



OzoNews

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

Volume XVIII | 30 September 2018

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Global

1. 49 countries signed the Kigali Amendment to date

The list of nations to ratify the Kigali Amendment to the Montreal Protocol has grown to 49. The latest countries who recently ratified are: Hungary, Mexico, Niger, Senegal, the Tonga, and Uruguay.



The Kigali Amendment to the Montreal Protocol will enter into force on 1 January 2019 after the threshold for the agreement to enter into force was met on 17 November 2017, when it was ratified by 20 parties.

2. Find out about World Ozone Day Country Activities

Ozone Day activities on 16 September - OzonAction is keen on highlighting your country's activities on the occasion of the 2018 World Ozone Day celebrations. Please send us the related information/photos to [email](#).

[Find out about World Ozone Day country activities.](#)

[Take this opportunity to share your innovative and inspiring events with the world!](#)



3. Coordinating finance for sustainable refrigeration and air conditioning

One of the challenges to achieve successful low-carbon transformation in line with the climate goals set out in the Paris Agreement is the provision and effective deployment of finance to enable widespread uptake of low-carbon technologies. The refrigeration and air conditioning (RAC) sector faces a particular challenge in the implementation of effective finance strategies given its cross-sectoral nature – extending from manufacturing of gases and appliances to energy end-use in buildings – and hence the different institutional responsibilities as well as policy and compliance regimes that affect the sector.

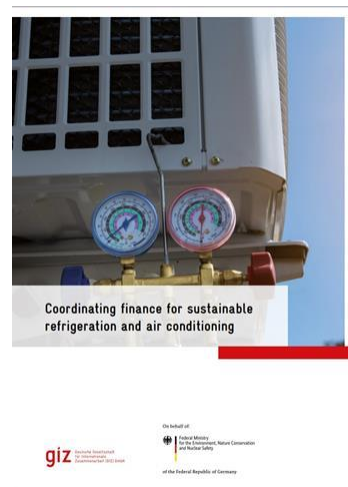
Against this backdrop, the paper focusses on questions related to the financing of the low-carbon transition of the RAC sector. The objective of the paper is to provide an overview of the current (climate) finance situation in the sector including a discussion of the different available sources of finance for ambitious reductions of direct and indirect emissions, and roles of different actors in this

regard. This is meant as a starting point for the development of further guidance and recommendations on the elaboration of integrated finance strategies to enable countries, in particular developing countries, to achieve the low-carbon transition.

The paper starts with a brief overview of the RAC sector and its role in the climate context. It continues with a summary of the status quo of different finance options in the sector, differentiating between direct (HFC) and indirect (CO₂) emission reductions. Subsequently, typical barriers and the role of different actors to provide finance and support are outlined. The ensuing part of the paper takes a more detailed look at the availability of finance for different mitigation activities, with a view to identifying access options to finance sources within the scope of a comprehensive and coherent RAC sector strategy.

See also >>> Key pieces for climate-friendly and energy-efficient cooling - [Poster](#)

[Deutsche Gesellschaft für Internationale Zusammenarbeit \(GIZ\) GmbH, September 2018](#)



4. Recent Southern Ocean warming and freshening driven by greenhouse gas emissions and ozone depletion

Abstract

The Southern Ocean has, on average, warmed and freshened over the past several decades. As a primary global sink for anthropogenic heat and carbon, to understand changes in the Southern Ocean is directly relevant to predicting the future evolution of the global climate system.

However, the drivers of these changes are poorly understood, owing to sparse observational sampling, large amplitude internal variability, modelling uncertainties and the competing influence of multiple forcing agents.

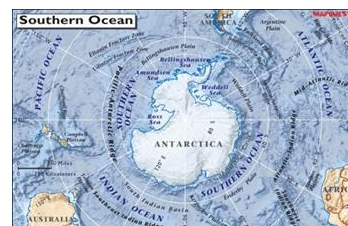
Here we construct an observational synthesis to quantify the temperature and salinity changes over the Southern Ocean and combine this with an ensemble of co-sampled climate model simulations.

Using a detection and attribution analysis, we show that the observed changes are inconsistent with the internal variability or the response to natural forcing alone.

Rather, the observed changes are primarily attributable to human-induced greenhouse gas increases, with a secondary role for stratospheric ozone depletion. Physically, the simulated changes are primarily driven by surface fluxes of heat and freshwater.

The consistency between the observed changes and our simulations provides increased confidence in the ability of climate models to simulate large-scale thermohaline change in the Southern Ocean.

[Nature Geoscience, 24 September 2018, By: Neil C. Swart, Sarah T. Gille, John C. Fyfe & Nathan P. Gillett](#)



Africa

5. A photovoltaic system powers the refrigeration systems of a fishing village in Morocco

An off-grid photovoltaic hybrid system was recently delivered in Aftissat, a fishing village in the province of Boujdour. With a capacity of 126 kWp, the system has an annual production of 233,000 kWh. The village consumes 600 kWh per day for refrigeration, cold storage units, shops and domestic infrastructure. The system therefore covers the daily energy needs of the village, including cold storage and refrigeration.



Thanks to this system, diesel costs were reduced by 95 % and CO₂ emissions by 99%. The diesel generators are only needed as a back-up in times of low irradiation.

Photovoltaic hybrid solutions offer the advantage of reducing diesel consumption. Furthermore, wear and tear as well as maintenance costs are considerably lowered. As a result, plant operators are largely independent from fossil fuels and soaring diesel prices. CO₂ emissions are also reduced.

