

Volume XXII | 15 July 2022

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GLOBAL

1. Kigali Amendment latest ratifications

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

[Tajikistan, 29 June 2022](#)

[Congo, 16 June 2022](#)

[Singapore, 1 June 2022](#)



At the Twenty-Eighth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer, held in Kigali from 10 to 15 October 2016, the Parties adopted, in accordance with the procedure laid down in paragraph 4 of article 9 of the 1985 Vienna Convention for the Protection of

the Ozone Layer, a further amendment to the Montreal Protocol as set out in Annex I to the report of the Twenty-Eighth Meeting of the Parties (Decision XXVIII/1).

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

[United Nations Treaty Collection](#)

Image: UN Treaty Collection website

2. 44th meeting of the Open-ended Working Group of the Parties

The forty-fourth meeting of the Open-ended Working Group of the parties to the Montreal Protocol (OEWG44), the Fifth Extraordinary Meeting of the Parties to the Montreal Protocol (ExMOP5) and the sixty-eighth meeting of the Implementation Committee (ImpCom68) will be convened in-person in Bangkok, Thailand as follows:

- ImpCom68 – 9 July 2022
- OEWG44 – 11 to 16 July 2022
- ExMOP5 - 16 July 2022 after the closing of OEWG44



Learn more, and access related documents >>>

- [Meeting information](#)
- [Pre-session documents](#)
- [Side events](#)
- [Daily highlights from IISD](#)

[United Nations Environment Programme, Ozone Secretariat, June 2022](#)

Image: Ozone Secretariat website

3. Importance of Women in Cooling Sector Highlighted at Montreal Protocol Side Event

BANGKOK, July 13.– UN Environment Programme (UNEP) OzonAction organized a side event on “Women in Cooling – Challenges and Opportunities” on 11 July during the forty-fourth meeting of the Open-ended Working Group of the Parties to the Montreal Protocol. This forum, the first of its kind, initiated a discussion about the context of women in cooling worldwide including the challenges they face in their careers, previewed an important global survey on this subject, and presented a new global initiative to support opportunities for women, more engagement and visibility within the cooling sector.



The side event is part of a broader discussion that UNEP OzonAction is having both internally and with its partners on how to further incorporate gender mainstreaming into the work of the Montreal Protocol. The meeting was well attended by 93 participants (female 55, male 38).

The focus on the cooling sector comes from the fact that it represents the major users of refrigerant gases controlled under the Montreal Protocol. The quality of the workforce, including its skill level and technical capacity, is essential for introducing new environmentally-friendly technologies that enable national compliance with this international treaty. The refrigeration, air conditioning and heat pump (RACHP) sector thus represents strategic partners for the National Ozone Units (NOUs) in developing countries for the Montreal Protocol and an inseparable part of the hydrochlorofluorocarbon (HCFC) phase-out and future hydrofluorocarbon (HFC) phase down process. However, women are largely underrepresented in this field and have the potential to contribute significantly to the success of the RACHP sector, including environmental protection

Mr. Jim Curlin, UNEP OzonAction Head of Branch, gave a short overview of how OzonAction is including gender considerations in its own work and the specific services it is developing with its various partners. Participants heard about the context and the challenges that women in the field are facing from Dr. Ina Columbo, Deputy Director General of the International Institute of Refrigeration (IIR). She presented the preliminary results of the first *Global Survey of Women in RACHP*, which are based on inputs received from 810 women worldwide. Mr. Steve Gill, Founder of the World Refrigeration Day, presented solutions and opportunities to advance women’s engagement in the cooling sector that will be offered through the newly-established International Network of Women in Cooling (INWIC).

These presentations were followed by a panel session of National Ozone Officers from different regions - Ms. Bitul Zulhasni - Indonesia; Ms. Yvette Boko-Benin, Ms. Roselyn Bue

– Vanuatu, Dr. Marissa Gowrie - Trinidad & Tobago, and Ms. Amalia Nangolo - Namibia – who provided their views on both challenges and opportunities to women in the RACHP field in their countries. They supported their interventions with real-world examples and inspired the audience to join the discussion.

The ensuing exchanges revealed that the main challenges that women in this sector are facing are maintaining work-life balance, limited career advancement opportunities, stereotypes about women working in the field both from company owners and from the customers, lack of female colleagues and lack of access to training. Some of opportunities were identified (many of which will be offered through INWIC) including networking, exchange of information and capacity building for women RACHP professionals, both through mentorship and internship platforms.

Gender mainstreaming and promoting active and equal engagement of women in the Montreal Protocol implementation are key objectives of the Multilateral Fund and its Implementing Agencies, including UNEP OzonAction. That applies to the NOU's stakeholders and partners, including the industry of heating, ventilation, air-conditioning, and refrigeration (HVACR). Gender mainstreaming is an important thematic focus area under UNEP's Compliance Assistance Programme (CAP) strategy and annual workplan.

Documents from the side event can be found on the [OzonAction Meeting Portal](#).

Contact: [Sonja Wagner](#), Programme Management Officer, UNEP, [OzonAction](#) Compliance Assistance Programme (CAP)

Image: OzonAction website

4. Pursuing the Food Cold Chain Action Agenda: Emergence of Finance Mechanisms – In the margins of OEWG-44



The 2022 World Cold Chain Symposium (WCCS) is co-organised by, Global Food Cold Chain Council (GFCCC) and United Nations Environmental Programme (UNEP) OzonAction. The event organised under the theme of “Pursuing the Food Cold Chain Action Agenda: Emergence of Finance Mechanisms” was held on July 10th in the margins of the OEWG-44, in Bangkok, Thailand.

