

OzoNews

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

Volume XXI | 15 November 2021

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GLOBAL

1. Kigali Amendment latest ratifications

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

[St. Lucia, 2 November 2021](#)

[Turkey, 10 November 2021](#)

[Serbia, 8 October 2021](#)



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).

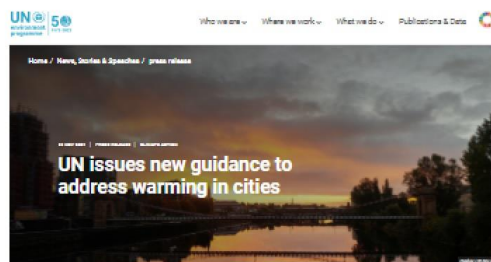
Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Status of Ratification 15 October 2016 to [date](#).

[United Nations Treaty Collection](#)

Image: UN Treaty Collection website

2. UN issues new guidance to address warming in cities

- Prepared with RMI, the comprehensive guide prescribes proven strategies to achieve sustainable urban cooling, with scores of case studies
- Overheated cities face disproportionate climate costs due to 'heat island effect'; average city could warm as much as 4°C by 2100



Glasgow, 3 November 2021–The UN Environment Programme (UNEP) today published detailed guidance to help the world's cities address warming, which is occurring at twice the global average rate in urban areas.

Beating the Heat: A Sustainable Cooling Handbook for Cities, prepared with RMI, states that by the end of this century, many cities could warm as much as 4°C if GHG emissions continue at high levels. Even at 1.5°C of warming, 2.3 billion people could be vulnerable to severe heat waves.

Launched at the ongoing UN Climate Conference (COP26) by the Cool Coalition, UNEP, RMI, the Global Covenant of Mayors for Climate & Energy (GCoM), Mission Innovation and the

Clean Cooling Collaborative, the new guide offers planners an encyclopedia of proven options to help cool cities.

“Science tells us that to keep global temperatures from rising by more than 1.5°C, we need to achieve net-zero emissions by mid-century. Sustainable and equitable urban cooling must be a part of cities’ efforts to reach net-zero energy targets,” said Inger Andersen, UNEP Executive Director.

In outlining the problem, the Sustainable Cooling Handbook for Cities describes how cities are warming quickly due to the “heat island effect”, caused by a combination of diminished green cover, the thermal properties of the materials commonly used in urban surfaces, and waste heat from human activities.

The Handbook notes that:

- Demand for space cooling is increasing. The energy requirement for space cooling is predicted to triple from 2016 to 2050 as millions of households in developing countries acquire air conditioners in the coming decades.
- Impacts of urban heat are not evenly distributed. Cooler cities, homes and streets are key to ensure climate justice. Lower-income districts and communities are usually the most vulnerable to heat, placing the negative impacts of excess warming disproportionately on those least likely to be able to afford or access thermal comfort. We need to transition to more equitable and sustainable ways of cooling our cities and make them liveable for all.
- The benefits of sustainable urban cooling are far reaching, including improved health and productivity, reduced power energy requirements, lower emissions, and economic benefits.
- Cooling strategies can be optimized to work together efficiently. The report calls for a whole-system approach – that is, reduce heat at urban scale, reduce cooling needs in buildings and serve cooling needs in buildings efficiently – to benefit from integrative effects.

City officials working to make their cities cooler and more liveable are faced with a wide range of approaches – the challenge is where to start.

“This new handbook provides a comprehensive overview of ways to cool cities sustainably and equitably,” said RMI CEO Jules Kortenhorst. “Based on systems-level thinking, this handbook includes actionable guidance to help cities make progress towards sustainable and equitable urban cooling, while also cutting emissions and increasing city resilience.”

The guide’s 80 supporting case studies and examples demonstrate the effectiveness of the strategies outlined and can help cities find an approach best suited to their unique contexts.

In collaboration with the Cool Coalition, the Extreme Heat Resilience Alliance, an initiative of the Adrienne Arsht-Rockefeller Resilience Center (Arsht-Rock) at the Atlantic Council, announced plans to disseminate the new Sustainable Cooling Handbook for Cities to their partner cities and counties– including Athens, Greece, Freetown, Sierra Leone, and Miami-

Dade County, United States. The newly announced Athens, Freetown and Miami-Dade Chief Heat Officers will be the first to benefit from this comprehensive guide.

To meet the energy- and building-related emissions target of their Nationally Determined Contribution under the Paris Climate Agreement, Vietnam will also pilot the handbook in three cities, Can Tho, Tam Ky and Dong Hoi City.

Similarly, 10 Indian cities will collaborate with UNEP, India's National Institute of Urban Affairs (NIUA), RMI and the Royal Danish Embassy of India to integrate cooling into their city masterplans.

Example case studies

- United States: Heat reduction services from urban tree cover in the United States are estimated to be worth USD 5.3 billion to USD 12.1 billion annually. Globally, investing USD 100 million annually in street trees would give 77 million people a 1°C reduction in maximum temperatures on hot days.
- Seoul, South Korea: An effort to restore the Cheonggyecheon stream that runs through the city replaced 5.8 kilometres of elevated expressway covering the stream with a mixed-use waterfront corridor. The waterfront corridor decreased temperature 3.3°C to 5.9°C compared to a parallel road a few blocks away.
- Medellín, Colombia: Green corridors were created that follow and restore the geography of the area prior to recent development. From 2016 to 2019, the city created 36 corridors, 18 along major roads and 18 along waterways, covering over 36 hectares. The areas with green corridors have already seen temperature reductions of up to 4°C.
- Paris, France: Paris is home of the first and largest district cooling system in Europe. When the water temperature in the Seine River that cuts through city is below 8°C, this water is used to provide "free cooling."
- Toronto, Canada: The municipal government implemented the largest lake-source cooling system in the world. Commissioned in 2004, Enwave's 264 MW of refrigeration Deep Lake Water Cooling (DLWC) system uses Lake Ontario's cold water as a renewable energy source.
- Guangzhou, China: The municipal government adopted regional centralized cooling as part of a green and environmentally friendly modern urban centre in the core area of the Pearl River New City development. The local environmental temperature in the core area of Zhujiang New Town was reduced by 2-3°C compared to using distributed cooling systems.

Read/download the [Executive Summary](#)

[The UN Environment Programme \(UNEP\), 3 November 2021](#)

Image: UNEP website-Pixabay / 08 Nov 2021

See also >>>

[Keeping the planet cool](#), speech delivered by Inger Andersen, Under-Secretary-General of the United Nations and Executive Director of the UN Environment Programme, Event: Sustainable and Efficient Cooling for a Warming Planet: Challenges, Opportunities and Solutions, COP 26, Glasgow, 10 November 2021. Watch a [video](#) of the event.

[Cooling community announces steps to beat global warming with GBP 12 million boost from UK](#), UNEP Press release, Glasgow, 11 November 2021.

3. Glasgow climate summit: A glass half full

In a remarkable spirit of compromise, the parties at the COP26 climate summit concluded their negotiations in Glasgow on Saturday –motivated in part by fear of climate impacts, now and in the future, and in recognition that there is indeed a climate emergency.



