

OzoNews

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

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GLOBAL

1. Kigali Amendment latest ratifications

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

Eritrea, 7 February 2023

Republic of Korea, 19 January 2023

At the Twenty-Eighth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, held in Kigali from 10 to 15 October 2016, the Parties adopted, in accordance with the procedure laid down in paragraph 4 of article 9 of the 1985 Vienna Convention for the Protection of the Ozone Layer, a further amendment to the Montreal Protocol as set out in Annex I to the report of the Twenty-Eighth Meeting of the Parties (Decision XXVIII/1).

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

United Nations Treaty Collection

Image: *UN Treaty Collection website*



2. Sustainable ODS and HFC banks management through complementary action of the Climate Ozone Protection Alliance to the Multilateral Fund – Webinar

Description

During the 91st Meeting of the Executive Committee (ExCom) of the Multilateral Fund (MLF) for the implementation of the Montreal Protocol in December 2022, the ExCom decided to establish a funding window for several activities related to banks of used or unwanted controlled substances (Decision 91/66).

The decision is an important step towards improved framework conditions for the sustainable management of ozone depleting substances (ODS) and hydrofluorocarbons (HFC) banks. However, there is a need for complementary implementation measures as well as mobilization of additional funds to bring action plans into practice. As the window of opportunity for climate action is closing, the time to step up mitigation action on ODS and HFC banks is now.

This webinar will present the Climate Ozone Protection Alliance (COPA) objectives and the MLF's efforts to deal with ODS and HFC banks and identify synergies to show how COPA and the MLF can support countries in managing ODS and HFC banks.

To cover as many time zones as possible, two slots of the same content are offered to choose between:

A) Tuesday, 9 May 2023, 09:00 a.m. – 10:30 a.m. (CEST, UTC+2)

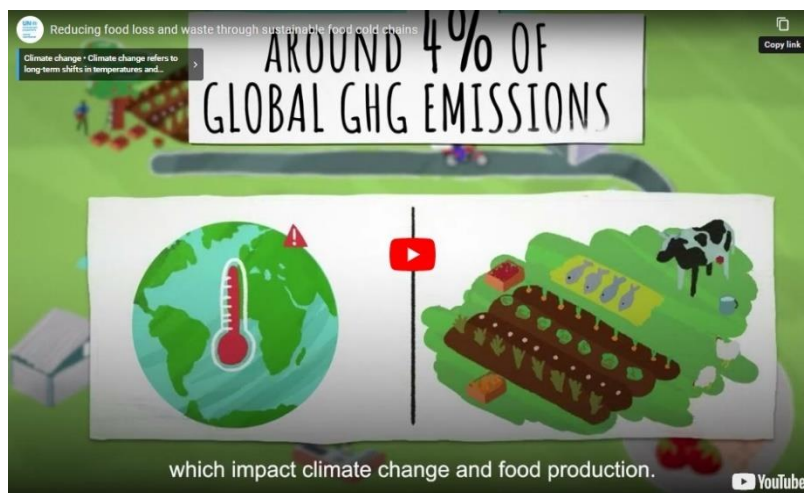


B) Tuesday, 9 May 2023, 4:00 p.m. – 5:30 p.m. (CEST, UTC+2)

Please register for the event using the [online registration form](#)
[Climate Ozone Protection Alliance \(COPA\) Secretariat, April 2023](#)

Image: COPA website

3. Reducing food loss and waste through sustainable food cold



In a world where tonnes of edible food is lost, leaving people hungry and small-scale farmers in poverty, temperature-controlled storage and transport of food is a solution.

Cold chains create suitable temperature conditions all the way from farm to fork, ensuring that food stays fresher and more nutritious for longer. Access to reliable and affordable energy is a pre-requisite to establishing cold chains, often lacking in developing countries.

The Food and Agriculture Organization (FAO), the Ozone Secretariat of UNEP, UNEP and the Italian Ministry of Environment and Energy are working with countries to find solutions to sustainably expand cold chain infrastructure, where viable, using renewable energy to power cooling.

Refrigeration demands significant quantities of electricity, still predominantly produced from fossil fuels, and may even rely on harmful greenhouse gases as cooling agents.

Sustainable cooling solutions limit global warming and protect the livelihoods of farmers, increasing food security through improved access to safe and nutritious food.

[Food and Agriculture Organization](#) (FAO), and [Ozone Secretariat](#) of UN Environment Programme (UNEP), April 2023

Image: video screen 1

4. Social media data shed light on air-conditioning interest of heat-vulnerable regions and socio-demographic groups

Summary

Cooling homes with air conditioners is a vital adaptation approach, but the wider adoption of air conditioners can increase hydrofluorocarbon emissions that have high global warming potential and carbon emissions as a result of more fossil energy consumption.

The scale and scope of future cooling demand worldwide are, however, uncertain because the extent and drivers of air-conditioning adoption remain unclear. Here, using 2021 and 2022 Facebook and Instagram data from 113 countries, we investigate the usability of social media advertising data to address these data gaps in relation to the drivers of air-conditioning adoption.

We find that social media data might represent air-conditioning purchasing trends. Globally, parents of small children and middle-aged, highly educated married or cohabiting males tend to express greater interest in air-conditioning adoption.

In regions with high heat vulnerability yet little empirical data on cooling demand (e.g., the Middle East and North Africa), these sociodemographic factors play a more prominent role. These findings can strengthen our understanding of future cooling demand for more sustainable cooling management.

Read/Download

Authors: Sibel Eker, Alessio Mastrucci, Shonali Pachauri, Bas van Ruijven

One Earth, 21 April 2023

Image: One Earth website



5. How cooling the world heats it up

The world is getting hotter. Oppressive heat is now stretching from coast to coast. Mexico, Venezuela, Senegal, Oman, India, and Bangladesh have seen scorching temperatures in the past few days. But though the dangers of rising temperatures are well documented, little is known about the knock-on effects of keeping cool. Because of growing urbanisation, demand for air conditioning is rising. As populations worldwide come out of poverty and into modest or middle-class lives, one of the first things people want to buy is an air conditioner. Unfortunately,

air conditioning is one of the worst consumers of electricity. It heats the planet. At least 7 per cent of greenhouse gas emissions come from cooling, and with temperatures likely to soar,

this will only worsen. The more the Earth warms, the more people need air conditioners, but the more of those we have, the warmer the world will be. An emerging vicious circle. Unfortunately, it also brings substantial environmental risks. It is like Newton's third law of motion: 'For every action, there is an equal and opposite reaction.'

Air conditioning and refrigeration systems have significantly impacted the world, fueling economic expansion, facilitating education, changing how food and medicines are stored and transported, and saving thousands of lives. But in doing so, they have significantly contributed to global warming, as they account for 20 per cent of the total electricity used in buildings.