World Cold Chain Symposium 2022 Final Agenda
*subject to change

Event Information: Bangkok, Thailand, July 10, 3-6 PM local time

The event calls attention to the significant work underway around the world to reduce food loss and waste in an environmentally friendly manner, and highlight means by which the sustainable cold chain can further this effort. And helps to spotlight the momentum for sustainable cold chain underway including:

- Joint UNEP OzonAction/GFCCC database and modelling program
 - Work of the UNEP Cool Coalition under the Cold Chain Working Group
-

- Addressing the objectives of the Rome Declaration on the Contribution of the Montreal Protocol to Food Loss Reduction through Sustainable Cold Chain Development
- Champions 12.3 efforts to promote public and private sector finance mechanisms

The Symposium highlighted important themes that will be discussed at venues including those related to the Montreal Protocol and the Climate Conference of the Parties in 2022 and 2023. The dialogue included:

- The importance of cold chain data collection and analysis and tools and services available to developing countries.
- Encouragement of financial support for cold chain expansion projects consistent with the Rome Declaration
- Development of partner projects on agriculture and cold chain linkages
- Promote development and implementation of financial mechanisms under the Green Climate Fund, World Bank, other UN implementing agencies, and private sector interests

Contact:

[Ayman Eltalouny](#), UNEP OzonAction

[Mackenzie Dobson](#), Global Food Cold Chain Council

Image: UNEP OzSec/OEWG44 side events website

5. New IIR Informatory Note. Low-GWP Refrigerants: Status and Outlook

The latest IIR Informatory Note outlines the options available for low-GWP refrigerants and their respective performance. It provides a series of recommendations on refrigerant selection criteria, research priorities and personnel training.

The IIR has just published a new Informatory Note “Low-GWP Refrigerants: Status and Outlook” prepared by Piotr A. Domanski (former President of the IIR Science and Technology Council) and Samuel F. Yana Motta (ORNL Building Technologies Deputy Program Manager).

At the outset of mechanical refrigeration, refrigerant selection was based on satisfying two main requirements: performance and material compatibility. Then, safety – including flammability and toxicity – as well as environmental protection became essential selection criteria, to which must be added the cost of the refrigerant.

This Informatory Note outlines the requirements and options available for low Global Warming Potential (GWP) refrigerants for eight refrigeration applications. It also presents



performance simulation results obtained using an advanced simulation model with the latest known refrigerant properties.

In addition, a series of recommendations in terms of refrigerant selection criteria, research to be carried out and training of personnel in handling flammable refrigerants are presented. Finally, the methods for estimating the performance of refrigerants and the discussed refrigerant blends and their compositions are detailed in two annexes.

A [Summary for policymakers](#) outlining the main conclusions and recommendations of this Informatory Note is available in open access.

This Informatory Note can be downloaded from IIR-FRIDOC by following this [link](#) (free for IIR members).

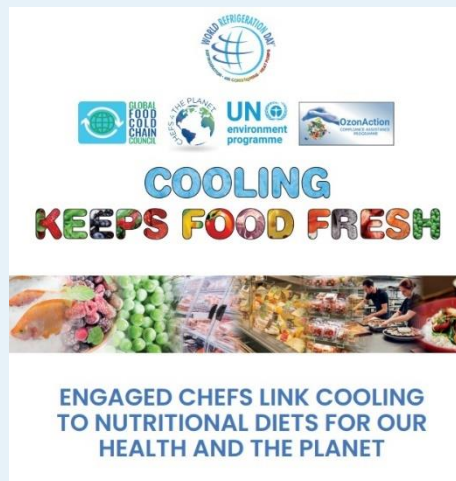
Also available in [French](#) language.

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

Image: IIR website

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

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



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

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



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

Learn more >>> <https://bit.ly/3L3xI3n> (English) <https://bit.ly/3GnBSzE> (Russian)

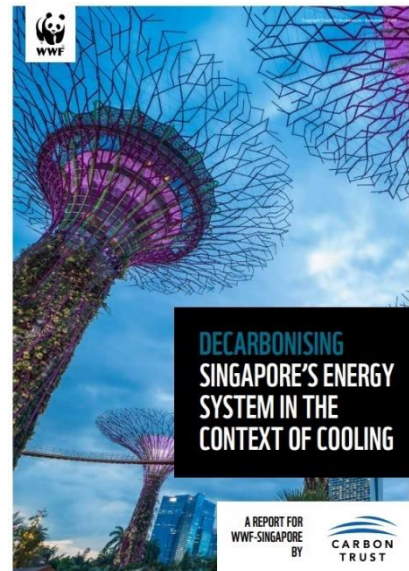
ASIA AND THE PACIFIC

6. Decarbonising Singapore's Energy System in the Context of Cooling

Executive summary

Why cooling matters to Singapore

Cooling is critical for health, prosperity, and the environment. It keeps our vaccines safe and food fresh, ensures we have comfortable buildings to live and work in and is central to our industrial and transport infrastructure. However, many standard cooling methods are energy intensive and highly polluting due to the emissions generated when powering cooling equipment using high carbon sources. The refrigerants and insulation gas used can also contribute to pollution, especially if not properly recovered and recycled.



