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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-ninth Meeting
Montreal, 7–11 December 2026
Items 9(c) and (d) of the provisional agenda[1]

UNIDO'S WORK PROGRAMME AMENDMENTS FOR 2026

[1] UNEP/OzL.Pro/ExCom/99/1

Pre-session documents of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol are without prejudice to any decision that the Executive Committee might take following issuance of the document.

COMMENTS AND RECOMMENDATION OF THE FUND SECRETARIAT

1. UNIDO is requesting approval from the Executive Committee of US $961,818, plus agency support costs of US $67,328 for its 2026 work programme amendments listed in table 1. The submission is attached to the present document.

Table 1: UNIDO's work programme amendments for 2026

Country	Activity/Project	Amount requested (US $)	Amount recommended (US $)
SECTION A: ACTIVITIES RECOMMENDED FOR BLANKET APPROVAL			
A1: Renewal of institutional strengthening projects			
Albania	Renewal of institutional strengthening project (phase XII)	270,408	270,408
Oman	Renewal of institutional strengthening project (phase X)	181,410	181,410
	Subtotal for A1	451,818	451,818
	Agency support costs	31,628	31,628
	Total for A1	483,446	483,446
A2: Project preparation for HCFC phase-out management plans (HPMPs)			
Mauritania [a]	Preparation of an HPMP (stage II)	10,000	10,000
Senegal [a]	Preparation of an HPMP (stage III)	10,000	10,000
	Subtotal for A2	20,000	20,000
	Agency support costs	1,400	1,400
	Total for A2	21,400	21,400
A3: Project preparation for Kigali HFC implementation plans (KIPs)			
Mauritania [a]	Preparation of a KIP (stage I)	40,000	40,000
Saudi Arabia [b]	Preparation of a KIP investment project in the refrigeration sector	80,000	80,000
	Preparation of a KIP investment project in the air-conditioning sector	80,000	80,000
	Preparation of a KIP investment project in the polyurethane foam sector	80,000	80,000
	Preparation of a KIP investment project in the firefighting sector	60,000	60,000
	Subtotal for A3	340,000	340,000
	Agency support costs	23,800	23,800
	Total for A3	363,800	363,800
SECTION B: ACTIVITIES RECOMMENDED FOR INDIVIDUAL CONSIDERATION			
B1: Project preparation for enhancing energy efficiency in the context of HFC phase-down in the refrigeration manufacturing sector (decision 94/60)			
Bangladesh	B1.1 Preparation of a project to enhance energy efficiency in the refrigeration and air-conditioning manufacturing sector in the context of HFC phase-down (deferred from the 98th meeting)	35,000	*
Ecuador	B1.2 Preparation of a project to enhance energy efficiency in the refrigeration manufacturing sector in the context of HFC phase-down (deferred from the 98th meeting)	30,000	*
Jordan	B1.3 Preparation of a project to enhance energy efficiency in the refrigeration and air-conditioning manufacturing sector in the context of HFC phase-down	30,000	*
Mexico	B1.4 Preparation of a project to enhance energy efficiency in the refrigeration manufacturing sector in the context of HFC phase-down (deferred from the 98th meeting)	45,000	*
	Subtotal for B1	140,000	*
	Agency support costs	9,800	*
	Total for B1	149,800	*

Country	Activity/Project	Amount requested (US $)	Amount recommended (US $)
B2: Preparation of a project to improve energy efficiency in the manufacturing of components and heat pumps in the context of HFC phase-down (decision 95/87)			
Jordan	Preparation of a project to improve energy efficiency in heat-exchanger manufacturing	10,000	*
	Subtotal for B2	10,000	*
	Agency support costs	700	*
	Total for B2	10,700	*
	Total for A1, A2, A3, B1, B2	961,818	811,818
	Agency support costs for A1, A2, A3, B1, B2	67,328	56,828
	Grand total	1,029,146	868,646

[a] UNEP as lead implementing agency

[b] UNDP as lead implementing agency with UNEP and UNIDO as cooperating implementing agencies

SECTION A: ACTIVITIES RECOMMENDED FOR BLANKET APPROVAL

A1: Renewal of institutional strengthening projects

Project description

2. UNIDO submitted requests for the renewal of institutional strengthening (IS) projects for the countries listed in section A1 of table 1. The descriptions of these projects are presented in annex I to the present document.

Secretariat's comments

3. The Secretariat reviewed the requests for the renewal of two IS projects submitted by UNIDO on behalf of the Governments concerned against the guidelines[2] and relevant decisions regarding eligibility and funding levels. The requests were cross-checked against the original work plans for the previous phases, country programme (CP) and Article 7 data, the latest reports on implementation of their HCFC phase-out management plans (HPMPs) and Kigali HFC implementation plan (KIP), the agency's progress reports, and any relevant decisions of the Meetings of the Parties. It was noted that the countries have submitted their 2025 CP and Article 7 data and are in compliance with the control targets under the Montreal Protocol, and that the reported annual HCFC and HFC consumption does not exceed the annual maximum allowable consumption indicated in their HPMP and KIP Agreements with the Executive Committee. Furthermore, all requests submitted included an assessment of performance indicators, project risk and sustainability, and achievement of the institutional strengthening objectives, in accordance with decision 91/63(b).

Secretariat's recommendations

4. The Secretariat recommends blanket approval of the institutional strengthening renewal requests for Albania and Oman at the levels of funding indicated in section A1 of table 1 of the present document. The Executive Committee may wish to express to the aforementioned Governments the comments presented in annex II to this document.

A2: Project preparation for HCFC phase-out management plans

Project description

5. UNIDO submitted requests for the preparation of stages II and III of the HPMPs for Mauritania and Senegal respectively, as the cooperating implementing agency, as shown in section A2 of table 1.

6. UNEP, as the lead implementing agency for stage II of the HPMP for Mauritania and stage III of the HPMP for Senegal has requested US $30,000, plus agency support costs of US $3,900, for each project, and has provided a description of the activities required for the project preparation and the corresponding costs of each activity in its work programme amendments for 2026;[3] the Secretariat's comments are also included therein.

[2] Decision 91/63: (b) to approve the revised format for terminal reports and requests for the extension of institutional strengthening funding and the corresponding performance indicators; and (c) to request Article 5 countries, through the bilateral and implementing agencies, to use the revised format referred to in subparagraph (b) above for all requests for institutional strengthening renewal as of the first meeting of the Executive Committee in 2023.

[3] UNEP/OzL.Pro/ExCom/99/33

Secretariat's recommendations

7. The Secretariat recommends blanket approval for project preparation for stage II of the HCFC phase-out management plan (HPMP) for Mauritania, and for stage III of the HPMP for Senegal, at the levels of funding shown in section A2 of table 1.

A3: Project preparation for Kigali HFC implementation plans

Project description

8. UNIDO submitted requests for the preparation of stage I of the KIP for two Article 5 countries, as cooperating implementing agency, with UNEP as lead implementing agency for Mauritania, and UNDP as lead implementing agency and UNEP as cooperating agency, for Saudi Arabia. These requests are shown in section A3 of table 1.

9. UNEP, as the lead agency for stage I of the KIP for Mauritania has requested US $150,000, plus agency support costs of US $19,500 in its work programme amendments for 2026; and has provided a description of the activities required for the project preparation and the corresponding costs of each activity in its work programme amendments for 2026;[4] the Secretariat's comments are also included therein.

10. UNDP, as the lead agency for stage I of the KIP for Saudi Arabia has requested US $180,000, plus agency support costs of US $12,600 in its work programme amendments for 2026; and has provided a description of the activities required for the project preparation and the corresponding costs of activities under overarching and investment components, in its work programme amendments for 2026; [5] the Secretariat's comments are also included therein. UNEP, as cooperating agency, has requested US $50,000, plus agency support costs of US $6,500 for Saudi Arabia, in its work programme amendments for 2026.[6]

Secretariat's recommendations

11. The Secretariat recommends blanket approval for project preparation for stage I of the Kigali HFC implementation plans for Mauritania and Saudi Arabia, at the levels of funding shown in section A3 of table 1.

SECTION B: ACTIVITIES RECOMMENDED FOR INDIVIDUAL CONSIDERATION

B1: Project preparation for enhancing energy efficiency in the context of HFC phase-down in the refrigeration manufacturing sector (decision 94/60)

Project description

12. At its 98th meeting, the Executive Committee considered preparatory funding requests for three projects to enhance energy efficiency in the refrigeration and air-conditioning (RAC) manufacturing sector in the context of HFC phase-down in Bangladesh, Ecuador and Mexico. Consideration of the Bangladesh project was deferred to a future meeting pending sufficient information on the proposed enterprises and project scope.[7] For Ecuador and Mexico, consideration was deferred to the 99th meeting due to ongoing discussions regarding the eligibility of certain enterprises that had already converted.[8] UNIDO subsequently resubmitted the preparatory funding for all three countries for consideration at the 99th meeting.

[4] Ibid
[5] UNEP/OzL.Pro/ExCom/99/32
[6] UNEP/OzL.Pro/ExCom/99/33
[7] Decision 98/28
[8] Decision 98/29

13. UNIDO also submitted one request for preparatory funding for a project to enhance energy efficiency in the RAC manufacturing sector in the context of HFC phase-down for Jordan. These requests are as shown in section B1 of table 1. The submissions were made in line with decision 94/60.

14. The Secretariat reminded UNIDO that for all the enterprises that have already phased out HFCs, with either Multilateral Fund funding or with their own funds, the consideration of their projects will be subject to the Executive Committee discussion at the 99th meeting on the Secretariat's document[9] providing information on refrigeration and air-conditioning manufacturing lines that had completed conversion under HCFC phase-out or HFC phase-down projects approved under the Multilateral Fund, in line with decision 98/23. UNIDO confirmed that it is aware of this decision and its potential impact.

B1.1 Preparation of a project to enhance energy efficiency in the refrigeration and air-conditioning manufacturing sector in the context of HFC phase-down in Bangladesh

Project description

15. The project preparation request focuses on energy efficiency improvements to be implemented in 13 enterprises in the refrigeration and air-conditioning (AC) manufacturing sector (13 with AC manufacturing and seven with the domestic refrigeration manufacturing), as shown in the table 2 below.

Table 2. List of enterprises proposed under the refrigeration and air-conditioning manufacturing sector in Bangladesh and status of conversion

No.	Name of the enterprise	Air-conditioning manufacturing		Domestic refrigeration manufacturing
		Residential	Commercial	
1	Walton Hi-Tech Industries PLC.	b	a	b
2	Singer Bangladesh Ltd.	b		b
3	Fair Electronics Ltd.	b		b
4	Trade International Industries Ltd.	a	a	b
5	Haier Bangladesh / Butterfly Group	b		
6	Jamuna Electronics and Automobiles Ltd.	a		b
7	Minister Hi-Tech Park Electronics Ltd.	a		b
8	RFL Electronics Ltd.	a		b
9	Elite Hi-Tech Industries Ltd.	b	a	
10	Supreme Air-conditioning Co.	b	a	
11	AC Bazar Industries Ltd.	b	a	
12	Transcom Electronics	a		
13	Esquire Electronics Ltd.	a	a	

a denotes an enterprise that is currently converting
b denotes an enterprise that has already converted

16. The project preparation activities include conducting surveys and data collection to gather detailed information on production capacities, production lines, energy efficiency levels, and refrigerant use, feasibility analysis and investment planning; carrying out technical feasibility studies to assess existing systems and identify opportunities for integrating energy-efficient technologies and low-global-warming-potential (GWP) refrigerants; developing energy efficiency cost estimations including financing options for upgrades for each company; and drafting a project proposal.

[9] UNEP/OzL.Pro/ExCom/99/81

Secretariat's comments

17. The Secretariat reviewed the request for preparatory funding to enhance energy efficiency in the manufacturing of RAC equipment and notes that the project is in line with the criteria set out in decision 94/60. The Secretariat also noted that UNIDO has provided the required information about the enterprises and that the stage I of the KIP for Bangladesh has been submitted to the present meeting.

18. The Secretariat noted that, out of 13 enterprises proposed under the AC sector, three enterprises had already converted to low/lower-GWP technologies with their own funds, four enterprises have conversion projects under the HPMP for residential ACs and in stage I of the KIP for commercial ACs. The remaining six enterprises are included for conversion under stage I of the KIP, proposed at the present meeting. Further, all seven domestic refrigerator manufacturing enterprises had already converted to R-600a with their own funding.