Countries pledged to take urgent action to keep alive the goal of limiting global warming below 1.5 degrees Celsius and avoid what Prime Minister Mia Mottley of Barbados called the “death sentence” of 2 degrees Celsius for vulnerable communities and ecosystems, and probably the rest of the world as well.

For many veterans of these annual climate summits, the glass will be more than half full. Once the parties have the toast they deserve, they’ll start tomorrow with the vital work that must begin immediately to implement and strengthen the Glasgow commitments. [...]

The Montreal Protocol on Substances that Deplete the Stratospheric Ozone Layer is the preeminent sectoral agreement which – besides putting the ozone layer on the path to recovery by 2065 – has already avoided as much warming as carbon dioxide contributes today. The Montreal Protocol’s 2016 Kigali amendment, to phase down hydrofluorocarbons, another super climate pollutant, is the single most significant mitigation measure of the last decade. With this record of climate success, it’s time we ask what else the Montreal Protocol can deliver for climate, and it’s a lot. [...]

[The Hill, 14 November 2021, By Durwood Zaelke, Romina Picolotti, and Gabrielle Dreyfus](#)

Image: COP26 website

4. Saving the Planet by Degrees Past and future climate benefits of the Montreal Protocol

Next steps for the Montreal Protocol to help prevent climate breakdown Just five years ago, the Montreal Protocol officially became a climate treaty when the Parties adopted the Kigali Amendment to phase down HFCs.

But it has played a critical role in addressing the climate emergency for almost 35 years, through the successful phase-out of ODS greenhouse gases and restoration of the ozone layer, protecting the world’s biosphere from harmful UV radiation.

As action to tackle the climate emergency becomes ever more urgent, it is clearly time to extract every degree of mitigation available from the world’s most successful

environmental treaty. Both the Vienna Convention and the Montreal Protocol have achieved universal ratification.

Every government in the world is on board, making it a powerful weapon of global governance in the fight against climate change. Avoidance of more than 2.5°C warming by the end of the century is a significant achievement, but political and financial investment is needed to ensure that the Montreal Protocol can meet new challenges, maximise the climate impact of current ODS and HFC controls and undertake new measures and actions to secure additional climate change mitigation.

Recommendations

EIA urges the world's governments to:

- Ratify the Kigali Amendment without delay – as of 2 November 2021, 128 Parties to the Montreal Protocol have ratified the Kigali Amendment⁴⁴
- Commit significant funding to the next replenishment of the Multilateral Fund in order to secure maximum climate benefits from the HCFC phase-out and accelerate actions to phase down HFCs
- Undertake measures to avoid the near-term growth in HFC consumption, including consideration by Article 5 countries currently in Group 2 to move to Group 1
- Initiate discussions to accelerate the Kigali Amendment in line with a 1.5°C consistent scenario
- Initiate a comprehensive fitness check of the Protocol's MRV and enforcement processes and institutions at the 2022 Meeting of the Parties, with clear timetables for consideration and adoption of needed improvements
- Undertake a review of ODS and HFC feedstock uses and emissions and consider measures to reduce the production of controlled substances for feedstock purposes
- Set up a comprehensive framework for recovering and destroying ODS and HFC banks under the Protocol
- Support developing countries to ensure an adequate, efficient, HFC-free vaccine cold chain is in place.

Read/download the [full report](#)

Excerpt from CoP26 Climate Brief, [Saving the Planet by Degrees Past and future climate benefits of the Montreal Protocol](#), By the [Environmental Investigation Agency \(eia\)](#), [November 2021](#)

Image: eia website

5. World Customs Organization-HS 2022: amendments to the Harmonized System (HS) Nomenclature-Amendments effective from 1 January 2022



HS 2022, which is the seventh edition of the Harmonized System (HS) nomenclature, is used worldwide for the uniform classification of goods traded internationally and has been accepted by all Contracting Parties to the Harmonized System Convention. It shall enter into force on 1 January 2022.

The HS serves as the basis for Customs tariffs and for the compilation of international trade statistics in 211 economies (of which 158 are Contracting Parties to the HS Convention). The new HS2022 edition makes some major changes to the Harmonized System with a total of 351 sets of amendments covering a wide range of goods moving across borders. Here are some of the highlights:

Adaption to current trade through the recognition of new product streams and addressing environmental and social issues of global concern are the major features of the HS 2022 amendments. [...]

Major changes, including new heading Note 4 to Section VI and new heading 38.27, have been introduced for gases controlled under the Kigali Amendment of the Montreal Protocol. [...]

Customs administrations and regional economic communities have a huge task to ensure timely implementation of the 2022 HS Edition, as required by the HS Convention. They are therefore encouraged to begin the process of preparing for the implementation of HS 2022 in their national Customs tariff or statistical nomenclatures. The WCO will step up its capacity building efforts to assist Members with their implementation.

For more information [contact](#) World Customs Organization (WCO)

Image: WCO website

ASIA AND THE PACIFIC

6. China implements HFC Import and Export Licensing System

China began officially implementing its hydrofluorocarbon (HFC) import and export licensing system as of 1 November 2021, one and a half months earlier than the date stipulated by the Kigali Amendment to the Montreal Protocol, according to a recent announcement jointly made by China's Ministry of Ecology and Environment (MEE), the Ministry of Commerce (MOC) and the General Administration of Customs (GAC). This major milestone follows the release of China's revised Import and Export Catalogue of Controlled Ozone Depleting Substances (ODS), which added HFCs to the list of substances whose trade is closely managed by the country in accordance with the Montreal Protocol.

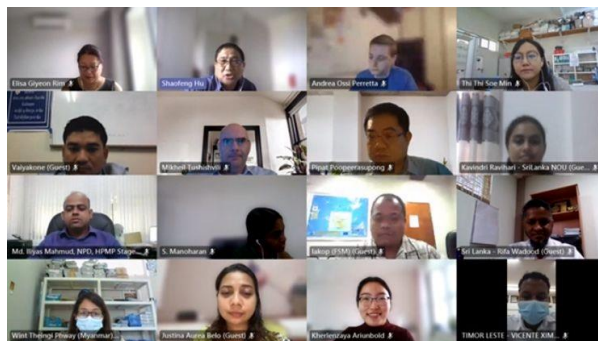


An effective and operational government system for licensing the import and export of new, used, recycled, and reclaimed controlled substances is crucial for ensuring national compliance with commitments under the Protocol. It enables a country to manage its supply of controlled substances by monitoring and controlling their movement over the national borders

and is necessary for collecting data that each country must report under the treaty. Licensing systems are also tools for preventing illegal shipments and avoiding unauthorized or unwanted trade in the controlled chemicals.

Each Party to the Protocol's Kigali Amendment must establish and implement an HFC import and export licensing system within three months of the date of entry into force of the Amendment. On 17 June 2021, the Permanent Mission of China to the United Nations deposited its acceptance letter of the Kigali Amendment with the Secretary-General of the United Nations. China became the 122nd Party to the Amendment when that instrument entered into force on 15 September 2021.

