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**UPDATE ON THE OPERATIONALIZATION OF CENTRES OF EXCELLENCE FOR
SUSTAINABLE COOLING (DECISION 95/87(e))**

Introduction

1. At its 95th meeting, the Executive Committee, under the agenda item relating to further elaborating the operational framework on energy efficiency while phasing down HFCs² requested the Secretariat to prepare, for its consideration at the 97th meeting, an updated paper that would (i) elaborate the specific functions for both the centres of excellence for sustainable cooling and the 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 (KIPs), as well as with existing centres; and (iv) identify potential opportunities to use existing centres and mechanisms already in place for testing the energy efficiency of equipment (decision 95/87(e)). The present document is prepared in response to the decision, and it covers the different aspects relating to centres of excellence for sustainable cooling. The different aspects relating to testing centres for energy efficiency are covered in document UNEP/OzL.Pro/ExCom/97/86.

2. In preparing this document, the Secretariat took note of what was previously presented and discussed at the 93rd to 95th meetings,³ in particular the Secretariat's paper on how HCFC phase-out and HFC phase-down activities might contribute to sustainable cooling.⁴ The preparatory work also included

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¹ UNEP/OzL.Pro/ExCom/97/1

² UNEP/OzL.Pro/ExCom/95/87

³ UNEP/OzL.Pro/ExCom/93/98 and UNEP/OzL.Pro/ExCom/95/87

⁴ UNEP/OzL.Pro/ExCom/94/63

consultation with international experts⁵ involved in sustainable cooling programmes on the scope, operations and business model of existing centres or programmes.

Scope of regional centres of excellence on sustainable cooling

3. While centres of excellence are common in financial and technological activities (e.g., engineering, manufacturing, information technology and others), there is no universal definition of the term “centre of excellence”. However, it can be defined⁶ as an institutional model that provides high-quality leadership in developing and sharing knowledge, innovation and best sector practices through market assessment, provision of training, capacity building and support in specific areas where countries need it.

4. In the context of sustainable cooling, and in light of Article 5 countries’ commitments under the Kigali Amendment to phase down HFCs while maintaining or improving energy efficiency, centres of excellence can play an important role beyond the services already provided by existing traditional training centres, to assist refrigeration and air-conditioning (RAC) manufacturers, installers, technicians, training institutions and national authorities to navigate the transition to low-global-warming-potential (GWP) technologies, including in specialized areas where additional expertise is needed. This entails support in setting standards and best practices to assist countries to address technical, energy efficiency, safety, and regulatory aspects associated with emerging technologies. Annex I provides a brief description of existing relevant centres or mechanisms supporting sustainable cooling and other similar initiatives.

5. The Secretariat elaborated further on the concept of the regional centre of excellence for sustainable cooling that could provide: (a) state-of-the-art services to facilitate the advancement of sustainable cooling⁷ in multiple countries within a region; and (b) co-financing targeting specific sectors to adopt sustainable cooling technologies in the region. The Secretariat proposes to replace the concept of centres of excellence for sustainable cooling with the clearer and more functional concept of a **“thematic regional centre”** for sustainable cooling.

6. In order for a thematic regional centre to attain credibility, offer state-of-art services and mobilise resources outside of the Multilateral Fund, it needs to be thematically focused by offering high-quality services cost-effectively in the relevant refrigeration, air-conditioning, and heat pumps (RACHP) sector. Examples of emerging sectors or sectors in which many developing countries lack sufficient local expertise to address HFC phase-down and could benefit from a regional approach, are the marine and fisheries sectors, data centres, cold chain, not-in-kind technologies or other areas that can be identified as priority needs for complementing activities to achieve the Kigali Amendment targets and supporting the attainment of sustainable cooling in a particular region. Those thematic regional centres will be relevant both to low-volume consuming (LVC) countries and non-LVC countries. The theme of the regional centres will be determined by an assessment of the needs of the region. Such assessment will be based on RACHP technology market in the respective region and expected trends related to the adoption of sustainable cooling technologies.

