

OzoNews

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

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GLOBAL

1. Kigali Amendment latest ratifications

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

Indonesia, 14 December 2022

Venezuela (Bolivarian Republic of), 5 December 2022

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. Backing the Montreal Protocol: Role of the Multilateral Fund



[UNEP Executive Director's](#) speech at the 91st Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, Montreal, Canada, 5-9 December 2022

*Mr. Hassan Ali Mubarak, Chair of the Executive Committee,
Mr. John Thompson, Vice-Chair, distinguished members of the Executive Committee of the Multilateral Fund,
Colleagues from implementing agencies and other organizations,
Colleagues from the Fund Secretariat,*

Guests and friends,

It is my pleasure to be with you today, my first time at a meeting of the Executive Committee of the [Multilateral Fund](#). This fund is a unique and successful financial mechanism, established for the specific purpose of assisting countries to comply with the Montreal Protocol on Substances that Deplete the Ozone Layer. I am delighted to be here, for many reasons.

First, to congratulate in person the Executive Committee and the Multilateral Fund Secretariat for their dedication to ensuring that developing countries keep receiving assistance, despite the pandemic. I tip my hat to you all.

Second, the United Nations Environment Programme (UNEP) plays a very important role in the work of the [Montreal Protocol](#). UNEP wears four different and equally important “hats”: as the [Ozone Secretariat](#), as the Multilateral Fund Secretariat, as Treasurer of the Fund, and as an implementing agency. It goes without saying that UNEP is fully committed to and proud of the work of the Montreal Protocol.

Third, because the work of the Montreal Protocol, and by extension the work of the fund that keeps it ticking, is crucial to ending the triple planetary crisis of climate change, nature and biodiversity loss and pollution and waste.

This meeting is, in fact, sandwiched between summits of the climate and biodiversity conventions – two processes to which the Montreal Protocol has made great contributions.

Independent scientific research has shown that the Montreal Protocol has protected human and ecosystem health by healing the ozone layer – at a time when biodiversity is in steep decline and needs all the help, it can get. Research shows that the Montreal Protocol has kept the climate cooler by near eliminating ozone-depleting substances that were also greenhouse gases – at a time when [UNEP’s Emissions Gap Report](#) shows that other efforts to slow climate change are failing and leaving us on course for warming far above 2°C.

So, thank you for the great work you have done. I spend a lot of time asking people to walk the talk on the triple planetary crisis. To start turning commitments into action. You have done this, setting the example for others to follow.

Now you have the chance to make an even greater difference and set an even stronger example by backing the Montreal Protocol to move to the next level. There are many items on the agenda of this meeting that will help to deliver this support, but I will focus on three messages that I feel are the most important.

First, funding the implementation of the Kigali Amendment

[The Kigali Amendment](#) can provide a huge boost to efforts to keep the 1.5°C target of the [Paris Agreement](#) alive – when this target is on life support, alarms beeping urgently and medical staff reaching for the paddles.

As you know better than I, phasing down hydrofluorocarbons can avoid up to 0.4°C of global warming this century. Given that every fraction of a degree counts for vulnerable communities and nations facing the impacts of climate change, this potential saving is hugely significant. It can save lives.

However, the amendment was passed in 2016 and we are still discussing funding modalities. It's time to pass from the initial splash of passing the amendment to implementation. The amendment can change people's lives and address the climate challenge, but only if we get moving and assist developing countries to implement the Amendment and address any challenges they may face.

Second, tackling energy efficiency

Becoming more energy efficient isn't just essential for the cooling industry. It's essential for every industry and sector as we decarbonize the global economy – which we must do. It's essential to address energy poverty and increase food security in developing nations by boosting cold chains in a low-carbon manner. It's essential because even when we go fully renewable, we will still need to manage loads and save consumers money. Energy efficiency efforts must go hand with the shift to clean energy – both as a short-term measure to slow climate change and a long-term measure to back sustainable development.

Dealing with energy efficiency is already baked into the Kigali Amendment. The commitment has been made. The task in front of you is to figure out how best to implement measures that do not duplicate work by other funders and agencies. I have no desire to be prescriptive on how you do this – as you have already shown that the fund is a roaring success. I simply encourage you to solve this conundrum.

Three, take the lessons from the fund to other agreements

The multilateral fund has a long history of success. It works, and it works well. Passing on the knowledge and experience gained through the fund would be a big help to other multilateral agreements.

One of the ways that assistance is provided is through institutional strengthening projects – a unique way to increase the capabilities of those who deal with the protection of the ozone layer and climate change mitigation. This is a very interesting area that many Multilateral Environmental Agreements have been looking at to boost their own work.

I am also thinking specifically of lessons that can be passed on to the deal on plastic pollution under negotiation – which has just seen the conclusion of the first session of the [Intergovernmental Negotiating Committee](#). We have until 2024 to get this agreement signed and sealed. To deliver it, we will need a strong funding mechanism – such as the one you have run so well.

So, friends, over to you. The Montreal Protocol has achieved so much down the years. It can achieve much more. But its success ultimately depends on you, the members of the Executive Committee, who decide how and where the money goes. You have done an

outstanding job down the years. I am sure that you will continue to do an outstanding job. Frankly, we need you to because our planet, and therefore humanity, is in deep, deep trouble. Thank you.

[United Nations Environment Programme \(UNEP\), OzonAction, December 2022](#)

Image: by Anthoula Dounavis, Multilateral Fund Secretariat

3. MOP34 high-level round table outcomes

High-level Roundtable Discussion: MP@35: The Kigali Amendment and its potential impact on climate

At the High-level Roundtable which took place on 3 November 2022 during the high-level segment of the 34th Meeting of Parties to the Montreal Protocol, the [panellists](#) discussed the challenges of the Kigali Amendment implementation and its potential impact on climate, with reference to the legacy of the Montreal Protocol.



The discussion was moderated by Dr Mona Nemer, Chief Science Adviser to Canada's Prime Minister, Minister of Innovation, Science and Industry, and Cabinet. The panellists were Kerryne James, Minister for Climate Resilience, Environment, and Renewable Energy, Grenada; Dr Abdulla Naseer, Minister of State for Environment, Climate Change and Technology, Maldives; Jan Dusík, Deputy Minister for Climate Protection, Czechia; Dr Cécile Siewe, Associate Assistant Deputy Minister, Environmental Protection, Environment and Climate Change Canada; Klaus Peter Schmid Spilker, President of the Chilean Chamber of Refrigeration and Air-Conditioning; Dr Dawda Badgie, Executive Director of the Environmental Protection Agency, Gambia; and Kylie Farrelley, General Manager of Refrigerant Reclaim Australia.

Summary of the key ideas from the roundtable:

- It is important to effectively communicate what the Montreal Protocol has achieved in the last 35 years and will potentially achieve with the Kigali Amendment implementation to avoid an estimated 0.5 to 1°C of warming.
- Increasing the Protocol's profile and raising awareness of its potential can lead to enhanced synergies with other multilateral agreements and programmes, generate more resources for accelerating the development of alternative technologies, and help countries to go above the compliance with the Kigali Amendment and achieve greater impact.
- The successful partnerships created under the Montreal Protocol across all the stakeholders allow a holistic perspective and approach in implementation to

realize the Protocol's multiple benefits. The continuation of public-private cooperation under the Kigali Amendment is essential.

