Volume XX | 30 September 2020

In this issue:

GLOBAL

1. Kigali Amendment latest ratifications

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

Botswana, 19 Sep 2020 A
Liechtenstein, 16 Sep 2020
Kyrgyzstan, 8 Sep 2020

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

---

2. First International Day of Awareness of Food Loss and Waste 29 September 2020

How the Kigali Amendment can help cut food loss, bringing even more sustainability benefits

In a world where hundreds of millions of people go hungry every year, and agriculture is a major driver of biodiversity loss and climate change, food loss and waste is hard to stomach.

Previous estimates from the Food and Agriculture Organization found that around one-third of food produced each year is lost or wasted. This translates to almost a trillion dollars in financial losses. Just as bad, the greenhouse gas emissions from producing and transporting this food still go into the atmosphere – essentially warming the planet for no return. Then there is the land and water used to grow food that is never eaten.

There is no doubt that dramatically reducing food waste and loss would make a massive contribution to the Sustainable Development Goals, the Paris Agreement, the to-be-agreed post-2020 framework on biodiversity and many other international agreements that function together as the global roadmap to a better future for humanity.

While food waste – when consumers and retailers throw out unused food – can be reduced by simple behavioural change, the issue of food loss is more complicated to address.

Around 15 per cent of perishable food produced worldwide is currently refrigerated. About 14 per cent of food is lost before it even gets to retailers, and a large part of this is because of a lack of access to cold-chain logistics – essentially refrigeration for local storage and transport over long distances. This is where the Kigali Amendment to the Montreal Protocol can make a real difference.

Current cold chain systems tend to use high global warming potential refrigerants and electricity derived from fossil fuels. The food supply cold chain accounts for an estimated 20 per cent of global use of hydrofluorocarbons (HFCs), refrigerants that have a more powerful impact on climate change than carbon dioxide. This means that simply expanding cold chain as it stands is not an option.

However, the Kigali Amendment, now ratified by over 100 nations, is a global commitment to phase down HFCs. Not only that, but redesigning cooling equipment to take new refrigerants offers the chance to dramatically increase their energy efficiency. This means that expanding cold chain can be done with less climate impact.

It is considered such an important opportunity that parties to the Montreal Protocol were last year invited to sign the Rome Declaration on the Contribution of the Montreal Protocol to Food Loss Reduction through Sustainable Cold Chain Management. This declaration called for stronger cooperation between governments, the Montreal Protocol, the United Nations and public and private initiatives to develop a sustainable cold chain.

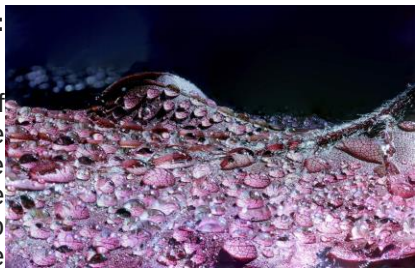
The commitments under the Kigali Amendment can help mobilize developing and developed countries to work together to use new, sustainable cold chain systems that are high in efficiency, safe, and use low or zero-global warming potential refrigerants and renewable energy sources. By clearly establishing the connection between food loss and climate change, the Montreal Protocol community can help countries gain access to United Nations climate funding for the development of cold chains. Opportunities for investment include facilities that allow perishable food to be stored after harvest, refrigeration to maintain proper temperature and humidity during transport, and real-time temperature monitoring and tracking devices to help safeguard the quality of perishable food as it moves along the cold chain.

The Kigali Amendment is already predicted to avoid 0.4 degrees C of global warming this decade. By making the most of the opportunity to expand cold chains in a sustainable manner, it could do even more by helping to reduce food loss and all of its associated environmental impacts.

The United Nations Environment Programme, Ozone Secretariat, 24 September 2020

---

3. Contingency meeting plans for 2020-2021: update



As we continue to live and work under the shadow of the COVID-19 pandemic, restrictions on travel and the convening of large meetings remain in place. The Ozone Secretariat, after consulting the bureaux of the eleventh meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone

Layer and the Thirty-First Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, the co-chairs of the forty-second meeting of the Open-ended Working Group (OEWG42), as well as many parties, suggests to conduct the combined twelfth meeting of the Conference of Parties to the Vienna Convention and the Thirty-Second Meeting of Parties to the Montreal Protocol (COP12/MOP32) online.

Meetings in 2020

Proposed arrangements for COP12(I)/MOP32 in November 2020

The combined twelfth meeting of the Conference of the Parties to the Vienna Convention, part I, and the Thirty-Second Meeting of the Parties to the Montreal Protocol (COP12(I)/MOP32) will be convened as an online meeting with a reduced agenda. **The preparatory segment will take place from Monday, 23 November 2020 to Thursday, 26 November 2020, and the high-level segment will take place on Friday, 27 November 2020 from 2 - 4 p.m. EAT each day with possibility of an additional extra hour should parties decide to have additional time.**

COP12 will be held in two parts. Part I will be convened this year to decide on the budget of the Vienna Convention Trust Fund for **2020 (revised)** and 2021 only. All the other agenda items that refer to the Convention will be addressed in COP12 part II in 2021.

- MOP32 will address few issues as found in **the agenda of the meeting**

Preparatory work will be needed in order to better prepare parties and facilitate their discussions during the online **meeting**. The **online forum** will be the forum used for the preparatory work on the specific agenda items of COP12(I)/MOP32 and will be open from 1 October 2020.

The related meetings that will take place immediately prior to COP12(I)/MOP32 are:

- the sixty-fifth meeting of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol, online, 16-18 November 2020;
- the joint meeting of the bureaux of the eleventh meeting of the Conference of the Parties to the Vienna Convention and the Thirty-First Meeting of Parties to the Montreal Protocol, online, 21 November 2020.

Meetings in 2021

OEWG42 part II, on replenishment of the Multilateral Fund for 2021-2023

A second part of OEWG42 focusing on the issue of replenishment may be convened as a face-to-face meeting in March 2021 to discuss the need for and content of a supplementary report. The Secretariat has made a tentative booking for the OEWG42 part II on replenishment to be held on 15 and 16 March 2021 in Montreal, Canada.

The parties may task the Technology and Economic Assessment Panel to prepare a supplementary report in time for consideration by the parties at the forty-third meeting of the Open-ended Working Group (OEWG43) in July 2021.

If a face-to-face meeting in the first quarter of 2021 is not possible due to the pandemic, then the suggested timeline will be adjusted accordingly.

OEWG43: Bangkok, 12-16 July 2021

The forty-third meeting of the Open-ended Working Group (OEWG43) is scheduled to be held from 12-16 July 2021 in Bangkok. All the agenda items that were deferred from the OEWG42 would be included in the agenda of OEWG43. In addition, any other issue that the parties may wish to discuss in 2021 can also be included.

The sixty-sixth meeting of the Implementation Committee will be held on 11 July 2021.

COP12(II)/MOP33: Nairobi (tentative), 25-29 October 2021 (tentative)

Part II of COP12 will address all issues including the recommendations of the eleventh meeting of the Ozone Research Managers (ORM11), which is now rescheduled to be convened in April 2021, matters related to the trust fund for monitoring and research and the budget of the Vienna Convention Trust Fund for the triennium 2022-2024. The Thirty-Third Meeting of the Parties (MOP33) will address all issues that MOP32 would have addressed in 2020 if a full-scale, physical meeting had been held, plus any new issues that may arise.

Other related meetings to be convened immediately prior to COP12(II)/MOP33 are:

- the sixty-seventh meeting of the Implementation Committee, 23 October 2021
- the joint meeting of the bureaux of the twelfth meeting of the Conference of the Parties to the Vienna Convention and the Thirty-Second Meeting of the Parties, 24 October 2021

Eleventh Meeting of the Ozone Research Managers (ORM11)

The **ORM11, part I, will be held online on 7-8 October 2020** to discuss only the issue of international monitoring programmes, namely the gaps in the global coverage of atmospheric monitoring of substances controlled by the Montreal Protocol.

ORM11, part II, will be held from on 14 to 16 April 2021 in Geneva to discuss all remaining issues set out in the agenda of the meeting taking also stock of the discussion on the gaps in monitoring of controlled substances discussed in ORM11(I). The recommendations will be passed on for the consideration of COP12(II).

The United Nations Environment Programme, Ozone Secretariat, 21 September 2020

4. Climate-Friendly Cooling Can Slow Global Warming

Today, an estimated 3.6 billion air conditioners, refrigerators, and related appliances are used worldwide; to meet the world's cooling needs, that number will more than triple, to 14 billion cooling units, by 2050. Image: Pikist, CC BY-SA 4.0

As global temperatures rise and demand for air conditioning and refrigeration soars, all countries must adopt common-sense initiatives to make cooling more efficient, less emissions-intensive, and more affordable for consumers.

The ironies of climate change are often cruel. In our warming world, for example, the demand for air conditioning (AC) and refrigeration is exploding, especially in developing countries.

But more AC units lead to more warming, both from the refrigerant chemicals they contain and the electricity they use. Globally, cooling can account for up to half of peak electricity demand during the hot season, which is getting longer and longer.

A new **report** by the International Energy Agency (IEA) and the United Nations Environment Program (UNEP), based on data gathered by a team we co-chaired, shows that the transition to energy-efficient, climate-friendly cooling – using refrigerants that pose a lower global-warming threat – is technically and economically feasible.

Adopting the best currently available technologies for both refrigerants and energy efficiency could eliminate the equivalent of up to 460 billion metric tons of carbon dioxide emissions by 2060, an amount equal to eight years of global greenhouse-gas emissions. By 2030, emissions equal to those of nearly 1,600 medium-size peak power plants would be avoided.

Eliminating the “super pollutant” refrigerants known as hydrofluorocarbons (HFCs) is critical, as is increasing the energy efficiency of cooling equipment. Otherwise, emissions from this sector alone could use up the remaining “carbon budget” for capping global warming at the “safe” threshold of 1.5°C relative to pre-industrial times.

Here, the world’s most successful environmental treaty, the Montreal Protocol, is a source of inspiration. The protocol, which was concluded in 1987 and entered into force in 1989, successfully addressed the first great threat to the global atmosphere: that chlorofluorocarbon refrigerants and related gases were destroying Earth’s protective ozone layer.

At the same time, the Montreal Protocol has done more to reduce the climate threat than any other agreement – avoiding warming by an amount equivalent to that caused by all the carbon dioxide emitted in the twentieth century, which is more than half of all warming.

