

# OZONENEWS

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A fortnightly electronic news update on ozone and climate protection and the implementation of the Montreal Protocol



# GLOBAL

## 1. Kigali Amendment: 3 Parties to the Montreal Protocol Have Ratified

Montreal Protocol parties continue to ratify the Kigali Amendment to the Protocol. The latest ratification was by Marshall Islands on 15 May 2017.

The other parties to the Amendment, listed in the order in which they ratified it, are: Mali and the Federated States of Micronesia.

The Amendment was adopted by the 28th Meeting of Parties to the Montreal Protocol on 15 October 2016 in Kigali, Rwanda.

Under the Amendment, all countries will gradually phase down hydrofluorocarbons, a policy move that would avoid up to 0.5°C of global warming by the end of the century, while continuing to protect the ozone layer.

The Amendment will enter into force on 1 January 2019, provided that it is ratified by at least 20 parties to the Montreal Protocol. If that condition is not met by that date, the Amendment will become effective on the 90th day following the date of ratification by the 20<sup>th</sup> party.

- ▶ UN Environment, [Ozone Secretariat](#), May 2017
- ▶ See also: [United Nations Treaty Collection](#) Depository (Kigali Amendment)

## 2. 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 28<sup>th</sup> 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 YouTube](#)



## 3. 79<sup>th</sup> Meeting of the Executive Committee of the Multilateral Fund for the Montreal Protocol Implementation, Bangkok, Thailand, 3-7 July 2017

### PROVISIONAL AGENDA

1. Opening of the meeting.
2. Organizational matters:
  - (a) Adoption of the agenda;
  - (b) Organization of work.
3. Secretariat activities.

4. Financial matters:

- (a) Status of contributions and disbursements;
- (b) Report on balances and availability of resources.

5. Country programme data and prospects for compliance.

6. Evaluation:

- (a) Evaluation of the performance of implementing agencies against their 2016 business plans;
- (b) Amendment to the monitoring and evaluation work programme for 2017 (decision 77/7(b)).

7. Programme implementation:

Progress reports as at 31 December 2016:

- (i) Consolidated progress report;
- (ii) Bilateral agencies;
- (iii) UNDP;
- (iv) United Nations Environment Programme (UN Environment);
- (v) UNIDO;
- (vi) World Bank;
- (b) Reports on projects with specific reporting requirements;
- (c) 2017 consolidated project completion report;
- (d) Inventory of enterprises database report (decision 77/5).

8. Business planning:

- (a) Update on the status of implementation of the 2017-2019 consolidated business plan of the Multilateral Fund;
- (b) Tranche submission delays.

9. Project proposals:

- (a) Overview of issues identified during project review;
- (b) Bilateral cooperation;
- (c) Work programmes:
  - (i) 2017 work programme of UNDP;
  - (ii) 2017 work programme of UN Environment;
  - (iii) 2017 work programme of UNIDO;
- (d) Review of the overall structure of the Compliance Assistance Programme (decision 77/38(c));
- (e) Investment projects.

10. Report on the review of the administrative cost regime and its core unit funding budget (decision 75/69).

11. Matters related to the Kigali Amendment to the Montreal Protocol:

- (a) Status of additional contributions to the Multilateral Fund (decision 78/1(c));
- (b) Overall analysis of the results of the surveys of ODS alternatives (decision 74/53);
- (c) Development of the cost guidelines for the phase-down of HFCs in Article 5 countries:
  - (i) Draft criteria for funding (decision 78/3);
  - (ii) Draft guidelines on enabling activities (decision 78/4(a));

(d) Key aspects related to HFC-23 by-product control technologies (decision 78/5);

(e) Procedures for Article 5 countries that have HFC consumption baseline years from 2020 to 2022 in accessing additional voluntary contributions for enabling activities.

12. Report of the Sub-group on the Production Sector.

13. Other matters.

14. Adoption of the report.

15. Closure of the meeting.

▶ [The Multilateral Fund for the Montreal Protocol Implementation](#), May 2017



## 4. The Ozone Awards 2017: Call for Nominations

In celebration of the 30<sup>th</sup> anniversary of the adoption of the Montreal Protocol, the Ozone Secretariat, in cooperation with the Government of Canada, will host the Ozone Awards at the Twenty-Ninth Meeting of the Parties, to be held in Montreal, Canada, from 20 to 24 November 2017.

The Ozone Awards will recognize the achievements of individuals, groups, and organizations that have demonstrated extraordinary commitment and contribution to the progress and achievements of the Montreal Protocol in the past 10 years. These individuals, groups and organizations also exemplify the power of cooperation on large and small scales to accomplish goals and produce tangible change.

The Ozone Secretariat is calling for nominations for the Ozone Awards from individuals, governments and implementing partners including the United Nations and international bodies, non-governmental organizations and industry and their associations.

### [Download the Call for Nominations](#)

#### HOW TO NOMINATE

##### Who is eligible?

You may nominate individuals, groups, civil society organizations, government agencies at local or national level, non-governmental organizations or private sector entities for these awards. You may nominate yourself or the institution to which you belong.

Please note that the Ozone Secretariat, the Secretariat of the Multilateral Fund for the Implementation of the Montreal Protocol, and the individuals working in the two Secretariats are not eligible to be nominated and shall not be part of the selection process.

##### How do I submit a nomination?

Complete and submit the [online nomination form](#). If you wish, you may submit additional supporting materials such as documents, photos, videos and character references together with the nomination.

Tell us how the nominee has made significant contributions that are required for being considered to win the relevant award.

##### When are nominations due?

All nomination forms and supporting materials must be submitted by **20 July 2017**.

#### SELECTION PROCESS

The winners for each award category will be selected through a two-step review:

1. A Technical Screening Committee made up of experts from non-governmental organizations, governments and other stakeholders that are knowledgeable about the ozone layer protection regime and processes will review all nominations and make their recommendations. The Committee may fact-check the details of the nominations with relevant UN bodies. The names of the Committee Members will be published in due course.
2. An International Jury made up of eminent experts will review the Technical Screening Committee's

recommendations of nominees and decide on a final list of award recipients in each of the award categories. The names of the Jury Members will also be communicated in due course.

Please note that Members of the Technical Screening Committee and International Jury are also eligible for awards and will recuse themselves from their roles when appropriate.

Award recipients will be announced and awarded during the award ceremony to be held on 23 November 2017 during the Twenty-Ninth Meeting of the Parties, to be held in Montreal, Canada.

#### KEY DATES

<b>8 May – 20 July 2017</b>	Nomination period: All nomination forms are to be submitted by 20 July.
<b>21 July – 16 October 2017</b>	Review and selection of award recipients.
<b>23 November 2017</b>	Ozone Awards ceremony at the Twenty-Ninth Meeting of the Parties in Montreal, Canada.

