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# OzoNews

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

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Global

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# 1. Post-Meeting Feedback Survey - OzonAction Second Global Inter-Regional and Parallel Network Meetings for National Ozone Officers, 17-20 February 2019

UN Environment Programme (UNEP) OzonAction organized the Second OzonAction Global Inter-Regional and Parallel Networks Meeting for National Ozone Officers from 17-20 February 2019 on the premises of UNESCO headquarters in Paris, France. These events were organised by the Compliance Assistance Programme (CAP) as part of UNEP’s work programme as an Implementing Agency of the Multilateral Fund for the Implementation of the Montreal Protocol on Substances that Deplete the Ozone Layer. This event was designed to help National Ozone Officers from Article 5 (developing) countries address emerging needs under the Protocol’s hydrochlorofluorocarbon (HCFC) phase out and to prepare for the ratification and initial implementation phase of the Kigali Amendment, which entered into force on 1 January 2019.

Following the meeting, participants (Article 5 countries, non-Article 5 countries, experts, and Secretariats) were requested to take part in a quick online survey to enable OzonAction to receive important feedback and guidance from the meeting participants.

The survey was completed by 100 respondents. This represented approximately 40% of the total number of participants requested to carry out the survey. Of the respondents to the survey, 66% were National Ozone Officers. This and the distribution of responses by other categories of participants broadly reflected the distribution of participants in the meeting. In general, the feedback was very positive with participants scoring the meeting with an overall score of 9.0 (out of a total score of 10). All scores were higher than those received from a similar survey following the 2018 First Inter-Regional Thematic Technical Workshops and Regional Network Meetings for National Ozone Officers.

The highest score was associated with the question regarding the meetings being useful to help participants becoming more familiar with the OzonAction Tools and Partnerships created to assist Article 5 Countries (with a score of 9.6). Respondents to the survey, the great majority of which were National Ozone Officers (NOOs) and National Ozone Unit (NOU) staff (see figure 1) scored the Regional Network Meetings as the most favoured component (with a score of 9.1). The Plenary session and 'Join the Expert' Sessions were scored equally favourably, with an average score of 8.7 each.

The lowest score was assigned to the question regarding the meetings providing adequate time for discussion (with a score of 8.1). This score was higher than that received from the 2018 meetings, but despite the ‘discussion panel’ approach adopted for the meeting, with all the sessions being led by Article 5 countries, the innovative ‘Join the experts’ session, the response to this question, and as noted in the some of the comments, participants still felt more time was needed for discussion. The additional 56 comments and suggestions provided by the respondents to the survey included statements of thanks and appreciation as well as comment, criticism and suggestions.

The positive feedback and multiple requests for more frequent similar meetings received through this survey and other avenues are encouraging to the CAP that this Second Global Inter-Regional and Parallel Network Meetings for National Ozone Officers was a success, including the new innovative approaches, such as the ‘Join the Expert’, and validated the colossal effort need to prepare and run it.

**Read/Download:** [Meeting report](#) | [Full survey report](#)

**UN Environment, OzonAction, March 2019**

Question (original number)	Average Score (out of 10)
4 What was your overall opinion of the Inter-Regional and Parallel Network Meetings (17-20 February)?	9.0
5 Did you find that there was enough time for discussion?	8.1
6 What was your opinion of the Plenary Session (The five Panel Discussions on Monday 18 February)?	8.7
7 What was your opinion of the 'Join the Expert' Session (Tuesday morning 19 February)?	8.7
8 What was your opinion of the Regional Network Meetings (17, 19 afternoon and 20 February)?	9.1
9 Have these meetings been useful to help you become more familiar with the OzonAction Tools and Partnerships created to assist Article 5 Countries?	9.6

## 2. UN Environment fights to cut cooling and heating emissions



Cooling and heating are—for those lucky enough to have them—a lifesaver, keeping children healthy, vaccines stable, food fresh, energy supplies stable, economies productive and environments clean.

But there is a cruel irony at play. Cooling and heating systems consume over 50 per cent of building energy and run largely on fossil fuels—at a level of 84 per cent in the European Union, for example. Consequently, they are pushing our planet's temperature up to dangerous levels.

We can expect more greenhouse gas emissions from the sector as the planet warms and middle classes expand in developing economies. We need this growth to provide equitable access to the 1.1 billion people who face imminent threats from a lack of cooling.

With energy consumption in the refrigeration, air conditioning and heat pump sectors expected to surge 33 times by 2100, we need to build up renewable energy and energy efficiency to avoid runaway climate change. This is possible, as the work of UN Environment's District Energy in Cities Initiative is showing in Bosnia and Herzegovina, India and the 14 other countries where it works.

In Bosnia and Herzegovina's second-largest city, Banja Luka, district energy—a network of underground pipes that carry hot or cold water to multiple buildings—keeps around 20,000 residents warm when winter bites hard. But the 35-year-old system has relied on fuel oil to power its creaky and inefficient boilers. The Initiative teamed up with the city, the UN Environment-hosted Climate Technology Centre and Network and the European Bank for Reconstruction and Development, to change this.

Through the partnership, the city attracted US\$22 million in investment—a US\$9.5 million loan from the European Bank for Reconstruction and Development and the rest from the private sector—for a district heating network that runs on renewable energy. The 49 megawatt system, which uses locally sourced biomass, came online in March 2018. This increased the share of renewables by 75 per cent, reducing CO<sub>2</sub> emissions by 91 per cent and saving up to US\$1 million annually in reduced fuel costs. It also improved air quality by cutting sulphur dioxide emissions by 94 per cent.