These fluorinated gases are also powerful greenhouse gases – or climate super pollutants – with thousands of times more warming power per molecule than CO_2. By eliminating them, the Montreal Protocol not only put the ozone layer on the path to recovery, but also significantly slowed the development of the climate crisis.

The Montreal Protocol's most recent mandatory measure is the 2016 Kigali Amendment, which aims to phase out HFCs, used primarily as refrigerants, and avoid up to 0.5°C of warming by 2100. The amendment's initial schedule ensures that about 90 per cent of this target will be reached.

With the Kigali Amendment, the nearly 200 parties to the Montreal Protocol (including every UN member) also recognised the importance of improving the energy efficiency of AC units and other cooling equipment during the switch from HFCs to more climate-friendly refrigerants.

Efficiency gains can more than double the Kigali Amendment's climate benefits by mid-century, while reducing energy generation and transmission costs by nearly $3 trillion. They will also reduce consumers' monthly electricity bills, create jobs for installation and maintenance staff, and, by reducing air pollution, protect public health and agricultural productivity.

The UNEP-IEA report highlights ten policies that would help to realise these benefits. They include universal ratification of the Kigali Amendment (the milestone of 100 countries was reached in July), national cooling action plans, proven measures like minimum energy-performance standards and building codes, and aggregating demand for sustainable cooling through buyers' clubs and bulk procurement.

This would help develop sustainable cold chains to reduce food loss and ensure effective vaccine dissemination. Improving service and maintenance is also essential, as is preventing inefficient AC units from being dumped in developing countries.

The enormous growth in cooling demand means we must act quickly. Today, an estimated 3.6 billion air conditioners, refrigerators, and related appliances are used worldwide; to meet the world's cooling needs, that number will more than triple, to 14 billion cooling units, by 2050.

Access to cooling is already becoming a leading climate and social justice issue around the world – especially in the many Asian, African, and South American countries that are subject to increasingly unlivable temperatures and already suffer from poverty, water shortages, and other related problems.

For example, only about 7-9 per cent of Indian households have access to AC today, compared to 60 per cent in China and 90 per cent in the United States. In India alone, demand for AC will grow by more than a billion units over the coming decades. During this time, making cooling less polluting will be critical. Decreasing the cost, as India has done through its innovative bulk procurement program, will also be beneficial.

We should all take courage from the Montreal Protocol's success in repairing the ozone layer and mitigating more warming from greenhouse gases than any other measure. All countries must now adopt common-sense initiatives to make cooling more efficient, less emissions-intensive, and more affordable for consumers.

Most urgently, we must heed the latest understanding of the planet's sensitivity to continuing emissions and recognise that without rapid action, runaway climate change will be far harder to prevent.

Durwood Zaelke is President of the Institute for Governance & Sustainable Development and a co-director of the Program on Governance for Sustainable Development at the University of California, Santa Barbara.

Mario Molina, a 1995 Nobel laureate in chemistry, is a professor at the University of California, San Diego and the National Autonomous University of Mexico.

eco-business, quoting: Project Syndicate, 8 September 2020

5. How Montreal Protocol activities contribute to the Paris Agreement

"The Paris Agreement encourages parties to pursue fast mitigation climatic measures. How do you integrate the Montreal Protocol activities into the nationally determined contributions (NDCs) to achieve fast mitigation measures?"

The Paris Agreement is an ambitious global agreement that aims for all nations to combat climate change and adapt to its effects. The Kigali Amendment to the Montreal Protocol contributes to this goal by abating hydrofluorocarbons (HFCs), which have high global warming potential. The Sustainable Development Goals provide a holistic framework guiding the international development policy and targeting climate change. These three multilateral agreements have complementary agendas to guide the global agenda towards more sustainable development.

To trigger these actions, countries should have policies and strategies that outline specific actions, for example, defining specific measures for the refrigeration sector, and ozone-depleting substance end-users.

A stepwise approach to defining such measures is to first start by identifying the relevant sectors, and for each one, describing which solutions are available to mitigate direct and indirect greenhouse gas emissions. The next step would be to determine which of these solutions are technically feasible and which would need to be adapted to the local conditions. Next, based on the selected technologies, focus on those that are economically viable in each sector, prioritize low, or no-cost actions. After that, recognizing specific actions to guide stakeholders in each sector, for example, adopting technology or modifying their operational schemes or business plans. Finally, adopting policies and programs, which encourage different stakeholders to take actions, or to accelerate action. UNIDO's technical assistance includes a broad spectrum of support measures, ranging from capacity building and awareness raising, financing, and standards.

To meet the goals of the Kigali Amendment, as well as the ambitious targets of the Paris Agreement, these policies and strategies should be holistic; covering technologies typically utilized for both refrigerants phase-out/phase-down and contemplate energy-efficient production and energy-efficient operations of facilities.

To align the actions identified for the priority sectors, which utilize ozone-depleting substances (ODS), National Ozone Units (NOUs) may choose to work with climate change counterparts and line ministries, to integrate the refrigeration sector actions into the national climate policy instruments. Climate Change policy instruments include the

Nationally Determined Contributions (NDCs), which are descriptive documents in which countries communicate their planned contribution to global efforts to reach the global peaking of greenhouse gases (GHGs). NDCs are a requirement of the Paris Agreement (Art. 4) and need to be submitted to the United Nations Framework Convention on Climate Change. Lately, countries have begun developing national cooling action plans and roadmaps, which follow part of the steps described above.

These actions, as a whole, serve to reduce greenhouse gas emissions, which play an important role in global efforts to decarbonize the economy. This ultimate goal is what unites the Kigali Amendment, the NDCs and the Paris Agreement.

UNIDO, Montreal Protocol, Newsletter # 2, September 2020

---

6. Lower-GWP refrigeration & air conditioning innovation award -

Entry period extended till 1 October 2020

What is lower GWP refrigeration and air-conditioning innovation award?
The award promotes innovative design, research, and practice, recognizing individuals and teams who have developed or implemented innovative technologies or concepts. Projects must be implemented or conceived specifically for use in developing countries and be aimed at advancing lower global warming potential (GWP) refrigerants.

Who are the awarding organizations?
Award recipients will be recognized by ASHRAE and UN Environment Programme.

How often is the award issued/awarded?
Annually.

What are the award categories?
Projects can be entered into one of two categories:
• Residential Applications
• Commercial/Industrial Facilities

What is the entry criteria?
The award is open to individuals and to teams of individuals. If submission is by an individual, individuals must confirm the work was not a team effort. If a team of individuals is selected, the team itself shall determine which team members shall be entitled to be certificated (maximum 5 per team). All awards will be made in the name of individuals, not in the name of their affiliations.

ASHRAE membership is not a requirement for submission.

How do I enter for the award?
To enter, please go to the link below and fill out the online form.

www.ashrae.org/lowerGWP

The submission form requires descriptive responses to each of the following:

- Description of innovation in the field of lower-GWP refrigerants
- Project details (description must include confirmation project has been implemented
  and date of implementation)
- Extent of need
- Description and goal of the research, design, practice or project
- Environmental impact achieved including specific reference to the GWP chemicals'
  contribution
- Further application(s) of project in developing countries from both the technical and
  economic perspectives, including how the innovation can be replicated
- Photographs illustrating the project, as well as statistical data demonstrating the project's successful performance or experimental findings (tables, figures, charts, etc.) are encouraged to be provided with the application.

How are the projects selected?
Projects in each category will be selected based on innovative solutions for designs, practice, or research using lower-GWP technologies. The selection will take into account the following criteria:
• Innovative aspects in transforming conventional practices (40%);
• Extent of need (25%);
• Technical replicability in developing countries (25%); and
• Economy feasibility for developing countries (10%).

What happens to the selected projects?
Selected entries in each category will be publicized by both ASHRAE and the UN Environment Programme.

When does the entry period opens and closes?
Entries are now being accepted. **Entry period extended till 1 October 2020**. Click **here** to learn more and to complete an online entry form. To receive updates about the awards, please send an **email** to request to be added to our mailing list.

---

7. Green Cooling for a better future

A milestone of international cooperation was reached in September 2015. In the 2030 Agenda, the international community agreed on 17 Sustainable Development Goals (SDGs). These SDGs focus on the sustainable development of economic growth in accordance with social justice and within ecological limits.

The technology transition towards Green Cooling plays an important role in achieving a better and more sustainable future for everyone. Proklima projects contribute to 11 SDGs of the United Nations.

Find out how Green Cooling contributes to the SDGs **here**

GIZ, PROKLIMA, September 2020

ASIA PACIFIC

8. Thailand Receives Grant to Protect the Ozone Layer and Climate

Thailand signed a US$5 million grant agreement with the World Bank today in support of reducing the import and use of ozone-depleting chemicals by 2023 by more than 60 percent, as part of the country's obligations under the Montreal Protocol.

Thailand is one of the world's ten largest importers and consumers of ozone-depleting hydrochlorofluorocarbons (HCFCs). In 2012, the year before the Montreal Protocol phase-out obligations began, it imported more than 18,000 metric tons. One of the priorities of the government is to introduce environment-friendly production practices in Thailand's industry, in line with the Montreal Protocol's goal of shifting away from the use of and manufacturing with these harmful substances.

The grant from the World Bank's Ozone Projects Trust Fund, financed by the Multilateral Fund for the Implementation of the Montreal Protocol, is supporting the **second phase of the Thailand HCFC Phase-out Project** 2020 to 2023.

"The successful first phase already helped Thailand's air conditioning manufacturing sector to end the use of HCFCs," said Viraj Vithoontien, World Bank Lead Environment Specialist, *"The second phase will focus assistance on small and medium size enterprises (SMEs) in order to produce HCFC-free foam insulation."*

The project will also help refrigeration and air-conditioning technicians maintain and install ozone- and climate-friendly cooling appliances and equipment, in line with good international practice, and support skills training for government agencies. These activities will indirectly improve energy efficiency in cooling applications, which will contribute to reduced emissions and decreased peak demand for electricity. Consumers will benefit from lower electricity cost. In addition, the project aims to continue to raise consumers' awareness about energy efficiency.

Underpinning the HCFC Phase-out Project is an enduring World Bank partnership with Thailand's government and private sector. Since 1994, the partnership has provided more

than $64 million in grant funding to help industries reduce ozone-depleting substances used in refrigeration, air-conditioning, foam manufacturing, aerosol production, and fire suppression. The World Bank has worked closely with Thailand's private sector to facilitate transfer of new ozone- and climate-friendly technologies and has provided policy and technical advice to government agencies to create the enabling environment for the shift to these new technologies.

