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Workshop on energy efficiency opportunities while phasing-down hydrofluorocarbons (HFCs)
Vienna, 9-10 July 2018

Concept note and provisional programme (revised)

The workshop on energy efficiency opportunities while phasing-down hydrofluorocarbons (HFCs) is convened in accordance with decision XXIX/10 (paragraph 4) taken by the parties to the Montreal Protocol on Substances that Deplete the Ozone Layer at their Twenty-Ninth Meeting held jointly with the eleventh meeting of the Conference of the Parties to the Vienna Convention for the Protection of the Ozone Layer, in Montreal (20-24 November 2017).

The parties, in this decision, recognised “the importance of maintaining and /or enhancing energy efficiency while transitioning away from high-global-warming-potential (GWP) HFCs to low-GWP alternatives in the refrigeration, air-conditioning and heat-pump sectors”. They have also recognised that “maintaining and /or enhancing energy efficiency could have significant climate benefits”. Previous decisions by the parties have also addressed the energy efficiency issue including decision XXVIII/2 (paras. 16 and 22) and decision XXVIII/3.

The workshop will provide an opportunity for informed discussions on:

- a) the technical opportunities to improve energy efficiency in the refrigeration, air-conditioning and heat-pump (RACHP) sectors and,
- b) the investment, financial and policy, actions that can encourage energy efficiency improvements of RACHP systems while phasing-down use of HFCs.

The workshop will involve wide stakeholder participation, including representatives of industries, institutions, associations and technical experts. The conclusions of the workshop will be presented to the fortieth meeting of the Open-ended Working Group for further consideration and discussion by the parties.

Concept note

I. Workshop structure

The workshop will take place over one and a half days, prior to the fortieth meeting of the Open-ended Working Group. Workshop sessions will include presentations and panel discussions with good opportunities for contributions to be made by all delegates. The workshop will be split into three main parts:

- Part A will provide a general overview of energy efficiency in the context of the refrigeration, air-conditioning and heat pump (RACHP) sectors.
- Part B will introduce the technical opportunities for improving RACHP energy efficiency.
- Part C will address the investment, financial and policy measures that can be adopted to encourage improved cooling efficiency and the potential connections between energy efficiency policies and the Kigali Amendment to the Montreal Protocol.

II. Objectives

The Kigali Amendment to the Montreal Protocol recognized the importance of maintaining and/or enhancing energy efficiency in the transition from HFCs to other alternatives. As described in briefing note A:

- The largest contribution to GHG emissions from RACHP equipment are the “indirect” CO₂ emissions from the energy used to operate the cooling equipment.
- The use of RACHP equipment is growing at a significant rate, especially in Article 5 countries, to provide thermal comfort and a more robust cold chain (e.g. food and vaccines).

The objectives of this workshop are to provide an opportunity for parties and other stakeholders to have in-depth discussions about:

- a) The types of technical opportunities that can be adopted to improve the efficiency of both new and existing RACHP equipment as well as improvements to building design.
- b) The barriers to seizing these opportunities and the ways these can be overcome through appropriate policy measures and investment activities.
- c) The connections between Montreal Protocol activities to phase-down HFCs and other activities that are already addressing the RACHP energy efficiency issues.

III. Briefing material

Briefing notes will be made available before the workshop to summarize factual information related to energy efficiency issues. They have been prepared by the Secretariat with support from the International Energy Agency (IEA), The Energy and Resources Institute (TERI), the United for Efficiency (U4E) and other energy efficiency experts. They have been peer reviewed by members of the Technology and Economic Assessment Panel and its Task Force on energy efficiency, which was established in response to decision XXIX/10.

Three briefing notes have been prepared, aligned with Parts A, B and C of this workshop.

The briefing notes and their content are by no means exhaustive. The Secretariat welcomes any suggestions the parties may have on further topics related to energy efficiency, on which they would like to see briefing notes.

