tested eight ultrasonic transducers, commonly employed for “production line controls, liquid level sensors and personnel detection.” Rated for -40 to 80°C (-40 to



176°F) operating temperatures, seven transducers had a peak frequency of around 40kHz and one around 58kHz.

Besides the transducers, the ULD system circuit used pre-amplification to remove electrical noise outside of the targeted frequency range, two-stage amplification inside of the targeted frequency range, peak detection after approximately 0.1 seconds of ultrasound noise, a comparator to turn on a leak detection light and a 5V voltage regulator for stable power supply, with a power-on indicator light.

To determine the mass flow of a release necessary to activate the leak detection light, researchers used a 5kW (1.4TR) capacity split air conditioner wall-mounted indoor unit. Tests focused on the right end of the air conditioner, where experience shows larger leaks arise. However, testing was also conducted on the left end, the center and the rear of the unit. Simulated leaks ran from 0.1 to 2.5mm (0.004 to 0.1in) in diameter using 0.1 to 0.5mm (.004 to 0.02in) increments.

The paper noted determining the appropriate “maximum safe leak rate” (MSLR) keeps costs down. “Only detecting leaks larger than MSLR is desired to mitigate the hazard.”

The International Electrotechnical Commission specifies MSLR based on the lower flammability limit, which for R290 corresponds to 9 grams per minute (0.3 ounces per minute). The paper notes that room size and release height influence potentially flammable mixtures, too. Taking this into account, “the MSLR ranges from 6 to 23 grams [0.2 to 0.8 ounces] per minute for a unit placed at 0.5 to 2.0m [1.6 to 6.6ft] height in a 15m<sup>2</sup> [161.5ft<sup>2</sup>] room or 9 to 38 grams [0.3 to 1.3 ounces] per minute in a 25m<sup>2</sup> [269.1ft<sup>2</sup>] room.”

## **Results**

“Results were broadly positive, with the ULD being able to detect simulated leaks in the range of 4 to 13 [0.5 ounces] grams per minute,” the paper said. “For all cases where the simulated leak and sensor were within the right end section of the IDU, an active response of the ULD occurred as low as 2 grams (0.1 ounces) per minute, depending upon the chosen sensor.”

The paper noted that the sensor should be within 0.4mm (0.02in) of a potential leak point to meet MSLR. “[However,] a typical wall-type air conditioner would unlikely require more than two sensors within the right end section.” Due to sound dampening, an additional sensor may be required under pipe insulation around connections or sharp bends, where potential indoor leaks could occur.

According to the paper, false positives from other noise sources are highly unlikely. “The noise from the [air conditioner] fan/motor is relatively quiet within the ultrasonic range, and the casing appears to provide significant attenuation of external [noise] sources.”

The researchers only tested R290 refrigerant. The approach may work for other flammable refrigerants based on the working pressures. “For instance, it is likely to be more effective with R1270 [propylene] and less effective with R600a [isobutane],” the paper said.

“Overall, ULD can be an appealing technology due to the substantially lower cost than that of gas detection, better reliability, much faster response times and greater longevity,” the paper noted. “It may be regarded as an effective means of significantly extending the safe application of hydrocarbon refrigerants.”

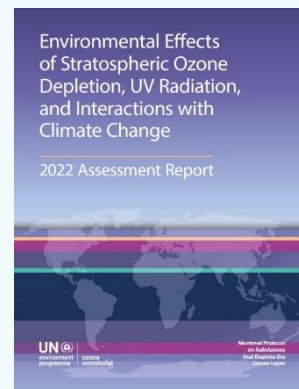
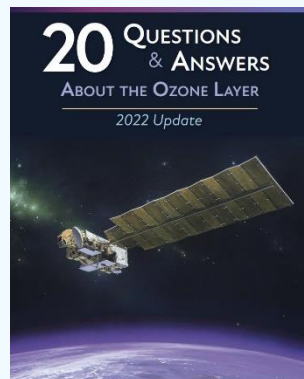
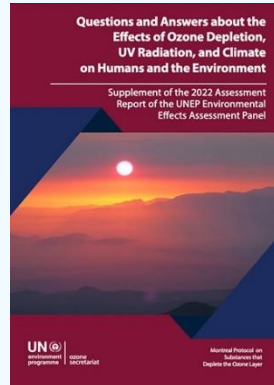
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The authors acknowledged Dr Ivan Vince of ASK Consultants for the original idea and project Proklima of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), HEAT and the EU Life Front Project for supporting the study.

“We hope our work will benefit the industry, and we have made no patents on the ideas presented,” Vonsild said in his LinkedIn post.

**hydrocarbons21, 18 October 2023**

*Image: hydrocarbons21*



**Watch out for Illegal Trade of HCFCs and HFCs:** Lessons learnt from the Global Montreal Protocol Award for Customs and Enforcement Officers. This publication provides an analysis of the cases submitted in the context of the [Global Montreal Protocol Award for Customs and Enforcement Officers](#). The Global Award was launched in 2018 by UNEP OzonAction. This Global Award is intended to raise awareness about the Montreal Protocol and to recognise customs and enforcement officials for their efforts in preventing and combating illicit traffic in Montreal Protocol and Kigali Amendment-regulated substances. Ozone-depleting substances (ODS) include hydrochlorofluorocarbons (HCFCs) and other compounds with a high Global Warming Potential (GWP), particularly hydrofluorocarbons (HFCs).



**UNEP OzonAction, ASHRAE, April 2023 Fact sheet: Update on New Refrigerants Designations and Safety Classifications.** The purpose of this fact sheet is to provide an update on ASHRAE standards for refrigerants and to introduce the new refrigerants that have been awarded an «R» number over the last few years and introduced into the international market.