7. The thematic regional centre can bring policy and technical advice that not only addresses Montreal Protocol compliance but could also address challenges associated with a specific sector. A centre that

⁵ The Secretariat wishes to acknowledge the valuable contribution offered by the Global Network for Regional Sustainable Energy Centres (GNSEC), Natural Resources Defense Council (NRDC), Africa Centre of Excellence for Sustainable Cooling and Cold Chain Systems (ACES), Sustainable Energy for All (SEforALL), United for Efficiency (U4E), Climate and Clean Air Coalition (CCAC), Clean Cooling Collaborative (CCC), Cool Coalition (CC), GIZ, UNEP OzonAction, International Institute of Refrigeration (IIR), Global Food Cold Chain Council (GFCCC), and several RACHP experts.

⁶ References used by different UN organizations, i.e., UNESCO, ILO, WHO, and others.

⁷ According to UNEP’s Cool Coalition Global Cooling Watch 2023 report, sustainable cooling is defined as cooling technologies and approaches that are accessible, affordable and scalable but that minimize the impacts on people and the planet, including through large reductions in GHG emissions.

leverages resources other than from the Multilateral Fund could accelerate the design and demonstration of emerging innovative sustainable cooling technologies beyond the regular Montreal Protocol project design and implementation framework. Thus, with the Montreal Protocol compliance framework and with the energy efficiency activities that go beyond compliance as a foundation, these thematic regional centres can accelerate adoption of sustainable cooling technologies.

Rationale and advantages of the thematic regional centres for sustainable cooling

8. The need for a thematic regional centre for sustainable cooling is driven by the complexity and challenges that characterize the RACHP sector in most developing countries. While resources are available to countries through Multilateral Fund to implement projects, the main imperative for the thematic regional centre is to provide continuous, complementary and high-quality cost-effective support for achieving sustainable cooling. The primary drivers for establishing thematic regional centres are the following:

- (a) Limited capability and expertise at the national level in undertaking in-depth market assessments of technology adoption trends for sustainable cooling and using data management and modelling tools; support in determining the needs of different stakeholders and how those needs feed into the national and regional priorities;
- (b) Limited capacity of small and medium enterprises (SMEs) and end-users in adopting low-GWP energy-efficient technologies in different applications in manufacturing, onsite installation and assembly, maintenance; absence of easily accessible local support for addressing adequately technology adoption; and
- (c) Limited local technical capacities on the part of national stakeholders in conducting in-depth analysis on technological issues and market dynamics, which would support the successful implementation of activities relating to KIPs and other activities supported by Multilateral Fund.

9. Although the above-mentioned challenges are addressed at the national level during the implementation of the KIPs, these challenges are transboundary in nature, especially in regions or subregions where markets are led by the same technology providers for different categories of applications (e.g., fisheries, cold chain, data centres). In addition, there are emerging areas such as cooling solutions in data centres that are evolving. The supply of RACHP equipment from larger countries to the medium and small countries in the same region, as well as the movement of labour and experts drives the need for a regional approach in tackling joint challenges. Therefore, in the context of implementation of the Kigali Amendment, including project implementation, a regional approach with a focus on thematic regional issues can result in effective support to the countries.

10. These thematic regional centres can form a global network through knowledge transfer and shared lessons learnt and make services available to countries in different parts of the world (e.g., expertise in fisheries or other food cold chains, data centre technologies in one region on technical and policy matters can be shared with other regions). These centres can secure financial sources outside the Multilateral Fund that could complement Multilateral Fund funding and implement projects/programmes that could contribute to sustainable cooling technologies. The structuring of co-financing options (e.g., sources, governance mechanisms, timelines) would depend upon the business plan that would be operationalised by the thematic regional centre. Over time and with an evolving thematic focus based on the most relevant issues, the thematic regional centres would be able to seamlessly support the implementation of project activities relating to sustainable cooling, beyond the lifetime of projects supported by Multilateral Fund funding.

