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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-seventh Meeting
Montreal, 1–5 December 2025
Item 9(c) and (d) of the provisional agenda¹

PROJECT PROPOSALS: TUNISIA

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

Phase-out

- | | | |
|--|---------------------------|-------------------------|
| <ul style="list-style-type: none"> • HCFC phase-out management plan (stage II, third tranche) | <p>UNIDO and
UNEP</p> | <p>Blanket approval</p> |
|--|---------------------------|-------------------------|

Energy Efficiency

- | | | |
|---|--------------|---------------------------------|
| <ul style="list-style-type: none"> • Pilot project to enhance energy efficiency in the residential air-conditioning manufacturing sector in Tunisia in the context of HFC phase-down | <p>UNIDO</p> | <p>Individual consideration</p> |
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¹ UNEP/OzL.Pro/ExCom/97/1

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Tunisia

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II)	UNIDO (lead), UNEP	86 th	67.5% phase-out by 2025

(II) LATEST ARTICLE 7 DATA (Annex C, Group I)	Year: 2024	14.98 ODP tonnes
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2024	
Chemical	Aerosol	Foam	Fire-fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22					14.98				14.98
HCFC-123									
HCFC-141b									
HCFC-141b in imported pre-blended polyol		1.60							1.60

(IV) CONSUMPTION DATA (ODP tonnes)			
2009–2010 baseline:	40.7	Starting point for sustained aggregate reductions:	45.68
CONSUMPTION ELIGIBLE FOR FUNDING			
Already approved:	32.49	Remaining:	12.88*

* Excluding 0.31 ODP tonnes of HCFC-141b and HCFC-142b since there is no more consumption in the country

(V) ENDORSED BUSINESS PLAN		2025	2026	2027	Total
UNIDO	ODS phase-out (ODP tonnes)	1.68	0.00	0.00	1.68
	Funding (US \$)	128,400	0	0	128,400
UNEP	ODS phase-out (ODP tonnes)	0.34	0.00	0.00	0.34
	Funding (US \$)	27,120	0	0	27,120

(VI) PROJECT DATA			2019	2020-2021	2022	2023	2024	2025	Total
Montreal Protocol consumption limits (ODP tonnes)			36.63	26.46	26.46	26.46	26.46	13.19	n/a
Maximum allowable consumption (ODP tonnes)			34.60	25.91	25.91	25.91	25.91	12.88	n/a
Funding agreed in principle (US \$)	UNIDO	Project costs	858,306	0	386,640	0	0	120,000	1,364,946
		Support costs	60,081	0	27,065	0	0	8,400	95,546
	UNEP	Project costs	76,000	0	100,000	0	0	24,000	200,000
		Support costs	9,880	0	13,000	0	0	3,120	26,000
Funds approved by ExCom (US \$)		Project costs	934,306	0	0	486,640	0		1,420,946
		Support costs	69,961	0	0	40,065	0		110,026
Total funds recommended for approval at this meeting (US \$)		Project costs						144,000	144,000
		Support costs						11,520	11,520

Secretariat's recommendation:	Blanket approval
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PROJECT DESCRIPTION

1. On behalf of the Government of Tunisia, UNIDO, as the lead implementing agency, has submitted a request for funding for the third and final tranche of stage II of the HCFC phase-out management plan (HPMP), at a total cost of US \$155,520, consisting of US \$120,000, plus agency support costs of US \$8,400, for UNIDO and US \$24,000, plus agency support costs of US \$3,120, for UNEP.² The submission includes a progress report on the implementation of the second tranche, the verification report on HCFC consumption for 2023 to 2024, and the tranche implementation plan for 2026.

Report on HCFC consumption

2. The Government of Tunisia reported a consumption of 14.98 ODP tonnes of HCFCs in 2024, which is 63 per cent below the country's HCFC baseline for compliance. The 2020-2024 HCFC consumption is shown in table 1.

Table 1. HCFC consumption in Tunisia (2020-2024 Article 7 data)

HCFC	2020	2021	2022	2023	2024	Baseline
Metric tonnes (mt)						
HCFC-22	422.30	376.18	375.40	325.16	272.31	709.34
HCFC-123	0.50	0.00	0.00	0.00	0.00	n/a
HCFC-141b	0.00	0.00	0.00	0.00	0.00	14.57
HCFC-142b	0.00	0.00	0.00	0.00	0.00	0.55
Total (mt)	422.80	376.18	375.40	325.16	272.31	724.46
HCFC-141b in imported pre-blended polyols*	67.00	14.50	14.50	14.50	14.50	45.64**
ODP tonnes						
HCFC-22	23.23	20.69	20.65	17.88	14.98	39.01
HCFC-123	0.01	0.00	0.00	0.00	0.00	n/a
HCFC-141b	0.00	0.00	0.00	0.00	0.00	1.61
HCFC-142b	0.00	0.00	0.00	0.00	0.00	0.04
Total (ODP tonnes)	23.24	20.69	20.65	17.88	14.98	40.70
HCFC-141b in imported pre-blended polyols*	7.37	1.60	1.60	1.60	1.60	5.02**

* Country programme (CP) implementation report data

** Starting point established in the Agreement with the Executive Committee

3. The consumption of HCFC-22 has been declining since 2020 due to activities being implemented in the refrigeration and air-conditioning (RAC) servicing sector, the implementation of the licensing and quota system, and the elimination of HCFC-22 in the RAC manufacturing sector. Small quantities of HCFC-123 were consumed in 2020 for use by the food industry as a refrigerant for chillers. The consumption of HCFC-141b contained in imported pre-blended polyols from 2020 to 2024 was related to use by two polyurethane (PU) foam manufacturing enterprises; as of January 2025, both enterprises have converted to alternative technology under stage II of the HPMP. The import of HCFC-141b in bulk has been banned since 1 January 2020.

Country programme implementation report

4. The Government of Tunisia reported HCFC sector consumption data under the 2024 CP report that is consistent with the data reported under Article 7 of the Montreal Protocol.

² As per the letter of 15 September 2025 from the National Agency of Environmental Protection of Tunisia to UNIDO.

Verification report

5. The verification report confirmed that the Government was implementing a licensing and quota system for HCFC imports and exports and that the total consumption of HCFCs reported under Article 7 of the Montreal Protocol for 2023 to 2024 was correct (as shown in table 1 above). The verification concluded that Tunisia has complied with the maximum allowable consumption of all Annex C, Group I substances for 2023 and 2024 as stated in the Agreement with the Executive Committee. One recommendation was included in the verification report along with some observations, which are discussed in paragraph 16 below.

Progress report on the implementation of the second tranche of stage II of the HCFC phase-out management plan

Legal framework

6. The Government of Tunisia continues to implement an electronic licensing and quota system for HCFC imports. The Government ratified the Kigali Amendment on 27 August 2021. The customs codes were updated in 2023 to implement a national amendment to align with the 2022 Harmonized System (HS) codes issued by the World Customs Organization (WCO), which does not include a separate classification for pre-blended polyols containing HCFC-141b. Therefore, the National Ozone Unit (NOU) has been working to identify all codes currently used by importers of polyols and, based on this, the NOU is undertaking another revision of the customs codes to assign a specific code for HCFC-141b in pre-blended polyols, expected to be in effect in early 2026.