**Sustainable cold chains: Virtual Exhibition - The virtual exhibition for sustainable cold chains aims to highlight the critical role of cold chains in ensuring food safety and security, access to vaccines, reducing global warming and preventing ozone layer depletion.**

The exhibition showcases commercially available cold chain technologies for food and vaccines, mainly targeting applications and equipment with refrigeration and cooling cycles that use ozone and climate-friendly refrigerants and have enhanced energy efficiency characteristics. It also aims to promote game-changing and systemic approaches, relevant initiatives, and not-in-kind solutions to cold chains

These technologies and approaches directly contribute to meeting national obligations under the Montreal Protocol on Substances that Deplete the Ozone Layer including its Kigali Amendment and the Paris Agreement on Climate Change. Sustainable cold chain contributes to the achievement of many [Sustainable Development Goals](#).

The exhibition is ongoing and continuously updated with submissions accepted on a rolling basis. The partners of the exhibition will continue promoting the exhibition at all relevant events and throughout 2022 and beyond.

Click [here](#) for more information / submit a nomination >>>

*Image: Sustainable cold chains website*



## Categories



1 exhibits

On site post-harvesting  
and/or precooling  
applications



6 exhibits

Storage of product, e.g.  
large warehouses /  
Distribution centers



0 exhibits

Storage on board ships,  
aircraft, and containers



4 exhibits

Food processing plants



1 exhibits

Transport (large and  
smaller trucks, smaller  
containers)



6 exhibits

Supermarkets (wholesale  
markets & Retailers)



1 exhibits

Food services  
(Restaurants, cafes,  
tourism facilities, etc)



2 exhibits

Vaccines and other  
pharmaceutical  
products



0 exhibits

Game-changing and  
systemic approaches

# AFRICA

## 7. Cooling and health experts join forces for African sustainable vaccine network

Major African symposium brings together industry, academia, medical professionals, and health agencies to drive progress in sustainable vaccine logistics.

Experts in sustainable cooling and healthcare have joined forces for a key event which will kick-start better vaccine logistics in Africa.

Africa Centre of Excellence for Sustainable Cooling and Cold-chain (ACES) worked with Rwanda Biomedical Center to host the continent's first Vaccine Cold-chain and Technology symposium, in Kigali, Rwanda.

Running from 10-13 October the event brings together industry, academia, medical professionals, and health implementation agencies to drive progress in areas including:

- Vaccine cold-chain security, clinical trials, technology, knowledge exchange and bioinformatics;
- Opportunities for training, developing ideas and solutions; and
- Tours of key medical and cold-storage sites as well as networking opportunities.

Hon. Minister of State for Health Dr. Yvan Butera commented: "The vaccine cold-chain symposium is a unique opportunity to exchange ideas on critical topics to strengthen Rwanda's healthcare sector and Africa at large."

ACES is a first-of-kind centre dedicated to sustainable cooling and cold-chain for food and health - accelerating deployment of sustainable end-to-end connectivity for food and health to protect quality and safety, minimise loss, and benefit communities.

Project lead Professor Toby Peters, Director, Centre for Sustainable Cooling at the University of Birmingham, commented: "This symposium will enable Africa's communities to build clean cold-chain services for resilient and sustainable distribution of life-saving vaccines.

"Deploying the right sustainable technology can help to ensure that vaccines reach healthcare providers in the best condition and peak effectiveness, while reducing GHG emissions, and preserving natural resources.

"We aim to support deployment of cold chain so that healthcare professionals can enhance the delivery of vaccination programmes and protect the health of millions across Africa."

ACES has worked with medical agencies to design the efficient and clean cold chain for resilient access to vaccines to meet the future demands.

Dr Christopher Green, Programme Director for Health at ACES and Associate Clinical Professor in Infectious Diseases at the University of Birmingham, commented: "The cold chain underpins our vaccine security and is critical national infrastructure, but it will come under additional strain from the special cooling requirements of modern vaccine technologies, such as mRNA vaccines, currently under development for a wide range of infectious disease targets.



Hon. Minister of State for Health Dr. Yvan Butera addresses the symposium.

“At the same time, further global warming creates unpredictable changes to where and when disease outbreaks occur, and these vaccine technologies will need to be deployed.

“Designing the ‘next-generation’ vaccine cold-chain system for African communities is an urgent topic and this event, and the work and committed partnerships it represents, aims to address future resilience, sustainable and flexible access to vaccines on the African continent.”

ACES will undertake collaborative research, demonstrate, and test new equipment, and develop knowledge and training programmes. The programmes focus on in-country capacity building and providing community-leaders with fundamental knowledge on refrigeration, cold-chain applications, cooling hub design and the underpinning business models in order to improve existing systems from a bottom-up approach, promote new businesses and increase sustainability and resilience of supply chains.

Academic partner institutions include the University of Birmingham – Centre for Sustainable Cooling; University of Rwanda, Kigali; Africa Centre for Technology Studies, Nairobi, Kenya; Heriot-Watt University, Edinburgh, UK; London South Bank University; Cranfield University, UK; and Wageningen University and Research, Netherlands. UNEP United for Efficiency, Rwanda Environment of Management Authority are also participating. [...]

[University of Birmingham, 13 October 2023, By Professor Toby Peters](#)

*Image: University of Birmingham*

## ASIA AND THE PACIFIC

### **8. Vietnam strives to cut use of chemicals harmful to ozone layer**

Under the roadmap to carry out the Montreal Protocol on the protection of stratospheric ozone layer by phasing out ozone-depleting substances, Việt Nam will begin managing and eliminating all fluorinated chemicals from 2024 toward reducing consumption by 10 per cent during 2029-2034, 30% during 2035-2039, 50 per cent during 2040-2044 and 80 per cent from 2045.