19. Regarding synergies with the National Ozone Unit (NOU) and UNDP implementing HFC phase-out projects in enterprises included in the proposed project, UNIDO replied that consultations were held with the NOU regarding the development of the energy efficiency project. UNIDO added that the coordination with UNDP through NOU was undertaken as necessary to avoid duplication of activities and funding.

20. UNIDO confirmed that Bangladesh has established minimum energy performance standards (MEPS) for domestic refrigerators and residential ACs. Further, it plans to upgrade these and expand MEPS to the commercial RAC sector. UNIDO also added that consultations were held with the Bangladesh Standards and Testing Institution and the Sustainable and Renewable Energy Development Authority regarding relevant energy efficiency policies, standards and regulations to support the proposed project.

Secretariat's recommendation

21. The Executive Committee may wish to consider approving the request for project preparation to enhance energy efficiency in the manufacturing of refrigeration and air-conditioning equipment in Bangladesh, in the amount of US $35,000, plus agency support costs of US $2,450 for UNIDO.

B1.2 Preparation of a project to enhance energy efficiency in the refrigeration manufacturing sector in the context of HFC phase-down in Ecuador

Project description

22. The project preparation request focuses on energy efficiency improvements to be implemented in one manufacturing enterprise which is using R-600a for domestic refrigerators and R-290 for commercial refrigeration manufacturing. The enterprise has implemented technology conversion processes under the Montreal Protocol and has received technical and financial assistance from the Multilateral Fund.[10]

23. The project preparation activities include collecting and analyzing the enterprise's technical, production, and market data alongside existing regulations; assessing feasible energy-efficiency improvements through technical evaluation and stakeholder consultations; review of existing MEPS and regulatory framework; and preparing a project document outlining the baseline, upgrade options, costs, feasibility, and relevant regulatory considerations.

[10] The enterprise received assistance (in line with decision 87/50(e)), approved at the 91st meeting, for the conversion of the manufacturing of domestic and commercial refrigerators from HFC-134a to R-600a and R-290 at a total cost of US $265,687. Additionally, the enterprise had previously been assisted to transition away from CFCs.

Secretariat's comments

24. The Secretariat has reviewed the request for preparatory funding to enhance energy efficiency in the manufacturing of refrigeration equipment and notes that the project is in line with the criteria set out in decision 94/60 and that this enterprise has converted to low-GWP technologies earlier.

25. Regarding enterprise, UNIDO noted that INDURAMA is one of the leading local manufacturers, and manufactures domestic and commercial self-contained refrigeration equipment, with an installed capacity of approximately 175,000 units per year and production of 193,000 units in 2025. The company estimates that it holds 43 per cent of the overall national refrigeration market.

26. On MEPS, UNIDO informed that Ecuador currently has an established MEPS and labelling framework for domestic refrigeration equipment, but no equivalent MEPS framework is yet in force for stand-alone commercial refrigeration equipment. However, due to the conversion of this enterprise to low-GWP technologies, the sector already has a technological basis that could facilitate the future development of MEPS for commercial refrigeration equipment. The preparation phase will review the existing energy-efficiency and labelling requirements applicable to domestic refrigeration equipment in Ecuador, including the current regulatory framework and existing MEPS-related provisions, and assess the technical and market conditions for future regulatory development in the commercial refrigeration segment.

27. The Secretariat also noted that the activities included in the preparatory funding request, as described above, are consistent with the activities required for formulating the energy efficiency component pursuant to decision 95/87.

Secretariat's recommendation

28. The Executive Committee may wish to consider approving the request for project preparation to enhance energy efficiency in the manufacturing of refrigeration equipment in Ecuador in the amount of US $30,000, plus agency support costs of US $2,100, for UNIDO.

B1.3 Preparation of a project to enhance energy efficiency in the refrigeration and air-conditioning manufacturing sector in the context of HFC phase-down in Jordan

Project description

29. The project preparation request focuses on energy efficiency improvements in four enterprises (two manufacturing commercial refrigeration equipment only and two manufacturing both domestic refrigeration and residential AC equipment). Of these enterprises, one enterprise has converted for domestic refrigerators with its own funds and is converting to HFC-32 under stage I of the KIP; two enterprises are converting under stage I of the KIP, and one enterprise has converted with its own funds, as shown in table 3 below.

Table 3. List of enterprises proposed under the refrigeration and air-conditioning manufacturing sector in Jordan and status of conversion

No.	Name of Enterprise	Residential air-conditioning manufacturing	Refrigeration manufacturing	
			Domestic	Commercial
1	Privatization Holding Co. (PHC)	a	b	
2	Abu Haltam	a	a	
3	Abdin			a
4	Mohammed Tahseen Baalbaki and Partners Company			b

a denotes an enterprise that is currently converting
b denotes an enterprise that has already converted

30. The project preparation activities include data collection, assessing feasible energy-efficiency improvements through technical evaluation and stakeholder consultations, and preparing a proposal.

Secretariat's comments

31. The Secretariat has reviewed the request for preparatory funding to enhance energy efficiency in the manufacturing of refrigeration and air-conditioning equipment and notes that the project is in line with the criteria set out in decision 94/60.

32. Regarding MEPS, UNIDO informed that MEPS currently exist for domestic refrigeration and residential AC. MEPS for commercial refrigeration are under consideration; a technical committee has been formed and drafting of the MEPS has commenced. In the interim, commercial refrigeration standards based on the Air-Conditioning, Heating and Refrigeration Institute (AHRI) standards are applied on a voluntary basis.

33. The Secretariat also noted that the activities included in the preparatory funding request, as described above, are consistent with the activities required for formulating the energy efficiency component pursuant to decision 95/87.

34. UNIDO had initially requested funding in the amount of US $45,000. Upon discussion, it was revised to US $30,000.

Secretariat's recommendation

35. The Executive Committee may wish to consider approving the request for project preparation to enhance energy efficiency in the manufacturing of refrigeration and air-conditioning equipment in Jordan, in the amount of US $30,000, plus agency support costs of US $2,100 for UNIDO.

B1.4 Preparation of a project to enhance energy efficiency in the refrigeration manufacturing sector in the context of HFC phase-down in Mexico

Project description

36. The project preparation request focuses on energy efficiency improvements to be implemented in 10 manufacturing enterprises in the refrigeration manufacturing sector. Of these 10 enterprises, three enterprises implemented technology conversion processes to non-HFC technology with technical and financial assistance from the Multilateral Fund[11], two converted using their own funds, and the remaining five are currently converting with their own funds, as shown in table 4 below.

Table 4. List of enterprises proposed under the refrigeration manufacturing sector in Mexico and status of conversion

No.	Name of enterprise	Refrigeration manufacturing	
		Domestic	Commercial
1	Mabe	b	
2	Imbera/Fersa		b
3	Friocima		b
4	Criotec	b	b
5	Metalfrio		a
6	Glacial		a
7	Refrigeración Ojeda		b

[11] Decisions 81/64, 81/65 and 92/35

No.	Name of enterprise	Refrigeration manufacturing	
		Domestic	Commercial
8	Kaltek		a
9	REFROD		a
10	ARPIPA		a

a denotes an enterprise that is currently converting
b denotes an enterprise that has already converted

37. The project preparation activities include conducting surveys and data collection to gather detailed information on production capacities, production lines, energy efficiency levels, and refrigerant use, feasibility analysis and investment planning; carrying out technical feasibility studies to assess existing systems and identify opportunities for integrating energy-efficient technologies and low-GWP refrigerants; assisting enterprises in preparing business plans to enhance energy efficiency; and drafting an investment project proposal.

Secretariat's comments

38. The Secretariat has reviewed the request for preparatory funding to enhance energy efficiency in the manufacturing of refrigeration equipment and notes that the project is in line with the criteria set out in decision 94/60.

39. On MEPS, UNIDO confirmed that MEPS exist for refrigeration and air-conditioning equipment.

40. The Secretariat also noted that the activities included in the preparatory funding request, as described above, are consistent with the activities required for formulating the energy efficiency component pursuant to decision 95/87.

Secretariat's recommendation

41. The Executive Committee may wish to consider approving the request for project preparation to enhance energy efficiency in the manufacturing of refrigeration equipment in Mexico, in the amount of US $45,000, plus agency support costs of US $3,150 for UNIDO.

B2: Preparation of a project to improve energy efficiency in the manufacturing of components and heat pumps in the context of HFC phase-down (decision 95/87)

42. UNIDO submitted a request for the preparation of a project to enhance energy efficiency in heat-exchanger manufacturing in the context of HFC phase-down in one Article 5 country, as shown in section B2 of table 1.

Project description

43. The objective of the preparatory project is to develop a project to assist one manufacturing enterprise in improving energy efficiency of its components.

44. Preparatory activities include data collection and analysis, including production lines, product mix, baseline coil performance, and other details; conduct technical assessment to measure heat conductance; review design options; identify production line changes and associated cost; a stakeholder consultation on barriers in energy efficiency implementation, performance levels for heat exchangers and policy measures, and the preparation of the project proposal.

Secretariat's comments

45. The Secretariat has reviewed the request of preparatory funding and notes that the project to be prepared with this funding is in line with the project criteria set out in decision 95/87(b)(ii).

46. Regarding enterprise details, UNIDO informed that the enterprise, Petra Engineering Industries Company, is a 100 per cent Jordanian enterprise, manufacturing AC equipment which includes split-unit AC, packaged AC units, chillers, air handling units, fan coil units and data centre cooling systems. The annual production of heat-exchangers is 50,000 units, out of which 97 per cent is for its own use and 3 per cent is sold in the local market. Out of 50,000 units, about 10,000 units are used in manufacturing residential split ACs, which is eligible under decision 94/60.

47. Regarding MEPS, UNIDO confirmed that MEPS with labeling schemes, have been in place in Jordan since 2013 for room AC, and household refrigerators and freezers. The work on MEPS for commercial and central AC equipment has commenced.

48. UNIDO confirmed that the heat-exchangers will be used for equipment using low/lower-GWP technology only. UNIDO also plans to examine heat exchangers manufactured for commercial AC units that are eligible under 94/60, and would have existing or planned related national MEPS, for possible inclusion in the project proposal when submitted.

49. UNIDO had initially requested US $30,000. Upon discussion, it was revised to US $10,000 considering the scope of the project preparation for one enterprise.

Secretariat's recommendation

50. The Executive Committee may wish to consider approving the preparation project for heat exchanger manufacturing in the refrigeration and air-conditioning sector (decision 95/87) for Jordan in the amount of US $10,000, plus agency support costs of US $700 for UNIDO.

Annex I

INSTITUTIONAL STRENGTHENING PROJECT PROPOSALS[12]

Albania: Renewal of institutional strengthening

Summary of the project and country profile		
Implementing agency:		UNIDO
Amounts previously approved for institutional strengthening (US $):		
	Phase I: Dec-01 & Nov-02 & Jul-05	151,200
	Phase II: Jul-06	109,200
	Phase III: Apr-08	109,137
	Phase IV: Jul-10	109,200
	Phase V: Apr-12	109,200
	Phase VI: May-14	108,000
	Phase VII: May-16	138,966
	Phase VIII: Nov-17	139,776
	Phase IX: Dec-19	139,776
	Phase X: Nov-21	139,776
	Phase XI: Dec-23	270,408
	Total:	1,524,639
Amount requested for renewal (phase XII) (US $):		270,408
Amount recommended for approval for phase XII (US $):		270,408
Agency support costs (US $):		18,929
Total cost of institutional strengthening phase XII to the Multilateral Fund (US $):		289,337
Date of approval of country programme:		2003
Date of approval of HCFC phase-out management plan:		2011
Date of approval of Kigali HFC implementation plan:		2023
Baseline consumption of controlled substances (ODP tonnes/CO_2-eq tonnes):		
(a) Annex B, Group III (methyl chloroform) (average 1998-2000)		0.0
(b) Annex C, Group I (HCFCs) (average 2009-2010)		6.0
(c) Annex E (methyl bromide) (average 1995-1998)		0.0
(d) Annex F (HFCs) (average 2020-2022 plus 65% of HCFC baseline)		883,849
Latest reported ODS consumption (2025) (ODP tonnes) as per Article 7:		
(a) Annex B, Group III (methyl chloroform)		0.00
(b) Annex C, Group I (HCFCs)		1.11
(c) Annex E (methyl bromide)		0.00
	Total:	1.11
(d) Annex F (HFCs) (CO_2-eq tonnes) as per Article 7		871,744
Year of reported country programme implementation data:		2025
Amount approved for projects (as at June 2026) (US $):		4,542,457
Amount disbursed (as at December 2025) (US $):		3,182,778
ODS to be phased out (as at June 2026) (ODP tonnes):		75.6
ODS phased out (as at December 2025) (ODP tonnes):		72.4
HFCs to be phased out (as at June 2026) (CO_2-eq tonnes):		79,546.7
HFCs phased out (as at December 2025) (CO_2-eq tonnes):		0

1. Summary of activities and funds approved by the Executive Committee:

Summary of activities	Funds approved (US $)
(a) Investment projects:	1,007,388
(b) Institutional strengthening:	1,524,639
(c) Project preparation, technical assistance, training and other non-investment projects:	2,010,430

[12] Data as at December 2025 are based on document UNEP/OzL.Pro/ExCom/99/17.