- ▶ For further inquiry about the Ozone Awards, please contact:

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- ▶ [Learn more](#)

- ▶ Ozone Secretariat, [2017 Award](#)

### 5. « Caring for All Life under the Sun » Theme and Logo for 30<sup>th</sup> Anniversary of the Montreal Protocol and International Ozone Day 2017

The 30<sup>th</sup> anniversary of the Montreal Protocol, which we are commemorating this year, and the International Day for the Preservation of the Ozone Layer to be marked on 16 September, will be celebrated under the theme:

#### Caring for All Life Under the Sun



The theme is complemented by a logo that illustrates the Montreal Protocol's focused and singular goal to protect all life on Earth.

The logo and theme celebrate the Montreal Protocol's critical role in caring for life on the planet over the past 30 years by preventing massive damage to human health and the environment from excessive ultraviolet radiation from the sun by phasing out nearly 99 per cent of close to 100 substances that deplete the ozone layer.

As a result of the unwavering commitment of the parties to the Montreal Protocol during the past three decades, the ozone layer is on track to recovery by mid-century. In addition, up to 2 million cases of skin cancer may be prevented each year by 2030.

The Montreal Protocol is also one of the prime contributors to the fight against climate change, as it averted more than 135 billion tonnes of carbon dioxide equivalent emissions from 1990 to 2010.

The Kigali Amendment to the Montreal Protocol, which was adopted in 2016, is expected to avoid up to 0.5° Celsius warming by the end of the century, while continuing to protect the ozone layer.

The logo and theme in all the six official UN languages are posted on the Ozone Secretariat [website](#) for wider dissemination, together with brand guidelines on their usage. Parties are also encouraged to download and use the email signature image of the logo and theme.

In the coming months, the Ozone Secretariat will conduct a communication campaign to celebrate the 30<sup>th</sup> anniversary and will provide the parties with more information about the campaign and related products to support commemorative activities. We would also be pleased to receive any information products for your planned commemorative activities for wide dissemination through our website.

As in previous years, we expect that the United Nations Secretary-General's message for International Ozone Day

to be shared prior to the day for further dissemination.

Once again, the Ozone Secretariat will provide limited financial assistance to four developing countries to contribute towards organizing their national commemorative activities. The Secretariat invites the parties to submit their plans of celebration activities and requests for assistance by 31 May 2017. Kindly send them to the Secretariat at [dan.tengo@unep.org](mailto:dan.tengo@unep.org) and [ozone.info@unep.org](mailto:ozone.info@unep.org)



## AFRICA



### 6. Gambia Institute Launches Natural Refrigerants Training

The Gambia Technical Training Institute (GTTI) has just provided its first training workshop for entrepreneurs and technicians on refrigeration and air conditioning using natural refrigerants. GTTI this week provided its first CO<sub>2</sub> and hydrocarbon training in collaboration with the Gambian National Environment Agency (NEA).

The GTTI training workshop for entrepreneurs and technicians on hydrocarbon and CO<sub>2</sub> management in refrigerators and air conditioning was funded by a UNIDO project.

The training, held on the GTTI's premises, was aimed at familiarising attendees with the use of CO<sub>2</sub> and hydrocarbons and providing access to modern equipment – provided by UNIDO – to reduce greenhouse emissions associated with industrial and domestic RAC facilities in The Gambia.

Speaking at the opening ceremony, GTTI Director Jahou S. Faal said the GTTI, in fulfilment of its mandate, aims to address the mid-level manpower needs of The Gambia and its partners. As a technical and vocational education and training (TVET) provider, under a UN scheme, Faal said the engineering department is fully equipped with standard equipment to meet the training needs and to promote natural refrigerants for refrigeration and air conditioning applications.

“This training is an opportunity to learn and adopt good practice in the use of natural refrigerants as recommended as alternatives to the use of hydrochlorofluorocarbons (HCFCs).” – Jahou S. Faal GTTI's Director.

Lamin Komma, from the SPO coastal and marine unit in the Gambian NEA, said that HCFCs are powerful man-made greenhouse gases primarily used in air conditioning, refrigeration and foam insulation and are thousands of times more potent than carbon dioxide. He said the training would help participants to make the change to R290 in the Gambia's air conditioning systems.

The GTTI will also work on other environment-related issues like energy efficiency projects and renewable energy. [...]

▶ [hydrocarbons21](#), 10 May 2017, By Charlotte McLaughlin



## ASIA PACIFIC

### 7. Global Refrigeration and Air Conditioning Industry Determined to Support Kigali Amendment

13 April 2017, Shanghai – The Under-Secretary-General of the United Nations, and Executive Director of UN Environment, Mr. Erik Solheim called on the refrigeration and air conditioning industry to join the fight against climate change through the full implementation of the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer. In his [video message to the Ozone2Climate Industry Roundtable on 13 April 2017 in Shanghai, China](#), he said, “The Kigali Amendment shows industry the direction. The encouraging news is that there are win-win solutions for industry, economy and the public. We have heard great examples that industries and governments working together to take actions to fight against climate change, that means we have to take actions to implement the Kigali Amendment.”



The Ozone2Climate roundtable is part of a series of events jointly organized by the UN Environment, UN Development Programme, the Foreign Economic Cooperation Office (FECO) of China's Ministry of Environment Protection, and the China Refrigeration and Air-Conditioning Industry Association (CRAA) during the 2017 China Ref Expo, which was held from 12-14 April 2017 in the Shanghai New International Expo Centre. As the biggest professional exhibition of heating, ventilation, and air-conditioning and cooling industry, this year's event attracted the participation of 1,220 companies and organizations from 33 countries, with more than 60,000 visitors from over 100 countries in three days.

After many years of negotiation, the Kigali Amendment was adopted by the Parties to the Montreal Protocol at their 28<sup>th</sup> Meeting on 15 October 2016 in Kigali, Rwanda. Under the Amendment, countries have agreed to phase-down their consumption and production of hydrofluorocarbons (HFCs), which is predicted to help the world avoid up to 0.5°C of global warming by the end of the century. The Ozone2Climate Technology Roadshow and Roundtable helped to keep the momentum following the adoption of the Amendment, by reflecting on the current challenges and opportunities facing developing countries, by engaging a broad scope of industry and policy makers, and encouraging approaches and strategies to overcome the challenges in adopting more ozone- and climate-friendly ("Ozone2Climate") alternatives.

Attended by leading refrigeration and air conditioning industry associations, senior government officials, as well as more than 200 participants from the private sector, research institutes, universities, NGOs and government departments from all over the world, the roundtable reviewed the implications of the Kigali Amendment for industry, and the corresponding trends in terms of the refrigerant technology, energy efficiency, industry standards, the servicing sector and required changes of national regulations that might constrain the application of alternative technologies. The objective of the roundtable was to help industry to take an informed decision in selecting ozone- and climate-friendly alternatives for the phase-out of hydrochlorofluorocarbons (HCFCs), which are used worldwide and the subject of a phase out under the Montreal Protocol. During the roundtable, the global refrigeration and air conditioning industries including those from the United States of America, China, Europe, Japan, Malaysia and the Middle East confirmed their support for the Kigali Amendment by moving forward to the Ozone2Climate technologies, irrespective of the timing of governments' ratification of the Amendment.