Cooling emissions represented approximately 11.5% of Singapore's national greenhouse gas (GHG) emissions in 2016 and are expected to rise by nearly 40%

by 2030 if cooling services are deployed in a business-as-usual fashion.¹ In 2019 cooling demand in Singapore was 15.3 Terawatt hours (TWh) representing approximately 30% of Singapore's total electricity demand and contributing to a quarter of peak power demand. In response to rising temperatures as a result of climate change² and further compounded by urbanisation and the Urban Heat Island effect,³ where buildings trap heat during the day, cooling demand is expected to grow. By 2030, in the absence of any clean cooling interventions, cooling demand in Singapore is projected to increase by 66% to 25.4 TWh and represent close to 30% of peak power demand.⁴

Growing cooling demand will put a strain on the power grid and could potentially increase grid infrastructure needs as total cooling demand rises. As more cooling demand comes on the grid, the total demand profile's variability could also increase. This is particularly significant, as the largest cooling consumers, the commercial and residential buildings, both have cooling demand profiles that are characterised by rapid ramp ups in cooling loads which directly contribute to sharp increases in power demand. Such variations lead to voltage disturbances as the utility operator has to adjust the power plant operations and this can adversely affect the functioning and life of equipment such as air-conditioners, motors, and lights. Given the current power system is supplied by highly flexible thermal gas generation, this variability has little impact on the current grid.

This could change in the future as the decarbonisation of our power system leads to an increase in renewable energy that is more variable and less flexible. Increasing low-carbon generation capacity will mean that addressing grid flexibility will become integral to Singapore's energy transition goals. Flexibility could be provided by demand-side management, supporting a more cost-effective transition. In this context, clean cooling has the potential to be a provider of demand side flexibility in the future.

1 Cooling emissions were 5.53 Mt CO₂eq in 2016 and are projected to reach 7.66 Mt CO₂eq by 2030 under a BAU scenario. Green Cooling Initiative. Singapore. Retrieved January 24, 2022, from <https://www.green-cooling-initiative.org/country-data#!country-data-sheet/702/allsectors> The calculation in the source accounts for direct (refrigerants) and indirect (energy consumption) emissions.

2 National Climate Change Secretariat (2022). Impact of climate change and adaptation measures. Retrieved 18th May, 2022, from: <https://www.nccs.gov.sg/faqs/impact-of-climate-change-and-adaptation-measures/>

3 Ministry of Sustainability and the Environment. Factsheet on Singapore's Efforts to Mitigate the Urban Heat Island Effect. Retrieved 20th June, 2022, from: <https://www.mse.gov.sg/cos/resources/cos-annex-j.pdf>

4 Please refer to Appendix 1 and 2 for the detailed calculation.

[The Carbon Trust and WWF-World Wide Fund for Nature \(Singapore\), 30 June 2022](#)

Image: WWF Singapore

WEST ASIA

7. UNEP OzonAction visits Jordan to Expand Montreal Protocol Cooperation

Lebanon, 8 July 2022 - The UN Environment Programme (UNEP) OzonAction Compliance Assistance Programme (CAP) team in West Asia Office, carried out a successful mission to the Hashemite Kingdom of Jordan from 28-30 June 2022, to review the work and achievements within the framework of the Montreal Protocol (MP) in Jordan. Discussions tabled included future ways of cooperation with the national ministries and institutions in the related fields noting Jordan's long experience in successfully implementing projects and activities under the MP and being one of the pilot countries in the region to ratify the Kigali Amendment (KA) and carry out the Kigali Implementation Plan.



The UNEP CAP team visited the Ministry of Environment where they held meetings with the Secretary-General of the Ministry, Dr. Mohammad Kashashneh, and the National Ozone Unit (NOU) on the cooperation between the two entities in developing a roadmap for the NOU and building its capacity to fulfill the country's obligations under the MP.

At the Vocational Training Corporation, the UNEP CAP team was briefed about Jordan's experience in training and licensing technicians, and they also discussed with the Director General Assistant for Technical Affairs, Eng. Ibrahim Al-Tarawneh, the areas of cooperation in licensing refrigeration and air conditioning technicians.

The UNEP CAP team also visited Jordan Standards and Metrology Organization (JSMO) and met with the Director General, Eng. Abeer Al-Zhair, and members of JSMO. The CAP team was briefed on the process of developing and updating the national standards in Jordan in line with the global trends and the latest publications in the sectors of refrigeration, air conditioning, and thermal insulation. UNEP CAP and JSMO further discussed future cooperation, through which JSMO would share their experience regionally

and establish cooperation with standards institutions in other West Asia countries within the framework of the MP and according to the KA requirements.

The UNEP CAP team ended their mission by visiting the Royal Scientific Society (RSS) and meeting with the Vice President/Executive Director of the Sustainable Solutions Sector, Eng. Rafat Assi, and a group of the Society's experts. The RSS gave a brief overview of its sectors and its contributions at the national and regional levels, the projects it implements, and the services it provides within the framework of the MP. UNEP CAP and the RSS also discussed areas of mutual interest and future cooperation opportunities to serve Jordan as well as other countries in the West Asia region under the Montreal Protocol.

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

Image: OzonAction website

NORTH AMERICA

8. Canada's Federal Halocarbon Regulation changes 2022

Canada's Federal Halocarbon Regulations have recently been updated to help further protect the Earth's ozone layer and limit the release of harmful substances.

The new requirements state how to properly handle systems that hold halocarbons, state the necessary information required to include in the inventory and activity logs of systems, and the action required if 10 or more kilograms of halocarbon is released into the atmosphere.

Click [here](#) for more information, and [here](#) for the full set of regulations.