**HÀ NỘI** – Việt Nam will scale down production and consumption of Hydrofluorocarbons (HFCs) - powerful greenhouse gases which are the main drivers of climate change.

Under the roadmap to carry out the Montreal Protocol on the protection of the stratospheric ozone layer by phasing out ozone-depleting substances, Việt Nam will begin managing and eliminating all fluorinated chemicals from 2024, working toward reducing consumption by 10 per cent during 2029-2034, 30% during 2035-2039, 50 per cent during 2040-2044, and 80 per cent from 2045.



Việt Nam has proactively carried out the protocol and agreements that it has joined in, while aligning with international laws on regulations to improve state management over climate change and ozone layer protection.

In Decree No. 06/2022/ND-CP dated January 7, 2022, which details the reduction of greenhouse gas emissions and the protection of the ozone layer, the Government stipulates a roadmap to manage and phase out ozone-depleting substances, as well as management principles and coordination responsibilities among state-owned agencies.

Details to implement the law on environmental protection in response to climate change, with guidelines to use, collect, transport, recycle, reuse, and treat the substances were laid down in the Ministry of Natural Resources and Environment (MoNRE)'s Circular No. 01/2022/TT-BTNMT dated January 7, 2022.

The Government also issued Decree No. 45/2022/ND-CP on July 7, 2022, specifying penalties for administrative violations in the field of environment, including those on the use of substances controlled under the Montreal Protocol.

The Department of Climate Change under the MoNRE joined hands with the Việt Nam Society of Refrigeration and Air-conditioning Engineers and the Institute of Heat Engineering and Refrigeration to provide training for nearly 188 lecturers from colleges and vocational schools, and 3,068 technical staff from refrigeration equipment service and maintenance facilities nationwide.

A wide range of activities have been held to support the state management work, including developing standards for capacity assessment and certification for air-conditioning technicians. National standards limiting the use of flammable expansion agents in foam production, and the use of flammable refrigerants in air-conditioners are critical to reducing HFC use.

The Montreal Protocol was signed in 1987 and entered into force on January 1, 1989. It is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances that are responsible for ozone depletion.

To date, it has been ratified by 197 countries, and has been one of the most successful environmental agreements to date. A united global effort to phase out ozone-depleting substances means that today, the hole in the ozone layer is healing, in turn protecting human health, economies, and ecosystems.

Việt Nam became a signatory of the United Nations Framework Convention on Climate Change in 1992, the Vienna Convention for the Protection of the Ozone Layer, and the Montreal Protocol in 1994.

**[Viet Nam News \(VNS\), 30 October 2023](#)**

*Image: VNS - Photo congthuong.vn*

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**Vanuatu's Case Study on Integrating ODS/HFC Module into the National Single Window System** - The National Single Window is a centralized system that links all relevant government approving authorities and acts as a 'one-stop-shop' where importers and exporters may submit applications electronically including information and all required paperwork to support the application and approval process. **Read/Download the [Factsheet >>>](#)**



**Recognition of Prior Learning Scheme for Refrigeration and Air-Conditioning Servicing Technicians in Mongolia** - The Recognition of Prior Learning (RPL) process can help those in the industry acquire a formal qualification that matches their knowledge and skills and thereby contributes to improving their employability, mobility, and lifelong learning. RPL can make a significant contribution to providing the relevant learning framework necessary for the present and ongoing maintenance of a quality workforce, especially in the RAC servicing sector. In Mongolia, the RPL process has been rolled out in over 30 TVET trades in the construction, mining, and other sectors, including apparel and culinary etc. Mongolia initiated the RPL scheme for RAC servicing technicians as part of their implementation of the HPMP in cooperation with various national stakeholders. **Read/ Download the [Factsheet >>>](#)**



## LATIN AMERICA AND CARIBBEAN



## 9. Delegación de Perú viaja a Colombia para fortalecer sus capacidades institucionales

**Barranquilla, Colombia, 3 de octubre de 2023** – El Programa de las Naciones Unidas para el Medio Ambiente (PNUMA), en su calidad de organismo de ejecución del Fondo Multilateral para la Aplicación del Protocolo de Montreal, a través del Programa Acción Ozono para América Latina, y en consulta con la Unidad Nacional del Ozono (UNO) de Colombia, acordaron facilitar la organización de un viaje de estudios para la delegación peruana compuesta por docentes de formación técnica en refrigeración y por un especialista en gestión ambiental por parte del Ministerio de la Producción, con el propósito de fortalecer capacidades en buenas prácticas de refrigeración, certificación de técnicos en refrigeración y climatización, implementación de los principios 3R, eficiencia energética, soluciones de bajo impacto ambiental, entre otras.

El objetivo principal de la Gira de Estudio fue facilitar el intercambio entre las partes interesadas colombianas y la delegación peruana para agilizar la implementación de programas nacionales de competencia laboral, el diseño de capacitaciones de técnicos de RAC, la aplicación de alternativas de bajo Potencial de Calentamiento (PCA) y soluciones de HC en el sector de RAC y la discusión sobre lecciones aprendidas;

En este sentido, Leydy Suárez Orozco, coordinadora de la Unidad Ozono de Colombia, señaló “que mejorar la cooperación internacional, incluida la Cooperación Sur-Sur entre las Unidades Nacionales de Ozono y otras partes interesadas pertinentes, nos permite promover el intercambio en mejores prácticas y las últimas tendencias tecnológicas para la aplicación de tecnologías de bajo o nulo PCA aplicadas en el sector RAC. Por ello, estamos muy contentos de poder llevar a cabo esta gira”.

