

OzoNews

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

Volume XXII | 30 July 2022

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GLOBAL

1. Kigali Amendment latest ratifications
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Congratulations to the latest countries which have ratified the Kigali Amendment:

[Mongolia, 27 July 2022](#)
[Tajikistan, 29 June 2022](#)
[Congo, 16 June 2022](#)
[Singapore, 1 June 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. Parties to the Montreal Protocol reunite in Bangkok



After two years of virtual meetings due to the COVID-19 pandemic, the parties to the Montreal Protocol on Substances that Deplete the Ozone Layer were reunited at the forty-fourth Open-ended Working Group meeting in Bangkok, Thailand from 11-16 July 2022. The parties were happy to interact face-to-face again. While the agenda and workload were heavy, the positive energy with which the parties embarked the meeting was palpable.

Although parties had continued to meet virtually during the pandemic to ensure work on Montreal Protocol implementation continued, critical agenda items such as the

Replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol 2021-2023 could not be discussed or decided on fully. Interim decisions were previously made in 2020 and 2021 in online Meetings of the Parties to ensure the Fund could continue operating; with agreements that a full decision would be discussed and adopted at the first opportunity to reconvene in person.

The deferred full decision on the Replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol 2021-2023, including the amounts of contributions and extension of the fixed-exchange-rate mechanism, was one of the key discussion points during this meeting. As anticipated, reaching consensus required several sessions of contact group meetings and separately amongst Article 5 developing economies and donors over a number of days. But enthusiasm to get 'the job done' was evident with two final decisions put forward by the parties for adoption. At the Fifth Extraordinary Meeting of the Parties, which convened immediately afterwards in the afternoon of 16 July 2022, agreed replenishment of the Multilateral Fund totalled US\$ 540 million for the current period 2021-2023. This is at the same level as last replenishment for 2018-2020.

Other issues discussed during the Open-ended Working Group meeting included the Terms of Reference for a study on the next replenishment of the Multilateral Fund for 2024–2026, energy efficient and lower-global-warming-potential technologies, assessing the processes for the effective implementation of the Montreal Protocol, identification of gaps in the global coverage of atmospheric monitoring of controlled substances and options for improvement including the EU-funded pilot project to identify other suitable locations to expand the monitoring network.

The parties also considered a 2022 report by the Technology and Economic Assessment Panel (TEAP) that covered agenda items on the critical-use exemptions applications of methyl bromide by a few parties as a fumigant in the agricultural and commercial sectors, the future availability of halons used by the civil aviation industry, as well as strengthening the TEAP and its technical committees for the phase-down of hydrofluorocarbons (HFCs) and other future challenges related to the Montreal Protocol and the climate. A proposal from Switzerland discussed the ongoing emissions of carbon tetrachloride (CTC), another from Ghana on behalf of the Africa Group looked at options to deter the dumping of inefficient cooling equipment in Africa.

Notable was also the draft decision proposed by Mexico, the EU and the USA and unanimously endorsed by the parties, supporting, and strengthening the Montreal Protocol in honour of the pioneering work on atmospheric ozone by Nobel Laureates Professors Mario Molina, Sherwood Rowland and Paul Crutzen. Their research on man-made CFCs and impact of nitrous oxide from aircraft emissions that were found to destroy the ozone layer was ground-breaking. It resulted in the Montreal Protocol which to this day protects all life on Earth.

On the margins of the Open-ended Working Group meeting the World Cold Chain Symposium met to discuss the work and results of sustainable food cold chain efforts to address food loss and waste including progress on the Rome Declaration on the Contribution of the Montreal Protocol to Food Loss Reduction through Sustainable Cold Chain Development. A total of 13 side events also took place during the meeting attracting many of the delegates.

The parties clearly relished reconnecting. The opportunity to discuss agenda items face-to-face during plenary sessions as well as hold bilateral, informal discussions and more formal contact group meetings resulted not only in the decisions on the replenishment of the Fund, but also a healthy number of proposals and draft decisions referred for consideration at the Thirty-Fourth Meeting of the Parties due to be held in Montreal, Canada from 29 October – 4 November 2022.

[UN Environment Programme, Ozone Secretariat, 22 July 2022](#)

Image: UNEP, Ozone Secretariat website

See also >>> [Draft Report](#) of the Fifth Extraordinary Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer.

3. Montreal Protocol Concludes Multilateral Fund Replenishment Talks



Convening in person for the first time in over two years, the 44th Meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (OEWG 44), concluded the negotiations on the replenishment of the Multilateral Fund (MLF) for the 2021-2023 triennium, which had been delayed by the COVID-19 pandemic. Parties agreed on a budget of USD 540 million, including USD 475 million in new contributions.

The decision was adopted at the brief Fifth Extraordinary Meeting of the Parties (ExMOP 5) that was convened on 16 July specifically for that purpose, the *Earth Negotiations Bulletin (ENB)* [analysis of the meeting](#) notes. OEWG 44 convened in Bangkok, Thailand, from 11-16 July 2022.

Although the OEWG meeting yielded no draft decisions for consideration and adoption by the MOP, many welcomed the return to in-person meetings where issues are advanced, in the words of Co-Chair Osvaldo Alvarez, “not only in the meeting room, but also in the corridors and outside the meeting venue.”

The meeting also “made significant progress” in addressing “some very big issues around the Protocol’s future effectiveness and capacity to make synergistic contributions to addressing climate change.”

In addition to MLF replenishment, delegates focused on:

- terms of reference for a study of replenishment needs in the 2024-2026 triennium;
- energy efficiency and dumping;
- ongoing emissions of carbon tetrachloride (CTC); and
- restructuring of the technical options committees (TOCs) that are linked to the Protocol's Technology and Economic Assessment Panel (TEAP).

The [ENB summary](#) of the meeting indicates that energy efficiency and phasedown of hydrofluorocarbons (HFCs) have been “key areas of implementation for parties since the adoption of the Kigali Amendment,” as per which developing countries will freeze HFC use in January 2024. ENB notes that the energy efficiency contact group discussed African countries' concerns that introduction of tighter efficiency standards in developed countries “is already resulting in the transport of unwanted appliances to their shores.” Parties forwarded four conference room papers to MOP 34 for further deliberation. The papers address:

- stocks and quarantine and pre-shipment uses of methyl bromide;
- CTC;
- an EU proposal on identifying sources of emissions originating from industrial processes; and
- recognition of the achievements of Paul Jozef Crutzen, Mario José Molina, and Frank Sherwood Rowland, whose work on the ozone layer laid the foundation for multilateral cooperation.

The three scientists were awarded the Nobel prize for chemistry in 1995.

In 2022, the Montreal Protocol celebrates its 35th anniversary. It is frequently said to be “the world’s most successful environmental treaty.”

MOP 34 will take place in Montreal, Canada, from 31 October to 4 November 2022.