To ensure smooth implementation of the HFC import and export licensing system, MEE, together with MOC and GAC, conducted a series of preparatory activities including updating the existing Import and Export Paperless Management System on Controlled Substances under the Montreal Protocol and incorporating HFCs into the system. China's National Management Office of ODS Import and Export collected information on domestic enterprises that import and export HFCs through various channels and established contact with the enterprises in advance. Through the country's HFC phase-down Enabling Activities project, the customs capacity building project and annual training programme, training plans were developed, and training workshops were organized for management personnel from MOC and GAC as well as HFC import and export enterprises, which comprehensively introduced management requirements on controlled substances as stipulated by the Montreal Protocol and practice of China's import and export licensing system.



China is the largest producer and exporter of HFCs in the world, and its trade involves exchanges with more than 120 countries. A senior official from MEE said that China is willing to extensively cooperate with relevant international organizations and countries on HFC import and export management, strengthen information exchange through mechanisms such as the Informal Prior Informed Consent (iPIC) mechanism managed by OzonAction, and contribute to promoting global compliance.

Patricia Kameri-Mbote, Director of UNEP Law Division, stated "UNEP heartily congratulates China on reaching this important milestone – even ahead of schedule – and commends the Government for the measures it has put in place for controlling imports and exports of HFCs. This is important for both the Montreal Protocol and for protecting our climate since many HFCs are also powerful greenhouse gases. Given China's position as the major producer of HFCs, the effect of its new licensing system will literally be felt around the world." She added, "UNEP also appreciates China's longstanding use of both formal and informal communication channels, like the iPIC mechanism, to promote compliance with licensing systems at home and abroad. Cooperation across borders makes national licensing systems work even better."

Contact: [Shaofeng Hu](#), Senior Montreal Protocol Regional Coordinator, UNEP, CAP OzonAction, Asia and Pacific Office

Images: OzonAction website

7. China updates list of controlled ozone depleting substances-HFCs were newly added

To implement the Montreal Protocol on Substances that Deplete the Ozone Layer and its amendments, on October 8th, several departments of China's central government, including the Ministry of Ecology and Environment, jointly released an updated list of ozone depleting substances controlled in China. It became effective immediately, replacing the Announcement No. 72 of 2010 that provided the previous version of the list.



Here are the main points of the revision.

1. 18 HFCs (hydrofluorocarbons) have been added to the list. Their main uses are described, and their reduction requirements set out in it.
 2. The definition of "controlled substance" from the Montreal Protocol is presented (in Chinese) in a footnote. Below is the English definition in the protocol: "Controlled substance" means a substance in Annex A, Annex B, Annex C, Annex E or Annex F to this Protocol, whether existing alone or in a mixture. It includes the isomers of any such substance, except as specified in the relevant Annex, but excludes any controlled substance or mixture which is in a manufactured product other than a container used for the transportation or storage of that substance.
 3. In accordance with the annexes to the protocol, the global warming potential (GWP) has been added to some substances, and the Chinese names of two substances have been changed as follows: the chemical name of CFC-113 (C₂F₃Cl₃) has been changed from 1,1,2-trichloro-1,2,2-trifluoroethane to trichlorotrifluoroethane (from 1,1,2-trichloro-1,2,2-trifluoroethane to trichlorotrifluoroethane), CFC-114 (C₂F₄Cl₂) from 1,2-dichloro-1,1,2,2-tetrafluoroethane to dichlorotetrafluoroethane (from 1,2-dichloro-1,1,2,2-tetrafluoroethane to dichlorotetrafluoroethane). Through this
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change, isomers, including CFC-113a and CFC-114a, are now covered by the list, matching the list content to the Montreal Protocol.

Main regulations implemented in the future

According to the Kigali Amendment to the Montreal Protocol, China must freeze the amount of HFC production and usage at a reference level, which is equal to the average amount of HFC production and usage between 2020 and 2022 plus 65 percent of the reference level for hydrochlorofluorocarbons (in CO₂ equivalent). The country may not exceed 90 percent of the HFC reference level from 2029, 70 percent from 2035, 50 percent from 2040 and 20 percent from 2045.

To fulfill this requirement, China will take the following five measures to control HFCs.

1. Revise the China's Plan to Implement the Montreal Protocol, consider the overall strategy to reduce HFCs, decide what areas to focus on and prepare a roadmap, policy management measures and other necessary things
2. Implement an HFC import and export licensing system by December 15, 2021, in accordance with the protocol
3. Formulate a policy to manage construction projects for HFC production that sets out ecological and environmental requirements and industry policies
4. Manage allowances and notifications of the production, sale and use of HFCs to achieve the targets for each year from 2024 onward, as necessary
5. Implement the Announcement of Regulations on Trifluoromethane Emissions as a Byproduct issued on September 10

The full updated list of China's controlled ozone depleting substances (in simplified Chinese) is available [here](#)

[Envilience intelligence service for environmental compliance](#), 8 November 2021, by Aoki Kenji

Images: *Envilience website*

8. China's Policy Opportunity to Avoid Dumping of Obsolete Cooling Equipment and Support Development and Climate Goals

An Opportunity That Should Not Be Missed: Applying Chinese Policy That Promotes Efficient Air Conditioning to Countries That Need It (Sustainable Development Law & Policy, Spring 2021) highlights the climate and industry benefits that can be gained through expansion of China's "Same Line, Same Standard and Same Quality Policy." This Policy encourages manufacturers to sell products within China that were produced for overseas markets according to standards exceeding those for products produced for the Chinese market. Policies like these, representing a



course of action that China’s leadership endorses, can drive changes in Chinese law, including changes that address loopholes in the law that allow climate-harmful activities to continue.

The article illustrates a new strategy to help mitigate climate-harmful greenhouse gas (GHG) emissions. Coordinated international action on energy-efficient and climate-friendly cooling could avoid as much as 460 billion tonnes of GHG emissions – roughly equal to eight years of global emissions at 2018 levels – over the next four decades. The strategy applies the Same-Line Policy to ACs (including energy-consuming AC components) that China-based companies export, so that the efficiency of the exported ACs shall at least meet China’s minimum energy performance standards. Such a strategy is particularly powerful when applied to products destined for importing countries that either lack any minimum energy performance standards for such products or have minimum energy performance standards which are lower than those applied to such products in China.

This new strategy is in China’s and the world’s interests because it facilitates efforts to avoid climate change’s existential threat to a livable planet Earth. Furthermore, it is in line with provisions in China’s recently released policies, including the Working Guidance for Carbon Dioxide Peaking and Carbon Neutrality in Full and Faithful Implementation of the New Development Philosophy.

The Working Guidance provides that China will “strictly manage the export of high energy-consuming and high-emission products.” In applying the Same-Line Policy to exported ACs, China would take a substantial first step in helping move the Working Guidance from policy statement to concrete action.

The article is co-authored by IGSD attorneys Xiaopu Sun and Richard Ferris, in collaboration with Professor Houfu Yan from Beijing Normal University and Professor Shekun Wang from China Northwest University.

Download full article [here](#)

[Institute for Governance & Sustainable Development - IGSD, 9 November 2021](#)

Images: IGSD website

9. Asia-Pacific launch a year-long Ozone2Climate Art Contest



“How can our daily life contribute to the ozone layer protection?” Mr. Siwakorn Maneethein, a third-year student of Geological Sciences at the Faculty of Science, Chiang Mai University, Thailand, enthusiastic about sustainable natural resources and environmental preservation shared his understanding of this significant question at a press conference of the launch of the [Asia Pacific Ozone2Climate Art Contest](#) on World Ozone Day, 16 September 2021.