“The intervention of the District Energy in Cities Initiative and partners enabled us to overcome long-standing barriers to modernizing our district heating system and attract the international investment and expertise needed,” said Igor Radojičić, Mayor of Banja Luka.

With this success under its belt, the Initiative is expanding its work. One of the biggest impacts from this expansion could come in India, where, according to the country's draft National Cooling Action Plan, space cooling demand will rise 11 times by 2037. District cooling, already used in cities from Amman to Stockholm, is on the table as a viable option to meet this demand.

Based on feasibility studies, two projects identified in the pilot city Thane are being taken to market for a combined investment of US\$50 million. Once built, these projects could save 30,000 tonnes of CO<sub>2</sub> equivalent, phase out harmful refrigerants and give customers cost savings of over 10 per cent each year.

“District energy will dramatically cut energy costs for our businesses and public buildings, increase urban resilience and deliver significant environmental benefits,” said Sanjeev Jaiswal, Municipal Commissioner, City of Thane. “We hope to pioneer the technology's development for the benefit of all cities in India.”

UN Environment is also backing another process to make the cooling industry more climate-friendly: the Kigali Amendment to the Montreal Protocol. This legally binding expansion to the treaty that protects our ozone layer can avoid up to 0.4°C of global warming this century by reducing the use of powerful climate-warming refrigerants known as hydrofluorocarbons by 80 per cent.

It could avoid even more warming by improving the energy efficiency of new equipment that will need to be designed. This is built into the Amendment, which had 65 ratifications by the end of 2018. UN Environment is supporting countries to adopt energy efficiency standards during the transition.

Increased district cooling use is central to the Amendment. The Kigali Cooling Efficiency Programme, a group of philanthropists supporting the Amendment by helping low- and middle-income countries with the transition, is the most recent donor to support the Initiative, backing it to accelerate investment in district cooling in Egypt.

Ultimately, cooling and heating present huge opportunities to minimize greenhouse gas emissions. With pledges under the Paris Agreement only taking the world one third of the way towards the cuts needed to limit climate change to 2°C, we have to seize them.

This article is part of a series of stories highlighting UN Environment's work and published in the [2018 Annual Report](#).

UN Environment, 7 March 2019

### 3. Multilateral treaties address some chemicals and issues of global concern, but implementation challenges remain

[...] 18. The international community has taken concerted action through legally binding treaties on some of the most harmful chemicals and on some issues of global concern. Prominent examples include the multilateral treaties shown in Figure 5.

These treaties have catalysed selected regulatory actions, raised awareness, and succeeded in reducing some exposures to the targeted chemicals and wastes. However, not all treaties have been universally ratified.

Given that treaties are designed to address specific chemicals and issues, many hazardous substances are beyond their scope. While implementation of the Montreal Protocol is a notable success story, the extent to which the objectives of a number of other treaties have been achieved is uncertain. In the case of the Stockholm Convention, the 2016 effectiveness evaluation concluded that “the Convention provides an effective and dynamic framework to regulate persistent organic pollutants throughout their life cycle”.

However, it identified areas for further work, such as gaps in regulatory and assessment schemes for industrial chemicals and the large remaining stockpiles of obsolete pesticides and PCBs. Significant progress has also been in the case of other treaties. Nevertheless, further efforts are needed to achieve full implementation, as in the case of the chemicals dimension of the International Health Regulations (2015). [Part II, Ch. 1, 3] [...]

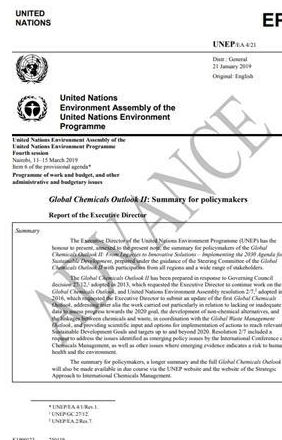
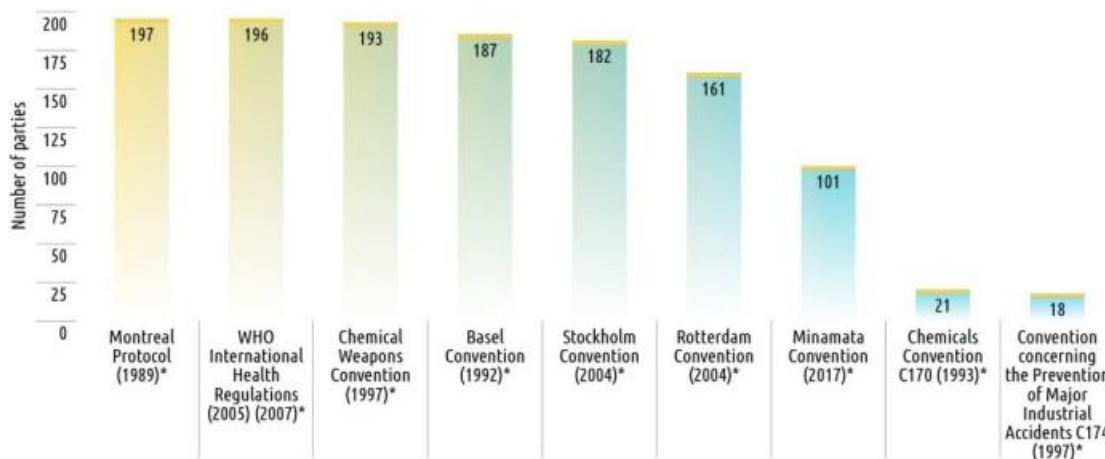


Figure 5: Number of parties to relevant multilateral legally binding treaties (as of 14 January 2019)



\* year of entry into force

Excerpt from the “UNEP Releases Global Chemicals Outlook Summary for Policymakers”, page 11.