Total:	4,542,457
(d) HFC activities funded from additional voluntary contributions	95,000

Progress report

2. During phase XI of its institutional strengthening project, the National Ozone Unit of Albania continued implementation of the Montreal Protocol and Kigali Amendment; maintained the HFC licensing and quota system; strengthened ODS and F-gas legislation; continued data verification and reporting; and coordinated with Customs to prevent illegal trade. The NOU also coordinated implementation of stage II of the HCFC phase-out management plan (HPMP) and supported the preparation and approval of stage III of the HPMP and stage I of the Kigali implementation plan (KIP). Capacity-building and awareness-raising activities were conducted with Customs, RAC associations, technicians, educational institutions and other stakeholders, including celebrations of World Refrigeration Day and World Ozone Day. Albania also continued participation in regional and international Montreal Protocol meetings. The country fully achieved six performance indicators and partially achieved one during the current phase.

Plan of action

3. In the upcoming phase, the NOU will continue to strengthen implementation of the Montreal Protocol and the Kigali Amendment and coordinate stage III of the HPMP and stage I of the KIP. The NOU will strengthen legislation through the completing and enforcing of ODS/F-gas secondary legislation and the licensing and quota systems for HCFCs and HFCs; improve data collection, reporting and customs controls to prevent illegal trade; and support technician certification and safe servicing with low-GWP alternatives. It will also promote refrigerant recovery, recycling, reclamation and end-of-life management; strengthen cooperation with the RAC sector, educational institutions and regional partners; and continue public awareness activities, including World Ozone Day and World Refrigeration Day. Gender considerations will continue to be integrated into project activities, including the monitoring of women's participation and stronger gender mainstreaming.

Sustainability and risk assessment

4. The sustainability of the project's results will be supported by maintaining the institutional capacity of the National Ozone Unit (NOU), strengthening institutionalized data exchange between Customs and the NOU, establishing sustainable technician training and certification arrangements, and maintaining updated legislation and operational databases. The main identified risks relate to institutional changes, delays in the adoption of secondary legislation, enforcement and data gaps, illegal trade, and capacity and safety challenges associated with the introduction of new refrigerants. These risks will be monitored and mitigated through early coordination with implementing agencies, regular inter-institutional reviews, targeted training and capacity building, strengthened verification and risk-profiling mechanisms, and continuous engagement with relevant stakeholders. Gender equality and equal opportunities will remain integrated throughout project planning, implementation, and monitoring.

Oman: Renewal of institutional strengthening

Summary of the project and country profile			
Implementing agency:			UNIDO
Amounts previously approved for institutional strengthening (US $):			
	Phase I:	Dec-00	79,000
	Phase II:	Jul-05	68,467
	Phase III:	Nov-08	68,467
	Phase IV:	Nov-11	68,467
	Phase V:	Dec-13	68,467
	Phase VI:	May-15	68,467
	Phase VII:	Dec-18	87,638
	Phase VIII:	Dec-20	87,638
	Phase IX:	Jun-23	181,410
		Total:	778,021
Amount requested for renewal (phase X) (US $):			181,410
Amount recommended for approval for phase X (US $):			181,410
Agency support costs (US $):			12,699
Total cost of institutional strengthening phase X to the Multilateral Fund (US $):			194,109
Date of approval of country programme:			1999
Date of approval of HCFC phase-out management plan:			2011
Baseline consumption of controlled substances (ODP tonnes):			
(a) Annex B, Group III (methyl chloroform) (average 1998-2000)			0.0
(b) Annex C, Group I (HCFCs) (average 2009-2010)			31.5
(c) Annex E (methyl bromide) (average 1995-1998)			1.0
Latest reported ODS consumption (2025) (ODP tonnes) as per Article 7:			
(a) Annex B, Group III (methyl chloroform)			0.00
(b) Annex C, Group I (HCFCs)			5.90
(c) Annex E (methyl bromide)			0.00
		Total:	5.90
(d) Annex F (HFCs) (CO_2-eq tonnes) as per Article 7			1,822,104
Year of reported country programme implementation data:			2025
Amount approved for projects (as at June 2026) (US $):			5,037,365
Amount disbursed (as at December 2025) (US $):			3,812,204
ODS to be phased out (as at June 2026) (ODP tonnes):			280.8
ODS phased out (as at December 2025) (ODP tonnes):			268.7

5. Summary of activities and funds approved by the Executive Committee:

Summary of activities	**Funds approved (US $)**
(a) Investment projects:	1,780,976
(b) Institutional strengthening:	778,021
(c) Project preparation, technical assistance, training and other non-investment projects:	2,478,368*
Total:	5,037,365
(d) HFC activities funded from additional voluntary contributions	0

* Includes US $150,000 for HFC enabling activities

Progress report

6. During phase IX of its institutional strengthening project, Oman continued implementation of the Montreal Protocol; ratified the Kigali Amendment and initiated preparatory activities; maintained its licensing and quota system for controlled substances; coordinated with Customs authorities to monitor imports and prevent illegal trade; reported Article 7 and Country Programme data; and continued implementation of its HCFC phase-out management plan (HPMP). Oman also advanced preparations for a national refrigerant recovery, recycling and reclamation centre; supported competency certification for refrigeration and air-conditioning technicians; conducted awareness-raising activities; promoted women's participation; and continued participation in regional and international Montreal Protocol meetings. The country fully achieved five performance indicators, partially achieved one and did not achieve one during the current phase.

Plan of action

7. In the upcoming phase, Oman will continue to strengthen the implementation of the Montreal Protocol and the Kigali Amendment. Oman will update its legislative and regulatory framework; strengthen licensing and quota systems for controlled substances; reinforce cooperation with Customs to prevent illegal trade; and enhance monitoring and reporting of HCFCs and HFCs. The NOU will continue to oversee implementation of the HPMP and advance preparations for the HFC phase-down, while promoting refrigerant recovery, recycling and reclamation and professional certification of RAC technicians. Oman will also strengthen coordination with relevant institutions and the private sector; ensure timely Article 7 and Country Programme data reporting; continue awareness-raising and capacity-building activities; integrate gender considerations into project implementation; and maintain active participation in regional and international meetings of the Montreal Protocol.

Sustainability and risk assessment

8. The sustainability of the project's results will be supported by the well-established institutional integration of the National Ozone Unit (NOU) within the Environment Authority, following its transition from the Civil Aviation Authority, with clearly defined roles and responsibilities for the implementation of the Montreal Protocol and its amendments. Continued cooperation with relevant national, regional, and international stakeholders will further support effective coordination, knowledge exchange, and the continuity of project activities. The main identified risks relate to potential institutional changes, staff turnover, and evolving technical and reporting requirements. These risks will be mitigated through continued capacity building and training for NOU staff, particularly in relation to the Kigali Amendment and emerging reporting requirements, as well as strengthened communication and coordination between UNIDO and the NOU. Regular meetings and follow-up consultations will support timely implementation, help address emerging challenges, and contribute to the long-term sustainability of project results.

Annex II

DRAFT VIEWS EXPRESSED BY THE EXECUTIVE COMMITTEE ON RENEWAL OF INSTITUTIONAL STRENGTHENING PROJECTS SUBMITTED TO THE 99TH MEETING

Albania

1. The Executive Committee reviewed the report submitted with the request for the renewal of the institutional strengthening project for Albania (phase XII) and noted that the Government reported 2025 Article 7 data to the Ozone Secretariat and country programme data to the Fund Secretariat indicating that the country is in compliance with the Montreal Protocol phase-out schedule. The Committee noted that Albania has taken steps to phase out HCFC consumption and phase down HFC consumption; in particular, monitoring HCFC and HFC trade through the national ODS and HFC regulatory framework, allocation of quotas, and continued cooperation with customs authorities to improve the effectiveness of ODS and HFC regulations and ensure implementation of policies issued by the National Ozone Committee. The Committee also noted the activities undertaken to facilitate the implementation of the Kigali Amendment, including the approval of stage I of the Kigali HFC implementation plan. The Committee further noted the approval of stage III of the HCFC phase-out management plan for the complete phase-out of HCFCs by 2030. The Committee acknowledged the efforts of the Government of Albania and is therefore hopeful that, within the next three years, the country will continue implementation of stage III of the HCFC phase-out management plan, stage I of the Kigali HFC implementation plan and institutional strengthening project activities with success in order to achieve and sustain the required reductions in HCFC and HFC consumption and compliance with the Montreal Protocol.

Oman

2. The Executive Committee reviewed the report submitted with the request for the renewal of the institutional strengthening project for Oman (phase X) and noted with appreciation that the country reported 2025 country programme and Article 7 data to the Fund and Ozone Secretariats, respectively indicating that the country is in compliance with the Montreal Protocol. The Committee also noted with appreciation Oman's ratification of the Kigali Amendment on 8 November 2024 and the commencement of activities under the Kigali Amendment implementation preparatory plan. The Committee further noted the continued implementation of stage III of the HCFC phase-out management plan, including the operation of the national licensing and quota system, strengthened cooperation with customs authorities through the Bayan electronic system, and continued efforts to prevent illegal trade in controlled substances. The Committee noted progress in developing the national professional competency certification programme for refrigeration and air-conditioning technicians and establishing a refrigerant recovery, recycling and reclamation centre, as well as activities related to public awareness, stakeholder engagement and regional cooperation, and participation in regional and international Montreal Protocol meetings. The Committee acknowledged the efforts of the Government of Oman and is therefore hopeful that, within the next three years, the country will continue implementation of stage III of the HCFC phase-out management plan, activities supporting the implementation of the Kigali Amendment and institutional strengthening project activities with success, while strengthening its institutional and regulatory capacities in order to sustain compliance with the Montreal Protocol and its Kigali Amendment.

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

UNIDO WORK PROGRAMME AMENDMENTS

Presented to the 99th Meeting of the Executive Committee of the Multilateral Fund

Introduction

The UNIDO Work Programme (WP) for the consideration of the 99th Meeting of the Executive Committee (ExCom) of the Multilateral Fund (MLF) has been prepared following the requests to UNIDO from the Governments of countries eligible for the MLF funding as well as based on ongoing and planned activities. The WP will support the implementation of UNIDO's three-year Rolling Business Plan 2026-2028. The UNIDO WP for the 99th ExCom Meeting is addressing preparatory assistance and institutional strengthening requests.

Preparatory assistance for developing the Kigali HFC implementation plan (Stage I), is requested for Mauritania and Saudi Arabia.

Preparatory assistance funding for developing Stage II of HCFC Phase-out Management Plan is requested for Mauritania and for developing Stage III of HCFC Phase-out Management Plan is requested for Senegal.

Preparatory assistance funding for developing energy efficiency pilot projects under decision 94/60 is requested for Bangladesh, Ecuador, Jordan and Mexico.

Preparatory assistance funding for developing energy efficiency pilot projects under decision 95/87 is requested for Jordan.

Institutional strengthening extension requests are submitted based on the country requests for Albania and Oman.

The UNIDO Work Programme for the consideration of the 99th ExCom Meeting comprises the following:

- **Section 1**: Consolidated list of activities foreseen for the above requests by project types and country; and
- **Section 2**: Project concepts indicating details and funding requirements.