"Thailand's success in reducing HCFCs is a testament to its commitment to embrace green industry and effectively address climate change," said Birgit Hansl, World Bank Country Manager for Thailand, *"Through our strong partnership, Thailand has made great strides to phase out ozone-depleting substances, avoiding emissions of the equivalent of 38 million tons of carbon dioxide, analogous to taking 8 million passenger cars off the road or shutting down ten coal-fired power plants."*

Contact: **Kanitha Kongrukgreatiyos**, The World Bank, Bangkok

The World Bank, 31 August 2020

NORTH AMERICA

9. New York Finalizes HFC-Reduction Rules, Launches HVAC Development Fund

The state adopts U.S. EPA's abandoned SNAP rules 20 and 21 and starts a program to fund climate-friendly HVAC systems.

New York Governor Andrew Cuomo
Photo by Diana Robinson, Wikimedia Commons

New York (U.S.) Governor Andrew M. Cuomo announced on September 23 during Climate Week NYC 2020 that new regulations have been finalized to significantly reduce the use of HFCs in the state in the absence of federal regulations of the climate-warming gases.

The New York regulations, originally proposed in 2018, will adopt 2015 and 2016 rules (20 and 21, respectively) adopted under the U.S. Environmental Protection Agency's Significant New Alternatives Policy (SNAP) program; these rules ban a number of high-GWP HFCs in specific applications.

In 2018, the EPA dismissed SNAP rules 20 and 21 pending a new rulemaking, in response to a U.S. Appeals Court ruling the previous year that narrowed its authority to regulate HFCs.

The New York HFC regulations apply to new or retrofitted food refrigeration equipment, chillers and vending machines, as well as aerosol propellants and foam-blowing agents in

new consumer products. The prohibitions will take place over the next four years and are expected to reduce HFC emissions by more than 20% of projected levels by 2030, or a cumulative total of 17 million metric tons of CO_2e emissions.

“Addressing HFCs in these substantial markets will help drive industry to transition away from HFCs nationally and globally,” said Cuomo’s office in a statement. “In addition, American-based businesses that produce substitutes for HFCs will benefit from New York's leadership in taking this action."

The formal Notice of Adoption is being filed with the Department of State and is anticipated to appear in the October 14, 2020 State Register. The rule will be effective 30 days after filing.

The regulations support the implementation of the state's Climate Leadership and Community Protection Act, which calls for reducing overall GHG emissions 40% by 2030 on a path to economy-wide carbon neutrality.

New York joins Colorado, Virginia, California, Vermont, Washington and New Jersey as U.S. states that have passed legislation to adopt HFC use limits based on SNAP rules 20 and 21. Other states, including Hawaii, Oregon, Rhode Island, Massachusetts, Maine, Connecticut, Delaware, Maryland and Pennsylvania, have committed to regulatory action to do the same. These 16 states are among the 24 plus Puerto Rico in the U.S. Climate Alliance, a group launched to address climate change following the Trump Administration’s decision to quit the Paris climate agreement.

HVAC Innovation Challenge

New York’s new regulations complement a new $3 million initiative – the Next Generation HVAC Innovation Challenge, directed by the New York State Energy Research and Development Authority (NYSERDA) – to bring new heating, ventilation and air conditioning systems for buildings.

Under the Next Generation HVAC Innovation Challenge, funding will be used to spur development and adoption of new refrigerants that have “a less damaging effect on the environment than their current counterparts,” said Cuomo’s office. The initiative supports clean energy companies “that want to develop, commercialize, and demonstrate new technologies that improve the performance of advanced HVAC systems and create new economically viable opportunities for energy efficiency in buildings.”

The funding will be offered through a competitive solicitation process to develop such technologies as advanced refrigerant monitoring and leak detection solutions; new compressor technologies; in-field leak repair solutions; demonstration and evaluation of emerging technologies; refrigerant capture and recycling; industry collaboration on training, market awareness and product requirements; and overall development of low climate-change refrigerants.

The initiative will also help make electrification solutions like heat pumps “more environmentally friendly and cost effective, accelerating the adoption of these non-fossil fuel heating and cooling solutions for communities across New York State,” said Cuomo’s office.

In total, $15 million has been made available through four rounds of the challenge to encourage private investment and advance the next generation of HVAC systems for buildings.

Applications for the Challenge are due on November 17, 2020 with awards anticipated in the first quarter of 2021. For more information about this funding or to see if which companies qualify, click **here**.

R744, 25 September 2020, By Michael Garry

See also >>> During Climate Week, Governor Cuomo Announces Finalization of New Standards to Cut Hydrofluorocarbons, a Potent Greenhouse Gas Used in Refrigerants

---

10. K. Madhava Sarma and K. Ramalakshmi Montreal Protocol Science Champion Award

On the occasion of the tenth anniversary of the passing of K. Madhava Sarma, the Institute for Governance & Sustainable Development (IGSD) announces the launch of a scholarship for young scientists, focusing on those who contribute to stratospheric ozone and climate protection.

The Award pays tribute to K. Madhava Sarma and his life partner K. Ramalakshmi for their diplomacy and environmental leadership. Sarma was: 1) a mastermind of the 1990 London Amendment that created the Multilateral Fund, 2) first Executive Secretary of the Ozone Secretariat from 1991 to 2000, 3) co-author of books and articles explaining how and why the Montreal Protocol succeeds, and 4) among the first to advocate that the Montreal Protocol become a climate treaty by accelerating the hydrochlorofluorocarbon (HCFC) phaseout (accomplished by the 2007 Adjustment), taking on hydrofluorocarbon (HFC) phasedown (initiated by the 2016 Kigali Amendment), and controlling anthropogenic nitrous oxide (N_2O) production and chemical feedstocks (not yet agreed).

Learn more about the Sarma and Ramalakshmi **Legacy** and their lasting influence on friends and colleagues at **Remembrance**.

For details on how to apply for the award please contact **Dr. Stephen O. Andersen**, Director of Research, IGSD.

LATIN AMERICA and CARIBBEAN

11. NatRefs Seen as Key to Reducing Emissions in Grenada

Caribbean nation's R290 training program is helping it meet reduction goals.

St. Georges, Grenada.
Credit: Skybluesrich. © 2019

Natural refrigerants – in particular, propane (R290) – are key to reducing Grenada's greenhouse gas (GHG) emissions as part of its Nationally Determined Contribution (NDC) to the Paris agreement, according to a new report.

The report – the "Greenhouse Gas Inventory of the Refrigeration and Air Conditioning Sector in Grenada" – was published in June by German development agency GIZ Proklima. It contains the first detailed estimate of Grenada's current and projected Refrigeration and Air Conditioning (RAC) emissions, broken down by sector.

Grenada, an island country in the Caribbean Sea, ratified the Kigali amendment to the Montreal protocol in 2018, and is already "moving to significantly reduce the consumption and production of HFCs by 2050," according to *Now Grenada*, a Grenadian newspaper.

Grenada's adoption of R290 and its investment in R290 technician training are considered instrumental to its meeting its climate goals.

"Training has always been fundamental and of paramount importance in the HFC phase-down process," said Leslie Smith, National Ozone Officer at the Ministry of Infrastructure Development, Public Utilities, Energy, Transport and Implementation of Grenada.

"The NOU [National Ozone Unit] identified at a very early stage that capacity development and training would be pillar in the transitioning away from the use of HFCs in the HVAC&R sector," he added.

Training is needed not only to prepare technicians to adequately handle the proper containment of f-gases in already installed systems, but also to educate them on "replacement technologies, particularly those with safety issues," Smith said,

According to Smith, "the level of training in Grenada has advanced to the point where it has gained the trust of flammable refrigerant manufacturers, such as Godrej, [which] is quite comfortable to allow their R290 equipment to be shipped and installed in Grenada."

Grenada made significant strides in 2017, when two hydrocarbon-based AC units were installed in its pilot training center for low-GWP flammable refrigerants. In addition, the NOU, with the support of the German Federal Ministry for the Environment, launched the C4 (Cool Contributions fighting Climate Change) project to train Grenadian technicians.

Role of RAC sector

Grenada's RAC sector emissions estimate can serve as a basis for planning and implementing mitigation measures in the RAC sector as a part of its NDCs," the GIZ report says.

The report comes as the United Nations asks governments to develop National Cooling Action Plans (NCAPs) that contribute to NDCs for the Paris agreement.

Grenada has committed “to reducing its greenhouse gas emissions by 30% of 2010 by 2025, with an indicative reduction of 40% of 2010 by 2030,” according to its most recent published NDCs.

However, the targets set under the original NDC submission are being reviewed and analyzed, said Smith. “The final approach would include additional targets and much more ambitious actions.”.

In 2015, Grenada’s RAC sector produced 122,000 metric tons of CO_2e emissions through energy consumption and refrigerant loss, according to the report. This means that the RAC sector accounted for approximately 29% of Grenada’s total GHG emissions.

Of total RAC emissions, 55% came from unitary air conditioners, 27% from mobile air conditioning, and 11% from domestic refrigeration.

The report offers two projections. In the business-as-usual (BAU) scenario case, it is estimated that the annual GHG emissions in Grenada’s RAC sector will reach 263,000 metric tons of CO_2e emissions in 2050.

However, in a mitigation scenario, “by continuously deploying climate-friendly and energy-efficient RAC appliances with increasing use of natural refrigerants, it is estimated that [111,000 metric tons of CO_2e] can be avoided annually by 2050,” the report says.

Of the 111,000 metric tons, refrigerants accounts for 38% of emission reduction, with the remaining 62% coming from total energy efficiency improvements, the report said.

Hydrocarbons21, 16 September 2020, By Nicholas Cooper

EUROPE & CENTRAL ASIA

12. The European Environment Agency: Ozone-depleting substances 2020

Man-made ozone-depleting substances destroy the protective ozone layer and the international community established the Montreal Protocol in 1987 to cut their consumption and production. To fulfil its obligations under the Montreal Protocol, the EU has adopted the more ambitious EU Ozone Regulation. This briefing contains information on ozone-depleting substances in the EU, based on aggregated data reported by companies since 2006 under the Ozone Regulation.

Key messages

- In 2019, the EU continued to actively phase out ozone-depleting substances (ODS), in line with its commitments under the Montreal Protocol. Although there is a general ban on ODS, certain uses are still permitted such as feedstock use, some laboratory and analytical uses and for firefighting.