The 44th meeting of the Open-ended Working Group of the Parties. The forty-fourth meeting of the Open-ended Working Group of the parties to the Montreal Protocol (OEWG44), the Fifth Extraordinary Meeting of the Parties to the Montreal Protocol (ExMOP5) and the sixty-eighth meeting of the Implementation Committee (ImpCom68) convened in-person in Bangkok, Thailand as follows: ImpCom68 – 9 July 2022, OEWG44 – 11 to 16 July 2022, ExMOP5 - 16 July 2022 after the closing of OEWG44. Learn more, and access related documents >>> [Meeting information](#) | [Documents](#) | [Side events](#) | [Daily highlights from IISD](#)

[The International Institute for Sustainable Development \(iisd\), 20 July 2022](#)

Image: iisd website | Photo by Ivetta Gerasimchuk

4. Is there an ozone hole above the tropics? Canadian study ignites debate among scientists

An Ontario researcher says he's discovered a new ozone hole that's seven times larger than the Antarctic ozone hole, a claim that other atmospheric scientists are questioning.



Qing-Bin Lu, a professor of chemical physics at the University of Waterloo, writes in a [peer-reviewed paper published in AIP Advances](#) last Tuesday that since the 1980s, there has been an all-season ozone hole in the tropics, affecting 50 per cent of the Earth's surface area. Lu says at the centre of this tropic ozone hole, around 80 per cent of the ozone has been depleted.

"The tropics constitute half the planet's surface area and are home to about half the world's population," Lu said in a [news release last Tuesday](#). "The existence of the tropical ozone hole may cause a great global concern."

The Earth's ozone layer lies in the stratosphere and helps absorb the sun's ultraviolet (UV) radiation. Too much exposure to UV radiation can increase the risk of skin cancer and eye damage for humans. UV exposure can also reduce photosynthesis, which can inhibit plant growth and negatively impact marine ecosystems.

In the late 1970s, researchers began to notice that the ozone layer around the polar regions had been thinning due to the industrial use of ozone-depleting substances such as hydrochlorofluorocarbons. When the Montreal Protocol was signed in 1987, 197 countries around the world agreed to phase out these substances, which led to the slowing of ozone depletion rates.

Ozone thickness is measured in Dobson units (DU). NASA defines an ozone hole or a thinning ozone layer as less than 220 DU, as measurements less than 220 DU were not found prior to 1979.

But Lu's study uses a different metric, defining an ozone hole as a 25 per cent reduction in ozone thickness. He argues NASA's 220 DU definition of an ozone hole is inadequate in the tropics, as the ozone in the tropics would still be above 220 DU even with a 56 per cent reduction in thickness.

However, several atmospheric researchers came out with a [statement published in Science Media Centre](#), disputing the existence of a tropical ozone hole.

"I am surprised that this study was published at all in its current form. The results of this work will be highly controversial and I'm not convinced they are correct," said Martyn Chipperfield, an atmospheric chemistry professor at the University of Leeds.

"The claim in this research of such large ozone changes in the tropics have not been apparent in other studies which makes me very suspicious. Science should never depend

on just one study and this new work needs careful verification before it can be accepted as fact," he added.

Lancaster University atmospheric scientist Paul Young, who was the lead author of the UN's 2022 Scientific Assessment of Ozone Depletion says the reduced ozone in the tropics doesn't constitute a "hole."

"There is no 'tropical ozone hole', driven by the author's proposed electrons from cosmic rays or otherwise," Young said in the statement. "The author's identification of a 'tropical ozone hole' is down to him looking at percentage changes in ozone, rather than absolute changes, with the latter being much more relevant for damaging UV reaching the surface."

Marta Abalos Alvarez, an earth and astrophysics researcher at Complutense University of Madrid, said the article "lacks the scientific rigour necessary to be a reliable contribution."

"It contains a lot of reasoning with serious errors and unsubstantiated assertions, contradicting previous results that are substantiated. Ozone depletion in the tropics is nothing new and is mainly due to the acceleration of the Brewer-Dobson circulation," she said in the statement.

The Brewer-Dobson circulation refers to the process in which ozone and water vapour circulates from the tropics up towards the poles, a phenomenon that climate researchers say has sped up due to the effects of climate change.

However, in an email to CTVNews.ca on Wednesday, Lu fired back at these critiques, calling them "groundless."

"The true fact is that in my paper... not only showed the ozone changes in absolute values... but compared my observed results with those reported by others in the literature, all of which obtained from multiple data sources," he said.

"None of the criticisms ... could stand from the close examination of the scientific literature."

Addressing Abalos Alvarez's comments, Lu said the changes expected in ozone thickness due to the Brewer-Dobson circulation is "approximately 10 times smaller than the observed large ozone losses in the 1980s and 1990s."

Citing measurements from NASA, Lu pointed out that the annual average total ozone value over the tropics is around 263 DU over the last decade. In comparison, the average in Antarctica has been 275 DU while the global average is 288 DU.

"It must also be noted that even (though) 'no tropical ozone hole' had been observed under the old definition in previous studies, but it does not mean that there has been no large ozone loss in the lower stratosphere in the tropics," Lu said.

"Thus, my discovery does call for further careful studies of ozone depletion, UV radiation change, increased cancer risks, and other negative effects on health and ecosystems in the tropical regions," he added.

[CTV News, 14 July 2022, By Tom Yun](#)

Image: CTV website

5. The Climate and Ozone Impacts of Black Carbon Emissions From Global Rocket Launches Abstract and Figures

Aerosol emissions from spaceflight activities play a small but increasing role in the background stratospheric aerosol population. Rockets used by the global launch industry emit black carbon (BC) particles directly into the stratosphere where they accumulate, absorb solar radiation, and warm the surrounding air.

We model the chemical and dynamical response of the atmosphere to northern mid-latitude rocket BC emissions. We initially examine emissions at a rate of 10 Gg per year, which is an order of magnitude larger than current emissions, but consistent with extrapolations of space traffic growth several decades into the future. We also perform runs at 30 and 100 Gg per year in order to better delineate the atmosphere's response to rocket BC emissions. We show that a 10 Gg/yr rocket BC emission increases stratospheric temperatures by as much as 1.5 K in the stratosphere.

Changes in global circulation also occur. For example, the annual subtropical jet wind speeds slow down by as much as 5 m/s, while a 10%–20% weakening of the overturning circulation occurs in the northern hemisphere during multiple seasons.

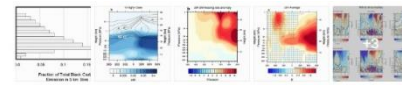
Warming temperatures lead to a ozone reduction in the northern hemisphere by as much as 16 DU in some months. The climate response increases in a near linear fashion when looking at larger 30 and 100 Gg emission scenarios.

Comparing the amplitude of the atmospheric response using different emission rates provides insight into stratospheric adjustment and feedback mechanisms. Our results show that the stratosphere is sensitive to relatively modest BC injections.