"The Chinese government appreciated the enormous efforts from all the Parties that made the success of Montreal Protocol and the agreement on the Kigali Amendment. We are happy to see that we are now promoting technologies which are not only ozone friendly but also with low Global Warming Potential to address the climate change, which will guide the development of the industry. The Chinese government will continue to work with all stakeholders to promote the implementation of the Kigali Amendment," said Mr. Chen Liang, Director-General, FECO, Ministry of Environment Protection, China.

Ms. Shi Min, Chairwoman of CRAA said in her remarks, "To tackle the challenges in the process of phasing down HFCs, we are working more closely with the Ministry of Environment Protection, and engaging more small and medium sized companies, to update standards, promote technology innovation, and build capacity of the industry to safe handle ozone and climate friendly technologies."

In parallel, the Ozone2Climate Technology Roadshow was also organized as part of the Expo to showcase the Ozone2Climate technologies, which are featured with zero Ozone Depleting Potential (ODP), low Global Warming Potential (GWP) and better Life Cycle Climate Performance. More than 70 exhibitors from over 10 countries exhibited their newest innovations that are both ozone- and climate-friendly, and energy efficient.

Sub-roundtables focused on Compressor, Air-conditioning and heat pump, Cold Chain, Refrigerant and Safety, as well as Good Servicing Practice, also witnessed active discussions on the cutting-edged technologies and trends, among industry leaders and participants.

► **Contact:** [Shaofeng Hu](#), Regional Network Coordinator, UN Environment OzonAction, Asia and Pacific Office, Bangkok, Thailand

## 8. OzonAction Hosts the Ozone Officer's Network Meeting for Pacific Islands Countries in Bangkok



12 April 2017, Bangkok – Government officers responsible for compliance with the Montreal Protocol on Substances that Deplete the Ozone Layer in the Pacific Islands gathered in the bustling metropolis of Bangkok, Thailand from 9-12 April 2017 to exchange experiences and plan their next steps under this landmark multilateral environmental agreement. The Network Meeting of National Ozone Officers (NOOs) of the Pacific Island Countries (PICs) Officers was organized by UN Environment's OzonAction Compliance Assistance Programme (CAP) in collaboration with the Government of Thailand. Given the importance of fisheries and marine issues to the PIC economies, the meeting was held back-to-back with the [International Conference on Sustainable Management of Refrigeration Technologies in Marine and Off-Shore Fisheries Sectors from 6-8 April 2017](#). The Network meeting included participants from 13 PICs, the Ozone Secretariat, the Multilateral Fund Secretariat (via skype), the Secretariat of the Pacific Community and other regional experts. The meeting was financially supported by the Multilateral Fund for the Implementation of the Montreal Protocol.

In keeping with the approach of OzonAction's Regional Networking services for Article 5 (developing) countries and supporting national ownership of the Montreal Protocol processes, the Network meeting provided a platform to share ideas and experiences, and best practices related to the national implementation of this multilateral environmental agreement. NOOs addressed Montreal Protocol compliance management, PIC regional and national Hydrochlorofluorocarbons (HCFC) phase-out management plans (HPMPs), national mechanism/approaches/preparation towards the ratification of the Protocol's Kigali Amendment on Hydrofluorocarbons (HFC) phase-down, national surveys on alternatives to ozone depleting substances, etc. The meeting also addressed the CAP services delivered to the PICs in 2017 and the planning for 2018. These services were taken in consideration to the special sustainable developmental challenges of the member States belonging to this network: all members are Small Islands Developing States (SIDS) and four are also classified as Least Developed Countries. All PIC Countries are fully in compliance with their national commitments under the Montreal Protocol.

In the joint opening address, Dr. Dechen Tsering, Regional Director of the UN Environment Asia and the Pacific Office, elaborated on the recent development of the Montreal Protocol: "In UN Environment we now see a window of opportunity to scale up action under the Montreal Protocol. More recently, nations agreed to the Kigali Amendment under the Montreal Protocol and committed to cut the production and consumption of HFCs by more than 80 percent over the next 30 years. Indeed, the recent Kigali Amendment could well be regarded as the single largest contribution the world has made toward keeping the global temperature rise "well below" 2 degrees Celsius, the target agreed in Paris. As representatives of governments, development agencies, businesses and civil society we must work to ensure that these global commitments are met". Dr. Tsreing congratulated the PIC countries for bringing into international attention the urgent subject addressing refrigeration technologies and requirements to move towards non-ozone depleting substance, low-global warming potential (GWP) alternatives in the marine and fisheries sectors. Fisheries are one of the largest industries for the PIC countries and refrigeration technologies are essential for post-catch management.

The PIC network called on UN Environment OzonAction to continue supporting the safe adoption to ozone-friendly, energy efficient and low-GWP alternatives and in both the land- and marine- based fishery sectors. The meeting agreed on the need to have stronger institutional and human resources, continued capacity building and trade enforcement including prevention of illegal trade in controlled commodities as requirements for sustaining the Montreal Protocol obligations. Specific to the needs of the PIC countries, OzonAction will seek to support mechanisms for the development and implementation of standards/guidelines/codes of practice for the refrigeration and air-conditioning servicing sectors. For the PIC countries, all refrigeration and air-conditioning technologies for land or marine are imported. In keeping with life cycle technology management, ozone officers

agreed to collect national data on unwanted refrigerants and to work with OzonAction in seeking options for safe disposal.

- ▶ Contact: [Artie Dubrie](#), Montreal Protocol - OzonAction Compliance Assistance Programme, Pacific Islands Regional Network Coordinator, UN Environment, Asia and Pacific
- ▶ UN Environment, [OzonAction](#), 11 May 2017



## LATIN AMERICA AND CARIBBEAN

### 9. AC Exam to Set Cooling Standards



The first exam for Professional Certification for the Refrigeration and Air Conditioning Industry is scheduled for the beginning of July.

Launched on April 12, at the Hilton Trinidad, St Ann's, it is one of the more recent steps taken by the National Ozone Unit to help the country comply with the Montreal Protocol.

Dr Marissa Gowrie, deputy environmental manager and national ozone officer in the Environmental Policy and Planning Division of the Ministry of Planning and Development, explained, "Several countries came together in the 1980s and agreed to phase out ozone depleting gases but the gases affect the ozone differently... Trinidad and Tobago signed on in August 1989." Some of the gases include refrigerants such as chlorofluorocarbons (CFCs) and hydro chlorofluorocarbons (HCFCs); the fumigant Methyl bromide; Halon, a fire suppressant; and more.

She noted the industry overlapped with many other sectors including tourism; the storage and transport of fish, meats, fruit and vegetables; the industrial sector; the medical sector with respect to operating theatres, the storing of vaccines, and even the morgue.

Gowrie told Sunday Newsday the Air-conditioning and Refrigeration Industry Association (ARIA) noticed a lack of professionalism and accountability in the industry. The organisation felt it critical to address these issues given the various sectors it services and so approached the ministry.

"For many years ARIA has been voicing that they were seeing a lot of practices they would not endorse. Because of the very rapid changes in technology and refrigerants, a technician needs to be kept abreast, must keep themselves current, and, let's face it, as a consumer you assume the technician would give you the best technical advice because you don't know better." Therefore, the Ministry of Planning, ARIA, the National Training Agency (NTA), and other training schools created a professional certification for the Refrigeration and AC Industry.

