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**UPDATE ON THE OPERATIONALIZATION OF TESTING CENTRES
FOR ENERGY EFFICIENCY (DECISION 95/87(e))****Introduction**

1. At its 95th meeting, the Executive Committee, under the agenda item on further elaborating the operational framework on energy efficiency while phasing down HFCs,² requested the Secretariat to prepare, for its consideration at the 97th meeting, an updated paper that would (i) elaborate the specific functions for both centres of excellence for sustainable cooling and testing centres for energy efficiency; (ii) assess sustainable business models for regional centres; (iii) assess potential duplication with activities funded under HCFC phase-out management plans and/or Kigali HFC implementation plans, as well as with existing centres; (iv) identify potential opportunities to use existing centres and mechanisms already in place for testing the energy efficiency of equipment (decision 95/87(e)). This document is in response to the decision, and it covers the different aspects relating to testing centres for energy efficiency.

2. In preparing this document, the Secretariat reviewed the previous documents that were developed on the operational framework on energy efficiency while phasing down HFCs, including the testing centres, reviewed the information provided in two projects that included funding related to upgrade of existing testing centres, consulted representatives from the Air-Conditioning, Heating, and Refrigeration Institute (AHRI), Eurovent, Underwriters Laboratories, Collaborative Labeling and Appliance Standards Program (CLASP), Lawrence Berkeley National Laboratory (LBNL), and a few identified industries that have experience setting up and operating testing centres. In addition, for information related to the capital and operating costs, inputs were obtained from experts with experience in setting up and/or operating these centres.

¹ UNEP/OzL.Pro/ExCom/97/1

² UNEP/OzL.Pro/ExCom/95/87

Role of energy efficiency testing centres

3. Energy efficiency testing centres (testing centres) play a key role in ensuring effective implementation of energy-efficiency standards and related activities, such as labelling programmes for different products in a country. Their main objective is to enable the enforcement of minimum energy performance standards (MEPS) or equivalent mechanisms for the performance of various equipment. This is achieved through pre-market conformity assessment (or certification) and post-market surveillance and verification of conformity. The procedures for testing are based on international standards such as ISO/IEC, regional standards such as AHRI, American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Ecodesign directives, and/or national standards designed based on country-specific requirements.³

4. Testing centres can, *inter alia*, provide additional services to build consumer confidence on product performance through appropriate certification and performance labels, technical support to the manufacturers of different products for improving their product performance, and technical inputs to the policymakers to facilitate strengthening of energy-efficiency regulations and market access for the most appropriate energy-efficient products in a country. Testing centres can be national or regional. Although decision 95/87(e) refers to regional energy-efficiency testing centres, the Secretariat, in this document and only when needed, makes reference to national testing centres as well.

5. Regional testing centres can play an important role in providing these services to countries within a given region. In regions where a group of countries have agreed to implement regional energy efficiency standards, such centres and their associated certification processes can facilitate cost-effective implementation of the standards and improve access of equipment and component suppliers to those regional markets. However, the implementation of regional agreements on standards and testing procedures, the recognition of these regional standards and testing procedures by the respective national regulators, and the logistical costs (such as costs of shipment of equipment/components for testing, customs procedures for easy and cost-effective transportation of goods, and requirements for shipping goods containing flammable/toxic refrigerants) may pose significant challenges. Such challenges must be addressed to enable the effective operationalization of regional testing centres.

Establishment of energy-efficiency regional testing centres, including accreditation process

6. The process typically undertaken for the establishment of a regional testing centre is outlined below:

Market assessment for long-term viability

- (a) Assessment of the needs of countries within a region and commitment of those countries to recognize and utilize the regional testing centre;
- (b) Robust implementation of MEPS regulations and certification/surveillance processes in the countries within the region recognizing the regional testing centre;
- (c) Enforcement of regulations for independently monitoring implementation of energy-efficiency standards, as well as labelling programmes, including market surveillance programmes for monitoring performance with energy-efficiency standards; and

³ For example, in the West Asia region, due to different temperature conditions of operations compared to other countries in the Asia region, the national and/or regional standards for testing can vary; therefore, there may be a requirement specified by the government for compliance with their national standards.

- (d) Identification of a testing centre location acceptable to all countries, taking into account factors such as equipment supply routes, accessibility for industry stakeholders supplying relevant equipment to the centres, the cost and ease of transporting goods to the centre, and the testing costs to be charged by the centre. The location identification should also include an assessment of the testing centres (both established or being established) and the possibility of utilizing those centres.