The project was commissioned by Morocco's National Fishery Office in order to contribute to Morocco's national green energy plan. This includes growing development of wind, solar and hydro energy, and the reduction of fossil fuel subsidies. It is scheduled to increase the share of renewable energies within the energy mix to 42% by 2020 and to 52% by 2030. The fishing industry in Morocco is a leading foreign exchange earner, accounting for 16 % of total exports. The National Fishery Office strongly intends to boost the modernisation of the domestic fishery sector.

Asia Pacific



6. Helping National Ozone Officers in the Pacific Islands successfully navigate through the Montreal Protocol

A key factor contributing to the remarkable success of the Montreal Protocol on Substances that Deplete the Ozone Layer to date is its country-driven nature. In the 147 developing countries that have joined this treaty, the implementation work is coordinated at the national level by dedicated “National Ozone Units” in the government, which are in turn led by “Ozone Officers.” How well those officers and their teams perform – developing projects, managing national strategies, reporting data, developing and enforcing policies, working with national and international institutions – directly or indirectly affects the status of their countries' compliance with obligations under the treaty.

Because National Ozone Units exist in all developing countries, and there is a normal process of personnel turnover due to career development, there is a regular need to transfer knowledge, teach skills, and share experiences with the new arrivals. This is where UN Environment’s OzonAction steps in.

As the Implementing Agency of the Protocol’s Multilateral Fund with the major responsibility for capacity building, UN Environment accords the highest priority to strengthening and supporting Ozone Officers. As part of OzonAction’s 2018 work plan, it brought 14 enthusiastic participants from the Pacific Island Countries – Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Republic of the Marshall Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, and Vanuatu – to Bangkok to participate in its newly-minted National Ozone Officer training course from 25 – 26 September 2018. This training event was the second of its kind, following the first successful one held in the Caribbean region in May 2018.

The training provides the new Ozone Officers and Assistant Ozone Officers with essential information about the Montreal Protocol, details about the role, responsibilities and expectations of Ozone Officers and their teams, the activities that a National Ozone Unit needs to undertake, and key skills required for its daily operations to efficiently support the implementation of the Montreal Protocol in their countries. The training programme was jointly delivered by the OzonAction team from Paris and the Asia and Pacific Office. Senior government officers from the region who have been working as National Ozone Officers for over 10 years also delivered selected training sessions to share their first-hand experiences with Montreal Protocol implementation.

The new programme consists of 12 modules ranging from basic information about ozone depletion science; the Montreal Protocol and its institutional regime; the roles of National Ozone Officers; national legal frameworks and enforcement; data collections, monitoring and reporting; development and implementation of Multilateral Fund projects; raising awareness and working with stakeholders and alternative technologies and technical options. The training was conducted informally to allow participants to be at ease during interactions thus allow a better uptake of the technically-rich curriculum. Each module comprised a presentation by a resource person followed by questions and answers. Thereafter followed an inclusive interactive activity session to allow participants to get in-depth understanding of the topics and practice their newly-acquired skills.

[UN Environment, OzonAction, September 2018](#)

7. Malaysia strives to reduce HCFC consumption to protect ozone layer



PETALING JAYA - Malaysia is intensifying efforts to implement the Stage Two of the Hydrochlorofluorocarbons (HCFC) Phase Out Management Plan (HPMP II) to fulfill its commitment to the Montreal Protocol.

Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC) secretary-general Datuk Seri Dr Mohd Azhar Yahaya said the implementation of the HPMP II was important for Malaysia to achieve the target of 35 per cent reduction of the baseline consumption of HCFC by 2020.

“The latest development at the Montreal Protocol is to reduce the consumption of HCFC. This is being done via the Kigali Amendment to the Montreal Protocol, which will take effect on Jan 1 next year.

“Malaysia is in the midst of ratifying the amendment which is expected to be implemented before end of 2018,” he said at the launch of the International Ozone Day 2018 celebration here today.

Mohd Azhar said through the HPMP I implemented from 2012 to 2016, Malaysia had succeeded in reducing consumption of HCFC by 19 per cent compared to the original target of 10 per cent.

As such, he called for cooperation from industry players in the country to phase out HCFC consumption in a bid to protect the ozone layer.

[The Edge Markets, 25 September 2018](#)

8. Policymakers voice support for natural refrigerants at ATMO Ibérica

Policymakers at this week's ATMOsphere Ibérica conference in Madrid presented new initiatives to foster the HFC phasedown in Spain and Portugal.

Guillermo Martínez from the Spanish Environment Ministry ('Oficina Española de Cambio Climático') presented one of these: the 'Pima Frio' plan establishing a €1.5m subsidy in Spain for installing refrigeration systems with zero or low-GWP refrigerants.

Martínez also provided an update on other measures supported by the Spanish government to accelerate the HFC phasedown and support the uptake of natural refrigerant-based equipment, namely the HFC tax and the 'Proyecto Clima' initiative.

"This September of this year, we set a tax rate of €15 per tonne of CO₂ equivalent," Martínez told the audience at the second annual ATMOsphere Ibérica, organised by shecco, publisher of this website, on 18 September.

"The tax rate is determined based on the global warming potential (GWP) of the refrigerant. A reduced tax rate applies for recycled and regenerated HFCs (50% less compared to the original tax fee)," Martínez said.

Proyecto Clima, meanwhile, is an initiative administered by the Spanish Ministry of Agriculture, Environment and Food to fund projects that replace high-GWP refrigerants with low-GWP or natural refrigerants.

Martínez said Proyecto Clima cannot be used in conjunction with the Pima Frio subsidy, meaning that a company working with natural refrigerants cannot benefit from both programmes at the same time.