- Data for 2019 show that consumption of ODS in the EU remained negative (-387 metric tonnes), meaning that more substances were destroyed or exported than were produced or imported. The EU's consumption of these substances has been negative since 2012.
- For the first time since 2012, however, EU consumption expressed as 'ozone-depleting potential' (i.e. taking into account the respective depleting power of each substance consumed) was positive in 2019. This was because of increased stocks destined for later destruction.

Background information

In 1989, the Montreal Protocol on Substances that Deplete the Ozone Layer entered into force. Its objective is to protect the stratospheric ozone layer by phasing out the production of ozone-depleting substances (ODS). The protocol covers over 200 individual substances with a high ozone-depleting potential (ODP), including chlorofluorocarbons (CFCs), halons, carbon tetrachloride (CTC), 1,1,1-trichloroethane (TCA), hydrochlorofluorocarbons (HCFCs), hydrobromofluorocarbons (HBFCs), bromochloromethane (BCM) and methyl bromide (MB), all of which are referred to as 'controlled substances'.

Within the European Union (EU), the use of and trade insubstances is regulated by Regulation (EC) No 1005/2009 (known as the **Ozone Regulation**). This regulation stipulates that all companies producing controlled substances or importing them into and/or exporting them out of the EU, as well as feedstock users, process agent users and destruction facilities, must report their activities concerning controlled substances annually. The Ozone Regulation also encompasses five additional ODS that are not covered by the Montreal Protocol. These 'new substances' are halon 1202, methyl chloride (MC), ethyl bromide (EB), trifluoroiodomethane (TFIM) andn-propyl bromide (n-PB). Producers, importers and exporters also have to report their activities for these new substances.

The European Environment Agency (EEA) is responsible for collecting, archiving, checking and aggregating information contained in these company reports. The EEA also supports the companies in fulfilling their reporting obligations. The data reported on production, imports and exports are presented to parties of the Montreal Protocol, in order to monitor progress in phasing out ODS in compliance with the Protocol. In 2020, 235 companies reported on their 2019 activities under the Ozone Regulation.

The EU has already achieved its phase-out goals under the Montreal Protocol and reports on the uses that are still allowed.

This briefing summarises the most recent data reported by companies under the Ozone Regulation and looks at trends since 2006. Data from 2012 onwards were also updated, based on reports resubmitted after the reporting deadlines for these years. Figures and data tables can be accessed in **an online viewer**.

Since the potential to harm the ozone layer varies among substances, results are expressed in both metric tonnes and ODP tonnes. The observed trends can differ significantly depending on the unit used. Controlled substances with a relatively high ODP (e.g. CFCs and CTC) exhibit a different trend from those with a relatively low ODP (e.g. HCFCs).

Consumption of controlled substances

Consumption is an aggregated parameter calculated for data reported under the Montreal Protocol (see Box 1 below). It integrates the statistics on imports, exports, production and destruction of controlled substances into one single metric, excluding non-virgin imports and exports. Amounts that are produced and imported for feedstock use within the EU and process agent use are not included in consumption figures, in line with calculations applied under the Montreal Protocol. New substances listed in Annex II to the Ozone Regulation are also excluded from consumption data.

Box 1. Consumption

In brief, consumption (which only applies to controlled substances) is calculated as follows:

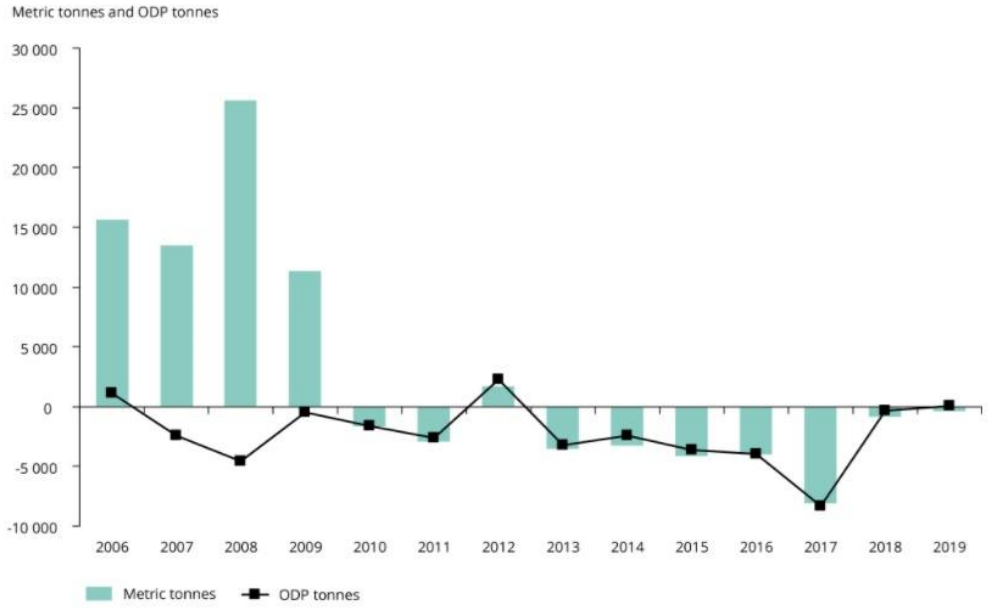
CONSUMPTION = ADJUSTED PRODUCTION + ADJUSTED IMPORT - EXPORT - DESTRUCTION

with

- **ADJUSTED PRODUCTION** = total production - production for feedstock in the EU - production for process agent use
- **ADJUSTED IMPORT** = total virgin imports - virgin imports for feedstock use in the EU - virgin imports for process agent use
- **EXPORT** = total virgin exports
- **DESTRUCTION** = total virgin and non-virgin destruction

In 2019, the consumption of controlled substances amounted to -387 metric tonnes, up from -884 metric tonnes in 2018. The consumption of controlled substances, when expressed in metric tonnes, has been negative every year since 2012. However, expressed in ODP, consumption in 2019 was positive for the first time since 2012, amounting to 61 ODP tonnes. The reason for the higher consumption in 2019, compared with previous years, is because of increased stocks in 2019 for the purpose of destruction in the future. Regarding consumption, imported and produced quantities should ideally be equal to or lower than exported and destroyed quantities. However, stocks held at the end of a year, which are to be destroyed in the following years, are not accounted for in consumption calculations.

Figure 1. Consumption of controlled substances within the EU-28



Notes: The calculation of the consumption of controlled substances under the Montreal Protocol excludes non-virgin imports and exports, substances intended for feedstock and process agent use, as well as new substances (see box in text).

The withdrawal of the United Kingdom from the European Union on 31 January 2020 did not affect the production of this briefing, which refers to 2019 data. Data reported by companies from the United Kingdom are included in all analyses contained herein, unless otherwise indicated.

Sources: Data reported by companies to the European Environment Agency (EEA) under Article 27 of Regulation (EC) No 1005/2009 (EU Ozone Regulation).

Feedstock use of controlled substances

A number of ODS serve as feedstock for the manufacture of other products such as refrigerants, foam blowing agents, polymers, pharmaceuticals and agricultural chemicals. In 2019, feedstock use amounted to 159 157 metric tonnes, a 9 % decrease compared with 2018.

In 2019, the emission rate [1] from feedstock uses was 0.03 %. The 2019 average emission rate was comparable to the emission rate in 2018 and much lower than the emission rate for earlier years. This appears to point towards improvements in emission control by industry.

Process agent use of controlled substances

A process agent is a substance that either facilitates or inhibits a chemical reaction in an industrial process. In 2019, make-up[2] and emissions stayed well below restrictions imposed by both the Montreal Protocol and the Ozone Regulation.

Imports of controlled substances

In 2019, imports of controlled virgin substances into the EU amounted to 4 659 metric tonnes, which represents a 47 % decrease compared with 2018. This was the largest decrease observed since 2006 and the lowest ever recorded value. The imported controlled substances were almost entirely virgin substances and 77 % of them were imported from China. Slightly more than half of the imported virgin quantities were HCFCs, followed by CFCs. In contrast to previous years, CTC imports almost ceased in 2019. Controlled substances were mostly imported for feedstock use. Imports of controlled non virgin substances amounted to 1 % of total imports. Expressed in ODP tonnes, imports of virgin halons and CFCs were largest.

Exports of controlled substances

In 2019, exports of controlled virgin substances from the EU amounted to 18 799 metric tonnes, an increase of 83 % compared with 2018. CTC accounted for the largest quantities of exported virgin substances, followed by HCFCs. CTC was mainly exported for feedstock use outside the EU (59 % of total exports) and HCFCs mostly for feedstock use and refrigeration. Since almost no CTC was imported in 2019, the exported quantities were mainly produced in the EU or taken from stocks accumulated in previous years. As with imports, controlled non-virgin substances were exported out of the EU to a much lesser extent than controlled virgin substances, amounting to about 2 % of total exports when expressed in metric tonnes. Expressed in ODP tonnes, exports of virgin CTC were largest.

Production of controlled substances

In 2019, the production of controlled substances in the EU amounted to 178 316 metric tonnes, a 5 % decrease compared with 2018. This included mostly HCFCs, CTC and TCA. Only minor quantities of halons, HBFCs and BCM, and no CFCs or MB, were produced. Expressed in ODP tonnes, production of CTC and HCFCs was largest (79 % and 11 % of total production, respectively). Controlled substances were produced largely for feedstock use inside the EU (85 % of the produced quantity in metric tonnes). Production for feedstock use inside the EU decreased by 12 % in 2019 compared with 2018, while production for process agent use remained relatively constant. However, production for other uses, as accounted for in the estimation of the consumption of controlled substances (see Box 1 above and the section on consumption), increased by 44 % in 2019 compared with 2018. This was mainly because the production of HCFCs, but especially of CTC for feedstock use outside the EU, increased.

Destruction of controlled substances

In 2019, 8 347 metric tonnes of controlled substances were destroyed in total, an 10 % decrease compared with 2018. The largest quantities destroyed were of CTC, HCFCs and CFCs (77 %, 11 % and 10 % of total destruction, respectively). Expressed in ODP, of the 8 043 ODP tonnes, the largest quantities destroyed were of CTC and CFCs (88 % and 10 % of total destruction, respectively).