Authors: Christopher M Maloney, Robert W Portmann, Martin Ross, Karen H Rosenlof
[Journal of Geophysical Research Atmospheres, ResearchGate, June 2022](#)

Image: *Journal of Geophysical Research Atmospheres* website

See also >>> [The pollution caused by rocket launches](#), BBC, 15 July 2022, By Mark Piesing



The Climate and Ozone Impacts of Black Carbon Emissions From Global Rocket Launches

Article June 2022

Christopher M Maloney Robert W Portmann Martin Ross Karen H Rosenlof

Aerosol emissions from spaceflight activities play a small but increasing role in the background stratospheric aerosol population. Rockets used by the global launch industry emit black carbon (BC) particles directly into the stratosphere where they accumulate, absorb solar radiation, and warm the surrounding air. We model the chemical and dynamical response of the atmosphere to northern mid-latitude rocket BC emissions. We initially examine emissions at a rate of 10 Gg per year, which is an order of magnitude larger than current emissions, but consistent with extrapolations of space traffic growth several decades into the future. We also perform runs at 30 and 100 Gg per year in order to better delineate the atmosphere's response to rocket BC emissions. We show that a 10 Gg/yr rocket BC emission increases stratospheric temperatures by as much as 1.5 K in the stratosphere. Changes in global circulation also occur. For example, the annual subtropical jet wind speeds slow down by as much as 5 m/s, while a 10%–20% weakening of the overturning circulation occurs in the northern hemisphere during multiple seasons. Warming temperatures lead to a ozone reduction in the northern hemisphere by as much as 16 DU in some months. The climate response increases in a near linear fashion when looking at larger 30 and 100 Gg emission scenarios. Comparing the amplitude of the atmospheric response using different emission rates provides insight into stratospheric adjustment and feedback mechanisms. Our results show that the stratosphere is sensitive to relatively modest BC injections.

6. To reduce temperature in the near-term two strategies beyond CO₂ are key

Countries must do more beyond CO₂ to meet carbon-neutrality goals by mid-century



8 July 2022, Washington, DC— Curtailing carbon dioxide (CO₂) emissions dominates the focus of climate mitigation efforts. However, the latest research has confirmed carbon dioxide mitigation alone has only marginal results in near-term temperature reduction. A new study, co-authored by the Chinese Academy of Sciences, Institutes for Science and Development, and the Institute for Governance & Sustainable Development, has identified the two most effective mitigation strategies to limit near-term warming beyond CO₂:

- Reducing the other non-CO₂ super climate pollutants— hydrofluorocarbons (HFCs), methane, and black carbon; and
-
- Promoting targeted nature-based solutions (NbS) that safeguard and enhance irrecoverable carbon sinks, such as intact forests, peatlands, and mangrove forests.

Published on 23 June 2022 in *Advances in Climate Change Research*, the authors emphasized that while it is critical to achieve net-zero CO₂ emissions to stabilize climate in the longer term, more must be done to avoid warming in the critical next twenty to thirty years. This is the only way we have a chance of slowing self-reinforcing climate feedbacks and avoiding dangerous irreversible climate tipping points.

The study finds fast action to reduce non-CO₂ emissions, particularly HFCs, methane, and black carbon, can avoid up to 0.6 °C of warming by 2050, within the timeline for fulfillment of countries' mid-century carbon neutrality goals. More specifically, quickly reducing emissions of HFCs, methane, and black carbon could avoid 0.1 °C, 0.3 °C, and 0.2 °C of warming respectively by 2050.

Additionally, promoting targeted NbS that safeguard and enhance irrecoverable carbon sinks, such as intact forests, peatlands, and mangrove forests, helps protect the climate benefits derived from greenhouse gas emissions mitigation strategies. Intact forests are particularly important for sequestering carbon in the near term.

"We need to move with lightning speed to win the climate sprint to 2030 by reducing non-CO₂ climate pollutants like methane and protecting our carbon sinks. But we also must continue running the marathon to decarbonize and reach net-zero emissions by 2050," said IGSD President and study co-author, Durwood Zaelke.

The study recommends that national and subnational governments adopt policies such as integrating non-CO₂ mitigation strategies into national and subnational carbon neutrality policies and protecting intact forest sinks through promotion of *proforestation* and moving away from burning forest biomass for energy.

At the international level, the study recommends the deployment of multiple treaty platforms to advance international collaboration on the reduction of non-CO₂ emissions and promotion of targeted NbS to protect and enhance natural sinks, including the Montreal Protocol on Substances that Deplete the Ozone Layer and its Kigali Amendment, the United Nations Framework Convention on Climate Change and the Convention on Biological Diversity.

"This is an emergency. We need to tackle all these strategies at full speed." Zaelke added.

The paper, ***Fast action on short-lived climate pollutants and nature-based solutions to help countries meet carbon neutrality goals***, is available [here](#)

An English summary of the paper by the authors is [here](#)

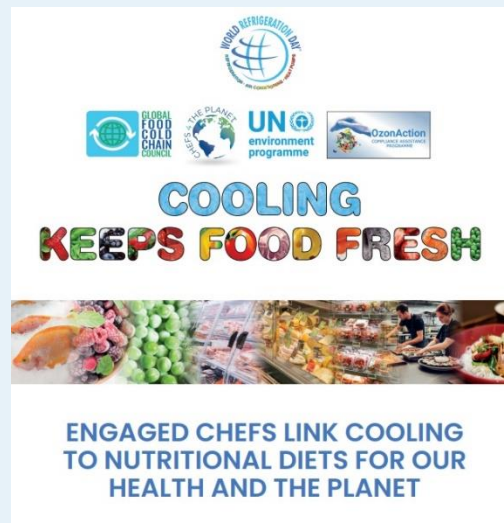
A Chinese summary of the paper from *Advances in Climate Change Research* is [here](#)

[Institute for Governance & Sustainable Development \(IGSD\)](#), 8 July 2022

Image: IGSD website

UNEP & partners raise profile on cold chain with support of world-renowned chefs; Launches on World Refrigeration Day 2022. Chefs Say, “**Cooling Keeps Food Fresh**”, in Global Campaign. To celebrate World Refrigeration Day, leading chefs are reminding us that cooling enables nutritional diets, helps reduce the number of undernourished, and can lower greenhouse gas emissions.

- [Press Release: Cooling Keeps Food Fresh](#)
- [Cooling Keeps Food Fresh \(brochure\)](#)
- [World Refrigeration Day Campaign](#)
- [World Refrigeration Day 2022 - UNEP & partners raise profile on cold chain with...](#)



[World Refrigeration Day, 26 June 2022](#)

International contest of scholar articles on the topic of “The Ozone Layer and Life on Earth”(Republic of Uzbekistan) - Regulation on the procedure for selecting scholar articles devoted to the protection of the ozone layer for the international contest under the Joint project of the State Committee of the Republic of Uzbekistan for Ecology and Environmental Protection and UNDP/GEF ‘Complete HCFC Phase-out in Uzbekistan through Promotion of Zero ODS Low GWP Energy Efficient Technologies’.



