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EXECUTIVE COMMITTEE OF
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Montreal, 26-30 May 2025
Item 9(d) of the provisional agenda¹

PROJECT PROPOSAL: NORTH MACEDONIA

This document consists of the comments and recommendation of the Secretariat on the following project proposal:

Energy efficiency

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| <ul style="list-style-type: none">• Pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities) | UNIDO | Individual
consideration |
|---|-------|-----------------------------|

¹ UNEP/OzL.Pro/ExCom/96/1

PROJECT EVALUATION SHEET – NON-MULTI-YEAR PROJECT**North Macedonia****PROJECT TITLE****BILATERAL/IMPLEMENTING AGENCY**

Pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities)	UNIDO
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PROJECT OBJECTIVE

The pilot project proposal on energy efficiency seeks to improve the country's framework for energy efficiency in the RAC sector by strengthening the legal system, enhancing the energy efficiency of HFC-based equipment, and promoting MEPS.

NATIONAL CO-ORDINATING AGENCIES	The Ministry of Economy; the Ministry for Energy, Mining and Minerals
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LATEST ARTICLE 7 DATA (Annex F)	Year:	2023	275,505 CO₂-eq tonnes
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Particular	Non-investment activities
HFC used by the servicing sector	99.46 mt 214,184 CO ₂ -eq tonnes (HFC-32, HFC-134a, R-404A, R-410A, R-517A, R-452A)
Project duration (months):	24
Initial amount requested (US \$):	260,000
Final project costs (US \$):	241,000
Implementing agency support cost (US \$):	21,690
Total cost of project to Multilateral Fund (US \$):	262,690
Energy efficiency savings (US \$/KwH):	n/a
Status of counterpart funding (Y/N):	N
Project monitoring milestones included (Y/N):	Y
Minimum energy performance standards available for the relevant sector (Y/N):	Y

SECRETARIAT'S RECOMMENDATION	Individual consideration
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PROJECT DESCRIPTION

Background

1. On behalf of the Government of North Macedonia, UNIDO has submitted, in line with decision 91/65, a request for a pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities), in the amount of US \$260,000, plus agency support costs of US \$18,200, as originally submitted.²

Energy efficiency pilot project

2. North Macedonia ratified the Kigali Amendment on 12 March 2020 and has implemented a licensing system for controlling and monitoring HFCs in line with the Kigali Amendment requirements. Under stage I of the Kigali HFC implementation plan (KIP) approved at the 93rd meeting,³ the country has committed to reducing HFC consumption by 18.7 per cent of its baseline by 2029. A more detailed overview of HFC consumption and related activities can be found in document UNEP/OzL.Pro/ExCom/93/78. The country has not yet requested funding for energy-efficiency-related activities under decision 89/6.

Policy, regulatory and institutional framework

3. As part of the Ministry of Environment and Physical Planning, the national ozone unit (NOU) coordinates HFC phase-down activities in the country, including implementing the KIP, collecting and reporting data on the consumption of controlled substances, operating the licensing system, and organizing training for customs officers and refrigeration technicians.

4. North Macedonia is a signatory of the Energy Charter Treaty and the Energy Community Treaty. Both treaties obligate the country to harmonize its legal framework with existing European Union (EU) regulations in the energy sector. The country is committed to working towards the 2050 climate neutrality target. The focus of the nationally determined contribution (NDC) is on climate change mitigation, with energy supply, buildings and transport as dominant sectors.

5. The energy management system of North Macedonia is mainly governed by the Energy Law and the more recent Energy Efficiency Law (adopted on 10 February 2020), which focus on environmental protection, energy efficiency, and reducing climate-change impacts. The legislation defines the minimum energy efficiency standards of buildings and issues certificates of compliance. A special provision on the inspection of heating and air-conditioning requests owners of heating systems with effective ventilation greater than 70 kW to perform an energy audit at least once every four years to check the energy efficiency of equipment and the compatibility of its capacity with cooling needs. The energy labelling and eco-design of the appliances/products are incorporated into the legislation.

6. The Government is implementing a licensing system for HFCs. An environmental fee for HFCs and equipment containing HFCs will be implemented, and the amount of the fee will be determined based on the global warming potential (GWP) of the HFC imported. The quota system for HFCs has been in place since 1 January 2024. A ban on the import, production, and placing on the market of refrigeration and air-conditioning (RAC) equipment containing HFCs will be gradually rolled out from 2028 to 2035.

7. Draft amendments to the Law on Environment have been prepared that include extending to HFCs the provisions on leak prevention, detection and control; regulating categories of licences for the management of refrigerants and products containing refrigerants; and setting criteria for the establishment of sustainable technician training centres, including minimum equipment requirements, a requirement for

² As per the letter of 17 February 2025 from the Ministry of Environment and Physical Planning of the Republic of North Macedonia to UNIDO.

³ Decision 93/71

on-site practical testing as part of the technician certification in line with EU requirements, as well as minimum educational requirements and experience for trainers. The rulebook on procedures for the reuse and recovery of ODS has been revised to address HFCs. Further regulations relating to energy and refrigerant management include rulebooks on energy audits, energy performance in buildings, the eco-design of products, conditions for training, certification, equipment servicing and annual obligatory reporting.