Specific functions for a thematic regional centre

11. There are three broad categories of services in the RACHP sector that a thematic regional centre could provide:

- (a) *Technical assessment, data management, and market-driven policies:* Such functions could include areas such as sectoral data analysis vis-à-vis different economic sectors; technology profiling across different applications; cutting-edge data management and modeling tools; studies on access to cooling across community clusters, e.g. rural, urban and high/medium/low-income groups; alignment of regional energy-efficiency standards, labelling and/or conformity schemes; development of smart green public procurement frameworks; designing market surveillance programmes; methodologies for risk assessment and management when adopting low-GWP technologies; bridging policies implemented at the national level to implement the Kigali Amendment with other relevant national/regional issues such as buildings, food security, health, tourism, or national cooling action plans;
- (b) *Market uptake and interventions for faster adoption of low-GWP technologies:* Such functions could include application and use of risk assessment studies; low-GWP transformation plans for specific economic segments, e.g., hospitality industry, health, retail, data centres, etc.; building the technical capacities of SMEs and the local assembly and installation subsector; technician certification programmes for regional recognition of the servicing workforce; end-user incentives and/or early retirement schemes including innovative financial products for different end users; consumer protection programmes and tools; and the digitalization of technical and vocational education and training in RACHP; and
- (c) *Attract and mobilize co-financing on sustainable cooling:* Such thematic regional centres could both provide technical assistance to countries to raise funds and be the place funding institutions turn to when they are looking to fund activities related to sustainable cooling. The centres could assist national ozone units (NOUs) on how to apply for funding from regional development banks or institutions and philanthropy. Additionally, it could also help the governments and end users to build bankable financial models and/or public-private partnership models to support financing sustainable cooling through local/regional/international banks or financial institutions using traditional loans, concessional lending or revolving fund modalities.

12. The above list of specific functions is indicative. Additional services could be suggested as long as they have been demonstrated to be a regional priority, and do not duplicate activities already implemented with funding under KIPs, or any other funding window established by the Multilateral Fund. Over time, their thematic focus, their visibility and integration in the region, higher levels of coordination with relevant industry players and the global inter-regional networking (national, regional and global connectivity) would enable the thematic regional centres to build on their technical and policy capabilities and their network to offer services on sustainable cooling to the countries.

Guidelines for developing thematic regional centres for sustainable cooling

13. To ensure a sustainable business model for a thematic regional centre for sustainable cooling, the following key elements should be well designed and elaborated.

Co-location with an existing centre or centres

14. Providing support to establish and operate a centre for services relating to sustainable cooling in an existing centre or centres will likely result in faster recognition and operationalisation of those centres. This approach can also help the centre use relevant knowledge and expertise of an existing centre and also gain acceptance from the countries in the region. An example of co-location is the Lawrence Berkeley National Laboratory (LBNL).⁸ Mapping existing regional centres or institutions that could host the thematic regional centre is an essential exercise at the planning stage.

Planning and priorities

15. Planning will be based on the needs of the region, which will identify the thematic priority for the centre. The knowledge and expertise, including industry collaboration, on handling different challenges would evolve over time, and this is expected to build the strengths of the thematic regional centres to offer services in the long run more effectively. Thus, a thorough regional consultation is needed amongst the NOUs, other relevant regional partners or groups including financial institutions to ensure building consensus about the regional needs and thematic priorities.

Governance and operation

16. There are two ways in which a thematic regional centre can be set up, which are:

- (a) It can be co-located with another centre which is established through an intergovernmental process. This approach can create strong ownership by the countries of the region and commitment to use the services of the thematic regional centre as appropriate. This implies a regional governance structure similar to the energy centre's approach supported by a global platform, hosted by UNIDO (see also annex I to the present document); and
- (b) It can be co-located with an existing centre that operates as a hub providing services not only to the host country but also to other countries in the region such as the case of the Africa Centre of Excellence for Sustainable Cooling and Cold Chain Systems (ACES).

17. In both cases, and to ensure robust and sustained operation and engagement with regional stakeholders, the centre should have an organizational setup that supports smooth decision-making, delivery and reporting processes. The basic organizational structure and operational model would include a governing body to provide strategic oversight and ensure alignment with the mission and scope of work of the centre that also ensures complementarity of activities with other initiatives in sustainable cooling.

18. A team will be needed to manage the day-to-day operations, stakeholder engagement, representation, design of projects, delivery of activities, outreach and events, and operational support. Affiliated partners can offer expertise, linkage to existing cutting-edge services, and quick access to the regional stakeholders. Technical experts could offer technical guidance on emerging issues, initiatives and projects led by the centre.