America is among the most prominent perpetrators. But, in a staggering revelation, the amount of electricity it utilises for air conditioning alone is equivalent to the total electricity consumption of Africa. This eye-opening statistic highlights the immense energy demands of cooling systems and their impact on global energy consumption. Air conditioners that consume so much electricity have become a significant concern because many of the world's power grids are still fired up by fossil fuels, contributing tremendously to the greenhouse gas problem.

According to a report by the International Energy Agency, an estimated 1.9 billion air conditioning units were in use worldwide in 2020. These were mainly concentrated in the United States, China, Japan, and South Korea. But in the tropics, over 90 per cent of the three billion people have yet to buy an AC unit. However, as temperatures and wages rise, demand for AC is predicted to skyrocket in the coming decades, especially in hot and humid regions like India, Bangladesh, Indonesia and Brazil. The International Energy Agency predicts that by 2050, there will be 5.6 billion households, or around two-thirds of the world's households, with air conditioning worldwide. And, without policy intervention, emissions will rise by 90 per cent above 2017 levels by 2050.

Moreover, as a cooling medium, most air conditioners and refrigerators use manufactured gases such as hydrofluorocarbons, or HFCs. These gases tend to leak into the atmosphere, where HFCs have thousands of times more global warming potential by trapping heat than carbon dioxide. However, they are emitted in much smaller quantities. HFCs have an ozone depletion potential of zero, but they indirectly contribute to it by increasing the warming of the stratosphere and decreasing ozone levels in the tropics. A NASA study found that HFCs will cause a 0.035 per cent decrease in ozone by 2050. So, the race is on to solve the cooling conundrum with innovative new methods being trialled by technology to make air conditioners more efficient and eradicate the need for HFCs.

Researchers and scientists around the world continue developing revolutionary new approaches for cooling. Despite having plans for more innovation, which is fantastic, the poorest people in the world are not likely to get the latest kit. They will be the least able to buy or invest in those efficient, innovative models that are now coming out. Nascent technology cannot be relied upon alone to provide affordable cooling on a mass scale. More solutions are necessary. So there is a lot to be said for reducing demand for mechanical cooling in the first place through improved buildings, better urban design, and nature-based approaches.

But today, innovative building design provides solutions to keep buildings cool without relying on air conditioning. For example, the floating office in Rotterdam, which houses the Global Centre on Adaptation, is a green architect's dream. The floating office uses technology to cool the building by pumping cooling liquid through pipes in the concrete and cooling the ceilings. It is powered off-grid, heated by solar panels, cooled by the river beneath it, and mainly made from wood. The Global Centre on Adaptation is the largest floating office in the world. But

although its exact cost is not known, it is rumoured to have been expensive to build. And with Rotterdam's average summer temperature only around 18°C, some might argue that keeping a building cool in this climate is not hard.

Projects like the Global Centre on Adaptation are impressive, and it is great that they exist. If only for their standout technology and their beautiful design. But we need scalable, affordable solutions that we can use everywhere. For example, designing buildings so they do not need air conditioning may be part of the answer. After all, that is how it was done before AC was invented. Pre-World War II buildings were designed to be passively cooled. They had windows that opened. They looked at ventilation and how it moved through the building, and our standards of comfort slightly differed from theirs. Post-World War II, we saw an explosion in the use of air conditioning in buildings. Between 1946 and 1955, nearly 1.5 million homes were constructed annually in America. This building boom brought about cooling complications. The race for skyscrapers takes over where the windows cannot open at those higher heights, so now these hermetically sealed buildings require even more cooling load.

However, the heat stress that we are facing is a real wake-up call. In Cairo, Egypt, where temperatures regularly surpass 35°C, the need for scalable and sustainable cooling systems has never been more urgent. Traditional cooling techniques have been used for centuries and incorporating them into new buildings can reduce the need for air conditioning. In addition, drawing on local knowledge can help communities find sustainable and scalable alternatives to air conditioning. For example, desert communities and rural Cairo have a high level of cooling just by knowing the correct ratios to build thick walls.

In Cape Town, South Africa, cheap adaptations to existing buildings can also reduce the need for AC. For example, to avoid the scorching heat during summer, they have painted them white to reflect the heat, just as we wear white dresses to reflect the heat. This will also cool the building and the neighbours around it. In addition, white roofs can reflect sunlight better, making the internal temperature 2–5 °C lower than a building with a roof painted another colour, like grey.

Cities worldwide suffer from the urban heat island effect due to replacing trees and plants with asphalt and concrete, which absorb and release heat into the air. As a result, urban areas' average annual land-surface temperatures can get up to 3.8°C hotter than non-urban areas at midday. To mitigate this, cities are turning some streets into pedestrianised tree-lined corridors, making people feel up to 2–2.5 °C cooler than the rest of the city.

Cities like Athens have planned to create three green corridors over the next two years, making the most of the cooling greenery already there. They have focused on supporting existing green areas, urban forests, parks and hills and replenishing their existing nature.

Multiple studies have shown that increasing green areas in cities is crucial to reducing temperatures and the need for air conditioning. If we can create more efficient ways of cooling, we will be able to reduce emissions linked to buildings and air conditioners. The urban heat island effect is a serious phenomenon that will only worsen. It is most likely to affect disadvantaged communities the most. Several cities in Europe are making adaptations —Paris, like Athens, has planned to have 50 per cent of the city covered by planted areas by 2030.

The wealthy are not the only ones who suffer in the sweltering heat. Green buildings should not, therefore, be high-end. Since it affects people of every socioeconomic background, it will make sense to design a structure that provides convenience to its habitats. While cheap improvements to walls, roofs, and windows could reduce the energy needed for cooling, these

will not be enough. It is necessary for there to be a shift, and this change must be brought about by far-reaching policies and a large-scale ambition to achieve them. Some countries are beginning to take action to meet the challenge.

Medellin in Colombia has already won awards for its green corridors, and Ahmedabad in India has been acknowledged for its heat action plan, pioneering in South Asia. So, we must think of sustainable and resilient solutions, which means we must consider cooling the whole city. So that the building is cooler, we do not need so much heating and cooling by using fossil-fuel-dependent appliances. And this is extremely important because if we continue like this again, we will see just higher temperatures and more crazy climate phenomena.

This scorching summer of 2023 is extraordinary because it started with a mild heatwave. Unfortunately, this heat wave is quickly approaching the record books and might even set a new record anytime as it continues with the looming threat of El Nino, which could bring more disasters and disruptions. Implementing the city-wide and, ultimately, country-wide solutions needed to cool the planet sustainably will require cooperation on an unprecedented scale. This will require industry, government, finance, and civil society to work together. We must deploy the most efficient technologies and invent new technologies for a brighter future. This finding highlights the urgent need for sustainable and energy-efficient solutions to address the growing demand for cooling in our modern world. We must find a better, more energy-efficient and climate-friendly way to cool the earth's population, or it will be a real problem in the future.