- Taking a holistic perspective helps integrate the implementation frameworks and institutions of the Montreal Protocol into the efforts to combat climate change, in particular at the national level, for better coordination, efficient use of resources and greater impact.
- It is important to share success stories for replication and scaling of effective practices in implementing the Kigali Amendment and achieving its potential double benefit for ozone and climate.
- The European Green Deal, which included instruments aimed at reducing fluorinated greenhouse gases, including HFCs, across the European Union can be one such success story. It shows that complex issues require complex solutions. The energy efficiency directive within the European Green Deal provided for assessments and planning for regional, national, and local heating and cooling and the promotion of better heating and cooling efficiency, including the accelerated replacement of old and inefficient systems, phasing out of fossil fuel systems overall and an increase in the use of renewable energy in heating and cooling.
- Another story comes from Grenada, where the national cooling action plan has helped stakeholders to develop a set of integrated measures to address challenges related to the cooling sector and accelerate its transition. The potential emission reduction from the HFC phase-down and energy efficiency in the cooling sector have also been included in the second update of the country's nationally determined contribution.
- Key to the realization of the Kigali Amendment's potential is reliance on science; assistance for Article 5 parties through adequate, timely and predictable funding for the transition to HFC alternatives, capacity-building, enabling projects and institutional strengthening activities; support for regional ozone networks; refrigerant recovery, reclamation, and disposal.
- The challenges in implementing the Kigali Amendment include access to alternative technologies, training for service sector technicians; technical capacity-building and equipment for customs officials to enable control of a variety of gases; effective implementation of a quota and licensing system; addressing of risks associated with safe handling of hydrocarbons; strengthening of refrigerant recovery and recycling; development of standards for the certification of refrigeration and air-conditioning technicians. Additional funding is needed for small island developing states and other low-volume consuming countries that cannot benefit from economies of scale.
- While the end-of-life destruction of refrigerants is not a compliance issue under the Protocol, more attention and support to the proper recovery and disposal of banks of controlled substances in equipment and equipment themselves could deliver substantial climate benefits.
- However, reclamation could, unwantedly, extend the life of old, inefficient equipment when leakage of controlled substances into the atmosphere can also become significant. Reclamation can have positive or negative impact and therefore must be considered carefully in policymaking.
- The development of national cooling action plans is complex but provides an excellent opportunity to engage all stakeholders to gain a holistic perspective to cooling needs, develop the relevant activities together and raise awareness of the

goals and ways to achieve them. A policy is more effective when all stakeholders have been involved in its design.

- National cooling action plans also include measures such as passive cooling, energy efficiency and green procurement in addition to core measures traditionally used for the implementation of the Montreal Protocol, for example, enhancement of skills of refrigeration and air conditioning service technicians, and upgrade of servicing practices.
- The Montreal Protocol's success would not have been possible without the private sector. The Montreal Protocol provided a vision and clear signals to the relevant industries as to how those industries needed to develop, while allowing them sufficient time to transition to alternative substances and technologies.
- Cooling as a service is a new business opportunity where companies make investment in the energy-efficient cooling equipment for the clients and are paid for the service and also through the energy savings generated.
- In the warming world, cooling is becoming essential. It needs therefore to use zero-ozone depleting and low-global warming refrigerants and be efficient, accessible and affordable as an effective climate adaption solution.

[United Nations Environment Programme \(UNEP\), Ozone Secretariat, 30 November 2022](#)

Image: UNEP Ozone Secretariat website/IISD Matthew TenBruggencate

4. Transboundary trafficking in waste and ozone depleting substances tackled through Operation DEMETER VIII

Operation DEMETER VIII, which took place from 1 to 31 October 2022, gave Customs administrations and their partners an opportunity to demonstrate their commitment to playing their part in the fight against climate change.

The DEMETER Operations, the first edition of which dates back to 2009, are aimed at intercepting illegal shipments of hazardous waste, especially plastic waste, as well as ozone depleting substances (ODS) and hydrofluorocarbons (HFCs) that contribute to global warming and environmental degradation.

These commodities are regulated, respectively, by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (the "Basel Convention") and the Montreal Protocol on Substances that Deplete the Ozone Layer (the "Montreal Protocol").



Polish Customs seized 1,239 non-refillable cylinders of ODS and HFCs (HCFC-22, HFC-134A, HFC-507, HFC-23), containing 19,349 kg of refrigerants.

The enforcement of these Multilateral Environmental Agreements (MEAs), which regulate cross-border movements of environmentally sensitive goods, falls under the remit of Customs which is mandated to control goods crossing borders.

By using risk indicators and focusing on pre-identified routings and hotspots during Operation DEMETER VIII, Customs officers conducted controls on suspicious shipments and seized illegal waste as well as ODS and other harmful gases. The preliminary results show that 139 seizures were made during the Operation, including the following:

- 3,647 tonnes of waste and an additional 8,662 pieces of waste (unweighted)
- 25 tonnes of substances controlled by the Montreal Protocol

“There is no doubt that Customs plays a crucial role in the fight against climate change and the success of operations such as DEMETER clearly demonstrates that cooperation is critical in this domain,” said the Secretary General of the World Customs Organization (WCO), Dr. Kunio Mikuriya.

“The WCO remains committed to supporting its Members in implementing MEAs, and regularly updates its relevant instruments so that Customs officers are appropriately equipped to perform their duties. The importance for Customs of using the latest edition of the Harmonized System (HS) should not be underestimated,” he added.

Operation DEMETER VIII, the largest in the series with 90 participating Customs administrations, was led by the WCO Secretariat, the Regional Intelligence Liaison Office for Asia/Pacific (RILO A/P) and China Customs, with the assistance of an Operational Coordination Unit based at the RILO A/P in Seoul, Republic of Korea.

In addition, the Operation was supported by the Basel Convention Secretariat, the United Nations Environment Programme (UNEP) OzonAction, the European Anti-Fraud Office (OLAF), the WCO-United Nations Office on Drugs and Crime (UNODC) Container Control Programme, INTERPOL, Europol, the European Union Network for Implementation and Enforcement of Environmental Law (IMPEL), and the WCO RILO network.

Under the Kigali Amendment, Parties to the Montreal Protocol are now required to gradually phase down HFC production and use.

The WCO and its partners will continue to intensify their efforts to address environmental risks, with more enforcement initiatives planned for the future.

French version available [here](#)

[The World Customs Organization, 13 December 2022](#)

Image: WCO website

5. The Future of Heat Pumps – a new report launched by The International Energy Agency (IEA)

Introduction

Accelerating the deployment of heat pumps would have far-reaching implications for the global energy sector, with important knock-on effects for economic activity and the environment – beyond the climate benefits.