### Global Chemicals Outlook II: Summary for policymakers.

United Nations Environment Assembly of the United Nations Environment Programme Fourth session, Nairobi, Kenya, 11–15 March 2019.

## 4. Vienna Convention Trust Fund for Research and Systematic Observations - A viable tool for the continued protection of the ozone layer

Our planet avoided a catastrophe. The concerted actions under the Montreal Protocol of the Vienna Convention virtually eliminated the emission of ozone-depleting substances (ODSs). Thanks to this action, the ozone layer, the invisible shield that protects all life on Earth from harmful ultraviolet (UV-B) radiation from the sun, is slowly recovering. Assuming continued compliance with the Protocol, the ozone layer should completely heal by 2060, continuing to protect the health of people, ecosystems and economies.

But we cannot afford to rest on our laurels. We need to keep observing the ozone layer and the remaining amounts of ODSs in the atmosphere, monitoring the impacts of our actions and evaluating the recovery of the ozone layer. The unexpected increase in emissions of ozone-depleting trichlorofluoromethane (CFC-11) reported by scientists in 2018 shows the importance of our continued vigilance. Had we not been monitoring the atmosphere for ODSs, we would never have detected the unexpected emissions, which may be due to illegal production of CFC-11. This scientific finding spurred the parties to the Montreal Protocol to launch an urgent response.

More resources are needed to facilitate monitoring of the recovery of the ozone layer and inter-calibration of current and future satellites dedicated to ozone surveillance. The Trust Fund for Research and Systematic Observations, which operates under the Vienna Convention for the Protection of the Ozone Layer, plays an important role in this effort.

### How does the Trust Fund support research and systematic ozone observations?

- The fund supports national and international research and monitoring activities in developing countries and countries with economies in transition.
- An Advisory Committee, established in 2015, advises the Ozone Secretariat and the World

Meteorological Organization (WMO) on planning, developing and implementing the Trust Fund’s activities.

- Decisions on how to distribute the funds effectively are informed by the recommendations of research and monitoring needs developed by the Ozone Research Managers at their triennial meetings where they review national and international research and monitoring programmes. [...]

### What needs to be done for continued protection of the ozone layer?

- We need to enhance the contribution of developing countries and countries with economies in transition to ozone layer science. This effort should include calibrating, intercomparing and relocating monitoring instruments as well as capacity-building for optimal results. Such participation will improve global data availability and enable these countries to participate in ozone layer science as equal partners with developed countries, for the global good.
- The ground-based ozone observing system is not adequate, particularly in the tropics, where the changing climate plays a major role in influencing the recovery of the ozone layer. As this greatly limits the understanding



and prediction of future ozone layer changes, more observations are needed at those locations.

• Current observational “gold standard” instruments are expensive and difficult to deploy. They are getting old. Moreover, the expertise to use and repair them has dwindled to a few people who will be retiring soon. We therefore need to deploy newer, smarter, more affordable and easy-to-use sensors and intercompare them with these current instruments. [...]

**Contact:**

Chair of the Advisory Committee of the Trust Fund [Mr. A.R. Ravishankara](#), Professor Department of Chemistry and Atmospheric Science Colorado State University

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

## 5. ASHRAE/UNEP Lower-GWP Refrigeration and Air Conditioning Innovation Award

### What Is Lower-GWP Refrigeration and Air-Conditioning Innovation Award?

The award promotes innovative design, research and practice by recognizing people who have developed or implemented innovative technological concepts applied in developing countries to minimize global warming potential (GWP) through refrigeration and air-conditioning management.

### Who Are the Awarding Organizations?

Award recipients will be recognized by ASHRAE and UN Environment.

### How Often Is the Award Issued/Awarded?

Annually

### What Are the Award Categories?

First Place and Honorable Citation awards are made in two categories:

- Residential Applications
- Commercial/Industrial Facilities

### What Are the Entry Criteria?

The award promotes innovative design, research and practice by recognizing people who have developed or implemented innovative technological concepts applied in developing countries to minimize global warming potential (GWP) Refrigerants.

### How Do I Enter for the Award **ENTER FOR THE AWARD**

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

- Description of innovation in field of lower-GWP refrigerants
- Project/Applicant details (description must include confirmation project has been implemented and date of implementation)
- Extent of need.
- Description and goal of the research, design, practice or project
- Naming of low GWP refrigerants used and description of associated refrigerant management practices associated with the lower GWP refrigerants
- Environmental impact achieved including specific reference to the GWP chemicals' contribution
- Further application of project
- Financial feasibility in developing countries and economic impact of the research, design or practice
- Photographs illustrating the project and tables, figures or charts that present statistical data demonstrating the project's successful performance or experimental findings are encouraged to be provided with the application.

### When Does the Entry Period Begin and End?

Submission of entries for 2019 awards will be accepted between January 2019 and May 15, 2019.



### How are the Winners Selected?

The winners in each category will be selected based on innovative solutions for designs, practice or research using lower-GWP technologies. The selection will take into account the following criteria:

- Extent of need (25%);
- Innovative aspects in transforming conventional practices (25%);
- Technical replicability to developing countries (25%); and
- Economy feasibility to developing countries (25%).