European Commission seeks 'smooth transition' to HFC-free tech

The ATMOsphere Ibérica policy session welcomed representatives from the European Commission, the Spanish Environment Ministry, environmental NGO ECODES and the United Nations Industrial Development Programme (UNIDO), to discuss the challenges ahead for a smooth HFC phasedown in the Iberian peninsula (Spain and Portugal).

"The priority for the European Commission is to create a smooth transition to HFC-free technologies, with close monitoring of the phase-down, the update of safety standards, and the fight against the illegal trade of HFCs in Europe," said Arno Kaschl from the European Commission.

"We are currently working on a system to automate the customs process ('Single Window')," Kaschl added, acknowledging illegal trade in HFCs is now a growing concern in Europe.

The 'Single Window' is an automated electronic system for commercial trade processing that would be used by customs to better monitor the market for refrigerant gases in the European Union.

Raising awareness of natural refrigerants

Monica Vidal of Spanish NGO ECODES (Fundación Ecología y Desarrollo) pointed out during her presentation that "the old safety standards restrict the adoption of alternative and sustainable technologies, such as natural refrigerants. Governments have to work to eliminate the barriers that exist for the adoption of natural refrigerants – by introducing compulsory training on natural refrigerants, for example".

Pedro Sallent from the United Nations Industrial Development Organisation (UNIDO) closed the policy session, stressing the "need for a global change". "Natural refrigerants are the greenest gases, with high energy efficiency and a growing number of applications. They are the best solution to achieve the United Nations Sustainable Development Goals for the cooling industry," he said.

[r744, 20 September 2018, By: Marie Battesti](#)



9. EHPA webinar: Decarbonise the residential sector

The European Heat Pump Association (EHPA) first of a series of online webinars, dedicated to presenting the best practices from the Heat Pump City of the Year award (HPCY) and EU projects that promote innovative solutions for the decarbonisation of the heating and cooling sector in Europe. [...]



The first webinar will showcase three winning projects that participated over the years in a category of the HPCY awards and developed smart solutions for apartments, social houses and public buildings. The three projects use heat pumps in combination with other renewable technologies, to reduce energy consumption and CO₂ emissions and increase thermal comfort.

During the webinar, you will also have a chance to get to know the Heat4Cool project, an EU H2020 funded project which is implementing a combination of six technologies in four different European climates, in three residential buildings (Poland, Spain, Bulgaria) and a district heating application in Budapest, Hungary.

The series of webinars aim to raise awareness on existing solutions which if replicated, could result in fully decarbonizing the heating and cooling sector in Europe.

Agenda: (Download [here](#))

Date: Tuesday, 2 October 2018

[The European Heat Pump Association \(EHPA\), September 2018](#)

Latin America and Caribbean

10. México entrega a la ONU ratificación de la enmienda de Kigali al Protocolo de Montreal

Con esta acción, México reafirma su compromiso con la protección de la capa de ozono y el clima global.

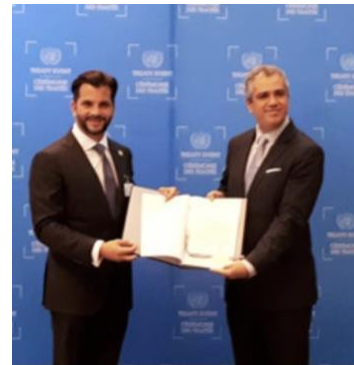
En el marco de la 73 Asamblea General de las Naciones Unidas, México presentó la ratificación de la Enmienda de Kigali al Protocolo de Montreal, que tiene como objetivo controlar y reducir el consumo y producción de hidrofluorocarbonos (HFC), potentes gases de efecto invernadero.

El testimonio de la ratificación lo entregó el Secretario de Medio Ambiente y Recursos Naturales, Rafael Pacchiano Alamán, con lo que nuestro país se suma a los beneficios ambientales que tendrá la instrumentación de esta Enmienda, entre los que destaca la reducción del consumo de sustancias de alto potencial de calentamiento global y la consecuente emisión de las mismas, así como evitar el incremento de 0.5 °C en la temperatura global del planeta en el año 2100.

La Enmienda al Protocolo de Montreal se aprobó el 15 de octubre de 2016 en Kigali, Ruanda, y fue aprobada por la Cámara de Senadores del H. Congreso de la Unión el 26 de abril de 2018, mediante decreto publicado en el Diario Oficial de la Federación el pasado 22 de junio.

De esta manera, México reafirma su compromiso con los sectores industrial, de servicios, académico y con todos los usuarios de sistemas de refrigeración y aire acondicionado para impulsar tecnologías más eficientes y libres de HFC.

Actualmente México consume poco más de 30 mil toneladas de HFC, principalmente en sistemas de refrigeración y aire acondicionado; esto significa aproximadamente 49.6 megatoneladas de CO₂ equivalente. De ahí la importancia de la enmienda de Kigali para la reducción del consumo y producción de dichas sustancias.



Finalmente, el secretario Pacchiano Alamán agradeció el apoyo de la ONU y de todas sus agencias, y felicitó a la comunidad internacional por aprovechar la gran oportunidad que nos brinda la Enmienda de Kigali al Protocolo de Montreal, para su entrada en vigor en 2019.

[Secretaría de Medio Ambiente y Recursos Naturales, 25 de septiembre de 2018](#)

North America

11. US EPA revisions to the refrigerant management program's extension to substitutes

The US EPA issued a proposed rule Protection of Stratospheric Ozone: Revisions to the Refrigerant Management Program's Extension to Substitutes. This action proposes to revisit the Agency's recent approach to regulating appliances containing substitute refrigerants such as hydrofluorocarbons (HFCs) by proposing to rescind the November 18, 2016 extension of the leak repair provisions to appliances using substitute refrigerants.