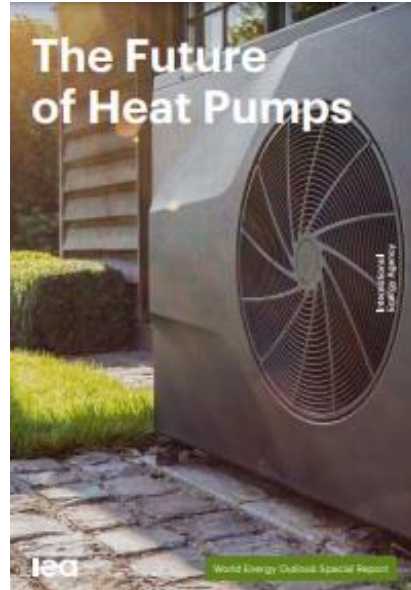
It would reduce the use of fossil fuels for heating, limiting vulnerability to supply disruptions, helping to reduce the import bills of net importing countries, and freeing up fuels for export in the case of producer countries. But more heat pumps would raise demand for electricity, necessitating grid upgrades and a need for more flexibility in operating power systems to ensure security of supply, especially during the winter. The high upfront cost of installing a heat pump also affects energy affordability for poorer households.

The impact of switching to heat pumps on the environment and human health, while overwhelmingly positive in most cases, is not without risk: fluorinated gases (F-gases) used in the refrigeration cycles of many models are potent greenhouse gases (GHGs).

Correct handling can reduce their impact, and substitute refrigerants can replace them, though both solutions carry additional costs and challenges. And ramping up production of heat pumps would create new opportunities for economic growth and job creation, though it would require workers to be trained in their manufacture, installation, maintenance, and certification. This section explores these implications in turn, highlighting the opportunities for policy makers to balance different priorities.

[The International Energy Agency \(IEA\), World Energy Outlook Special Report, November 2022](#)

Image: IEA website



See also >>>

[A policy toolkit for global mass heat pump deployment](#) - This policy toolkit is a foundational guide for policymakers and advocates interested in learning how to achieve rapid and successful heat pump deployment. Experts in energy policy and markets, appliance regulation and sustainable buildings have contributed to its development. **Authors:** Richard Lowes, Duncan Gibb, Jan Rosenow, Samuel Thomas, Matt Malinowski, Alexia Ross, Peter Graham. Read/download the [full document](#) - [The Regulatory Assistance Project \(RAP\), 14 November 2022](#)



6. NDC4 Call for Proposals

NDC4 (Nationally Determined Contributions (NDCs). The global project Cool Contributions fighting Climate Change II (C4 II))

The global project “Cool Contributions fighting Climate Change II” (C4 II) launches a Call for Proposals which provides technical advisory to ambitious countries in the application of best practices for NDC strategy development in the RAC sector.



Background

The global project “Cool Contributions fighting Climate Change II” (C4 II) assists countries in implementing Nationally Determined Contribution (NDC) mitigation measures in the Refrigeration and Air Conditioning (RAC) sector.

Simultaneously, C4 II aims to support countries in developing more differentiated and ambitious NDC cooling targets and actions.

The objective of this Call for Proposal is to identify and support ambitious countries in the application of best practices for NDC strategy development in the RAC sector.

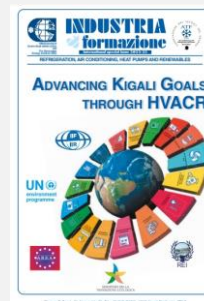
[Application Form](#) / Deadline for submission **16 January 2023**

[GIZ, Green cooling initiative, December 2022](#)

Image: Green Cooling Initiative website

[Advancing Kigali goals through HVACR - International Special Issue 2022- 2023](#)

To provide an update on this global effort, The Centro Studi Galileo (CSG) and the Renewable Energy Institute (REI), with support from the International Institute of Refrigeration (IIR), The United Nations Environment Programme-OzonAction, (UNEP-OzonAction) and The Air conditioning and Refrigeration European Association (AREA), Ministero Della Transizione Ecologica, have collected experiences from around the world, compiled in this special publication, featuring papers from leading global institutions and experts, addressing the current situation, the challenges ahead, and sharing opinions from different National Ozone Units, on issues related among others to HVAC&R, training, and the role of women in the cooling industry.



The [International Special Issue 2022- 2023](#) was officially launched during a side event at the Thirty-Fourth Meeting of the Parties to the Montreal Protocol in Montreal, (MOP34), 31 October – 4 November 2022 | Montreal, Canada



ATLANTA/PARIS (October 28, 2022) – Entries are now being accepted for the ASHRAE and OzonAction of the UN Environment Programme (UNEP) [2022 Lower GWP Refrigeration & Air-Conditioning Innovation Award](#). The award promotes innovative design, research, and practice by recognizing people who have developed or implemented innovative technological concepts applied in developing countries to minimize global warming potential (GWP) through refrigeration and air-conditioning applications. The award is part of the ASHRAE-UNEP OzonAction joint workplan for 2021-2023 under the global cooperation agreement established by both parties in 2007.

Due to the global pandemic, judging of submissions received for the 2020 award was not completed. However, entries submitted for the 2020 award will be automatically entered into consideration for the 2022 award. Those who submitted entries for 2020 will be allowed and encouraged to update those entries if desired.

“We must support and recognize innovative efforts that seek to minimize negative impacts on our environment,” said 2022-23 ASHRAE President Farooq Mehboob, Fellow Life Member. “ASHRAE is proud to continue our partnership with UNEP OzonAction to sponsor this award in support of pioneering refrigerant technologies that will play a crucial role in our global marketplace and help us to achieve important climate management goals.”

The award’s selection criteria include:

- Description of innovation in field of lower-GWP refrigerants.
- Confirmation project has been implemented in a developing country.
- Extent of need.
- Environmental impact achieved including specific reference to the GWP chemicals’ contribution.
- Description of further application in developing countries from both the technology and economic perspectives, including how the innovation is financially feasible to be replicated.

The entry period ends 31 December 2022

Information about the award and the online submission form can be found at ashrae.org/lowerGWP. Entries will be judged by an international jury of experts in the field of refrigerant research and management selected by ASHRAE and UNEP.

The individuals who worked on projects selected for 2022 awards will be announced at Montreal Protocol related events. ASHRAE and UNEP will also team to disseminate information to specialists and government officials in developing countries about the projects selected to raise awareness of successful technology applications.

In 2019, ASHRAE and UNEP identified five projects – two Residential Applications and three Commercial/Industrial Applications for awards.

- *Low Charge Ammonia Vapor Compression Refrigeration System implemented in India*
- *HFC-161 Application for High Cooling Capacity Household Air Conditioners implemented in China*
- *Packaged Chillers with Integrated Air Handling Units Using HFC-32 and HC-290 implemented in Saudi Arabia*
- *CO₂ Transcritical Refrigeration System for a Hot-and-Humid Region implemented in Thailand*
- *Low Charge Propane Chiller for a Supermarket Refrigeration System implemented in Brazil*

Contact:

[Karen Buckley Washington](#), ASHRAE Senior public relations specialist

[Amr Abdelhai](#), Montreal Protocol officer, UNEP OzonAction

Image: ASHRAE website

[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.

