Energy Efficiency in Building Sector and HCFC Phase-out

HCFC Phase-out Plan (HPMP) Servicing Sector - India

24th October 2017
GIZ - Proklima
Progression of Servicing Sector Projects for Phase out of ODS

- ECOFRIG Project: ECOFRIG project launched as an Indo-Swiss-German collaboration from 1992 to 2002
- Human and Institutional Development in Ecological Refrigeration (HIDECOR Project): launched as an Indo-Swiss collaboration from 2001 to 2004
- National CFC Consumption Phase-out Plan (NCCoPP) MLF Funded project from 2004 to 2010
- HCFC Phase out Management Plan (HPMP) Stage – I MLF Funded project from 2012 to 2016
- HCFC Phase out Management Plan (HPMP) Stage – II MLF Funded project from 2016 to 2022
RAC Technicians a growing population!

- Large population of RAC technicians, as per industry estimates approx. 200,000 nos., many informal;

- These technicians are spread over the entire country (small and big towns/cities);

- RAC maintenance is a seasonal requirement mainly in summer months, the technicians frequently & easily switch over to other trades which have year round demand;

- A large number (about 12,000) of technicians undergoing formal vocational training through Industrial Training Institutes (ITI) every year;

- Trained technicians from vocational Institutes also require training to understand Good Service Practices (GSP), upgrade their skills and knowledge / information on new, incoming technologies, to stay in business / trade.
Building Sector

- Witnessing very high growth in the country both for the residential and commercial sectors;
- In India this sector is already consuming close to 40% of the electricity and this is expected to increase to 76% by 2040 (CSE, 2014).
- As per the Bureau of Energy Efficiency, residential building sector consumes 26% and commercial building consumes 11% of the total energy use (BEE);
- Demand for air conditioners in India is expected to grow from 3.8 million a year to 6.2 million in 2020-21 (increase of 63% Cumulative Annual Growth Rate (CAGR) (Ozone Cell, 2017).
Building Sector

- promoting space cooling equipment that use low-GWP refrigerant and are energy efficient is critical and introduce measures in buildings that align with ozone and climate change mitigation goals;

- emissions of refrigerants are due to the leakage of refrigerants from air conditioning and refrigeration equipment during manufacturing, operations and disposal at end of life:
Where training is needed?

- Most low GWP alternatives have characteristics that require additional training

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<th>Ammonia</th>
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<th>CO₂</th>
<th>HFOs</th>
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<td>High pressure</td>
<td></td>
<td></td>
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- Additional training is required for:
  - Technicians doing installation, maintenance and end-of-life decommissioning;
  - Engineers doing design of systems and components.
Training needs a Framework

- Providing training and certification is essential to support the development of appropriate infrastructures.

- Where specific safety issues are related to the alternatives, certification of trained skills needs to be mandatory.

- For example, in the EU, standard EN 13313, “Refrigerating systems and heat pumps - Competence of personnel” sets training requirements for all refrigerants. This standard includes reference to safety issues.

- Training courses need to meet the legislative and standard requirements, where gaps exist international standards can provide helpful guidance.
Best practice service provides sustainable income!

- Newly acquired competences develop multiple benefits:
  - higher energy efficiency from better servicing;
  - minimal operational failure - better economy;
  - customers understand value and pay for it;
  - enhances local know how
  - high safety standards may generally improve servicing practices & performance
  - cash saved during operation could be used to pay qualified workers
HPMP Stage – II ….. bigger picture

- National phase-out plan in the RAC servicing sector touches upon...
  - Technology policy
  - Private sector development
  - Skills development and green jobs
  - Poverty alleviation
  - Environmental Protection (ozone, climate, persistent wastes, scarce resources,...)
- Prominent in SDGs (Sustainable Development Goals)
HPMP Stage – II Sector Strategy

Capacity Development

- *Training Technicians in Good Servicing Practices leads to*:
  - Reduced leakage / containment
  - Improved safety concepts
  - Increased energy-efficiency

- *Safe Handling of new refrigerants*
  - Introduce technicians with new refrigerants – properties and safety measures
HPMP Stage – II Sector Strategy Contd....

➤ Outreach to various stakeholders
  • Expand existing training network
  • Work with multipliers (institutions, companies, RASSS, National Skills Development Corporation, National Centre for Cold-chain Development…)
  • Identify and work with additional service providers
  • Curricula adjustments for ITI

➤ Introduction of Certification program
  • Private sector driven
  • Quality assurance; improved acceptability;
HPMP Stage – II Sector Strategy Contd....

➢ Technical Assistance
  • Market preparation
  • Support sector transformation

➢ RAC Training Centre
  • Training for
    ▪ AC equipment (split, window type, chiller)
    ▪ Refrigeration equipment (cold stores, commercial units, systems)
  • Support for design of servicing tools and products
    ▪ Reduced charge size, reduced leakage / containment / sealed systems
    ▪ Improved safety concepts
    ▪ Increased energy-efficiency
**Technicians Trained in Installation & Servicing Room Air conditioners up to 2 ton**

- Trained **11276** through **408** programs
- Servicing - Trained **9240** through **332** programs
- Installation - Trained **2036** through **76** training programs

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<th>State</th>
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<th>Installation</th>
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<td><strong>9240</strong></td>
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<td><strong>11276</strong></td>
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HPMP Stage - I  Technicians at Training
HPMP Stage - I Handbook for Technicians
Impact of Servicing Sector

- Good service practices result in
  - Ca 30% less leakage
  - Up to 30% better energy-efficiency
  - Ca 4.5 Mio t CO2eq avoided emissions
- Market better prepared for absorbing new technologies
- Stakeholders better informed about developments (technical alternatives, upcoming HFC amendment, …)
- Improved services (certified technicians)
- Safe, green jobs for technicians
Proklima worldwide

- ~ 20 years worldwide initiatives
- ~ 245 projects
- ~ 40 Partner countries
- ~ 8,100 ODP tons reduced
- ~ 100 Mio tons CO$_2$eq. reduced
- > 35,000 technicians trained

Integrated ozone and climate protection with focus on natural refrigerants with low-GWP and energy-efficient applications

Map not to scale
Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH

An international cooperation enterprise for sustainable development with worldwide operations

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~18,000 employees
Thank you very much!

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