[Ozone2Climate Art Contest](#) on World Ozone Day, 16 September 2021.

In 2015, Maneethein, then a junior high school student aged 14, won the national contest essay on the topic "How does our daily life protect the ozone layer?" organized by the National Ozone Unit of Thailand. Beforehand, Maneethein and two fellow students had thoroughly researched ozone layer protection and consulted with teachers on the subject. Maneethein then presented his views and saw the value of everyone in participating towards reducing the destruction of the ozone layer and global warming. He particularly appealed to his generation to contribute by choosing products not containing ozone depleting substances (ODS) but environmentally friendly ones. Satisfied that Thailand had successfully phased out CFCs in 2010 and switched to less damaging substances, Maneethein emphasized that the ozone layer and climate protection cannot be achieved individually, but requires cooperation among all, especially youth like himself who are the future generation.

Due to restrictions caused by the ongoing COVID-19 pandemic, the public awareness raising Ozone2Climate Art Contest was launched online by United Nations Environment Programme (UNEP) OzonAction, the United Nations Educational, Scientific and Cultural Organization (UNESCO), and more than 30 countries in the Asia Pacific region. A key factor of the Art Contest is to engage the general public especially the youth like Mr. Siwakorn Maneethein to link daily life activities and choices with the common environmental challenges faced globally, and consider how to be engaged to identify solutions, and most importantly, how everyone can contribute to addressing the challenges.

Officially opened on World Ozone Day, 16 September 2021, the Art Contest will run its course and close on 31 March 2022, followed by the regional contest of nominated winners. The final winners in the three categories of artworks - photography, drawing, and graphic design, will be evaluated and announced on World Ozone Day in 2022.



As highlighted by Mr. James S. Curlin, Head of UNEP OzonAction, the role of industry and the public in the promotion of Ozone2Climate safe alternative technologies to replace ODS and high-global warming potential refrigerants is critical for the success of achieving ozone layer protection and climate-friendly targets. He further called on "everybody in the Asia-Pacific region and world at large to take action and play their role" noting especially that "the procurement power of the public will guide the market to favour Ozone2Climate products."

Mr. Alex Rendell, UNEP's National Goodwill Ambassador for Thailand, whose video message was pre-recorded, invited everyone to join this art contest to learn more about the issue that is critical to our lives and our well-being by sharing their ideas through the contest to show how ozone layer depletion and climate change can be solved. He further shared his idea on how everyone can contribute to protecting the ozone layer and climate by making conscientious and more environmentally friendly choices such as buying refrigerators and air-conditioners that are energy efficient and use climate-friendly

refrigerants and maintaining that equipment in good condition to minimize refrigerant leakage and enhance energy performance.

Other high-level participants who addressed the press and public, and responded to questions were, Ms. Megumi Seki, Executive Secretary of UNEP's Ozone Secretariat, Ms. Isabelle Louis, Deputy Regional Director at UNEP's Asia Pacific Office, Ms. Rika Yorozu, Head, Executive Office and Regional Programme Coordinator for UNESCO Bangkok, and Mr. Jackrit Suthakorn, Dean of the Faculty of Engineering, Mahidol University, a supporting partner of the regional contest.

As of today, 33 developing countries in the region – Bangladesh, Bhutan, Cambodia, China, Cook Islands, Fiji, India, Indonesia, Iran, Kiribati, Republic of Korea, Lao PDR, Malaysia, Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nauru, Niue, Palau, Pakistan, Papua New Guinea, Philippines, Samoa, Solomon Islands, Sri Lanka, Thailand, Timor-Leste, Tonga, Tuvalu, Vanuatu, and Viet Nam, have joined the regional initiative.

The art contest was organized as part of the Asia-Pacific Regional Networks of Ozone Officers, as part of UNEP's workplan under the Montreal Protocol's Multilateral Fund.

For more information about the contest, please visit: www.ozone2climate.org

Contact: [Shaofeng Hu](#), Senior Montreal Protocol Regional Coordinator, UNEP, [OzonAction](#) Compliance Assistance Programme (CAP) Asia-Pacific.

Images: OzonAction

WEST ASIA

10. Suitable alternative technologies in the cooling sector and the additional hurdles faced by high ambient temperature (HAT) countries such as Jordan

When did Jordan start to phase down Hydrofluorocarbons (HFCs) and what path is the country following? (Eng. Sulafa Mdanat)



The Government of Jordan ratified the Kigali Amendment to the Montreal Protocol on 18th October 2019 and it subsequently entered into force on 14th January 2020. Jordan then rolled out a licensing system in March 2021 to control the import, export, and consumption of HFCs.

Following the successful implementation of the project Enabling activities for HFC phase-down that helped Jordan ratify the Kigali Amendment, UNIDO and the Government of

Jordan are now beginning a new chapter. With the adoption of the cost-guidelines for the preparation of HFC phase-down plans, the Executive Committee of the Montreal Protocol approved funding for Jordan to start with the preparation of the so-called Kigali HFC implementation plan (KIP). With UNIDO as implementing agency, this project will pave the way for Jordan to prepare a robust strategy to phase-down HFCs.

What is Jordan's experience identifying alternative solutions for High Ambient Temperature (HAT) countries such as Jordan? (Eng. Ghazi Al-Odat)

Jordan is a High Ambient Temperature (HAT), which means that it faces additional hurdles in selecting suitable zero ozone depleting potential (ODP) and low global warming potential (GWP) refrigerants for retail refrigeration installations, as the technology required needs to operate at higher temperatures. To promote HFC alternative technologies, UNIDO together with the Climate and Clean Air Coalition (CCAC) conducted a demonstration project in a Jordanian supermarket.

The government of Jordan agreed to work within the first group^[1] under the Kigali Amendment to expedite the phase down of HFCs according to the amendment's schedule. To date, there is no mechanism for facilitating and supporting the retail sector in replacing high GWP commercial refrigerators with alternative CO₂ technologies or retrofitting the existing commercial refrigerators. Therefore, HCFC phase-out and HFC phase-down is usually driven by costs and to a lesser extent by energy efficiency.

UNIDO, in collaboration with CCAC, conducted a demonstration project in the supermarket Aswaq Alsalam located in Jordan's capital Amman. The full-scale replacement of an existing HCFC-22 installation with a CO₂ system, demonstrates the feasibility of adopting non-HFC alternatives. Results show that the system is delivering on energy savings, zero food loss and no maintenance costs in the first years of operation. The system's success has established a better understanding of the applicability of this technology in countries with high ambient temperatures. This has not only stimulated innovation in the national industry, but also encouraged follow up projects in the region. These positive results^[2] are a needed stimulus for the retail sector and there is now a greater willingness among larger supermarkets in Jordan to use CO₂ technologies.

Eng. Ghazi, when discussing the Montreal Protocol in Jordan, there is no way of not mentioning your name based on your involvement from the start, through all its challenges, changes and of course accomplishments. In your opinion, why is the celebration of the Ozone Day so important? (Eng. Ghazi Al-Odat)

International Ozone Day, was initiated by the United Nations General Assembly and has been celebrated since 1994, commemorating the date of the signing of the Montreal Protocol in 1987 on 16 September. World Ozone Day is important because it is a day used for spreading awareness on ozone layer depletion, as well as, the search for solutions in preserving it. The ozone layer is a part of the atmosphere that has high ozone concentrations. Educators seize this occasion to teach their students about the ozone layer. Schools organize events to raise awareness on this topic which is an opportunity for everyone to share and exchange experiences.