Funding is requested as follows:

- Preparatory assistance funding for developing Kigali HFC Implementation Plan (Stage I) for Mauritania and Saudi Arabia amounting to US$ 363,800 (including US$ 23,800 representing 7.0 % agency support costs);
- Preparatory assistance funding for developing Stage II and Stage III of HCFC Phase-out Management Plan is requested for Mauritania and Senegal amounting to US$ 21,400 (including US$ 1,400 representing 7.0 % agency support costs);
- Preparatory assistance funding for developing energy efficiency pilot projects under decision 94/60 for Bangladesh, Ecuador, Jordan and Mexico amounting to US$ 149,800 (including US$ 9,800 representing 7.0 % agency support costs);
- Preparatory assistance funding for developing energy efficiency pilot projects under decision 95/87 for Jordan amounting to US$ 10,700 (including US$ 700 representing 7.0 % agency support costs); and
- Institutional strengthening project for Albania and Oman amounting to US$ 483,446 (including US$ 31,628 representing 7.0 % agency support costs).

Total: US$ 1,029,146 (including US$ 67,328 agency support costs).

SECTION 1

Country	Type	Substance	Sector and Sub-Sector	Title of Project	Total amount USD	A.S.C.	Total (incl ASC) USD	A.S.C. %	P.D.
Funding for preparation of Kigali HFC Implementation Plan (Stage I)									
Mauritania[1]	PRP	HFC	Servicing	Preparation of Kigali HFC Implementation Plan (Stage I)	40,000	2,800	42,800	7%	24
Saudi Arabia[2]	PRP	HFC	Refrigeration	Preparation of KIP investment project in the refrigeration sector	80,000	5,600	85,600	7%	24
Saudi Arabia	PRP	HFC	Air-conditioning	Preparation of KIP investment project in the air-conditioning sector	80,000	5,600	85,600	7%	24
Saudi Arabia	PRP	HFC	PU Foam	Preparation of KIP investment project in the polyurethane foam sector	80,000	5,600	85,600	7%	24
Saudi Arabia	PRP	HFC	Fire fighting	Preparation of KIP investment project in the firefighting sector	60,000	4,200	64,200	7%	24
SUBTOTAL					**340,000**	**23,800**	**363,800**		
Funding for preparation of HCFC Phase-out Management Plans									
Mauritania[3]	PRP	HCFC	Servicing	Preparation of HCFC Phase-out Management Plan (Stage II)	10,000	700	10,700	7%	24
Senegal[4]	PRP	HCFC	Servicing	Preparation of HCFC Phase-out Management Plan (Stage III)	10,000	700	10,700	7%	24
SUBTOTAL					**20,000**	**1,400**	**21,400**		
Funding for preparation of energy efficiency pilot projects under decision 94/60									
Bangladesh	PRP	HFC	EEF	Preparation of energy efficiency pilot project 94/60	35,000	2,450	37,450	7%	24
Ecuador	PRP	HFC	EEF	Preparation of energy efficiency pilot project 94/60	30,000	2,100	32,100	7%	12

[1] Preparatory funding request for both countries are included in the lead agency Work Programme i.e. UNEP.
[2] Preparatory funding request is included in the lead agency Work Programme i.e. UNDP.
[3] Preparatory funding request is included in the lead agency Work Programme i.e. UNEP.
[4] Preparatory funding request is included in the lead agency Work Programme i.e. UNEP.

Country	Type	Substance	Sector and Sub-Sector	Title of Project	Total amount USD	A.S.C.	Total (incl ASC) USD	A.S.C. %	P.D.
Jordan	PRP	HFC	EEF	Preparation of energy efficiency pilot project 94/60	30,000	2,100	32,100	7%	12
Mexico	PRP	HFC	EEF	Preparation of energy efficiency pilot project 94/60	45,000	3,150	48,150	7%	24
SUBTOTAL					**140,000**	**9,800**	**149,800**		
Funding for preparation of energy efficiency pilot projects under decision 95/87									
Jordan	PRP	HFC	EEF	Preparation of energy efficiency pilot project 95/87	10,000	700	10,700	7%	12
SUBTOTAL					**10,000**	**700**	**10,700**		
Institutional Strengthening									
Albania	INS	All	SEV	Institutional strengthening project	270,408	18,929	289,337	7%	36
Oman	INS	All	SEV	Institutional strengthening project	181,410	12,699	194,109	7%	36
SUBTOTAL					**451,818**	**31,628**	**483,446**		
GRAND TOTAL					**961,818**	**67,328**	**1,029,146**		

SECTION 2

PROJECT CONCEPT – BANGLADESH

MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

ENERGY EFFICIENCY EXCOM DECISION 94/60 (EE) PROJECT PREPARATION (PRP)

Part I: Project information

Project title:	**Preparatory assistance for the Energy Efficiency Project in the Refrigeration and Air-Conditioning Sector**	
Country:	**Bangladesh**	
Lead implementing agency:	**UNIDO**	
Implementation period for stage RPR EE:	**24 months**	
Duration of PRP implementation (i.e., time (in months) from the approval of PRP to submission of the project proposal (please specify): 24 months		
Funding requested:		
Agency	**Sector**	**Funding requested (US $)***
UNIDO	**INV - Others**	**35,000.00 USD**

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

Item	Yes	No
Official endorsement letter from Government, indicating the specifying roles of respective agencies (where more than one IA is involved)	☒	☐

A. Information required for PRP funding request for investment projects/sector plans as part of Energy Efficiency Funding Window

1. Agency:	UNIDO
2. Sector:	Refrigeration, Air-Conditioning
3. HFC consumption in item #2 reported under country programme data?	☒ **Yes**, please specify reported amount and year: 2024 ☐ **No**
4. Does the enterprise commit to phase out the HFC consumption associated with the proposed investment project, if approved by the Executive Committee?	☐ **Yes**, please provide support letter ☐ **No** ☒ **N/A**
5. If the project preparation is requested in advance of the KIP, did the Government provide a written commitment that the consumption associated with these investment projects, once approved, will be deducted from the country's starting point, once established?	☐ **Yes** ☐ **No** ☒ **N/A**
6. Please explain briefly how the investment project would relate to the overarching strategy for the country, and when the final KIP will be submitted (decision 87/50(e))	The project will significantly contribute to the energy efficiency improvement in air-conditioning and refrigeration manufacturing and service sectors in Bangladesh and the region.
7. Background information	

Bangladesh's Refrigeration and Air Conditioning (RAC) sector has been expanding rapidly over the past decade, driven by rising household incomes, urbanization, and increasing demand for cooling in both residential and commercial applications. Market studies project continued strong growth, with demand for air conditioners and refrigerators expected to at least double over the next 20–25 years. The Government of Bangladesh has initiated national efforts to guide this growth towards sustainable cooling, including the preparation of a National Cooling Action Plan (NCAP) and the progressive introduction of Minimum Energy Performance Standards (MEPS) for household appliances.

The RAC sector in Bangladesh consists of both a substantial local manufacturing base—covering refrigerators, freezers, and room air conditioners—and significant imports of higher-capacity commercial and industrial equipment. In parallel, the servicing sector plays a critical role, supporting both locally produced and imported equipment. As the Government strengthens MEPS requirements and moves to align them with international best practice, it is essential that domestic manufacturers upgrade production capabilities, adopt higher-efficiency refrigerants and components, and maintain competitiveness with global brands. Similarly, building national capacity to extend MEPS into commercial sectors, training technicians to guide consumers in selecting energy-efficient equipment, and raising consumer awareness on environmentally friendly technology will be central to ensuring long-term sustainable market transformation.

As of August 2025, a total of over 20 key manufacturers across Domestic Refrigeration, Commercial Refrigeration, Residential and Commercial Air Conditioning subsectors have been identified for participation in this project. A brief overview of these companies is provided below. In addition, several medium-sized refrigerator and RAC assemblers already applying MEPS labels to their equipment will be further assessed for eligibility during the preparatory phase.

A. Residential AC: Bangladesh's Residential AC sector includes 13 key companies, with a mix of large-scale domestic manufacturers and joint ventures with international brands.

1. **Walton Hi-Tech Industries PLC:** Founded in 1977, Walton is Bangladesh's largest home-appliance manufacturer headquartered in Gazipur, operating dedicated RAC production alongside other product lines. Current models primarily use HFC-32, with selected units adopting HC-290 and legacy models using R-410A. Walton is fully Bangladeshi-owned, employs over 30,000 people according to company disclosures, and exports to 40+ countries.
2. **Singer Bangladesh Ltd (Arçelik Group):** With a heritage dating back to 1905 and majority ownership by Arçelik (Turkey), Singer assembles and markets RACs nationwide. Product lines include inverter/non-inverter splits. The company operates a large retail footprint and benefits from international technology transfer, supporting sustainable refrigerant transitions.
3. **Fair Electronics Ltd (Samsung JV):** Established in 2017 in partnership with Samsung, Fair operates a modern facility producing Samsung-branded RACs. Its residential AC lines predominantly use HFC-32, with some earlier models using R-410A. As a licensed JV, Fair integrates high-efficiency components aligned with global OEM specifications.
4. **ElectroMart Ltd / Trade International Industries (Gree Bangladesh):** A long-standing partner of Gree, ElectroMart assembles and distributes Gree RACs domestically. The portfolio includes inverter splits transitioning from R-410A to HFC-32. The company maintains nationwide sales and after-sales networks, supporting market uptake of efficient RACs.
5. **Haier Bangladesh / Butterfly Group:** Through local partnership, Haier RACs are manufactured/assembled in Bangladesh. Newer residential split models primarily use HFC-32, while legacy stock may include R-410A. The collaboration brings OEM process control and energy-efficiency features into local production.
6. **Jamuna Electronics & Automobiles Ltd:** A major local appliance producer manufacturing RACs for the domestic market. Current product literature indicates R-410A and HFC-32 models, with a gradual shift toward higher-efficiency refrigerant platforms. Jamuna's nationwide channels support broad consumer reach.
7. **Minister Hi-Tech Park Electronics Ltd:** A fast-growing Bangladeshi brand producing split RACs at its manufacturing park. Published specifications show R-410A on established lines, with HFC-32 adoption expanding in new launches. Minister's in-house capabilities and retail coverage position it well for MEPS-driven upgrades.

8. **Vision (PRAN-RFL Group):** Part of PRAN-RFL, Vision offers locally produced/assembled RACs serving mass-market needs. Portfolio information indicates R-410A and HFC-32 offerings, with continued movement toward higher-efficiency products.
9. **Elite Hi-Tech Industries Ltd:** A Bangladeshi RAC assembler supplying split units to the domestic market. Publicly available information shows predominant R-410A usage, with HFC-32 introduction underway. Elite previously received Multilateral Fund support under Bangladesh's HPMP, strengthening readiness for future initiatives.
10. **Supreme Air-Conditioning Co.:** A local producer/assembler active across residential and light-commercial AC. Product lines have R-410A models with progressive HFC-32 rollout. Supreme previously benefited from HPMP support, demonstrating capacity to align with sustainable refrigerant transitions.
11. **AC Bazar Industries Ltd:** A domestic assembler and supplier of RACs. The company offers entry-level and mid-range split models using R-410A and HFC-32. AC Bazar's prior involvement under Bangladesh's HPMP indicates experience with Montreal Protocol compliance.
12. **Simplex Corporation:** Local assembler/distributor serving residential AC demand with value-segment offerings. Public information points to R-410A models and increasing availability of HFC-32 variants.
13. **Transcom:** A diversified Bangladeshi group distributing/assembling international RAC brands (e.g., Japanese/other OEMs). Market listings show R-410A and HFC-32 models in the residential segment, supported by nationwide service coverage.

