

Submission by Ecuador

1. Name of the party

Ecuador

2. Please provide the names and locations of existing centres of excellence for sustainable cooling and testing centres for energy efficiency in your country or region

1. Centro de Perfeccionamiento en el Uso de Refrigerantes (CEPUR) Location: Escuela Politécnica Nacional (EPN), Quito, Ecuador

2. Refrigerant Regeneration Pilot Centre – Escuela Superior Politécnica del Litoral (ESPOL)

Location: Guayaquil, Ecuador

3. Are there plans to set up a centres of excellence for sustainable cooling and/or testing centres for energy efficiency in your country/region? If yes, please provide more information on these ongoing efforts

Yes. Ecuador is currently working on the expansion and strengthening of the Refrigerant Regeneration Pilot Centre at ESPOL (Guayaquil) as part of its efforts to support the transition towards sustainable cooling and the implementation of the Kigali Amendment to the Montreal Protocol.

The planned expansion seeks to consolidate the centre as a national reference facility for refrigerant management and sustainable cooling practices. Ongoing efforts include the enhancement of technical infrastructure and equipment, as well as the strengthening of institutional and human capacities.

Key areas of focus include expanding training opportunities for refrigeration and air-conditioning technicians. Strengthening capacities on refrigerant recovery, recycling, regeneration, and reuse.

Building technical expertise on low-GWP and climate-friendly refrigerants.

Promoting best practices for reducing refrigerant emissions and improving system efficiency.

4. Please describe policies implemented in your country/region that support the setting up and operations of such centers of excellence for sustainable cooling and testing centers for energy efficiency

Ecuador has implemented several policy and capacity-building measures that support the establishment and long-term operation of centres of excellence for sustainable cooling, particularly through the strengthening of technical education, workforce development, and institutional capacity under the framework of the Montreal Protocol

and the Kigali Amendment.

A key achievement has been the development and formal recognition of two occupational competency profiles for the refrigeration and air-conditioning (RAC) sector, which provide a standardized framework for workforce qualification and skills development. These competency profiles support the professionalization of technicians and facilitate the design of training, certification, and capacity-building programmes aligned with the evolving needs of sustainable cooling technologies and refrigerant management.

In addition, Ecuador has promoted the institutionalization of permanent training programmes and technical courses within the country's leading engineering universities, namely the Escuela Politécnica Nacional (EPN) in Quito and the Escuela Superior Politécnica del Litoral (ESPOL) in Guayaquil. Through this approach, sustainable cooling and refrigerant management are no longer addressed through isolated projects but are incorporated into the regular academic and extension activities of these institutions.

5. Please describe activities and specific functions of the existing/planned centres of excellence for sustainable cooling and testing centres for energy efficiency

Centro de Perfeccionamiento en el Uso de Refrigerantes (CEPUR) – EPN, Quito
Serve as Ecuador's principal training centre for the refrigeration and air-conditioning sector.

Provide continuous technical education and hands-on training for technicians.
Deliver courses on refrigerant management, leak prevention, recovery and recycling practices.

Support the implementation of national competency-based training programmes.
Provide laboratory facilities for practical instruction and technical demonstrations.
Strengthen national capacities related to sustainable cooling technologies and energy-efficient servicing practices.

Refrigerant Regeneration Pilot Centre – ESPOL, Guayaquil

Serve as Ecuador's first facility dedicated to refrigerant regeneration and reuse.

Demonstrate environmentally sound refrigerant management practices.

Receive, analyze, regenerate, and prepare recovered refrigerants for reuse.

Provide practical training on refrigerant recovery and regeneration processes.

Support the implementation of circular economy approaches within the refrigeration and air-conditioning sector.

Function as a technical demonstration platform for industry, technicians, students, and government stakeholders.

Promote the reduction of refrigerant emissions through proper recovery, regeneration, and reuse practices.

6. Please share key lessons learned, including best practices and challenges encountered in establishing or operating the centres of excellence for sustainable cooling and testing centres for energy efficiency

Best Practices

Strong partnerships between government, academia, and international organizations have been essential for the successful establishment and operation of the centres. Collaboration among the National Ozone Unit, universities, industry stakeholders, and international partners has enabled the mobilization of technical expertise and resources.

Institutionalization within universities has proven critical for long-term sustainability. By embedding training activities within the regular academic and extension programmes of EPN and ESPOL, the centres are able to maintain operations beyond the duration of individual projects.

Competency-based training approaches have improved the quality and consistency of technical education. The development of nationally recognized occupational competency profiles for the RAC sector has provided a clear framework for skills development and workforce qualification.

Hands-on practical training has been particularly effective in building technician capacities. Access to real equipment, demonstration systems, and practical exercises has significantly improved learning outcomes and adoption of best practices.

Combining training with demonstration activities has facilitated the transfer of knowledge and technologies to technicians, service companies, students, and other stakeholders.

Challenges Encountered

Ensuring long-term financial sustainability remains a key challenge. Continuous operation, equipment maintenance, laboratory upgrades, and training activities require sustained financial and institutional support.

Keeping pace with technological change requires ongoing investment in equipment, training materials, and instructor development, particularly as the sector transitions to low-GWP and alternative refrigerants.

Expanding technical capacities nationwide remains challenging due to the geographical distribution of technicians and the need to reach professionals outside the main urban centers.

Limited awareness of refrigerant recovery and regeneration practices among some market actors has highlighted the need for continued outreach and capacity-building efforts.

Strengthening linkages between training and industry demand is an ongoing process to

ensure that training programmes continue to respond to emerging technologies and market needs.

Key Lessons for Future Initiatives

7. Please provide any supporting documentation (e.g. policy documents, reports, website links etc.)

https://www.youtube.com/watch?v=z_c1zO74ASQ

<https://www.youtube.com/watch?v=Y3buLhqFF2E>

8. Any other information

N/A