### What Happens to the Winning Projects

Winning projects will be publicized by both organizations, and the First Place recipients will receive a stipend to receive their award at a UN Environment event. UN Environment, represented by the Law Division (OzonAction), and ASHRAE have a Memorandum of Understanding to establish technical cooperation and mutual coordination toward providing professional technical services to the refrigeration and air-conditioning stakeholders (governmental, private, and public). The organizations work to ensure that up-to-date related technical information and standards are properly introduced and promoted. ASHRAE is a worldwide technical society of more than 57,000 individual members.

[Lower-GWP Refrigeration and Air-Conditioning Innovation Award flyer](#)

#### Contact:

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

[W. Stephen Comstock](#), Manager of Business Development EMEA, ASHRAE

## Africa

### 6. Premier calls for more climate-friendly development approaches (Rwanda)



Prime Minister Edouard Ngirente has called on countries to ratify the Kigali Amendment to the Montreal Protocol in a bid to avoid an additional half a degree Celsius of warming by the end of the century.

The Prime Minister was speaking in Nairobi, Kenya at the One Planet Summit alongside President Uhuru Kenyatta of Kenya, President Emmanuel Macron of France, Interim President of the World Bank Group, Kristalina Georgieva, and Deputy Secretary-General of the United Nations, Amina Mohammed.

DR Congo's new president, Felix Antoine Tshisekedi was also in attendance.

Ngirente said that by implementing the amendment with energy efficiency, the world can avert an additional half a degree Celsius of warming.

The amendment has been described by experts as a key pillar of global Climate Action. The agreement seeks to eliminate hydrofluorocarbons, the greenhouse chemicals better known as HFCs – that usually used in refrigerators and air conditioners, among other coolants – which are blamed for heating up the planet.

The Kigali Amendment aims at reducing hydrofluorocarbons by more than 80 per cent over the next 30 years.

“The Government of Rwanda thanks the 69 nations that have already ratified the Kigali Amendment, and encourages all Member States to do so in order to fast-track the phase-out of these warming gases, and strengthen global climate action. If we implement the Kigali Amendment with energy efficiency, we can avoid an additional half a degree Celsius of warming by the end of the century,” the Premier said.

He said that in the face of growing pressure on the environment as a result of climate change, it is necessary for countries to work towards development models that are clean, green and climate-friendly.

“Never before have the pressures on our environment been greater. In many parts of the world, climate change is already affecting our societies. Economies and ecosystems are struggling to keep up with the rate of warming,” he said.

Ngirente said that among the most critical climate interventions necessary on the African continent at the moment are management of water resources and reducing dependency on biomass as a source of cooking energy.

“Water resources management and reducing dependency on biomass as a source of cooking energy are two critical aspects of climate action in Africa, and necessitate innovative solutions. I encourage nations across the continent to work together to address these challenges for the health and well-being of all,” he said.

He called on countries to be part of the cooperation initiatives to address challenges for the health and well-being of all.

In the aspect, he said that Rwanda, in partnership with the UN Environment, Global Environment Facility, the World Economic Forum and other governments recently established the African Circular Economy Alliance.

Inviting countries to be part of the initiative, the Premier said that the alliance aims at advancing the uptake of the circular economy across the continent through sharing experience and facilitating new partnerships between public and private institutions.

“I invite all African nations to join the Alliance. Our common goal should be the creation of a zero waste society that will address environmental issues, boost economic growth and job creation,” he added.

**The New Times, 15 March 2019, By: Collins Mwai**

[See also >>>](#)

[The fourth session of the UN Environment Assembly](#), Nairobi, Kenya, 11 - 15 March 2019.

[Daily reporting](#) by IISD ENB services.

## Latin America and Caribbean

### 7. Cuba to Reduce Use of Gases with Impact on the Greenhouse Effect

Cuba is preparing to implement the Kigali Amendment to reduce the use of hydrofluorocarbons (HFCs), gases with a serious impact on the greenhouse effect, specialized sources report Wednesday.

Although these compounds do not contribute to the ozone layer's deterioration, they do boost the greenhouse effect and affect global warming, Nelson Espinosa, a specialist at Cuba's Ministry of Science, Technology and Environment, told Granma newspaper.

In this sense, it is necessary to work urgently to reduce their use and gradually replace them in the refrigeration and air conditioning sector with alternative environmentally friendly gases, Espinosa said.

Referring to the initial actions aimed at creating the conditions so that the country can first ratify the amendment and then join in its fulfillment, the expert underlined the realization of three training workshops held from this Tuesday until Thursday at the National Hotel of Cuba, in Havana.





Among the issues to be discussed are refrigerant gases and alternative technologies with low global warming potential to eliminate ozone-depleting substances and HFCs in the refrigeration and air conditioning branches, as well as energy efficiency in both.

In recent years the increase in the amount of HFCs on the market has been fueled by the growing demand for refrigeration equipment, especially in developing countries with a growing middle-class population and in warmer countries.

For this reason, on October 15, 2016, the 197 members of the Montreal Protocol [agreed to] the Kigali Amendment to gradually reduce the use of HFCs worldwide.

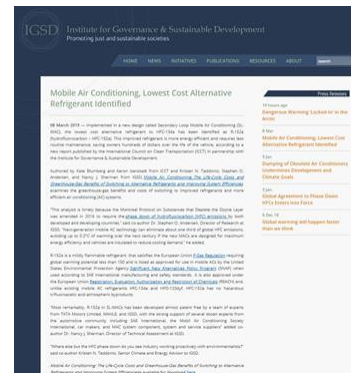
This agreement will reinforce the Paris Agreement's goal of keeping global warming below 1.5 degrees Celsius to two degrees Celsius by 2100.