B. Domestic Refrigeration: Bangladesh's Domestic Refrigeration sector comprises 7 prominent companies specializing in the production of refrigerators and freezers:

1. **Walton Hi-Tech Industries PLC:** Walton began domestic refrigerator and freezer production in the early 2000s at its Gazipur facilities and is the largest producer in Bangladesh. The company operates multiple production lines manufacturing refrigerators, freezers, and beverage/display coolers. Walton primarily uses R-600a for domestic refrigerators and freezers, while HFC-134a remains in use for some display coolers. Walton is fully Bangladeshi owned.
2. **Singer Bangladesh Ltd (Arçelik Group):** Singer has been active in refrigerator manufacturing and assembly for several decades, with operations strengthened after its acquisition by Turkey's Arçelik. Its refrigerator production lines primarily use R-600a refrigerant. Singer benefits from international technology transfer through Arçelik and is positioned to support future energy efficiency initiatives.
3. **Fair Electronics Ltd (Samsung JV):** Established in 2017 as a joint venture with Samsung, Fair Electronics manufactures refrigerators and freezers at its state-of-the-art plant in Narsingdi. Its lines predominantly use R-600a. As part of Samsung's global production network, Fair Electronics integrates advanced efficiency and refrigerant technologies consistent with international best practice.
4. **ElectroMart Ltd / Trade International Industries:** A long-standing Bangladeshi company, ElectroMart assembles and distributes refrigerators and freezers under the Gree and Konka brands. The company's refrigerator lines primarily use R-600a refrigerant. ElectroMart has a significant retail and after-sales presence, enhancing its role in the domestic refrigeration market.
5. **Jamuna Electronics & Automobiles Ltd:** A major local producer, Jamuna manufactures refrigerators, chest freezers, and upright freezers at its production facilities. Current lines use R-600a refrigerant. Fully Bangladeshi-owned, Jamuna has expanded rapidly to serve the growing domestic market.
6. **Minister Hi-Tech Park Electronics Ltd:** Minister manufactures refrigerators and freezers as part of its broad home appliance portfolio. Production lines primarily use R-600a refrigerant. Minister has been expanding production capacity in recent years and participates actively in Bangladesh's domestic refrigeration market.

7. **Vision (PRAN-RFL Group):** Vision is part of the PRAN-RFL Group and manufactures refrigerators and freezers in Bangladesh. Its lines predominantly use R-600a refrigerant, consistent with national market trends. Vision benefits from PRAN-RFL's strong retail distribution channels, ensuring wide consumer reach.

Current Status of MEPS in Bangladesh

- Residential Air Conditioners (RAC): SREDA Standard and Labelling (Appliances & Equipment) Regulation-2018: This regulation is a key policy instrument that sets the framework for prescribing MEPS and labeling appliances based on their energy efficiency. The goal is to provide consumers with information to make informed, energy-efficient choices. MEPS and labelling for RAC units are already established under Bangladesh Standards and Testing Institution (BSTI). However, enforcement remains weak due to the absence of a robust monitoring, reporting, and verification (MRV) framework. The current standards include EER (Energy Efficiency Ratio) and have been updated to reflect SEER (Seasonal Energy Efficiency Ratio) in line with international practice. Energy Efficiency and Conservation Master Plan (EECMP): This master plan, which guides the country's energy efficiency initiatives, includes the promotion of an "EE Labeling Program" to target energy-consuming equipment in residential and commercial sectors
- Domestic Refrigerators: MEPS and labelling for domestic refrigerators and freezers are established and implemented by BSTI. Similar to RAC, the system lacks a comprehensive MRV mechanism to ensure compliance across the market.

Challenges and Opportunities

Improving energy efficiency in Bangladesh's refrigeration and air conditioning (AC) sector faces a complex set of challenges, spanning policy, economics, and consumer behavior. While the government has established a regulatory framework through bodies like the Sustainable and Renewable Energy Development Authority (SREDA) and the Bangladesh Standards and Testing Institution (BSTI), significant barriers impede widespread adoption of more efficient technologies.

- **Policy and Regulatory Challenges**
    - Enforcement of Standards: While Minimum Energy Performance Standards (MEPS) and labeling regulations exist, a key challenge is the consistent and rigorous enforcement of these rules. BSTI is responsible for monitoring the market and phasing out non-compliant products, but this can be a difficult and resource-intensive task.
    - Weak Auditing and Monitoring: For the industrial and commercial sectors, there is a need for proper enforcement of energy audit regulations. Simply generating data on energy use is not enough; there's a need for a system that sets clear, verifiable energy-saving targets and prescribes corrective measures for underperforming businesses.
    - Competing Priorities: The government often faces competing pressures in the power sector, with a primary focus on expanding generation capacity and improving transmission and distribution systems. Energy efficiency, while crucial for demand management and energy security, can sometimes take a secondary role.
- **Institutional Challenges**
    - Limited Capacity: SREDA and other government bodies responsible for promoting energy efficiency may face capacity constraints, including limited funding and a need for more trained personnel to conduct awareness campaigns, energy audits, and market monitoring.
    - Data and Information Gaps: There can be a lack of reliable data on the energy consumption patterns of different appliances and sectors. This makes it difficult to set effective, evidence-based policies and measure the success of energy efficiency initiatives.
- **Technical and Market Challenges**
    - High Upfront Costs: Energy-efficient appliances, particularly those with advanced technologies like inverters, are generally more expensive than their less-efficient counterparts. For many

consumers, especially in a developing economy with rising inflation, the initial cost is a major barrier to purchasing a new, efficient appliance.

- Inadequate Incentives: While there is a recognized need for financial incentives to accelerate the transition to efficient appliances, such programs (like low-interest loans, subsidies, or preferential taxation) are not always robust or widely available. In some cases, government policies, like higher import duties on inverter compressors, can even make efficient appliances more expensive.
- Lack of Competitive Market: The market may not have a wide range of high-quality, efficient products, and there can be information asymmetry where consumers are not aware of the true energy performance of different brands.
- Imported vs. Locally Manufactured Products: A significant portion of the appliance market relies on imported components or completely built-up units. Ensuring that these products meet local efficiency standards and are not being "dumped" in the market is an ongoing challenge.

- **Awareness and Behavioural Challenges**
  - Low Consumer Awareness: Despite the existence of energy labels, many consumers in Bangladesh lack a proper understanding of what the ratings mean and how they translate into long-term savings. The immediate focus is often on the purchase price, not the lifetime operating cost.
  - Wastage and Inefficient Use: Even when people purchase efficient ACs or refrigerators, they may not use them in an energy-conscious manner. For example, some people set AC temperatures to very low levels (e.g., below 25°C) without realizing the significant impact on energy consumption.
  - Cultural and Social Norms: In some segments of society, there's a limited demand for chilled or frozen food, especially in the fishery, livestock and dairy sectors. This affects the business case for investing in energy-efficient cold chain solutions and infrastructure.

Bangladesh has significant opportunities to improve energy efficiency in its refrigeration and air conditioning sector, which can help address energy shortages, reduce import bills, and mitigate climate change. The main opportunities lie in a conducive policy environment, technological adoption, and consumer behavior change.

- **Policy and Regulatory Framework**
  - Climate Leadership: With its export to more than 40 countries, Bangladesh can demonstrate its commitment to climate action by taking the lead in energy efficiency in the region.
  - Bangladesh has established the Sustainable and Renewable Energy Development Authority (SREDA) as the lead agency for promoting energy efficiency. This provides a strong institutional foundation. The country's Energy Efficiency and Conservation Master Plan (EECMP) sets clear targets, aiming to reduce energy intensity by 20% by 2030. The following are key opportunities stemming from this framework:
  - Enforcement of MEPS and Labeling: The existing Minimum Energy Performance Standards (MEPS) and labeling regulations (managed by BSTI) can be strictly enforced to phase out low-efficiency appliances from the market. This creates a market for better products and ensures consumers can make informed decisions.
  - Green Building Codes: Implementing and enforcing a robust green building code can significantly reduce the need for mechanical cooling in new constructions. This includes promoting passive cooling design, such as proper insulation, reflective roofing, and natural ventilation, which are highly effective in Bangladesh's climate.

- **Technological Advancement**
  - The market is shifting towards more efficient technologies, offering a significant opportunity for Bangladesh to leapfrog older, inefficient systems.

- Inverter Technology: Promoting the use of inverter technology in ACs and refrigerators is a major opportunity. Inverter compressors adjust their speed to match the cooling load, leading to substantial energy savings compared to conventional, single-speed compressors.
- Natural Refrigerants: Bangladesh can transition to refrigerants with lower Global Warming Potential (GWP), in line with the Kigali Amendment to the Montreal Protocol. This not only improves energy efficiency but also contributes to global climate goals.
- Local Manufacturing and R&D: Encouraging local manufacturers to produce high-efficiency, energy-saving appliances will reduce import reliance and stimulate local economic growth. The government can provide R&D grants to facilitate the development of new, efficient cooling technologies tailored to the local market.

- **Economic Benefits and Market Transformation**
  - Promoting energy-efficient appliances can stimulate local manufacturing, create jobs, and reduce the cost of electricity for consumers. As the government of Bangladesh has begun to promote energy efficiency through standards and labelling, companies have invested heavily in modernizing their production facilities to meet the growing demand for higher-efficiency products. For example, to manufacture inverter compressors, which are crucial for energy-efficient cooling, companies can expand their factories and invested in new machinery. This expansion directly translates into new job opportunities for technicians, engineers, and factory workers, as well as a wider ecosystem of suppliers and distributors. The widespread adoption of energy-efficient appliances directly benefits consumers by lowering their electricity bills. An energy-efficient refrigerator, for instance, can consume 60% less energy than a conventional one. For a typical household in Bangladesh, this can result in savings of several hundred Taka per month, which adds up to substantial savings over the appliance's lifespan. These savings can then be used by households for other expenses, boosting the local economy.
  - Cold Chain Development: Improving the energy efficiency of the commercial cold chain (refrigerated trucks, warehouses, and retail refrigeration) is a huge opportunity to reduce food waste and save a significant amount of energy, which is particularly relevant for the agricultural sector. This also supports the growth of the economy by improving food security and reducing post-harvest losses.
  - Public Awareness Campaigns: Large-scale campaigns can educate consumers about the direct link between appliance efficiency, electricity bills, and environmental impact. The focus should be on explaining how higher-rated appliances, despite their initial cost, provide a positive return on investment through lower electricity bills over their lifetime

Project Objectives

This preparatory project aims to lay the groundwork for strengthening energy efficiency in Bangladesh's RACHP sector by:

1. **Data Collection and Verification:** Gather and verify data on the current market landscape, energy consumption patterns, imported equipment, and existing appliance stock, including the servicing sector, to inform policy development and future interventions.
2. **Awareness Raising and Sensitization:** Provide comprehensive information to key stakeholders, including government officials, industry representatives, and technicians on energy efficient technologies in both the residential and commercial sectors, as well as on MEPS implementation, enforcement, and monitoring.
3. **Project Document Development:** Prepare a comprehensive project document outlining a detailed roadmap for enhancing energy efficiency in the sector, including technical assistance, financial mechanisms, and policy recommendations while phasing down HFCs.

Expected Outcome

The primary outcome of this project is to deliver a comprehensive and evidence-based project document that serves as a blueprint for synergistic activities in implementing energy efficiency projects while phasing down HFCs to achieve the highest energy efficiency levels in Bangladesh’s RACHP manufacturing sector. This document will be instrumental in securing additional funding and guiding the implementation of comprehensive

energy efficiency measures, ultimately leading to the following:

- **Clear Roadmap for Energy Efficiency:** The project document will provide a detailed action plan, encompassing technical assistance, financial mechanisms, and policy recommendations tailored to the specific needs and challenges of the Bangladeshi RAC sector.
- **Enhanced Manufacturing Practices:** By implementing the highest energy efficiency standards, the RAC manufacturing sector in Bangladesh will experience a significant transformation, producing appliances with superior energy performance so that the government can progressively advance current MEPS for domestic appliances and to develop MEPS for commercial air conditioning and refrigeration appliances.
- **Reduced Energy Consumption and Emissions:** The widespread adoption of energy-efficient RAC equipment will result in substantial energy savings at both the household and commercial buildings; yielding significant national levels energy savings. This in turn will contribute to reduced greenhouse gas emissions and a more sustainable energy landscape.
- **Strengthened Local Capacity:** The project activities, particularly the workshops, will empower national policymakers, private sector entities, and other stakeholders with the knowledge and skills necessary to drive energy efficiency improvements in the RAC sector.
- **Investment Attraction:** The well-structured project document, backed by robust collected data and analysis, will serve as a compelling tool for attracting additional funding from investors, enabling the scale-up of energy efficiency initiatives in Bangladesh.
- **Potential for Regional Impact:** Bangladesh's leadership in energy efficiency conversion through this project will create a path for regional impact through supporting neighbouring countries and exporting higher performance equipment by elaborating of the possible regional centre of excellency for the energy efficiency in Bangladesh.