MOPIA (The Manitoba Ozone Protection Industry Association), July 2022 • Issue 227

Image: MOPIA website



EUROPE & CENTRAL ASIA

9. The sharp increase in refrigeration needs should be better reflected in public policies

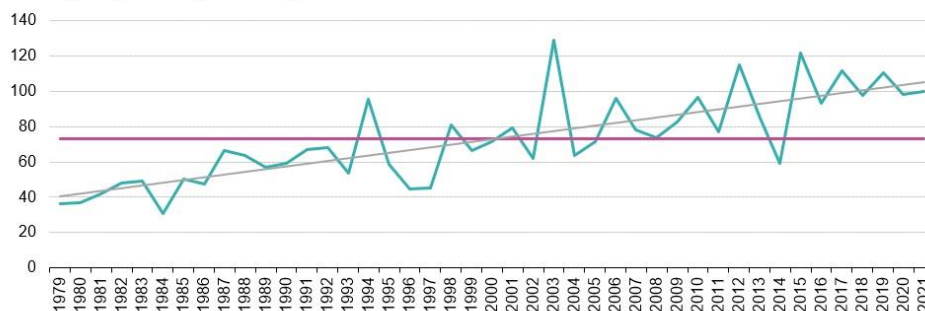
Recently released degree-day indicators confirm the steady progression of cooling needs compared to heating in the EU. Globally, energy consumption from refrigeration (including air conditioning) is expected to exceed that from heating by around 2060.

On May 31, 2022, Eurostat, the statistical office of the European Union, published new data on cooling degree days (CDDs) and heating degree days (HDDs) illustrating respectively the evolution of cooling* and heating needs of buildings as a function of outdoor temperatures in the European Union.

The calculation of CDDs relies on the base temperature, which is defined as the highest mean daily air temperature that does not result in indoor cooling. The value of the base temperature depends in principle on several factors associated with the building and the surrounding environment. Using a general climatological approach, the base temperature is set at a constant value of 21°C in the CDD calculation. Only the days when the daily mean air temperature is equal to or above 24°C are considered for this calculation. These calculations are executed on a daily basis, added up to a calendar month and subsequently to calendar years.

Eurostat underlines how the need to cool a given building has increased over time, with average cooling degree days (CDD) values being almost three times higher in 2021 (100) than in 1979 (37). The result in the EU is an average increase of 170% in the theoretical air conditioning needs of buildings in 42 years (see the evolution of CDD in the table below).

Cooling degree days in EU, 1979-2021



CDD values vary between EU countries. In the last observed year (2021), the countries with the highest values were Malta (793), Cyprus (732) and Greece (421).

In contrast, heating degree days (HDD) values decreased by 11% between 1979 and 2021 in the EU, resulting in heating needs equivalent in 2021 to 89% of the 1979 needs.

Eurostat points out that indicators such as HDD and CDD can help monitor the changes in energy demand for cooling and heating of buildings in the context of climate change.

These indicators clearly show a sharp increase in cooling needs. Thus, according to the EU, by 2030 the energy used to cool buildings across Europe is likely to increase by 72%, while the energy used for heating buildings will fall by 30%. ⁽²⁾

Globally, according to the IEA ⁽³⁾, space cooling needs in the buildings sector required only 15% of the energy used for heating in 2019. However, cooling degree days are expected to increase by 50% by 2050 up to 70% by 2070, depending on the region and climate change impact on temperature rise. Consequently, cooling demand is expected to grow at more than 3% per year over the next three decades, eight times faster than heating demand over the past 30 years.

Other projections suggest that by 2060, the amount of energy used worldwide for cooling will overtake that used for heating. ⁽⁴⁾

However, this growing importance of refrigeration* (including air conditioning) and related technologies is probably not yet fully accounted for in the European Union's strategy towards the objective of a carbon-neutral energy system by 2050. Thus, the roadmap on policy support for heating and cooling decarbonisation just published by the European Commission on June 13, 2022, focuses mainly on heating. ⁽⁵⁾

** The term "cooling", used in the sources cited and taken up in this article, refers to the cooling of spaces and is equivalent to "air conditioning". The definitions of "cooling" and "refrigeration", endorsed by the IIR and ASHRAE, are specified [here](#)*

Sources:

- (1) https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Heating_and_cooling_degree_days_-_statistics&stable=0
- (2) <https://www.theguardian.com/environment/2015/oct/26/cold-economy-cop21-global-warming-carbon-emissions>
- (3) <https://www.iea.org/commentaries/is-cooling-the-future-of-heating>
- (4) <https://www.sciencedirect.com/science/article/abs/pii/S0301421508005168>
- (5) Policy support for heating and cooling decarbonisation Roadmap : <https://op.europa.eu/en/publication-detail/-/publication/f5118ffc-eabd-11ec-a534-01aa75ed71a1/language-en>

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

Image: IIR/IIRwebsite

See also >>>

[Heating of buildings decreasing, cooling increasing](#), European Commission, EuroStat, May 2022

[How air conditioning cools homes and warms the planet](#), SwissInfo, 7 July 2022

10. Metropolis meltdown: the urgent steps we need to take to cool our sweltering cities

All over the world, temperatures in urban areas are rocketing. What can we do? Axe air-con, whitewash roofs, unleash buried rivers – and try to be a bit more like Norwich

With temperatures set to hit 37C (98.6F) in the UK next week, and heatwaves only likely to become more frequent, it might be useful to see how other sun-scorched regions have adapted their cities to cope.