8. The Government of North Macedonia has established minimum energy performance standards (MEPS) in the RAC sector. MEPS and eco-design have already been incorporated into the 2020 Energy Efficiency Law. The MEPS cover domestic refrigerators (between 10 and 1,500 litres) and air-conditioning equipment (≤ 12 kW). The responsibility for enforcement and monitoring was transferred from the Ministry of Economy to the Ministry for Energy, Mining and Minerals in 2024. Existing legislation on MEPS needs to be reviewed and amended to align with international recommendations and standards.

HFC consumption and sector background

9. The HFC consumption baseline for North Macedonia has been established at 397,843 CO₂-equivalent (CO₂-eq) tonnes. The Government of North Macedonia reported a consumption of 275,505 CO₂-eq tonnes of HFCs in 2023, which is 31 per cent below the country's HFC baseline for compliance. The Article 7 data for 2024 has not been reported yet. The country has provided a preliminary estimate of HFC consumption of 257,426 CO₂-eq tonnes in 2024; the 2024 consumption data is being verified. The 2020-2024 HFC consumption is shown in table 1.

Table 1. HFC consumption in North Macedonia (2020–2024 Article 7 data)

	2020	2021	2022	2023	2024*
Metric tonnes (mt)	317.12	426.71	403.23	426.97	245.43
CO₂-eq tonnes	363,454	347,746	366,617	275,505	257,426

* Preliminary estimate.

Project objective

10. The pilot project proposal on energy efficiency seeks to improve the country's framework for energy efficiency in the RAC sector by strengthening the legal system, enhancing the energy efficiency of HFC-based equipment, and promoting MEPS. This will be achieved through legislation amendments and an action plan, stakeholder coordination and collaboration, and a pilot project for large equipment end users to reduce leakage. This is aligned with the long-term KIP strategy to facilitate the adoption of energy-efficient, low-GWP-based technologies in the RAC sector, and to improve the energy efficiency of RAC equipment through leakage control to maintain appropriate refrigerant levels for optimum equipment efficiency and operational conditions.

Proposed activities

11. The following activities have been proposed to be implemented within 24 months:

- (a) Defining the national framework for energy efficiency in the RAC sector:
 - (i) Review existing national legislation related to energy efficiency in the RAC sector (organize a launching meeting, review existing legislation and policies, analyze gaps, establish a working group of stakeholders for energy efficiency, and conduct a cost-benefit analysis of integrating EU energy efficiency policies into national legal framework) (US \$53,000);

- (ii) Identify national priorities and develop a sector plan for improving energy efficiency in the RAC sector (workshops, research, and report development) (US \$27,000);
- (b) Strengthening the implementation of MEPS and labelling in the RAC sector:
 - (i) Identify and coordinate with stakeholders that have an impact on energy efficiency in the RAC sector (equipment owners and importers, industry organizations, and national experts) and conduct a public-awareness campaign for these stakeholders (materials, videos, and three awareness workshops) (US \$48,000);
 - (ii) Two workshops to train 20 energy efficiency professionals (servicing technicians, equipment owners, auditors, and energy management institutions) on best practices for energy efficiency in the RAC sector, covering RAC system optimization, good servicing practices, and leakage prevention (training materials, workshops, and final report) (US \$30,000);
 - (iii) Define priorities and develop an action plan to improve energy efficiency in the RAC sector (action plan and two workshops) (US \$27,000);
- (c) Pilot project to introduce leakage detection systems (LDSs)⁴ in stationary equipment containing a high charge of HFCs:
 - (i) Review the database of enterprises and equipment owners with large stationary RAC equipment (containing 500 CO₂-eq tonnes or more, or 100 kg or more of HFCs) and hold a workshop on the introduction of LDSs on stationary RAC equipment (US \$9,000);
 - (ii) Select 10 enterprises to receive an LDS, and review models and prepare the technical specifications of the LDS based on the needs of each beneficiary (US \$10,000); and
 - (iii) Procure, deliver and install the LDS, and provide operation and maintenance training to the ten beneficiaries (US \$56,000).

Total cost of the pilot project

12. The project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down amounts to US \$260,000, plus agency support costs, and will be implemented between September 2025 and August 2027.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

Comments

13. The Secretariat has reviewed the project proposal in light of the activities described under decisions 89/6 and 91/65 as well as those being implemented under stage I of the KIP.

⁴ An LDS includes sensors to detect equipment refrigerant leaks, leakage warning alarms, and data transmittal to the central control system. LDSs provide continuous leakage monitoring to identify leaks and alert the operator in a timely manner.

14. In line with decision 91/65, confirmation has been received from the Government of North Macedonia that the NOU will coordinate with relevant energy efficiency authorities and national standards bodies to facilitate the consideration of refrigerant transition when developing energy efficiency standards in the relevant sectors/applications; that, if North Macedonia has mobilized or were to mobilize funding from sources other than the Multilateral Fund for energy efficiency components when phasing down HFCs, the project will not result in the duplication of activities among those funded by the Multilateral Fund and those funded from other sources; that information on project progress, results and key learning will be made available, as appropriate; and that the date of completion of the project will be set as no more than 36 months after the date of approval by the Executive Committee and a detailed project report will be submitted to the Executive Committee within six months of the date of completion of the project.