New substances

The Ozone Regulation is more stringent than the rules of the Montreal Protocol and encompasses new substances (halon 1202, n-PB, EB, TFIM and MC). In 2019, the production of new substances amounted to 1 002 611 metric tonnes, an 11 % decrease compared with 2018. The production of new substances was almost exclusively for

feedstock use and predominantly comprised MC (99.5 % of total production), n-PB and EB. Expressed in ODP tonnes, the production of MC was also largest (97 % of total production).

In 2019, the production of new substances was almost six times higher than the production of controlled substances expressed in metric tonnes. However, when expressed in ODP tonnes, the production of new substances was almost three times lower than that of controlled substances in the same year. This is because new substances, on average, have a significantly lower ODP than controlled substances.

Footnotes:
1. Calculated as the ratio between total emissions and quantities of controlled substances used as make-up.
2. The quantity of virgin, recovered or reclaimed controlled substances that has not been used in the process cycle before, and that is fed into the process cycle for the first time.

Note: The withdrawal of the United Kingdom from the European Union did not affect the production of this briefing. Data reported by the United Kingdom are included in all analyses and assessments contained herein, unless otherwise indicated.

The European Environment Agency, 18 September 2020, Briefing no. 10/2020

---

13. The International Institute of Refrigeration (IIR) contributes to the Review of EU F-gas regulation

The IIR has responded to the European Commission consultation "Fluorinated greenhouse gases – review of EU rules (2015-20)" which aims to collect opinions and suggestions about the update of the F-gas Regulation (EU) No 517/2014.

The International Institute of Refrigeration (IIR) has consulted its Science and Technology Council and all its Commission members in the various IIR member countries who are experts in the fields of refrigerants, including their use in all applications: refrigeration and cold chain, air conditioning, heat pumps, cryogenics…

They all consider that the F-gas regulation is a major success and that we must continue to apply the quota reduction program and the refrigerants bans as previously decided, until 2030. This shouldn't be done any slower, since it seems possible to continue the phase-down of HFCs as scheduled, nor faster since, in addition to illegal trade issues, priority must now be given to the energy efficiency of equipment and whole systems such as buildings or vehicles. Faster phase-down would certainly lead to less energy-efficient solutions. In addition, clear and stable regulations are necessary to give confidence and enable intelligent investment planning. The refrigeration sector accounts for about 20% of global electricity consumption and this share is steadily increasing (see IIR, IEA and UNEP publications). Indirect CO_2 emissions due to electricity consumption are twice as high as the direct impact of refrigerants.
However, in any case, it is necessary to decide now on quotas for the period 2030-2036, since the European Union shall respect the Kigali Amendment to the Montreal Protocol: the objective is a 85% phase-down on CO_2eq emissions in 2036 and the target for F-gas

is only 79% in 2030. Such a reduction would not be a problem but the sooner it is decided, the better.

Some sectors are currently not concerned by the F-gas regulation. The IIR is preparing an Informatory Note on refrigeration below -50°C. It will explain how we could possibly implement a phase-down in these sectors.

Actions must be taken at European level on energy consumption, considering the Total Equivalent Warming Impact (TEWI). Coordination with EU actions on energy, such as the Ecodesign directive, is essential. Priority should be given to air conditioning and heat pumps, where the implementation of energy efficiency labelling should be pursued and a ban on inefficient equipment should be planned.

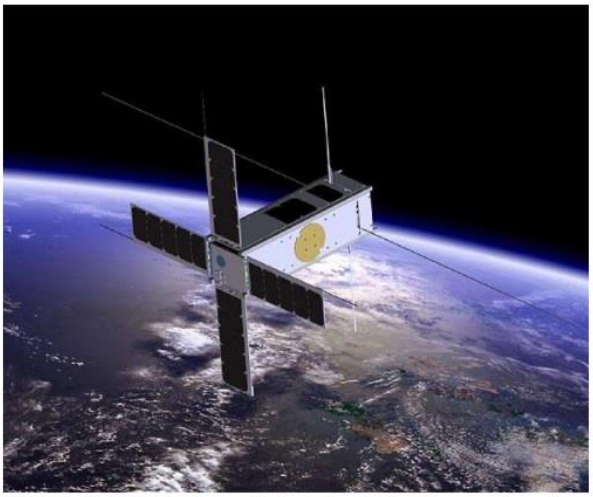
Other actions should be taken during the period 2020-2030. The use of natural refrigerants should be encouraged and facilitated through the harmonisation of national legislations, including safety rules (e.g. ammonia) and through harmonised implementation of the new standards on hydrocarbons and other low-GWP flammable and mildly flammable refrigerants. A review of the current and future regulations and their practical application in all EU member countries regarding flammable and toxic refrigerants should be carried out. A rapid implementation of new standards across Europe would help phasing-down current HFCs.

In addition, training on low-GWP refrigerants should be better promoted or, better still, become mandatory. The IIR has participated in the EU-funded project REAL Alternatives for LIFE: tools for such training exist. Research and development in all refrigeration uses must continue more than ever in order to reduce the TEWI of a growing number of applications. In parallel, control and certification of installations should be reinforced to reduce leakage.

The IIR and its experts are at the disposal of the EU Commission, which is an official observer in our Organisation due to its intergovernmental status, to assist it in conducting the review and to participate in working groups on this issue if any.

The International Institute of Refrigeration (IIR), 23 September 2020

14. ESA launches small Belgian satellite carrying VTT's remote sensing technology into space



PICASSO will orbit the Earth at an altitude of about 530 km. It is expected to gather data for one to two years, depending on how well its electronics withstand the harsh conditions of space. It will eventually fall into the atmosphere and be destroyed. In this time, the satellite and its payload can gather plenty of valuable scientific data. In addition, the mission will serve to indicate the current research capabilities of CubeSat nanosatellites and provide valuable lessons for the future development of small-scale scientific operations.

The European Space Agency (ESA) has launched 42 tiny satellites aboard a Vega rocket. It took off from ESA's launch site in French Guiana on 2 September local time. One of the launched nanosatellites, PICASSO, carries state-of-the-art remote sensing technology developed and built by VTT Technical Research Centre of Finland Ltd. It will be used to take scientific measurements in the upper layers of the atmosphere.

PICASSO stands for PICo-Satellite for Atmospheric and Space Science Observations. It is the first CubeSat nanosatellite mission of the Royal Belgian Institute for Space Aeronomy (BIRA-IASB) and weighs only 3.5 kg.

It carries two measuring instruments for atmosphere research. Its most important payload is the Visible Spectral Imager for Occultation and Nightglow (VISION), built by VTT for sun occultation measurements. VISION directly builds on the spectrometers launched with the Aalto 1 and Reaktor Hello World nanosatellites. It also has another payload for plasma measurements in the ionosphere, the Sweeping Langmuir Probe (SLP), developed by BIRA-IASB.

Small research instruments enable leaps forward in remote sensing
What makes the instruments launched aboard the PICASSO exceptional is their unprecedented combination of scientific performance and small size. The mission aims to demonstrate the opportunities of miniaturisation in remote sensing. The quality of the data collected by these tiny new instruments in relation to their costs enables high-quality scientific research that nanosatellites have not been able to deliver before.

VISION, developed by VTT, is a tiny spectral imager for gas measurements in the atmosphere. Its camera can capture the visible light of the sun in freely selectable narrow wavelength bands (430-800 nm). When the light of the sun passes through the earth's atmosphere at different heights at sunset and sunrise, the vertical distribution of ozone in the stratosphere can be measured. At the same time, VISION can also determine the temperature profile of the atmosphere by tracking the deformation of the solar image caused by atmospheric refraction.

"Integrating atmospheric measurement instruments into a satellite the size of a carton of milk is challenging - but the scientific opportunities are massive. In future, instruments like VISION can also be used to measure other gases, such as carbon dioxide and methane," says Antti Nasila, Research Team Leader at VTT

"PICASSO VISION uses the spectral range of visible light to study the ozone layer in the stratosphere and mesosphere. Although the ozone layer at a height of 20-30 km is

gradually recovering, it is vital to keep monitoring it due to its links to climate change. The satellite instruments that are currently performing similar measurements are already nearing the end of their useful lives, so the launch of PICASSO VISION occurred at an important moment," says Research Professor Johanna Tamminen from the Finnish Meteorological Institute.

Mission will last about two years and includes partners from around Europe
PICASSO will orbit the Earth at an altitude of about 530 km. It is expected to gather data for one to two years, depending on how well its electronics withstand the harsh conditions of space.

It will eventually fall into the atmosphere and be destroyed. In this time, the satellite and its payload can gather plenty of valuable scientific data. In addition, the mission will serve to indicate the current research capabilities of CubeSat nanosatellites and provide valuable lessons for the future development of small-scale scientific operations.

PICASSO is an international collaboration project of the European Space Agency (ESA). It is led by the Royal Belgian Institute for Space Aeronomy (BIRA-IASB) and in addition to VTT, other partners include AAC Clyde Space Ltd (United Kingdom) and the Centre Spatial de Liege (Belgium).

Space Daily, 7 September 2020

5th Edition of Europe and Central Asia (ECA) Montreal Protocol Award for Customs and Enforcement Officers for 2019-2020

The United Nations Environment Programme, OzonAction, in cooperation with the World Customs Organization and the Ozone Secretariat, has launched the fifth edition of the ECA Montreal Protocol Award for Customs and Enforcement Officers for the period 2019-2020. Nominations forms are available in English and Russian and the award ceremony is scheduled for 2021. The award is part of the work programme of OzonAction's Regional Montreal Protocol Network for Europe and Central Asia (ECA network).

The award recognizes the crucial role of customs & enforcement officers in implementing trade restrictions and bans for hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs). Both groups of chemicals, which are controlled under the Montreal Protocol on Substances that Deplete the Ozone Layer, are widely used as refrigerants and foam blowing agents in the refrigeration, air conditioning and foam blowing sectors.

The informal Prior Informed Consent (iPIC) system allows trade partners to confirm the legitimacy of an intended trade in controlled substances prior to issuing import / export licenses. More information on iPIC is available **here**

The award aims to recognize and offer encouragement to customs and enforcement officers and their respective organizations for successful prevention of illegal or unwanted trade in HCFCs / HFCs. This also includes equipment or products containing or relying on the use of HCFCs / HFCs.

Eligible nominees include customs and enforcement officers and / or their respective organizations who have been directly involved or instrumental in preventing illegal or unwanted trade in HCFCs / HFCs as well as equipment or products containing or relying on the use of HCFCs / HFCs.