Capital and operating costs

- (e) The capital costs for the testing centres include the costs related to equipment procurement and the initial certification of those centres. Based on inputs from organizations with experience in establishing testing centres, as well as experts from the field, the estimated capital and certification costs for the testing centres are presented in table 1:

Table 1: Best estimates of capital costs for establishing a testing centre⁴

Particulars	Cost (US \$)
Estimated equipment costs for testing various equipment include costs for testing equipment for domestic refrigerators (US \$240,000), self-contained commercial refrigeration units (US \$250,000) and residential air conditioners up to 3 TR ⁵ (US \$350,000). Capital costs also cover a refrigerant quality testing facility (US \$60,000) and include shipment and clearance charges in the recipient countries.	900,000
Costs for certification (ISO and other related certification charges)	50,000
Total capital costs	950,000

Notes: (1) Periodic upgrade of equipment may be required depending upon the technology evolution. Upgrade costs must be carefully considered and incorporated into the business model for the centre operation; (2) Costs may vary depending upon specifications and location of equipment; therefore, the analysis of each project cost level must be undertaken on a case-by-case basis.

- (f) The operating costs could vary depending upon the location, the number and types of units tested for certification, market surveillance and inspection, among others. The operating costs mainly relate to personnel, testing consumables, maintenance, including calibration and annual audits, utilities and other administration costs. Technical personnel required for operating a testing centre would include an engineer to supervise the technical aspects related to testing different categories of equipment (e.g., adjustment of test procedure to take into consideration variations in climate conditions, electricity supply quality, adjustment in energy-efficiency metric) and one or two technicians who would assist the engineer in undertaking the testing. Depending on the business volume and proposed business process(es) for operating the centre, the number of personnel may vary. The operating costs are part of the business model, and those costs could be considered outside of any potential support provided by the Multilateral Fund (MLF);
- (g) Additional activities, such as market surveillance programmes, product performance optimization and design modifications, witnessing of testing procedures, training of engineers on testing and certification procedures, could be undertaken with support from relevant external agencies (e.g., external verification organizations like Société Générale de Surveillance (SGS), Technischer Überwachungsverein (TÜV), and specialist experts from existing testing centres). These experts/specialized organizations need to be engaged on a need basis for specific tasks. These services could assist the testing centre in gaining

⁴ Actual costs can vary depending upon specific commercial arrangements and market trends.

⁵ Tonne of refrigeration: a unit of power used to describe the cooling capacity of air-conditioning systems.

knowledge and recognition in the region, thus strengthening the business case of the centre and possibly contributing to additional revenues that could support business operations.

Co-financing

- (h) Obtaining financial contributions from the Government(s) or non-MLF sources within the region for capital and operating costs is a prerequisite for strengthening the commitment to the continued operations and support of the testing centre. Co-financing would enhance the attractiveness of the centre's business model.

Volume for viable operations

- (i) The number of equipment falling under different categories (e.g., domestic refrigerators, residential air conditioners) expected to be tested for the different countries, including those under market surveillance programmes, will determine the direct revenues from testing and certification and hence, the viability of the centre and its business model. The activities related to testing/certification and market surveillance are anticipated to contribute to a significant portion of the revenue and would directly drive the centre's business operations.

Management structure

- (j) The management structure of the centre should ensure technical competence, independence and neutrality, and regional coordination among participating countries. It should include elements for periodic monitoring and reporting to the representatives of the participating countries, to the extent feasible, and processes for technical support and oversight, particularly through relevant Government and/or independent bodies. The characteristics of the management structure could vary based on specific regional needs and requirements (e.g., countries in the region, on a rotation basis, could preside the management committee or equivalent).

Upgrade of an existing national technical centre

- (k) An existing national testing centre can also play the role of a regional testing centre to support other countries in the region. In this case, the commitment of those countries for recognition and utilization of the testing centre as regional is essential. When an existing centre is utilized, establishing a management structure may require less effort, as the national centre would already have an operational management structure. A cost benefit analysis of using the services of the existing centre in the region will be critical.

Inclusion of a testing centre within an existing energy efficiency centre of excellence

- (l) A recognized centre of excellence could house a well equipped and certified testing centre on a case-by-case basis. A centre of excellence could have partners from other relevant organizations undertaking different services relating to refrigeration, air-conditioning, and heat-pump (RACHP) equipment as described in document UNEP/OzL.Pro/ExCom/97/85. The main advantages of housing the testing centre within a centre of excellence are convenience in operationalizing both facilities at a single location, which can be logistically convenient; availability of technical support for activities undertaken by either of the facilities; and lower administrative costs during operationalization. The business viability of the testing centre needs to be assessed based on the steps explained in subparagraphs 6(a) to (j).