A Body of Knowledge was developed as a text of basic technical knowledge a technician is required to know and is available on the NTA website and the National Ozone Unit's ozone blog. "It was developed in a manner to appreciate that there are people who may have never gone to a formal school to learn the trade. The Body of Knowledge is aligned to what they should know." When the online exam is written, the technician would get the result immediately.

For people who are not computer literate, the NTA has a system where a proxy would sit with the person and provide assistance. Those who pass are then certified, recognising that "they are at a certain level, and do a certain quality of work." They are then issued a license that is valid for three years.

"In addition, NTA has developed, and are developing further, something called Skills TNT. If someone comes to you and says, 'I'm an air conditioning technician,' you can log on to Skills TNT and see reviews of their work, if it is they are in fact registered, similar to what Ebay has for sellers.

It gives a level of power to the consumer as well as another level of accountability to the sector." In order to renew the license, the technician is expected to present a portfolio of work done over the previous three years to the NTA, a record of how they have kept themselves current, and reviews from customers.

"There are things that a technician can do to keep current that may not cost him any money but just shows due diligence on the part of the technician given the fact that this is such a dynamic field and will continue to be a dynamic field." Gowrie said one reason the field was so dynamic was because of the addition of alternative

refrigerants, changes in the law, as well as changes in the Montreal Protocol. She noted that in October 2016, Kigali Amendment to the Montreal Protocol stated that one alternative refrigerant, a hydrofluorocarbons (HFCs), would be phased out because, while it was not damaging to the ozone, it was a greenhouse gas, causing climate change and global warming.

To assist technicians, she said the National Ozone Unit hosted free webinars (online seminar), which they would try to develop on a more regular basis in order to provide free training, as well as keep technicians up-to-date on what was happening in the air conditioning and refrigeration field.

► [NewsDay](#), 7 May 2017, By: Janelle De Souza



## NORTH AMERICA



### 10. U.S. Commercial Refrigeration Systems Market will Reach at a CAGR [Compound Annual Growth Rate] of 3.2% from 2015 to 2025

Commercial refrigeration systems are refrigerators with remote or self-contained condensing units. These refrigerators are designed especially for commercial use with a wide range of temperature control (typically from  $-18^{\circ}\text{C}$  to  $+10^{\circ}\text{C}$ ) options. Commercial refrigeration systems are mainly used in

hypermarkets, supermarkets, convenience stores, warehouses & distribution centers, foodservice industry and food & beverage production units. Commercial refrigeration systems include various products such as ice machines, vending machines, beverage refrigeration equipment, refrigerated display cases, trailers, trucks, containers and walk-in & reach-in refrigerators. Commercial refrigeration system includes various components such as compressors and refrigerants. Refrigerants mainly used in commercial refrigeration systems include R507A, R417A and R422A. The selection for a refrigerant depends on various properties such as non-corrosiveness, global warming and ozone depletion potential, inflammability, toxicity, cost, erosional properties, leak-detection capability and thermodynamic properties.

Growing demand for frozen and chilled products, expansion of cold chain capacity, technological advancements in commercial refrigeration systems and rebates on energy-efficient products and practices are some of the major underlying factors anticipated to fuel growth of the [U.S. commercial refrigeration systems market](#) between 2016 and 2025. This is forecast to create unprecedented opportunities for commercial refrigeration system manufacturers, distributors and HVAC contractors.

Key trends identified in the U.S. commercial refrigeration systems market include rapid adoption of Internet of Things (IoT), compatible commercial refrigeration systems for enhancing system output, government initiatives to support utilisation of eco-friendly refrigerants and continued advancements in energy-efficient products. However, declining replacement rate of commercial refrigeration equipment and stringent government regulations could pose major challenge for tier II & III players.

#### Market Segmentation

The U.S. commercial refrigeration systems market is projected to expand at a healthy CAGR [Compound Annual Growth Rate] of 3.2% during the forecast period. The U.S. commercial refrigeration systems market is segmented on the basis of application and product type. By application, the market is segmented into foodservice, food & beverage distribution, food & beverage retail and food & beverage production. On the basis of product type, the market is classified into transportation & refrigeration systems, refrigerator & freezers, beverage refrigeration equipment, refrigerated display cases, ice machines and refrigerated vending machines.

#### U.S. Commercial Refrigeration System Market Analysis, By End-use Application

Foodservice segment accounted for the highest share of 30% in terms of value in the U.S. commercial refrigeration systems market in 2014. This segment is expected to remain dominant in the market over the

forecast period. Ice machines segment and beer dispensing equipment sub-segment are projected to play an important role in the foodservice industry due to various factors such as increasing per capita food consumption and rising number of foodservice restaurants in the country.

### U.S. Commercial Refrigeration System Market Analysis, By Region

Southeast region represents the largest market potential, followed by the Middle-east and Far West regions. California, Texas and Florida represent a huge potential for refrigerated systems due to high density of restaurants and convenience stores in these states. Other high-growth markets include Arizona, Georgia and Utah due to rapid growth in the restaurant industry in these states.

### U.S. Commercial Refrigeration System Market Analysis, By Product Type

By product type, transportation refrigeration systems segment is projected to expand at the highest CAGR of 5.5% during the forecast period due to expansion of cold chain capacity in the U.S. It is observed that customisation holds the key for tier 2 and tier 3 players in order to further penetrate into the market, thus creating a competitive threat for tier 1 suppliers in the market. Meanwhile, key players are strengthening their market positions through both organic and inorganic growth. Also, acquisition of HVAC contractors is leading to the addition of a new customer base for commercial refrigeration systems manufacturers.

▶ [LANEWS.ORG](http://LANEWS.ORG), 11 May 2017



## EUROPE & CENTRAL ASIA

### 11. French Report on Refrigerants Leak Detection Systems

The French ADEME has released an in-depth study on installed fluorocarbons refrigerants leak detection systems (*Etude sur les moyens de detection de fuite des installations de refrigeration de climatisation*), mandated by AFCE and conducted by ARMINES and EReIE, on installed fixed refrigerants leak detection systems.

Two systems have been investigated: gas detectors and “expert systems” (based on indirect detection methods, incorporating plant parameters such as temperature, pressure or tank level measurements).

The study gives recommendations for the best choice of a leak detector, which depends on the installed systems, for example gas detectors for chillers rooms (able to detect leaks of 50g/h) or expert systems for commercial refrigeration systems (able to detect leaks of less than 100 g/h over a few days).

Detection of leakages is mandated in the [F-Gas Regulation](#) and limiting leakages is become even more important since the HFC phase down dictated by that Regulation will significantly reduce the availability of fluids for refilling.

▶ [EFCTC](#), quoting [Institut International du Froid](#) / International Institute of Refrigeration, 12 May.2017

### 12. What is Sustainable Cooling in the EU? A Cross-sector Perspective

The new “WebinarWednesday series” for 2017 is going live in two weeks. On 31 May, the first webinar of 2017 will be hosted by energy-efficiency company Danfoss, on the topic of ‘What is sustainable cooling in the EU? A cross-sector perspective’.