### Participación en actividades regionales

Entre los días 25 y 29 de septiembre, los participantes tuvieron la oportunidad de visitar e intercambiar opiniones con expertos sobre recuperación y regeneración de refrigerantes, centros de capacitación especializados en el manejo de refrigerantes naturales, fabricantes de equipos RAC, y certificación de técnicos RAC; asimismo, pudieron asistir a las ferias regionales de EXPOCAIRE y al Congreso Latinoamericano de Distritos Térmicos.

La Gira de Estudios comenzó con la visita al Servicio Nacional de Aprendizaje (SENA) de Barranquilla, entidad que ofrece formación gratuita en programas técnicos, tecnológicos y complementarios enfocados en el desarrollo económico, científico y social del país. Edwin Dickson, profesional técnico de la Unidad Técnica de Ozono de Colombia, brindó una presentación sobre la Red de recuperación, reciclaje y regeneración de gases refrigerantes del SENA Barranquilla.



La gira continuó con la visita a ThermoThar, empresa dedicada a la fabricación de equipos centrales de aire acondicionado para el uso en el sector industrial, comercial y residencial, donde se presentó el proyecto demostrativo para el uso del R-290 como refrigerante alternativo en la manufactura de equipos centralizados de acondicionamiento de aire con ductos en Colombia.

De igual forma, los asistentes participaron en la muestra comercial, programas académicos, conferencias técnicas, y reuniones con actores de interés que se dieron cita en la ExpoACAIRE, la Feria del sector climatización y refrigeración comercial e industrial más importante de América Latina.

Finalmente, los participantes realizaron visitas técnicas a las instalaciones de Distritos Energéticos: Serena del Mar y San Francisco. Un distrito térmico es una innovadora alternativa de infraestructura para producir frío o calor, de manera centralizada, y distribuir esta energía térmica mediante redes a múltiples usuarios y edificaciones agrupadas en entornos urbanos; como sectores residenciales, industriales y comerciales. Es, por tanto, una alternativa tecnológica que permite, en el mejor de los casos, sustituir el uso de Sustancias Agotadoras de la Capa de Ozono (SAO) que generan un alto impacto ambiental. Este proyecto responde a los desafíos del cambio climático y protección de la capa de ozono, y surge como alternativa para promover la sostenibilidad urbana, la reducción de impactos ambientales y la eficiencia energética, procurando igualmente la rentabilidad financiera.

**Contacto:** [Markus Hoffmann](#), Programme Management Officer, [UNEP OzonAction](#) Office of Latin America & the Caribbean

*Image: OzonAction ROLAC*

## NORTH AMERICA



### 10. Management of Certain Hydrofluorocarbons and Substitutes under Subsection (h) of the American Innovation and Manufacturing Act

#### Proposed Rule Overview

The American Innovation and Manufacturing Act authorizes EPA to address hydrofluorocarbons (HFCs) in three main ways: phasing down their production and consumption, facilitating the transition to next-generation technologies through sector-based restrictions, and promulgating certain regulations for purposes of maximizing reclamation and minimizing releases from equipment. This proposed rule focuses on the third area.

This action proposes to establish an Emissions Reduction and Reclamation Program for the management of certain HFCs and substitutes. The proposed requirements include:

- Leak repair provisions for certain appliances;
- Use of automatic leak detection for certain new and existing equipment;
- A proposed reclamation standard;
- Use of reclaimed HFCs for certain types of equipment in certain refrigeration, air conditioning, and heat pump subsectors and use of recycled HFCs in fire suppression equipment;
- Certain provisions for equipment in the fire suppression sector, including technician training;
- Recovery of HFCs from disposable containers prior to disposal;
- Container tracking for HFCs that could be used in the servicing, repair, and/or installation of refrigerant-containing equipment or fire suppression equipment; and
- Recordkeeping, reporting, and labeling requirements.

EPA is also proposing alternative recycling criteria for ignitable used refrigerants, including some HFCs and their equivalents, under the authority of the Resource Conservation and Recovery Act.

**Additional information on the proposed rule:**

- [Federal Register Link to ODS Process Agent Reporting Rule](#)
- [Fact Sheet \(pdf\)](#) (174.86 KB)

**USEPA, 19 October 2023**

*Image: USEPA*

## EUROPE & CENTRAL ASIA

### 11. New rules to tackle “refillable” cylinder loophole

EUROPE: The new F-gas regulations will force refrigerant importers/suppliers to keep and provide documented evidence that binding arrangements are in place for the return of “refillable” cylinders for refilling.



The new, recently agreed, regulation proposals place responsibilities on undertakings placing refillable F-gas cylinders on the market to produce a declaration of conformity that includes evidence confirming there are binding arrangements in place for the return of that container for the purpose of refilling. In particular, the regulation says the declaration should identify the “relevant actors”, their obligatory commitments and the relevant

logistical arrangements. Those arrangements will be binding on the distributors of the containers to the end-user.

Suppliers will also be required to keep evidence of the compliance with these arrangements for a period of at least five years after supply to the end-user and make it available, on request, to the competent authorities of member states and the Commission.

The provisional deal to revise the European F-gas regulation was agreed by the European Parliament and Council on October 5. It is expected to enter into force in Spring 2024.

## Banned

Non-refillable (disposable) refrigerant cylinders have been banned under European law since 2007, due to the "heel" of refrigerant that is inevitably left behind in an "empty" cylinder. It was estimated that this vapour and liquid heel could represent as much as 10% of the original refrigerant charge – all of which could eventually be released to atmosphere.