Media New Age, 29 April 2023, By Md Zahurul Al Mamun

Image: Media New Age website – SGS Bangladesh

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

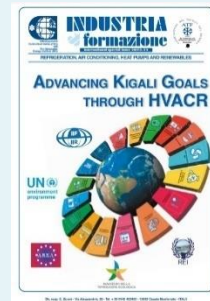


UNEP OzonAction, ASHRAE, April 2023 Fact sheet: Update on New Refrigerants Designations and Safety Classifications. The purpose of this fact sheet is to provide an update on ASHRAE standards for refrigerants and to introduce the new refrigerants that have been awarded an «R» number over the last few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



Advancing Kigali goals through HVACR - *International Special Issue 2022- 2023*

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



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

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

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

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

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

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

Image: Sustainable cold chains website



Categories



1 exhibits

On site post-harvesting and/or precooling applications



6 exhibits

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



0 exhibits

Storage on board ships, aircraft, and containers



4 exhibits

Food processing plants



1 exhibits

Transport (large and smaller trucks, smaller containers)



6 exhibits

Supermarkets (wholesale markets & Retailers)



1 exhibits

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



2 exhibits

Vaccines and other pharmaceutical products



0 exhibits

Game-changing and systemic approaches

AFRICA

6. Ozone and Climate protection in Burkina Faso

The Ministry of the Environment, through the project Refroidissement respectueux de l'Ozone et du Climat en Afrique de l'Ouest et Centrale (ROCA), officially handed over a batch of medical and educational equipment to the Ministries of Health and Education, on Thursday 30 March 2023 in Ouagadougou. This handover is part of the promotion of the use of energy-efficient and ozone-friendly cooling technologies.



The preservation of the ozone layer is important for the survival of all living beings. It is therefore essential to reduce the climate impact of the refrigeration sector in Burkina Faso. And this requires the increased use and mastery of Green Cooling and air conditioning technologies.

The Secretary General of the Ministry of the Environment, Dr Bouraima Kouanda, handed over sanitary and didactic material to the Ministry of Health and the Ministry of the Environment, on Thursday 30 March 2023 in the premises of the National Ozone Office in Ouagadougou. The ceremony of reception of this equipment took place in the presence of the European Union, the ROCA project coordinator, the general secretaries of the beneficiary ministries and several guests.

This batch of equipment, worth about 85 million CFA francs [Approx. USD 143116.20], is composed of 10 natural fluid refrigerators, ten (10) solar panels, four (4) teaching benches, five (5) autogenous welding kits, eight (8) maxigas cartridges and eight (8) oxygen cartridges.

This equipment acquisition was made possible by the GIZ's Ozone and Climate Friendly Cooling in West and Central Africa (ROCA) project, funded by the European Union and the German Federal Ministry for Economic Cooperation and Development.

This grant also falls within the framework of strengthening the operational and technical capacities of the beneficiaries. According to Dr Silem Sassi, team leader for human and social development and representative of the European Union, "the refrigerators will enable the populations of the East and South-West communes to have equitable access to high-quality vaccines in the health and social promotion centres (CSPS). As for the teaching benches, they will strengthen the technical skills of learners in the Ouagadougou and Bobo-Dioulasso training centres in the safe handling of propane-R290, used in air conditioning and refrigeration.

The beneficiaries, through their representative, Dr Estelle Dabiré, Secretary General of the Ministry of Health, expressed their thanks to the donors.

Together we can protect the ozone layer.

GIZ, Green Cooling Initiative, 20 April 2023

Image: GIZ Website

ASIA AND THE PACIFIC

7. Training workshop for technicians of Refrigeration and Air Conditioning Sector

The National Ozone Unit (NOU), Ministry of Environment, Forest and Climate Change (MOEF&CC), Government of India, recently conducted a two days training workshop in New Delhi, India.



As part of phase out projects of Ozone Depleting Substances (ODS) in India, GIZ – Proklima has reached out to an enormous number of technicians from the Refrigeration and Air Conditioning Sector (RAC) across the country. The training workshop was held for a delegation of government officials, service technicians and trainers from Timor Leste and Sri Lanka and service technicians from New Delhi. The technicians have been trained using theory and practical modules, developed by trainers and industry experts of GIZ Proklima. The training modules have been appreciated and well received.

GIZ Training module titled “Good Service Practices and Installation of Room Air- conditioners with HCFC – 22 and Flammable Refrigerants” was used for the theory and practical sessions with an emphasis on the installation and servicing of natural flammable refrigerant, R-290 in Room ACs. The initiative was seen as a relevant step in South South cooperation by the government.

Appreciation on hands on practical and theoretical training workshop

Delegates from Timor Leste and Sri Lanka appreciated the learnings of the workshop, especially the use of natural refrigerant R-290, that is yet to be fully adapted in these countries and the respective governments are ensuring sufficient capacity building initiatives as this one. Participation of relevant personnel in the training is a starting point for the introduction of refrigerant R-290 in room air conditioners in the two governments.

“The training was productive, especially regarding the correct installation and usage of refrigerant R-290 in room ACs and we take away a lot of learnings and sharings to be used back home in our home country.”

Mr Srilal Kumara, Senior Service Engineer, Ceylon German Technical Training Institute, Sri Lanka

Reference Materials

For future reference and in order to revise the learnings of the two days training workshop, all participants were provided with a Refrigeration Scale and a technicians handbook titled “**Good Service Practices and Installation of Room Air-conditioners with HCFC–22 and Flammable Refrigerants**”, both of which are developed by technical experts of GIZ Proklima.

"Our aim of participating in the two days workshop and India visit to Godrej is to gain capacity building by training the technicians and future trainers for best practices in effective installation and service of room ACs, once our government approves the use of R-290 in Timor Leste. We hope to return to India for further such useful trainings."

Mr. Luis Belo, National Ozone Unit, Timor Leste

GIZ – Proklima, 20 April 2023

Images: GIZ-PROKLIMA website

LATIN AMERICA AND CARIBBEAN

8. New Caribbean National Ozone Officers and Assistants trained on Montreal Protocol

Panama City, Panama, 30 March 2023 – The UN Environment Programme (UNEP) OzonAction Compliance Assistance Programme (CAP) team in Latin America and the Caribbean in cooperation with the Government of Panama organized a training programme for nine (two men, seven women) National Ozone Officers (NOOs) and National Ozone Assistants (NOAs) from Belize, Dominica, Grenada, Jamaica, Saint Kitts and Nevis, Saint Lucia, and Trinidad and Tobago. Also in attendance was an expert NOO from Grenada who participated as a resource person and trainer, as well as three UNEP representatives.