7. The Government of Tunisia has advanced the preparation of several draft regulations to strengthen the management of HCFCs and HFCs. Three decrees are undergoing Government review, including a decree establishing a certification system for RAC technicians, a decree prohibiting the import, manufacture, and assembly of HCFC-based equipment and the import of HCFC-141b contained in pre-blended polyols, and a decree defining the role of the National Ozone Committee (NOC). In addition, a decree on refrigerant life cycle management, covering recovery, recycling, reclamation, destruction, and end-of-life management was drafted. Once adopted, these instruments will provide the legal framework to regulate refrigerant use, reinforce the quota system, and ensure compliance with international obligations.

8. During the second tranche five regional training workshops were organized to train a total of 83 customs and enforcement officers including five women. Six refrigerant identifiers were provided to environmental inspectors at the National Agency of Environmental Protection (ANPE).

Manufacturing sector

9. Stage II included conversion projects for the phase-out of the use of HCFC-141b contained in pre-blended polyols in two PU foam manufacturing enterprises. The conversion at the enterprise GAN was completed in December 2021³ while the conversion project at le Panneau was completed in January 2025 phasing out 1.6 ODP tonnes (14.5 mt) of HCFC-141b contained in pre-blended polyols. Le Panneau originally planned to convert to n.pentane technology, but a change to HFO-1233zd was approved in November 2021 (decision 88/25). The enterprise is now fully operating with HFO technology in sandwich panel production. Both enterprises have agreed not to revert to using HCFC-141b in pre-blended polyols.

³ Phasing out 5.78 ODP tonnes (52.5 mt) of HCFC-141b in pre-blended polyols as previously reported in paragraph 11 of document UNEP/OzL.Pro/ExCom/92/40.

Refrigeration servicing sector

10. A national inventory of RAC equipment was conducted in cooperation with the RAC association, and the data collected was incorporated into a national RAC inventory database⁴ that is designed to enhance the management of RAC training and support services and to assist in planning future certification initiatives.

11. From 2024 to 2025, four training sessions were held on codes and standards for 187 RAC technicians (including 22 women). Three training courses were carried out for 35 RAC trainers (including six women), based on the European Union (EU) Regulation (EU) 2067/2015, which aims to ensure safe handling of fluorinated gases, and technologies based on alternatives to HFCs. Following an evaluation, 29 of the participants (including four women) were certified. Eight comprehensive training manuals were prepared to support the RAC technician certification system, covering both theoretical and practical aspects, including low-global-warming-potential (GWP) and flammable refrigerants. A full set of professional RAC tools and equipment⁵ was delivered to a maritime fisheries training centre in Kelibia to support hands-on training of RAC technicians including safe refrigerant recovery, leak testing, and system maintenance.

12. The business model for the HCFC recovery, recycling, and reclamation (RRR) system developed under the first tranche was revised to take into account the ratification of the Kigali Amendment by Tunisia and the lack of infrastructure in the relevant public entities to operate an RRR system.

Project implementation and monitoring

13. A project management unit (PMU) operates under the supervision of the NOU comprising one coordinator and technical experts are engaged as needed. A total of US \$36,640, including remaining balances from the previous tranche, was disbursed during the implementation of the second tranche for consultants (US \$17,000) travel (US \$4,640), events and meetings (US \$6,000), and for the verification report (US \$9,000).

Level of fund disbursement

14. As of September 2025, of the US \$1,420,946 approved so far, US \$1,161,072 had been disbursed (US \$985,072 for UNIDO and US \$176,000 for UNEP), as shown in table 2. The balance of US \$259,874 will be disbursed in 2026.

Table 2. Financial report of stage II of the HPMP for Tunisia (US \$)

Agency	First tranche		Second tranche		Total		
	Approved	Disbursed	Approved	Disbursed	Approved	Disbursed	Balance
UNIDO	858,306	839,575	386,640	145,497	1,244,946	985,072	259,874
UNEP	76,000	76,000	100,000	100,000	176,000	176,000	0
Total	934,306	915,575	486,640	245,497	1,420,946	1,161,072	259,874
Disbursement rate (%)	98		50		82		

Implementation plan for the third and final tranche of stage II of the HCFC phase-out management plan

15. The following activities will be implemented between December 2025 and December 2026:

- (a) *Policy and regulation*: Continued work to facilitate the adoption of the ban on the import

⁴ The RAC inventory database will be finalized by 31 December 2025.

⁵ Which included refrigerant recovery and recycling units; vacuum pumps; manifold gauge sets; leak detectors; electronic scales; thermometers; pressure gauges; cutting and flaring tools; tube benders; safety equipment such as gloves and goggles; basic electrical tools and multimeters; and training boards with accessories for practical exercises.

of HCFC-141b contained in pre-blended polyols and the other draft decrees to strengthen the management of HCFCs and HFCs including the certification of RAC technicians and service workshops; the ban on the import, manufacturing, and assembly of HCFC-based equipment; and to establish the national life cycle refrigerant management system (UNEP) (US \$10,000);

- (b) *Capacity building for customs*: Three training workshops for 60 customs officers on the control of HCFC imports under the current licensing system (UNEP) (US \$14,000);
- (c) *Capacity building for the RAC servicing sector*: Training sessions for 200 RAC technicians (target of 50 per cent women) on good practices for managing and handling refrigerants, led by local certified trainers; certification of 200 RAC technicians; provision of a set of tools and equipment⁶ for 15 RAC workshops participating in the certification programme (UNIDO) (US \$75,000 and US \$80,000 from the previous tranche);
- (d) *Technician certification*: Finalization of training and testing materials for RAC technician certification, ensuring a gender-sensitive approach; three workshops to raise awareness among stakeholders to the official certification system; three training and certification sessions to certify 40 trainers on the new system; and certification sessions for 200 previously trained RAC technicians (UNIDO) (US \$12,853 from the previous tranche);
- (e) *Capacity building for training centres*: Provision of five refrigerant identifiers to selected training centres and provision of spare parts⁷ for one training centre specialized in ammonia-based refrigeration (UNIDO) (US \$25,000 and US \$10,000 from the previous tranche);
- (f) *Recovery, recycling, and reclamation system*: Study tour for responsible Tunisian entities to a reclamation centre in Europe with the aim of training their representatives and the NOU on the best practices for the recovery and reclamation; procurement of equipment for the two selected reclamation centres⁸ (US \$5,000 and US \$151,143 from previous tranche); and
- (g) *Project monitoring unit*: Coordination and monitoring of project implementation and ensuring the collection of relevant results and other indicators (UNIDO) (US \$15,000).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Verification report

16. The verification report noted that in 2024, one enterprise imported HCFCs using its 2023 and 2024 quotas within the same year. As a result, it was recommended that Tunisia strengthen controls to ensure the validity of importers' annual import quotas and that when confirming an import transaction, the customs should verify validity by entering into the system the date of issue of the quota, to prevent the misuse of

⁶ Each set of tools will include two digital manifolds, two recovery units, two vacuum pumps, two digital vacuum gauges, four cylinders, two electronic scales, one electronic leak detector for HCFCs and HFCs and one electronic leak detector for hydrocarbons.

⁷ Including safety valve and cooling hoses for the compressor, droplet separator, sprayers, spray motor pump for the condenser, ammonia detection unit and electrical cabinet, and ammonia (NH₃) charge.

⁸ The equipment for the two reclamation centres includes 25 recovery and recycling units, 50 different size cylinders, 25 digital leak detectors, 20 digital manifolds, four refrigerant identifiers, vacuum pumps, scales, and basic tools.

expired quotas. In response to the quota violation, the NOC suspended the aforementioned enterprise's 2025 quota while the enterprise has committed to ensuring full compliance with future allocations. The NOU will coordinate with the Directorate General of Customs to reinforce verification of quota clearances and include the matter in customs training sessions. UNIDO noted that the issue arose from delays in 2023 shipments, which were affected by force majeure conditions resulting from maritime traffic disruptions in the Red Sea due to regional security concerns.