Ozone Day simultaneously increases awareness of the Montreal Protocol among ministries, stakeholders, private and public sectors. Governments around the world collaborate with international partners in order to protect the ozone layer and fight against

climate change. This collaboration has led to an increasingly high awareness of Montreal Protocol initiatives in the industrial sector. Sensitization of the importance of keeping pace with environmentally friendly technologies to maintain competitiveness is also emphasized. The phase-out of controlled substances and the related reductions have not only helped protect the ozone layer for this and future generations but have contributed significantly to global efforts to address climate change. Furthermore, it has protected human health and the ecosystem by limiting the harmful ultraviolet radiation from reaching the earth. This year, we celebrated 36 years of the signing of the Vienna convention and herewith the initiation of global efforts to protect the ozone layer. The HCFCs phase out schedule started in 1996 for developed countries and in 2009 for developing countries. During the 28th Meeting of the Parties to the Montreal Protocol (MOP) held 10th-15th October 2016, in Kigali/Rwanda it was agreed to gradually reduce the consumption and production of HFCs.

World Ozone Day highlights the Montreal Protocol's extensive work related to slowing climate change and helping to boost energy efficiency in the cooling sector, which has a co-benefit of contributing to food security, because one third of all food produced globally for human consumption is wasted each year largely due to the lack of access to cold chains and storage.

Food loss and waste amounts to billions of US\$ annually. Therefore, countries should develop cold chain solutions that are more efficient, climate friendly, and less costly.

For these reasons, on this international acknowledged day, we celebrate the Montreal Protocol and its Kigali Amendment in the wider efforts to keep humans and the environment protected our food and medication (especially vaccines) cool.

Which challenges will Jordan be facing in the next years, implementing the Montreal Protocol? (Eng. Sulafa Mdanat)

With financial and technical support from the MLF and UNIDO respectively, Jordan will be well capacitated in implementing and Montreal Protocol and the Kigali Amendment over the next 20 years, and most importantly complying with its obligations under the Protocol.

Despite tremendous efforts, however, it is envisaged that small and medium enterprises (SMEs) in the refrigeration and air conditioning sectors would require special attention in transitioning to the use of alternatives to HCFCs and HFCs. Substantial technical training combined with necessary tools and equipment is required to absorb the new technologies. Import, storage, transportation, distribution, handling and using of alternatives of HFCs need specifications, standards, trainings, and the application of safety measures are frontiers, which the Jordan Ministry of Environment will embark upon.

[1] First group countries under the Kigali Amendment are committed to reduce the use of HFCs by 45% by 2024 and by 85% by 2036, compared to their use between 2011 and 2013. A second group, which includes China and Brazil, is committed to reducing its consumption by 80% by 2045. Jordan as HAT country is eligible to enter into group 2 but decided to commit to a shorter HFC phase-down.

[2] Read more about the projects results on UNIDOs [open data platform](#).

[United Nations Industrial Development Organization \(UNIDO\), Interview with Eng. Sulafa Mdanat and Eng. Ghazi Al-Odat, October 2021](#)

Image: UNIDO website

NORTH AMERICA

11. Phasing Down HFCs and Cracking Down on Illegal Trade is Critical to Reducing Greenhouse Gas Emissions

The U.S. will take steps to detect and prevent the illegal trade in HFCs.

As COP26 winds down in Glasgow, Scotland, significant commitments have been made by the business community to reduce greenhouse gas emissions and address the global challenge of climate change.



No issue underscores this leadership more than phasing down the production and use of hydrofluorocarbons (HFCs).

On November 9th at the U.S. Pavilion, the Chamber was on hand as Michael Regan, Administrator of the U.S. Environmental Protection Agency, headlined a panel of global leaders from the European Union, Canada, and Japan and representatives from business and NGOs, entitled [Securing the Climate Benefits of the Global HFC Phasedown: Preventing Illegal Trade in HFCs](#). Administrator Regan warned that markets for illegally traded HFCs could undermine the significant climate benefits that accompany international regulatory progress. “Efforts to phase down HFCs in many countries have had the side effect of creating markets for illegal trade of these harmful chemicals,” Regan said.

He announced new steps the U.S. will take to detect and prevent illegal trade in HFCs through agile enforcement, including:

- Promoting labeling, third-party auditing, and data transparency.
- Utilizing QR codes to track legally traded products.
- Banning single-use disposable cylinders that are often used for smuggling.
- Launching an [interagency task force](#) “led by experts from U.S. Customs and Border Protection, U.S. Immigration and Customs Enforcement, Homeland Security Investigations and EPA to detect, deter, and disrupt any attempt to illegally import HFCs into the United States.”

These short-term climate pollutants—primarily used as refrigerants, solvents, foams, etchants, and fire suppressants—remain in the atmosphere for a much shorter period of time than carbon dioxide, but their impact on increasing temperatures is substantially greater.

In 2016, 170 countries agreed to set reduction targets for HFCs. This agreement, known as the Kigali Amendment, will gradually phase down HFCs by approximately 85% over the next

15 years. They would be replaced with more environmentally friendly alternatives. A group of developed countries began the phasedown in 2019.

With strong support from the Chamber, the American Innovation and Manufacturing (AIM) Act was enacted in December 2020 to phase down HFCs in the U.S. and enable implementation of the Kigali Amendment.

EPA recently [finalized its initial allocation rule and trading system](#) for manufacture and import of HFCs for 2022 and 2023 under the new law.

Phasing down HFCs requires products manufacturers and OEMs to invest in the transition, and there are estimates that some sectors could directly add 33,000 U.S. manufacturing jobs over the next decade. In addition, this proposal is the first step in growing the U.S. share of the world market for some types of heating, air-conditioning, and commercial refrigeration equipment by 25%. U.S. companies are leading the way in developing low-Global Warming Potential (GWP) solutions to support the transition.

Implementing the HFC phasedown globally would reduce a significant source of emissions that contribute to climate change, avoiding up to 0.5° C in temperature increases by 2100. For the Biden administration to achieve its ambitious climate goals, continued collaboration with American businesses to phase down HFCs must be part of the solution, including efforts to prevent illegal trade of HFCs.

A critical next step is for the administration to submit the Kigali Amendment to the Senate for ratification, which was noted by Kevin Fay of the Alliance for Responsible Atmospheric Policy at the event.

[U.S. Chamber of Commerce, 10 November 2021](#)

Image: U.S. Chamber of Commerce website

12. Are you ready to take action on climate friendly refrigerants?

Download the [guide](#) to learn how to purchase the best products and avoid obsolete hydrofluorocarbon (HFC) refrigerants that are being phased down under the American Innovation & Manufacturing Act in the U.S. and the Kigali Amendment to the Montreal Protocol internationally.

Developed by the Sustainable Purchasing Leadership Council (SPLC), in partnership with IGSD, the Guide to [Climate Friendly Refrigerant Management and Procurement](#), 2021 edition, is a

toolkit designed to help select affordable, energy-efficient refrigeration and cooling equipment that uses next-generation refrigerants that are more climate-friendly.