The first National Ozone Unit training was piloted in select regions in 2018 and is now being delivered in all regions. The training for the Caribbean and Haiti was held from 16 to 18 March 2023, back-to-back with the Joint Network Meetings for Latin America and the Caribbean which took place in Panama City from 20 to 24 March 2023.

The main objective of the training was to provide new NOOs and NOAs with basic and essential information about the Montreal Protocol, countries' obligations under the Montreal Protocol and the main activities to be carried out by NOUs at the national, regional, and international level. The training also provided the new officers with basic knowledge and information tools necessary to support local governments and stakeholders in fulfilling their commitments under the Montreal Protocol.

The training programme delivered information to support Officers in carrying out their daily work in an effective manner. This included an understanding of national commitments under the Montreal Protocol, the annual cycle of events, annual and intermittent reporting

requirements to the Ozone Secretariat and Multilateral Fund (MLF) Secretariat as well as MLF project cycles. It also addressed key activities at the national level, such as the effective implementation of MLF projects, and interacting with Ozone Depleting Substances users and other stakeholders.

Mrs. Sophia Anselm, National Ozone Officer for the Commonwealth of Dominica remarked “The NOO training conducted by UNEP was an enlightening and engaging experience. The environment enabled the exchange of a wealth of knowledge as well as networking opportunities, assuring the less seasoned NOOs and Assistant NOOs that UNEP and the Ozone community is vast and extremely supportive.”

The training was designed using a series of modules including detailed background information, practical exercise handouts, quizzes, crosswords, innovative activity exercises, evaluation documents, guides for additional work by participants before and after training sessions and lists of useful additional resources.

The meetings were organised as part of the Regional Network service that OzonAction’s CAP provides to Article 5 (developing) countries as part of its role as an Implementing Agency of the Multilateral Fund for the Implementation of the Montreal Protocol.

Contact: [Donnalyn Charles](#), Montreal Protocol Regional Coordinator, Caribbean, UNEP OzonAction, Latin America and the Caribbean

UNEP, OzonAction, 30 March 2023

Images: UNEP OzonAction website

9. La Argentina, entre los países que protegen la capa de ozono

Ratificado por 165 países, entre ellos la Argentina, el Protocolo de Montreal apunta a disminuir la producción y consumo de las diversas sustancias que agotan el ozono y la tasa de crecimiento de su concentración atmosférica. Una de estas sustancias es el bromuro de metilo, un gas ampliamente usado en el sector agrícola en tratamientos de control de plagas y desinfección de suelos y sustratos.



Con este objetivo, el INTA fue convocado para llevar adelante tres proyectos de sustitución del bromuro de metilo. Así, se logró su reemplazo en la producción de almácigos de tabaco, mediante el proyecto “Prozono”, así como en la postcosecha de cítricos y algodón, mediante el proyecto “Más ozono”.

Para los cultivos de hortalizas, frutilla y ornamentales, se creó el proyecto “Tierra Sana” que es implementado por el INTA junto con la organización de las Naciones Unidas para el Desarrollo Industrial (ONUDI). Además, se coordina conjuntamente con el Ministerio de Ambiente y Desarrollo Sostenible, la Secretaría de Agricultura, Ganadería y Pesca de la Nación y Cancillería.

Fruto del trabajo de más de 20 años se desarrollaron alternativas que permiten la desinfección del suelo y los sustratos de manera sustentable.

“El objetivo inicial del proyecto es acompañar al productor en la reconversión tecnológica que implica la sustitución de estas sustancias por alternativas de manejo y tecnologías sustentables. Para ello, se investigaron, validaron e implementaron prácticas de manejo y tecnologías alternativas”, detalló Analía Puerta, coordinadora nacional del proyecto “Tierra Sana” e investigadora del Instituto de Floricultura del INTA Castelar. [...]

Fruto del trabajo de más de 20 años se desarrollaron alternativas que permiten la desinfección del suelo y los sustratos de manera sustentable.

“Al cumplir con este compromiso internacional, el proyecto Tierra Sana inicia una nueva etapa que tiene como desafío sostener el reemplazo logrado, al igual que lo han hecho otros proyectos de sustitución de bromuro de metilo en el mundo”, expresó Puerta. [...]

El Protocolo de Montreal apunta a disminuir la producción y consumo de las diversas sustancias que agotan el ozono y la tasa de crecimiento de su concentración atmosférica.

Una sustancia, numerosas alternativas para reemplazarla

Entre las alternativas que permitieron reemplazar gradualmente el bromuro, Puerta enumeró las físicas, las biológicas y las químicas, todas ellas capaces de ser empleadas de manera eficiente y sustentable.

Entre las alternativas físicas se encuentran la solarización, un método de desinfección que utiliza la energía solar. Para esto, la superficie a desinfectar se cubre con un plástico transparente durante 30 a 45 días, con el objetivo de retener la radiación solar y producir un aumento de temperatura que permita suprimir o eliminar los organismos patógenos. El polietileno se puede colocar en cobertura total o sobre los lomos del cultivo, dependiendo del grado de infestación del sitio. Se trata de una práctica adoptada en la mayor parte de los establecimientos hortícolas del norte y noreste del país.

Por su parte, los colectores solares son alternativas que también se basan en aumentar la temperatura que produce la radiación solar. En éstos equipos el material a desinfectar se coloca dentro de tubos metálicos ubicados dentro de una caja de madera que se cubre con polietileno transparente en la parte superior. Se utiliza en sustratos y en mezclas con el suelo, tanto para cultivos hortícolas como florícolas, y con gran adopción en el sector de viveros.

El vapor de agua, también ha sido utilizado como método físico de desinfección. El mismo consiste en hacer pasar vapor de agua por el suelo o sustrato. El efecto de control se logra debido al aumento de temperatura que se produce en el suelo o sustrato. Esta alternativa se adoptó especialmente en el sector ornamental.

Dentro de las alternativas biológicas, se encuentran: la biofumigación, que consiste en el agregado de materia orgánica al suelo o sustrato; y la biosolarización que combina la solarización y la biofumigación.

Por último, existen las denominadas alternativas químicas que son fumigantes que no dañan la capa de ozono. Muchos de estos productos se registraron en el país, debido a su comprobada eficiencia a escala internacional. Se utilizan cuando la presión de plagas es alta, especialmente en ciertos cultivos hortícolas y frutilla.

Para complementar y potenciar los métodos de desinfección del suelo y sustratos se pueden combinar con otras técnicas como: polietilenos barrera, que permiten reducir la dosis de fumigantes, plantas injertadas que otorgan mayor resistencia al ataque de plagas y el cultivo sin suelo conocido como hidroponía. Entre otras practicas, se destaca también el uso de microorganismos benéficos y bioinsumos. Recientemente se están desarrollando diferentes alternativas de desinfección para conseguir la adecuada disposición y reutilización de sustratos.