Progress report on the implementation of the second tranche of stage II of the HCFC phase-out management plan

Legal framework

17. The Government of Tunisia has issued the HCFC import quota for 2025 of 12.88 ODP tonnes (234.19 mt) which is lower than the Montreal Protocol control targets and is in accordance with the targets set out in its Agreement with the Executive Committee. The quota for 2026 will be set at about 5 to 7 per cent lower than the maximum allowable consumption for that year.

18. The Secretariat discussed with UNIDO and UNEP the progress made on the regulatory instruments advancing through the government review process. Agencies provided an update that the decrees establishing the certification system, banning HCFC-based equipment, and revising the mandate of the NOC were submitted to the Prime Minister's Office (PMO) in August 2024, sent for comments from relevant ministries, and are currently being revised before resubmission to the PMO by year-end. The ban on HCFC-141b in pre-blended polyols will be included in the decree on HCFC-based equipment, for which adoption is anticipated to be completed in the coming months. The draft decree on refrigerant life cycle management was elaborated in 2024 and will be submitted to the Ministry of Environment by year-end.

19. UNIDO explained that the slower-than-expected progress reflected the complexity of Tunisia's interministerial review process, which requires multiple rounds of consultation and clearance among relevant ministries before final approval, including ANPE, the Ministry of Environment, and the PMO. The NOU and UNIDO are maintaining close coordination and regular follow-up with government counterparts to accelerate approval and ensure adoption of all regulatory texts.

20. UNIDO indicated that five refrigerant identifiers were procured for customs out of the ten originally planned. The delivery timeline remains to be confirmed, and no additional units will be procured under stage II owing to limited funds and the global scarcity of the equipment.

Manufacturing sector

21. The PU foam conversion project at Le Panneau had experienced a delay due to difficulties arising from the limited availability and high cost of HFO-1233zd. Following advice from UNIDO, the enterprise contacted an alternative supplier that was able to provide HFO-1233zd at an 80 per cent discount compared to the original supplier. UNIDO confirmed that the supply chain and cost issues have now been resolved, and Le Panneau is manufacturing PU foam using HFO-1233zd as a blowing agent.

Refrigeration servicing sector

22. With regard to the provision of spare parts for the ammonia training system at the Kairouan training centre, consultations with suppliers have been constrained by the current system's age and technical specifications, with all offers exceeding the allocated budget. The NOU, with UNIDO's support, is exploring co-funding options with the training centre and the Tunisian Professional Training Institution and this activity will be carried forward to the third tranche to finalize negotiations.

23. The RRR model was revised during the second tranche to reflect the implications of the country's Kigali Amendment ratification and to take into account the limited infrastructure in the RAC servicing

sector, with the aim of ensuring technical and financial sustainability. The revised model recommends mandatory recovery and reclamation, integration with the technician certification system, and the progressive restriction of virgin high-GWP refrigerants in installation and servicing. The forthcoming decree on refrigerant life cycle management provides the legal framework for RRR. UNIDO emphasized the need to conduct an inventory of used and/or unwanted controlled substances as a prerequisite for developing a comprehensive life cycle management action plan for which UNIDO has submitted a request to the present meeting under decision 91/66 on behalf of the country.⁹

24. The revised RRR model aims to identify new host organizations, potentially within the private or semi-public service sectors, while clearly defining the respective roles of operators and regulators. The selection process to identify two enterprises to host the reclamation centres is expected to conclude in 2025. Eligible enterprises must have at least five years of experience in the RAC servicing sector; employ at least two qualified refrigeration technicians, including one certified professional; be located in Greater Tunis or Sfax; and have adequate facilities and personnel to manage refrigerant storage and reclamation.

25. UNIDO noted that the main lessons learned, which may also be relevant to stage I of the KIP, include the importance of establishing a consistent and mandatory regulatory framework for the recovery, reuse, and disposal of controlled substances. The development of a certification system and the provision of adequate tools and equipment, including refrigerant cylinders, for RAC technicians are also critical. Additionally, the pricing of virgin refrigerants was identified as a key factor influencing the success of the RRR system, with the implementation of the Kigali Amendment and the HFC phase-down targets expected to play an important role in determining such prices.

Implementation plan for the third and final tranche of stage II of the HCFC phase-out management plan

26. The Secretariat discussed with UNIDO and UNEP the measures being taken to manage the implementation schedule for the third tranche, noting that several activities depend on the timely approval of regulatory decrees. Furthermore, several training and recovery and reclamation activities remaining under stage II of the HPMP and under stage I of the KIP are contingent upon an operational certification system.

27. Agencies indicated that the NOU, with support from UNIDO, is maintaining close coordination with national authorities to expedite approval of the certification decree by March 2026, with entry into force by September 2026. The certification system will be mandatory and competency-based once adopted. UNIDO confirmed that the development of certification testing materials will proceed in parallel with the final adoption and entry into force of the certification decree. An expert will be recruited to support this activity. Assuming the decree is approved by March 2026, certification activities could be implemented by December 2026; otherwise, an extension of stage II of the HPMP may be required.

28. With regard to other activities under the third tranche, training and certification of technicians can proceed once the certification system is in place. Procurement and distribution of tools and equipment for 15 RAC workshops is scheduled for completion by the fourth quarter of 2026 in conjunction with the participation of the workshops in the certification programme. The study tour for Tunisian stakeholders to reclamation centres in Finland or Spain is planned for the first quarter of 2026 to strengthen national RRR capacity.

Gender policy implementation

29. In line with decisions 84/92(d) and 90/48(c), information on women's participation in HPMP activities has been provided. Under stage II, women participated in several training and capacity-building activities, though representation remains below target levels. Of the 92 RAC trainers trained to date, 20 per cent were women, including four certified in 2024, and 12 per cent of participants in the technician training

⁹ UNEP/OzL.Pro/ExCom/97/32

were women. There was also some participation by women from the National School of Engineers of Monastir and inspectors from ANPE in the specialized sessions on good servicing practices, the Kigali Amendment, and low-GWP refrigerants. A network of women RAC technicians within the national RAC association provides a platform for peer support and outreach. During the next tranche, women's involvement will be considered in the planning of activities, and disaggregated data will be systematically collected. The NOU will continue to promote women's participation in the RAC sector and plans to introduce a mechanism to track the career progress of women trainees in cooperation with vocational centres.

Completion of stage II of the HCFC phase-out management plan

30. Considering that some activities have progressed more slowly than originally planned, particularly those related to the regulatory framework, and that several activities depend on the approval of these regulations, especially those concerning the certification system, UNIDO will reconfirm the completion date for stage II of the HPMP at the 98th meeting, together with the submission of stage III of the HPMP for Tunisia. UNIDO will also confirm at that meeting that the ban on the import of HCFC-141b contained in pre-blended polyols, as reflected in decision 83/64(b), has been implemented.