IV. Format

The workshop will be structured as follows:

PART A, SETTING THE SCENE

Introduction to the workshop’s objectives

Session I: Background to RACHP energy efficiency

PART B, THE POTENTIAL TO IMPROVE EFFICIENCY IN THE RACHP SECTORS

Session II: Improving the energy efficiency of new RACHP systems while phasing-down HFCs

Session III: Improving the energy efficiency of existing RACHP systems while phasing-down HFCs

PART C, INVESTMENT, FINANCIAL ACTIVITIES AND POLICY MEASURES

Session IV - *Panel Discussion*: Investment and financing opportunities

Session V: Policies for improving the energy efficiency of small RACHP appliances

Session VI: Policies for improving the energy efficiency of RACHP systems in commercial buildings, industry and urban environments

Concluding remarks from rapporteurs

Each session will be supported by a facilitator and a rapporteur.

The session facilitators will provide introductory remarks and will encourage questions from the audience.

A smart phone “Meeting Application” will be used to encourage audience participation via votes that can be cast about questions raised by the facilitators.

The rapporteurs of sessions I to VI will record key discussion points for feedback in the concluding session, which will briefly summarize the results at the end of the workshop. The summary of the workshop results will be forwarded to the fortieth meeting of the Open-ended Working Group for the consideration of the parties.

Parties are encouraged to invite officials responsible for energy efficiency policies in their countries, national representatives of relevant industries, enterprises and their associations, as well as technical experts involved in cooling energy efficiency in their countries to participate in the workshop and contribute actively to the discussion.

PROVISIONAL PROGRAMME

DAY 1 **Monday, July 9th, 9.30 a.m. – 6.30 p.m.**

PART A: SETTING THE SCENE

Part A of the Workshop will set the scene by illustrating the growing importance of improving RACHP efficiency, due to the potentially massive growth in the use of cooling equipment in many market sectors, particularly in Article 5 countries. Part A will also provide an introduction to the ways in which RACHP efficiency can be considerably improved.

9.30 a.m. – 9.35 a.m. **Opening of the workshop - Introduction to the workshop's objectives**, Tina Birmpili, *Executive Secretary, Ozone Secretariat*

9.35 a.m. - 11.00 a.m. **Session I: Background to RACHP energy efficiency**

Session I will consist of four 15-minute presentations, followed by questions and clarifications.

Facilitated by: Kevin Fay (*Executive Director, Alliance for Responsible Atmospheric Policy*)

Rapporteur: Clare Perry (*Environmental Investigation Agency*)

Session I Topics	Presenters
Energy efficiency: the big picture and the challenges	Dr Brian Motherway, Head of Energy Efficiency, <i>International Energy Agency</i>
Social and economic benefits of improving cooling efficiency	Dr Ajay Mathur, Director General, <i>The Energy and Resources Institute, India</i>
Cooling Efficiency: technologies	Ray Gluckman, <i>Gluckman Consulting, United Kingdom</i>
Cooling Efficiency: policies	Archana Walia, Director, <i>CLASP, India</i>

11.00 a.m. - 11.30 a.m. *Coffee break and interaction with the mobile application*

PART B: THE POTENTIAL TO IMPROVE EFFICIENCY IN THE RACHP SECTORS

Part B of the workshop is split into two sessions that will provide a wide range of practical examples of energy efficiency opportunities and achievements in different parts of the RACHP market.

11.30 a.m. – 1. 00 p.m. **Session II: Improving the energy efficiency of new RACHP systems while phasing-down HFCs**

Session II will consist of an introduction by the facilitator, 8-minute presentations, followed by audience questions and contributions. Each presentation will describe aspects of improving the efficiency of new RACHP systems and will be illustrated with reference to actual examples and case studies.

Facilitated by: Nihar Shah (*Lawrence Berkeley National Laboratory*)

Rapporteur: Bassam Elassaad (*Independent consultant, Lebanon*)

Session II Topics	Presenters
Air-conditioning load reduction using building design, improved insulation and passive cooling measures	Peter Holzer, IEA-Energy in Buildings and Communities Technology Collaboration Programme, <i>Institute of Building Research and Innovation, Austria</i>

