Decision XXXVII/5: National and regional initiatives to support the implementation of the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer (online form)

1. Name of the Party

United Kingdom

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

The UK, through the Department for Environment, Food and Rural Affairs (Defra), provides Official Development Assistance (ODA) funding to the Sustainable Cooling and Cold Chain Solutions (SCCCS) programme, delivered by the United Nations Environment Programme (UNEP) and partners.

The programme supports implementation of the Kigali Amendment by strengthening capacity, policy frameworks and market systems for the uptake of energy-efficient and low-global warming potential (GWP) cooling technologies. Activities focus on reducing cooling and cold chain-related emissions and improving system efficiency, including through reducing food and vaccine loss and strengthening cold chain systems in developing markets for poverty reduction, improved livelihoods and strengthened climate resilience.

The programme supports a hub-and-spoke model designed to deliver training, technical assistance and demonstration of sustainable cooling solutions, while generating lessons from local implementation that can inform replication in other contexts.

The programme is currently operating through the following in-country facilities:

- The Africa Centre of Excellence for Sustainable Cooling and Cold Chain (ACES) in Kigali, Rwanda.
- Specialist Outreach and Knowledge Establishment (SPOKE) in Kenya.
- Technical assistance to the design and development of the Haryana-UK Centre of Excellence on Sustainable Crop Post-Harvest Management C Cold-Chain (CoE-SPMCC) in India.

Delivery Model – Hub and SPOKE

The programme has supported the development of a hub-and-spoke model, centred on ACES as a reference hub, with associated SPOKE activities operating in local contexts. This model is designed to provide training, technical assistance and demonstration of cooling solutions, while enabling learning from local implementation to inform wider application in other contexts.

- The hub (ACES) provides facilities for training, testing and demonstration of cooling and cold chain solutions.
- The SPOKE model focuses on deploying and testing solutions in local settings, generating practical insights on implementation.

More information on the Hub-SPOKE model can be found at this link: Clean Cooling's Centre of Excellence C SPOKE model.

System-level approach

The programme is underpinned by a systems-based approach to cold chain development. This approach is designed to support end-to-end cold chain systems, from production through to distribution, across both food and health sectors. Delivery partners, including the Centre for Sustainable Cooling (University of Birmingham led consortium), have developed modelling tools, training programmes and financial and business models intended to support sectoral stakeholders (farmers, industry, funders, policy makers, governments) in designing more efficient, resilient and sustainable cold chain systems. These materials are currently being applied in programme countries to support ongoing operations.

Information provided on the SCCCS programme reflects the UK's perspective as a donor, based on delivery partner reporting and programme monitoring.

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

Defra's current focus is on supporting delivery of existing activities under the SCCCS programme through UNEP and Delivery Partners, as well as relevant opportunities to scale up activities.

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

Through SCCCS, UK funding supported UNEP United for Efficiency (U4E) team with complimentary policy activities. These are not directly linked to the Centre of Excellence approach but could support the set up and operations of a Centre of Excellence.

The programme has supported development and dissemination of U4E Model Regulation Guidelines and associated tools, which provide countries with frameworks to implement

standards, labelling, and market controls that promote energy-efficient and low-GWP technologies.

The programme also supported U4E regional policy harmonisation processes (e.g. in the East African Community and Southern African Development Community), which aim to align regulatory approaches across countries.

In parallel, the programme also supported U4E technical assistance to support national implementation of these frameworks, including application of policy tools such as Sustainable Public Procurement and related financial and regulatory measures.

Together, these frameworks aim to create an enabling environment in which the SCCCS Centre of Excellence Hub and SPOKE approach can operate as a practical delivery mechanism.

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

The Centres of Excellence approach supported under the SCCCS programme is designed to deliver capacity building, technical assistance and demonstration activities that directly support implementation of the Kigali Amendment through strengthened technical capability, supporting compliance with regulatory frameworks, and creating the enabling environment for market adoption of energy-efficient and low-GWP cooling solutions.

An example of functions of SCCCS Centre of Excellence activities have been shared below. The weblinks to Clean Cooling Network articles used throughout this submission reflect delivery partner reporting and not reporting by UK Defra.

Training Programme

- Capacity building, including targeted training and technical assistance for technicians, farmers, policymakers and other stakeholders provide practical skills and foundation knowledge on cold chains. An example of past courses can be found at this link: ACES announces first courses of 2026. A list of upcoming training courses can be found at this link: Course Finder - the Clean Cooling Academy.
- Specialised technical training through delivery of targeted training models on advanced system management, including telemetry and remote monitoring, equipping technicians and operators with the skills to monitor system performance in real time, detect faults early and maintain reliable operation of cooling systems: ACES Launches Telemetry and Remote Monitoring Course
- The train-the-trainer programme is one example where ACES aims to build impact of training and skills creation, and disseminate skills and knowledge. More

information on the train-the-trainer course can be found at this link: Train the Trainer Programme secured accreditation.

Testing and Demonstration Facilities

- Equipment testing capabilities at ACES, including an Environmental Test Chamber.
- Demonstrating technologies in the ACES Demonstration Hall, and through community engagement in SPOKE programmes. More about the capabilities of the ACES demonstration hall can be found at this link: ACES Demo Hall.
- Generating and applying analytical tools (e.g. virtual cold chain modelling and return-on-investment tools) to inform government decision-making, policy development and investment planning for sustainable cooling transitions.
- Testing and validating delivery and business models (e.g. through pilot and demonstration approaches) to generate evidence on effective approaches. The TBYB approach is one example of a business model being tested through the programme to unlock finance for communities to sustain cold chain solutions. A case study of the TBYB pilot with Lari Horticultural Cooperative can be found at this link: Lari Case Study. More information relating to finance and business models can be found at this link: Ustawi Afrika has become the second ACES SPOKE.