Sustainability of the HCFC phase-out and assessment of risks

31. The Secretariat and UNIDO discussed key project risks, including the protracted process for regulatory approval and delays in implementation and procurement, as discussed in paragraphs 18 to 20 above. These are being mitigated through coordinated efforts by the NOU, UNIDO, and UNEP, and revised implementation timelines through 2026. Tunisia's progress in strengthening its national regulatory framework marks an important step toward sustaining HCFC phase-out and enabling the country's HFC phase-down. Once adopted, the new decrees will establish a firm legal basis for enforcing HCFC import and use controls, enhancing inter-agency coordination, and formalizing the RAC servicing sector through mandatory, competency-based certification. The forthcoming regulation on life cycle refrigerant management together with RRR activities will promote reuse and reduce dependence on imported refrigerants. Technical assistance is supporting enterprises in accessing affordable low-GWP refrigerants, while appropriate measures encourage greater participation of women in training and certification. These measures, combined with the operational licensing and quota systems for HCFCs and HFCs, will reinforce Tunisia's capacity to meet its Montreal Protocol obligations. The increasing cost of virgin refrigerants is expected to further incentivize recovery and reclamation practices. Strengthened customs capacity, supported by regular training, and improved coordination with the NOU will ensure the continued implementation and enforcement of these measures.

Conclusion

32. Tunisia remains in compliance with its Agreement with the Executive Committee, with HCFC consumption steadily declining from 23.24 ODP tonnes in 2020 to 14.98 ODP tonnes in 2024. The country has made significant progress in strengthening its national regulatory framework to control HCFC imports, ensure the management of refrigerants, and enable the refrigeration and foam sectors to operate with low-GWP technologies. The NOU is making efforts to facilitate the process of governmental approval of drafted regulations. The conversion of the remaining PU foam manufacturing enterprise using HCFC-141b in pre-blended polyols was completed in 2025, with the enterprise successfully adopting HFO technology following resolution of supply chain and cost issues. Ongoing efforts to establish two RRR centres will further support the creation of a sustainable refrigerant management system. The disbursement rate of the second tranche of stage II of the HPMP stands at 50 per cent, and 82 per cent of total approved funds to date. Taken together, these achievements demonstrate that Tunisia is on track to meet the 2025 reduction targets and sustain compliance over the long term.

RECOMMENDATION

33. The Fund Secretariat recommends that the Executive Committee:

- (a) Note the progress report on the implementation of the second tranche of stage II of the HCFC phase-out management plan (HPMP) for Tunisia; and
- (b) Request the Government of Tunisia, UNIDO and UNEP to submit a progress report on the implementation of the work programmes associated with the final tranche of stage II of the HPMP to the first meeting of the Executive Committee in 2027.

34. The Fund Secretariat further recommends blanket approval of the third and final tranche of stage II of the HPMP for Tunisia and the corresponding 2026 tranche implementation plan at the funding levels shown in the table below.

	Project title	Project funding (US \$)	Support costs (US \$)	Implementing agency
(a)	HCFC phase-out management plan (stage II, third tranche)	120,000	8,400	UNIDO
(b)	HCFC phase-out management plan (stage II, third tranche)	24,000	3,120	UNEP

PROJECT EVALUATION SHEET – NON-MULTI-YEAR PROJECTS**Tunisia****PROJECT TITLE****BILATERAL/IMPLEMENTING AGENCY**

Pilot project to enhance energy efficiency in the residential air-conditioning (AC) manufacturing sector in Tunisia in the context of HFC phase-down	UNIDO
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PROJECT OBJECTIVE

The project aims to support the transition toward energy-efficient residential air-conditioning technologies, while progressively reducing the use of HFCs in manufacturing processes, and to strengthen technical and industrial capacities in environmentally friendly technologies

NATIONAL CO-ORDINATING AGENCY	National Agency of Environmental Protection of Tunisia (ANPE)
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LATEST ARTICLE 7 DATA (Annex F)	Year: 2024	528.46 mt	1,166,379 CO ₂ -eq tonnes
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Particulars	Investment activities	
HFCs used in the residential AC manufacturing sector as reported in CP data for 2024:	R-401A	150.98 mt 315,169 CO ₂ -eq tonnes
Project duration (months):	36 months	
Initial amount requested (US \$):	1,915,224	
Final project costs (US \$)	1,347,360	
Implementing agency support cost (US \$):	94,315	
Total cost of project to Multilateral Fund (US \$):	1,441,675	
Energy efficiency savings* (US \$/kWh/year):	7.50	
Status of counterpart funding (Y/N):	Y	
Project monitoring milestones included (Y/N):	N	
Minimum energy performance standards available for the relevant sector (Y/N):	Y	

* For the first year of the project following project completion. Additional benefits will be accrued each subsequent year, based on the operation of equipment manufactured in that and in subsequent years

SECRETARIAT'S RECOMMENDATION	Individual consideration
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PROJECT DESCRIPTION

Background

35. On behalf of the Government of Tunisia, UNIDO has submitted, in line with decisions 94/60 and 94/57(b),¹⁰ a request for a project to enhance the energy efficiency of split air-conditioning units, in the context of the project to convert to HFC-32 in manufacturing enterprises and a project to support the calorimetric laboratory, in line with decision 91/65, in the amount of US \$1,915,224, plus agency support costs of US \$134,066, as originally submitted.¹¹

Status of implementation of energy efficiency-related activities funded by the Multilateral Fund

36. The project preparation for stage I of the Kigali HFC implementation plan (KIP) for Tunisia, approved at the 88th meeting, included the development of a detailed report and an energy efficiency strategy for the refrigeration and air-conditioning (RAC) sector. This included the results of a field survey of end users of domestic, commercial, industrial, and mobile refrigeration; AC equipment and systems; installation and maintenance service companies; and manufacturers of this type of equipment, as well as manufacturers of rigid polyurethane foams containing controlled substances.

37. In line with decision 91/65, a project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of the HFC phase-down was also approved at the 94th meeting. The project's activities included developing minimum energy performance standards (MEPS) for both small RAC equipment and large installations; developing energy labelling for RAC appliances; updating training and certification for RAC technicians to include energy efficiency; training for designers and installers of large RAC systems; conducting awareness-raising activities; implementing a demonstration project to replace R-410A split AC units with more energy-efficient HFC-32 and R-290-based units in a public sector building; and supporting a calorimetric testing laboratory for RAC appliances.¹² The latter focused on implementing safety measures related to the management and handling of equipment containing flammable refrigerants, including a technical assessment; the provision of fire detectors, fire extinguishers, anti-spark switches, and other related equipment and measures; and the training of personnel. Since its approval, a local expert has been engaged to update the training and certification programme and lead the demonstration project, the National Ozone Unit (NOU) has initiated consultations with key stakeholders on updating the MEPS and labelling systems, and, as further discussed in paragraph 52 of the present document, the technical assessment of the calorimetric testing laboratory has also been undertaken.

Energy efficiency pilot project

38. Tunisia ratified the Kigali Amendment on 27 August 2021, and stage I of the KIP was approved at the 94th meeting which included a project to convert eight enterprises¹³ in the RAC manufacturing sector from R-410A and HFC-134a to HFC-32 and R-600a; technical assistance to four enterprises manufacturing commercial RAC equipment; activities in the servicing sector; and policy and regulatory action to support the phase-down of HFCs, including a labelling system that would specify the refrigerant (including HFC blends, the amount of HFC contained in the equipment, and other relevant information such as flammability) for RAC equipment manufactured and imported in Tunisia.

¹⁰ To invite the Government of Tunisia, if it so wished, to submit an additional pilot project to enhance the energy efficiency of the HFC-32-based split air-conditioning units and R-600a-based cold-water dispensers manufactured by the manufacturing enterprises that were being converted in stage I of the country's Kigali HFC implementation plan, on the understanding that the additional pilot project be submitted no later than the 96th meeting.

¹¹ As per the letter of 25 August 2025 from the National Agency of Environmental Protection of Tunisia to UNIDO.

¹² UNEP/OzL.Pro/ExCom/94/56

¹³ Seven supported by the HCFC phase-out management plan and one which would convert using its own resources.