Eligible enforcement actions include the detection of an illegal shipment and the subsequent seizure, detention or sending back of the disallowed goods, as well as successful iPIC consultation preventing the issuance of export / import licenses for illegal or unwanted shipments.

Enforcement actions are eligible if they have not been submitted to any other award schemes.

Geographical scope and time period

Eligible countries include those in the Europe and Central Asia (ECA) region including countries with economies in transition (CEIT countries) and Western European countries as well as their trading partners.

Eligible enforcement actions must have taken place during the period: 1 January 2019 – 31 December 2020.

Completed nomination forms with detailed and comprehensive case descriptions and supporting photos and documents should be received by the United Nations Environment Programme as soon as possible but **at the latest by: 31 January 2021**.

Learn more >>>

WEST ASIA

15. Bahrain Supreme Council for Environment, UNEP sign Institutional Support Agreement

The Supreme Council for Environment (SCE)'s CEO Dr. Mohammed Mubarak Bin Dainah, and Regional Director and Representative of United Nations Environment Program (UNEP) in West Asia Sami Dimassi, signed Institutional Support Agreement Phase 10.

The agreement aims to help non-industrialized countries in accordance with The Montreal Protocol on Substances that Deplete the Ozone Layer requirements.

It came within the UNEP framework to provide technical and financial support to enable the non-industrialized countries to fulfill their obligations, including submitting annual reports on quantities, imported and used refrigerants and ozone-depleting chemicals, and implementing an advanced licensed system aimed to tighten control over the import of substances that deplete the ozone layer.

The UNEP Director described the Montreal Protocol as one of the most successful environmental treaties in history with 198 international parties and succeeded in phasing out more than 99% of ozone-depleting substances.

He also affirmed the efforts made to strengthen the existing partnership between the UNEP and Bahrain, to ensure the sustainability of the system, implement the protocol, and provide environmentally friendly alternatives in all sectors.

Dr. Bin Dainah stressed Bahrain's keenness to strengthen cooperation with the UNEP throughout the past three decades in various environmental fields, including the file of protecting the ozone layer and reducing depleting substances.

Bahrain News Agency, 27 September 2020

---

16. Iraq and UNEP sign a memorandum of understanding to train air conditioning and refrigeration technicians

بتوجيه مباشر من معالى وزير الصحة والبيئة الدكتور حسن محمد التميمي ... الوكيل الفني لوزارة الصحة والبيئة الدكتور جاسم عبد العزيز حمادي يستقبل مدير عام دائرة العمل والتدريب المهني السيد رائد جبار باهض لتوقيع وثيقة التعاون بين وزارة الصحة والبيئة ووزارة العمل والشؤون الاجتماعية في مجال تدريب اصحاب ورش صيانة اجهزة التبريد والتكييف والغازات البديلة والتعامل الامن معها وعملية الاسترجاع لغازات (HCFC) .

حيث بين السيد الوكيل الفني ان اتفاقية فيينا وبروتوكول مونتريال يهدف الى التخلص من المواد المستنفدة لطبقة الاوزون الهيدروكلوروفلوروكاربونية (HCFC) حيث يعتبر العراق من الدول الممتثلة للاتفاقية وانعكس هذا الالتزام الى دعم العراق بمشاريع مهمة ومن تلك المشاريع مشروع التخلص من المواد الهيدروكلوروفلوروكاربونية (HPMP) كذلك قيام المركز الوطني للاوزون برسم خارطة طريق لفعالية التدريب حيث شكل المركز الوطني للاوزون (لجنة مستويات التاهيل) لتحديد مستويات التاهيل للعاملين في قطاع التكييف والتبريد بالتنسيق مع برنامج الامم المتحدة للبيئة (UNEP) وبالتعاون مع وزارة العمل والشؤون الاجتماعية التي تهتم بقطاعات العمل والعامليين وتطوير مهاراتهم وتمنحهم شهادات التقييم في مختلف المجالات المهنية ومن ضمنها المجال المهنى للتكييف والتبريد وقد اتفق الطرفان على ابرام هذه الوثيقة وفقا للقوانين والقواعد السارية في العراق للحفاظ على طبقة الاوزون والتخلص من المواد والغازات الضارة .

3 ايلول/ سبتمبر 2020 - تغطية خبر توقيع مذكرة التفاهم على الموقع الرسمى **لوزارة الصحة والبيئة** وعلى **الموقع الرسمى** للسيد الوكيل الفنى

FEATURED

OZONE SECRETARIAT

Ozone for life: 35 years of ozone layer protection

World Ozone Day, held on September 16, the world celebrates 35 years of the Vienna Convention and 35 years of global ozone layer protection. Learn more

---

Overview for the meetings of the ozone treaties in 2020-2021

Click **here** for upcoming Montreal Protocol Meetings Dates and Venue.

Recent Meetings:

- **42nd Meeting of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer (OEWG 42)**, 14-16 July 2020 | Online
- **31st Meeting of the Parties to the Montreal Protocol,** 4 - 8 November 2019, Rome, Italy
- **Bureau Meeting of the 30th Meeting of the Parties to the Montreal Protocol,** 3 November 2019, Rome, Italy
- **63rd Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol,**, 2 November 2019, Rome, Italy

United Nations Treaty Collection

Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, Status of Ratification 15 October 2016 to **date**

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.

Multilateral Fund for the Implementation of the Montreal Protocol

THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

Provisional agenda of the 85th meeting of the Executive Committee

The Eighty-fifth Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, has been postponed due to the coronavirus disease (COVID-19).

The 85th meeting has been postponed until immediately after the 42nd meeting of the Open-ended Working Group (OEWG), and will be held in Montreal for a duration of four days, from 19 to 22 July 2020, on the understanding that the meeting might be further postponed or cancelled in light of the evolution of the COVID-19 pandemic.


UNITED NATIONS

EP

United Nations Environment Programme

Provisional Agenda

The Multilateral Fund for the Implementation of the Montreal Protocol, April 2020

Click **here** for the Executive Committee upcoming and past Meetings.

Recent meetings:

- **84th meeting of the Executive Committee**
- **83rd meeting of the Executive Committee**
- **82nd meeting of the Executive Committee**
- **Executive Committee Primer – 2019** - An introduction to the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol

OZONACTION

COVID-19 pandemic: Letter from James S. Curlin, Acting Head, OzonAction, to the National Ozone Officers -
On behalf of the United Nations Environment Programme (UNEP) OzonAction, I would like to express our deep appreciation to your country for its continued high-level commitment to implement the Montreal Protocol on Substances that Deplete the Ozone Layer, including during very challenging times such as what the world is now facing with the COVID-19 pandemic. I would like to re-assure you that during this very difficult period, OzonAction's Compliance Assistance Programme (CAP) – like the rest of UNEP – remains open for business. Our CAP teams in Bangkok, Manama, Nairobi, Panama City, and Paris continue to work with great dedication and diligence to support Article 5 countries with meeting their compliance, reporting and project-related needs. Our internal processes are all functioning well, including those related to finance and

administration. Our CAP teams continue to provide technical and policy support. Our information clearinghouse, capacity building services, and refrigeration and air conditioning partnerships are still developing and distributing tools and information to support your work. [...] **Read/download**

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

To access the tools:

Click **HERE** to access the HCFC Quota tracker app

Click **HERE** to access the flyer for more information on the tracker

Click **HERE** to see the short video tutorial on the OzonAction YouTube Channel

IIR and UNEP OzonAction release the French and Spanish versions of the 'Cold Chain Technology Briefs' -

As part of their cooperation to support the needs of different stakeholders in developing countries to fulfil their commitments under the Montreal Protocol, the International Institute of Refrigeration (IIR) and UNEP OzonAction today released the French and Spanish versions of their popular Technology Briefs on the Cold Chain. The original English versions are also available for download from the OzonAction website.

Download:

- **Cold Storage and Refrigerated Warehouse**
- **Commercial, Professional and Domestic**
- **Fishing Vessel Application**
- **Refrigeration in Food Production and Processing**
- **Transport Refrigeration**

The new updated OzonAction GWP-ODP Calculator Application

"Quickly, efficiently and accurately convert between values in metric tonnes, ODP tonnes and CO_2-equivalent tonnes"

Data are extremely important for the Montreal Protocol community, and the data reporting formats for both A7 and CP have changed recently, to a large degree triggered by the Kigali Amendment. HFCs, blends, CO_2-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 CO_2-eq values from both GWP and metric tonne values. This free app from OzonAction is a practical tool for Ozone Officers to help demystify some of this process and put frequently-needed information at their fingertips.

What's new in the app:

- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- A new **Kigali Amendment mode** - in this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs

- Latest updated ODP and GWP values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change (IPCC) reports
- References added for sources of all values
- New refrigerant mixtures (with ASHRAE -approved refrigerant designations)

The new and updated UNEP OzonAction ***GWP-ODP Calculator*** application will help you to convert between values in metric tonnes, ozone depleting potential (ODP) tonnes and CO_2-equivalent tonnes of substances controlled by the Montreal Protocol and their alternatives.
This application, available at no cost, is particularly useful for National Ozone Officers to assist with understanding and calculating quantities of controlled substances, both pure substances and mixtures, for quota assignment, reporting requirements, etc. Other stakeholders interested in ODP and global warming potential (GWP) values of controlled substances and their alternatives will also find this tool useful.

Operation of the application is very simple — just select a substance from the dropdown list and enter the known value in the appropriate field; the calculator will automatically perform the conversion between metric tonnes, ODP tonnes and/or CO_2-equivalent tonnes and display the corresponding converted values. The ODP, GWP and information about the substance is provided. For mixtures, the components of the mixture and their relative proportions (metric, ODP, CO_2- equivalent tonnes) are also calculated.

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

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

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

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

Using the application:

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

Desktop Application: *GWP-ODP Calculator* is also available online on the OzonAction **website**

Watch the new short introductory tutorial **video** on the *GWP-ODP Calculator* - available now on **YouTube**

Read/download the **flyer** for more information

RAC Technician Videos - Full length films!

OzonAction is very pleased to release two 'full length' videos for refrigeration and air-conditioning (RAC) sector servicing technicians: on 1) Techniques, Safety and Best Practice and 2) Flammable Refrigerant Safety.

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

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

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

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

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

You can watch these videos on the OzonAction YouTube Channel:

- **Techniques, Safety and Best Practice**
- **Flammable Refrigerant Safety**

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

If you prefer to access the video clips via the OzonAction smartphone application, just search for "RAC Technician Video Series" or UNEP in the Google Play Store and iTunes/App Store or scan the QR code – **free to download!**

The flyer is available from the **OzonAction website**.