Applications and electronic versions of scholar articles, including a link to the published paper on web-platforms or a scanned copy shall be sent to ozone.o3.uz@gmail.com by August 1, 2022

Learn

more >>> <https://bit.ly/3L3xl3n> (English) <https://bit.ly/3GnBSzE> (Russian)

ASIA AND THE PACIFIC

7. Asia Pacific's National Ozone Officers reunited at their Joint Network Meeting in Bangkok, Thailand

17-19 July 2022, Bangkok, Thailand – After conducting business through computer screens for the past two years due to the COVID-19 pandemic, the Ozone Officers of the Asia and Pacific countries were enthusiastic to meet in-person for the first time in Bangkok, Thailand from 17-19 July at the Joint Meeting of the South Asia (SA), Southeast Asia (SEA) and Pacific Island Countries (PIC) Networks of National Ozone Officers.

The meeting was organized by UNEP's OzonAction Asia-Pacific Compliance Assistance Programme (CAP) team with financial support from the Montreal Protocol's Multilateral Fund, and it was held back-to-back with the 44th Open-Ended Working Group (OEWG44) and the 5th Extraordinary Meeting of the Parties to the Montreal Protocol (ExMOP5).

Resuming the in-person Joint Network Meeting was warmly welcomed by both the network member countries and their international partners. All participants continued to respect the COVID-19 guidelines of the host country and although they had to conduct their business behind masks, their smiles, commitment, and energy for their common mission were quite apparent. Twenty-six (26) countries participated physically, eight joined virtually, while five other countries attended both physically and virtually. In total 100 participants (female 56, male 44) comprising Ozone Officers from the Asia-Pacific region, representatives from developed countries partners, i.e. Australia, Japan and Sweden, the



Ozone Secretariat, the Multilateral Fund Secretariat (MFS), the Senior Monitoring and Evaluation Officer of the Multilateral Fund, the United Nations Development Programme (UNDP), the United Nations Industrial Development Organization (UNIDO), and the World Bank.

Mr. Jim Curlin, Head of UNEP OzonAction said, “This event – the first physical Regional Network meeting that UNEP has organized since the start of the pandemic – not only provided an opportunity for everyone to interact face-to-face after a long hiatus. It also demonstrated the resilience and results-based approach of the National Ozone Officers in the face of challenging times. The high quality of the discourse during the meeting proved that the countries of the Asia-Pacific Regional Networks continue to march forward with dedication to meet their compliance objectives with the Montreal Protocol. They are all inspiring examples of how members of this multilateral agreement can adapt and work creatively to deliver on their commitments.”

The plenary sessions of the Joint Network Meeting were preceded by three breakout sessions for each Regional Network to reconnect with one another and share their experience and challenges during the pandemic period. At the plenary sessions, updates were presented by the Ozone Secretariat and Multilateral Fund Secretariat on discussions and policy outcomes of meetings, and policy papers that were being discussed as well as the planning programme for the evaluation of activities for the regional networks, respectively.

The plenary sessions offered opportunities for SA, SEA and PIC network countries to be updated on the conclusions from the OEWG44 and the decisions taken at ExMOP5, the 89th and 90th Executive Committee (ExCom) Meetings. Participants contributed to brainstorming on policy and technical options in sustaining the hydrochlorofluorocarbon (HCFC) phase-out, establishing a hydrofluorocarbon (HFC) quota allocation system following the experiences and best practices shared by Japan, Sweden and Thailand on the HFC quota allocation approaches, and the preparation of the Kigali HFC Implementation Plans (KIPs) from both countries and implementing agencies’ perspectives in the panel discussion. General issues on mainstreaming gender into the Montreal Protocol implementation, and opportunities to consider the energy efficiency issues during HCFC phaseout/HFC phasedown, were also covered.

The Asia-Pacific CAP team presented a series of regional public materials that were developed in collaboration with the National Ozone Unit of Indonesia and offered the networks with support on translation, if required, to local languages that could potentially reach out and raise awareness to wider local networks and partners on issues related to the Montreal Protocol. Countries also discussed the next steps for the Asia Pacific Regional Ozone2Climate Art Contest and committed to promoting popular voting as the final push for the regional contest which remains open until 31 August 2022.

The Networks also agreed to have another similar meeting before the next Meeting of the Parties and scheduled it from 31 October to 4 November 2022 to further discuss the challenges and options for the Montreal Protocol implementation. In the first half of 2023, the countries hope to hold a thematic workshop to address the challenges and needs identified.

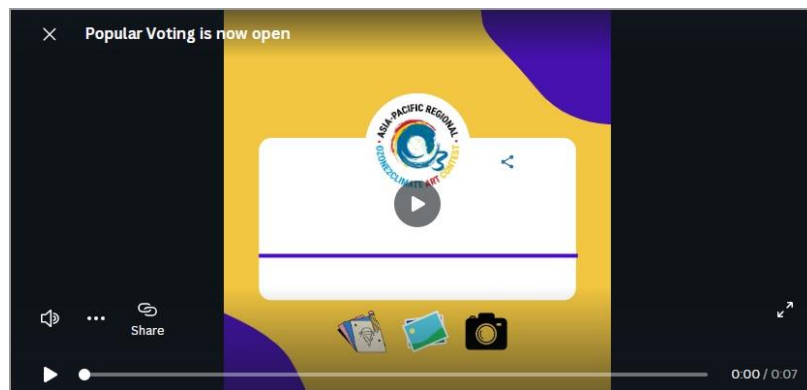
The Joint Network Meeting was organized by UNEP OzonAction in Asia-Pacific as one of its approved work plan activities for the year 2022 and under the mandate of the Multilateral Fund for the Implementation of the Montreal Protocol.

Documents and Presentations can be found on the [OzonAction Meeting Portal](#).

[UNEP, OzonAction/ROAP, July 2022](#)

Image: OzonAction website

8. The Asia Pacific Regional Ozone2Climate Art Contest- Popular Voting is NOW OPEN until 31 August 2022



The Asia Pacific Regional Ozone2Climate Art Contest, launched by UNEP Asia and the Pacific Office, UNESCO, and the National Ozone Units in the Asia Pacific in partnership with Mahidol University, is the regional awareness-raising initiative for the protection of the ozone layer and mitigation of climate change through arts: drawing, photography, and graphic design.

Almost 100 pieces of artworks selected as the national winner of each category (from over 5,300 artworks received both online and offline submission across 34 participating countries in Asia-Pacific) are now competing at the regional level contest until 31 August 2022.

[VOTE NOW](#)

and be part of this journey to save the ozone layer and climate.

More information: www.ozone2climate.org

#YourVoteMatters

[UNEP, OzonAction/ROAP, July 2022](#)

Image: OzonAction website

9. Approval for new export log fumigant takes effect - New Zealand

From 22 July 2022, EDN [ethanedinitrile] can be imported, manufactured, and used under

strict conditions. Used to kill common pests found in wood, EDN is an alternative to methyl bromide and is already approved for use in Australia, South Korea, Malaysia, and Russia.