Featuring:

- Alix Chambris, Head of Public Affairs at Danfoss;
- Ingo Wagner, Policy Manager at Euroheat & Power;
- Thomas Nowak, Secretary General of European Heat Pump Association (EHPA);
- Christine Weiker, Secretary General of European Cold Storage and Logistics Association (ECSLA)
- Focus: How the EU's new heating and cooling strategy can lead to opportunities for sustainable cooling



**31 May:** What is sustainable cooling in the EU  
A cross-sector perspective

technology?

The webinar will bridge two significant events for the HVAC&R industry, the DecarbHeat Forum (11-12 May) and the upcoming EU Sustainable Energy Week (EUSEW; 19-25 June). The aim of webinar is to update participants on the latest legislative developments in the European Union and identify the opportunities it offers for cooling solutions in Europe.

The webinar will specifically cover:

- What is sustainable cooling in the light of the DecarbHeat Forum and EU Sustainable energy week;
- Technology trends and analysis of the future opportunities in the EU;
- Public affairs trends: an update on policy in industrial and commercial refrigeration markets;
- What is next for cooling: how can the industry get involved?

**When:** 31 May 2017 **at:** 10 AM CEST / 3 PM ICT / 4 PM CST / 5 PM JST / 6 PM AEST

**Duration:** 1 Hour

**[Register for 31 May](#)**

- ▶ Contact: [Alvaro de Ona](#), Chief Operating Officer, shecco
- ▶ Shecco "[Webinar Wednesday](#)"

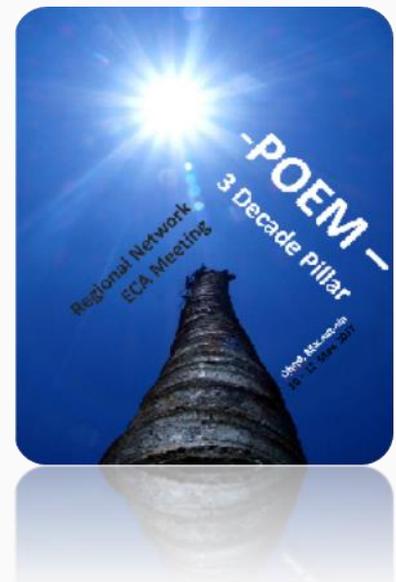
### 13. The Three- Decade Pillar

After a winter long and cold,  
here is a story not to fold.  
At heights in the dry stratosphere,  
in the civil twilight without fear,  
clouds form over the north,  
glowing brightly in the polar forth.  
In these nacreous clouds fly no pigeons,  
all is quiet in such regions.  
A secret they behold,  
one which is to be told.

Emergence of the Sun -  
onset of chemical reactions,  
broken down into fractions.  
Molecules of active chlorine,  
catalyzing destruction of "Ozzy";  
removing gaseous nitric acid,  
in a manner which is tacit.  
Disturbing nitrogen and chlorine cycles,  
imprisoning ozone in shackles.

Vicious CFCs, HCFCs, methyl bromide and halons -  
the notorious great felons.  
Oozing from fridges, propellants, extinguishers and soils,  
one cannot cover the Earth in foils.  
Released they twirl and soar high,  
where they are never shy;  
wreaking havoc  
the ozone layer they destroy,  
impeding civilizations from joy.

HFCs are not ozone layer foes  
yet global warming they propel,  
they too do not mean our home well.  
The Montreal Protocol -  
a lifejacket in stormy seas,



aiding the world from high, human fees.  
The Kigali Amendment -  
avoiding the increase of heat,  
an essential, global feat.

Countries gather from A to Z  
of our existence, to be!  
A mission for all to do,  
combine our strengths and others woo,  
of the importance to take a stance,  
in global issues of ozone protection and climate change.  
To strive for further success and arrange,  
a continued effort on global range -  
one never to be estranged.  
In this 2017 year,  
we should all hear big cheer!  
The Montreal Protocol celebrates –  
30 years of universal success,  
a great Earth to bless!  
Synchronizing the tunes  
of world melodies strewn.  
An orchestrated deed  
like a heartbeat.

A climate symphony,  
echoing for millennia -  
growing purple Robinia,  
enjoying the sounds of Luscinia;  
human shades,  
from different faiths,  
of all trades,  
with own fates,  
strolling in parades,  
for many more decades.

- ▶ Poem Written by: Natasha Kochova, National Ozone Unit, Macedonia FYR, declaimed during the opening of the ECA Network Meeting, 10-12 May 2017, Ohrid, Macedonia FYR



## WEST ASIA



### 14. Lebanon Poster Design Competition 2017” – Caring for all life under the sun

[National Ozone Unit - Lebanon](#)

On the occasion of the 30<sup>th</sup> anniversary of the Montreal Protocol on substances that deplete the Ozone Layer, the National Ozone Unit of Lebanon is pleased to launch the “**Poster Design Competition 2017**” – **Caring for all life under the sun.**

#### BRIEF DESCRIPTION

On September 16, 2017, the Montreal Protocol on substances that deplete the Ozone Layer, known as “The single most successful international environmental agreement to date” will celebrate its 30<sup>th</sup> anniversary. This date coincides with the International Day for the preservation of the Ozone Layer; the United Nations commemorative day that marks the date when the treaty was established in 1987. Therefore, on this occasion the National Ozone Unit of Lebanon (NOU), the Ministry of Environment (MoE) and the United Nations Development Programme (UNDP) are pleased to launch the Poster Design Competition 2017 for all university

students.

## CRITERIA

1. The poster should highlight the worldwide efforts to protect the Ozone Layer and to combat Climate Change. Also, it should emphasize on how the protection of the stratospheric Ozone Layer under the Montreal Protocol has impacted human lives, and how Montreal Protocol contributed to the fight against Climate Change.
2. The poster should be: Creative. Attractive. Sharp & Bright.
3. The poster can be either in English or Arabic.
4. The poster must be the original work of the participants.

While copyright of the selected posters will remain with their creators, the National Ozone Unit of Lebanon must be granted the right to use the posters for communication material purposes free of charge.

## SUBMISSION

1. You must first become a member of our facebook page: National Ozone Unit Lebanon.
2. Upload your poster in digital format and high-resolution. Once the poster is uploaded to our facebook page, it is considered final and may not be modified or edited.
3. Participants should provide a small description of the poster.
4. Participants must email the National Ozone Unit of Lebanon ([nou@moe.gov.lb](mailto:nou@moe.gov.lb)) their full name, facebook user name, university ID, nationality, date of birth, and phone number to be officially part of the competition and eligible for the prize.
5. Submissions that do not include all the required information and adhere to the foregoing and following requirements will be considered void.

**CLOSING DATE: 15 JULY 2017**

## ELIGIBILITY

University students from all faculties in Lebanon are invited to participate in this competition. Each person can submit only one poster.

## JURY

The jury members will be senior media experts, teachers from different universities and experts from the Ministry of Environment of Lebanon and the United Nations Development Programme.