Key Deliverables

In addition to the Project Document, the following key deliverables will contribute to achieving the project's overarching outcome:

- **Comprehensive Survey Data:** Detailed information on the energy efficiency levels of RAC products manufactured and imported in Bangladesh, providing a baseline for future improvements and calculating investment needed.
- **Technical Analysis and Gap Assessment:** Expert analysis of the survey data and identification of key gaps in technology, financing, and policy, including the absence of accredited national testing laboratories and limited MRV capacity, to guide the formulation of targeted interventions.
- **Capacity Building and Knowledge Transfer:** Successful completion of workshops, empowering stakeholders to actively contribute to the advancement of energy efficiency in the sector.

Project Activities

- **Data Collection and Analysis:** Collect and analyse data on the current market, imported equipment, potential beneficiaries, energy consumption patterns, appliance stock, and servicing sector practices to identify key challenges and opportunities.
- **Stakeholder Consultations:** Engage with industry representatives, government officials, and other relevant stakeholders to gather input and ensure broad support for the project document.
- **Awareness raising workshops:** Conduct targeted training sessions on MEPS compliance and best practices for energy-efficient RACHP equipment, targeting both manufacturers and importers, for relevant private and public sector stakeholders.
- **Project Document Development:** Prepare a comprehensive project document that outlines a clear roadmap for achieving energy efficiency goals in the sector.

Budget and Timeline

A detailed budget is outlined in the table below. The project duration is estimated to be 36months.

Conclusion

This preparatory project is essential for building the foundation for successful and sustainable energy efficiency interventions in Bangladesh's refrigeration, air-conditioning, and heat pump manufacturing sector. By investing in data collection and market landscape surveys, capacity building of stakeholders, and possibly building an energy efficiency centre of excellence in Bangladesh, the project can pave the way for significant energy savings, reduced emissions, and a more sustainable future for Bangladesh.

8. Activities to be undertaken for the preparation of the investment project and funding requested

Activity	Indicative funding (US $)	Bilateral/ implementing agency
Survey, Data Collection: Collect data on production capacities, production lines, refrigerant use, HFC consumption, and energy efficiency levels for participating local manufacturers, as well as market and servicing data for imported RACHP equipment. This will lay the foundation for feasibility studies and guide targeted investment strategies.	$5,000	UNIDO
Technical Feasibility Studies: Assess current systems and evaluate the potential to integrate energy-efficient technologies and low-GWP refrigerants for participating companies.	$5,000	UNIDO
Energy Efficiency cost estimation: Develop financing options for energy efficiency upgrades for each company, including potential partnerships with suppliers of additional components.	$5,000	UNIDO
Drafting of Energy Efficiency Project Document	$20,000	UNIDO
TOTAL	35,000	

PROJECT CONCEPT – ECUADOR

MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

FUNDING REQUEST FOR THE PREPARATION OF ENERGY EFFICIENCY PILOT PROJECT UNDER DECISION 94/60

Part I: Project information

Project title:	**Preparatory assistance for the Energy Efficiency Project in the Refrigeration Sector**	
Country:	**Ecuador**	
Lead implementing agency:	**UNIDO**	
Implementation period for stage RPR EE:	**12 months**	
Duration of PRP implementation (i.e., time (in months) from the approval of PRP to submission of the project proposal (please specify): 12 months		
Funding requested:		
Agency	**Sector**	**Funding requested (US $)***
UNIDO	**INV - REF**	**30,000.00 USD**

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

Item	Yes	No
Official endorsement letter from Government, indicating the specifying roles of respective agencies (where more than one IA is involved)	☒	☐

A. Information required for PRP funding request for investment projects/sector plans as part of Energy Efficiency Funding Window

1. Agency:	UNIDO
2. Sector:	Refrigeration
3. HFC consumption in item #2 reported under country programme data?	☒ **Yes**, please specify reported amount and year: 2025 ☐ **No**
4. Does the enterprise commit to phase out the HFC consumption associated with the proposed investment project, if approved by the Executive Committee?	☐ **Yes**, please provide support letter _____ ☐ **No** ☒ **N/A**
5. If the project preparation is requested in advance of the KIP, did the Government provide a written commitment that the consumption associated with these investment projects, once approved, will be deducted from the country's starting point, once established?	☐ **Yes** ☐ **No** ☒ **N/A**
6. Please explain briefly how the investment project would relate to the overarching strategy for the country, and when the final KIP will be submitted (decision 87/50(e))	The project will significantly contribute to the energy efficiency improvement in domestic and commercial self-contained refrigeration manufacturing in Ecuador and the region.
7. Background information	
Sector context and rationale Ecuador's refrigeration sector includes both a domestic refrigeration segment and a commercial self-contained refrigeration segment, which present different manufacturing, market, and regulatory conditions. The domestic segment is more structured in terms of product typology and national regulation, while the commercial self-contained refrigeration segment is more heterogeneous in equipment configuration, market structure, and manufacturing	

conditions. This distinction is relevant because the technical pathways for improving energy performance, and the regulatory conditions required to sustain such improvements, are different for the two segments.
For domestic refrigeration equipment, Ecuador has an established national framework through RTE INEN 009 (1R) and RTE INEN 035 (1R), which provide the basis for product conformity, energy performance, test methods, and labelling. However, while this framework provides a national basis for compliance, it is not yet fully comparable to the technical benchmarking and validation frameworks required for broader alignment with international standards and future market expansion. The enterprise indicates that, although it complies with the regulations and market requirements currently applicable to its products, additional strengthening will be required to align testing and validation capacity with standards such as IEC 62552:2015 and NOM-015.
In addition, the practical effect of the existing domestic framework is constrained by enforcement limitations. The enterprise identifies that limited market control over imported products reduces the effective application of MEPS, weakens the capacity of the existing framework to drive technological upgrading, and creates unequal competitive conditions in the market. Under these conditions, the market tends to align with minimum compliance rather than moving toward higher-efficiency differentiation.
The situation is different in the commercial self-contained refrigeration segment. Ecuador does not currently have an equivalent regulatory framework of comparable maturity for the energy performance of this category of equipment. In addition, part of the market is supplied through smaller-scale artisanal assembly of self-contained equipment with non-standardized configurations, which makes it more difficult to apply a uniform regulatory framework comparable to that used for domestic appliances. This has limited the development of a more structured MEPS-based approach for commercial self-contained refrigeration and makes future regulatory development more complex from both technical and market-enforcement perspectives

Industrial profile of INDURAMA
INDURAMA S.A. is the main industrial manufacturer in Ecuador's locally produced refrigeration sector. Established in 1972, the company operates its manufacturing plant in Cuenca, Ecuador, and employs approximately 1,400 workers. The enterprise manufactures both domestic and commercial self-contained refrigeration equipment locally, including top-mount domestic refrigerators, glass-door commercial display cabinets, and chest freezers. Its installed production capacity is approximately 175,000 units per year. Actual production reached 168,000 units in 2023, 166,000 units in 2024, and 193,000 units in 2025.

Its market orientation is predominantly domestic, with approximately 98 per cent of sales directed to the Ecuadorian market and 2 per cent to export markets. The company estimates that it holds around 50 per cent of the national top-mount refrigerator market and approximately 43 per cent of the overall national refrigeration market, considering all refrigeration categories. This market position is particularly relevant for the proposed project, as any improvement in the energy performance of INDURAMA's product portfolio would have a meaningful effect on the efficiency profile of locally manufactured equipment.

The enterprise operates two production lines, which converge into a common refrigerant charging and laboratory testing line. The manufacturing platform is semi-manual, with automated stages in polyurethane foaming, cabinet roll-forming and bending, and door injection. The assembly process also includes automatic line progression and a quality-control carousel in which products are tested prior to final packaging. The current assembly line was installed in 2015, with further upgrades in 2024, including improvements to vacuum pumps and automatic data-analysis systems, while the polyurethane foaming equipment dates from 2009. The existence of two integrated production lines is relevant because it allows the project to assess upgrading opportunities separately for the domestic refrigeration line and the commercial self-contained refrigeration line, while also considering shared process and testing requirements within the same industrial platform

The current product portfolio includes both domestic and commercial self-contained refrigeration equipment manufactured locally. Domestic refrigeration products are based on R-600a, while the commercial line is based on R-290. The domestic segment also shows a more structured basis for energy performance classification, while the commercial segment remains more heterogeneous in design and market conditions.

Previous technology conversion experience
INDURAMA has previous experience in implementing technology conversion processes under the framework of the Montreal Protocol and has received technical and financial assistance from the Multilateral Fund. The company previously benefited from support for the conversion of its foam system and for the transition of its refrigeration manufacturing processes from HFC-based technologies to hydrocarbon refrigerants.

Building on this experience, INDURAMA can pursue additional improvements in the performance of locally manufactured refrigeration equipment. With the refrigerant transition already advanced, further action can focus on improving energy performance through the optimization of key components and manufacturing processes, including compressors, heat exchangers, insulation systems, controls, and testing capacity.

Energy-efficiency baseline and technological opportunities

INDURAMA reports compliance with applicable minimum energy-performance requirements and operates an in-house testing laboratory. The enterprise reports that testing is currently carried out according to NTE INEN 2206 and NOM-022, depending on product type and destination market, and that certifications available include NTE INEN 22006, RETIQ, and RTS, depending on the type of equipment and country of destination. Over the last five years, the enterprise estimates that product energy performance has improved from COP 1.2 to COP 1.6, equivalent to an improvement of approximately 33 per cent.

At the same time, the enterprise reports that, although its current laboratory configuration is adequate for the regulations and markets in which it currently participates, it is not yet sufficient for broader alignment with international and external-market standards. For future market expansion, the company identifies the need for repowering and expanding testing capacity toward IEC 62552:2015 and NOM-015. This is a central point for the project, because it indicates that the current national compliance platform is not yet fully equivalent to the technical validation framework required for wider international comparability and future market expansion.

For the commercial self-contained refrigeration line, the enterprise currently relies on the applicable standards required for the markets in which those products are placed. This confirms that the company already has a testing and compliance basis for its current operations, but also that a broader upgrading strategy will require stronger testing and validation capacity to support future product improvement and external benchmarking.

The enterprise has also identified specific technological pathways for further efficiency improvement. These include the incorporation of compressors with COP 1.8, evaporators with UA-29, condensers with UA-21, improved thermal conservation through increased polyurethane insulation thickness, and further development of controls and connectivity features to support product optimization. These opportunities are relevant for both the domestic refrigeration line and the commercial self-contained refrigeration line, although their technical application and validation requirements may differ between the two categories, which reinforces the need for a differentiated assessment within the same manufacturing facility.

Economic and market barriers

The main barrier to improving the energy performance of locally manufactured refrigeration equipment is economic. The Ecuadorian market remains highly price-sensitive, and purchasing decisions are driven primarily by upfront cost rather than lifecycle operating savings. The enterprise reports an average production cost of USD 258.89 per unit and an average sales price of USD 352, while the technological improvements under consideration would imply an estimated 10 per cent increase in product cost. The company also indicates that the market does not currently recognize higher efficiency through a corresponding price premium. Under these conditions, the incorporation of higher-efficiency technologies faces structural commercial constraints even where technical opportunities are available.

Additional barriers arise from the dependence on imported enabling technologies, particularly compressors, electronic controls, and other components associated with higher-efficiency product platforms. This limits the manufacturer's ability to control costs, availability, and the pace of technological upgrading. The enterprise also identifies the need to strengthen engineering capacity in areas such as system-level optimization, polyurethane application, CFD-based analysis, and advanced simulation, in order to achieve efficiency gains through integrated redesign rather than through component substitution alone.

Regulatory framework for domestic and commercial self-contained refrigeration

Ecuador has an established regulatory framework for domestic refrigeration equipment through RTE INEN 009 (1R) and RTE INEN 035 (1R), which provide the basis for product conformity, energy performance, test methods, and labelling. However, while this framework provides a national basis for compliance, it is not yet fully comparable to the technical benchmarking and validation frameworks associated with broader international standards. In line with this, the enterprise indicates that its current laboratory configuration is adequate for the regulations and markets currently served, but that additional strengthening will be required to align testing and validation capacity with standards such as IEC 62552:2015 and NOM-015 for future market expansion.