Policy, regulatory and institutional framework

39. In Tunisia, the regulatory framework for energy efficiency standards, labelling, and related measures is overseen primarily by the National Agency for Energy Management (ANME), and is supported by legal, institutional, and technical instruments. Energy labelling regulations and MEPS were introduced in 2004 by Law No. 2004-72 on energy management and its implementing decree, No. 2004-2145, on the labelling of household appliances, devices, and materials.¹⁴

40. The Technical Centre of Mechanical and Electric Industries (CETIME) calorimetric laboratory is the only certified testing laboratory in Tunisia. It performs both certification and spot-checking of imported and locally sold domestic units. The laboratory is equipped for the testing of appliances based on non-flammable substances. A preliminary study has been conducted to upgrade the calorimetric laboratory to strengthen flammable-gas detection and air renewal systems.

41. The energy labelling and MEPS requirements for individual air conditioners placed on the Tunisian market were implemented on 21 July 2009, whereby those requirements are expressed in terms of the unit's energy efficiency ratio (EER). Since 2012, only individual air conditioners of class 1 ($EER > 3.38$), class 2 ($3.38 \geq EER \geq 3.2$), or class 3 ($3.2 \geq EER \geq 3.0$) have been authorized for placement on the market. The MEPS have not been updated since 2012; work being undertaken as part of the energy efficiency project approved at the 94th meeting will update the MEPS.¹⁵ ANME is expected to tighten MEPS in 18-24 months that would only allow air conditioners of class 1 or better¹⁶ to be sold in the market and to introduce seasonal performance metrics (e.g., seasonal energy efficiency ratio (SEER)).

42. Compliance with MEPS is monitored via an electronic platform that is integrated with the CETIME testing system, where suppliers of AC units must submit the technical specifications of the products, which is validated by the ANME. ANME conducts audits and periodic market surveillance in collaboration with customs and market regulators to ensure continued compliance.

Report on energy and HFC consumption

43. As reported at the 94th meeting, the energy consumed in Tunisia for RAC equipment and systems in 2022 was 5,431 gigawatt hours (GWh), which represents approximately 28 per cent of the total national electricity consumption (19,516 GWh). Currently, the domestic refrigeration and commercial AC subsectors have the largest consumption of electricity. Table 1 below provides the consumption of R-410A in the AC manufacturing sector as reported in CP reports from 2020 to 2024.

Table 1. HFC consumption in the AC manufacturing sector (2020-2024 CP data)

Substance	GWP	2020	2021	2022	2023	2024	2020-2022 Average
Mt							
R-410A	2,087.5	100.93	102.67	89.05	112.50	150.98	97.55
CO₂-eq tonnes							
R-410A	2,087.5	210,691	214,313	185,884	234,844	315,169	203,629

¹⁴ The provisions included: refrigerators, freezers, and combination appliances (refrigerators-freezers); individual AC units with a cooling capacity of less than 12 kW; hot water production and storage appliances; lamps and lighting equipment; washing machines, dryers, and combination appliances (washer-dryers); dishwashers; ovens; irons; and audio-visual equipment.

¹⁵ At the 94th meeting, UNIDO had inadvertently indicated that there were no MEPS related to RAC appliances and systems in Tunisia. Accordingly, assistance provided under that project is not to develop but to update MEPS for RAC equipment.

¹⁶ Only air conditioners of class 1 ($3.38 \leq EER \leq 3.60$), class 1+ ($3.60 < EER \leq 3.82$), class 1++ ($3.82 < EER \leq 4.26$), or class 1+++ ($4.26 < EER$) would be allowed on the market.

Project objective

44. The objective of the project is to support energy efficiency enhancements in eight enterprises manufacturing residential AC units. All enterprises are converting from R-410A to HFC-32 under stage I of the KIP, with one enterprise¹⁷ undertaking the conversion under the KIP with its own resources. The aim of the project is to improve energy efficiency of AC units manufactured by the eight enterprises by ratios of 1.33 to 1.4, depending on the enterprise (i.e., the EER relative to the current MEPS), which falls between the ratio of low and medium as described in table 4 of document UNEP/OzL.Pro/ExCom/94/61.

Enterprise background and equipment manufactured

45. The beneficiary enterprises are 100 per cent Tunisian-owned. All enterprises manufacture air conditioners with fixed- and variable-speed compressors with a capacity between 9,000 BTU/hr¹⁸ and 24,000 BTU/hr, except for Novatech, which only manufactures air conditioners with variable-speed compressors. With the exception of Société New Star, all enterprises also have other manufacturing lines (e.g., domestic refrigerators, water dispensers, and washing machines). For all enterprises, all lines that manufacture AC units would participate in the project. To determine the AC manufacturing volume of each enterprise, UNIDO used the maximum number of units of each model manufactured annually during the 2022-2024 period. Details on the number of models, manufacturing lines, manufacturing volume, and the year of establishment for the eight AC manufacturers are provided in table 2 below.

Table 2. Participating AC sector enterprises and manufacturing details

Enterprise	Number of models	Lines in project	Lines not in project*	Manufacturing volume (units)**	Year established***
Société Industrielle Méga	8	1	1(R)	A	1997
El Athir	17	2	2 (R, WM)	E	2007
Sicad Coala	8	1	1 (WD)	E	1980
3 Stars Electronics	8	1	1 (R)	F	2019
Star One	6	1	1 (R)	G	2011
Novatech West Point (Novatech)	4	1	2 (R, WM)	H	2004
Société New Star (New Star)	7	1	0	E	1997
Condor Tunisie	8	1	1 (R)	F	2023

* R = domestic refrigerator; WM = washing machine; WD = water dispenser

** For reasons of confidentiality, manufacturing volume is provided in bands with A ≥ 50,001; 50,000 ≥ B > 40,000; 40,000 ≥ C > 30,000; 30,000 ≥ D > 20,000; 20,000 ≥ E > 10,000; 10,000 ≥ F > 5,000; 5,000 ≥ G > 2,500; and H ≤ 2,500.

*** Year of establishment of the AC manufacturing line rather than of the enterprise.

Proposed activities and costs requested*Manufacturing activities*

46. The project would assist the enterprises with product design, modifications to manufacturing facilities, and technical capacity-building to enable the manufacture of more energy-efficient equipment and would be completed within 36 months from the date of approval by the Executive Committee. The energy efficiency of the products under consideration would be verified upon completion of the project and the quantity of products manufactured during the year following project completion would be used to assess the energy efficiency performance.

¹⁷ Condor Tunisie, whose AC manufacturing line was established in 2023.

¹⁸ British thermal units per hour

47. Each of the participating enterprises commits to manufacturing equipment with at least the target energy efficiency performance after project completion and to making best efforts to continue improving the energy efficiency of those products beyond the project duration at its own cost. While the enterprises have, to date, not exported air conditioners, in the case of exports in the future, the exported air conditioners would have energy performance over and above domestic MEPS. The performance of equipment covered under the project would be monitored for a period of two years from the date of project completion by the NOU and UNIDO.