On a trip to Dubai a few years ago, I was shown a new outdoor shopping street that had apparently been carefully tuned to the desert climate. It was presented as a novel concept for this indoor shopping mall-addicted nation, designed in the manner of a pedestrian precinct familiar to those in less arid climes. A merciful breeze wafted along the pavement, and I wondered what clever environmental design allowed the street to feel so much cooler than the rest of the sweltering city.

“Outdoor air conditioning,” came the answer. Sure enough, between each shop unit, rows of jets were busy pumping processed icy air out into the 40C heat. Meanwhile, around the back of the block, generators spewed out hot exhaust air, making other streets even more insufferable for those outside the chilled private precinct.

As temperatures soar across the world, with London expected to feel like Barcelona by 2050, and Madrid set to be like Marrakech, there is a danger that outdoor AC units could soon become just as ubiquitous as the patio gas heater – the colossal emissions of both accelerating the extreme weather that they are designed to mitigate.

Air conditioning is almost uniquely power-hungry, and its use is only set to grow. The US expends as much energy on it each year as the UK uses in total, while during a recent heatwave in Beijing, half of the city’s power capacity was going on AC. As hot, developing nations become more prosperous, and prosperous nations become hotter, the International Energy Agency estimates that the energy spent on air conditioning will triple by 2050 – a growth equivalent to the current electricity demand in the US and Germany combined.

So how can we adapt our buildings, streets and public spaces to cope, without resorting to pumping out energy-hungry, mechanically chilled air and further heating our planet in the process?

The biggest cause of the urban heat island effect – which can make cities up to 10C warmer than neighbouring rural areas – is the stuff they are made of: hard, dark, dense materials like concrete, brick, tarmac and asphalt, which absorb the sun’s heat during the day, and re-radiate it at night. It sounds too simple a solution, but some argue that one of the most effective measures to cool cities down is to make their surfaces reflect light, rather than absorb it – particularly where you might not think to look: up on the roof.

Researchers at the University of Oxford found that making the rooftops of buildings a lighter, more reflective colour could reduce daytime temperatures by up to 3C during a



heatwave. That might not sound like a huge difference, but the scientists concluded that such a drop could reduce the number of heat-related deaths by up to a quarter – a massive life-saving measure, given there were over 2,500 excess deaths from heat during the 2020 heatwave.

“Cool roofs can be really simple,” said co-author of the study Dr Clare Heaviside, who is now associate professor at University College London’s Institute for Environmental Design and Engineering. “Think of Mediterranean countries, where the houses are painted white. The more reflective the rooftop, the lower the surrounding air temperature will be.” The modelling study, which focused on Birmingham and the West Midlands, found that the type of building made a difference, too. Modifying only half of the industrial and commercial buildings, with their expansive rooftops, had the same impact on lowering temperatures as adapting all of the residential buildings in the city – suggesting that real change could be easily implemented with a tweak to planning policy.

In the US, the roof-lightening crusade is already under way. Research by Nasa has shown that a white roof in New York City can be 23C cooler than a typical black asphalt roof on the hottest day of the summer. The city’s Cool Roofs campaign, which was launched in 2009, has already seen over 900,000 sq metres of roof space covered in a white reflective coating, saving almost 4,000 tonnes of CO₂ a year from cooling emissions.

Meanwhile, the road-riddled city of Los Angeles faces a different dilemma: more than 10% of the urban land area is black asphalt, which absorbs up to 95% of the sun’s energy. In response, the city has trailed painting roads with a white reflective coating – at a cost of \$40,000 a mile. Initial measurements showed the coating could reduce temperatures by up to 5C, although others have suggested that, while the road surface itself may be cooler, the reflected sunlight actually makes nearby pedestrians feel much hotter.

While the jury might be out on the benefits of white roads, most urbanists agree that planting trees is one of the best ways to cool cities down – without the danger of reflecting sunlight where it isn’t wanted. Beyond biodiversity benefits, flood mitigation and pollution-scrubbing abilities, trees’ cooling powers come from both shade and transpiration, when the water within the tree is released as vapour through its leaves. One study in Manchester found that street trees reduced surface temperatures by an average of 12C, and that concrete surfaces shaded permanently by a bank of trees were cooled by up to 20C in the summer. A recent Swiss study of almost 300 cities across Europe came to similar conclusions, but it also found that green spaces without trees had a negligible cooling effect – and in some instances treeless green spaces were actually even warmer than the surrounding urban areas, due to the lack of shade. Beware the greenwashers.

Although trickier to implement than greenery, bodies of water also have a powerful cooling effect on cities, through evaporation and by channelling air currents. A study of the River Don, which flows through Sheffield, revealed that the cooling impact of this small river extended into surrounding areas up to 30 metres away, especially in green spaces or streets that opened to the river.

In Seoul, the Cheonggyecheon River was revived in 2005, having been buried beneath an elevated highway since the 1960s. It was found that the temperatures along the waterway are up to 6C cooler than on parallel roads a few blocks away – although critics of the \$900m project argue that the location of roads within the cooled zone means that it is cars, not humans, who enjoy the benefits. Paris has also been considering plans to reinstate the

buried river Bièvre, a waterway described in 1899 as “oily and black, streaked with acids, dotted with soapy and putrid pustules”, but now seen as a potential climate saviour in a city that saw summer temperatures reach over 42C in 2019. Could London’s buried Fleet and Walbrook be next in the riverine battle against urban heating?