Despite this ban, the disposable cylinder became the vessel of choice for illegal importers cashing in on the huge increases in the cost of refrigerants as a result of the European F-gas phase down.

A belated clampdown by authorities eventually reduced the flow of gas in disposables, but many illegal operators merely switched to using cylinders, which were, technically, refillable. However, in many cases, no provision was made for their refilling, as required by the existing F-gas regulation, so they effectively became disposable. In addition, there were, and still are, many supposedly legitimate suppliers failing to comply with the regulations.

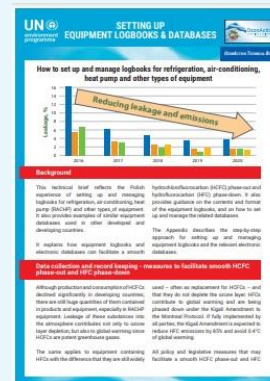
The new regulation attempts to plug those loopholes. It may create extra paperwork for some companies and force others to establish legitimate systems, but will, of course, only be effective if the regulation is properly policed.

## CoolingPost, 29 October 2023

Image: CoolingPost

**See also >>> "F-Gas : après l'accord, on en est où ?** Le tant attendu accord européen sur la révision de la F-Gas a été annoncé début octobre avec son lot d'informations majeures. Depuis, le règlement poursuit son chemin parlementaire. Tour d'horizon.", article dans LA RPF, 25 octobre 2023, Par Lilian Pouyaud

**How to set up and manage logbooks for refrigeration, air-conditioning, heat pump and other types of equipment - Background:** This technical brief reflects the Polish experience of setting up and managing logbooks for refrigeration, air-conditioning, heat pump (RACHP) and other types of equipment. It also provides examples of similar equipment databases used in other developed and developing countries. It explains how equipment logbooks and electronic databases can facilitate a smooth hydrochlorofluorocarbon (HCFC) phase-out and hydrofluorocarbon (HFC) phase-down. It also provides guidance on the contents and format of the equipment logbooks, and on how to set up and manage the related databases. The Appendix describes the step-by-step approach for setting up and managing



equipment logbooks and the relevant electronic databases. **This factsheet is available in [English](#) and [Russian](#).**

**UN Environment, OzonAction, August 2023**

## FEATURED



**Summary of the 45<sup>th</sup> meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer: 2-7 July 2023.** Read/Download the full [Summary Report](#)

See also >>>

- [IISD daily reporting/highlights](#)

- [UNEP Ozone Secretariat/OEWG-45](#)

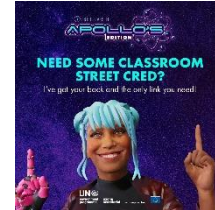
**Overview for the meetings of the ozone treaties** - Click [here](#) for upcoming and past Montreal Protocol Meetings dates and venues.

**World Ozone Day 2023 theme announced: Montreal Protocol: fixing the ozone layer and reducing climate change** - On World Ozone Day, we celebrate the achievements of the Montreal Protocol on Substances that Deplete the Ozone Layer in fixing the ozone layer and reducing climate change. The theme for the 2023 International Day for the Preservation of the Ozone Layer, to be marked on 16 September, is **Montreal Protocol: fixing the ozone layer and reducing climate change**. This reiterates the recent finding by the Scientific Assessment Panel of the positive impact the Montreal Protocol has on climate change, that ozone recovery is on track and how climate challenges can be supported through the Kigali Amendment.



The theme and other related materials available [here](#) in the six UN official languages.

**New gaming technology to create environment simulation game for teenagers**-The UN Environment Programme's (UNEP) Ozone Secretariat today launched a simulator game and avatar using the latest software technology. **Apollo's Edition** is the latest addition to the **Reset Earth education platform**. Targeting 13-18-year-olds, the free online education material developed provides educators with resources to teach students the importance of environmental protection.



**Online introductory course 'International legal framework on ozone layer protection'** - Designed for government representatives and national stakeholders new to the Vienna Convention and Montreal Protocol, students of environmental law, and anyone interested in learning about the ozone treaties, the **online course** launched by the Ozone Secretariat aims to provide an introduction to the international legal framework on ozone layer protection.



[United Nations Environment Programme \(UNEP\), Ozone Secretariat](#)

**Free teaching kits on ozone layer and environmental protection**

- New free online teacher toolkits and lesson plans based on the success of UNEP's Ozone Secretariat's **Reset Earth** animation and video game
- Targeting Tweens by adopting animation and gamification to create innovative online lessons to raise awareness on ozone layer and environmental protection
- Available online in digital and print format for universal access



**Read/download >>> [Ozone Secretariat's education platform](#)**

### [The UN Environment Assessment Panels](#)

The Assessment Panels have been vital components of ozone protection since the Montreal Protocol was first established. They support parties with scientific, technological, and financial information in order to reach decisions about ozone layer protection and they play a critical role in ensuring the Protocol achieves its mandate. The Assessment Panels were first agreed in 1988 to assess various direct and indirect impacts on the ozone layer. The original three panels are:

- [The Technology and Economic Assessment Panel](#)
  - [The Scientific Assessment Panel](#)
-

- [The Environmental Effects Assessment Panel](#)

In the past there were 4 main panels. The Panels for Technology and Economic Assessments were merged in 1990 into one Panel, now called the Technology and Economic Assessment Panel.