This proposal also requests public comment on rescinding other provisions that were extended to substitute refrigerants. This proposal would not affect the requirements for ozone-depleting refrigerants. If finalized as proposed, this action would rescind the leak repair and maintenance requirements at 40 CFR 82.157 for substitute refrigerants. Therefore, appliances with 50 or more pounds of substitute refrigerants would not be subject to the following requirements:

- conduct leak rate calculations when refrigerant is added to an appliance,
- repair an appliance that leaks above a threshold leak rate,
- conduct verification tests on repairs,
- conduct periodic leak inspections on appliances that exceed the threshold leak rate,
- report to EPA on chronically leaking appliances,
- retrofit or retire appliances that are not repaired, and
- maintain related records.

EPA is also requesting comment on rescinding other provisions that were extended to substitute refrigerants, including the following:

- anyone purchasing refrigerant for use in an appliance or handling refrigerants (e.g., air-conditioning and refrigeration service contractors and technicians) must be a Section 608-certified technician,
- anyone removing refrigerant from a refrigeration or air-conditioning appliance must evacuate refrigerant to certain level using certified refrigerant recovery equipment before servicing or disposing of the appliance,
- the final disposer (e.g., scrap recycler, landfill) of small appliances, like refrigerators and window air conditioners, must ensure and document that refrigerant is recovered before final disposal, and
- all used refrigerant must be reclaimed to industry purity standards before it can be sold to another appliance owner.

Key Documents

[Advance copy of the 2018 Proposed Rule as signed](#)

[Letter indicating plans to revisit some aspects of the 2016 Final Rule](#)

The advance copy of the proposed rule will be updated once the proposed rule is published in the Federal Register. This proposed rule will have a 45-day public comment period. To view the public docket in the Federal Register, visit www.regulations.gov and search for docket number EPA-HQ-OAR-2017-0629. Once the proposed rule is published in the Federal Register, EPA will provide a link to the docket, where interested stakeholders can submit comments on the proposed rule.

Additionally, EPA will be hosting a public hearing on this proposed rule 15 days after its publication in the Federal Register at EPA Headquarters in Washington DC. [...]

[US Environmental Protection Agency, 18 September 2018](#)

12. US EPA GreenChill Webinar: GreenChill Store Certification Program

Description: Tom Land (US EPA), Christine Gajewski (ICF), and Ashley Bryan (Publix), will present on GreenChill's Store Certification Program. The webinar will provide an overview of the program, how to apply for store certifications, and trend data from the past 10 years, as well as Publix's experiences getting stores certified.



Date: Tuesday, October 16, 2018

Time: 2:00 pm to 3:00pm (Eastern time)

To join the webinar:

1. Visit the webinar access page: GreenChill Store Certification Program
2. Select "Enter as a Guest". It is important that you select the option to enter as a guest.
3. Enter your name.
4. Click "Enter Room".
5. Click "OK".

For audio:

1. Call the toll free call-in number: 1-866-299-3188 (706-758-1822 from outside the U.S.)
2. Use Conference Code: 202 343 9185#

[US EPA GreenChill, Webinar](#)

West Asia

13. Oman launch the third session of the initiative: "Ozone umbrella protects the future of our children"

دشنت السلطنة - ممثلة في وزارة البيئة والشؤون المناخية - النسخة الثالثة من مبادرة "مظلة الأوزون تحمي مستقبل أبنائنا"؛ وذلك على هامش الاحتفال باليوم العالمي لحماية طبقة الأوزون، ... وذلك تحت رعاية سعادة نجيب بن علي الرواس وكيل وزارة البيئة والشؤون المناخية، وبحضور المهندس خالد الكلالتي مسؤول السياسات والإنفاذ ببرنامج الأمم المتحدة للبيئة المكتب الإقليمي لغرب آسيا، وخبراء من برنامج الأمم المتحدة للبيئة، وعدد من مسؤولي وموظفي الوزارة ...



أوضح مدير عام الشؤون المناخية أنه من أجل ضمان تحقيق متطلبات خفض المواد المستنفدة لطبقة الأوزون، فقد قامت السلطنة - ممثلة بوزارة البيئة والشؤون المناخية - بتنفيذ عدة برامج وإجراءات في هذا الشأن؛ منها التحكم في استيراد المواد المستنفدة لطبقة الأوزون، والعمل بنظام اصدار تراخيص لحماية طبقة الأوزون، وكذلك تنفيذ عدد من المشاريع والدراسات بالتعاون مع بعض المنظمات البيئية الدولية. وأضاف أنه سيتم تكريم الطلاب الفائزين في الدورة الثانية الماضية لهذه المبادرة التي حققت نجاحا وتعاوننا متميزا بين الوزارة ووزارة التربية والتعليم والطلاب في محافظات السلطنة، إضافة لتدشين الدورة الثالثة الجديدة لهذه المبادرة، والتي ستتضمن قسمين؛ هما: كتابة قصة قصيرة عن بروتوكول مونتريال لحماية طبقة الأوزون، واختيار أفضل مؤسسة صديقة للأوزون وفقا للشروط والمعايير المحددة لأقسام هذه المبادرة.

وقال المهندس خالد الكلالى مسؤول السياسات والإنفاذ ببرنامج الأمم المتحدة للبيئة المكتب الإقليمى لغرب آسيا: إن بروتوكول مونتريال يعد من أنجح المعاهدات البيئية في التاريخ، فهو يضع ضوابط ملزمة تحكم إنتاج واستهلاك المواد المستنفدة للأوزون، ويحظى بتصديق عالمي من 197 طرفاً ...