19. The operation of the thematic regional centre should be designed taking into account capital and operational costs including, as a minimum, the following elements: a one-time cost that includes the co-location of the centre, intergovernmental and partner acceptance processes, necessary contractual and legal services, staff and programmatic costs and operational and administrative costs.

⁸ LBNL is recognized as a leading centre of excellence in energy efficiency improvement, including research and development in refrigeration and air conditioning technologies supported by its extensive expertise and collaborations with industry and government agencies.

Cost-estimate, co-financing, business model and sustainability

20. A minimum of five years of support is recommended at the start-up of such centres to establish the necessary credibility and build reliance on the services offered by the centre within the region. An additional one-year period should be considered, upon the approval of the project, to facilitate the start-up arrangements and recruitment of staff before the centre or programme starts functioning and offering the required technical and programmatic services.

21. The business plan needs to demonstrate the operational viability of the centre. The plan should identify revenue sources (e.g., technical consultancy support for services, services relating to training of technical personnel, market analysis and policy framework assessments, technology-adoption-related services), number of clients serviced,⁹ and costs for operating those services. The business model should demonstrate viability with internally generated resources from the end of the fifth year.

22. An indicative estimate of the level of funding that could be necessary to establish a thematic regional centre that could also leverage on other funding resources and modalities, that serves a region composed of eight to ten countries, covering the start-up and operation for the first five years would be in the range of US \$1.8 to US \$2 million per year.¹⁰

23. The availability of co-financing from the hosting Government or entity or from other countries in the region and other stakeholders should be secured prior to considering support for the establishment of the thematic regional centre and should have a strong co-financing component. It is recommended that the Multilateral Fund contributes up to maximum of 30 per cent of the costs as indicated in paragraph 22 for the first three years and then up to 15 per cent for the fourth and fifth years. After this period, the regional thematic centre should be self-sustained and funded.

An alternative option

24. A thematic regional programme, which could be hosted by an established regional setup as an alternative option to that of the thematic regional centre. This model could secure a quick start and minimize the capital and operational costs by piggybacking on the existing governing setup and the established operation. The risk of this approach is ensuring that the decision-making process of the programme is not affected by the hosting centre's processes, and that Multilateral Fund resources are only used for the purpose and activities of the thematic regional programme. Risks could be minimized significantly if the hosting or supporting entity is operating through an existing programme or activity linked to the Montreal Protocol.

Assessment of potential duplication of activities funded under HPMPs and KIPs, as well as the activities of existing centres

25. The project activities that will be undertaken in the thematic regional centres would support activities under the ongoing KIPs and thus be complementary to those activities. For example, the centres with their expertise could provide services related to technology and market readiness assessment for fast-growing sector like data centres or developing a study and propose a model for a regional technicians' certification or certificate recognition programme that strengthens the mobility of trained and certified RACHP workforce.

26. In the case of existing centres of excellence under HCFC phase-out management plans (HPMPs) and KIPs, the services that are offered primarily relate to training and capacity building in the servicing sector at the national level (e.g., training on refrigeration equipment using flammable refrigerants, training

⁹ The clients could include private enterprises, associations implementing specific activities, NOUs and other relevant stakeholders.

¹⁰ Based on the best estimate of the operational and administrative costs with the assumption that the centre is co-located with an existing centre or its location is offered through the host country/entity.

on recovery and reclamation). The thematic regional centres can provide, as needed, technical inputs on emerging technologies, strengthen industry collaboration and provide other services relating to training (e.g., training material upgrades, train-the-trainers, KIP development for future stages) to centres established under HPMPs and KIPs. These thematic regional centres would have knowledge/expertise on local challenges and build linkages/network with the key national stakeholders. They would be able to provide a fast and an effective way of offering different services on an ongoing basis for different activities including KIP implementation. This would result in cost-effective support and help mobilize resources outside the Multilateral Fund.

Preparatory support for thematic regional centres for sustainable cooling

27. Detailed project proposals for establishing thematic regional centres / programmes must be prepared taking into account the specific functions for the centres in paragraphs 11 to 12 and the guidelines presented in paragraphs 13 to 24.