The UNEP OzonAction WhatGas? application has been updated and improved

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

The WhatGas? application is an information and identification tool for refrigerant gases: ozone depleting substances (ODS), HFCs and other alternatives. It is intended to provide a number of stakeholders, including Montreal Protocol National Ozone Officers, customs officers, and refrigeration and air-conditioning technicians with a modern, easy-to-use tool that can be accessed via mobile devices or the OzonAction website to facilitate work in the field, when dealing with or inspecting ODS and alternatives, and as a useful reference tool. If the user requires additional information or assistance in identifying a refrigerant gas they are inspecting or that is described in the relevant paperwork, this can be easily obtained by consulting the application.

Using the application:

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

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

Desktop Application: WhatGas? is also available online on the OzonAction **website**

For more information: Watch the new short introductory tutorial **video** on WhatGas? available on **YouTube**

See/download the **WhatGas? flyer**

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

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. This guideline was intended to support manufacturers, engineers, installers, contractors and users, and was also widely used by customs and enforcement officers and National Ozone Officers (NOOs) to help identify the contents of cylinders.

In recent years, the number of refrigerants has dramatically increased, particularly as chemical producers continue to develop numerous new refrigerant mixtures for various applications. This fast-rising number of refrigerants created some concern since as more and more colours were used, the potential for misidentification of cylinders of similar colours increased. It was therefore decided by AHRI that for the benefit of the industry the guideline should be updated. This was to ensure continuation of correct identification and safe use of refrigerants based on clear and distinct product markings and labels. The revised guideline, first published in 2015, removes paint colour assignments for refrigerant containers and specifies that all refrigerant containers should have the same paint colour from 2020 onwards. This colour is a light green/grey, called “silk grey” (RAL 7044[4]). This guideline also provides a means by which colours can be assigned to printed materials, such as printed labels on refrigerant containers; these

colours generally follow the familiar AHRI colours previously used for refrigerants.

It is very important that the range of stakeholders in the refrigeration and air-conditioning industry as well as NOOs and customs and enforcement personnel are aware of this change. **Cylinder colours can no longer be relied on as a means to identify the type of refrigerant in a container**. The principal method of cylinder identification now needs to be the container labels and markings. It is important to note that **flammable refrigerants** should include a red band on the top of the cylinder.

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. It will be important to inform and train customs officers of this change as colour codes have always been a helpful way to identify refrigerants. Given the possibility of mis-labelled or counterfeit refrigerants in cases of doubt/suspicion, it is recommended to verify the type of refrigerant using a refrigerant identifier

For more information 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 (April 2020 update).

The factsheet, produced by **ASHRAE** in cooperation with **UN Environment Programme OzonAction** is updated every 6 months.

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

Read/download the **factsheet**

The factsheet, as well as more information on ASHRAE-UNEP joint activities and tools, is also available on the **ASHRAE UNEP Portal**.

Contact:
- **Ayman Eltalouny**, OzonAction, UN Environment Programme
- **W. Stephen Comstock**, Manager of Business Development EMEA, ASHRAE

OzonAction's iPIC system helps prevent an illegal shipment of 72 tonnes of HCFC-22

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.

The OzonAction new iPIC platform - The Informal Prior informed consent system (iPIC) has been completely overhauled and updated - *OzonAction latest updated and streamlined version of the online Informal Prior-Informed Consent (iPIC) platform. Responding to comments and feedback we have changed how the system looks and operates.* ***See the iPIC flyer for more details - Visit iPIC website to familiarise yourselves with the new features and functionalities.*** *Automatically re-set your password if required.*

Contact: iPIC Online Administrators for any further questions.

Servicing tail for HCFCs: What is it & why does it matter?

This concept of a servicing tail, while allowed under the Montreal Protocol might not always be consistent with the phase-out targets specified under the HCFC Phase out Management Plan (HPMP) funding agreements agreed by Article 5 countries with the Executive Committee when receiving funds for HCFC phase out, where countries are obliged to meet these targets as specified in the agreement.

Details and explanations are provided in this **Policy Brief**.

Contact: Ezra Clark, UNEP, OzonAction

OzonAction Factsheet: Proposed additional HS code sub-headings for HFCs in advance of the 2022 HS code update - 'Cheat Sheet'

This document is intended to accompany the OzonAction policy brief: "*HS CODES FOR HFCs - Advice for countries in advance of the 2022 HS code update*", available here.

Download the Factsheet

Contact: Ezra Clark, UNEP, OzonAction

OzonAction Factsheet: Dealing with seized ODS - Options for Article 5 countries

This concise factsheet summarises the five main options available to countries when dealing with seized ODS or HFCs as well as outlining the various considerations and the pros and cons of these options.

Download the Factsheet

Contact: Ezra Clark, UNEP, OzonAction

UNEP OzonAction Training Programme for National Ozone Officer

A key factor contributing to the significant success of the Montreal Protocol on Substances that Deplete the Ozone Layer is the 'country-driven approach'. This approach places National Ozone Units at the centre of the action to protect the ozone layer.

The National Ozone Unit led by the National Ozone Officer (NOO), is the single most important element in national strategies to comply with the Montreal Protocol.

The knowledge and capacity of the NOO in effectively developing projects, managing strategies, reporting data, and working with national and international institutions -directly or indirectly affects each developing (Article 5) country's ability to meet its obligations under the Montreal Protocol treaty.

For this reason OzonAction has completely transformed and updated its NOO training programme to assist NOUs in successfully understanding all the roles and requirements and in carrying out their daily tasks in Montreal Protocol implementation.

The main objective of this training programme is to provide new National Ozone Unit (NOU) staff with essential information about the Montreal Protocol, a country's obligations under the Montreal Protocol, and the main activities carried out by NOUs. It aims to provide new NOU staff with fundamental knowledge and information tools that will enable them to support their national government in meeting the commitments agreed by all countries under the Montreal Protocol.

Download the flyer >>>

Contact: **Mikheil Tushishvili**, Montreal Protocol Programme Officer, UNEP-OzonAction.

OzonAction Factsheet: Article 7 Data Reporting on HFCs - When Countries Need to Start Reporting

One of the important commitments of the Protocol is that of reporting the consumption and production of substances controlled under the Montreal Protocol.

Following ratification of the Kigali Amendment, this commitment is now extended to HFCs.

This short factsheet provides some useful information on relevant Article 7 reporting dates and deadlines for HFCs.

Download the Factsheet

Contact: **Ezra Clark**, UNEP, OzonAction

HS Codes for HFCs - Advice for countries in advance of the 2022 HS code update

The Kigali Amendment requires Parties to put into place an import and export licensing system for hydrofluorocarbons (HFCs) by 1st January 2019 (or two years later if required).

To enable a licensing system to function effectively, it is important that the government is able to monitor and record imports and exports of each specific HFC individually.

Import and export statistics are normally collected by customs officers using the international product nomenclature system – the Harmonized Commodity Description and Coding System, or Harmonized System (HS).

However, until the HS is revised in 2022, all HFCs are contained in a single HS code which does not allow differentiation of the individual chemicals or of mixtures.

This document outlines a proactive interim approach, recommended by the World Customs Organization (WCO), to establish additional digits in the existing national HS codes to identify specific HFCs.

This practical document is suitable for outreach to the customs agencies, customs officers in the field, and others involved in controlling trade in HFCs.

Document prepared by the UN Environment Programme in cooperation with the World Customs Organization (WCO).

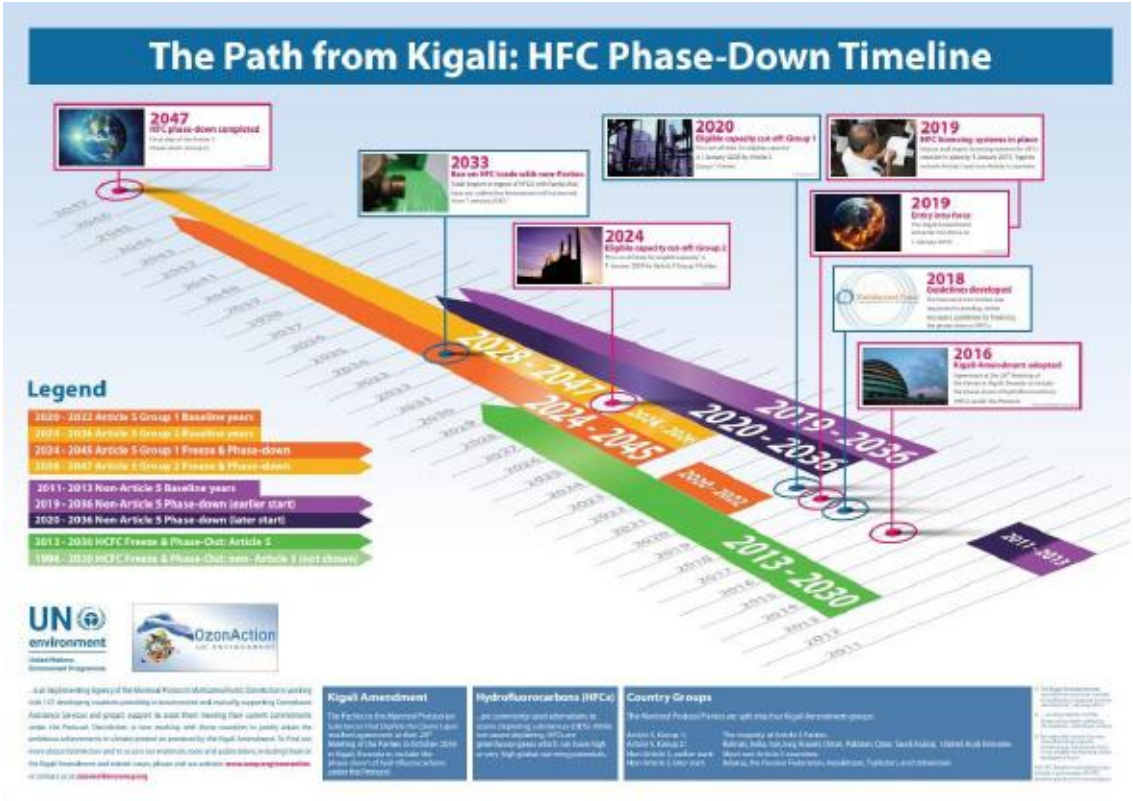
Download the publication

Contact: Ezra Clark, UNEP, OzonAction

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.