Possible options for supporting energy efficiency testing centres under the Multilateral Fund

7. The Multilateral Fund could support either the capital costs of upgrading an existing testing centre or establishing a new one. The maximum amount of the capital costs is provided in table 1, and it refers to the establishment of the testing centre. Partial funding for an upgrade will be assessed on a case-by-case basis, based on a cost benefit analysis specific to the centre. The regional network meetings organized by UNEP OzonAction could serve as a platform for promoting recognition of the centres, where appropriate, in the region.

8. The following options could be considered for supporting energy efficiency testing centres:

Countries with manufacturing that requested or will request funding under decisions 94/60 and 95/87⁶

9. Given that the projects approved under decisions 94/60 and 95/87 require a strong system for monitoring, verification and reporting of energy-efficient performance, providing financial support for upgrading existing national testing centres, where necessary, should be considered, and such funding could be provided under the funding window established under decision 94/60. In an exceptional case where a testing centre had not yet been established in a country requesting funding under decisions 94/60 and/or 95/87, the establishment of a new testing centre could be considered on a case-by-case basis, and it would be desirable for this centre to also serve the region.

Countries without manufacturing

10. For countries without manufacturing, a detailed mapping of existing regional facilities for energy-efficiency testing and certification for RACHP equipment and a detailed assessment of collaboration with those facilities will be required. The use of existing regional facilities that are already recognized and provide similar services can facilitate a more rapid and cost-effective operationalization of the testing centres.

11. Opportunities for implementing energy efficiency standards and certification through mutual recognition agreements (MRAs)⁷ must be explored where such arrangements would be practical and cost-effective. This would particularly benefit low-volume-consuming and very-low-volume-consuming countries, provided acceptable testing standards and procedures are available to those countries.

12. In those cases where there is no existing testing centre, establishing a new regional centre could be considered after careful consideration of the sustainability of such a centre, and whether there is a firm commitment by countries in the region, and importers and manufacturers, if relevant, in the region to utilize the centre. Establishing such a new centre will have to meet the criteria explained in paragraph 6.

13. The project funding of the new testing centre would depend upon the financial structure and business plans for operations of the testing centre. For this option of the non-manufacturing countries, initial capital costs of the testing centre could be considered to be fully or partially funded by the MLF under the funding window established in decision 91/65. Availability of co-financing from the Government or an entity outside the Fund would strengthen the viability and sustainability of the testing centre. Any delays in securing the co-financed component could result in delays in setting up the centre; therefore, co-financing should be in the form of firm funding for those centres.

⁶ This category will also include manufacturing projects under decision 91/65 approved prior to the operational framework.

⁷ MRA for energy efficiency standards for RACHP equipment can facilitate trade and reduce trade barriers by recognizing the conformity assessment procedures (such as testing and certification) of other countries. This means that products meeting the standards of one country can be accepted as meeting the standards of the other, streamlining the process of bringing products to market in both locations.

Project preparation funding

14. Project preparation support for the establishment or upgrade of a testing centre could be considered to cover consultations, field data collection, and analytical work required for project development. It is proposed that funding of up to US \$35,000 be allocated for these preparatory activities. This funding may be provided under the respective funding window of the project.

Project completion

15. The project for establishing a regional energy efficiency testing centre should be completed in no more than 36 months after the date of approval by the Executive Committee, and a detailed project report would be submitted to the Executive Committee within six months of the date of completion of the project.

Recommendation

16. The Executive Committee may wish to consider:

- (a) Noting the information provided in document UNEP/OzL.Pro/ExCom/97/86 related to the update on the operationalization of testing centres for energy efficiency (decision 95/87(e));
 - (b) Adopting the options for supporting energy efficiency testing centres under the Multilateral Fund as set out in the following paragraphs of document UNEP/OzL.Pro/ExCom/97/86, on the understanding that funding requests for projects should address the process for establishing a new centre or upgrading an existing centre in a region or in a country referred to in paragraph 6 of the aforementioned document:
 - (i) In paragraph 9 for countries with manufacturing, through the funding window established by decision 94/60; and
 - (ii) In paragraphs 10 to 13 for countries without manufacturing, through the funding window established by decision 91/65;
 - (c) Providing funding, for the preparation of projects referred to in subparagraph (b)(i) above and no more than [three] projects referred to in subparagraph (b)(ii) above, of no more than US \$35,000 per project, on the understanding that the preparation requests for projects referred to in subparagraph (b)(ii) above should be supported with endorsement letters by the Government of at least three countries from that region for establishing such a regional testing centre; and
 - (d) That, once approved, the dates of completion of the project on establishing a regional energy efficiency testing centre would be set at no more than 36 months after the date of approval by the Executive Committee, and a detailed project report would be submitted to the Executive Committee within six months of the date of completion of the project.
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