Wider Operational Support and Capacity Building

- Recent F-gas certification/registration ensures that technicians meet recognised competency standards for the safe handling, installation, servicing and disposal of refrigeration and air-conditioning equipment, reducing leakage of HFCs. Read more about ACES becoming F-gas registered at this link: ACES has become officially F-Gas Registered.
- Development and application of operational frameworks, including standard operating procedures, risk management and maintenance systems, which support the effective and consistent operation of centres of excellence and enable replication in new contexts.
- Disseminating knowledge, tools and best practices through digital platforms and networks, supporting wider access to training, resources and learning beyond physical centres.
- Regulatory and enforcement training including for customs and enforcement agencies to strengthen monitoring and control of refrigerant imports, including identifying non-compliance or prohibited substances and supporting safe handling practices: ACES trains customs and enforcement officers.

Collectively, these activities position centres of excellence as a practical delivery platform that can link policy, technical capacity and market development, supporting reduced emissions and sustained implementation of the Kigali Amendment.

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

From a donor perspective, drawing on delivery partner reporting, monitoring and site visits, key lessons include:

- **Systems approach and engagement:** Delivering sustainable cooling through centres of excellence requires a systems-based approach, addressing multiple interdependent barriers simultaneously (e.g. technical skills, equipment supply, policy frameworks and market demand). An early needs assessment shows that isolated interventions are less effective, and that aligning these components is critical to enabling sustained implementation of the Kigali Amendment. Since ACES has been designed to be a multi-sectoral regional Centre of Excellence, early and consistent engagement across sectoral stakeholders including Government, industry, service users and policy makers has been important to establish functions which can address the variety of actors required to deliver sustainable cold chains in the local context.

- **Phased implementation:** Establishing centres of excellence has required an initial phase focused on demonstration and validation of delivery models before scaling implementation. Experience shows that refining a reference model and testing approaches in-country is critical to support replicability and effective scale-up across different contexts.

- **Replicability through standardised tools:** Developing standardised tools, models and operational frameworks (e.g. training materials, SOPs, and system design tools) is critical to enabling replication of centres of excellence in new markets, reducing delivery time and improving consistency of implementation.

- **Behavioural factors:** Uptake of sustainable cooling solutions can be constrained by behavioural and cultural factors, including perceptions of cold chain technologies. Addressing these through targeted training and awareness-raising is important to support adoption and maximise the impact of centres of excellence.

- **Context-appropriate training:** Effective capacity building requires training approaches that are adapted to local skill levels and educational contexts. Experience shows that standardised training models may need to be tailored to ensure accessibility and effective knowledge transfer to technicians and end-users.

- **Community-level delivery models:** Centres of excellence can improve effectiveness of sustainable solutions uptake when linked to community-level delivery and business models (e.g. cooperatives and demonstration pilots), which

help de-risk adoption, build demand and enable access to finance for sustainable cooling solutions.

- **Monitoring and evidence:** Establishing robust monitoring, evaluation and learning systems early in programme delivery is essential to track outcomes, test assumptions and demonstrate impact, particularly for first-of-kind approaches.

- **Realistic delivery timelines:** It has taken over 5 years for the programme to move from early-stage design and development through to sustained roll out of activities. Timelines can be context specific, but are significantly influenced by procurement, contracting and governance arrangements. Experience to date shows that establishing centres in new contexts can be delayed by processes such as equipment procurement, infrastructure development and coordination across delivery partners. This underlines the importance of delivery realism, supported practically by early-stage risk management, setting realistic timelines and streamlined operational arrangements to ensure delivery can proceed efficiently.

- **Building capacity of local delivery teams:** Strengthening the capacity of local operational teams to take forward centre activities has been critical to enabling transition towards locally led delivery models. This supports long-term sustainability beyond programme funding, strengthens in-country technical capability, and enables continued implementation of Kigali Amendment requirements through locally embedded expertise.

- **Capacity constraints at country level represent a key challenge.** Evidence shows that limited technical skills, particularly in installation, servicing and system management, can constrain uptake of cooling technologies. As a result, sustained investment in targeted training and workforce development is essential.

- **At the policy level**: U4E-led regional harmonisation and national implementation of regulatory frameworks are time-intensive processes requiring sustained engagement. Centres of Excellence could play a key role in bridging these processes, providing ongoing technical support and coordination to enable consistent implementation across countries.

- **Host Government Support:** Active engagement with Host Governments when designing, developing and deploying a Centre of Excellence has been important to maintain progress within the country context and to establish a centre which can service national needs, as well as those of the region.

- **Leveraging finance for sustained impact:** The role of programme delivery partners in mobilising co-financing and partnerships has strengthened value for money of initial donor investments. Establishing financial self-sustaining approaches (such as blended finance models) to maintain equitable and effective delivery of the Centre of Excellence functions can support sustaining impact.

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

Documents

The following publicly available documents are provided as supporting evidence. These represent core Defra-owned programme documentation (business case and annual reviews). Insights from more recent delivery have been incorporated into the responses above.

1. 2023 Annual Review - First Donor Annual Review of the SCCCS Programme.
2. 2024 Annual Review - Second Donor Annual Review of the SCCCS Programme.
3. Original Business Case - Donor Original Full Business Case which underlines the consolidation of early-stage funding, and rationale, strategy and governance for scaled up UK Official Development Assistance anchor funding to the SCCCS Programme.
4. ACES Feedback Form to MLFS

8. Any other information

In-country operations through ACES, Kenya SPOKE and India, are complimented by the Clean Cooling Network - an online knowledge platform developed through the SCCCS programme to facilitate knowledge sharing, training and dissemination of tools and guidance across the sustainable cooling sector.