[AIRoya, September 2018](#)

Featured



OZONE SECRETARIAT

"Keep Cool and Carry On", Theme for World Ozone Day 2018

The theme is accompanied by the tagline: **The Montreal Protocol**

The theme for this year's World Ozone Day is a motivational rallying call urging all of us to carry on with the exemplary work of protecting the ozone layer and the climate under the Montreal Protocol.

The theme has two connotations – that our work of protecting the ozone layer also protects climate and that the Montreal Protocol is a “cool” treaty, as exemplified by its outstanding success.

Ozone Secretariat is inviting people to join in keeping our planet cool and celebrating the Montreal Protocol's success in protecting the ozone layer and its contribution to combating climate warming by phasing out nearly 100% of controlled ozone-depleting substances that are also potent global-warming gases.

The Montreal Protocol is poised to contribute even more to the fight against global warming through the Kigali Amendment, which will enter into force on 1 January 2019.

The theme and tagline of this year's World Ozone Day in all the six official UN languages are posted on our [website](#) for wider dissemination.

To support your World Ozone Day communication activities, the Secretariat has developed two posters in all the six official UN languages. Please download them from our [website](#) for dissemination in your commemorative activities.

As in previous years, the United Nations Secretary-General's message for World Ozone Day and other materials will be shared prior to the day for further dissemination.

UN Environment, [Ozone Secretariat](#), May 2018



- [40th Meeting of the Open-ended Working Group of the Parties to the Montreal Protocol](#), 11-14 July 2018, Vienna, Austria

The documents for the forthcoming 40th meeting of the Open-ended Working Group of the Parties to the Montreal Protocol (11 to 14 July 2018, Vienna), and the associated workshop on energy efficiency opportunities while phasing-down hydrofluorocarbons (9 and 10 July 2018) are available on the meeting portal and mobile app.

Read/download OEWG40 [Summary](#)
[OEWG-40 Daily coverage by IISD](#)

- Click [here](#) for Montreal Protocol upcoming Meetings Dates and Venues

[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.



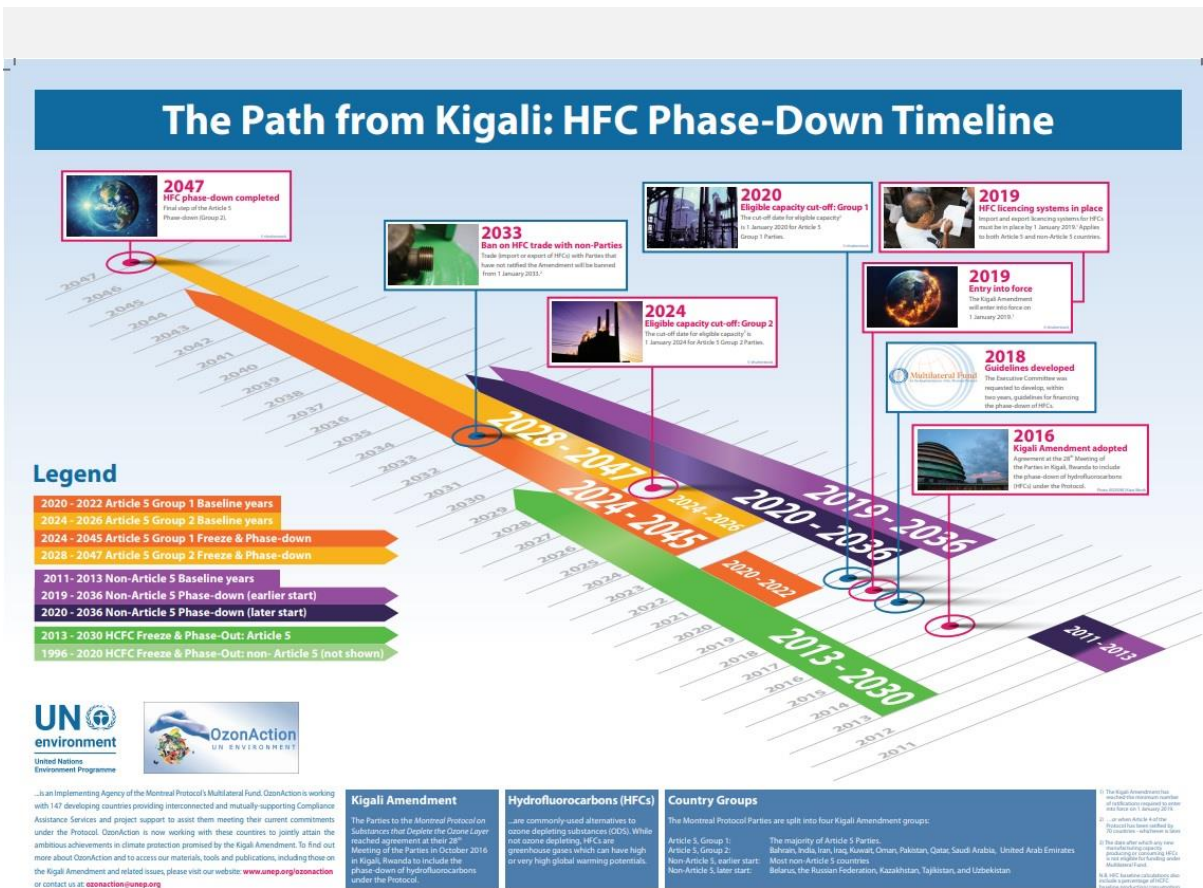
THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

- [Adjusted Prorated 2018-2020 business plan of the Multilateral Fund \(16 August 2018\)](#)
- [81st meeting of the Executive Committee](#), Montreal, Canada, 18 to 22 June 2018
- [Reports of projects demonstrating alternatives to HCFC technologies \(updated 81st meeting\)](#)
- [2018 Executive Committee Primer](#)

[Learn more](#)



OZONACTION



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

RAC Videos

Download on the **App Store** | **GET IT ON Google Play**

New videos available on the OzonAction RAC video application

A series of new videos has just been released on the Refrigeration and Air-conditioning Technician Video Series application, with a focus on working with flammable refrigerants ...