**Prensa Latina, 6 March 2019**

# North America

## 8. Mobile Air Conditioning, Lowest Cost Alternative Refrigerant Identified

Implemented in a new design called Secondary Loop Mobile Air Conditioning (SL-MAC), the lowest cost alternative refrigerant to HFC-134a has been identified as R-152a (hydrofluorocarbon – HFC-152a). This improved refrigerant is more energy efficient and requires less routine maintenance, saving owners hundreds of dollars over the life of the vehicle, according to a new report published by the International Council on Clean Transportation (ICCT) in partnership with the Institute for Governance & Sustainable Development.



Authored by Kate Blumberg and Aaron Isenstadt from ICCT and Kristen N. Taddonio, Stephen O. Andersen, and Nancy J. Sherman from IGSD, [Mobile Air Conditioning: The Life-Cycle Costs and Greenhouse-Gas Benefits of Switching to Alternative Refrigerants and Improving System Efficiencies](#), examines the greenhouse-gas benefits and costs of switching to improved refrigerants and more efficient air conditioning (AC) systems.

“This analysis is timely because the Montreal Protocol on Substances that Deplete the Ozone Layer was amended in 2016 to require [the phase down of hydrofluorocarbon \(HFC\) emissions](#) by both developed and developing countries,” said co-author Dr. Stephen O. Andersen, Director of Research at IGSD. “Next-generation mobile AC technology can eliminate about one third of global HFC emissions, avoiding up to 0.2°C of warming over the next century if the new MACs are designed for maximum energy efficiency and vehicles are insulated to reduce cooling demand,” he added.

R-152a is a mildly flammable refrigerant that satisfies the European Union [F-Gas Regulation](#) requiring global warming potential less than 150 and is listed as approved for use in mobile ACs by the United States Environmental Protection Agency [Significant New Alternatives Policy Program](#) (SNAP) when used according to SAE International manufacturing and safety standards. It is also approved under the European Union [Registration, Evaluation, Authorization and Restriction of Chemicals](#) (REACH) and, unlike existing mobile AC refrigerants HFC-134a and HFO-1234yf, HFC-152a has no hazardous trifluoroacetic acid atmospheric byproducts.

“Most remarkably, R-152a in SL-MACs has been developed almost patent free by a team of experts from TATA Motors Limited, MAHLE, and IGSD, with the strong support of several dozen experts from the automotive community including SAE International, the Mobil Air Conditioning Society International, car makers, and MAC system component, system and service suppliers” added co-author Dr. Nancy J. Sherman, Director of Technical Assessment at IGSD.

“Where else but the HFC phase down do you see industry working proactively with environmentalists?” said co-author Kristen N. Taddonio, Senior Climate and Energy Advisor to IGSD.

Mobile Air Conditioning: The Life-Cycle Costs and Greenhouse-Gas Benefits of Switching to Alternative Refrigerants and Improving System Efficiencies is available for download [here](#).

Institute for Governance & Sustainable Development (IGSD), 8 March 2019

## 9. Market Trends for Natural Refrigerants in North America and Globally - Upcoming Webinar



US EPA GreenChill upcoming Webinar's Topic: **Market Trends for Natural Refrigerants in North America and Globally**

**Date:** Tuesday, April 2, 2019

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

**Description:** Klara Skacanova (*Shecco*) will discuss the latest market and technology trends for CO<sub>2</sub>, hydrocarbons and ammonia in commercial refrigeration applications.

This will include market data on the current state of these technologies. While ammonia has traditionally been used in larger industrial applications, the webinar will mention examples of installation of low-charge ammonia systems in supermarkets.

### To join the webinar:

1. Visit the webinar access page: Market Trends for Natural Refrigerants in North America and Globally
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, April 2019**

# Asia Pacific

## 10. India Cooling Action Plan Launched

It is yet an indeed proud moment for the country since India is one of the first countries in the world to develop a comprehensive Cooling Action plan which has a long term vision to address the cooling requirement across sectors and lists out actions which can help reduce the cooling demand. Cooling requirement is cross-sectoral and an essential part for economic growth and is required across different sectors of the economy such as residential and commercial buildings, cold-chain, refrigeration, transport and industries Union Minister for Environment, Forest and Climate Change, Dr Harsh Vardhan released the India Cooling Action Plan (ICAP) on March 8 in New Delhi.

### India Cooling Action Plan Launched: All about it

Union Minister for Environment, Forest and Climate Change, Dr. Harsh Vardhan released the India Cooling Action Plan (ICAP) on March 8 in New Delhi.

www.pib.gov.in  
www.india.gov  
www.mef.gov.in



India Cooling Action Plan LAUNCHED BY 08/03/19

The minister further stated that the India Cooling Action Plan (ICAP) provides an integrated vision towards cooling across sectors encompassing inter alia reduction of cooling demand, refrigerant transition, enhancing energy efficiency and better technology options with a 20-year time horizon.

#### **Key benefits of ICAP:**

The thrust of the India Cooling Action Plan (ICAP) is to look for synergies in actions for securing both environmental and socio-economic benefits. "The overarching goal of ICAP is to provide sustainable cooling and thermal comfort for all while securing environmental and socio-economic benefits for the society.