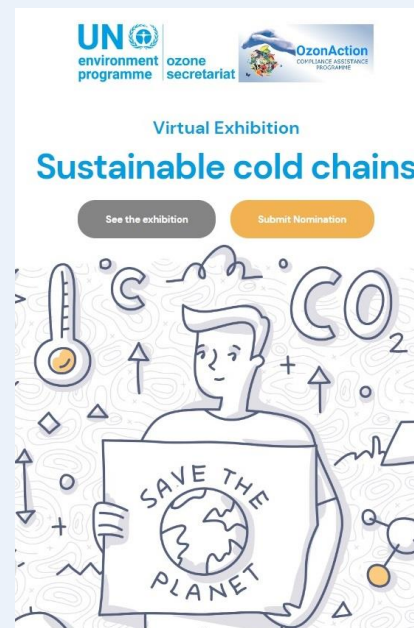
The exhibition showcases commercially available cold chain technologies for food and vaccines, mainly targeting applications and equipment with refrigeration and cooling cycles that use ozone and climate-friendly refrigerants and have enhanced energy efficiency characteristics. It also aims to promote 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

LATIN AMERICA AND CARIBBEAN

7. St. Kitts and Nevis: advancing project implementation

The UNEP's OzonAction Programme in cooperation with the Government of St. Kitts and Nevis through the Ministry of Sustainable Development, Environment, Climate Action, and Constituency Empowerment, undertook an official mission to St. Kitts and Nevis 22-25 November 2022, to meet with high-level officials, National Ozone Unit, and key stakeholders.



From left to right: Donnalyn Charles, UNEP OzonAction, Sharon Rattan, Permanent Secretary, Hon Dr. Joyelle Clarke, Minister of Environment and Climate Action, Mikheil Tushishvili, UNEP OzonAction.

The Mission sought to advance project implementation at the national level, facilitate the submission of key data related to the finalization of the Verification Report of National HCFC Consumption Targets for 2015-2022 and finalize activities under the HCFC Phase out Management Plan (HPMP) Stage I in St. Kitts and Nevis as well as submission of the request for preparation of the HPMP Stage II.

During the mission, facilitated by Ms. Vicia Woods, National Ozone Officer, meetings were held with Ms. June Hughes, the Director of Environment and Permanent Secretary Ms. Sharon Rattan. A Courtesy Visit was paid to the Hon. Minister of Sustainable Development, Environment, Climate Action and Constituency Empowerment, Dr. Joyelle Clarke. She reaffirmed her support for the smooth implementation of Montreal Protocol related activities at the national level.

Important consultations were also held with the Customs and Excise Department, the RSS and the Tourism and Fisheries sub-sector representatives.

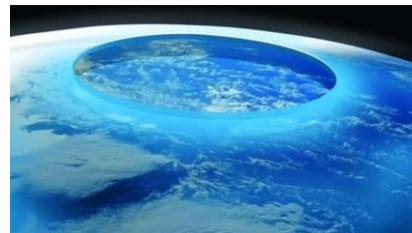
Contact:

[Donnalyn Charles](#), OzonAction Regional Network Coordinator for the Caribbean
[Mikheil Tushishvili](#), OzonAction Programme Officer

Image: OzonAction

8. Ozone hole makes third appearance over Argentine Patagonia in 2022

Argentine scientists warned this week about the possible consequences on people's skin stemming from the ozone hole positioning itself over the Argentine provinces of Santa Cruz and Tierra del Fuego, which is taking place for the third time in 2022.



The hole usually appears between August and December over Antarctica. The phenomenon was discovered in the 1970s. Since then, a worldwide agreement has been

reached to reduce emissions of chlorofluorocarbons (CFCs), a gas that affects the atmosphere.

Residents in Patagonian areas were advised to stay off sunny spaces and take other preventive measures because, despite environmental agreements currently in force, it will take many years before the situation reverses. In the meantime, the hole's negative effects on people's health can be serious.

Argentina's National Meteorological Service (SMN) reported that the hole spent a couple of days over Ushuaia and parts of Patagonia. According to the World Meteorological Organization (WMO), the area affected by the ozone hole reached its peak this year on Sept. 16. It was larger than that recorded in 2010 and 2012 but smaller than that of 2011. The ozone deficit this year is also larger than in 2010 and 2012.

These events are particularly harmful in October and November when the sun is high on the horizon and the intensity of ultraviolet radiation increases considerably. In October this year ozone's values dropped by over 50% its normal figures.

The Ozonesonde Program developed at the Ushuaia Global Atmospheric Watch station carries out a weekly survey, as part of a program resulting from a joint project between the SMN the Government of Tierra del Fuego (Argentina), and Spain's National Institute of Aerospace Technology (INTA Spain) and the State Meteorological Agency (AEMET Spain). "More UV rays reach the surface" due to the ozone hole filtering less of them, SMN's Cindy Fernández explained. "They are harmful, they generate a rapid reddening of the skin, regardless of the temperature. They are one of the main causes of skin cancer," she added. "Human beings in their activities generated large amounts of CFCs. These gases last for many years and also break down ozone molecules," she elaborated.

Using ozone to manufacture certain products led to "the abnormal reduction of the ozone layer," Fernández also pointed out.

On average the hole passes above Ushuaia three times a year. "This year we had that condition on October 12, and on Monday and Tuesday" this week, Fernández also noted. "Then there were some days when we were very close to 220 Dobson units (anything below that value is considered a hole)," Fernández also underlined.

[MercoPress, 3 December 2022](#)

Images: Merco Press Website

ASIA AND THE PACIFIC

9. Bench testing results of refrigeration and air conditioning equipment – Australia

The Department of Climate Change, Energy, the Environment and Water engaged recognised independent testing facilities to bench test refrigeration and air conditioning equipment to find out how much additional power was used when common faults were applied to the equipment. The bench testing was to determine the benefits of regular equipment maintenance.



On the department's behalf, SuperCool Asia Pty Ltd and the CSIRO tested a number of different refrigeration and air conditioning equipment for common faults that occur over time.

The findings are detailed in the reports below, and clearly demonstrate that preventative maintenance minimises technology failure, reduces refrigerant leaks and increases the energy efficiency of properly installed equipment.

As part of this project, Cresstec Pty Ltd, (with 9 years' experience of fault analysis and tracking), also provided bench test results undertaken independently to this project on an air-conditioning unit at different Australian temperature zones, against similar common faults, with similar findings.

The reports are available [here](#):

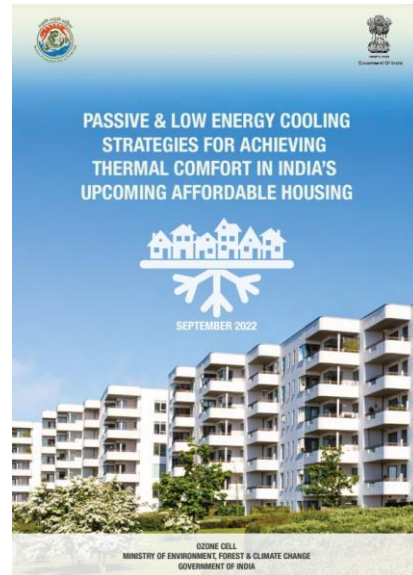
- UTR -165 – Refrigerated Display Cabinet Report – SuperCool Asia Pty Ltd
- UTR -165 – Walk-in cool room Report – SuperCool Asia Pty Ltd
- Air Conditioner Energy Use Testing Under Common Fault Conditions – CSIRO
- Effects of preventable faults on air-conditioning systems at T1 – Cresstec Pty Ltd
- Effects of preventable faults on air-conditioning systems at T2 – Cresstec Pty Ltd
- Effects of preventable faults on air-conditioning systems at T3 – Cresstec Pty Ltd

[Australian Government, The Department of Climate Change, Energy, the Environment and Water, October 2022](#)

Images: Australian Government Website

10. Passive and low energy cooling strategies for achieving thermal comfort in India's upcoming affordable housing

Over the past decade, the world has witnessed a record frequency and temperatures of heat waves, which have resulted in over 6000 casualties. Rising temperatures in urban centres increase the demand for cooling and have moderate to severe negative impacts. AC-induced urban heat islands are projected to increase the vulnerability of urban populations, especially the poor, potentially leading to heat related health impacts in the future. These impacts include issues such as poor public health, reduced workforce productivity, and poor air quality, which disproportionately affect the LIG and EWS leading to greater urban inequality.