50,000 downloads and counting!

To install, search for “RAC Video” in the Google Playstore or Apple IOS store, or scan the QR code.



GWP-ODP Calculator Smartphone Application

The application allow you to easily convert ODP, CO₂-eq and metric quantities of refrigerants and other chemicals.

- Helps in understanding and reporting under the Montreal Protocol (and future commitments under the Kigali Amendment)
- The calculator will automatically perform the conversion between metric tonnes, ODP tonnes and/or CO₂-equivalent tonnes (or kg) and display the corresponding converted values
- The app includes both single component substances and refrigerant blends
- The components of a mixture and their relative proportions (metric, ODP,

CO₂-eq) are also displayed.

Available for [free](#) from the [Apple IOS store](#) and [Google PlayStore](#). Search for “GWP ODP CALC” in the Playstore to install!

Download it Now!



OzonAction Smartphone Application WhatGas? Quickly search for the information you need

- Chemical name
- Chemical formula
- Chemical type
- ASHRAE designation
- Trade names
- HS code
- CAS number
- UN number
- Montreal Protocol Annex and Control measures
- Ozone depleting potential (ODP)
- Global warming potential (GWP)
- Blend components
- Toxicity and flammability class
- Main uses

OzonAction Smartphone Application WhatGas?

Available for [free](#) in the [Google Play](#) and [Apple IOS Store](#)

Scan the QR code or search for “UNEP”, “OzonAction” or “WhatGas?”



[The Kigali Amendment to the Montreal Protocol - Opportunities and Next Steps](#) - OzonAction Video

The Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer reached agreement at their 28th Meeting of the Parties on 15 October 2016 in Kigali, Rwanda to phase down hydrofluorocarbons (HFCs). The UN Environment, OzonAction developed a video to find out from renowned international scientific, health, technical, financial and national experts about background and significance of this Kigali amendment.

The amendment presents many opportunities: improving the environment, refrigeration and air-conditioning systems and especially energy efficiency. It also presents new challenges. It is absolutely critical now for industry, governmental bodies and civil society to work together to adopt greener technologies in each country of the world and fight global warming.

OzonAction Factsheets



NEW >>> UN Environment-ASHRAE Factsheet [Update on New Refrigerants Designations and Safety Classifications](#)

OzonAction Series of [19 Fact Sheets](#) related to the Kigali Amendment.

[HS codes for HCFCs and certain other Ozone Depleting Substances ODS](#) (post Kigali update).

[The Kigali Amendment to the Montreal Protocol: HFC Phase-down](#) - The phase-down of HFCs under the Montreal Protocol on Substances that Deplete the Ozone Layer has been under negotiation by the Parties since 2009 and the successful agreement on the Kigali Amendment at the 28th Meeting of the Parties on 15 October 2016 in Kigali, Rwanda to phase-down hydrofluoro-carbons (HFCs) continues the historic legacy of the Montreal Protocol. This factsheet summarises and highlights the main elements of the Amendment of particular interest to countries operating under Article 5 of the Protocol (Article 5 Parties).

[Refrigerant Blends: Calculating Global Warming Potentials](#) (post-Kigali update).

[Global Warming Potential \(GWP\) of Refrigerants: Why are Particular Values Used?](#) (post-Kigali update).

[Tools Commonly used by Refrigeration and Air-Conditioning Technicians.](#)



OzonAction Multimedia Video Application: Refrigeration and Air-conditioning Technician Video Series - 50,000 download 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)



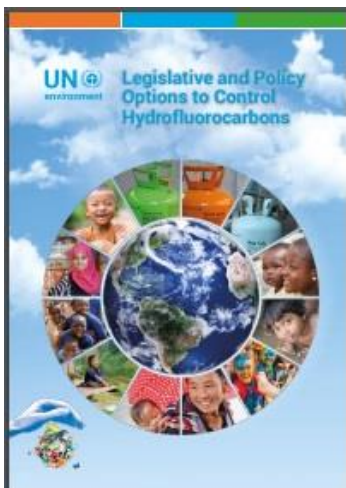
OzonApp eDocs+ launched in Android Play Store and Apple Store.

This new application launched by OzonAction on February 12, includes publications, videos, fact sheets and other awareness materials to help National Ozone Units (NOUs) and other stakeholders to build their capacity to implement the Montreal Protocol in a sustainable manner and at the same time to derive climate benefits.

OzonApp eDocs+ 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.

Events

2018

- [FREE Natural Refrigerant Workshop - Mapping the Future of Refrigerants](#). Join the NASRC and Efficiency Vermont for a FREE workshop that will provide an in-depth overview of natural refrigerant options and how the industry's "mega-trends" will influence those options in new and existing stores.

3 October 2018, 9AM - 5PM / Burlington, Vermont. Register [here](#)

- [Healthcare ColDays](#), 15 November 2018, Lyon, France,

2019

[25th IIR International Congress of Refrigeration](#) - From August 24-30, 2019, Montreal (Canada), birthplace of the 1987 Montreal Protocol, will host the 25th IIR International Congress of Refrigeration – ICR 2019.