¿Qué es el bromuro de metilo?

Este gas es utilizado de manera tradicional en la desinfección del suelo y los sustratos donde se desarrollan los cultivos intensivos, con el fin de combatir las plagas, enfermedades y malezas que comprometen a la producción. Su adopción masiva se debe principalmente a su alta eficiencia de control y a su facilidad de aplicación.

“El bromuro de metilo es un biocida de amplio espectro con impacto directo en las plagas y consecuencias en los organismos benéficos. Además, el contacto directo con esta sustancia implica un riesgo también para la salud humana”, explicó Puerta. En este sentido, la investigadora subrayó “la necesidad de reemplazar esta sustancia que, también, tiene un impacto negativo en la capa de ozono”.

Economis, 27 abril 2023, Por: Arguello Juan Carlos

Images: Economis website

NORTH AMERICA

10. Chair's Summary of the Major Economies Forum on Energy and Climate Held by President Joe Biden (Excerpt)

On April 20, 2023, President Biden convened the Major Economies Forum on Energy and Climate (MEF) for a fourth time to galvanize efforts needed during this critical decade to stem the climate crisis by keeping a 1.5°C limit on warming within reach.

Argentina, Australia, Brazil, Canada, People's Republic of China, Egypt, the European Commission, France, Germany, India, Indonesia, Italy, Japan, the Republic of Korea, Mexico, the Kingdom of Saudi Arabia, Türkiye, the United Arab Emirates, the United Kingdom, the United Nations Secretary-General, and the International Energy Agency Executive Director participated in the virtual meeting.

Special Presidential Envoy for Climate (SPEC) John Kerry opened the meeting by noting the progress made over the last two years toward keeping a 1.5°C limit within reach. He emphasized, at the same time, that the latest findings of the Intergovernmental Panel on Climate Change underscore that there is a need for greater ambition and action during this critical decade and that the window for decisive action is quickly narrowing. [...]



Participants spoke to the urgency of addressing the climate crisis during this decade, including through a wide range of intensified efforts related to mitigation, adaptation, and support for developing countries. They stressed the need for accelerating the energy transition across multiple sectors, including by scaling up renewable energy. Participants highlighted the economic opportunities that come along with climate-related efforts and the importance of major economies showing the way. [...]

Participants announced support for joint efforts targeting the four pillars of action, as well as the urgent need to scale up climate finance from the MDBs (joined in some cases by countries not participating in the MEF meeting): [...]

- **Phasing Down HFCs** – Australia, Canada, the European Union, France, Germany, Japan, the United Kingdom, and the United States expressed support for a robust upcoming replenishment of the Montreal Protocol Multilateral Fund to incentivize **early action on hydrofluorocarbon (HFC) reductions** and to maximize parallel cooling efficiency improvements. The Kigali Amendment will expedite the phasedown of super-polluting HFCs to avoid up to half a degree Celsius of warming by 2100. [...]
- **Egypt**, the President of COP 27, highlighted that it has joined the Kigali Amendment and intends to update its NDC under the Paris Agreement by June 2023, including a goal of 42% of power from renewable energy by 2030. [...]
- **Türkiye** announced that it plans to launch in 2024 a national strategy on mitigation that will include greenhouse gases beyond CO₂, including HFCs. [...]

In closing remarks, SPEC Kerry reviewed the many positive commitments made, including with respect to the joint initiatives. He noted that several participants had spoken to the importance of following the science and that the major economies had generally “sounded the same alarm bells.” He closed by thanking the participants, stressing that while the 1.5°C aim is “within our grasp,” nations need to summon the necessary political will to achieve it.

The White House, 20 April 2023

Image: The White House website

See also an excerpt of the "FACT SHEET: President Biden to Catalyze Global Climate Action through the Major Economies Forum on Energy and Climate", 20 April 2023. [...]

Expediting the Phasedown of Super-Polluting HFCs to Avoid up to Half a degree Celsius of Warming by 2100

Hydrofluorocarbons (HFCs), widely used in refrigeration and air-conditioning, are thousands of times more powerful as greenhouse gases than CO₂. In October, with bipartisan Senate support, the United States ratified the Kigali Amendment to the Montreal Protocol, which aims to phase down global production and consumption of HFCs. Other countries participating in today’s MEF meeting that have ratified Kigali over the past year include Brazil, Egypt, Indonesia, Italy, and the Republic of Korea.

Full implementation of the Kigali Amendment could avoid up to half a degree of warming by 2100. According to the U.N. Environment Programme, fully seizing opportunities to improve

the energy efficiency of cooling appliances alongside HFC phasedown could as much as double the Kigali Amendment's climate benefits.

To promote rapid implementation of the Kigali Amendment, President Biden will call on other countries to ratify the amendment as soon as possible, consider expedited timelines for their phasedown of HFCs, and pledge support to use the Montreal Protocol Multilateral Fund to incentivize early action on HFCs and maximize parallel cooling efficiency improvements. [...]

EUROPE & CENTRAL ASIA

11. Funding to help developing countries phase out use of damaging climate gases announced

Environment Secretary announces developing countries will receive £4 million to phase out the use of chemicals found in refrigeration and cold supply chains.

- £4 million dedicated to phase out the use of chemicals found in refrigeration and cold supply chains
- Funding will support climate-friendly technologies in developing countries that help reduce food and vaccine loss, as well as increase farming productivity
- Announcement made as a delegation of scientists visit London for talks and attend No10 reception



Developing countries will receive £4 million to drive down the emissions of harmful hydrofluorocarbons generated by outdated air conditioning units, cooling refrigeration and cold supply chains, the government has announced today (20th April).

Hydrofluorocarbons are industrial chemicals primarily used for cooling and refrigeration. They are amongst the fastest-growing sources of greenhouse gas emissions in the world, and when emitted have a global warming potential thousands of times that of carbon dioxide.

The funding will help deliver an African Centre of Excellence for Sustainable Cooling and Cold Chain – based in Kigali, Rwanda – which delivers training to farmers, healthcare workers and technicians to uptake more climate friendly and energy-efficient cooling.

As well as reducing emissions, developing nations will be better placed to store food and medicines more efficiently with the use of more efficient technologies. These will also help to improve farming productivity and reduce poverty, as for many crops up to 40% of the harvested produce is lost before being sold.

The Environment Secretary has made the announcement as she is set to welcome a delegation of climate scientists from the UN Montreal Protocol's Assessment Panels to a reception in No.10 Downing Street later today.