When it comes to the design of buildings themselves, our regulations are only just beginning to catch up with the hotter end of the climate crisis. Last year, for the first time, the building regs introduced a new section on overheating, appropriately titled Part O. Until now, most environmental design measures in England have been focused on keeping our draughty homes warm, a task made even more pressing by stratospheric winter fuel bills.

The result is that most contemporary housing is designed with scant consideration for rising temperatures. The proliferation of single aspect flats (with windows on just one side) leaves no possibility for cross-ventilation, while lower ceiling heights, large amounts of glazing and communal heating systems all add to the furnace feeling, and enhanced insulation levels mean it’s now much harder for heat to escape once a flat has heated up.

Other regulations have brought their own unintended consequences. For example, the need to ensure that communal outdoor space receives enough direct sunlight at certain times of the year has spawned many developments with apartments that are oriented east-west, and therefore prone to overheating – as the sun is lower in the sky at these directions and shines straight through the windows.

“The guidance has always been about maximising daylight and sunlight as an asset,” says Annalie Riches, architect of the Stirling prize-winning Goldsmith Street low-energy social housing in Norwich. “But it hasn’t really acknowledged the problem with having too much of it.” At Goldsmith Street, they ensured the homes were oriented north-south, and added horizontal shades above the south-facing windows, like the peak of a cap. Such features are likely to become evermore common, with external shutters, blinds and louvres preventing too much direct summer sunlight from reaching the window in the first place.

As Rachel Harris of the Architects Climate Action Network argues, the future will not be about hi-tech, mechanical solutions, but getting the basics right, learning from vernacular techniques that have been tried and tested for centuries. “If orientation, shading and air flow are done right,” she says, “we should be able to keep people comfortable, even in increasingly extreme climates – without the need to reach for the aircon switch.”

[The Guardian, 14 July 2022, By Oliver Wainwright](#)

Image: The Guardian website

11. Nuclear concern over HFC availability

Electricité de France (EDF) is concerned about the short-term availability and costs of HFCs vital to maintaining its nuclear facilities if the proposed accelerated phase-down under the F-gas regulations become law. The French multinational electric utility company also voices its concern that the proposed phase-down trajectory combined with product bans in 2025 and 2027 will be “highly problematic” for heat pumps.

EDF uses R134a in around 800 process cooling units in the company’s nuclear power plants. The units are used to maintain the “nuclear island” at a suitable temperature and prevent materials’ ageing.

In its response to the current feedback to the European Commission’s F-gas revision proposals, EDF explains that following the implementation of the Montreal Protocol, R134a was chosen on the basis of technical and safety parameters, such as flammability, toxicity to workforce and corrosiveness.

It is now concerned that the “highly ambitious” phase-down objectives and reduced production rights will impact the refrigerant’s availability and costs in the short-term.

Echoing the sentiments of other groups who have responded to the proposals, EDF also warns that the proposed bans and maximum GWP restrictions on split air conditioning and heat pump equipment from 2025 “might lead to heat pumps shortages since the whole value chain would have to reorganise at a very fast pace”.

“This can be a major issue considering the ambition set out in the Renovation Wave and RepowerEU in terms of heat pumps deployment, which acknowledges their key contribution to the decarbonisation of the building sector,” EDF says.

“Indeed, the lack of HFC stocks and alternative solutions might disrupt the market in the short-term, and the associated high level of investments would surely be reflected in sales price,” it adds.

[CoolingPost, 28 June 2022](#)

Image: CoolingPost website

Nuclear concern over HFC availability

28 JUN 2022



FRANCE: EDF is concerned about the short term availability and costs of HFC, vital to maintaining its nuclear facilities if the proposed accelerated phase-down under the F-gas regulations become law.

See also >>> [High GWP refrigerants show upward price trend](#), CoolingPost, 29 June 2022

FEATURED

Overview for the meetings of the ozone treaties in 2022

44th OEWG, Bangkok, Thailand | 11 - 16 July 2022

5th ExMOP, Bangkok, Thailand | 16 July 2022

69th IMPCOM, Montreal, Canada | 29 October 2022

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

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

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

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

A new app for mobile phones that provides localized information on ultraviolet (UV) radiation levels has been launched by the World Health Organization (WHO), the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP) and the International Labour Organization (ILO). The *SunSmart Global UV app* is available free of charge at both the [Apple App](#) and [Google Play](#) stores. It provides personalized options so that users can take actions to protect prolonged, excessive UV exposure, a major cause of skin cancer and other UV related diseases. The app allows the inclusion of national and local data streams and adaptation to multiple languages – it is currently available in Chinese, English, French, Russian, Dutch, and Spanish.

Image: UNEP, Ozone Secretariat website



Online introductory course 'International legal framework on ozone layer protection'

Designed for government representatives and national stakeholders new to the Vienna Convention and Montreal Protocol, students of environmental law, and anyone interested in learning about the ozone treaties, the [online](#)



[course](#) launched by the Ozone Secretariat aims to provide an introduction to the international legal framework on ozone layer protection.