This will also help in reducing both direct and indirect emissions

#### **The India Cooling Action seeks to**

- (i) reduce cooling demand across sectors by 20% to 25% by 2037-38
- (ii) reduce refrigerant demand by 25% to 30% by 2037-38
- (iii) Reduce cooling energy requirements by 25% to 40% by 2037-38
- (iv) recognize "cooling and related areas" as a thrust area of research under the national S&T Programme
- (v) training and certification of 100,000 servicing sector technicians by 2022-23, synergizing with Skill India Mission. These actions will have significant climate benefits.

The following benefits would accrue to society over and above the environmental benefits:

- (i) Thermal comfort for all - provision for cooling for EWS and LIG housing
- (ii) Sustainable cooling - low GHG emissions related to cooling
- (iii) Doubling Farmers Income - better cold chain infrastructure - better value of products to farmers, less wastage of produce
- (iv) Skilled workforce for better livelihoods and environmental protection
- (v) Make in India - domestic manufacturing of air-conditioning and related cooling equipment's
- (vi) Robust R&D on alternative cooling technologies - to provide the push to innovation in a cooling sector

Cooling is also linked to human health and productivity. Linkages of cooling with Sustainable Development Goals (SDGs) are well acknowledged. The cross-sectoral nature of cooling and its use in the development of the economy makes provision for cooling an important developmental necessity. The development of ICAP has been a multi-stakeholder inclusive process encompassing different Government Ministries/Departments/Organizations, Industry and Industry Associations, Think tanks, Academic and R&D institutions.

**India Today, 9 March 2019**

## **11. Technicians learn proper RAC systems servicing (Brunei)**



Technicians learnt about proper procedures in servicing cooling systems along with installation and servicing of refrigeration and air conditioning (RAC) units, as well as the impact of refrigerants on the environment during a workshop.

The workshop was held by the Institute of Brunei Technical Education Jefri Bolkuah Campus (IBTE JBC) and Department of Environment, Parks and Recreation (JASTRe) from February 27 to 28.

A total of 18 technicians attended the workshop, conducted as part of Brunei Darussalam's Hydrochlorofluorocarbons Phase-Out Management Plan (HPMP) project under the Montreal Protocol, and the 20th of its kind held at IBTE JBC.

The course was facilitated by three national trainers from IBTE.

On the first day, the technicians learnt about the environmental and human health impact and safety and handling issues of RAC systems, while on the second day they were assessed theoretically and practically on the topics discussed the previous day.

Similar training workshops will be held throughout the rest of the year for technicians of registered RAC service companies in the four districts.

**Borneo Bulletin, 4 March 2019, By: Daniel Lim**

## 12. Japan to boost subsidy for low-GWP technology development

*Ministry of Economy, Trade and Industry allocates €5.1 million in FY2019, up from €2 million, for green refrigerant technology.*

The Japanese government's subsidy aimed at accelerating the development of low-GWP HVAC&R technology is set to increase to €5.1 million (¥650 million) in FY2019 from €2 million (¥250 million) in FY2018, said a representative from the Ministry of Economy, Trade and Industry (METI).

The announcement was made at the ATMOsphere Japan conference on natural refrigerants, held on 12 February 2019 in Tokyo.

"METI is currently intensively engaged in a number of initiatives aimed at the development of [low-GWP HVAC&R] technology," said Hideyuki Naoi, deputy director for METI, who announced the increase. This subsidy is part of a five-year plan which lasts from 2018 through 2022.

The increase comes after Japan's Ministry of Environment (MOE) confirmed in December of last year a €58 million budget for natural refrigerant installations in FY2019.

METI is in charge of the development and introduction of green refrigerant technology while MOE is in charge of the dissemination of those technologies, Naoi explained.

METI previously provided subsidies to Japan's New Energy and Industrial Technology Development Organization (NEDO), which, in turn, commissioned universities and private sector research organisations to develop new technology.

However, Naoi said, "in order to help encourage more intensive development of green refrigerant technology, METI would now be providing these subsidies directly to the private sector."

This will help Japan "achieve its HFC phase down obligation from 2029 onwards, strengthening our efforts to develop and introduce refrigerants using new alternatives," he said.

In June of last year, Japan revised its Ozone Layer Protection Law to control the production and import of HFCs. The new regulation came into force on 1 Jan 2019.

On 18 December 2018, Japan ratified the Kigali Amendment.

According to METI, its projections predict that Japan will have a very difficult time achieving its scheduled HFC consumption reduction targets after 2029.

**r744, 11 March 2019, By: Devin Yoshimoto**



Hideyuki Naoi, Deputy Director, Japan's Ministry of Economy, Trade and Industry, speaking during ATMOsphere Japan 2019

## West Asia

### 13. Middle East Industrial Refrigeration Systems Market to 2024: Forecast Analysis by Equipment Type, Refrigerant, Application and Country

*According to this research, the Middle East industrial refrigeration systems market is forecast to reach \$1,023 Million by 2024.*

[...] The countries across the Middle East region lags agricultural activities, resulting in an increased dependence on imported food & beverage products and thereby driving the demand for industrial refrigeration system market in the Middle East region across all the countries in order to preserve the perishable edible items.

MIDDLE EAST INDUSTRIAL REFRIGERATION SYSTEMS MARKET (2018-2024): MARKET FORECAST BY EQUIPMENT TYPES, BY REFRIGERANTS, BY APPLICATIONS, BY COUNTRIES, AND COMPETITIVE LANDSCAPE



The market for these systems recorded a decline in the past few years owing to declining oil prices in the Middle East region. However, with recovering crude oil prices, Middle East Industrial Refrigeration Systems Market revenues are anticipated to increase.