The scientists will discuss the next steps of the Montreal Protocol, designed to protect the earth's ozone layer by phasing out the production and consumption of harmful ozone-depleting substances and then extended to cover hydrofluorocarbons through the Kigali Amendment.

The UK is a global leader in the fight against climate change, integral to the agreement of the Protocol and leading the world in the ambition to keep global warming under 1.5 °C through our presidency of COP26 and leadership at COP15 placed nature at the heart of tackling the twin challenges of climate change and biodiversity loss.

The Environment Secretary Thérèse Coffey said:

The UN Montreal Protocol has played a vital part in protecting our ozone layer from harmful depleting substances and, as a global leader in the fight against climate change, I am delighted to be able to welcome the scientists leading the charge on this to Downing Street.

This funding will help developing countries to play their part in tackling climate change and communities across the world with storing food and medicines more efficiently - as well as support farmers to increase their productivity.

Alongside improvements to cooling equipment efficiency, UK leadership for early action on hydrofluorocarbons under the Montreal Protocol could avoid up to a degree of warming by the end of the century. The UK continues to cut consumption of hydrofluorocarbons at a faster pace than required under the Kigali Amendment to the UN Montreal Protocol - since 2015, levels have been reduced by 55% and by 2030 this will have phased down by 79% under existing legislation.

On top of today's announcement, a further £1.2 million is being allocated towards the development of a roadmap and virtual modelling tools to help developing countries pilot techniques before they are implemented – enabling them to deploy the most efficient and cost-effective approach to more sustainable cooling.

The UK is a global leader in supporting efforts to halt the decline in nature and restore the natural world, with UK leadership helping to deliver an ambitious new global deal for nature to protect 30% of our land and ocean by 2030 at the UN Nature Summit COP15 in December.

Through UK programmes such as the Darwin Initiative, the Illegal Wildlife Trade Challenge Fund, and the Biodiverse Landscapes Fund the UK is supporting developing countries around the world to restore habitats, tackle the trade in illegal wildlife and deal with the drivers of habitat loss that put the environment at risk.

Professor Toby Peters, Professor in Cold Economy at University of Birmingham and Heriot-Watt University, and leading the collaboration of UK Universities supporting the work in Africa and India, said:

Sustainable and equitable cooling and cold-chain is now more than ever critical infrastructure in a warming world. This programme for the first time delivers in an integrated approach that includes on the ground training and support for subsistence farmers and their communities, financeable business models and the network of skilled engineers needed to support equipment

installation and maintenance. This work is underpinned by the evidence strategies required to increase investment into the development of sustainable cold-chain and community cooling.

United Kingdom Government, 20 April 2023

Image: GOV.UK website

12. Updated Guidance - Recovering ODS from equipment (UK)

When equipment containing **ODS** has reached the end of its life, the ODS must be recovered (taken out). ODS must be recovered from:

- refrigeration, air-conditioning and heat pump (RACHP) equipment
- equipment containing solvents
- fire protection systems
- fire extinguishers

For equipment not listed above, ODS must be recovered if it's technically feasible and the cost is proportionate.

How to recover ODS

ODS can only be recovered by a technician with [qualifications to service equipment containing ODS](#).

Once recovered, you must use a [registered waste carrier](#) to send the recovered ODS (or the whole unit) to a [licensed waste facility that accepts waste ODS](#) to either reclaim or destroy it.

You should contact the waste facility to confirm they can accept your waste ODS.

Reclaiming ODS

Reclaiming ODS is the cleaning process by a licensed waste facility into virgin (unused) ODS.

Reclaimed or recycled ODS cannot be used to service RACHP equipment in Great Britain.

ODS can only be recycled (re-used after a basic cleaning process) for critical uses (halons).

Reclaimed ODS can only be used in Great Britain or exported:

- for laboratory and analytical uses
- to be used as feedstock or process agents
- for critical uses (halons)

If you're exporting reclaimed ODS, you will need to:

- apply for a [licence to export ODS](#)



- check that the country you want to export into allows ODS imports

You cannot export reclaimed hydrochlorofluorocarbons for destruction.

You must always label ODS for their intended use.

Further advice and information is available from the Environment Agency, email:

f-gassupport@environment-agency.gov.uk

United Kingdom Government, 18 April 2023

Image: GOV.UK website

See also >>> [Guidance Recovering, reclaiming and recycling F gas. How to recover fluorinated gas \(F gas\) from equipment and get it reclaimed or recycled](#). Latest update 18 April 2023

13. Is R290 the solution to the F-gas problem? The heat pumps now using this non-toxic refrigerant

A new solution to heat pumps long term F-gas problem is now sweeping across Europe with manufacturers increasingly turning to R290 as a refrigerant in heat pumps.

R290 propane refrigerant is becoming increasingly popular in air source heat pumps, especially in smaller capacity heat pumps used in residential and commercial applications. One of the main reasons for this is R290 is a more environmentally friendly compared to the refrigerants commonly used in heat pumps, such as R410A and R407C. Some heat pump manufacturers, [...] have already started producing R290-based heat pumps for residential and commercial use.

Other manufacturers are also likely to follow this trend, as demand grows for a more environmentally friendly and energy-efficient heating and cooling solution.

What is R290 propane refrigerant?

R290 is a natural refrigerant that is also known as propane. Propane is classified as a hydrocarbon and is an effective refrigerant.

Propane has a number of properties that make it effective, including its low boiling point, which makes it easy to evaporate, and its ability to absorb heat quickly.

It is already commonly used in domestic refrigerators, freezers, and small commercial refrigeration systems.

Why is R290 environmentally friendly?



R290 propane refrigerant provides alternative to F-gas refrigerants (Image credit: Getty)

R290 is considered environmentally friendly because it has a very low impact on the environment.

R290 is a hydrocarbon refrigerant that has zero ozone depletion potential (ODP) and very low Global Warming Potential (GWP). The GWP of R290 is 3 whereas the current alternatives such as R410A and R407C are 675, proving that R290 is far more environmentally friendly than other refrigerants.

This means that it does not contribute to ozone layer depletion or the greenhouse effects causing climate change.

Why is F-gas a problem for heat pumps?

F-gas (fluorinated gases) are synthetic greenhouse gases that cause significant environmental harm. They are currently commonly used as refrigerants in heat pumps, one of the only environmental factors holding heat pump technology back.

When F-gases, which include hydrofluorocarbon (HFCs), are released into the atmosphere, they can remain there for many years. Over time this can trap heat, contributing to an increase in global temperatures. This effect is much stronger than that of carbon dioxide, which is the most well-known greenhouse gas.

In addition to this, existing EU legislation aims to cut F-gas usage to a third of the amount used in 2015 by 2030, but is considering reducing this to 2025, prompting eco-friendly alternatives to emerge more quickly on the market.