On the one hand, India is one of the fastest growing and largest economies in the world. On the other, the growth is not equally distributed. Overall, India has a very low per capita level of energy consumption for space cooling—69 kilowatt-hours (kWh) per capita, compared to the world average of 272 kWh, making it one of the lowest globally¹³. According to macroeconomic estimates, the per capita income in India will rise to about USD 5,700 (INR 4.15 lakhs) in 2030¹⁴ from USD 2,104 (INR 1.5 lakhs) in 2019. This increase would alter the quality of life in Indian cities and enhance citizens' socio-economic status.

The projected growth, coupled with the rising temperatures in Indian cities, could significantly alter urban consumption patterns, directly impacting the rise in cooling demand. In the absence of additional policy measures and continuation of the business-as-usual (BAU) scenario, RAC penetration is expected to rapidly increase in India, reaching somewhere between 190 and 239 million units by 2030¹⁵, amounting to about 152 terawatt-hours (TWh) in annual energy consumption.

To address the growing energy demand and thermal comfort challenges in the affordable housing sector, it is vital to examine India's current policy initiatives and housing scenario. Solutions need to be developed to prevent the additional introduction of HCFCs in any possible form, while simultaneously addressing energy efficiency and thermal comfort.

Various ongoing policy initiatives were reviewed for this study, including the ENS, ICAP, and Hydrochlorofluorocarbon Phase-out Management Plan (HPMP).

¹³ Ozone Cell, Ministry of Environment, Forest & Climate Change, Government of India, "India Cooling Action Plan."

¹⁴ Bloomberg, "[India Insight: \\$10 Trillion GDP by 2030? Not Quite, but Almost](#)" | Bloomberg Professional Services," 2019

¹⁵ Ozone Cell, Ministry of Environment, Forest & Climate Change, Government of India, "India Cooling Action Plan."

[Ozone Cell, Ministry of Environment, Forest & Climate Change, Government of India, September 2022](#)

Images: India Ozone Cell Website

11. Carbon emission and climate change impact agriculture and food value chain – India

Confederation of Indian Industry (CII) Food and Agriculture Centre of Excellence (FACE) organised a National Post-Harvest & Logistics Summit recently with the theme “Sustainably mitigating food loss and climate change.” The summit was followed by the 7th CII Cold Chain Award Ceremony.

The summit was the significant forum to discuss innovations, business models and best practices adopted by organisations to mitigate food loss and minimise impact on the environment. Three technical sessions were covered during the summit. First session was Spotlight on the Global Best Practices to mitigate climate change in which the session aimed at bringing to light the mitigation strategies for developing countries, to make transformational shifts to address climate change.

The second session was Achieving net zero carbon emission by 2070 in which it aimed at bringing to light the necessary strategies that support organisations on their journey to reduce carbon and greenhouse gas emission for a Net Zero Future. The third session was Climate-smart Post-harvest Innovations in which the session aimed towards catalysing science-based policy action on sustainable post-harvest innovation with International Researchers and Stakeholders sharing perspectives from crucial issues such as climate change and its impact on cold chain markets to sharing experiences on adaptation in the region and dialogues on nature-based solutions to prevent post-harvest losses globally in India.

To create a seamless cold chain logistics, an industry led Cold Chain Logistics Resource Centre (CCLRC) is set up under CII’s Food and Agriculture Centre of Excellence in 2021.

The CCLRC is supported by international agencies such as GIZ and UNEP and aligned to international priorities such as the Sustainable Development Goals and Kigali Amendment to the Montreal Protocol.

The day saw the launch of Commodity Specific Post-Harvest Protocols for fruits & vegetables, Frozen Products and Logistic Protocols, developed under the aegis of the CCLRC.

Going forward, the CCLRC will continue working towards promoting green technologies, piloting community cooling solutions and build the capacity of the sector in India.

[Food and Beverage News \(FnB\), 10 December 2022](#)

Images: FnB Website



12. China phases out 504,000 tons of ODS over past 30 years

After 30 years of unremitting efforts, China has phased out a total of 504,000 tons of ozone-depleting substances (ODS) since its accession to the Montreal Protocol on Substances that Deplete the Ozone Layer, contributing significantly to climate change mitigation and ozone layer protection, the country's Ministry of Ecology and Environment said on Monday.

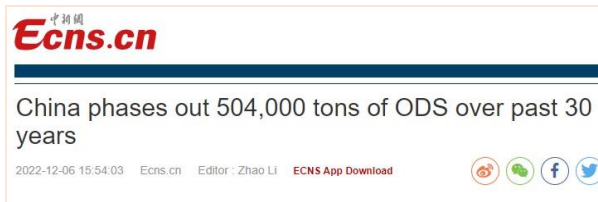
China signed the protocol in 1991. By now, it has fully eliminated the use of five major ODS, namely, chlorofluorocarbons (CFCs), halon, carbon tetrachloride, methyl chloroform, and bromomethane. Currently, it is phasing out Hydrochlorofluorocarbons (HCFCs), the last type.

Over the past 30 years, China has avoided greenhouse gas emissions equivalent to about 23 billion tons of carbon dioxide, more than twice the total carbon emissions of 2021, and a remarkable achievement according to the ministry.

China has explored a path to implement a protocol that conforms to its national conditions, contributing Chinese wisdom, planning and experience to international environmental cooperation, said the Ministry.

[China News, 6 December 2022](#)

Images: China News Website



13. Public Notice: Attention to All Importers of Refrigerants Gases - Solomon Islands

PUBLIC NOTICE

ATTENTION TO ALL IMPORTERS OF REFRIGERANT GASES

NOU Licenses / Quota Allocation / Permit Requirement For 2023

National Ozone Unit (NOU)

The National Ozone Unit, housed within the Energy Division, Ministry of Mines and Energy is the focal point for controlling the imports of ozone depleting

substance into Solomon Islands. To be eligible to import in 2023, the following steps are to be fulfilled:

1. Licences/Registration

As required under the Montreal Protocol and the successive amendments, The NOU will be introducing the licencing system into the country to be effective 1st January 2023. Invitations are sought from the general business houses for registration to import.