The international meeting will provide, among others, the ideal platform to take stock of the historic Kigali Amendment to the Montreal Protocol, which will enter into force in January 2019, bringing about a global phase-down of hydrofluorocarbons (HFCs).

Covering all fields of refrigeration, ICR 2019 is expected to surpass the success of previous congresses, and will be a unique opportunity for researchers and engineers from all over the world to meet, exchange and publish the results of their research. With nearly 1,000 abstracts received, the 25th event in the series is set to welcome its largest audience to date.

The congress will be organised under the theme "Refrigeration for Human Health and Future Prosperity" and will focus on the current global issues at the centre of international concern, including food security, health, energy saving and energy efficiency, the reduction of global warming and the protection of the ozone layer.

Click [here](#) for more information / [International Institute of Refrigeration](#)

Reading



[Twenty Questions and Answers About the Ozone Layer](#), presents complex science in a straightforward manner. It complements the [2014 Scientific Assessment Report of Ozone Depletion](#) by WMO and the U.N. Environment Programme.

Lead Author:
Michaela I. Hegglin
Coauthors:

David W. Fahey, Mack McFarland, Stephen A. Montzka, Eric R. Nash



[Primer on Hydrofluorocarbons \(HFCs\)](#) - IGSD -11 January 2018

Summary:

Fast action under the Montreal Protocol can limit growth of hydrofluorocarbons (HFCs), prevent 100 to 200 billion tonnes of CO₂-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](#)

Letter to the Editor
Refrigerants: There is still no vision for sustainable solutions

Risto Ciconkov

Refrigerants: There is still no vision for sustainable solutions

by Risto Ciconkov

Letter to the Editor, International Journal of Refrigeration

[Abstract and highlights](#)

Optimization, monitoring, and maintenance of cooling technology

KIGALI
GLOBAL EFFICIENCY PROGRAM


This Knowledge Brief from the Kigali Cooling Efficiency Program, outlines the need for maintaining and servicing of cooling technology. It estimates that better optimization, monitoring, and maintenance of cooling equipment the potential to save 30Gt of CO₂ emissions by 2050.

THE NEED FOR COOLING EFFICIENCY
 Cooling is essential to health, prosperity, and the environment, underpinning many of the Sustainable Development Goals. Yet currently most cooling is energy intensive and highly polluting. Demand for cooling is expected to rise as air urban areas to not only cool pollution from existing cooling but to ensure future cooling needs are met sustainably.

COOLING ACCOUNTS FOR ~ 7% GHG EMISSIONS
 Use of cooling technologies causes substantial global GHG emissions of between 3.8¹ and 4.7² GtCO₂e as a 10% global emissions. The International Institute of Refrigeration has estimated that cooling consumes 1.2% of global electricity at 3,300 TWh a a based on 2011 consumption³. Addressing emissions risk requires the most efficient technologies be used. Replacing equipment at present is a green solution. Risk and 2050 air conditioning systems gain access to energy and new technologies. It is estimated that improving the efficiency of cooling equipment between now and 2050 can avoid the emission of approximately 30GtCO₂e.

OPTIMIZATION, MONITORING, & MAINTENANCE CAN REDUCE TOTAL COOLING GHG EMISSIONS BY 15%
 Regular optimization, monitoring, and maintenance of cooling equipment results in increased energy use, lower cooling performance, and shorter equipment life. Effective optimization,

monitoring, and maintenance of cooling equipment could deliver additional electricity savings of up to 30%⁴ (2018). Particularly Equipment has not been mentioned for a long time, leading to increasing energy use in 2012 CO₂e by 1.1.



The global use of room air conditioning is expected to rise 300% by 2050 to 2.8 billion units by 2050. (Clean Energy Ministerial 2018)

CARBON TRUST
The Carbon Trust is a not-for-profit organization that provides free energy efficiency advice to businesses.

“[Optimization, monitoring, and maintenance of cooling technology](#)” outlines the need for maintaining and servicing of cooling technology. It estimates that better optimization, monitoring, and maintenance of cooling equipment the potential to save 30Gt of CO₂ emissions by 2050.

Cooling as a Service (CaaS)

KIGALI
GLOBAL EFFICIENCY PROGRAM

This brief presents a new approach to cooling – Cooling as a Service. This approach can benefit companies, governments and society at large and is based on the servitization concept which is rapidly penetrating other marketplaces.

WHY CaaS?
 The standard business model of delivering cooling technology involves the manufacturer, sale, use, and disposal of equipment. Higher production volume generally support lower sales and more profit. As a result, manufacturers can lack a strong incentive to research focus on increasing the energy and resource use of cooling products. Alternative business models are possible – and can generate much more energy and resource efficient technologies.

CaaS is a novel service model and customer paying for the cooling they require, rather than the physical product or infrastructure that delivers the cooling. Elements of the CaaS model include direct cooling where customers do not own the cooling infrastructure and pay per service (PPS) model, where a technology provider installs and maintains the cooling equipment, and recovers costs through periodic payments made for the customer. These payments are fixed cost per unit for the cooling service delivered the normal, stable per tonne of refrigeration, or cubic metres of cooled air, and are based on actual usage. The payments are not dependent on the cooling, as with an EPC model, but agreed in advance as a function of actual usage. This model is easier and more transparent for the client, as a flexible service, customers may also view some EPC models as a form of CaaS as they can involve a series of on-going service payments and avoid the upfront capital costs of cooling equipment.