If the EU does significantly reduce its F-gas usage quota to only 5% of the 2015 HFC usage by 2025 this could create shortages of refrigerants for heat pumps, placing increased pressure on manufacturers. Graham Wright, former chairman of the Heat Pump Association, explained, "It isn't straight forward to swap out a gas with a different refrigerant. The heat pump industry is renowned for being innovative, but it still takes time. There's a balance that needs to take place."

Is R290 safe?

Safety is an obvious concern as propane is a flammable gas, and as such requires special precautions when handling and using it as a refrigerant. This means more rigorous safety procedures and regulations need to be implemented when working with propane refrigeration systems.

However, David Hilton, an expert in sustainable buildings and energy efficiency, points out: "In a heat pump you've got a teapot full of propane. Whereas every caravan park you go to has two 47kg bottles (of propane) which are massive. If we are prepared to have two of those outside our property, then having a teapot full in a contained environment is not really going to be a problem."

"The only thing we have to look at with R290 is that propane in the form of R290 has no smell. That smell we have with gas has been put into it to make it smell. If you start putting those impurities into it, because of the way the refrigerants work it doesn't like it, so if there is a leak you wouldn't smell it. Those bits need to be managed."

"However, with a monobloc heat pump any leak would quickly dissipate into the air quite quickly and for it to ignite there would have to be a certain mix of propane to air, otherwise, it would

not ignite. If it just leaks out, as long as it isn't near drains where it can become concentrated, it doesn't always become an issue. So, it is a challenge, but it is not insurmountable."

Is R290 a viable alternative to F-gas for heat pumps?

R290 has many advantages over F-gas for heat pumps. Its environmental benefits are clear; however, the benefits don't end there.

R290 is a more energy-efficient refrigerant than F-gas and is designed to function efficiently in colder climates as it can work in temperatures as low as -25°C and still produce heat ranging from 2kw to 24kw and hot water from 22C to 75C.

Additionally, it is compact and operates silently, making it suitable for residential purposes. The noise level ranges from 54 dB(A) to 59 dB(A) during the day and 46 dB(A) at night, about the same level as a dishwasher.

Overall, propane is a promising alternative to F-gases for heat pumps, and its use can help to reduce the environmental impact of these systems while providing effective heating and cooling.

R290 has not been widely adopted earlier due to the fact that most innovations are initially geared towards the commercial sector before trickling down to the residential market. However, because commercial applications would require a substantial amount of propane, it poses a significant safety hazard. Conversely, the quantity of propane required for residential properties is insufficient to mitigate the potential risk.

David adds: "For domestic problems and domestic heat pumps, personally I think R290 is a good solution. Especially if you're using a monobloc heat pump."

"R290 wasn't really the low hanging fruit for the commercial market but if you start looking at the exhibitions and stuff now around Europe, everyone is going to R290."

Note: [The GWP of R-410A and R-407C is more than 675 (which are 3,921.6 and 1,773.85 respectively). 675 is the GWP of HFC-32.]

Homebuilding and renovating, April 2023, By Joseph Mullane

Image: Homebuilding website / Image credit: Getty

14. Georgia Parliament deliberating on the accession to the Kigali Amendment to the Montreal protocol on Substances that deplete the ozone layer

MPs discussed the accession to the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer; the Kigali Amendments of 2016 to the Protocol of 1987 and the deriving legal changes have been introduced to the plenary session by the Deputy Environmental Minister, Nino Tandilashvili.



The key objective of the Kigali Amendments is to gradually mitigate the consumption and emission of hydrofluorocarbons with high Global Warming Potential (GWP) by encouraging alternatives with low or zero GWP.

As the reporter clarified, the Amendments have been initiated in view of the fulfillment of the EUAA commitments and the ratification thereof will allow the country to approximate the national legislation and the local system with the international standards.

“The Kigali Amendments regulate a new list of certain substances that are consumed in the cooling and refrigerating systems. The gradual withdrawal of the hereof substances providing the requirements of the document will mitigate the emission of air pollutants. The accession to the hereof international commitments by Georgia will serve as a significant step forward in the environmental protection sphere”, - the reporter added.

Parliament of Georgia, 19 April 2023

Image: Parliament of Georgia website

15. Guest Lecturing at the Yerevan State University on the topic of ozone layer and the Montreal Protocol

On April 18, 2023, the National Ozone Focal Point Ms. Liana Ghahramanyan held a meeting with the 1st year students of the master’s program of the Faculty of Law of the Yerevan State University.



As a successful example of solving global environmental problems, the experience of the Vienna Convention and the Montreal Protocol implementation and the efforts to restore the ozone layer were presented to the students during the meeting.

The following topics were discussed, including the scientific basis of ozone layer depletion and its recovery, the global consequences of climate change, the role of the ministry of environment in managing public resources, the processes on the international arena, and the contribution of Armenia therein.

The structure of the Multilateral Investment Fund, the functions and membership of the Executive Committee were also presented.

The National Ozone Unit of Armenia has been using the guest lecturing format as one of the forms of raising awareness on the topic since 2005.

Ozone Program, Ministry of Environment of Armenia, 18 April 2023

Image: Ozone Program website

AREA: EU Women in cooling video competition

AREA (Air conditioning and Refrigeration European Association) and World Refrigeration Day (WRD) have partnered to launch a competition on best practices for all EU women in cooling.

The challenge is to provide a video showing their best practices (e.g. installation, repair, charging, leak checking, recovery...) using the right PPE, right tools, etc.... (please refer to the attached modalities); the video will be provided by uploading it on AREA's Facebook page within the **deadline of May 13th**



AREA's appointed judges will decide the winner, who will be awarded:

- by AREA (through ATF) of flight, accommodation, and conference fee
- and by Steve Gill (WRD) of a check in the value of 1,000 EUR
- receiving the prize in the frame of **UNEP-IIR-AREA-CSG 20th European Conference (Milan, 8-9 June 2023)**.

Any AREA language is welcome.

Thank you, very much, and good luck, to EU women in cooling!