Download the publication



The Path from Kigali: HFC Phase-Down Timeline

This timeline, produced by OzonAction, highlights key hydrofluorocarbons (HFCs) phase-down dates. Click **here** to download the timeline

Good Servicing: Flammable Refrigerants Quick Guide

This is the electronic and interactive version of the UN Environment Programme OzonAction Quick Guide on Good Servicing Practices for Flammable Refrigerants. It offers easy reference to the key safety classification and technical properties of flammable refrigerants that are available in the market.
It also provides important safety guidance for the installation and servicing of room air-conditioners designed to use flammable refrigerants.
This interactive guide allows you to scroll and browse the text, jump to specific chapters or use the comprehensive dynamic index to locate specific keywords, figures and tables. The application also includes a refrigerant charge size calculator and a room size calculator for flammable refrigerants.

Available for free on the Google play store (Apple

version coming soon). Search for “UNEP Quick guide” or use the QR code

Refrigerant Identifier Video Series

Guidance on how to identify refrigerants using a refrigerant identifier.
This new OzonAction video series consists of short instructional videos showing how to use and maintain a refrigerant identifier.
The videos provide useful guidance on safety and best practice, understanding the difference between different identifier units, testing procedures and identification of results.
It is intended for use by Montreal Protocol National Ozone Officers, Customs and Enforcement Officers as well as technicians involved in the servicing and maintenance of refrigeration and air conditioning systems.
The application features 10 short instructional videos on the following topics:

- Refrigerant cylinder types
- Types of identifiers
- Getting to know your identifier
- Safety and precautions
- Testing a sample – vapour (gas)
- Testing a sample – liquid
- Results
- Faults & error messages
- Maintaining the unit
- Software updates

Available for free on the Google play store (Apple version coming soon). Search for “UNEP Refrigerant ID” or use the QR code

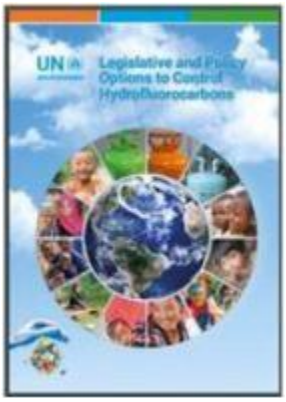
OzonAction Multimedia Video Application: Refrigeration and Air-conditioning Technician Video Series - Over 50,000 downloads to date -

OzonAction has launched an exciting new application which hosts series of short instructional videos on techniques, safety and best practice for refrigeration and air-conditioning technicians.
This application, consisting of short instructional videos on techniques, safety and best practice, serves as a complementary training tool for refrigeration and air-conditioning (RAC) sector servicing technicians to help them revise and retain the skills they have acquired during hands-on training.

New videos on flammable refrigerants just added!
Please share with your RAC associations, technicians and other interested stakeholders…

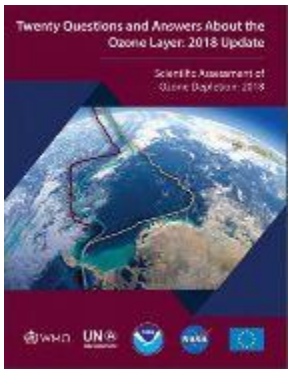
OzonAction Multimedia Video Application: Refrigeration and Air-conditioning Technician Video Series Available in the **Android Play Store** and **Apple Store/iTunes**. (Just search for "OzonAction", or scan this QR code)

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.



Twenty questions and answers about the ozone layer: 2018 update, is a component of the Scientific Assessment of Ozone Depletion: 2018 report. The report is prepared quadrennially by the Scientific Assessment Panel (SAP) of the Montreal Protocol on Substances that Deplete the Ozone Layer.

Lead Author: Ross J. Salawitch
Coauthors: David W. Fahey, Michaela I. Hegglin, Laura A. McBride, Walter R. Tribett, Sarah J. Doherty

Read / Download:

20 Questions and Answers about the ozone layer-2018 | **Figures**

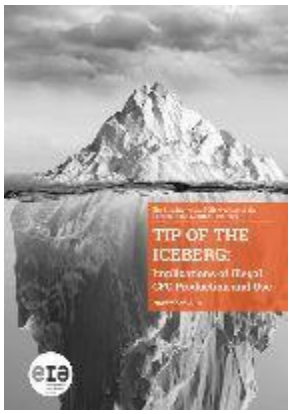
Primer on Hydrofluorocarbons (HFCs) - IGSD -11 January 2018
Fast action under the Montreal Protocol can limit growth of hydrofluorocarbons (HFCs), prevent 100 to 200 billion tonnes of CO_2-eq by 2050, and avoid up to 0.5°C of warming by 2100.
Lead authors:
Durwood Zaelke, Nathan Borgford-Parnell, and Stephen O. Andersen.
Contributing authors:
Kristin Campbell, Xiaopu Sun, Dennis Clare, Claire Phillips, Stela Herschmann, Yuzhe Peng
Ling, Alex Milgroom, and Nancy J. Sherman.

The **IIR International Dictionary of Refrigeration** Available in 11 languages, the complete version of the International Institute of Refrigeration (IIR) International Dictionary of Refrigeration is now freely accessible online. The IIR International Dictionary of Refrigeration offers researchers, industrialist or administrations the practical resources required to produce content related to refrigeration technologies in multiple languages.
This online tool allows you to find definitions, in English and French, of scientific and technical terms, as well as identify terms in the language of your choice and find corresponding translations in the 10 other languages.
The dictionary provides term searches in Arabic, Chinese, Dutch, English, French, German, Italian, Japanese, Norwegian, Russian and Spanish.
Access the International Dictionary of Refrigeration on the **IIR website**

Impact of Standards on Hydrocarbon Refrigerants in Europe – Market research report.

The market research report was realised for the EU-funded **LIFE FRONT** project. Amongst the main result of the market research:

- Current charge limits set in standards both restrict and obstruct the development of hydrocarbon technology
- Over 50% survey respondents already work with hydrocarbons to some extent
- Most of those planning to start working with hydrocarbons in the future will do that in 2019-2020 timeframe - revision of standards could have a major impact on the scale of this shift
- Large proportion of respondents indicated they manufacture equipment using multiple refrigeration circuits - allowing higher hydrocarbon charge limits per single refrigeration circuit would have a profound impact on cost and availability of larger units.



Tip of the Iceberg: Implications of Illegal CFC Production and Use.

The Environmental Investigation Agency (EIA) recently released report urges Parties to the Montreal Protocol to address a number of remaining unanswered questions, in particular the absence of comprehensive data regarding the size of current banks of CFC-11 in PU foam and other products or equipment.

Cold Hard Facts 3 - Review of the Refrigeration and Air Conditioning Industry in Australia

[...] This study provides a broad view of the composition, size and value of the industry, and projections for its future. This will assist industry and policy makers with management of ozone depleting substances as they are phased out, and synthetic greenhouse gases, including hydrofluorocarbons (HFCs) which are being phased down from January 2018.

Ozone-depleting substances 2019 Aggregated data reported by companies on the import, export, production, destruction, feedstock and process agent use of ozone-depleting substances in the European Union, 2006-20181994-2019 - The 2019 edition of the European Environment Agency (EEA) report on ODS confirms that the EU has already achieved its goals on the phase-out of such substances under the Montreal Protocol. [...]

Benefits of Energy Efficient and Low-Global Warming Potential Refrigerant Cooling Equipment
Authors: Nihar Shah, Max Wei, Virginie Letschert, Amol Phadke.
Energy Analysis and Environmental Impacts Division
Lawrence Berkeley National Laboratory
August/2019

Lower-GWP Alternatives in Stationary Air Conditioning: A Compilation of Case Studies -The case studies in this booklet discuss several applications in the stationary air conditioning sector. The applications include chillers of natural refrigerants and hydrofluoroolefins (HFOs) as well as split-units which use hydrocarbons (HCs) as the refrigerant. The technologies presented in these case studies are only some examples of the many available options for zero and lower GWP substances. The examples take into account design criteria such as system performance, environmental impact and cost. All these refrigerants still have many challenges that should be considered in the design, for example their flammability, toxicity, lower efficiency in some cases, and cost. Balancing these challenges using a consistent and comprehensive methodology across all refrigerants and system types is essential in assessing alternatives...

Climate and Clean Air Coalition (CCAC), 2019

Latest issue of Centro Studi Galileo magazine,
Industria & Formazione, n. 7 - 2020
(in Italian language).

Accelerate #110 features a cover story on Clean Cooling, a new approach to HVAC&R.

"**World Guide to Transcritical CO_2 Refrigeration**", a free three-part resource looking at the global market penetration and potential of this natural refrigerant technology. As the use of transcritical CO_2 refrigeration systems increase at an exponential rate around the world, it has become apparent that there is a great need for reliable information from a neutral source. The newly included Part 3 focusses on specific trends relating to industrial applications and on the global transcritical CO_2 market in the future. It includes survey information, partner case studies and interviews, and "thought leader interviews" with important individuals from the industry.

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 are pleased to 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*

New International Journal of Refrigeration service for IIR members

Access the complete archives of the International Journal of Refrigeration (IJR) online. Designed with IIR members in mind, this new and practical electronic subscription gives members substantial advantages:

- Immediate and permanent access to the latest research and to IJR archive
- Access the latest articles as soon as they become available online.
- Browse, search and read each one of the nearly 4,500 papers since Volume 1, Issue 1.
- Unlimited access to seminal contributions to the field of refrigeration dating back to 1978.
- Keep up-to-date with subscriptions to customized e-alerts on New Volumes, Topics and saved Searches. Enhanced content and functions
- Easily export references, citations and abstracts.
- Print, download or share articles with colleagues or peers.
- See which papers, published in Elsevier or elsewhere, have cited any selected article.

- Consult the research highlights overview of articles in volumes from 2012 onwards.

To access this new service, click "**activate my e-IJR subscription now**" and follow the instructions.

Click here to access recent OzoNews Issues Request a PDF of the current issue

Prepared by: Samira Korban-de Gobert, OzonAction
Reviewed by: Ezra Clark, OzonAction

If you wish to submit articles, invite new subscribers, please contact:
Samira Korban-de Gobert,
Tel. (+33) 1 44.37.14.52,
samira.degobert@un.org

UNEP, OzonAction · 1 rue Miollis · Bat. VII · Paris 75015 · France