Developing an Ecosystem to Phase Out HFCs in India

Establishing a Research and Development Platform to support HFCs phasing out

Summary presentation of the report

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Energy Access

Renewables

Low-Carbon Pathways

Greenhouse Gases and Monitoring, Reporting, Verification

Risks and Adaptation

Technology, Trade, and Finance
Setting the Context

- HFCs: good for ozone, bad for climate
- Kigali Agreement: India to initiate transition from 2028
- Low GWP refrigerants exist; very few in use in India

- September 2016, Government of India announced it’s intention to establish a collaborative R&D programme to phase out HFCs in India: As per its official press release, “the collaboration of research institutes as well as industry will create larger ecosystem for developing sustainable solutions, and eventually deploying low global warming potential HFCs on a national scale.”

SOURCE: Press Information Bureau (2016)
Methodology

• Literature review and desk-based research: HFC alternatives, innovation systems and collaborative platforms
• Industry stakeholder interviews (semi-structured)
• Government consultations
• Meetings with experts
Industry needs

All industry stakeholders confirmed the need for

(1) Policy certainty,

(2) indicators to ascertain that the government is in fact keen to facilitate research and development in India, across company sizes,

(3) financial commitments to enable sector-wide transformations along the supply chain, and

(4) ecosystem factors (the needs for safety standards, technology referencing and certification).
Why a policy push is needed for R&D?

• Clear targets and policy certainty
• Environmental costs still unaccounted
• Transition costs vs. social benefits
• Public spending (R&D) increases private investment
R&D Platform to phase out HFCs: Encouraging an Innovation System (1)

The primary objective of this Platform would be to facilitate the phase-out of HFCs in India by supporting research and development and adoption of alternatives.
Functions

- Facilitate basic and applied research,
- Facilitate application testing,
- Recommend standards for usage, performance, and safety,
- Recommend policies for market integration and low-GWP refrigerant usage,
- Suggest consumer-based programmes,
- Function as a knowledge and information clearing house,
- Encourage stakeholder interactions,
- Support linkages between industry, R&D institutions, and policy makers,
- Recommend skill development and training programmes, and
- Any other related programme or aspect deemed necessary for adoption of low-GWP refrigerants in place of HFCs.

Institutional and operational framework

SOURCE: CEEW (2017)
Research Verticals: Criteria

1. The projects should have at least three partners applying/bidding, collaboratively.

2. The consortium lead should be a legal Indian entity, with at least 50% Indian ownership, to encourage Indian industry interests and national benefits.

3. The project collaborators must aim to co-finance at least 50%, and share existing infrastructure and facilities as much as possible.

4. Other criteria for project selection could include:
   - meeting India’s Kigali and climate change targets,
   - the potential impact of project on policy development and on India's economic growth,
   - the value return of the project for the Platform and its members at large, and others.
   - the Platform should promote research related to low-GWP refrigerants that are non-patented and easily accessible.
Research Verticals

• Developed sectorally, these will be the actual projects that will be undertaken as part of the Platform. Thus, we expect that the platform would have at least the following research verticals:
  1. Room/ Residential Air Conditioners (RAC)
  2. Mobile Air Conditioners (MAC)
  3. Commercial Air Conditioners
  4. Commercial Refrigeration
  5. New and Horizon Technologies

• Based on factors such as costs, risks, applicability, availability, patents, and familiarity within the Indian market, we have highlighted a few initial subjects that the Platform could focus on:
  1. RAC: Developing standards for HC 290 as an energy efficient alternative for new ACs
  2. RAC: Developing R32 and HFO blend as a retrofitted alternative for existing ACs
  3. MAC: Evaluating and developing R152A
  4. MAC: Evaluating and application-testing of HFO 1234yf
  5. Commercial Refrigeration: Evaluating and application-testing of Trans-critical Carbon Dioxide
Ensuring Functionality

- Establishing clear responsibilities and coordination within multiple partner research verticals and projects.
- As this Platform could be the nodal agency at the heart of the HFC-free transition that India needs, encouraging and amassing a wide stakeholder base is important.
- Encouraging different projects within the same sectoral research vertical, to limit bias towards particular refrigerants.
- Withdrawal of partners during a project should be controlled through legal contracts.
- Disruption in financing needs could be minimised through contracts and instruments such as contingency funds.
Advantages of the Platform

• Clear and encouraging signal to industry and the market at large
• Domestic benefits (systemic industry transition, large market share)
• Pooling of resources (autonomous body)
• Export experiences
• Spillover benefits such as efficiency gains
Other elements included in the report

1. Sustainability Oriented Innovation Systems
2. Rough budget estimate and financial resource lines
3. IPR options
4. Case studies
THANK YOU!

For any feedback or questions, please get in touch at shikha.bhasin@ceew.in