Policy, regulatory and institutional framework

15. Discussions on controlling the GWP value of the refrigerants revealed that although currently there is no official restriction on the GWP value of the refrigerants in RAC equipment, several acts were drafted and are expected to be adopted by the end of 2025 to address this, including the Order on Prohibiting the Import and Placing on the Market of Domestic and Commercial Refrigerators and Freezers as well as Equipment Containing HFCs with a GWP of 150 or More; and the Order on Prohibiting the Import and Placing on the Market of Self-Contained and Split Air-Conditioning Equipment Containing HFCs with a GWP of 2500 or More.

16. Although North Macedonia has developed MEPS for RAC equipment, the institutional framework and implementation mechanism for the enforcement of MEPS in the RAC sector, including coordination between energy efficiency authorities and the NOU, have yet to be established. The activities proposed in the pilot project, specifically defining the national framework for energy efficiency and strengthening the implementation of MEPS and labelling, are expected to achieve this purpose by motivating all stakeholders, raising awareness, identifying priorities and planning for joint action to provide a sustainable foundation for the implementation and monitoring of MEPS in the RAC sector.

Technical and cost-related issues

17. The Secretariat noted that installation of LDSs in large stationary RAC equipment will enable end users to detect leakage in a timely manner and minimize the amount of refrigerant leakage. It will also facilitate early action to repair the leaks and maintain the refrigerant charge at the required level for optimum equipment performance to maintain the energy efficiency of the unit. This is in line with the intent of decision 91/65. The end users involved in the pilot project will monitor energy efficiency improvements and report to the NOU on a yearly basis.

18. After discussions on activities, outcomes, and costs, the cost of the project was further optimized taking into account other funding resources available for certain activities. Activities under subparagraphs (a)(ii) and (b)(iii) of paragraph 12 were combined, as they are both for defining national priorities and plans in energy efficiency in the RAC sector. The costs for reviewing legislation and updating the national plan for energy efficiency in the RAC sector were reduced from US \$80,000 to US \$37,000 with a focus on coordination of stakeholders and implementation of MEPS; the costs for strengthening the implementation of MEPS and the labelling system were increased from US \$105,000 to US \$108,000 with the addition of the development of training materials; and the costs for the introduction of LDS were increased from US \$75,000 to US \$96,000 to support the development of specifications for different categories of equipment and the training of equipment owners in operating the LDS. The costs of the other activities were agreed as submitted. The total cost of the project was reduced from US \$260,000 to US \$241,000, as summarized in table 2.

Table 2. Total cost of the energy efficiency pilot project for North Macedonia as agreed (US \$)

Activities	As submitted	As agreed
Defining the national framework related to energy efficiency in the RAC sector	80,000	37,000
Strengthening the implementation of MEPS and labelling in the RAC sector	105,000	108,000
Pilot project to introduce LDSs in stationary equipment containing HFCs	75,000	96,000
Total	260,000	241,000

19. The Secretariat noted that the Government also submitted to the 96th meeting a request for the preparation of a feasibility study to assess the technical, economic, and environmental viability of phasing down HFCs in data centres using HFCs as cooling technology in North Macedonia under decision 91/65.⁵ The Secretariat noted that the activities planned in that project will not duplicate the activities in the current project.

Sustainability of the pilot project and assessment of risks

20. The Republic of North Macedonia has established mandatory MEPS with regulatory support. The proposed pilot project includes a component for the sustainable enforcement of the MEPS. Implementation of the MEPS will enhance the energy efficiency of RAC equipment and reduce refrigerant emissions through leakage reduction, resulting in environmental benefits. Raising key stakeholders' awareness will foster collaboration, promote joint action for the implementation of the MEPS and mobilize the general public to support the adoption of energy-efficient RAC equipment. The introduction of LDSs in stationary RAC equipment is expected to facilitate refrigerant leakage detection and ensure continuous performance monitoring and improvement of energy performance of RAC equipment, resulting in a sustainable improvement in energy efficiency. The risk to sustainability lies in the lack of interest of service technicians to participate in project activities; this will be addressed through a public awareness campaign, training activities covering LDSs, continuous communication with relevant stakeholders and the dissemination of information on the benefits of improved servicing practices.

Recommendation

21. The Executive Committee may wish to consider approving the pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities) for North Macedonia, in the amount of US \$241,000, plus agency support costs of US \$21,690 for UNIDO, noting:

- (a) That the Government of North Macedonia has committed to the conditions referred to in decision 91/65(b)(iv)b to (b)(iv)d; and
- (b) That the project would be operationally completed no later than August 2027, and a detailed project report would be submitted to the Executive Committee within six months of the date of completion of the project.

⁵ UNEP/OzL.Pro/ExCom/96/22