How to apply:

- Cover letter of Expression of Interest
- Complete Application Form
- Valid Business License Certificate
- TIN Number

2. Quota Application: ONLY APPLICABLE TO HCFC Refrigerant (R22) IMPORTERS

Upon being licensed/registered, each importer can then apply for quota

- HCFC (R22) quota baseline for Solomon Island = 4.29 MT/ 4290 KG, is allocated to importers by end of each year for the following year import.
- The quota that will be issued indicates the quantity of HCFCs that an importer can import in that year. Company will only be authorized to import within the quota limits set by NOU/MMERE.
- Quota issued does not immediately qualify the import of HCFC into the country.
- Quotas will only be issued to qualified importers that meet the requirements set by NOU/MMERE.

3. Permit Per Shipment Application

Upon issuance of quota, importers will have to apply separately for permit for each consignment of import into the country:

- Complete Application Form
- Bill Of Lading
- Invoice
- Packing List

FOR ENQUIRIES ON FEES, FORMS AND SUBMISSIONS, PLEASE CONTACT:

National Ozone Unit, Ministry of Mines, Energy and Rural Electrification

PO Box G37, Lengakiki - Honiara

Email: Marina Nonga [MNonga@mmere.gov.sb]

or Marywayne F Siau [MFalea@mmere.gov.sb]

Office Phone: 21525 EXT 242

DEADLINE FOR SUBMISSION: Friday 30th December 2022

[Solomon Islands Government, 13 December 2022](#)

Images: Solomon Islands Government Website

WEST ASIA

14. UNEP Supports Iraq in Keeping Up with Montreal Protocol Commitments

2 December 2022, Beirut, Lebanon – The UN Environment Programme (UNEP) OzonAction Compliance Assistance Programme (CAP), West Asia Office, organized a three-day coordination meeting at the Landmark Hotel in Amman, Jordan, from 28 to 30 November 2022, which brought together representatives from the National Ozone Unit (NOU) / Ministry of Environment in Iraq and members of the UNEP CAP West Asia team to discuss progress achieved in the implementation of Montreal Protocol funded projects in Iraq, namely the second stage of the HCFC phase-out management plan (HPMP) and Phase V of the Institutional Strengthening Project (ISP), as well as challenges faced and the support that can be provided to the NOU and national team to ensure the sound implementation of activities under those two projects.

The meeting also provided an opportunity to go through the financial and operational obligations as well as reporting requirements that fall within the framework of the project's cooperation agreements signed between UNEP and the government of Iraq, to ensure the effective and timely implementation and delivery of planned activities, as well as sound reporting as per the agreed upon format and conditions.

In combination with the meeting, and given the good progress achieved by some Jordanian companies in introducing alternative energy-efficient technologies using natural refrigerants, two site visits were organized for representatives of Iraqi industries using Ozone depleting Substances (ODS) to benefit from their experience in replacing ODS with environment-friendly alternative technologies.

The first site visit took place at Petra Engineering Industries, a lead and pioneer company, both at the regional and global levels, in testing and converting production to use long-term alternatives in the air conditioning sector. The second site visit took place at Abdin Industrial Establishment, a lead manufacturer of commercial refrigeration equipment with extensive experience in converting to available long-term alternatives including hydrocarbons (HCs) and CO₂.



On the last day of the meeting, Mr. Khaled Klaly, UNEP's Montreal Protocol Regional Coordinator in West Asia, also visited the Royal Scientific Society of Jordan and met with a group of representatives to discuss areas of potential joint cooperation and support, particularly in what relates to the implementation of the Kigali Amendment related projects including the development and implementation of HFCs Phase-down Plans (KIPs) in the region.

Contact: [Khaled Klaly](#), Montreal Protocol Regional Coordinator, UNEP, OzonAction CAP West Asia

Images: OzonAction Website

NORTH AMERICA

15. EPA Proposes Rule to Advance Transition to Safer, More Efficient Heating and Cooling Technologies



Latest proposal under the bipartisan AIM Act promotes US development and manufacturing of climate safe HFC alternatives, saving billions in costs

WASHINGTON – Today, the U.S. Environmental Protection Agency (EPA) announced a proposed rule under the American Innovation and Manufacturing (AIM) Act to advance the transition to more efficient heating and cooling technologies by restricting the use of super-polluting hydrofluorocarbons (HFCs) in certain products and equipment where more climate friendly alternatives are available. The proposed rule, which would apply both to imported and domestically manufactured products, will help ensure a level playing field for American businesses that are already transitioning to next-generation, safer alternatives and more energy efficient technologies.

“With this latest proposal under the bipartisan AIM Act, EPA continues to advance President Biden’s ambitious climate agenda while investing in American innovation and ingenuity,” said EPA Administrator Michael S. Regan. “This proposal will support a transition away from super-pollutant HFCs in key sectors of our economy while promoting American leadership in manufacturing of new climate-safe products, making our nation more globally competitive and delivering significant environmental and economic benefits.” The bipartisan AIM Act authorizes EPA to limit or prohibit the use of HFCs in specific sectors and to phase in these requirements over time as appropriate. The proposed rule addresses petitions granted in October 2021 and would restrict the use of climate-damaging HFCs used in certain foams, aerosol products, and refrigeration, air conditioning,

and heat pump equipment beginning in 2025. The HFCs that are being restricted under this proposal are those that have higher global warming impacts.

Under the AIM Act, the Biden-Harris Administration is implementing a national HFC phasedown to achieve a 40% reduction below historic levels starting in 2024 and an 85% reduction by 2036. Today's proposed rule will help guide this overall phasedown by accelerating the transition away from HFCs in areas where substitutes are available or being introduced, helping to unlock additional climate benefits and savings. EPA estimates that this action would provide greenhouse gas emissions reductions of up to 35 million metric tons of carbon dioxide equivalent (MMTCO_{2e}) per year, equivalent to annual fuel consumption of roughly 7.5 million gasoline-powered cars. The cumulative savings for industry and consumers—which largely result from improved energy efficiency and lower cost refrigerants—is estimated to be up to \$8 billion through 2050.

The proposal is in response to petitions from companies, industry associations, non-governmental environmental organizations, and 12 states and the District of Columbia that requested that EPA restrict the use of certain HFCs in products and equipment across 40 subsectors. EPA developed the proposed restrictions after reviewing petitions, holding stakeholder workshops, and considering an extensive list of factors as specified in the AIM Act, including the availability of substitutes, safety, and the overall economic and environmental impacts.

To ensure a level playing field for companies complying with the AIM Act's national HFC phasedown, EPA has also established robust enforcement mechanisms, drawing from experience globally with illegal HFC trade and with past attempts to illegally introduce ozone-depleting substances into the U.S. market. Companies now need allowances for producing or importing HFCs.

Last month, the Interagency Task Force on Illegal HFC Trade, co-lead by EPA and the Department of Homeland Security and comprised of the Departments of Defense, Justice, and State, held their semi-annual meeting along with the White House and participants from the industry trade association The Alliance for Responsible Atmospheric Policy. The Task Force reported that they have prevented illegal HFC shipments equivalent to more than 889,000 MTCO₂ in the first nine months of this year, the same amount as the emissions from nearly 173,000 homes' electricity use for one year. The Task Force will continue to cooperate on and improve real-time monitoring of our borders to prevent illegal HFC trade, with increased opportunities for training customs officers, especially leading up to the 2024 reduction in HFCs to 40% below historic levels.