## RESULTS

The winners will be announced on the "[National Ozone Unit Lebanon](#)" [facebook page](#), on the occasion of the international ozone day: September 16, 2017.

## PRIZES

1<sup>st</sup> Prize:

The winner will be awarded an all-expenses paid roundtrip to Montreal, Canada, for 5 days to attend the 29 Meeting of Parties of Montreal Protocol, from 20 to 24 November 2017. In addition, the winner will receive a trophy and a certificate. The winning poster will be shown on all our communication material for a year.

2<sup>nd</sup> & 3<sup>rd</sup> Prizes:

The second and third place winners will receive a trophy and a certificate.

All participants will be awarded with a certificate of participation.

- ▶ For any clarifications, contact the Lebanon NOU team by mail: [nou@moe.gov.lb](mailto:nou@moe.gov.lb) or by phone on 01 976 555 ext 467, 476 or 560.



## FEATURED

### OZONE SECRETARIAT

- ▶ - [Twenty-Eighth Meeting of the Parties.](#)
- ▶ - [Resumed 38<sup>th</sup> meeting of the Open-ended Working Group.](#)
- ▶ - [57<sup>th</sup> meeting of the Implementation Committee.](#)

- ▶ Final text of the Kigali Amendment to the Montreal Protocol available in all the six official UN languages  
([ACEFRS](#))
- ▶ **OEWG 39:** The 39<sup>th</sup> Session of the Open-ended Working Group of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer will be preceded by the 58<sup>th</sup> meeting of the Implementation Committee under the Non-Compliance Procedure for the Montreal Protocol, to be held on 9 July and a workshop on safety standards relevant to the use of low-GWP alternatives to HFCs, to be held on 10 July 2017.

Click [here](#) for further information.

- Browse through the Ozone Secretariat “[In Focus](#)” to learn about latest updates.
- Click [here](#) for Montreal Protocol Meetings Dates and Venues

**The UN Environment Assessment Panels** have been the pillars of the ozone protection regime since the very beginning of the implementation of the Montreal Protocol. Through provision of independent technical and scientific assessments and information, the Panels have helped the Parties reach informed decisions that have made the Montreal Protocol a world-recognized success.

UNEP initiated the process of setting up the assessment panels in 1988, pursuant to Article 6 of the Montreal Protocol, to assess the scientific issues of ozone depletion, environmental effects of ozone depletion, and the status of alternative substances and technologies and their economic implications.

Four panels, namely the panels for Scientific, Environmental Effects, Technology, and Economic Assessments were formally established and approved at the First Meeting of the Parties to the Montreal Protocol in 1989 where their first set of Terms of Reference were adopted. Shortly after the Second Meeting of the Parties in 1990, the Panels for Technical Assessment and the Panel for Economic Assessment were merged into one Panel called the Technology and Economic Assessment Panel (TEAP), which together with the Scientific Assessment Panel (SAP) and the Environmental Effects Assessment Panel (EEAP) make up the three assessment panels active today.

In accordance with Article 6 of the Montreal Protocol and subsequent decisions of the Parties, the three panels carry out a periodic assessment at least every 4 years. The first assessment reports were published in 1989 and since then major periodic assessments have been published by all three panels in 1991, 1994, 1998, 2002, 2006 and 2010. For each periodic assessment, the key findings of the panels are synthesized into a short report. The full SAP assessment report for 2014 was published in December 2014, while the EEAP assessment report for 2014 was published in January 2015.

#### PROGRESS & QUADRENNIAL ASSESSMENT REPORTS

- [EEAP](#)
- [SAP](#)
- [TEAP](#)

[Assessment Panels List of Meetings](#)

#### SYNTHESIS REPORTS

- [2014 assessments](#)
- [2010 assessments](#)
- [2006 assessments](#)

## THE MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL



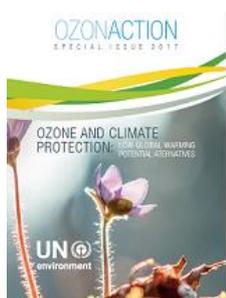
[Report of the 78<sup>th</sup> meeting of the Executive Committee](#)

See also: [Adjusted business plan of the Multilateral Fund for 2017-2019 after the 77<sup>th</sup> meeting of the Executive Committee](#)

▶ [Learn more](#)

# OZONACTION

UN Environment, [OzonAction](#) highlights



## Ozone and Climate Protection: Low-Global Warming Potential Alternatives - [OzonAction Special Issue](#)

### OzonAction Factsheets:



[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 28<sup>th</sup> Meeting of the Parties on 15 October 2016 in Kigali, Rwanda to phase-down hydrofluorocarbons (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).



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



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



**OzonAction Factsheet:** [Tools Commonly used by Refrigeration and Air-Conditioning Technicians](#)



Get the new **RAC Technician Video App**

Watch our short instructional videos on refrigeration & air-conditioning techniques, safety and best practices on your mobile device

Available in English, French, Spanish and German

Download for free from Google Play Store & Apple Store/iTunes or scan this QR code

**New! OzonAction Multimedia Video Application: Refrigeration and Air-conditioning Technician Video Series** - 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. Additional videos will be added regularly.

Please share with your RAC associations, technicians and other interested stakeholders... **Over 11, 200 installations to date!**

Now 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. Now available in the [Android Play Store](#) and Apple Store/iTunes.



(Just search for "OzonAction", or scan this QR code)



**[OzonAction News Drops](#)** - UNEP OzonAction is presenting a series of short video “**News Drops**” which focus on ozone layer protection, climate change and the importance of continuing ozone observations.



### Regional News Drops

The Regional Networks of National Ozone Units (NOUs) under the Multilateral Fund are a path-breaking mechanism for North-South and South-South cooperation. Networking provides a platform for NOUs from Article 5 countries to exchange experiences, develop their skills and tap the expertise of their peers in both developing and developed countries. Conducted at the regional level, the Networking activity builds the Ozone Officers' skills for implementing and managing their national ODS phase-out activities. During 2016 these videos were filmed at the regional network meetings around the world.

The NOUs were asked about their success stories, alternative refrigerants selected and their personal messages for national ozone celebrations...

Click [here](#) to access the News Drops

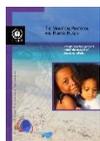
### OzonAction Recent Publications:



**[Lower-GWP Alternatives in Commercial and Transport Refrigeration: An expanded compilation of propane, CO<sub>2</sub>, ammonia and HFO case studies](#)** - This booklet presents an expanded compilation of case studies on lower-GWP alternatives in commercial and transport refrigeration and provides an update to the first set of case studies which was published in 2014 by UNEP DTIE OzonAction/CCAC (Low GWP Alternatives in Commercial Refrigeration: Propane, CO<sub>2</sub> and HFO Case Studies).