Improving efficiency of retail refrigeration systems	David Schalenbourg, <i>DELHAIZE, Belgium</i>
High efficiency room air-conditioners	Jonathan Li, <i>Midea Group, China</i>
Optimising efficiency via design for good controllability under a wide range of conditions	Raul Simonetti, <i>Carel, Italy</i>
Achieving best energy efficiency in a high ambient temperature environment using both equipment and building design.	Mohammed F. AlArwan, <i>Saudi Energy Efficiency Centre</i> Hakam A. Zummo, <i>Saudi Energy Efficiency Programme, Saudi Arabia</i> (joint presentation)

1.00 p.m. - 2.30 p.m. Lunch

2.30 p.m. – 4.00 p.m. Session III: Improving the energy efficiency of existing RACHP systems while phasing-down HFCs

Session III will consist of an introduction by the facilitator, a practical demonstration of maintenance issues and four 8-minute presentations, followed by audience questions and contributions. Each presentation will describe opportunities to improve the efficiency through improved operation and maintenance of existing equipment and will be illustrated with reference to actual examples and case studies.

Facilitated by: Stephan Sicars (UNIDO)

Rapporteur: Helen Walter-Terrinoni (Chemours)

Session III Topics	Presenters
Demonstration of maintenance issues	Tadafumi Mikoshi, <i>CRS and Global Environment Centre, Daikin, Japan</i>
Monitoring performance for improved operation and maintenance. Fault diagnosis and correction	Kevin Schlemmer, <i>CoolCheck, South Africa</i>
Improving efficiency through technician training and refrigerant leak reduction	Jane Gartshore, <i>Cool Concerns, United Kingdom</i>
Innovation process and improving the efficiency of RACHP equipment for countries with high-ambient temperature	Maher Mousa, <i>International consultant, Saudi Arabia</i>
Examples of RACHP efficiency opportunities through improved operation and maintenance	Stefan Thie, <i>European Partnership for Energy and the Environment</i>

4.00 p.m. - 4.30 p.m. Coffee break and interaction with the mobile application

PART C: INVESTMENT, FINANCIAL ACTIVITIES AND POLICY MEASURES

Part C of the Workshop is split into three sessions that will address the opportunities for improving energy efficiency and how synergies with HFC phase-down programmes can be maximised.

4.30 p.m. – 6.30 p.m. Session IV - Panel discussion: Investment and financing opportunities

Session IV will consist of a panel discussion addressing some of the opportunities for funding of RACHP efficiency projects. Each panel member will make 5 minutes of introductory remarks to illustrate examples of successful projects or funding mechanisms. The audience will be encouraged to contribute to the discussion.

Facilitated by: Daniel Magallon (*Basel Agency for Sustainable Energy*)

Rapporteur: Ian Crosby (*Sustainable Energy for All*)

Session IV Topics	Panel Members
Development funds– a borrower’s perspective	Santiago Creuheras, Director General for Energy Efficiency and Sustainability, <i>Mexico</i>
Development funds– a borrower’s perspective	Hoang Nguyen Thi My, <i>Vietnam</i>
Development funds– a borrower’s perspective	Bafoday Sanyang, <i>Gambia</i>
Scaling up energy efficiency with climate finance	Sabin Basnyat, <i>Green Climate Fund</i>
Investment schemes to drive energy efficiency	Jigar Shah, <i>International Finance Corporation</i>
Tailored financing vehicles for energy efficiency	Gunter Fischer, <i>Global Energy Efficiency and Renewable Energy Fund, European Investment Bank Group</i>
Using Energy Service Companies to drive private sector investment in efficient cooling	Zhao Ming, <i>Energy Management Company Association, China</i>
The role of philanthropy in making more energy efficiency happen faster	Dan Hamza-Goodacre, <i>Kigali Cooling Efficiency Programme</i>

6.30 p.m. End of day 1

Bulk procurement	Kumar Saurabh, <i>Energy Efficiency Services Limited, India</i>
The role of district cooling in meeting the cooling challenge	Afif Sair Nasser Harhara, <i>VP Operation, Tabreed, United Arab Emirates</i>

1.00 p.m. - 1.30 p.m. Concluding remarks from Rapporteurs

Facilitated by: Mark Radka (*Chief, Energy and Climate Branch, UN Environment*)

1.30 p.m. End of workshop