These actions also support U.S. climate leadership on the world stage. On October 31, 2022, the United States ratified the Kigali Amendment to the Montreal Protocol, an international treaty that calls for a global HFC phasedown and could avoid up to half a degree Celsius of global warming by the end of the century. EPA is conducting active and ongoing oversight of the AIM allocation and reporting program to ensure parties are reporting their import and production of HFCs accurately, and to ensure that EPA is making appropriate decisions regarding HFC allocation volumes for importers and producers each year. EPA found that several entities misreported historic data. As a consequence, EPA is retiring allowances for each of the affected entities for 2023. Altogether, EPA is retiring nearly 3.9 MMTCO_{2e} of

2023 allowances as a result of misreporting and importing without allowances. Once retired, these allowances cannot be used, providing additional environmental benefit.

The bipartisan AIM Act provides the tools that allow the United States to implement a national HFC phasedown to comply with the Kigali Amendment, as well as provisions to help transition technologies away from HFCs and manage the use of HFCs through maximizing their reclamation and minimizing their release. EPA is planning to issue a proposed rule to address the management of HFCs and their substitutes next year.

EPA will accept comments on this proposal for 45 days after publication in the Federal Register and hold a public hearing.

[US EPA, 9 December 2022](#)

Image: USEPA website

EUROPE AND CENTRAL ASIA

16. European Groups Seek Support for Statement Urging Ambitious EU F-gas Regulation and Heat Pumps using Natural Refrigerants

Four European organizations supporting the wider uptake of natural refrigerants are seeking support for a statement asking the European Commission (EC), the European Parliament and national governments to maintain an ambitious stand in their ultimate revision of the EU F-gas Regulation, particularly in regard to heat pumps.

The organizations – the Clean Cooling Coalition, Refrigerants, Naturally!, the Royal Dutch Association of Refrigeration (KNVvK) and STEK (Emission Prevention Refrigeration Technology Foundation) – released the statement at the ATMOsphere (ATMO) Europe Summit 2022, held November 15–16 in Brussels. The conference was organized by ATMOsphere, publisher of R744.com

Dozens of companies signed the statement at the conference, and the groups invite like-minded stakeholders to sign it as well.

The statement can be [downloaded](#) /filled in, scanned and emailed to any of the groups:



info@cleancoolingcoalition.eu, info@refrigerantsnaturally.org, info@knvvkyoungcool.nl, info@stek.nl

The groups are forwarding the signed statements to EU and national policy makers working on the F-gas Regulation.

The EC has [submitted a proposal](#) to increase the ambition of the current EU F-gas Regulation, part of the process in the EU that will lead to a revision of the regulation. In addition, Member of the European Parliament (MEP) Bas Eickhout has called for greater ambition than the EC's proposal, through both bans on new refrigeration and air-conditioning equipment with fluorinated gases (HFCs and HFOs) between 2024 and 2027 and a more stringent HFC phase down.

Separately, the European Chemicals Agency (ECHA) will take up a proposal to regulate certain f-gases and one of their by-products, trifluoroacetic acid, in January.

Meanwhile, the EU has developed the [REPowerEU program](#) to accelerate the bloc's transition away from fossil fuels toward an electrified future that includes heat pumps. However this initiative has sparked a debate about whether an ambitious F-gas Regulation would not support an accelerated heat pump rollout.

"Our companies' business is aligned with the objectives of REPowerEU and the EU Chemical Strategy for Sustainability," the statement says, adding, "We support the overall direction of the Commission proposal for the new EU F-gas Regulation, the amendments of the European Parliament and the work related to PFAS." In a footnote, the statement refers in particular to the [amendment proposed by Eickhout](#).

The statement stressed that "there is no 'conflict' between a phase-down of halogenated chemicals and the objectives of REPower EU, in particular those related to heat pumps." In fact, manufacturers are already investing "at large scale" in R&D and production capacities for environmentally friendly equipment without f-gases and other halogenated chemicals, the statement adds.

Natural refrigerants, notes the statement, "are a proven, reliable, energy-efficient and technically mature option for almost all applications, capacities, sizes and temperatures. They are readily available in the EU and in the countries adopting EU ambitions. This is particularly true for heat pumps."

The organizations say they would like to see "legislation, standards, training and certification schemes for technicians" as well as "targeted financial incentives" to support equipment with natural refrigerants or refrigerant-free technologies.

[r744, 12 December 2022](#)

Image: r744 website

FEATURED



Summary of the 34th Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (MOP34), 31 October – 4 November 2022 | Montreal, Canada

- Read/Download the [full report](#)
- pre/post documents, United Nations Environment Programme (UNEP), Ozone Secretariat [MOP-34](#)
- [Daily highlights](#) Earth Negotiations Bulletin-International Institute for Sustainable Development (IISD) / [Presentations and statements](#) / [Side events](#)

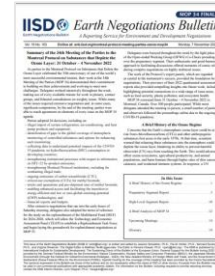


Image: ENB-IISD website

Overview for the meetings of the ozone treaties in 2022 - Click [here](#) for past and upcoming Montreal Protocol Meetings dates and venues.

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](#)



Image: UNEP, Ozone Secretariat website

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](#)

Image: UNEP, Ozone Secretariat website

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:

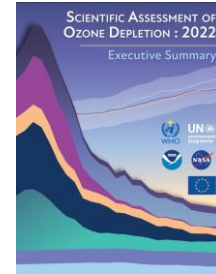
- [The Technology and Economic Assessment Panel](#)
- [The Scientific Assessment Panel](#)
- [The Environmental Effects Assessment Panel](#)

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, November 2022](#)



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 90 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.

As at September 2022, the contributions received by the Multilateral Fund from developed countries, or non-Article 5 countries, totalled over US\$ 4.49 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.

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.

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.

- [Updated guide for the presentation of stage II of HCFC phase-out management plans \(August 2022\)](#), 9/19/2022
- [The provisional agenda for the 91st meeting is now posted](#), 9/14/2022
- [The Information Note for the 91st meeting is now available](#), 9/9/2022

>>> 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

[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).



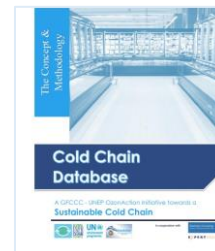
More Information - The Gas Card web based tool is part of UNEP OzonAction's portfolio of activities and tools to assist various stakeholders in developing countries, including customs officers and technicians, to achieve and maintain compliance with the Montreal Protocol on Substances that Deplete the 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 Card web-based tool**

- The Gas Card 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)*

OzonAction and GFCCC launch the methodology questionnaires the Cold Chain Database Initiative

The Global Food Cold Chain Council (GFCCC) and the United Nations Environment Programme (UNEP) OzonAction announced the launch of their Cold Chain Database and Modeling initiative. The initiative marks the first formal step to assist developing countries in identifying their cold chain baseline along with consumption of relevant HCFCs or HFCs or other refrigerants. The initiative was conceived in 2019 and kicked off during the 31st Meeting of Parties to the Montreal Protocol (Rome, Italy), which concluded with the Rome Declaration on "The Contribution of the Montreal Protocol to Food Loss Reduction through Sustainable Cold Chain Development".