This document focuses primarily on space conditioning and refrigeration equipment where climate-friendly alternatives are readily available, cost-effective, and compliant with U.S.



RECOMMENDATIONS FOR CLIMATE FRIENDLY REFRIGERANT MANAGEMENT AND PROCUREMENT

Developed by the Sustainable Purchasing Leadership Council (SPLC) Action Team on Climate Friendly Refrigerants, in partnership with the Institute for Governance & Sustainable Development (IGSD).

This document is the updated edition of the Recommendations for Climate Friendly Refrigerant Management and Procurement authored by the SPLC Climate Friendly Refrigerant Action Team. The Climate Friendly Refrigerant Action Team is dedicated to investigating global regulatory and voluntary programs to avoid and/or reduce emissions from high global warming potential (GWP) HFCs. This document identifies opportunities and specific procurement options 1) to avoid high GWP HFC refrigerants when purchasing new energy efficient refrigeration and air conditioning equipment, and 2) to reduce refrigerant leakage and service emissions. We invite you to read and put this work to use in your own procurement processes, and to offer additional insights and experiences to sharpen and improve the guidance over time.

Publication Date
September 22, 2021

This document updates and replaces the original Procurement Recommendations for Climate Friendly Refrigerants version 1.0, published in September 2020.

environmental and safety standards. While this toolkit focuses on procurement, it also covers the importance of refrigerant management and developing an organizational HFC policy to avoid negative climate change impacts of HFCs.

In its second version, this guide was developed by the SPLC Climate Friendly Refrigerant Action Team who is dedicated to investigating global regulatory and voluntary programs to avoid and/or reduce emissions from high global warming potential (GWP) HFCs. The second edition of the guide covers new developments that have occurred since the passage of the American Innovation & Manufacturing Act in 2020, which phases down the climate impact of production & consumption of HFCs in the USA by 85% by 2036.

Read/download the Guide to [Climate Friendly Refrigerant Management and Procurement](#).

For inquiries contact co-author [Kristin Taddonio](#).

[Institute for Governance & Sustainable Development \(IGSD\), September 2021](#)

Image: IGSD

EUROPE & CENTRAL ASIA

13. European Parliament Resolution – ‘Phasing out of HFCs’ threatens EU Green Deal and international commitments

Today’s European Parliament motion on COP26, which calls for international action to reduce F-gas emissions, is warmly welcomed by EPEE [European Partnership for Energy and the Environment] - representing the Refrigeration, Air Conditioning and Heat Pump Industry in Europe. We welcome the fact that the Parliament has recognised the importance of reducing F-gas emissions, but regret that it has called for their phase-out, rather than for a phase-down in Europe.

This may seem a small quibble over language, but the difference is important. A phase-out would lead to a full ban on using HFCs, while a phase-down process is a flexible and market-orientated approach, recognizing that not all HFC applications are replaceable. The EU phase-down is being used successfully right now to reduce F-gas emissions in Europe.



21 October 2021

European Parliament Resolution – ‘Phasing out of HFCs’ threatens EU Green Deal and international commitments

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The Refrigeration, Air Conditioning and Heat Pump sector’s technologies are key solutions for the European Green Deal as well as other societal needs such as health. These technologies contain fluids called refrigerants, of which hydrofluorocarbons (HFCs) are commonly used for reasons of safety and energy efficiency. HFCs are F-gases which, if they leak from the equipment into the atmosphere, cause global warming. Their consumption is, therefore already strictly controlled and phased down – internationally through the Montreal Protocol, and at the EU level through the EU F-gas Regulation. The EU F-gas regulation has resulted in lower leakage rates, a growing circular economy of refrigerants and a transition to refrigerants with a lower global warming impact. By 2030, thanks to this effective Regulation, F-gas emissions will be cut by two-thirds compared to 2014 levels, proving the effectiveness of the phase-down mechanism.

As announced recently in its 2022 Work Programme, the European Commission will publish a proposal for a revision of the F-gas Regulation in Q2 2022, reviewing the uses of HFCs and the current phase-down schedule after a thorough impact assessment. EPEE is looking forward to the Commission to continue its support of the phase-down approach when it brings forward legislation next year. This is an effective and proven legal framework and ensures that F-gas legislation work in harmony with policies to grow renewable energy and promote energy efficient buildings.

Refrigeration, Air conditioning and Heat Pump technologies are essential for a sustainable food cold chain, for the decarbonisation of buildings, and for an effective, efficient and inclusive energy transition. Because of their wide variety of applications, in homes, businesses, health and transport sectors, our sector needs a large variety of refrigerant options, including non-HFCs as well as HFCs. Calling for a phase-out, instead of a phase-down, therefore endangers the emission savings from renewable heating and cooling, which are much bigger than any further savings from HFC emissions.

ABOUT EPEE:
EPEE represents the Refrigeration, Air Conditioning and Heat Pump industry in Europe. Founded in the year 2000, EPEE’s membership is composed of over 50 member companies as well as national and international associations from three continents (Europe, North America, Asia), with manufacturing sites and research and development facilities across the EU, which translate for the global market. EPEE member companies make a turnover of over 50 billion Euro, employ more than 200,000 people in Europe and also create indirect employment through a vast network of small and medium sized enterprises such as retailers who install, service and maintain equipment. Please see our website (<https://www.epeeglobal.org/>) for further information.

EPEE – European Partnership for Energy and the Environment

Avenue des Arts, 45 - 1000 Brussels
secretariat@epeeglobal.org - <http://www.epeeglobal.org>

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[European Partnership for Energy and the Environment \(EPEE\), 21 October 2021](#)

Image: EPEE website

14. Nordic Nations Favor NatRefs Over HFOs in Procurement

The Nordic Green Public Procurement Criteria, a project to mitigate the impact of f-gases on global warming, is promoting the use of natural refrigerants rather than HFOs in refrigeration, air conditioning and heat pumps (RACHP) as the default option for public procurement in locations such as Denmark, Finland, Iceland, Norway, Sweden, and the Faroe Islands.

That was one of the messages communicated during the webinar "Green Public Procurement (GPP) of RACHP products – Nordic criteria," hosted by the Finnish Environment Institute (SYKE). The webinar was held on



October 23 as a side event to the combined 12th Conference of the Parties to the Vienna Convention and 33rd Meeting of the Parties to the Montreal Protocol.

The Nordic countries originally published a report outlining their procurement policy with regard to refrigerants in July 2020 in a document called “Nordic criteria for Green Public Procurement (GPP) for alternatives to high GWP HFCs in RAC products.” The report formulated green procurement criteria for 25 product categories that can be directly inserted into tender documents. Its overall conclusion: “Natural refrigerants are applicable for most RAC products at equal cost and can be used as a selection criteria in GPP.”

The report was the product of a green procurement project conducted by experts in public procurement and f-gases, including Tomas Sander Poulsen, owner of the Danish independent consultancy Provice ApS, and Per Henrik Pedersen, Project Manager and Senior Consultant with the Danish Technical Institute. They were supported by the Nordic Ozone and F-Gas Group, a subdivision of the Nordic Working Group for Chemicals, Environment and Health.