At the same time, the effective application of the existing domestic framework is constrained by enforcement limitations. The enterprise indicates that limited post-market control over competing products, particularly imported equipment, reduces the ability of existing MEPS to function as effective drivers of market transformation, weakens

incentives to move beyond minimum compliance, and creates unequal competitive conditions for manufacturers investing in higher-efficiency technologies. Under these conditions, the presence of regulations alone does not necessarily ensure effective implementation or sustained improvement in product efficiency.
The situation is different in commercial self-contained refrigeration. Ecuador does not currently have an equivalent regulatory framework of comparable maturity for the energy performance of this category of equipment. In addition, part of the market is supplied through smaller-scale artisanal assembly of self-contained equipment with non-standardized configurations, which makes it difficult to apply a uniform framework comparable to that used for domestic appliances. This has limited the development of a more structured MEPS-based approach for commercial self-contained refrigeration and makes future regulatory development more complex from both technical and market-enforcement perspectives.

Project objectives
This preparatory project aims to lay the groundwork for improving energy performance in locally manufactured domestic and commercial self-contained refrigeration equipment in Ecuador by:

- **Data Collection and Verification:** Gather and validate data on the current market, enterprise profile, manufacturing configuration, product portfolio, testing practices, and technical opportunities for improving the energy performance of manufactured refrigeration equipment. The work will also assess current performance levels, identify relevant component-level and system-level opportunities, and estimate associated incremental costs, considering commercial factors and the characteristics of the Ecuadorian market.
- **Selection of Opportunities:** Identify and prioritize the most cost-effective options for improving the energy performance of INDURAMA's domestic and commercial self-contained refrigeration product lines, including opportunities related to compressors, heat exchangers, insulation systems, controls, and related manufacturing and testing requirements.
- **Review of Existing MEPS and Regulatory Framework:** Review the existing energy-efficiency and labelling requirements applicable to domestic refrigeration equipment in Ecuador, including the current regulatory framework and existing MEPS-related provisions, and assess the technical and market conditions for future regulatory development in the commercial refrigeration segment, where no equivalent framework is currently in force.
- **Project Document Development:** Prepare a comprehensive investment project document to improve energy performance in the refrigeration manufacturing sector in Ecuador, including the technical rationale, estimated costs, implementation requirements, and regulatory considerations relevant to future investment support under the Multilateral Fund.

Expected outcome
The primary outcome of this project is to deliver a comprehensive, evidence-based investment project document to improve energy performance in Ecuador's refrigeration manufacturing sector. The document will detail specific opportunities for enhancing energy performance in INDURAMA's domestic and commercial self-contained refrigeration product lines, including baseline information on current technical characteristics, identified upgrading options, and indicative costs for cost-effective technological improvements.

Key deliverables
In addition to the project document, the following deliverables will support the achievement of the project's objectives:

- **Comprehensive Baseline Data:** Detailed information on INDURAMA's manufacturing profile, product portfolio, current energy-efficiency performance, testing practices, market participation, and relevant production characteristics for domestic and commercial self-contained refrigeration equipment.
- **Technical Analysis and Gap Assessment:** Expert evaluation of the current product platforms and manufacturing configuration to identify gaps in technology, engineering capacity, testing capability, and financing, and to define targeted opportunities for improving energy performance.
- **Assessment of Cost-Effective Upgrading Options:** Identification and prioritization of feasible technological improvements, including high-efficiency compressors, optimized heat exchangers, improved insulation systems, enhanced controls, and related testing and validation requirements.
- **Technical Assistance to Review Existing MEPS and Regulatory Conditions:** Assessment of the existing domestic refrigeration energy-efficiency and labelling framework, including the applicable regulatory instruments, and analysis of the technical and market conditions relevant to future regulatory development in the commercial refrigeration segment.

- **Investment Project Document:** A complete project document setting out the baseline situation, identified opportunities, cost implications, implementation approach, expected benefits, and supporting justification for future investment support.

Project activities

- **Data Collection and Analysis:** Collect and analyse data of INDURAMA, including product categories, production characteristics, refrigerant use, current energy-efficiency levels, key components, testing practices, and market participation in domestic and commercial self-contained refrigeration. The activity will also include a review of the existing regulatory framework applicable to domestic refrigeration equipment, including existing energy-efficiency and labelling provisions, and an assessment of the regulatory and market conditions affecting the commercial self-contained refrigeration segment.
- **Technical Assessment and Stakeholder Consultations:** Assess the current product platforms and manufacturing configuration to identify feasible options for improving energy performance in locally manufactured domestic and commercial self-contained refrigeration equipment. This will include the evaluation of higher-efficiency components and system improvements, such as compressors, heat exchangers, insulation systems, controls, and related testing requirements, as well as consultations with the beneficiary enterprise and relevant national counterparts to validate findings and align the scope of the proposed intervention.
- **Project Document Development:** Prepare the investment project document, including the technical baseline, identified upgrading opportunities, assessment of technical feasibility, indicative costs, implementation requirements, and the review of existing MEPS and regulatory conditions relevant to the proposed intervention.

Budget and Timeline

A detailed budget is outlined in the table below. The project duration is estimated to be 12 months.

8. Activities to be undertaken for preparation of the investment project and funding requested

Activity	Indicative funding (US $)	Bilateral/implementing agency
Data Collection and Analysis: Collect and analyse data on the current manufacturing profile of the beneficiary enterprise, including product categories, production characteristics, current energy-efficiency levels, key components, testing practices, market participation, and the existing regulatory framework applicable to domestic refrigeration equipment.	$10,000	UNIDO
Technical Assessment and Stakeholder Consultations: Assess the current product platforms and manufacturing configuration in order to identify feasible options for improving energy performance in locally manufactured domestic and commercial self-contained refrigeration equipment, including compressors, heat exchangers, insulation systems, controls, and related testing requirements; and conduct consultations with the beneficiary enterprise and relevant national counterparts to validate findings and refine the scope of the proposed intervention.	$12,000	UNIDO
Project Document Development: Prepare the investment project document, including the technical baseline, identified upgrading opportunities, assessment of technical feasibility, indicative costs, implementation requirements, and the review of existing MEPS and regulatory conditions relevant to the proposed intervention**.**	$8,000	UNIDO
TOTAL	**30,000**	

PROJECT CONCEPT – JORDAN

MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

FUNDING REQUEST FOR THE PREPARATION OF ENERGY EFFICIENCY PILOT PROJECT UNDER DECISION 94/60

Part I: Project information

Project title:	**Preparatory assistance for Advancing Energy Efficiency Project in the Refrigeration and Air-Conditioning Sector**	
Country:	**Hashemite Kingdom of Jordan**	
Lead implementing agency:	**UNIDO**	
Implementation period for stage RPR EE:	**12 months**	
Duration of PRP implementation (i.e., time (in months) from the approval of PRP to submission of the project proposal (please specify): 12 months		
Funding requested:		
Agency	**Sector**	**Funding requested (US $)***
UNIDO	**INV - Others**	**30,000 USD**

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

Item	Yes	No
Official endorsement letter from Government, indicating the specifying roles of respective agencies (where more than one IA is involved)	☒	☐

A. Information required for PRP funding request for investment projects/sector plans as part of Energy Efficiency Funding Window

1. Agency:	UNIDO
2. Sector:	Refrigeration, Air-Conditioning
3. HFC consumption in item #2 reported under country programme data?	☒ **Yes**, please specify reported amount and year: 2025 ☐ **No**
4. Does the enterprise commit to phase out the HFC consumption associated with the proposed investment project, if approved by the Executive Committee?	☐ **Yes**, please provide support letter ☐ **No** ☒ **N/A**
5. If the project preparation is requested in advance of the KIP, did the Government provide a written commitment that the consumption associated with these investment projects, once approved, will be deducted from the country's starting point, once established?	☐ **Yes** ☐ **No** ☒ **N/A**
6. Please explain briefly how the investment project would relate to the overarching strategy for the country, and when the final KIP will be submitted (decision 87/50(e))	Stage I of Jordan's KIP (decision 93/84), which will reduce HFC consumption by 54% from the HFC baseline by 2030. Stage I converts RAC manufacturers to low-GWP refrigerants, and the Government has committed to ban the manufacture and import of HFC-based domestic refrigeration equipment once those conversions are complete. The proposed energy efficiency project will build on these conversions. In addition, Jordan has approved its National Cooling Action Plan that further strengthens their cooling policy and regulatory framework to strengthen MEPS and enable the transition towards lower GWP refrigerants.

7. Background information

1-Background

Electricity demand in Jordan is mainly driven by cooling. The residential sector is the largest electricity consumer, with 49% of national consumption in 2020, and more than 60% of household energy is used for space cooling. Around 60–80% of new homes and 70–95% of new offices, supermarkets, healthcare facilities and hotels are fitted with air conditioning, and an additional 2.5 million ACs are expected to be installed by 2050. Electricity demand has grown by about 4.3% annually since 2018 and is projected to reach 3.5–4% a year to 2040. Demand for the cold chain is also rising, with 22% of domestically grown fruit and vegetables currently lost along the supply chain but also providing export opportunities to the country.

Air conditioning and commercial refrigeration account for around 4% of Jordan's GHGs emissions. Many systems in use have low energy efficiency, so raising the efficiency of new equipment, alongside the HFC phase-down under the Kigali Amendment, offers significant climate mitigation potential.

Jordan has a solid regulatory base for energy efficiency. The Jordan Standards and Metrology Organization (JSMO) issues MEPS which currently cover five appliance categories of which 3 are for cooling, with efficiency levels matching the EU's:

- Domestic refrigeration: mandatory MEPS and labels based on the EU eco-design and labelling regulations and are currently being upgraded to the most recent ones. The revision is at the final stage of JSMO Board approval.
- Room ACs up to 2 tons (about 7 kW): mandatory MEP based on the 2013 EU level (Regulations 206/2012 and 626/2011) and a review process is being initiated.
- ACs above 2 tons, VRF, chillers and commercial refrigeration: no mandatory MEPS, however, voluntary AHRI-based standards are being drafted. There is an interest to develop mandatory MEPS for this category.

MEPS are enforced through market surveillance and border controls with Customs. The Ministry of Energy and Mineral Resources exempts higher energy-efficiency equipment from customs duties and applies a zero general sales tax rate. Local manufacturers of domestic refrigerators, commercial refrigeration equipment and residential ACs have been converting under KIP, making them eligible for support to go beyond current MEPS under the operational framework of decision 94/60.

2-Barriers to Energy Efficiency

- Limited scope of current MEPS which are either outdated or absent. MEPS for room AC are still based on the 2013 EU level and give manufacturers little push to improve efficiency, while there are no mandatory MEPS for commercial refrigeration (display cabinets, cold rooms, cold chain) or for ACs above 2 tons, VRF systems and chillers. A national technical committee is drafting voluntary AHRI-based standards, but the choice of reference standard (AHRI, EN 14511/Eurovent or ISO) has not been settled.
- Limited testing capacity with the Royal Scientific Society of Jordan running the only independent accredited laboratory, which covers household ACs. A refrigeration laboratory is under construction. There is no national testing capacity for commercial refrigeration or larger AC systems, so compliance relies on international certification. Local biggest manufacturer Petra has testing capacity.

- High incremental costs of efficient designs that would require more expensive components (inverter compressors, improved heat exchangers, controls) and production line changes. It is also unclear whether fiscal incentives will extend to commercial refrigeration and AC equipment.

3-Problem Statement

Demand for cooling in Jordan is rising quickly, but local manufacturers have limited incentive to produce equipment above current MEPS. Without support for the incremental cost of high-efficiency designs, manufacturers cannot move ahead of the market, and the government cannot tighten MEPS without risking harm to local industry.

The preparatory assistance will collect the enterprise-level and market data needed to prepare a full project under decision 94/60. That full project will help the participating enterprises produce equipment well above current MEPS and support a government commitment to raise MEPS at the end of the project, through technical regulations for household products and voluntary standards for commercial products initially.

4-Project Objectives

This preparatory assistance aims to prepare a full energy efficiency project under decision 94/60, ready to submit to the Executive Committee. To do this, it will collect enterprise and market data, agree target efficiency levels and costs with each enterprise, and consult JSMO and other stakeholders.

