

Future Refrigeration India: INDEE+

(India-Norway Collaboration 2021 -2024)

Seminar on

Lifecycle Refrigerant Management & Transition to Natural Refrigerants

06 October 2023, The Royal Norwegian Embassy, Chanakyapuri, New Delhi

1. Introduction

Future Refrigeration India (INDEE+) is an Indian Norwegian bilateral environmental cooperation project focused at enhancing the use of natural refrigerants, and lifecycle management of refrigerant gases having ozone depletion and high global warming potential. Overall, this project aims to support India's commitment to achieve the goals of the Kigali Amendment of the Montreal Protocol. The duration of the INDEE+ Project is from 2021 to 2024.

To support the lifecycle refrigerant management (LRM), the team has been working on developing policy recommendations and identifying suitable business models for operationalising effective LRM practices in India. The team has published four reports under the theme "Activating Circular Economy for Sustainable Cooling":

- Current Status and Barriers to Lifecycle Refrigerant Management in India
- Global Best Practices for Lifecycle Refrigerant Management
- Policies and Regulation for End-of-life management of refrigerant and other F-gases in Norway and the EU
- How can India Effectively Manage the Lifecycle of Refrigerants?

As part of the work, INDEE+ is providing technical and financial support to establish pilot demonstration units. These units are applying only natural refrigerants and provide space- and process cooling / freezing at various commercial establishments. The demo units are installed in hotels, community kitchens, and food processing plants. To gain local experience with future proven and clean working fluids (refrigerants) in real applications, focus is given to apply CO₂ (R744), ammonia (R718) and Propane (R290). INDEE+ is also supporting the implementation of educational units applying R744 at three academic partner institutes for educational and capacity building purposes.

At this juncture, the INDEE+ team is organising a roundtable discussion with the relevant stakeholders from the government, industry, civil society organisations and academia. The objectives of this roundtable are:

- Short introduction to INDEE+, and discuss and disseminate the findings and learnings so far
- Discuss and gather inputs from the stakeholders on the refrigerant transition pathway for India.

2. Draft Agenda

Time	Agenda Items	Speakers
10:00-10:45	Registration & Networking	
10:45-11:30	Opening Session	
(5 min)	Welcome of participants and Introduction of the Seminar	Mr Sonal Kumar, CEEW
(10-15 min)	Welcome Address	Ms Beate Langset, Counsellor for Climate and Environment, Embassy of Norway
(15 min)	Introduction to INDEE+ Project	Prof Armin Hafner, NTNU
(15 min)	Special Address	Shri Aditya Narayan Singh, Additional Director, Ozone Cell, MoEFCC*
(15 min)	Special Address	Central Pollution Control Board*
(15 min)	Special Address	Dr G V Raghunath Reddy, Scientist F, Department of Science & Technology
11:30-11:45	Tea/Coffee	
11:45-13:00	Session-1: How can India operationalise Lifecycle Refrigerant Management	
(15 min)	Context setting presentation	Mr Sonal Kumar, CEEW
(45 min)	Moderated Discussion Discussion Points: <ul style="list-style-type: none"> • Appropriate policy approaches and business models for refrigerant management in India • Ensuring effective refrigerant management through e-waste and vehicle scrap management • Creating the market for reuse of reclaimed gases • Enabling Voluntary Carbon Markets for LRM • Any remarks on the study findings and recommendations 	Panellist: <ul style="list-style-type: none"> • Prof R S Agarwal, Advisor, Ozone Cell • Dr Rashid Hasan, Sr Advisor, SIAM • Mr Torgrim Asphjell, Norwegian Environmental Agency • Mr Pranshu Singhal, CEO, Karo Sambhav • Mr Sanjay Mathur, India Country Manager, A-Gas
(15 min Q&A)		Moderator – Mr Sonal Kumar, CEEW
13:00-14:00	Lunch	
14:00-15:30	Session-2: Uptake of Natural Refrigerant Units – Make in India	
(5-7 min)	India's Refrigerant Transition Plan	Mr Aditya Garg, CEEW
(15 min)	Refrigerant transition – Why do we need to leapfrog to natural refrigerants in the next decade	Prof Armin Hafner, NTNU
(15 min)	Which support would help vendors to gear up production of natural working fluid based HVACR system	Mr Dhruv Sawhney, Triveni Turbines

(15 min)	Natural Refrigerant based HVACR: What measures can support vendors to manufacture CO ₂ systems for India and abroad	Mr Aadinath Harihar, Koshyma Engineering
(20-30 min)	Challenges, opportunities, and way forward for supporting the uptake of natural refrigerants in India	Prof M P Maiya, IIT Madras; Prof Pramod Kumar, IISc Bangalore; Prof M S Dasgupta, BITS Pilani
(5-7 min)	Indian industries perspective on transition to natural refrigerants – challenges & opportunities	Mr Jitendra Bhambure, Advisor-Technology, Bluestar
(10 min)	Status of all demonstration/educational sites	Dr Sarun Kumar Kochunni, NTNU
15:30-16:00	Discussion: Way forward, next steps and how to interact with INDEE+ Vote of Thanks	CEEW / NTNU Norwegian Embassy