“As public spending normally ranges from 15 to 30% of national GDP, it provides a huge opportunity to drive markets towards innovation and sustainability,” said Tapio Reinikainen, Project Manager with the Finnish Environment Institute, during the webinar. “We cannot afford not to use the enormous purchasing power of public institution[s] in mitigation of global warming.”

Reinikainen noted that the starting points in evaluating procurement in the RACHP sector will be global warming potential, natural refrigerants, energy efficiency and the chemical risks in equipment materials, with the hope that the final criteria will be adopted across Europe and beyond.

These criteria informed the decision to favor natural refrigerants as a more prudent choice than HFOs. “The basic idea behind preferring natural refrigerant over HFOs is the precautionary principle, as recent studies seem to relate HFOs to TFA [trifluoroacetic acid], PFASs [per- and polyfluorinated alkyl substances] and HFC-23,” said Reinikainen. “These would be quite critical things, and it is why we favor natural refrigerants in Scandinavia.”

These concerns were also reflected by five European countries – Denmark, Germany, the Netherlands, Norway and Sweden – who announced on July 15 their intention to submit a joint proposal to restrict PFAS, including TFA and some HFC and HFO refrigerants, to the European Chemicals Agency (ECHA) under the REACH regulation by July 2022.

Wide-ranging analysis

Before reaching its conclusions, the green procurement project team conducted multiple analysis of tender processes, ecolabels and relevant EU Ecodesign Directives provisions, as well as market and technology assessments of RACHP sectors.

“We have found that we do have in the market already available green products, or they will be available in most RACHP sectors relatively soon, and these products are and will be based on natural refrigerants, are more energy efficient and cost equally,” said Poulsen during the webinar. “This makes it very easy to set up green public procurement criteria in the RACHP sector, and natural refrigerants can be a selection criterion.”

Natural refrigerants will be preferred over other solutions, except for a few cases where the lowest GWP threshold (likely to be less or equal to 675 GWP for 100 years) will be used as a proxy.

During the webinar, representatives of the Swedish Environment Agency informed participants of the ongoing work on green criteria for public procurement of chillers. The latter is likely to be informed by the Nordic Green Public Procurement criteria. Along the same line, a representative from New Zealand informed participants that Wellington intends to target refrigerants with high GWP in its strategy for greenhouse gas emission reductions.

[r744, 9 November 2021, By Thomas Trevisan](#)

Image: r744 website

FEATURED



OZONE SECRETARIAT

Overview for the meetings of the ozone treaties in 2022

- [68th IMPCOM](#), Venue – to be determined, | 09 July 2022
- [44th OEWG](#), Venue – to be determined, | 11 - 15 July 2022
- [69th IMPCOM](#), Venue – to be determined, | 29 October 2022
- [33rd MOP Bureau](#), Venue – to be determined, | 30 October 2022
- [34th MOP](#), Venue – to be determined, | 31 October - 04 November 2022

Click [here](#) for past and upcoming Montreal Protocol Meetings Dates and Venue.

Upcoming meetings
2022
68th IMPCOM Venue – to be determined, 09 Jul 2022
44th OEWG Venue – to be determined, 11 - 15 Jul 2022
69th IMPCOM Venue – to be determined, 29 Oct 2022
33rd MOP Bureau Venue – to be determined, 30 Oct 2022
34th MOP Venue – to be determined, 31 Oct - 04 Nov 2022

Summary of the Combined Twelfth Meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer (part II) and the Thirty-Third Meeting of

the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer: 23-29 October 2021. [The Earth Negotiations Bulletin, 1 November 2021, Vol. 19 No. 157](#)
See also >>> [IISD Daily coverage and photos](#)

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 >>>](#)



[THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL](#)

- The Executive Committee Eighty-seventh Meeting, Montreal, 28 June-2 July 2021

[REPORT OF THE INTERSESSIONAL APPROVAL PROCESS AND ONLINE MEETINGS FOR THE 87TH MEETING](#)

The present document consists of the following two parts:

I. Process for the 87th meeting, describing the agreed process followed by the Executive Committee for conducting the 87th meeting, which included consideration of several items of the agenda through an intersessional approval process (IAP) and several other items through online meetings.

II. Comments, discussions and decisions by the Executive Committee, containing a compilation of comments and discussions where applicable, and decisions on each of the documents considered during the 87th meeting, presented in the order of the agenda of the meeting.

Click [here](#) for the Executive Committee upcoming and past Meetings and related documents.



OzonAction

[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

New OzonAction Knowledge Maps tool - The UNEP OzonAction Knowledge Maps tool was developed to provide the National Ozone Units (NOUs) and different UNEP partners with a simple tool to help them access data and information about relevant stakeholders, who are

mainly involved in the implementation of programmes and projects under the Montreal Protocol (MP) supported by Multilateral Fund (MLF).

Currently, the first two available knowledge maps are described below:

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, for the training of technicians and supporting the national policies related to the Montreal Protocol.



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.

To develop this tool, UNEP OzonAction collected and reviewed different datasets from multiple sources, and then presented the collected datasets into a common platform and format (mainly in the form of a global map so that data can be geographically displayed).

Kindly note that the data and information provided will be updated regularly through the feedback that will be received from NOUs and partners to update and/or add new records. Other maps are currently under development which will include access to other key data and information of importance to the implementation of Montreal Protocol programmes.

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 developed by the UN Environment Programme (UNEP) OzonAction, to provide engineers, workers, and technicians with easily accessible information on substances/ gases that they are working with or handling in the workplace on visual printable cards. 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

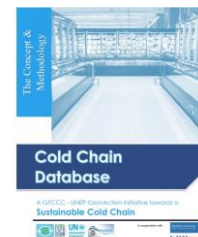
customs officers and technicians, to achieve and maintain compliance with the Montreal Protocol on Substances that Deplete the Ozone Layer. In the left navigation bar of the Gas Card tool web page, you will find a list of commonly used HFCs and HFC Blends in different sectors.*

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)

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”. The launch also comes in advance of the United Nations Food Systems Summit.



With the support provided by the Montreal Protocol’s Multilateral Fund, the Cold Chain Database initiative is currently being piloted in six countries – Bahrain, Bosnia and Herzegovina, Maldives, North Macedonia, Paraguay, and Senegal. From the pilot data gathering initiatives, a model is being developed that will allow the projection of benefits of cold chain expansion.

GFCCC is an independent not-for-profit industry organisation that seeks to simultaneously reduce food waste, and related greenhouse gas emissions in the processing, transportation, storage, and retail display of cold food by expanding and improving access to energy efficient low-global warming potential technology. The Cold Chain Database concept, methodology and data collection questionnaires are offered to interested countries and partners to help in assessing local cold chain capacities and designing respective action plans and policies.

> [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 [Ayman Eltalouny](#)

Contact: [Ayman Eltalouny](#), Coordinator International Partnerships, UNEP, OzonAction

United Nations Environment Programme (UNEP), OzonAction

Image: OzonAction



[HCFC Quota and Licence Tracker](#) - UNEP

OzonAction launches 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)

The new and updated UNEP OzonAction **GWP-ODP Calculator** application will help you to convert between values in metric tonnes, ozone depleting potential (ODP) tonnes and CO₂-equivalent tonnes of substances controlled by the Montreal Protocol and their alternatives.