Carbon Dioxide based industrial refrigeration systems is expected to register the highest growth during 2018-24 due to their eco-friendly characteristics such as low ozone depleting potential. Further, many Middle East countries follow norms and regulations under the Montreal Protocol, leading to higher adoption of systems utilizing ammonia, carbon dioxide or a mixture of air & water for refrigeration purposes.

The trend is anticipated to eliminate the utilization of systems based on hydrochlorofluorocarbons as these gases result in the depletion of the ozone layer and pose a potential threat to the environment. [...]

**Research and Markets, March 2019**

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## Europe & Central Asia

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### 14. Dutch authorities intercept illegal R134a refrigerant



A raid on a car parts warehouse in Rotterdam has netted authorities over 1600kg of illegal R134a refrigerant.

The Netherland's Human Environment and Transport Inspectorate, working on a tip-off from Dutch customs authorities, discovered 123 13.6kg cylinders that had been imported outside of the EU quota system and in illegal disposable cylinders.

The refrigerant has been seized and the authorities are said to be seeking the whereabouts of a further 477 cylinders from the same trader.

**CoolingPost, 5 March 2019,**

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## Featured

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- [62<sup>nd</sup> Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol](#), 29 June 2019, Bangkok, Thailand
- [41<sup>st</sup> Meeting of the Open-Ended Working Group of the Parties to the Montreal Protocol](#), 1 - 5 July 2019, Bangkok, Thailand
- [63<sup>rd</sup> Meeting of the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol](#), 2 November 2019, Rome, Italy
- [Bureau Meeting of the 30<sup>th</sup> Meeting of the Parties to the Montreal Protocol](#), 3 November 2019, Rome, Italy
- [31<sup>st</sup> Meeting of the Parties to the Montreal Protocol](#), 4 - 8 November 2019, Rome, Italy

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

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

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### [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](#)

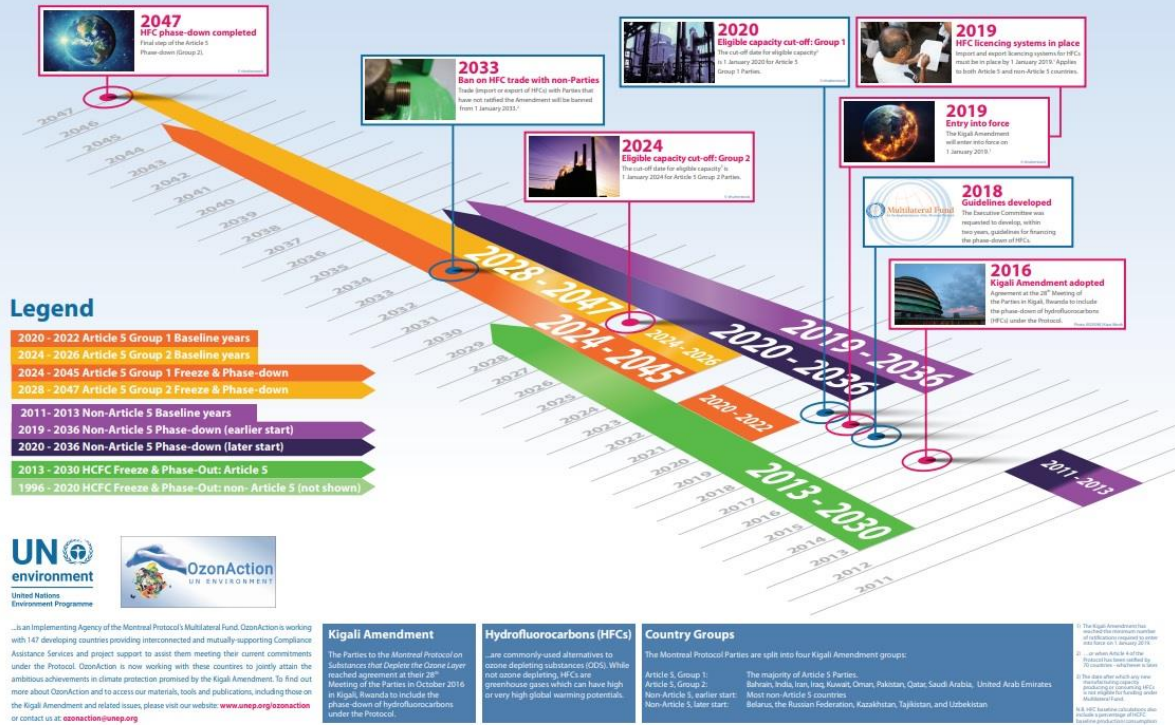
#### [The Environmental Effects Assessment Panel](#)

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.

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# The Path from Kigali: HFC Phase-Down Timeline



## 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, CO<sub>2</sub>-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 CO<sub>2</sub>-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, CO<sub>2</sub>-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 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](#) | See also: [United Nations Treaty Collection](#)

## OzonAction Factsheets

The factsheets cover various topics related to the Montreal Protocol and the Kigali Amendment, including operationalization, tools for technicians, and updates on refrigerants.

## **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 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).

[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 - Over 50,000 downloads to date**

OzonAction has launched an exciting new application which hosts series of short instructional videos on techniques, safety and best practice for refrigeration and air-conditioning technicians.

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

#### **New videos on flammable refrigerants just added!**

Please share with your RAC associations, technicians and other interested stakeholders...