[United Nations Environment Programme \(UNEP\), Ozone Secretariat, 14 February 2022](#)

Image: UNEP, Ozone Secretariat website

Free teaching kits on ozone layer and environmental protection

- New free online teacher toolkits and lesson plans based on the success of UNEP's Ozone Secretariat's [Reset Earth](#) animation and video game
- Targeting Tweens by adopting animation and gamification to create innovative online lessons to raise awareness on ozone layer and environmental protection
- Available online in digital and print format for universal access



Read/download >>> [Ozone Secretariat's education platform](#)

Image: UNEP, Ozone Secretariat website

The UN Environment Assessment Panels

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

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

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

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



THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

Multilateral Fund's post-COVID-19 recovery response

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

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

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

In this context, the Multilateral Fund's response involves immediate action to reinforce its role of providing financial and technical assistance to Article 5 countries to sustain the implementation of their phase-out activities under the Montreal Protocol and to contribute to economic recovery post-COVID-19. The Executive Committee has given a high priority to the continued operations of the Fund by establishing an effective intersessional approval process that has provided over US \$35 million. The funds are being used for continued support to the national ozone units in implementing phase-out activities at the country level; for continued conversion of manufacturing lines, including refrigeration and air-conditioning manufacturing lines to low-to-zero global-warming-potential alternative technologies not relying on controlled substances; and for technical assistance to technicians so that they can apply better servicing practices and sustain their livelihood despite the downturn in the economy. This funding is expected to provide economic stimulus that will allow these small enterprises to remain in operation.

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

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

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



OzonAction

[OzonAction Compliance Assistance Programme](#) produces and outreaches a wide variety of information and capacity building materials and tools that support the implementation of the Montreal Protocol programs and assist Article-5 countries in meeting the compliance targets. These include publications, technology briefs and factsheets, mobile applications,

videos, e-Learning, modelling and database programs and special educational or certification programs.

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

Images in this section are by OzonAction

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

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



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

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

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



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

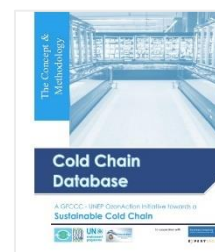
Using the Gas Card web-based tool

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

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

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

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

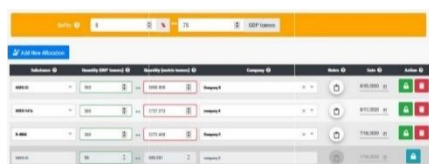


> [GFCCC-UNEP OzonAction Cold Chain Modelling Press Release](#)

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

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

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



[HCFC Quota and Licence Tracker](#) - a new desktop application to assist with HCFC licences and quotas - National Ozone Officers have the great responsibility of managing the allocation and monitoring of quotas for

substances controlled under the Montreal Protocol. This process can be complex with many importers, especially if the country imports a range of different hydrochlorofluorocarbons (HCFCs) and mixtures containing HCFCs. To address this challenge, OzonAction developed a new desktop application that helps Ozone Officers with the tasks of planning, calculating, monitoring, and managing consumption quotas and licences. It can be used on a daily basis to track and manage the current year's quota allocations for different importers, or for future planning by trying different scenarios that adjust the type of substances imported, their quantity, or the number of importers. The

HCFC Quota and Licence Tracker allows Ozone Officers to see the effect of such scenarios on the national HCFC consumption and helps ensure that the quotas stay within agreed HCFC Phase-out Management Plan (HPMP) targets. For countries that have ratified the Kigali Amendment, in the future OzonAction will extend the tracker to include hydrofluorocarbons (HFCs) once countries begin designing their quota systems for those controlled substances.

Access the:

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

GWP-ODP Calculator Application - Updated- “Quickly, efficiently

and accurately convert between values in metric tonnes, ODP tonnes and CO₂-equivalent tonnes”. Data are extremely important for the Montreal Protocol community, and the data reporting formats for both A7 and CP have changed recently, to a large degree triggered by the Kigali Amendment. HFCs, blends, CO₂-equivalent values, etc, now have to be addressed much more frequently by Ozone Officers during their daily work. Sometimes the terminology and values are complex and can be confusing, and it helps to have it all the official facts and figures in one place. Conversion formulas need to be applied to calculate CO₂-eq values from both GWP and metric tonne values. This free app from OzonAction is a practical tool for Ozone Officers to help demystify some of this process and put frequently needed information at their fingertips.



What's new in the app:

- An updated more user-friendly interface
- Multilingual interface: English, French and Spanish
- A new **Kigali Amendment mode** - in this mode the GWP values used to calculate the refrigerant blends/mixtures only include GWP contributions from components that are controlled HFCs
- Latest updated ODP and GWP values from the recent reports from the Montreal Protocol technology and scientific expert panels as well as the Intergovernmental Panel on Climate Change (IPCC) reports
- References added for sources of all values
- New refrigerant mixtures (with ASHRAE -approved refrigerant designations)

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



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



Desktop Application: GWP-ODP Calculator is also available online on the OzonAction [website](#)



Watch the new short introductory tutorial **video** on the GWP-ODP Calculator - available now on [YouTube](#)

>>> [Read/download the flyer](#)

Updated OzonAction "WhatGas?" Mobile App - The

OzonAction ‘WhatGas?’ application is an information and identification tool for refrigerants gases: ozone depleting substances (ODS), HFCs and other alternatives. It is intended to provide some stakeholders, including Montreal Protocol National Ozone Officers, customs officers, and refrigeration and air-conditioning technicians with a modern, easy-to-use tool that can be accessed via mobile devices or the OzonAction website to facilitate work in the field, when dealing with or inspecting ODS and alternatives, and as a useful reference tool.



This latest release includes the 2022 Harmonized System (HS) Codes for HFCs and blends, which facilitates the process of inspection and identification of controlled and alternative substances.

Scan the QR code to download the app (*currently available for Android devices only*). If you’ve already downloaded the app, to update visit the [Google Play Store](#)

RAC Technician Videos - Full length films! Two ‘full length’ videos for refrigeration and air-conditioning (RAC) sector servicing technicians: on 1) Techniques, Safety and Best Practice and 2) Flammable Refrigerant Safety.