An Environmental Protection Authority (EPA) decision-making committee granted approval for the fumigant in April, but it did not take effect at that time because guidelines for safe use of the fumigant needed to be finalised.

“This new fumigant was approved because its benefits are significant, and adverse effects are negligible with the appropriate control measures,” says Dr Chris Hill, General Manager of the EPA’s Hazardous Substances and New Organisms group.

“EDN decomposes rapidly after use, is ozone-friendly, and there are reduced risks to people and the environment compared with methyl bromide, another log fumigant that is now heavily restricted.”

Additional rules developed by WorkSafe to protect workers, called safe work instruments (SWIs), will take effect at the same time as the EPA approval on 22 July and include the need for buffer zones when using EDN.

Other controls for the use of EDN include that it can only be applied by professionals in commercial settings, and the fumigation of export logs or timber can only take place under tarpaulins or in shipping containers.

[New Zealand Environmental Protection Authority, 7 July 2022](#)

Image: NZEPA website



EUROPE & CENTRAL ASIA

10. EU Advisory Body Calls for 2030 Ban of GWP5 Over Five for Heat Pumps, Room ACs, Chillers and Refrigeration

The [European Economic and Social Committee \(EESC\)](#), a key EU advisory body, has released its [opinion](#) on the [proposed EU F-gas Regulation](#), calling for a ban on all refrigerants with a GWP



above five in new heat pumps, room air conditioners, chillers and refrigeration applications as of 2030.

The opinions of this body are taken into consideration in the negotiations between the European Commission (EC), Council of the EU and Parliament. It thus has a key role to play in the EU's decision-making process.

The opinion was drafted by Kęstutis Kupšys, rapporteur on the F-gas Regulation and representative of the Alliance of Lithuanian Consumer Organisations. The opinion was adopted with 140 votes in favor, 1 against and 6 abstentions.

The EESC also calls for banning the use of high-GWP refrigerants (such as R404a), setting a 150-GWP cap across all technologies, promoting incentive schemes and public procurement for f-gas-free alternatives and helping EU Member States incentivize greener solutions with very low GWP and free of f-gases where possible.

While the EESC welcomes the EC-proposed EU F-gas Regulation, it believes further ambition can be deployed to "maintain the global EU leadership in climate action." The Committee asserts that the revision of this regulation is a chance to "significantly reduce direct climate impacts by promoting natural solutions with a low global warming potential (GWP) instead of continuing to use hydrofluorocarbons (HFCs) with a high global warming potential."

The EESC also notes that it is "extremely important to promote shifting directly to the lowest-GWP f-gas-free solution, avoiding intermediate solutions. EU markets demonstrate that this is feasible, and the EU should lead by example."

The EESC also calls attention to the challenges of operating with "any kind of f-gases blends, even low-GWP ones," as they make recycling, reclamation, maintenance and servicing more complex.

In response to concerns that the EU's REPowerEU heat pump rollout will be hampered by the F-gas Regulation, the EESC labels them "unfounded, due to the increased production capacity of the industry, which will be mostly based on natural refrigerants."

The EESC adds that the "EU has a clear opportunity to make this an exemplary case in setting global green standards" and "to make sure that European businesses and households are not burdened with a climate-damaging stock of equipment for decades to come."

The EESC's opinion also calls for negotiators to raise the fee applied to the sale of allowances (a proposed €3 [US\$3.06] per metric ton of CO₂e), suggesting that incomes can be benchmarked to support stakeholders in contributing towards more climate-aligned technologies. Finally, the advisory body supports the acceleration of training initiatives on HFC alternatives.

ATMOsphere (publisher of the r744 website) has recently released a [report](#) on the market of natural-refrigerant-based domestic heat pumps.

[r744, 22 July 2022, By Thomas Trevisan](#)

Image: r744 website / Headquarter of the European Economic and Social Committee in Brussels, Belgium. Credit: Wikimedia Commons.

11. Europe: What about cooling?

Demand for cooling is surging as temperatures hit a record 40°C in Europe, but there is a long way to go before carbon-free cooling becomes law.

Temperatures have hit record highs across the European continent as the EU wraps up its work before the summer break. On 20 July, the European Commission proposed a gas demand reduction plan to get the EU through a winter with potentially very little or no Russian gas. On 13 July, the European Parliament's industry and energy committee voted to further raise 2030 targets for renewable energy and energy efficiency, in response to Russia's invasion of Ukraine. Whether for heating or cooling, energy is increasingly a scarce and expensive commodity, and the current heatwaves suggest the latest acceleration towards climate neutrality cannot come too soon.

In 2020, the UK MET office modelled what temperatures would look like in 2050, but that forecast has already become reality. In accordance with those predictions, studies warned that global cooling demand would increase fivefold, and the number of cooling appliances would quadruple to 14 billion. With the arrival of record temperatures three decades early, experts are concerned that the world is ill-prepared to cope.

Cooling makes the world hotter

Cooling technologies remain overwhelmingly powered by fossil fuels.

The production and use of refrigerant gases called hydrofluorocarbons (HFCs) also threatens to exacerbate global warming by as much as 0.4°C by 2100.

In 2016, Montreal Protocol signatories agreed to the Kigali Amendment, pledging to restrict the production and use of HFCs from 2019. One alternative is natural refrigerants, which are naturally occurring substances like CO₂ or ammonia. While natural refrigerants cause negligible carbon emissions and do not damage the ozone layer, they are controversial for their potential chemical footprint. The European Fluorocarbons Technical Committee, which represents HFC suppliers and producers, warns that ammonia can lead to changes to soil and water quality, for example.

"Refrigerants are a true dilemma," says Kristian Strand, president of commercial compressors at Danish energy company Danfoss. "On the one hand, if we use natural refrigerants then we eliminate global warming potential. On the other hand, there is a discussion on the chemicals and what [environmental] impact they have.

"But they are not supposed to [leak], so it is thinking about how we build systems that are tight," he adds.

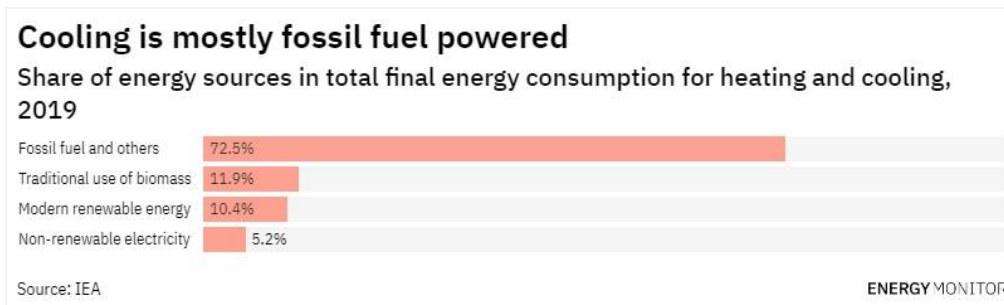
"[Refrigerants] are a non-issue if time and resources are invested," says Thomas Nowak, head of the European Heat Pump Association. "If tight timelines are applied, [they become a less secure option]."