This application, available at no cost, is particularly useful for National Ozone Officers to assist with understanding and calculating quantities of controlled substances, both pure substances and mixtures, for quota assignment, reporting requirements, etc. Other stakeholders interested in ODP, and global warming potential (GWP) values of controlled substances and their alternatives will also find this tool useful.

Operation of the application is very simple – just select a substance from the dropdown list and enter the known value in the appropriate field; the calculator will automatically perform the conversion between metric tonnes, ODP tonnes and/or CO₂-equivalent tonnes and display the corresponding converted values. The ODP, GWP and information about the substance is provided. For mixtures, the components of the mixture and their relative proportions (metric, ODP, CO₂- equivalent tonnes) are also calculated.

The updated **GWP-ODP Calculator** application now includes a new Kigali Amendment mode. The app can now be used in two different modes: the regular "Actual Values" mode and the "Kigali Amendment" mode. In the Kigali Amendment mode, the GWP values provided are those specified in the Kigali Amendment to the Montreal Protocol, i.e., GWP values are only assigned to controlled HFCs. In this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs. The user can effortlessly switch between modes.

The OzonAction GWP-ODP Calculator uses standard ODP values and GWP values as specified in the text of the Montreal Protocol to make the conversions. Other ODP and GWP values from the recent reports of the Montreal Protocol Technology and Economic Assessment Panel and Scientific Assessment Panel as well as the Intergovernmental Panel on Climate Change (IPCC) are used when appropriate, with references to sources of all values used. The app includes new refrigerant mixtures (with ASHRAE- approved refrigerant designations).

This application is designed primarily for use by Montreal Protocol National Ozone Units and other related stakeholders. The application was produced by UN Environment Programme (UNEP) OzonAction as a tool principally for developing countries to assist them in meeting their reporting and other commitments under the Protocol and is part of the OzonAction work programme under the Multilateral Fund for the Implementation of the Montreal Protocol.

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](#) for more information

OzonAction [WhatGas? Updated](#)

New features:

- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- HFCs and HFC containing mixtures
- Latest updated ozone depleting potential and global warming potential values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change; as well as the standard ODP and GWP values as specified in the text of the Montreal Protocol
- References to sources of all values used
- New refrigerant mixtures (with ASHRAE approved refrigerant designations)
- Values for 'actual GWP' and 'Kigali Amendment context' GWP for pure substances and mixtures (i.e. only including GWP values/components assigned to controlled hydrofluorocarbons - HFCs).



The WhatGas? application is an information and identification tool for refrigerant gases: ozone depleting substances (ODS), HFCs and other alternatives. It is intended to provide a number of 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. If the user requires additional information or assistance in identifying a refrigerant gas they are inspecting or that is described in the relevant paperwork, this can be easily obtained by consulting the application.

Using the application:

If you already have the application installed on your device, be sure to update to benefit from the new features.

Smartphone Application: Just search for "WhatGas?" or UNEP in the Google Play store or use the QR code – free to download!



Desktop Application: WhatGas? is also available online on the OzonAction [website](#)

For more information: Watch the new short introductory tutorial [video](#) on WhatGas? available on [YouTube](#)

See/download the [WhatGas? flyer](#)

Over 10,000 installations on Android and iOS devices to date!

[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.

The purpose is to provide an update on ASHRAE standards for refrigerants and to introduce the new refrigerants that have been awarded an “R” number (or ASHRAE designation) over the last few years and which have been introduced into the international market.

Read/download the [factsheet](#)

The factsheet, as well as more information on ASHRAE-UNEP joint activities and tools, is also available on the [ASHRAE UNEP Portal](#).

Contact: [Ayman Eltalouny](#), 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.

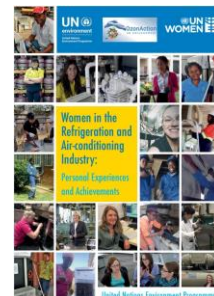


[Women in the refrigeration and air-conditioning industry: Personal experiences and achievements](#)

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 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](#)



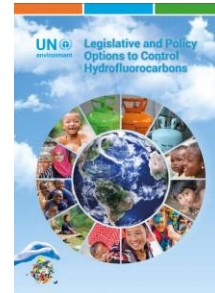
PUBLICATIONS

[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. 8-2021](#) (in Italian).



[Sustainable Cooling in support of a Resilient and Climate Proof Recovery](#), Report by the Climate and Clean Air Coalition (CCAC), 2021



[Status of the Global Food Cold-Chain: Summary Briefing-Food Cold Chain Food saved is as important as food produced.](#)

The UNEP-led Cool Coalition in collaboration with the Climate & Clean Air Coalition (CCAC), United Nations Environment Programme (UNEP), United Nations Food and Agriculture Organization (FAO), OzonAction and the Ozone Secretariat, with the support of the Italian Government, are producing a status report on the global food cold-chain, which will include case studies to show the current state and development across areas such as technologies, design approaches, finance and business models, policy, and planning.



This brief is a short summary of the full report that will be published in December 2021. The aim is to help better identify and accelerate solutions to simultaneously feed the world, support smallholder and marginal farmers, and protect our environment.

[Cool Coalition Secretariat, September 2021](#)

Image: Cool Coalition

[Solar Cooling \(2020\), 40th Informatory Note on Refrigeration Technologies.](#)

Summary-Solar cooling is a promising and environmentally friendly technology that can help meet the growing global demand for space cooling. Solar cooling can be achieved by various technologies. The two main commercial options are photovoltaic (PV)-driven vapour compression chillers and heat-driven cooling machines powered by solar collectors. Thermal cooling equipment can be coupled with various types of solar collectors with different efficiencies and costs. Overall system efficiencies of PV-driven and solar thermal-driven plants may not have such different values. Economic analysis indicates that the investment cost for the PV solution is at least half that of other systems. Solar cooling may have a very positive environmental impact by reducing the use of fossil fuels, and the technology may be considered mature to compete with conventional cooling equipment.



* This Informatory Note is an update of a previous version published in April 2017. It was prepared by Renato Lazzarin (President of IIR Section E).

A Summary for policy makers - Solar Cooling 2020 is [available](#) in English and French languages. [International Institute of Refrigeration, March 2021](#)

[Leaks, maintenance and emissions: Refrigeration and air conditioning equipment report](#) details common faults identified in both residential and commercial refrigeration and air conditioning equipment. The report also lists the impacts of these faults and how routine maintenance of the equipment has the potential to significantly reduce electricity use, refrigerant leaks, and emissions.

The research was supported by an extensive survey of international and domestic literature included as Appendix B to the report.

[Australian Government, Department of Agriculture, Water and the Environment, Expert Group, 2021](#)

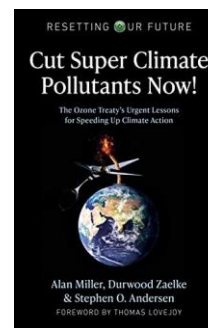


[Green Cooling in public procurement](#) How to advance the procurement of climate-friendly and energy-efficient cooling equipment in the public sector? Air conditioning in public buildings is often responsible for around 50% of total electricity consumption. Switching to climate-friendly cooling technologies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



MISCELLANEOUS

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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