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



technician training, but to supplement and provide some revision of tips and skills and to build on training already undertaken.

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.

Feel free to share this message and the flyer with:

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



You can watch these videos on the OzonAction YouTube Channel:

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



The videos are also available for download by request from UNEP OzonAction:

unep-ozonaction@un.org



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

The flyer is available from the [OzonAction website](#).

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



Update on [new refrigerants designations and safety classifications](#) -

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

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

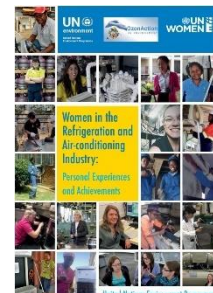


[OzonAction's iPIC platform - Updated](#) Collaboration between China and Thailand using OzonAction's informal Prior Informed Consent (iPIC) system has resulted in the prevention of a huge consignment of ozone-depleting and climate damaging hydrochlorofluoro-carbons (HCFCs). Those chemicals, which are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



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

The United Nations Environment Programme's (UNEP), OzonAction, in cooperation with UN Women, has compiled this booklet to raise awareness of the opportunities available to women and to highlight the particular experiences and examples of women working in the sector and to recognise their successes. All of the professionals presented in the booklet are pioneers. They are role models whose stories should inspire a new generation of young women to enter the field and follow in their footsteps. **Read/download the [publication](#)**

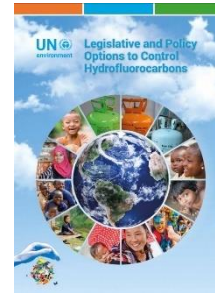


As part of IIR and UNEP OzonAction's partnership, a set of Cold Chain Technology Briefs was released over the past few years, which includes in-depth summaries about the cold chain in different key sectors. They include descriptions of technology, refrigerant options and trends and conclude with prospects and challenges. They cover the main cold chain sub-sectors, i.e., [Production & Processing](#), [Cold Storage](#), [Transport Refrigeration](#), [Commercial & Domestic](#), and [Fishing Vessels](#). **Download the Cold Chain Technology brief in [English](#) | [French](#) | [Russian](#) | [Spanish](#)**

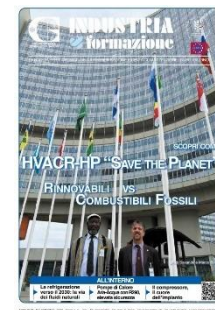


PUBLICATIONS

Legislative and Policy Options to Control Hydrofluorocarbons In order to follow and facilitate the HFC phase-down schedules contained in the Kigali Amendment, the Parties, including both developed and developing countries, will have to implement certain measures. This booklet contains a recommended set of legislative and policy options which the developing (Article 5) countries may wish to consider for implementation. It is intended to be a guide/tool for countries. [Read/download](#)



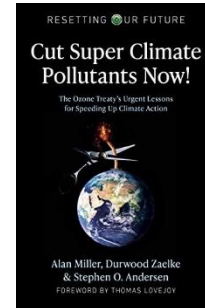
Latest issue of Centro Studi Galileo magazine, **Industria & Formazione**, n. [5-2022](#) (in Italian).



Green Cooling in public procurement How to advance the procurement of climate-friendly and energy-efficient cooling equipment in the public sector? Air conditioning in public buildings is often responsible for around 50% of total electricity consumption. Switching to climate-friendly cooling technologies ("Green Cooling") can reduce costs and energy consumption and improve the carbon footprint of public buildings. This study takes a closer look at the benefits of Green Cooling in the public sector and discusses current barriers and possible solutions. The information presented provides a solid basis to revise current procurement criteria for sustainable cooling systems in public buildings. **Read/Download the [study](#)**



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



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

E-Book on Process Safety Management (PSM) Training for Ammonia Refrigeration - a new e-book about the critical elements of a process safety management (PSM) training program for facilities operating an ammonia refrigeration system.

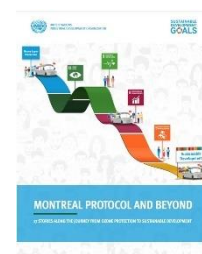
The e-book, titled "[7 Keys to a Compliant PSM Training Program for Ammonia Refrigeration](#)," outlines important questions a facility's program should address and questions that trained plant personnel should be able to answer. Topics covered include:

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

Request free Download [here](#)



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



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



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

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

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



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- Prix de la meilleure innovation en Froid Commercial
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- Prix de l'installation innovante
- Prix de la meilleure innovation en Climatisation
- Prix de la meilleure innovation en Cuisine professionnelle
- Prix de la meilleure initiative en développement durable

Date limite de dépôt de candidature: **29 juillet 2022**



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



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

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

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

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

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

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

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



Click [here](#) for recent OzoNews Issues

[Request a PDF](#) of the current issue

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The views expressed in articles written by external authors are solely the viewpoints of those authors and do not represent the policy or viewpoint of UNEP. While UNEP strives to avoid inclusion of misleading or inaccurate information, it is ultimately the responsibility of the reader to evaluate the accuracy of any news article in OzoNews. The citing of commercial technologies, products or services does not constitute endorsement of those items by UNEP.

If you have questions or comments regarding any news item, please contact directly the source indicated at the bottom of each article.

Prepared by: Samira Korban-de Gobert
Reviewed by: James S. Curlin

If you wish to submit articles, invite new subscribers, please contact:
Samira Korban-de Gobert, samira.degobert@un.org



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