> [GFCCC-UNEP OzonAction Cold Chain Modelling Press Release](#)

> [GFCCC-UNEP Cold Chain Database Methodology Final](#)

> For countries or partners interested to use the model data collection detailed questionnaires, please fill in the [Expression of Interest and NDA of Cold Chain Database](#) form and return to UNEP, [OzonAction](#)

Substance ID	Quantity (ODP)	Quantity (CO2-e)	Importer	Year	Value	Status
1	100	10000	Importer	2015	\$10,000	Active
2	200	20000	Importer	2016	\$20,000	Active
3	300	30000	Importer	2017	\$30,000	Active
4	400	40000	Importer	2018	\$40,000	Active

[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 CO₂-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, CO₂-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 it all the official facts and figures in one place. Conversion formulas need to be applied to calculate CO₂-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 refrigerant 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 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



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](#).

[Refrigerant Cylinder Colours: What has Changed](#) - A new UNEP OzonAction factsheet on the new AHRI revised guideline on a major change to refrigerant cylinder colours - One of the ways in which refrigeration cylinders are quickly identified is by cylinder colour. Although there was never a truly globally adopted international standard, the guideline from the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) although not required by law was used by the vast majority of industry and chemical producers around the world. An AHRI revised guideline, first published in 2015, now removes paint colour assignments for refrigerant containers and specifies that all refrigerant containers should have the same paint colour from 2020 onwards. NOOs and technicians should be aware of this change and inform national stakeholders, as well as familiarising themselves with relevant container labels and markings for refrigerants. **Read/download the [factsheet](#)**



Update on [new refrigerants designations and safety classifications](#) - The latest version of the factsheet providing up to date information on refrigerant designations and safety classifications is now available (September 2020 update). The factsheet, produced by **ASHRAE** in cooperation with **UN Environment Programme OzonAction** is updated every 6 months. **Read/download the [factsheet](#)**



Contact: [OzonAction](#), UN Environment Programme

[OzonAction's iPIC platform - Updated](#) - Collaboration between China and Thailand using OzonAction's informal Prior Informed Consent (iPIC) system has resulted in the prevention of a huge consignment of ozone-depleting and climate damaging hydrochlorofluoro-carbons (HCFCs). Those chemicals, which are primarily used as refrigerants for air conditioners and fridges, are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer and are being phased out by all countries according to a specific timeline.



[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 field and follow in their footsteps. **Read/download the [publication](#)**



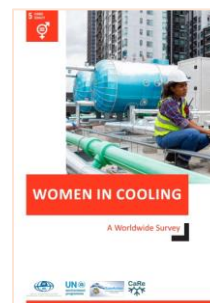
As part of IIR and UNEP OzonAction's partnership, a set of Cold Chain Technology Briefs was released over the past few years, which includes in-depth summaries about the cold chain in different key sectors. They include descriptions of technology, refrigerant options and trends and conclude with prospects 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](#)**



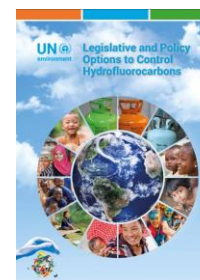
[Sustainable Food Cold Chains: Opportunities, Challenges and the Way Forward](#)

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](#)



Latest issue of Centro Studi Galileo magazine, **Industria & Formazione**, n. [9-2022](#) (in Italian).

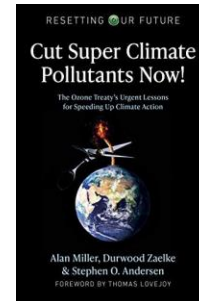


Green Cooling in public procurement - How to advance the procurement of climate-friendly and energy-efficient cooling equipment in the public sector? Air conditioning in public buildings is often responsible for around 50% of total electricity consumption. Switching to climate-friendly cooling technologies ("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](#)**

Cut Super Climate Pollutants Now!: The Ozone Treaty's Urgent Lessons for Speeding Up Climate Action (Resetting Our Future). We have a decade or less to radically slow global warming before we risk hitting irreversible tipping points that will lock in catastrophic climate change. The good news is that we know how to slow global warming enough to avert disaster. Cut Super Climate Pollutants Now! explains how a 10-year sprint to cut short-lived "super climate pollutants" -- primarily HFC refrigerants, black carbon (soot), and methane -- can cut the rate of global warming in half, so we can stay in the race to net zero climate emissions by 2050.



Authors: Alan Miller, Durwood Zaelke, Stephen O. Andersen.

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.

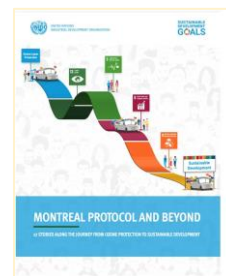
The e-book, titled "[7 Keys to a Compliant PSM Training Program for Ammonia Refrigeration](#)," outlines important questions a facility's program should address and questions that trained plant personnel should be able to answer. Topics covered include:

- Safety hazards and health considerations
- Emergency shutdown procedures
- Addressing deviations from system operating limits
- Risks and costs of non-compliance with regulatory standards



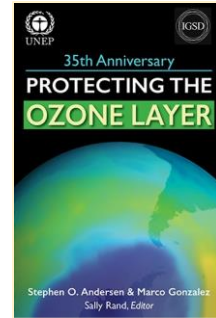
Request free Download [here](#)

[Montreal Protocol and beyond: 17 stories along the journey from ozone layer protection to sustainable development](#) - The 2030 Agenda for Sustainable Development and the 17 Sustainable Development Goals (SDGs) embody the global commitment to build a more sustainable future for all. These universally agreed objectives address the most urgent environmental, social and economic challenges of our time... **Read/Download [here](#)**



Protecting the Ozone Layer - 35th Anniversary Edition - a new book celebrating the 35th Anniversary of the Montreal Protocol. 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 (N₂O), feedstock exemptions for plastics production, and dumping of obsolete cooling appliances.

[The book was released at 34th Meeting of the Parties to the Montreal Protocol on 31 October 2022.](#)



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I am in the Montreal Protocol Who's Who... Why Aren't You?

The United Nations Environment Programme, OzonAction, in collaboration with Marco Gonzalez and Stephen O. Andersen are updating and expanding the "[Montreal Protocol Who's Who](#)".

We invite you to submit your nomination*, and/or nominate Ozone Layer Champion(s). ***The short profile should reflect the nominee's valuable work related to the Montreal Protocol and ozone layer protection.***

Please notify and nominate worthy candidates through the [on-line form](#).

We look forward to receiving your nomination(s), and please feel free to contact our team for any further assistance concerning your nomination.

Take this opportunity to raise the profile of women and men who made an important contribution to the Montreal Protocol success and ozone layer protection.

- View the «Montreal Protocol Who's Who» [Introductory video](#)
- Contact : [Samira Korban-de Gobert](#), UN Environment Programme, OzonAction

** If you are already nominated, no need to resubmit your profile*



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If you wish to submit articles, invite new subscribers, please contact:
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