48. Additional capital costs were requested for all enterprises based on product design and testing; modifications to manufacturing facilities; and training and capacity-building as follows:

- (a) Product design and testing: US \$50,000 for design, simulation software, prototype development and testing and certification at an accredited laboratory, per enterprise, except for Star One and New Star, that imported complete knock-down kits (CKD) and that therefore did not require such assistance, and Sicad Coala, for which US \$60,000 was requested as the enterprise wished to purchase a standard calorimetric chamber (US \$58,000) and simulation software (US \$2,000);
- (b) Modifications to manufacturing facilities: funding levels ranging from US \$35,000 (3 Stars Electronics) and US \$300,000 (Société Industrielle Méga), depending on whether CKD kits were used (performance test benches), and the need for and extent of modifications to heat exchanger equipment to shift to more narrow tubes (copper unwinder, T-fin press, bending machine, tube expansion machine, and control oven); and
- (c) Training and capacity-building: US \$15,000 for training 10 personnel for all enterprises, except for Sicad Coala (US \$9,000 for six personnel) and Novatech (US \$7,500 for five personnel).

49. UNIDO provided detailed information for each model manufactured by the enterprises, including number of units sold between 2022 and 2024; the capacity of each model and whether it was based on a fixed- or variable-speed compressor; the price of baseline components and components that will be used in the more energy-efficient air conditioners; and the baseline and target energy performance of each model. This information is considered confidential and is available upon request by Executive Committee members on the understanding that the information will not be shared and will only be used to evaluate the project. The additional cost of components needed to meet the energy efficiency targets was based on that information, such as the cost of energy-efficient compressors, heat exchangers, electronically commutated (ECM) motors, and electronic cards relative to the baseline components. This resulted in varying additional cost of components that depend, inter alia, on whether the baseline air conditioner is based on a fixed- or variable-speed compressor and the relative price of other components. The minimum, average, and maximum additional component costs are US \$42/unit, US \$95.75/unit, and US \$189/unit, respectively.

50. The eligible additional capital costs per enterprise were calculated based on the annual manufacturing volume for each enterprise as per table 3 of document UNEP/OzL.Pro/ExCom/94/61, while the eligible additional component costs were calculated based on table 4. Based on those calculations, the total amount requested was US \$1,661,962, consisting of US \$820,000 for additional capital costs and US \$841,962 for additional component costs, as reflected in table 3 below.

Table 3. Baseline, target energy performance, and capital and additional component costs, as submitted

Concept	Société Industrielle Méga	El Athir	Sicad Coala	3 Stars Electronics	Star One	Novatech	New Star	Condor Tunisie	Total
Additional capital costs									
Actual	365,000	200,000	200,000	100,000	100,000	152,000	100,000	196,000	1,413,000
Requested	120,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	820,000
Additional component costs									
Average additional cost of components (US \$/unit)	110.23	97.01	96.05	119.09	75.72	101.75	90.42	108.76	n/a
Average baseline performance level (EER)	3.35	3.12	3.35	3.25	3.25	3.20	3.11	3.33	
Baseline EER / MEPS ¹⁹	1.12	1.04	1.12	1.08	1.08	1.07	1.04	1.11	n/a
Target EER	4.00	4.20	4.00	4.00	4.20	4.00	4.00	4.20	n/a
Target EER / MEPS	1.33	1.40	1.33	1.33	1.40	1.33	1.33	1.40	n/a
Additional component cost (US \$/unit)*	14.71	24.40	14.84	17.00	21.40	18.04	20.00	19.73**	n/a
Additional component cost (US \$)***	1,029,973	452,260	296,707	135,102	59,627	34,545	356,574	161,100	2,525,888
Requested incentive (US \$)									
Additional capital cost	120,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	820,000
Additional component cost	343,324	150,753	98,902	45,034	19,876	11,515	118,858	53,700	841,962
Total	463,324	250,753	198,902	145,034	119,876	111,515	218,858	153,700	1,661,962

* Based on table 4 of document UNEP/OzL.Pro/ExCom/94/61

** As submitted

*** Based on manufacturing volume

Policy-level activities

51. The Government commits to periodically upgrading MEPS regulations and labelling programmes, and to undertaking awareness and information outreach activities to ensure that information on the target energy-efficiency levels under the project for the equipment is publicized among different stakeholders. The Government also commits to taking steps to implement regulations to ensure that the manufacturing, import, and sale of air conditioners achieve at least the target energy efficiency performance levels, no later than December 2028.

Additional funding for calorimetric laboratory

52. The technical assessment of CETIME's calorimetric laboratory, undertaken under the pilot energy-efficiency project approved at the 94th meeting, determined that additional upgrades beyond those identified at the 94th meeting were required, in particular the installation of two gas detection and air renewal systems (GDR) (one for indoor and one for the outdoor test rooms) with capabilities for detecting flammable gases monitoring oxygen levels, and activating a forced ventilation system to refresh the air inside the test

¹⁹ The MEPS currently in force is EER = 3.0.

rooms in the event of an incident. Each GDR incorporates a gas monitoring programmable logic controller unit with programmable relays activation and Ethernet connection; explosion-proof gas transducers for oxygen, R-290 and propane; and an air renewal system including motorized dampers and ATEX-rated,²⁰ fans with electrical supply assured by an uninterrupted power supply system. Accordingly, the Government requested additional funding to further upgrade the laboratory in the amount of US \$93,262, consisting of two air renewal systems (US \$35,977), two gas detection systems (US \$9,945), electrical and control systems (US \$34,340), and transport, installation, commissioning and training (US \$13,000).

Project monitoring and verification

53. The Government of Tunisia is requesting a total of US \$160,000 for the implementation, monitoring, verification, and reporting of the project based on an allocation of US \$20,000 per enterprise. The funding will cover technical consultation and oversight, including regular site visits and performance verification throughout the three-year implementation period, as well as continued follow-up and reporting for an additional two years, after the project is completed, extending the support through to 2030.

Total cost of the pilot project

54. The total cost of the project to enhance energy efficiency in the residential AC manufacturing sector amounts to US \$1,915,224, including US \$1,661,962 for the energy efficiency improvements, US \$93,262 for additional upgrades to the calorimetric laboratory, and US \$160,000 for verification and reporting. The project would be implemented between January 2026 and December 2028.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Progress in implementing the stage I of the KIP

55. UNIDO experienced some delays in the implementation of the conversion of the AC manufacturing enterprises under the stage I of the KIP, due to the need to secure the necessary co-financing from the beneficiaries and the completion of the bidding process to select the equipment supplier, which took longer than had been anticipated. Accordingly, the conversion of the eight enterprises is now expected to be completed by the third quarter of 2026. Consequently, the ban on the import and manufacture of residential AC units based on HFCs with a global-warming potential greater than 700 that had been planned by 1 January 2027 (decision 94/53(c)(ii)) should be postponed to 1 January 2028, allowing sufficient time to undertake and finalize the corresponding legal and institutional procedure for its development and publication.

56. At the 94th meeting, it was noted that the enterprise Star One had very small consumption and had only manufactured a small number of AC units. Accordingly, it was agreed that, should the enterprise not manufacture HFC-32-based residential AC units on a commercial scale upon completion of its conversion, and continue such manufacturing for at least three years, UNIDO would return to the Multilateral Fund the funding associated with the conversion, plus the funding associated with the project management unit and agency support costs (decision 94/53(c)(iii)). UNIDO provided an update on the status of manufacturing at the enterprise: in 2024, the enterprise had manufactured 2,780 AC units, and that manufacturing had increased to 6,500 units between January and October 2025. UNIDO therefore continued to consider the AC manufacturing at the enterprise to be financially viable.

²⁰ ATEX (Atmosphères Explosibles), which refers to a set of European Union directives that regulate equipment and protective systems intended for use in environments where there is a risk of explosion due to flammable gases, vapours, mists, or dust.