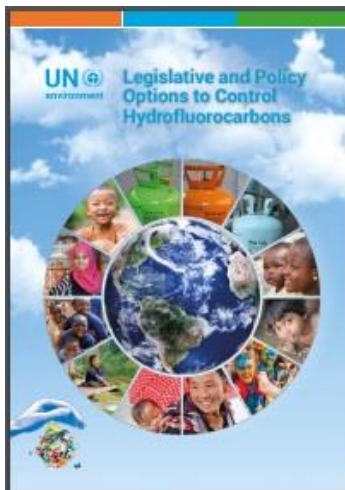
[OzonAction Multimedia Video Application: Refrigeration and Air-conditioning Technician Video Series](#)

Available in the [Android Play Store](#) and [Apple Store/iTunes](#).  
(Just search for "OzonAction", or scan this QR code)

## **Publications**



Latest issue of the Centro Studi Galileo - **Industria & Formazione**. La rivista per il tecnico della refrigerazione e della climatizzazione, N. 424, 2019



### 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

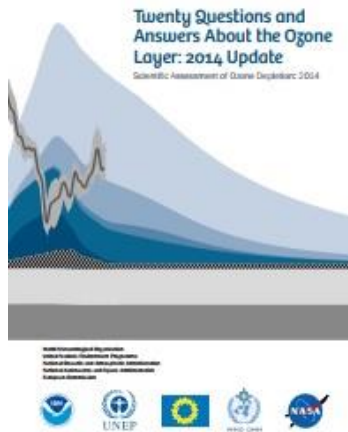
### 2019

- [22<sup>nd</sup> European Cold Chain Conference](#), 20-22 March 2019, Brussels, Belgium.
- [15<sup>th</sup> Cryogenics 2019 Conference](#), 7-11 April 2019, Prague, Czech Republic
- [China Refrigeration 2019](#), 9-11 April 2019, Shanghai New International Expo Center, China
- [8<sup>th</sup> Conference on Ammonia and CO<sub>2</sub> Refrigeration Technologies](#), 11-13 April 2019, Ohrid, Macedonia (FYROM)
- [25<sup>th</sup> IIR International Congress of Refrigeration](#) - 24-30 August 2019, Montreal, Canada

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

Please feel free to share relevant events.

## 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 CO<sub>2</sub>-eq by 2050, and avoid up to 0.5°C of warming by 2100.

Lead authors:

Durwood Zaelke, Nathan Borgford-Parnell, and Stephen O. Andersen.

Contributing authors:

Kristin Campbell, Xiaopu Sun, Dennis Clare, Claire Phillips, Stela Herschmann, Yuzhe Peng Ling, Alex Milgroom, and Nancy J. Sherman.



The [IIR International Dictionary of Refrigeration Available in 11 languages](#), the complete version of the International Institute of Refrigeration (IIR) International Dictionary of Refrigeration is now freely accessible online. The IIR International Dictionary of Refrigeration offers researchers, industrialist or administrations the practical resources required to produce content related to refrigeration technologies in multiple languages.

This online tool allows you to find definitions, in English and French, of scientific and technical terms, as well as identify terms in the language of your choice and find corresponding translations in the 10 other languages.

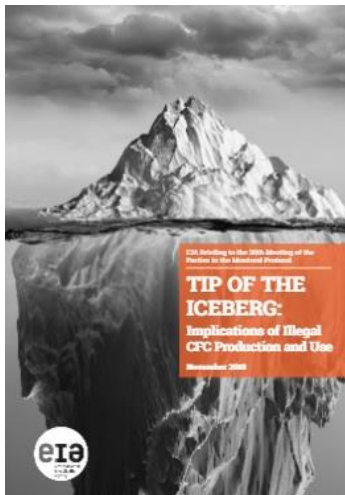
The dictionary provides term searches in Arabic, Chinese, Dutch, English, French, German, Italian, Japanese, Norwegian, Russian and Spanish.

Access the International Dictionary of Refrigeration on the IIR [website](#)



**Impact of Standards on Hydrocarbon Refrigerants in Europe – Market research report.** The market research report was realised for the EU-funded **LIFE FRONT** project. Amongst the main result of the market research:

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



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



**Cold Hard Facts 3 - Review of the Refrigeration and Air Conditioning Industry in Australia** - The refrigeration and air conditioning industry is the largest user of synthetic greenhouse gases and ozone depleting substances in Australia. Cold Hard Facts 3 provides an economic and technological assessment of the refrigeration and air conditioning industry in Australia in 2016. The report includes an analysis of the size and economic value of the industry, the equipment and refrigerant gas bank, trends in gas imports and equipment, and direct and indirect emissions in this sector. [...] This study provides a broad view of the composition, size and value of the industry, and projections for its future. This will assist industry and policy makers with management of ozone depleting substances as they are phased out, and synthetic greenhouse gases, including hydrofluorocarbons (HFCs) which are being phased down from January 2018.

## 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".

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

Please notify and nominate worthy candidates through the **on-line form**

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

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

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

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



### New *International Journal of Refrigeration* service for IIR members -

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

- Immediate and permanent access to the latest research and to IJR archive
  - Access the latest articles as soon as they become available online.
  - Browse, search and read each one of the nearly 4,500 papers since Volume 1, Issue 1.
  - Unlimited access to seminal contributions to the field of refrigeration dating back to 1978.
  - Keep up-to-date with subscriptions to customized e-alerts on New Volumes, Topics and saved Searches.
- Enhanced content and functions

- Easily export references, citations and abstracts.
- Print, download or share articles with colleagues or peers.
- See which papers, published in Elsevier or elsewhere, have cited any selected article.
- Consult the research highlights overview of articles in volumes from 2012 onwards.

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



**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)



### 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.



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**Reviewed by:** Dr. Ezra Clark, OzonAction

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