**[NATIONAL CERTIFICATION SCHEMES FOR RAC SERVICING TECHNICIANS](#)** - This publication aims to provide introductory information for institutions in developing countries to better understand the issue of certification in the field of refrigeration and air conditioning, to assist in the creation of such certification and training schemes and to demonstrate to service technicians and enterprises why it is in their interest to participate. [Read/Download](#)



**[THE MONTREAL PROTOCOL AND HUMAN HEALTH](#)** - This booklet summarizes how the successful implementation of the Montreal Protocol has protected human health. It describes how ozone depletion would have led to increases in UV radiation and, based on current understanding of the mechanisms by which UV affects biological processes, how that would have led to a dramatic increase in skin cancers, cataracts and affected human health in other ways. It also covers recent progress in understanding the ‘World Avoided’ – that is the world we would have lived in without a successful Montreal Protocol. [Read/Download](#)



**[FINANCING THE CLIMATE CO-BENEFITS OF THE HCFC PHASE-OUT](#)** - A guide for Low Volume Consuming Countries - Hydrochlorofluorocarbons (HCFCs) are being phased out worldwide under the Montreal Protocol on Substances that Deplete the Ozone Layer. The Parties to this treaty encouraged countries to promote the selection of alternatives to HCFCs that minimise environmental impacts, in particular impacts on climate. The Protocol's Multilateral Fund encourages developing countries to explore potential financial incentives and opportunities for additional resources to maximise the environmental benefits from HCFC Phase out Management Plans (HPMPs). This booklet explains how Ozone Officers in low volume consuming countries can explore such opportunities for climate co-benefits. Read/Download in [English](#) | [French](#) | [Spanish](#)



**[SAFE USE OF HCFC ALTERNATIVES IN REFRIGERATION AND AIR CONDITIONING](#)** - An Overview for Developing Countries - Many of the alternative refrigerants to hydrochlorofluorocarbons (HCFCs) have particular characteristics in terms of toxicity, flammability and high pressure which are different from those used previously. It is therefore important that the refrigeration and air-conditioning industry adapts to both the technical and safety issues concerning these refrigerants. This publication provides an overview of the alternatives, their general characteristics and their

application in the context of the safety issues. It provides guidance for National Ozone Units (NOUs) and other interested parties in developing countries on how they can advise and assist their national stakeholders in the selection and implementation of alternative refrigerants. [Read/Download](#)



**PHASING-OUT HCFCs IN SMALL AND MEDIUM-SIZED ENTERPRISES** - This booklet aims to assist foam enterprises, especially SMEs, to better understand policies on HCFC phase-out, access to assistance from the Multilateral Fund for the Implementation of the Montreal Protocol and access alternative technologies in different foam applications taking into account challenges in converting to alternative technology. It also discusses some tips on how to identify enterprises that may use HCFCs and verify the HCFCs consumption of enterprises. [Read/Download](#)



**INTERNATIONAL STANDARDS IN REFRIGERATION AND AIR-CONDITIONING** - This guide provides an introduction and simple overview of the issues related to international standards in the refrigeration and air-conditioning sector and how they can be useful in the context of the phase-out of hydrochlorofluorocarbons (HCFCs) in developing countries as required by the Montreal Protocol on Substances that Deplete the Ozone Layer. Read/Download in [English](#) | [French](#) | [Spanish](#)



[Guide on Good Practices: Phasing out HCFCs in the Refrigeration and Air-conditioning Servicing Sector](#)



[Phasing out HCFCs in Small and Medium-sized Foam Enterprises](#)



[Demonstrating the feasibility of R-290 based AC manufacturing: China's Midea and Meizhi case](#)



[Low-GWP Alternative for Small Rigid PU Foam Enterprises](#)

► [Learn more](#) about OzonAction publications

## EVENTS

2017



[12<sup>th</sup> Heat Pump Conference](#), 15-18 May 2017, Rotterdam, the Netherlands



[ATMOsphere America 2017](#), 5-7 June 2017, San Diego, USA. Interactive workshops bringing together decision makers from industry and government to change the future of natural refrigerants.



[ATMOsphere Asia 2017](#) taking place a day before the [Bangkok RHVAC trade show](#), 7-9 September, which ranks among the world's best HVAC&R exhibitions and is the second largest in the Asia Pacific region.



[9<sup>th</sup> International Conference on Compressors and Coolants](#), 6-8 September 2017, Bratislava, Slovakia



[Future of HVAC 2017](#) – 13–14 September 2017, Sydney, NSW, Australia



[EUREKA 2017: Heating, Cooling & Ventilation: Sustainable technologies for a better life](#),



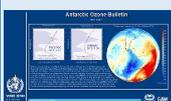
# READING



[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.



[UNEP and USEPA: Promoting ozone and climate-friendly technologies in public procurement - a scoping study of Asia Pacific](#)



[WMO Antarctic Ozone 2016 Bulletins](#) - Containing information on the state of the ozone layer in the Antarctic at roughly two week intervals from August to November. The bulletins are based on data provided by WMO Members which operate ozone monitoring stations in the southern hemisphere and satellites to observe ozone globally.



The [EU F-Gas Regulation Handbook](#), Keeping Ahead of the Curve as Europe Phases Down HFCs - a free online resource for climate media and other concerned parties, published by the London-based Environmental Investigation Agency (EIA).



[Alternative Refrigerant Evaluation for High-Ambient-Temperature Environments: R-22 and R-410A Alternatives for Mini-Split Air Conditioners](#)



[AREA Guidance on minimum requirements for contractors' training & certification on low GWP Refrigerants](#) - AREA has updated its Guidance on minimum requirements for contractors' training & certification on low GWP Refrigerants.



[Free guide to F-gas changes](#) The European contractors association AREA has produced a timely guide to the F-gas regulations which clarifies the new rules, their impact and their practical application...[Read more](#)



The recent [Alternatives to HCFCs/HFCs in developing countries](#) with a focus on high ambient temperatures" study carried out by Öko-Recherche for the European Commission stresses that the refrigerant and blowing agent demand is expected to triple by 2030 in developing countries as a result of economic growth. A sector by sector analysis shows that a climate-friendly replacement for current and future of HCFCs and high GWP HFCs is possible in most applications ...



[Primer on Hydrofluorocarbons](#), Fast action under the Montreal Protocol can limit growth of HFCs, prevent up to 100 billion tonnes of CO<sub>2</sub>-eq emissions by 2050, and avoid up to 0.5°C of warming by 2100. IGSD, January 2014, Lead authors: Durwood Zaelke, Nathan Borgford-Parnell, and Danielle Fest Grabel. Contributing authors: Stephen O. Andersen, Xiaopu Sun, Dennis Clare, Yuzhe Peng Ling, and Alex Milgroom.



[Flammable Refrigerants Safety Guide](#), AIRAH - Many of the refrigerants traditionally used in refrigeration and air conditioning systems in Australia have been non-flammable, non-toxic, synthetic greenhouse gases (SGGs) that have a high global warming potential (GWP). These were typically synthetic refrigerants including CFCs,

HCFCs and HFCs. Due to the growing national and international concern regarding the resulting atmospheric effects of SGGs, the use of alternative low GWP refrigerants is increasing. ...