**Why are the three current panels important to ozone layer protection?** Each carries out assessment in its respective field. Every four years, the key findings of all panels are consolidated in a synthesis report. [Learn more >>>](#)

**Scientific Assessment of Ozone Depletion: 2022 - [Executive Summary](#)**

**United Nations Environment Programme (UNEP), Ozone Secretariat**



### **The Multilateral Fund for the Implementation of the Montreal Protocol**

The Fund is dedicated to reversing the deterioration of the Earth's ozone layer. It was established by a decision of the Second Meeting of the Parties to the Montreal Protocol (London, June 1990) and began its operation in 1991. The main objective of the Fund is to assist developing country parties to the Montreal Protocol whose annual level of consumption of the ozone depleting substances (ODS) chlorofluorocarbons (CFCs) and halons is less than 0.3 kilograms per capita to comply with the control measures of the Protocol. Currently, 147 of the 197 Parties to the Montreal Protocol meet these criteria. They are referred to as Article 5 countries.

The Multilateral Fund is managed by an Executive Committee with equal membership from developed and developing countries. Since the inception of the Fund, the Executive Committee has held 91 meetings. The Fund Secretariat, located in Montreal, assists the Executive Committee in its tasks. Projects and activities supported by the Fund are implemented by four international implementing agencies and a few bilateral agencies.

Last 16 July 2022, following the adoption of interim budgets for the Multilateral Fund due to the Covid-19 pandemic, the Fifth Extraordinary Meeting of the Parties to the Montreal Protocol (5th ExMOP) decided on the replenishment of the Multilateral Fund for the triennium 2021-2023. The Parties agreed on a budget of US \$540 million for the triennium.

As at 5 December 2022, the contributions received by the Multilateral Fund from developed countries, or non-Article 5 countries, totaled over US\$ 5.02 billion. The Fund has also received additional voluntary contributions amounting to US \$25.5 million from a group of donor countries to finance fast-start activities for the implementation of the HFC phase-down.

To facilitate phase-out by Article 5 countries, the Executive Committee has approved 144 country programmes, 144 HCFC phase-out management plans and has funded the establishment and the operating costs of ozone offices in 145 Article 5 countries.

**New and updated guides and submission forms for the preparation of project proposals:**

- Guide for funding requests for preparation of national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances >>>
- Updated interim guide for the presentation of stage I of Kigali HFC implementation plans (July 2023) >>>
- Updated guide for the presentation of new stages of HCFC phase-out management plans (July 2023) >>>

**All guides and submission forms are available [here](#)**

**Upcoming events:**

- The [93<sup>rd</sup> meeting](#) is scheduled for 11 to 15 December 2023, in Montreal, Canada
- Click [here](#) for the Executive Committee upcoming and past Meetings and related documents.



**OzonAction Compliance Assistance Programme** produces and outreaches a wide variety of information and capacity building materials and tools that support the implementation of the Montreal Protocol programs and assist Article-5 countries in meeting the compliance targets. These include publications, technology briefs and factsheets, mobile applications, videos, e-Learning, modelling, and database programs and special educational or certification programs.

**The section below features several of our most recent products.**

**Visit [OzonAction website](#) for more information, discover the entire range of products.**

*Images in this section are by OzonAction*

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**Considerations for establishing national HFC Quota System** - As HFC consumption in most countries is determined by their import, this document aims to highlight guiding principles and key aspects that countries need to consider when developing their import quota system. The underlying principles and approaches are equally applicable for production and export quota allocation. [Read/download the full document](#)



**Every Action Counts: Kigali Amendment - UNEP 2022** - This brochure targets the general public and explains in a simplified manner what the Montreal Protocol and its Kigali Amendment signify. It includes some actions that everybody can do to support the Kigali Amendment. It also covers the relationship between the Kigali Amendment and Sustainable Development Goals. It introduces some examples of successful communication campaigns on the Kigali Amendment. [English/Spanish](#)



**Gender Mainstreaming in the Montreal Protocol: Experiences in Latin America and the Caribbean** - Taking into account that women and girls constitute half of the world's population and, therefore, represent half of the potential and innovation necessary to face the "triple planetary crisis" – climate change, nature and biodiversity loss, pollution and waste –, positioning people and the planet as central pillars of the transformation necessary to overcome it, and considering the guiding principles and the scopes of action of the Operational Policy on Gender Mainstreaming of the Multilateral Fund, the United Nations Environment Programme (Latin America and the Caribbean Office). [English / Spanish](#)



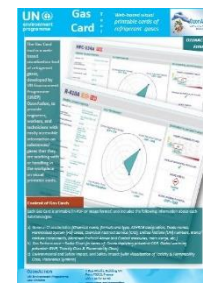
**Refrigeration, Air-Conditioning, and Heat Pumps (RACHP) Associations & Organizations:** This Knowledge Map provides a global directory of RACHP associations, societies, and organisations around the world. These are key stakeholders for ensuring safe and efficient refrigerant transitions.



**Local Technical & Vocational Education and Training (TVET):** This Knowledge Map provides a global directory of TVET entities and centres around the world. These are the strategic partners for conducting and promoting training and certification programmes related to the refrigeration servicing sector.

Click [HERE](#) to access the OzonAction Knowledge Maps tool  
Click [HERE](#) to download the OzonAction Knowledge Maps tool flyer

**Gas Card Tool: Web-based Visual Printable Cards of Refrigerant Gases Content of Gas Cards** - Each Gas Card is printable (in PDF or image format) and includes the following information about each substance/gas: a) General Characteristics (Chemical name, formula and type, ASHRAE designation, Trade names, Harmonized System (HS) codes, Chemical Abstract Service (CAS), United Nations (UN) numbers, Blend/ mixture components, Montreal Protocol Annex and Control measures, main usage, etc.) b) Gas Performance— Radar Chart (in terms of: Ozone depleting potential-ODP, Global warming potential- GWP, Toxicity Class & Flammability Class) c) Environmental and Safety Impact, and Safety Impact (with visualization of Toxicity & Flammability Class, Hazardous Symbols).