If rising global temperatures continue to be countered with current cooling practices, their high emissions risk making the world an even hotter place.

The case for more energy-efficient cooling is not just environmental but a necessity given the increasing volatility and scarcity of energy, says Strand. "We will not be able to serve

the growing population with air-conditioned offices, buildings or even enough food [if we do not use energy more efficiently],” he notes.

Propelled by Europe’s race to find an alternative to Russian gas come wintertime, much of the decarbonisation conversation has been dominated by clean heating technology. However, across Europe, unbearable heatwaves are exposing countries’ ill-preparedness to meet surging demand for clean cooling.



A University of Birmingham study predicts that demand for cooling will soon overtake that for heating, a prospect European countries’ climate and energy targets have not yet accounted for. The European Commission’s current proposal to revise the EU’s energy efficiency directive names clean cooling technology as a priority, but it is far from becoming law. The EU Parliament’s full plenary will discuss the proposal in September and then negotiations with member states will begin.

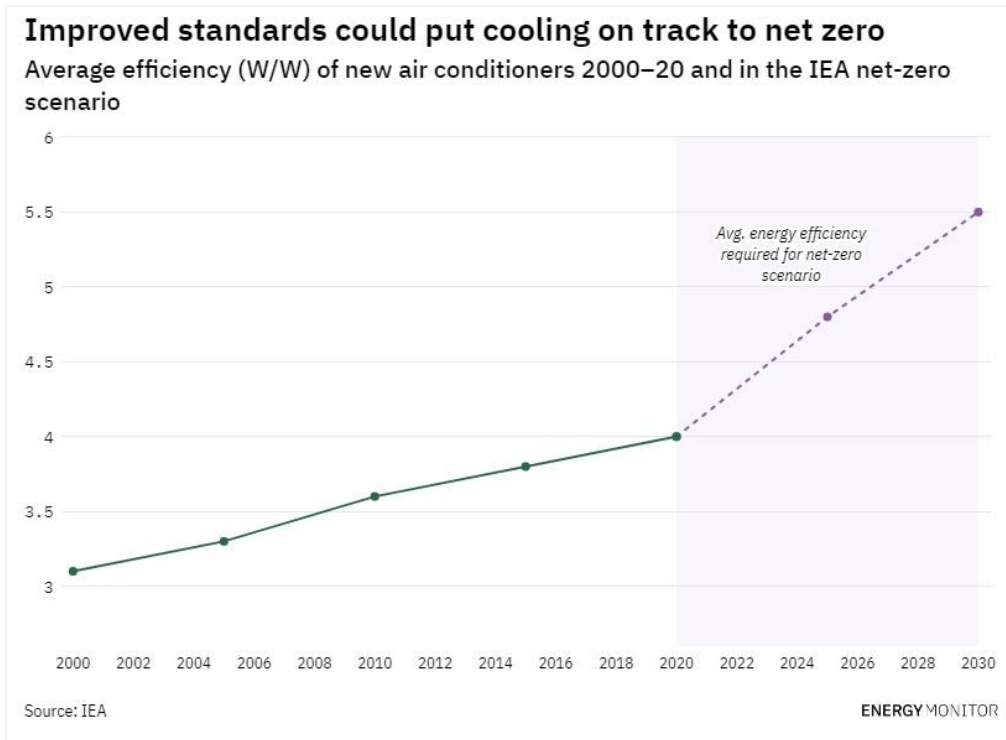
“It is a massive task,” says Strand. “If you look at all the figures [for cooling demand and supply] you can get a little depressed. Looking towards 2050, we think, how are we going to make it? That is why we are so persistent on energy efficiency; it is often overlooked [as a solution].”

By 2030, Danfoss aims to produce 80% of its products using the circularity approach and create circularity collaborations with its top 25 clients.

Efficiency and standards

Doubling the energy efficiency of cooling by 2050 would reduce the need for additional electricity generation capacity to meet peak demand by 1,300GW, calculates the International Energy Agency (IEA) – equivalent to all the coal-fired power generation capacity in China and India in 2018. It could also save up to \$2.9trn on electricity generation, transmission, and distribution costs.

Together with natural refrigerants, the IEA says improved efficiency could abate between 210 and 460 billion tonnes of CO₂-equivalent emissions from cooling over the next four decades.



While high efficiency air conditioners (ACs) are available on the market, most customers choose to buy two to three times less efficient models, the IEA notes. It estimates that, by 2030, energy efficiency regulations could increase AC energy efficiency by around 50%, putting cooling on track to its Net Zero Emissions by 2050 Scenario. Efficiency standards in product design and production are a crucial safeguard against the potential surge in inefficient cooling technology over the next few decades.

“We need to think about circularity,” adds Strand. “To what degree is your product reusable and recyclable? What is the lifetime of your product?”

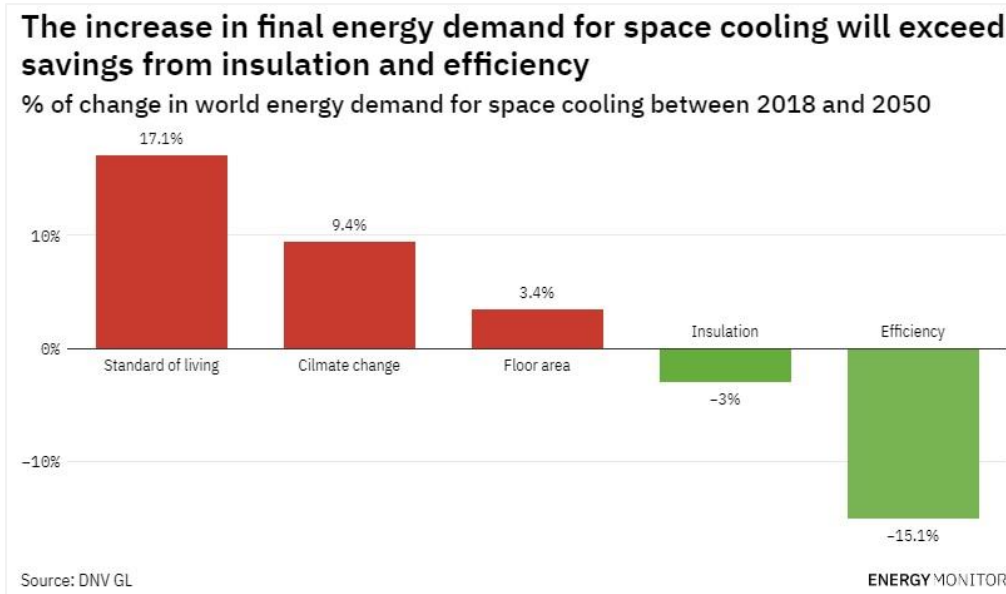
Heat pumps: not just heat

Nowak believes the solution lies in switching to different technologies such as heat pumps. Heat pumps are more effective than air conditioning during heatwaves, suggested a study by US non-profit RMI last year. Nowak says: “[We need to] ban the worst-performing products. A label is not enough. [...] We have no cooling problem. We have a technology selection problem. End users choose the cheapest solution and rarely consider both heating and cooling together.”