- [Specifications for the award WOMAN IN COOLING.pdf](#)
- [WOMEN IN COOLING leaflet.pdf](#)

AREA (Air conditioning and Refrigeration European Association)

Image: AREA website

FEATURED

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

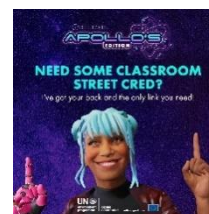
- Read/Download the [full report](#)
- pre/post documents, United Nations Environment Programme (UNEP), Ozone Secretariat [MOP-34](#)
- [Daily highlights](#) Earth Negotiations Bulletin-International Institute for Sustainable Development (IISD) / [Presentations and statements](#) / [Side events](#)



Image: ENB-IISD website

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

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



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



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](#)

Images: UNEP, Ozone Secretariat website

The UN Environment Assessment Panels

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

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

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

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

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



The Multilateral Fund for the Implementation of the Montreal Protocol

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

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

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

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

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

Latest News and Announcement:

- [Executive Committee Primer – 2023](#), An introduction to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, 24/4/2023
- [Policies, Procedures, Guidelines and Criteria of the Multilateral Fund \(Dec 2022\)](#), 3/30/2023
- [Framework of activities for sustainability supported by the Multilateral Fund](#), 3/22/2023

Upcoming events:

- The 92nd meeting is scheduled for 29 May to 2 June 2023, in Montreal, Canada
- The 93rd meeting is scheduled for 11 to 15 December 2023, in Montreal, Canada

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



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

The section below features several of our most recent products.
Visit [OzonAction website](#) for more information, discover the entire range of products.

Images in this section are by OzonAction

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



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



Refrigeration, Air-Conditioning, and Heat Pumps (RACHP)

Associations & Organizations: This Knowledge Map provides a global directory of RACHP associations, societies, and organisations around the world. These are key stakeholders for ensuring safe and efficient refrigerant transitions.

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



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

Gas Card Tool: Web-based Visual Printable Cards of Refrigerant Gases

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



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

Using the Gas Card web-based tool

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

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

Substance	Quantity (ODP tonnes)	Quantity (GWP tonnes)	Country	Unit	Year	Status
HCFC-22	100	100,000	Canada	kg	2015	Active
HCFC-123	100	100,000	Canada	kg	2015	Active
HCFC-124	100	100,000	Canada	kg	2015	Active
HCFC-141b	100	100,000	Canada	kg	2015	Active

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

with many importers, especially if the country imports a range of different hydrochlorofluorocarbons (HCFCs) and mixtures containing HCFCs. To address this challenge, OzonAction developed a new desktop application that helps Ozone Officers with

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

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

GWP-ODP Calculator Application - Updated- “Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and CO₂-equivalent tonnes”

Data are extremely important for the Montreal Protocol community, and the data reporting formats for both A7 and CP have changed recently, to a large degree triggered by the Kigali Amendment. HFCs, blends, CO₂-equivalent values, etc., now have to be addressed much more frequently by Ozone Officers during their daily work. Sometimes the terminology and values are complex and can be confusing, and it helps to have 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

The **Updated OzonAction "WhatGas?" Mobile App**

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 for RAC sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training. The videos are not intended to replace structured formal technician training, but to supplement and provide some revision of tips and skills and to build on training already undertaken.




These videos are based on the successful UNEP OzonAction smartphone application, the RAC Technician Video Series app. This application has been downloaded on more than **86,000** devices since its launch.

Following many requests to make the videos more versatile and better suited to classroom and training settings, OzonAction has responded to this demand and produced two 'full-length' instructional videos.


You may wish to share this message and the flyer with:

- Your national/regional RAC associations
- Training or vocational institutes

- Master RAC trainers in your country
- Any other interested national stakeholders

 You can watch these videos on the OzonAction YouTube Channel:

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

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



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 also available from the [OzonAction website](#).

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

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

Read/Download the Full Report

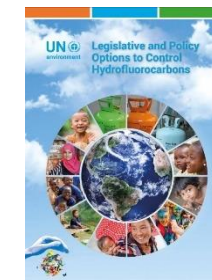
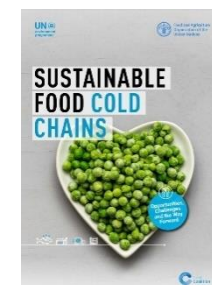
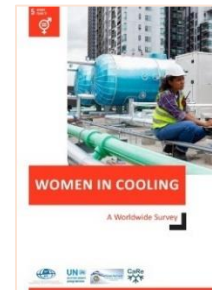
Sustainable Food Cold Chains: Opportunities, Challenges and the Way Forward-This [UNEP-FAO] report explores how food cold chain development can become more sustainable and makes a series of important recommendations. These include governments and other cold chain stakeholders collaborating to adopt a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

Legislative and Policy Options to Control Hydrofluorocarbons - In order to follow and facilitate the HFC phase-down schedules contained in the Kigali Amendment, the Parties, including both developed and developing countries, will have to implement certain measures.

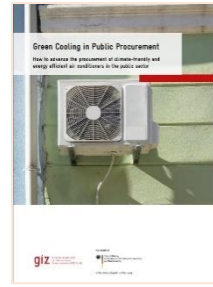
This booklet contains a recommended set of legislative and policy options which the developing (Article 5) countries may wish to consider for implementation. It is intended to be a guide/tool for countries.

Read/download

Latest issue of Centro Studi Galileo magazine,
Industria & Formazione, n. **10-2022**
(*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**



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.

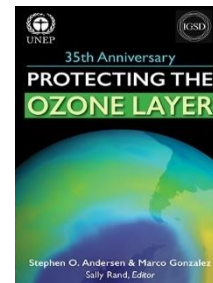


The e-book, titled "**7 Keys to a Compliant PSM Training Program for Ammonia Refrigeration**," outlines important questions a facility's program should address and questions that trained plant personnel should be able to answer. Topics covered include:

- 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

Protecting the Ozone Layer - 35th Anniversary Edition - a new book celebrating the 35th Anniversary of the Montreal Protocol. **The electronic version (Kindle Edition) of the book has become available for purchase \$3.03 on Amazon.** The book highlights successes and documents innovation during the first 35 years and inspires new ambition to strengthen protection of stratospheric ozone and climate before Earth passes tipping points. The book tells the story of the Montreal Protocol, revealing a model of cooperation, collaboration, universal ratification, record of compliance with over 99 per cent of controlled ozone-depleting substances (ODSs) phased out, the ozone layer on the path to recovery, the 2007 Montreal Adjustment, and the 2016 Kigali Amendment moving the Montreal Protocol further into environmental protection. Unfinished business includes: HCFC phase out, ODS bank management, HFC phase down, uncontrolled ozone-depleting greenhouse gas nitrous oxide (N₂O), feedstock exemptions for plastics production, and dumping of obsolete cooling appliances.



The book was released at 34th Meeting of the Parties to the Montreal Protocol on 31 October 2022.

MISCELLANEOUS

To be organised by the French Association of Refrigeration (AFF) under the theme “**Towards Efficient, Controlled and Smart Refrigeration**”, the **26th IIR International Congress of Refrigeration will be held in Paris (France) on August 21-25, 2023.**



Participate to share the latest developments in the industry with the international refrigeration community.

This international event will bring together scientific and technical experts in all fields of refrigeration from across the globe to provide perspectives on the future of the industry in line with sustainable development. [Learn more >>>](#)



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