WHY CaaS BENEFICIAL?
 At the global scale, the widespread adoption of demand for cooling and air conditioning continues to grow more pronounced, and as manufacturing and planetary warming increases, will lead to a rapid escalation of energy and resource use from cooling. The 2018 report that global annual energy use from air conditioning alone will triple to amount to 1,500 TWh in 2050 under business as usual (BAU) scenario (IEA, 2018). There is no urgent need to reduce the energy intensity and carbon pollution from cooling, and the most efficient cooling systems are affordable to all those who need them.

CaaS models benefit customers through lower energy and maintenance costs, the absence of upfront capital investments, industry leading equipment, and a transparent and predictable pricing structure. The model effectively turns capital expenditure into operational expense for clients, freeing up capital for other investment priorities. The model also reduces the perceived technology risk for the client, as they are not required to invest in the technology directly and are not responsible for equipment failure.

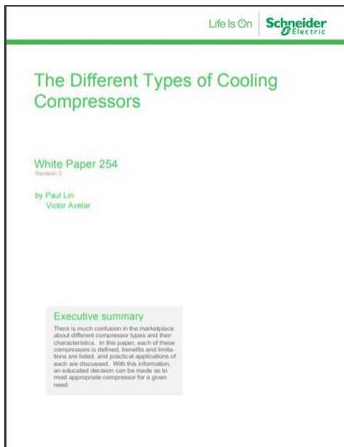
CaaS gives technology providers a stronger incentive to increase their own profits by reducing their products' operating costs through innovation. Working increasingly with customers, business manufacturers and users, better cooling technology providers are already offering CaaS to demonstrate themselves in the marketplace and compete against low quality, inefficient and low cost cooling solutions.

CaaS can also increase the likelihood that cooling equipment is effectively serviced and maintained, lowering the risk of ambient degradation and ensuring performing longer. These maintenance can deliver electricity savings up to 30% (IEA, 2018).



BASE
Building Air Conditioning Energy Efficiency Program of the International Energy Agency

“[Cooling as a Service \(CaaS\)](#)” presents a new service approach to cooling, which can benefit companies, governments and society at large and is based on the servitization concept which is rapidly penetrating other marketplaces.



"[The Different Types of Cooling Compressors](#)", A new free-to-download white paper launched by Schneider Electric.

Introduction: There is much confusion in the marketplace about different compressor types and their characteristics. In this paper, each of these compressors is defined, benefits and limitations are listed, and practical applications of each are discussed.

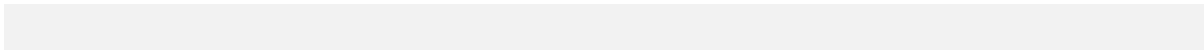
With this information, an educated decision can be made as to most appropriate compressor for a given need.

Conclusion: Various compressor types are appropriate for different uses, and no single compressor type is ideal for all applications. The intent of this paper is to contrast the benefits and limitations of the various compressor types on the market today.

Significant differences in compressor designs offer theoretical and practical benefits for different purposes. Nevertheless, the compressor is just one of four basic components of an air conditioner. The compressor type, cooling

system configuration (e.g. condenser, evaporator), control, etc. will determine the ultimate performance achieved in a particular application.

For more information on the types of cooling systems, see *White Paper 59*, [The Different Technologies for Cooling Data Centers](#).



Miscellaneous



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

The United Nations Environment, OzonAction, in collaboration with Marco Gonzalez and Stephen O. Andersen are updating and expanding the "Montreal Protocol Who's Who" as part of the 30th Anniversary of the Montreal Protocol celebration.

The new website was launched during the 29th Meeting of the Parties to the Montreal Protocol, Montreal, Canada, 20-24 November 2017.

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 men and women 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, 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.
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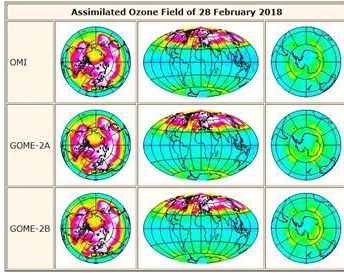
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To access this new service, click "[activate my e-IJR subscription now](#)" and follow the instructions.



[International Observers - New AREA membership category](#) - Due to the significant worldwide interest in European legislative developments and the increase in competence of personnel who handle new refrigerants, AREA is pleased to introduce its brand new "International Observer" membership category. This provides a fantastic opportunity for non-European RACHP installer bodies the world, to benefit from the expertise and discussions within Europe through access to AREA. Contact: info@area-eur.be



[TEMIS -- Near-real time global ozone field](#). The in near-real time delivered total ozone columns, derived from satellite observations, are input to a data assimilation program which provides global ozone fields for today and a forecast for the coming days.



[The International Institute of Refrigeration supports World Refrigeration Day](#) - As the only independent intergovernmental organisation in the field of refrigeration, the International Institute of Refrigeration (IIR) joins associations and companies worldwide to support the initiative of an official World Refrigeration Day on 26 June every year. The annual World Refrigeration Day, to be launched on 26 June 2019, aims to raise awareness among the wider public about the importance of refrigeration technologies in everyday life.

Refrigeration is essentially a question of temperature and, as such, it only seems natural to celebrate the field on the birthday of the pioneer at the origin of the international unit of temperature, Lord Kelvin (Sir William Thomson) – born 26 June 1824.

With increasing global stakes at hand, over the past years refrigeration has come to take a leading role at the heart of international affairs.

The inauguration of a World Refrigeration Day would not only be an ideal way to recognise the many historical achievements of the industry, but also a means to anticipate and overcome together the challenges we face. ... Click [here](#) for more information.

[Current and previous OzoNews Issues, are available from OzonAction website](#)
[Download a PDF](#)



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