Heat pumps operate by sucking heat from the natural environment – the ground, air or water – and concentrating it into a building to provide heating. The mechanism can be reversed in warm weather to provide cooling. When powered by renewable electricity, heat pumps are carbon neutral.

A [2021 IEA report on cooling](#) notes that energy use for space cooling has more than tripled since 1990, which has had a substantial impact on power grids, particularly during times

of high demand or extreme heat. This trend has continued over the past year, in part prompted by increased home cooling as Covid-19 confined people to their homes. Space cooling accounted for nearly 16% of the building sector's final electricity consumption globally in 2020, more than triple what it was in 1990, according to the IEA.



“It is about more efficient systems but also rethinking how we use the energy we already put out there,” says Strand. He suggests using heat pumps to channel waste heat from big energy consumers such as data centres or supermarkets into cooling.

Nowak agrees. “Instead of discharging [waste heat] into the environment as “thermal waste,” we should use it [for energy],” he says.

One of the greatest barriers to a large-scale heat pump roll-out is that they require expert installation, and the number of experts that would be required to meet surging cooling demand is far more than is currently available.

“We in the industry have an obligation to work together and to provide training and education,” says Strand. “Otherwise, when you look at the demand, we will have no chance. We need to get more people interested to work [in the field],” he adds. Strand also suggests that heat pump component design can be further improved, “so that our customers don’t need a refrigeration technician or electrician to install [the technology]”.

[Energy Monitor, 21 July 2022, By Nour Ghantous](#)

Image: Energy Monitor website

12. Scientific Body Urges U.K. to 'Match or Exceed' EU F-gas Regulation

The U.K. Climate Change Committee (CCC) has called for the U.K. government to “match or exceed” the level of increased ambition that will be adopted following the revision of the EU F-gas Regulation.



This was one of the messages contained in the [2022 Progress Report to the Parliament](#) released June 29. The report points out major gaps in the implementation of policy measures supporting the U.K.'s net-zero goals.

The report notes that the f-gas sector represents 3% (12MtCO₂e) of total UK emissions in 2020. Even if credible policies to reduce f-gases are in place domestically, the body calls for “stronger international action on reducing f-gas emissions, including health services in other countries,” referring to f-gases emissions released from the use of high-GWP HFCs in metered dose inhalers.

With regard to heat pumps, the scientific body says, “most heat pumps use f-gas refrigerants, which could become a significant source of f-gas emissions as heat pumps get rolled out across the UK, unless the Government takes action to ensure that they shift to using non-F-gas refrigerants. Potential replacement refrigerants [to fluorinated gases] include propane [R290] and CO₂ [R744].”

Following Brexit, the U.K. Department for Environment, Food and Rural Affairs (DEFRA) has led the effort to draft the country's F-gas regulation. The new regulation, however, is not expected to come into force before 2024.

[r744, 18 July 2022, By Thomas Trevisan](#)

Image: r744 website



13. IIR Woman prize at ICR 2023 - a brand new award to be launched

During the 26th International Congress of Refrigeration in Paris in August 2023, a brand-new award will be presented: the IIR Women in Refrigeration Medal. It will reward exceptional scientific work carried out by a woman in all RACHP fields.

At each IIR Congress, a series of prestigious academic and scientific awards are presented to acknowledge those who have made outstanding contributions to the field of refrigeration or have completed noteworthy research.

In 2023, the 26th IIR International Congress of Refrigeration (ICR) will take place in Paris, France, on August 21-25, and will be organised by the French Association of Refrigeration

(AFF) under the theme “Towards efficient, controlled, and smart refrigeration”. On this occasion, a new prize will be launched: The IIR Woman in Refrigeration Medal.

The medal is awarded for outstanding scientific achievements by a woman in academic or industrial research, innovation, or development, in all fields of refrigeration, air-conditioning, and heat pumps (RACHP). Women are significantly under-represented in the RACHP industry, and this award can help promote diversity and role models by increasing the visibility of women achievements in the sector, thus, inspiring a new generation of women. Role models are paramount to highlight the career opportunities in RACHP; a diverse workforce balanced in terms of gender, ethnic and cultural background benefits the industry and society as a whole.

Companies that embrace diversity are more likely to perform better as different perspectives promote better solutions. With major challenges to tackle, such as climate change, sustainable use of resources, renewable and resilient energy supply, promoting diversity has never been more important or timely.

The winner of the IIR Woman in Refrigeration Medal will receive: the medal, a certificate as well as a 1,600 euros reward.

How to apply?

Click [here](#) for information on the terms and conditions for applying for this award. **The deadline to submit the nomination form is early December 2023.**

[The International Institute of Refrigeration \(IIR\), 8 July 2022](#)

Image: IIR website



James Lovelock dies on 103rd birthday (26 July 1919 – 26 July 2022) was an English independent scientist, environmentalist, and futurist. He is best known for proposing the Gaia hypothesis, which postulates that the Earth functions as a self-regulating system. With a PhD in medicine, Lovelock began his career performing cryopreservation experiments. His methods were influential in the theories of cryonics (the cryopreservation of humans). He invented the electron capture detector, and using it, became the first to detect the widespread presence of chlorofluorocarbons in the atmosphere.



FEATURED



OZONE SECRETARIAT

Overview for the meetings of the ozone treaties in 2022

69th IMPCOM, Montreal, Canada | 29 October 2022

33rd MOP Bureau, Montreal, Canada | 30 October 2022

34th MOP, Montreal, Canada | 31 October - 04 November 2022

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

SunSmart Global UV App helps protect you from the dangers of the sun and promotes public health.

A new app for mobile phones that provides localized information on ultraviolet (UV) radiation levels has been launched by the World Health Organization (WHO), the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP) and the International Labour Organization (ILO). The *SunSmart Global UV app* is available free of

charge at both the [Apple App](#) and [Google Play](#) stores. It provides personalized options so that users can take actions to protect prolonged, excessive UV exposure, a major cause of skin cancer and other UV related diseases. The app allows the inclusion of national and local data streams and adaptation to multiple languages – it is currently available in Chinese, English, French, Russian, Dutch, and Spanish.

Image: UNEP, Ozone Secretariat website



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, 14 February 2022](#)

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 >>>](#)



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

Multilateral Fund's post-COVID-19 recovery response

The COVID-19 pandemic has wreaked havoc on people's health and economic security around the world. The economic impact of lockdowns has left many developing countries vulnerable to further financial decline. Many of those countries are beneficiaries of the Multilateral Fund for the Implementation of the Montreal Protocol (referred to as Article 5 countries). Their continued efforts to restore the ozone layer, mitigate climate change and protect the environment are at risk.