**More Information** - The Gas Card web based tool is part of UNEP OzonAction's portfolio of activities and tools to assist various stakeholders in developing countries, including customs officers and technicians, to achieve and maintain compliance with the Montreal Protocol on Substances that Deplete the Ozone Layer. In the left navigation bar of the Gas Card tool web page, you will find a list of commonly used HFCs and HFC Blends in different sectors. \*

### Using the Gas Gard web-based tool

- The Gas Gard tool is available online on the [OzonAction website](#)
- Read the full [2021 annual iPIC report](#)
- See the [flyer](#) introducing the new iPIC platform

\* Based on the Overall Analysis of the Results of the Survey of ODS Alternatives Report (conducted in 119 countries from 2012 to 2015)



Substances	Quantity (HPMP)	Quantity (Kigali)	...
...	...	...	...
...	...	...	...
...	...	...	...

**HCFC Quota and Licence Tracker** - a new desktop application to assist with HCFC licences and quotas - National Ozone Officers have the great responsibility of managing the allocation and monitoring of quotas for substances controlled under the Montreal Protocol. This process can be complex with many

importers, especially if the country imports a range of different hydrochlorofluorocarbons (HCFCs) and mixtures containing HCFCs. To address this challenge, OzonAction developed a new desktop application that helps Ozone Officers with the tasks of planning, calculating, monitoring, and managing consumption quotas and licences. It can be used on a daily basis to track and manage the current year's quota allocations for different importers, or for future planning by trying different scenarios that adjust the type of substances imported, their quantity, or the number of importers. The HCFC Quota and Licence Tracker allows Ozone Officers to see the effect of such scenarios on the national HCFC consumption and helps ensure that the quotas stay within agreed HCFC Phase-out Management Plan (HPMP) targets. For countries that have ratified the Kigali Amendment, in the future OzonAction will extend the tracker to include hydrofluorocarbons (HFCs) once countries begin designing their quota systems for those controlled substances. **Access the:**

- [HCFC Quota tracker app](#)
- [Flyer for more information on the tracker](#)
- [Short video tutorial on the OzonAction YouTube Channel](#)

### **GWP-ODP Calculator Application** - Updated- "Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and CO<sub>2</sub>-equivalent tonnes"

Data are extremely important for the Montreal Protocol community, and the data reporting formats for both A7 and CP have changed recently, to a large degree triggered by the Kigali Amendment. HFCs, blends, CO<sub>2</sub>-equivalent values, etc, now have to be addressed much more frequently by Ozone Officers during their daily work. Sometimes the terminology and values are complex and can be confusing, and it helps to have all the official facts and figures in one place. Conversion formulas need to be applied to calculate CO<sub>2</sub>-eq values from both GWP and metric tonne values. This free app from OzonAction is a practical tool for Ozone Officers to help demystify some of this process and put frequently needed information at their fingertips. **What's new in the app:**



- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish

- A new **Kigali Amendment mode** - in this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs
- Latest updated ODP and GWP values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change (IPCC) reports
- References added for sources of all values
- New refrigerant mixtures (with ASHRAE -approved refrigerant designations)

If you already have the application installed on your device, be sure to update to benefit from the new features. The app can be viewed in English, French or Spanish.



Smartphone Application: Just search for “GWP-ODP Calculator” or UNEP in the Google Play store or use the QR code – free to download! If you already have the application installed on your device, be sure to update to benefit from the new features.



Desktop Application: *GWP-ODP Calculator* is also available online on the [OzonAction website](#)



Watch the new short introductory tutorial **video** on the *GWP-ODP Calculator* - available now on [YouTube](#)  
 >>> [Read/download the flyer](#)

### Updated OzonAction "WhatGas?" Mobile App

The OzonAction ‘WhatGas?’ application is an information and identification tool for refrigerants gases: ozone depleting substances (ODS), HFCs and other alternatives. It is intended to provide some stakeholders, including Montreal Protocol National Ozone Officers, customs officers, and refrigeration and air-conditioning technicians with a modern, easy-to-use tool that can be accessed via mobile devices or the OzonAction website to facilitate work in the field, when dealing with or inspecting ODS and alternatives, and as a useful reference tool.



This latest release includes the 2022 Harmonized System (HS) Codes for HFCs and blends, which facilitates the process of inspection and identification of controlled and alternative substances.

Scan the QR code to download the app (*currently available for Android devices only*). If you’ve already downloaded the app, to update visit the [Google Play Store](#)

### RAC Technician Videos - Full length films! Two ‘full length’ videos for refrigeration and air-conditioning (RAC) sector servicing technicians: on 1) Techniques, Safety and Best Practice and 2) Flammable Refrigerant Safety.


The OzonAction Refrigeration and Air-Conditioning Technician Video Series consists of instructional videos on techniques, security and best practice and flammable refrigerant safety. They are intended to serve as a complementary training tool for RAC sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training. The videos are not intended to replace structured formal technician training, but to supplement and provide some revision of tips and skills and to build on training already undertaken.