28. The Secretariat recommends funding a limited number of requests for preparation of projects to allow agencies to prepare proposals that address all issues raised in paragraphs 11 to 24, including information on the thematic focus of the proposed regional centre, the co-financing model that will generate funds to address sustainable cooling under the thematic focus, and all elements regarding the scope of services, operational model, governance setup, required level of funding and viability of the co-financing opportunities. The Executive Committee could consider preparatory funding of US \$50,000 for each PRP request. The funds could be provided under the existing funding window of decision 91/65.

Recommendation

29. The Executive Committee may wish to:

- (a) Note the information provided in document UNEP/OzL.Pro/ExCom/97/85 relating to the update on the operationalization of centres of excellence for sustainable cooling (decision 95/87(e));
- (b) Consider provide funding for the preparation of [3] project proposals for the development of thematic regional centres or programmes, for US \$[50,000] each in line with the functions and guidelines included in paragraphs 11 to 24 of document UNEP/OzL.Pro/ExCom/97/85, on the understanding that the requests for preparatory funding would be submitted no later than the 99th meeting and that the full proposals would be submitted by the 101st meeting of the Executive Committee, at which point the Executive Committee would consider whether or not to co-finance any of the proposals submitted as described in paragraph 23 of document UNEP/OzL.Pro/ExCom/97/85; and
- (c) To request the UNEP Compliance Assistance Programme, through its networks of national ozone units and the energy-efficiency twinning project, to facilitate all agencies, if needed, with the regional or subregional consultation process during project preparation.

Annex I

EXISTING RELEVANT CENTRES OR MECHANISMS SUPPORTING SUSTAINABLE COOLING

1. There are many initiatives and programs that directly or indirectly support sustainable cooling. These programs vary in terms of their governance, institutional setup, type of service, sector or regional coverage, and operational models.¹ The centres can be either cooling focused or non-cooling focused.

Cooling-focused centres or mechanisms

2. This category includes centres, programmes or initiatives established with a dedicated mandate and scope to support one or more segments of the cooling sector, whether through policy or technical interventions. An example of a stand-alone centre of excellence is the Africa Centre of Excellence for Sustainable Cooling and Cold Chain Systems (ACES) which has a mandate that is focused on sustainable cold-chain solutions and offers a wide range of services and capacity-building programs.

3. Lawrence Berkeley National Laboratory (LBNL) is recognized as a leading centre of excellence in energy efficiency improvement, including research and development in refrigeration and air conditioning technologies and testing of performance of refrigeration and air-conditioning equipment. LBNL has a strong reputation for advancing sustainable energy solutions and innovation in these fields, supported by its extensive expertise and collaborations with industry and government agencies.

4. Other cooling-dedicated programs that are not centres vary in terms of governance setup, mission, and type of services. They cover diverse functions such as policy advocacy and advice, technology transfer, capacity building, finance and business models, energy-efficient applications, data collection, market studies, and outreach programs. Examples from this group include the Cool Coalition (CC), the Green Cooling Initiative (GIZ), the Clean Cooling Collaborative (CCC), the Global Food Cold Chain Council (GFCCC), and others.

Non-cooling-focused but related centres or mechanisms

5. This category includes centres or programmes initiated to support different, or broader, mandates like energy or buildings in general, but which may also offer services focused on sustainable cooling as part of their mission. The regional sustainable energy centres are the most recognized model. They are established as centres under the auspices of a regional intergovernmental body and with the support of the regional energy ministerial councils of regional economic communities. Currently 11 such centres are in operation across Africa, Asia and the Pacific, and Latin America. These centres are supported by a global platform, hosted by UNIDO, and they are part of the Global Network for Regional Sustainable Energy Centres (GN-SEC).

6. Other programs or initiatives with a broader scope but which provide services that contribute to sustainable cooling and/or are linked the Montreal Protocol, and its Kigali Amendment targets include groups such as Sustainable Energy for All (SEforALL), United for Efficiency (U4E), and others.

¹ This list is not exhaustive; there are new initiatives that evolve over time.