Policy, regulatory and institutional framework

57. While the MEPS that are expected to be implemented by December 2027 (i.e., 3.38) would be substantially above those currently in force in the country (i.e., 3.00), the Secretariat noted that this level was below the target EER that would be achieved by the enterprises by December 2028, of 4.0 by all enterprises except El Athir, Star One, and Condor Tunisie, which would achieve a target EER of 4.2. The Secretariat therefore sought to better understand how the proposed MEPS of 3.38 relate to the minimum energy efficiency levels specified in the model regulations guidelines for energy-efficient and climate-friendly air conditioners published by United for Efficiency (U4E) in September 2019,²¹ and inquired whether the country could commit to meeting the minimum levels applicable to Tunisia as outlined in those model regulations by 1 January 2030.²²

58. UNIDO noted that the project had been elaborated in line with document UNEP/OzL.Pro/ExCom/94/61, in particular paragraph 31, which considers the local MEPS as the reference to estimate the ratio of the energy performance levels; that the Cooling Seasonal Performance Factor (CSPF) used in the U4E's model regulations had therefore not been applied; and that undertaking a comparison of the expected MEPS, which are specified in terms of EER, with the CSPF levels indicated in U4E's model regulations would be both resource and time consuming and could not be undertaken at this time. The Secretariat concurred with that assessment and recalled that the pilot project approved at the 94th meeting, inter alia, included updating and strengthening the country's MEPS, and further noted that the Government also planned to introduce seasonal performance metrics rather than static EER values by 2030. Accordingly, it was agreed that UNIDO will include in the report to be submitted in line with decision 94/57(a)(ii) a detailed comparison of the MEPS the country plans to implement by December 2027 with those specified in U4E's model regulations and an assessment of how the next update of the MEPS (expected by December 2031) will compare to the levels specified in the 2019 U4E model regulations. While recognizing the country cannot commit to a specific MEPS at this time, this comparison and assessment will help the country to at least meet the minimum energy efficiency performance levels specified in the 2019 U4E model regulations by 2031, if not before.

59. Regarding the Secretariat's concern that the MEPS expected to be enforced by December 2027 (i.e., 3.38) are below the EER local industry will manufacture by the completion of the project (i.e., 4.00 or 4.20), which could put the local industry at risk, as cheaper, less energy-efficient equipment could continue to be imported into the market, UNIDO confirmed that, in line with decision 94/60(b)(i) and paragraph 38 of document UNEP/OzL.Pro/ExCom/94/61, the Government commits to periodically upgrade MEPS regulations, labelling programmes and awareness and information outreach activities, and to take steps to implement regulations to ensure that the manufacturing, import and sale of the equipment would at least achieve the target energy efficiency performance levels, at the latest by three years from the date of completion of the project.

60. UNIDO also confirmed that, in line with decision 94/60(b)(i) and paragraph 37 of document UNEP/OzL.Pro/ExCom/94/61, the enterprises commit to manufacturing equipment with at least the target energy efficiency performance levels after project completion, and to continue to make best efforts to continue to improve energy efficiency of those products beyond the project duration, at their own cost. Regarding the former, the enterprises commit to only manufacturing air conditioners with variable-speed technology by the completion of the project. Regarding a possible ban on the import and manufacture of single-speed air conditioners, UNIDO clarified that such a ban would require consultations among different ministries and stakeholders, and the elaboration, approval and entry into force of the

²¹ https://united4efficiency.org/wp-content/uploads/2021/11/U4E_AC_Model-Regulation_EN_2021-11-08.pdf

²² Per table 19 of the model regulations, Tunisia is in the primary climate group 1, and secondary groups 2A*, 2B, 3A, and 3B, which would mean a CSPF of at least 5.60 for AC units with a capacity below 4.5 kW (ca. 15,000 BTU/hr) and at least 4.80 for AC units with a capacity between 4.5 kW and below 9.5 kW (ca. 32,400 BTU/hr) for 2A. The lowest CSPF is for 2B, which would mean a CSPF of at least 4.90 for AC units with a capacity below 4.5 kW (ca. 15,000 BTU/hr) and at least 4.30 for AC units with a capacity between 4.5 kW and below 9.5 kW.

necessary regulation, for which considerable time may be needed. Consequently, the NOU could not confirm at this time whether such a ban could be implemented upon completion of the project. The Secretariat noted that MEPS set at an appropriate level would likely effectively preclude AC units based on single-speed compressors from the market.

Technical and cost-related issues

Enterprise-level activities

61. The Secretariat noted that UNIDO had indicated at the 94th and the present meeting that Condor Tunisie was established after 1 January 2023 and was therefore not eligible, in line with decision 96/21(a).²³ UNIDO clarified that the enterprise was established in July 2019 and provided documentation showing that a domestic refrigeration manufacturing line had been established in December 2020 and suggested that the same line could also manufacture AC units. Given that the enterprise had only started manufacturing AC units in 2023 and had not manufactured any in 2021 and 2022, and that the documentation was not available to show when additional equipment needed for the manufacture of AC units was procured and installed, it was agreed to remove the enterprise from the project.

62. UNIDO has submitted three projects under decision 94/60 to the present meeting and has proposed a different method to calculate the manufacturing volume for the additional component costs in each project. In the case of Tunisia, UNIDO used the largest number of units of each model manufactured in the period 2022 to 2024, which could result in manufacturing volumes that are not consistent with capacity of the respective manufacturing lines. In contrast, the other projects used the manufacturing in the year preceding, or the average of three years preceding, the submission of the project, (i.e., in line with the decision in paragraph 32(b) of document UNEP/OzL.Pro/ExCom/16/20). The Secretariat recommends using this approach for projects under decision 94/60. Tunisia agreed and decided to use the average manufacturing volume in the 2022 to 2024 period, resulting in revised manufacturing volumes and reduced eligible additional component costs of US \$467,098, as further detailed in annex I to the present document.

63. Of the seven enterprises eligible to participate in the project, four (3 Star Electronics, Star One, Novatech, and New Star) use CKD kits in their manufacturing. Those kits provide all the necessary components for an AC unit; the kits are assembled onsite, including vacuum and refrigerant charging, and their performance is tested, before being sold on the market.

64. The Secretariat considers that AC manufacturing enterprises that use CKD kits should be treated differently than enterprises that do not. The latter manufacture some components (e.g., in some cases, heat exchangers) and purchase others and are therefore expected to need more support for their capital costs, for example, related to product design and development. Moreover, the additional capital costs indicated in table 3 of document UNEP/OzL.Pro/ExCom/94/61 were based on manufacturing enterprises that do not use CKD kits.

65. Similarly, table 4 of document UNEP/OzL.Pro/ExCom/94/61 was based on AC manufacturers that do not use CKD kits. The Secretariat considers it likely that purchasing CKD kits that provide a specified level of energy efficiency enhancement would be more expensive than purchasing components individually, which, when assembled by the manufacturer, result in the same enhancement. In other words, enterprises that use CKD kits will have lower additional capital costs but are likely to have higher additional component costs. In addition, while the four enterprises in Tunisia are not considered to be small and medium-sized enterprises (SMEs), it is likely that SMEs in other Article 5 countries use CKD kits in their manufacturing, and the Secretariat does not wish to create a precedent that would reduce their funding. Accordingly, the

²³ That funding related to energy efficiency for enterprises with HFC manufacturing capacity established prior to 1 January 2023 that had converted or committed to convert to lower global-warming-potential alternatives with their own resources would be considered on a case-by-case basis when such capacity was included as part of a sector plan that would phase-down HFCs in the sector concerned.