These videos are based on the successful UNEP OzonAction smartphone application, the RAC Technician Video Series app. This application has been downloaded on more than **86,000** devices since its launch. Following many requests to make the videos more versatile and better suited to

classroom and training settings, OzonAction has responded to this demand and produced two 'full-length' instructional videos. You may wish to share this message and the flyer with:

- Your national/regional RAC associations
- Training or vocational institutes
- Master RAC trainers in your country
- Any other interested national stakeholders

 You can watch these videos on the OzonAction YouTube Channel:

- [Techniques, Safety and Best Practice](#)
- [Flammable Refrigerant Safety](#)

 The videos are also available for download by request from UNEP OzonAction:  
[unep-ozonaction@un.org](mailto:unep-ozonaction@un.org)



If you prefer to access the video clips via the OzonAction smartphone application, just search for "RAC Technician Video Series" or UNEP in the Google Play Store and iTunes/App Store or scan the QR code –**Free to download!** The flyer is available from the [OzonAction website](#).

**Women in the refrigeration and air-conditioning industry: Personal experiences and achievements** The United Nations Environment Programme's (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. All of the professionals presented in the booklet are pioneers. They are role models whose stories should inspire a new generation of young women to enter the weld and follow in their footsteps. **Read/download the publication**

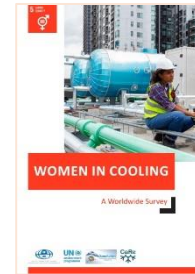


As part of IIR and UNEP OzonAction's partnership, a set of Cold Chain Technology Briefs was released over the past few years, which includes in-depth summaries about the cold chain in different key sectors. They include descriptions of technology, refrigerant options and trends and conclude with prospects and challenges. They cover the main cold chain sub-sectors, i.e., **Production & Processing, Cold Storage, Transport Refrigeration, Commercial & Domestic, and Fishing Vessels**. **Download the Cold Chain Technology brief in English | French | Russian | Spanish**

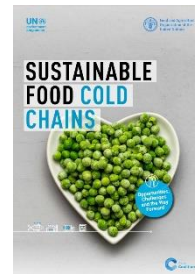


## PUBLICATIONS

**Results of a Worldwide Survey about Women in Cooling Released by IIR and UNEP OzonAction** - Refrigeration, Air-Conditioning, and Heat-pumps (RACHP) are crucial for our health, nutrition, comfort, and well-being. It is one of the sectors that crosscuts many of the UN sustainable development goals and can contribute significantly to safeguard the environment, advance welfare of humanity and support the growth of employment and economics worldwide. Women are highly under-represented in this sector as indicated by the fact that only 6% of the members of national refrigeration associations/organisations/institutions are women. In order to better understand the background, motivation, challenges, and opportunities faced by women working in RACHP a worldwide survey was undertaken by the International Institute of Refrigeration (IIR) and OzonAction of UN Environment Programme (UNEP) in cooperation with several partners. **Read/Download the Full Report**



**Sustainable Food Cold Chains: Opportunities, Challenges and the Way Forward**-This [UNEP-FAO] report explores how food cold chain development can become more sustainable and makes a series of important recommendations. These include governments and other cold chain stakeholders collaborating to adopt a systems approach and develop National Cooling Action Plans, backing plans with financing and targets, implementing, and enforcing ambitious minimum efficiency standards. At a time when the international community must act to meet the Sustainable Development Goals, sustainable food cold chains can make an important difference.



**Legislative and Policy Options to Control Hydrofluorocarbons** - In order to follow and facilitate the HFC phase-down schedules contained in the Kigali Amendment, the Parties, including both developed and developing countries, will have to implement certain measures. This booklet contains a recommended set of legislative and policy options which the developing (Article 5) countries may wish to consider for implementation. It is intended to be a guide/tool for countries. **Read/download**



**Green Cooling in public procurement** How to advance the procurement of climate-friendly and energy-efficient cooling equipment in the public sector? Air conditioning in public buildings is often responsible for around 50% of total electricity consumption. Switching to climate-friendly cooling technologies ("Green Cooling") can reduce costs and energy consumption and improve the carbon footprint of public buildings. This study takes a closer look at the benefits of Green Cooling in the public sector and discusses current barriers and possible solutions. The information presented provides a solid basis to revise current procurement criteria for sustainable cooling systems in public buildings. **Read/Download the study**



E-Book on Process Safety Management (PSM) Training for Ammonia Refrigeration - a new e-book about the critical elements of a process safety management (PSM) training program for facilities operating an ammonia refrigeration system.

The e-book, titled "**7 Keys to a Compliant PSM Training Program for Ammonia Refrigeration**," outlines important questions a facility's program should address and questions that trained plant personnel should be able to answer. Topics covered include:

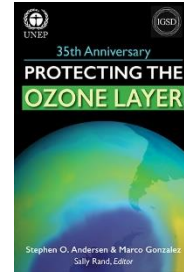
- Safety hazards and health considerations
- Emergency shutdown procedures
- Addressing deviations from system operating limits



- Risks and costs of non-compliance with regulatory standards

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[Protecting the Ozone Layer - 35<sup>th</sup> Anniversary Edition](#) - a new book celebrating the 35<sup>th</sup> Anniversary of the Montreal Protocol. [The electronic version \(Kindle Edition\) of the book has become available for purchase \\$3.03 on Amazon.](#) The book highlights successes and documents innovation during the first 35 years and inspires new ambition to strengthen protection of stratospheric ozone and climate before Earth passes tipping points. The book tells the story of the Montreal Protocol, revealing a model of cooperation, collaboration, universal ratification, record of compliance with over 99 per cent of controlled ozone-depleting substances (ODSs) phased out, the ozone layer on the path to recovery, the 2007 Montreal Adjustment, and the 2016 Kigali Amendment moving the Montreal Protocol further into environmental protection. Unfinished business includes: HCFC phase out, ODS bank management, HFC phase down, uncontrolled ozone-depleting greenhouse gas nitrous oxide (N<sub>2</sub>O), feedstock exemptions for plastics production, and dumping of obsolete cooling appliances.



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