COVID-19 has had an unprecedented adverse impact on the manufacturing and trade of a range of consumable products because of supply constraints and a fall in demand. Cooling applications are one example. Converting cooling applications to ozone- and climate-friendly technologies is a cornerstone of the work of the Multilateral Fund, which is expected to be temporarily undermined by the pandemic. Recovery will be slow, and it will take time before output and manufacturing can be brought back to pre-pandemic levels.

The Multilateral Fund recognizes the urgency of this moment and the role it can play in post-COVID-19 recovery measures to support the environmental protection efforts of Article 5 countries and to contribute to the economic sectors that rely on the substances needed for cooling applications like refrigeration and air-conditioning that are essential for human health and welfare.

In this context, the Multilateral Fund's response involves immediate action to reinforce its role of providing financial and technical assistance to Article 5 countries to sustain the implementation of their phase-out activities under the Montreal Protocol and to contribute to economic recovery post-COVID-19. The Executive Committee has given a high priority to the continued operations of the Fund by establishing an effective intersessional approval process that has provided over US \$35 million. The funds are being used for continued support to the national ozone units in implementing phase-out activities at the country level; for continued conversion of manufacturing lines, including refrigeration and

air-conditioning manufacturing lines to low-to-zero global-warming-potential alternative technologies not relying on controlled substances; and for technical assistance to technicians so that they can apply better servicing practices and sustain their livelihood despite the downturn in the economy. This funding is expected to provide economic stimulus that will allow these small enterprises to remain in operation.

Much-needed international cooperation has continuously been provided through the Multilateral Fund to governments of Article 5 countries to support them in establishing policies that will support their recovery efforts, especially for sectors in which people's livelihoods are directly affected by the pandemic. The bilateral and implementing agencies of the Fund continue to identify near-term priorities and approaches for capacity-building, information exchange and implementing training projects in these countries despite the challenges of travel restrictions. Their efforts have resulted in innovative virtual on-line solutions ensuring that countries continue to be assisted during this time. The Multilateral Fund will continue its work to heal and restore the ozone layer, which is protecting the planet from the side effects of excessive ultraviolet radiation, despite the challenges of the new reality created by the pandemic.

- [Evaluation of regional networks of national ozone officers \(desk study and terms of reference for the second phase\)](#)
- [Evaluation of regional networks of national ozone officers \(desk study and terms of reference for the second phase\): Corrigendum](#)
- [Guide for project preparation of Stage I of Kigali HFC implementation plans \(KIP\) \(February 2022\)](#)
- [Updated guide for the presentation of stage II of HCFC phase-out management plans \(February 2022\)](#)
- [Executive Committee Primer 2022](#)

>>> 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

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 the Deplete the Ozone Layer. In the left navigation bar of the Gas



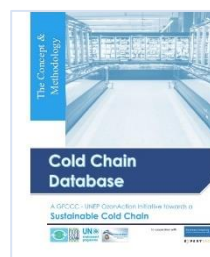
Card tool web page, you will find a list of commonly used HFCs and HFC Blends in different sectors.*

- 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”.



> [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

[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. 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**

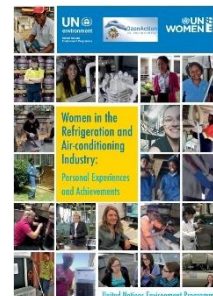
Contact: **Ayman Eltalouny**, OzonAction, UN Environment Programme



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



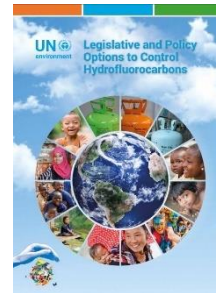
As part of IIR and UNEP OzonAction's partnership, a set of Cold Chain Technology Briefs was released over the past few years, which includes in-depth summaries about the cold chain in different key sectors. They include descriptions of technology, refrigerant options and trends and conclude with prospects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

[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](#)



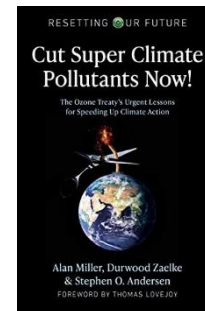
Latest issue of Centro Studi Galileo magazine, **Industria & Formazione**, n. [6-2022](#) (in Italian).



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.

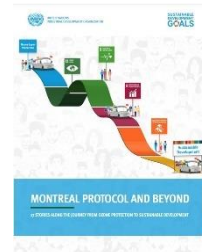
E-Book on Process Safety Management (PSM) Training for Ammonia Refrigeration - a new e-book about the critical elements of a process safety management (PSM) training program for facilities operating an ammonia refrigeration system. The e-book, titled "**[7 Keys to a Compliant PSM Training Program for 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](#)**



The Green Customs Guide to Multilateral Environmental Agreements was designed to promote sustainable trade and encourage customs and border control officers to take on a proactive role in protecting the environment. The guide provides useful information and guidance about relevant trade-related multilateral environmental agreements (MEAs), thus facilitating legitimate trade in environmentally sensitive items while preventing illicit trade in such items and contributing to the achievement of the **[Sustainable Development Goals](#)**.



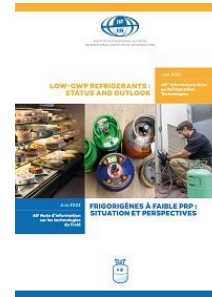
Read/Download the [full report](#).

See pages 91-98 on "How the Montreal Protocol regulates trade", and "Montreal Protocol-specific training materials for customs officers."

Photovoltaic-powered Air Conditioning in Buildings - Space cooling in buildings is characterized by enormous growth rates, due to increasing ambient temperatures, growing population and urbanisation. Air-conditioned buildings in many countries are largely dominated by mid to low appliance energy efficiency levels, highly climate-damaging refrigerants as well as fossil-fuel based electricity supply. This in sum generates a huge amount of greenhouse gas (GHG) emissions, furthering climate change. The objective of this paper is to further unfold the technical and economic potential of solar PV-powered green air conditioners. Therefore, it focuses on the most widely applied type of active cooling appliance: single split-type air conditioning systems with a cooling capacity up to 5 kW. It looks at the current development of technical main components and based on that defines model cases for hybrid and off-grid solutions for private and small commercial applications. The technical and economic potential for these cases is then analysed for 13 countries worldwide. Subsequently, a case study on Médecins Sans Frontières' (MSF) solar AC project in Haiti provides practical insights on the use of PV-powered AC systems in the context of off-grid social infrastructure. **Read/Download the [study here](#)**



[International Institute of Refrigeration \(IIR\)](#) **New Informatory Note. Low-GWP Refrigerants: Status and Outlook** - The latest IIR Informatory Note outlines the options available for low-GWP refrigerants and their respective performance. It provides a series of recommendations on refrigerant selection criteria, research priorities and personnel training. A [Summary for policymakers](#) outlining the main conclusions and recommendations of this Informatory Note is available in open access. Also available in [French](#) language.



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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