[Recent Trends in Global Emissions of Hydrochlorofluorocarbons and Hydrofluorocarbons: Reflecting on the 2007 Adjustments to the Montreal Protocol](#). S. A. Montzka \*†, M. McFarland ‡, S. O. Andersen §, B. R. Miller †||, D. W. Fahey †, B. D. Hall †, L. Hu †||, C. Siso †||, and J. W. Elkins †† Earth System Research Laboratory, National Oceanic and Atmospheric Administration, Boulder, Colorado 80305, United States ‡ DuPont Chemicals & Fluoroproducts, Wilmington, Delaware 19805, United States § Institute for Governance & Sustainable Development, Washington, D.C. 20007, United States || Cooperative Institute for Research in Environmental Sciences, University of Colorado, Boulder, Colorado 80309, United States

[Geothermal Heating and Cooling: Design of Ground-Source Heat Pump Systems-ASHRAE](#)

A first edition, the IIR guide “[CO<sub>2</sub> as a Refrigerant](#)” highlights the application of carbon dioxide in supermarkets, industrial freezers, refrigerated transport, and cold stores as well as ice rinks, chillers, air conditioning systems, data centers and heat pumps. This guide is for design and development engineers needing instruction and inspiration as well as non-technical experts seeking background information on a specific topic. Publication, IIR Technical Guide, 2014.

FREE [HVAC Optimisation Guide released](#) by AIRAH and the NSW Office of Environment & Heritage outlines 20 HVAC optimisation strategies and how they can be applied to the vast majority of commercial systems, both in older and modern buildings...

[Latin America Industrial Refrigeration Equipment Market Benefits from Region Flourishing Food and Beverage Production and Processing Market](#) – Trends and forecast 2013-2019.

[Solvents & Bio Solvents Market Outlook - Global Trends, Forecast, and Opportunity Assessment \(2014-2022\)](#)

[Chlorofluorocarbon Market: Global Industry Analysis and Forecast 2015 to 2021](#)

[Getting The World Off the Chemical Treadmill: A per capita convergence framework for an ambitious phase-down of HFCs under the Montreal Protocol](#), By: Umang Jalan, Research Associate, Climate Change Programme, Centre for Science and Environment

[The Importance of Ambition in the 2016 HFC Phase-Down Agreement](#). Download the full report from EIA, [here](#)

[Update on the Illegal Trade in Ozone-Depleting Substances](#) – The Environmental Investigation Agency (EIA) briefing to the 38<sup>th</sup> meeting of the Open-Ended Working Group of Parties to the Montreal Protocol, in Vienna, Austria, from July 18-21, 2016.

[F-Gas Regulation shaking up the HVAC&R industry](#). Commissioned by the Greens in the European Parliament, the study provides qualitative and quantitative analysis of the early impacts of the EU F-Gas Regulation on the European industry and evaluates its influences on other countries and regions in designing their own policies to curb HFCs.



Industrial Refrigeration Equipment Market (Refrigeration systems, Coil and Condensers, Thermal panels and Parts) - Latin America Industry Analysis, Size, Share, Growth, Trends and Forecast 2013 - 2019





"[The Road to Competence in Future Green Technologies](#)", the International Special Issue 2016-2017 of Centro Studi Galileo. Read/Download [pdf version](#) | [E-book](#)

The [2016 editions of ASHRAE's major refrigerants-related standards](#) have been published as a package with 30 new refrigerants and refrigerant blends added.

[Quest for climate-friendly refrigerants finds complicated choices](#), National Institute of Standards and Technology (NIST), 17 February 2017, Summary: Researchers have just completed a multiyear study to identify the 'best' candidates for future use as air conditioning refrigerants that will have the lowest impact on the climate.

The second issue of [The Natural Voice magazine](#), entitled 'Mainstreaming Natural Refrigerants' showcases examples of installations using natural refrigerants around the world, including in the Gambia, Jordan, South Africa, China, Thailand, Tanzania and Saudi Arabia.

[Industria & Formazione, no. 2/17](#), Preview of the journal Industry & Training in refrigeration and air conditioning, technical refrigeration and air-conditioning, Centro Studi di Galileo # 406 Technological innovations in cooling and air conditioning with special focus on the F-Gas new regulations, new refrigerants, components and systems, food storage and cold sector. Vol. XLI - No. 2-2017.

Refrigeration: An increasingly strategic issue for data centres - [Cooling data centres: A major economic challenge](#) Today, data centres play a key role in many businesses as information technology is becoming an increasingly strategic factor. Cooling can present a major economic challenge for data centres. If cooling is implemented incorrectly or is inadequate, the amount of energy required to cool a data centre can equal or exceed that used to operate the equipment. Larger data centres can use a staggering amount of energy just to ensure the day-to-day running of electronic equipment. As a result, these data centres can produce a great deal of heat, which require large-scale cooling systems in order to maintain efficient and continual operation... Browse through a selection of [articles and papers](#), by [iifir](#)

[shecco](#) GUIDE to Natural Refrigerants Training in Europe shows that training is readily available. [Read on r744](#)

## MISCELLANEOUS

### Announcement!

The UN 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 celebration of the 30<sup>th</sup> Anniversary of the Montreal Protocol - which was agreed as 16 September 1987.

The new website will be launched during the upcoming 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 an 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](#)

Looking forward to receiving the 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 important contribution to the Montreal Protocol success and ozone layer protection.**

▶ Contact : [Samira Korban-de Gobert](#), UN Environnement, OzonAction

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



**How will the heat pump market move towards natural refrigerants?** Eric Delforge talks about the energy-efficient properties of natural refrigerants when used in heat pump applications.

[Watch on r774's YouTube channel](#)



[UN knowledge platform launches live-tracking tools to review progress towards SDGs](#), UN Environment's dynamic online platform designed for sharing contextualized data...



New *International Journal of Refrigeration* service for IIR members - As of January 2017, not only will IIR members continue to receive the hard copy of the journal but IIR membership will now also give members access to the complete archives of the *International Journal of Refrigeration (IJR)* online. Designed with IIR members in mind, this new and practical electronic subscription gives members substantial advantages:

- Immediate and permanent access to the latest research and to IJR archive
- Access the latest articles as soon as they become available online.
- Browse, search and read each one of the nearly 4,500 papers since Volume 1, Issue 1.
- Unlimited access to seminal contributions to the field of refrigeration dating back to 1978.
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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](mailto:info@area-eur.be)



MONTREAL PROTOCOL  
WHO'S WHO

**The Montreal Protocol Who's who**

*See the latest nominations /*

Nominate Ozone Layer Protection Champion

From Your Country /Region >>

<http://www.unep.fr/ozonaction/montrealprotocolwhoswho>

**Disclaimer:** The United Nations Environment (UNEP), Economy Division, OzonAction provides OzoNews as a free service for internal, non-commercial use by members of the Montreal Protocol community.

Since its inception in January 2000, the goal of OzoNews is to provide current news relating to ozone depletion and the implementation of the Montreal Protocol, to stimulate discussion and promote cooperation in support of compliance with the Montreal Protocol. With the exception of items written by UNEP and occasional contributions solicited from other organizations, the news is sourced from on-line newspapers, journals and websites.

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.



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**Prepared by:** Samira Korban-de Gobert, OzonAction

**Reviewed by:** Shamila Nair-Bedouelle, Head OzonAction Branch, and Ezra Clark, OzonAction

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