Secretariat proposes not to change the level of eligible funding provided to enterprises that manufacture using CKD kits but instead to change how the additional capital costs are provided: half of the additional capital costs would be provided upon approval of the project, and the other half would be provided one year after project approval, once it is confirmed that the enterprises have manufactured AC units at least at the proposed targets. Effectively, this second half of the additional capital costs would be treated as a supplemental additional component cost, provided over and above the additional component costs, resulting in agreed supplemental additional component costs of US \$200,000 for the four enterprises, as further detailed in annex I to the present document.

66. The total agreed incentive for the seven AC manufacturing enterprises is US \$1,187,098 based on additional capital costs of US \$520,000, additional component costs of US \$467,098, and supplemental additional component costs of US \$200,000, as shown in annex I. Based on the baseline energy consumption per model, target energy efficiency, and number of units of each model manufactured by the enterprises,²⁴ the cumulative energy savings are 8,906,805 kWh/year. Based on the agreed costs of US \$1,187,098, this results in a cost-effectiveness of US \$7.50/kWh/year for this component of the project, for the first year following project completion. Additional benefits will be accrued each subsequent year, based on the operation of equipment manufactured in that and in subsequent years.

Additional upgrades to the calorimetric laboratory

67. In line with decision 95/87(d), the request for additional funding to further upgrade the CETIME laboratory was reviewed and is considered ineligible under decision 91/65, as the laboratory is used by the manufacturers and this is not a servicing sector activity. However, the Secretariat considers that having a well-functioning laboratory will help Tunisia to implement the project submitted under decision 94/60. While it might be possible for manufacturers to ship air conditioners to a laboratory in another country for testing, doing so will incur costs and take time. A concern expressed by enterprises participating in the project was that the procedure for obtaining an energy performance test report from CETIME was expensive and could take several weeks, which usually does not fit the development and manufacturing schedule of the enterprises. Moreover, the laboratory will help the Government ensure that equipment imported into the country meets the country's MEPS and support meaningful periodic market surveillance of the energy efficiency of equipment in the market, which will also help ensure the successful implementation of the project under decision 94/60.

68. Tunisia was not requesting to establish a new laboratory. Rather, the country was requesting funding to ensure the existing laboratory can be used to support the implementation of the project submitted under decision 94/60. The fact that there are eight manufacturers in the country, and that the laboratory is already established and operating, suggests that there is sufficient volume of equipment to be tested to enable its sustainable operation. Accordingly, the Secretariat recommends that additional assistance for the laboratory be provided under decision 94/60, consistent with the recommendation made by the Secretariat under agenda item 10 of the present meeting.²⁵

69. On that basis, UNIDO and the Secretariat had detailed discussions on the cost of the proposed upgrades, including ensuring that there was no duplication of assistance requested under the present project and that approved at the 94th meeting. UNIDO emphasized that there was no duplication, as assistance under the project approved at the 94th meeting focused on the provision of equipment for fire safety, particularly fire detectors, fire extinguishers, anti-spark switches, an emergency exit and creation of a muster point, while funding requested under the proposal submitted to the present meeting was distinct and related to the installation of flammable gas detection and air renewal systems. Further to additional constructive discussions, it was agreed that the laboratory would co-finance the requested transport,

²⁴ Information considered confidential.

²⁵ Update on the operationalization of testing centres for energy efficiency (decision 95/87(e)) contained in document UNEP/OzL.Pro/ExCom/97/86.

installation, commissioning, and training, resulting in agreed costs to the Multilateral Fund of US \$80,262, on the understanding that no additional funding would be requested to support the laboratory.

Project management and technical support activities

70. The PMU, established under the stage I of the KIP, would operate through 2031 and would undertake periodic monitoring and site visits to the enterprises. Moreover, the country intends to submit a request for stage III of its HPMP in 2026, which would mean three concurrent PMUs would be operating in the country: for the KIP, for the HPMP, and for the present project. Accordingly, the Secretariat considered that efficiencies in the project management, monitoring and verification could be achieved, while noting that some monitoring and assistance by the PMU would be specific to the energy efficiency project, including related to the gathering of data associated with sales and whether equipment met the energy efficiency targets. Accordingly, it was agreed to allocate US \$10,000 per enterprise (including Condor Tunisie which, while ineligible, would still need to meet MEPS), resulting in agreed funding of US \$80,000 for project monitoring and verification.

Co-financing

71. Participating enterprises may contribute in-kind resources to support the successful implementation of proposed activities. These contributions could include covering the differential costs for equipment and components, among others.

Sustainability of the pilot project and assessment of risks

72. The Secretariat considers the most significant risk to the project is that if MEPS are set too low, participating enterprises would need to compete with imported air conditioners at lower energy efficiency and potentially lower costs. This risk is exacerbated by the relatively low volume of manufacturing at the enterprises that must compete with imported equipment manufactured by substantially larger enterprises that may benefit from economies of scale and more integrated supply chains. The commitment by the Government to periodically upgrade MEPS regulations and labelling programmes, implement awareness and information outreach activities, and to take steps to implement regulations to ensure that the manufacturing, import and sale of the equipment would at least achieve the target energy efficiency performance levels, at the latest by three years from the date of completion of the project, will mitigate the this risks. The implementation of the pilot project approved at the 94th meeting will also mitigate the risks, raise awareness, and enhance capacity in the country. The further upgrade to CETIME's calorimetric laboratory will enable the enterprises to ensure that the air conditioners they manufacture are energy efficient and can be used by the Government for market surveillance and to ensure that manufactured and imported air conditioners meet the applicable MEPS. The sustainability of the project will be enhanced by the assistance provided to the enterprises under the present project, under the KIP, and based on the reduced energy costs experienced by consumers of more energy efficient air conditioners.

Recommendation

73. The Executive Committee may wish to consider approving the pilot project to enhance energy efficiency in the residential air-conditioning manufacturing sector in Tunisia in the context of HFC phase-down, in the amount of US \$1,347,360, plus agency support costs of US \$94,315 for UNIDO, noting:

- (a) That the agreed funding would be allocated under the funding window established by decision 94/60, including US \$80,262, plus agency support costs of US \$5,618 for UNIDO, associated with further upgrades to the Technical Centre of Mechanical and Electric Industries (CETIME) calorimetric laboratory, on the understanding that no additional funding would be requested to support the laboratory;

- (b) The commitment of the enterprises participating in the project to only manufacture air-conditioning units with variable-speed technology upon completion of the project;
- (c) That UNIDO will include, in the report to be submitted in line with decision 94/57(a)(ii), a detailed comparison of the minimum energy performance standards (MEPS) Tunisia plans to implement by December 2027 with those specified in the model regulation guidelines for energy-efficient and climate-friendly air conditioners published by United for Efficiency, and an assessment of how the next update of the MEPS will compare to the levels specified in those model regulations; and
- (d) That the project would be operationally completed no later than December 2028, and a detailed project report would be submitted to the Executive Committee within six months of the date of completion of the project.

Annex I

AGREED COSTS (US \$)

Costs	Société Industrielle Méga	El Athir	Sicad Coala	3 Stars Electronics	Star One	Novatech	Société New Star	Total
Additional capital cost	120,000	100,000	100,000	50,000	50,000	50,000	50,000	520,000
Additional component cost	224,916	85,923	80,190	22,040	6,625	7,785	39,619	467,098
Supplemental additional component cost*	0	0	0	50,000	50,000	50,000	50,000	200,000
Sub-total	344,916	185,923	180,190	122,040	106,625	107,785	139,619	1,187,098
Project monitoring and verification								80,000
Additional support to CETIME laboratory								80,262
Total								1,347,360

* Associated with manufacturing with complete knock-down kits.