The full project will then aim to raise the energy efficiency of appliances in the domestic refrigeration, commercial refrigeration, chest freezer, and the residential AC manufacturing sectors. The expected impact of the project in emissions mitigation will be calculated. The project will also result in the optimization of MEPS in these sectors to levels equivalent to the targeted EE levels.

The full project covers domestic refrigeration, commercial refrigeration, chest freezers, and residential air conditioning manufacturing sub-sectors and targets 4 (or more) enterprises, which have expressed interest in participating and all are reported as eligible for KIP and EE activities. Eligibility for energy efficiency incentives under decision 94/60 will be confirmed during project preparation for other interested enterprises, which are not converting under stage I of the KIP. Three of these enterprises (PHC, M. Abu Haltam and Abdin) are beneficiaries of the stage I KIP conversion project. In refrigeration, they account for about 45% of annual sales of around 220,000 units. The KIP preparation identified 5 domestic refrigeration manufacturers and 22 commercial refrigeration manufacturers, 20 of them SMEs. In room AC, the two participating enterprises account for about 64% of annual sales of around 120,000 units; the KIP identifies five residential AC manufacturers.

- **Privatization Holding Company (PHC):** Incorporated in 2014 and 95% Article 5-owned, PHC manufactures domestic refrigerators and room air conditioners. Its eligible production averaged 65,000 units a year over the last three years (capacity 100,000 units), of which about 15% was exported. Under stage I of the KIP, its residential AC line is being converted to HFC-32. It now uses R-600a and R-32.
- **M. Abu Haltam Group for Investments:** Incorporated in 1993 and fully locally owned, the company manufactures domestic refrigerators and room air conditioners. Its eligible production averaged 58,600 units a year (capacity 100,000 units), of which about 10% was exported. It currently uses R-410A and R-134a and is converting its refrigeration line to R-600a and its AC line to HFC-32 under stage I of the KIP.
- **Abdin Company:** Incorporated in 1974 and fully locally owned, the company manufactures refrigeration equipment. Its eligible production averaged 5,600 units a year (capacity 10,000 units), of which about 25% was exported. It is being converted under stage I of the KIP from consumption of HFC-134a and R-404A to fully R-600a and R-290.
- **Mohammed Tahseen Baalbaki & Partners Company:** Incorporated in 1977 and fully locally owned, the company manufactures refrigeration equipment. Its eligible production averaged 35,800 units a year (capacity 50,000 units), of which about 5% was exported. It uses R-134a and R-404A (quantities to be confirmed) and plans to move to R-600a for small refrigerators and R-290 for large units.

Current energy efficiency levels for the two refrigeration manufacturers, and production line details for all four enterprises, will be established during project preparation.

The full project proposal to be developed with this preparation funding will:

- Develop a comprehensive updated market analysis concerning electricity consumption and cooling to feed into the decision making concerning this area and business strategies of companies
- Help the participating enterprises make refrigerators and ACs that perform well above current MEPS, using the low-GWP refrigerants adopted under the KIP.
- Cover part of the extra cost of efficient components and production line changes to make it easier for local enterprises to transition to higher energy efficiency.
- Invest in quality assurance infrastructure and support the production of high-efficiency systems to drive economic growth.

- Support JSMO in updating MEPS, so that the Government can commit to higher MEPS at the end of the project.
- Provide technical assistance on product design and the safe use of flammable refrigerants.

5-Expected Outcomes

Implementing the full project will lead to the following outcomes:

- More efficient refrigerators and ACs made in Jordan, using less electricity.
- More efficient, low-GWP equipment available on the local market.
- Local manufacturers better able to design, make and test efficient equipment, helping to sustain the KIP conversions.
- Energy savings and emission reductions calculated for each enterprise.

6-Key Deliverables of the preparatory assistance

- Enterprise data that covers production lines, models, refrigerants and current energy performance for each enterprise, checked through site visits.
- Technical and cost assessment to identify target efficiency levels, changes needed on each production line, and their extra costs.
- Full project proposal under decision 94/60 ready to submit to the Executive Committee, with the Government's commitment to raise and develop MEPS.

7-Preparatory Assistance Activities

- Technical assistance and capacity building consultations focused on the needs for upgrading production lines and integrating energy-efficient technologies.
- Data collection and project proposal writing: Work with interested enterprises, collect relevant data for full energy efficiency project document, and finalizing the proposal for submission.

9. Activities to be undertaken for preparation of the investment project and funding requested

Activity	Indicative funding (US $)	Bilateral/implementing agency
Collect data on energy efficiency landscape in the country	10,000	UNIDO
Conduct consultation workshops focused on upgrading production lines and integrating energy-efficient technologies.	10,000	
Prepare a full proposal for energy efficiency in room air conditioning and refrigeration in Jordan under 94/60 operational framework	10,000	
TOTAL	**30,000**	

PROJECT CONCEPT – MEXICO

MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

FUNDING REQUEST FOR THE PREPARATION OF ENERGY EFFICIENCY PILOT PROJECT UNDER DECISION 94/60

Part I: Project information

Project title:	**Preparation project for energy efficiency - Refrigeration Sector**	
Country:	**Mexico**	
Lead implementing agency:	**UNIDO**	
Implementation period for stage RPR EE:	**24 months**	
Duration of PRP implementation (i.e., time (in months) from the approval of PRP to submission of the project proposal (please specify): 36 months		
Funding requested:		
Agency	**Sector**	**Funding requested (US $)***
UNIDO	**INV - REF**	**$45,000**

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

Item	Yes	No
Official endorsement letter from Government, indicating the specifying roles of respective agencies (where more than one IA is involved)	☒	☐

A. Information required for PRP funding request for investment projects/sector plans as part of Energy Efficiency Funding Window

1. Agency:	UNIDO
2. Sector:	**REFRIGERATION**
3. HFC consumption in item #2 reported under country programme data?	☒ **Yes**, please specify reported amount and year: _2025_ ☐ **No**
4. Does the enterprise commit to phase out the HFC consumption associated with the proposed investment project, if approved by the Executive Committee?	☐ **Yes**, please provide support letter _____ ☐ **No** ☒ **N/A**
5. If the project preparation is requested in advance of the KIP, did the Government provide a written commitment that the consumption associated with these investment projects, once approved, will be deducted from the country's starting point, once established?	☐ **Yes** ☐ **No** ☒ **N/A**
6. Please explain briefly how the investment project would relate to the overarching strategy for the country, and when the final KIP will be submitted (decision 87/50(e))	The project will complement Mexico´s KIP by improving energy efficiency in refrigeration manufacturing while supporting the transition to low-GWP refrigerants. Mexico's KIP Stage I has already been submitted and approved.
7. Background information	

Mexico's refrigeration manufacturing sector is central to its Kigali Implementation Plan (KIP) Stage I, now in its second tranche, which commits the country to reducing HFC consumption by 30 per cent from its baseline by 2030. The RAC sector in Mexico includes both manufacturing and import activities, in addition to a large servicing sector. As the Government moves towards stricter Minimum Energy Performance Standards (MEPS), it is imperative that the local manufacturing sector is upskilled to remain competitive with international manufacturers. It is equally important to build local capacity to support the expansion of MEPS in commercial sectors, ensuring that technicians are capable of providing expert advice to consumers on the selection of energy-efficient equipment.

Currently, Mexico has a total of 35 manufacturers in the residential air conditioning, domestic refrigeration,

commercial air conditioning, and domestic and commercial refrigeration sectors, 12 of which are domestically owned. Ten companies in the refrigeration sector have expressed interest in participating in improving the energy efficiency of their manufactured equipment. A brief overview of each company is provided below. Additionally, those already applying MEPS labels to their equipment will have their eligibility assessed during the preparatory activities.

1. **Domestic Refrigeration:** Mexico's Domestic Refrigeration sector comprises 1 company specializing in the production of refrigerators:

- **Mabe:**

Mabe Plant, located in Celaya, Guanajuato, and Mabe Compressors Plant located in San Luis Potosí, is a leading Mexican company in white goods products in Latin America, including domestic refrigerators, with more than 75 years in the market.
In 2021, Mabe completed the conversion of its domestic refrigerator manufacturing facility from HFC-134a to isobutane (R-600a), together with the conversion of its compressor manufacturing facility. The project eliminated the use of HFC-134a across six production lines and resulted in an approximately 16% improvement in energy efficiency through component modifications, in compliance with NOM-015. A total of 198.0 metric tons of HFC-134a (283,140 tCO_2-eq) were eliminated.
It should be noted that Mabe previously received support for both the refrigerant transition and energy efficiency improvements. In addition to the Multilateral Fund-supported conversion of its domestic refrigeration and compressor manufacturing facilities from HFC-134a to R-600a, Mabe received approximately US$926,000 in complementary funding from Environment Canada and the ClimateWorks K-CEP Window to support energy efficiency improvements, including improvements related to compressor manufacturing and the introduction of more efficient technologies. These activities were completed as part of the previous project.
The Celaya plant has expressed interest in pursuing further energy efficiency improvements. The proposed preparatory activities would therefore seek to identify additional opportunities for technological innovation and energy efficiency improvements, ensuring that any future intervention is clearly distinct from, and complementary to, the investments and energy efficiency gains achieved under the previous projects.

2. **Commercial Refrigeration:** Mexico's Commercial Refrigeration sector is composed of the following leading companies:

- **Imbera/Fersa**

Imbera is the largest manufacturer of commercial refrigeration appliances in Mexico and is 100% Mexican-owned. Imbera began operations in the commercial refrigeration equipment manufacturing line in 1998. The company was interested in converting to HC-based technology because of the demand for environmentally friendly, high-efficiency coolers among both multinational and domestic beverage enterprises. The company operated two plants:

- Plant 1 Imbera: located in the center of the country in Querétaro. The production capacity is 98 units/hour, and in 2017 the plant produced 35,000 appliances per month. Plant 1 exports an average of 16% of its production to non-Article 5 countries.
- Plant 2 Fersa (now called Torrey), Located in the north of the country in Nuevo León, the production capacity is 14 units/hour, and in 2017 it produced an average of 1,830 appliances per month. Plant 2 exports 7% of its production to non-Article 5 countries.

In 2022, Imbera completed the conversion from HFC-134a and R-404A to propane (R-290) and isobutane (R-600a), eliminating 51.73 mt of HFC-134a and 4.31 mt of R-404A.
Considering the upcoming update of NOM-022 regulating energy efficiency in self-contained commercial refrigeration equipment, the company is interested in improving energy efficiency and testing procedures in accordance with MEPS.

- **Friocima**

Friocima is a 100% Mexican company located in Celaya, Guanajuato, with 25 years of experience. It manufactures commercial refrigeration equipment for the Mexican market using HFCs across three subsectors: centralized systems (for supermarkets), condensing units (for businesses), and self-contained units (such as freezers, display cases, and plug-in beverage coolers). Friocima's products are sold primarily in the Mexican market.
In 2022, Friocima's total production was 14,405 units, including ice cube machines (7,376), freezers (5,257), upright refrigerators (1,246), chest freezers (511), and vertical freezers (15). The conversion of commercial refrigerator

manufacturing from HFC-134a to propane was completed in early 2025, eliminating 5.18 metric tons (t) (7,407 CO2 eq) of HFC-134a that were consumed annually in Friocima's commercial refrigerator production line.
In addition, Friocima assumed the energy efficiency component during the conversion, estimated at US$80,000, with its own funds; however, considering the upcoming update of the Official Mexican Standard (MEP) NOM-022 that regulates energy efficiency levels in self-contained commercial refrigeration equipment, the company is interested in increasing the energy efficiency of the equipment it manufactures.

- **Criotec**

Criotec is a leading Mexican company in commercial refrigeration, founded in 1986 in Santa Catarina, Nuevo León. It specializes in the design and manufacture of upright refrigerators, beverage coolers, upright freezers, freezers, display cases, and refrigerated units. Some of its main clients include Coca-Cola, Oxxo, 7-Eleven, PepsiCo, and Grupo Modelo.

- **Metalfrio**

For 60 years, Metalfrio Solutions has delivered innovation, quality, and reliability to the world's leading food and beverage brands and their businesses. It is located in the city of Celaya, Guanajuato.
Metalfrio Solutions is a global company, originally from Brazil, and is among the world leaders in the commercial refrigeration sector. With a comprehensive product portfolio, it meets the needs of a wide variety of establishments, bringing technology, durability, and lowest energy consumption. The company manufactures beverage coolers, freezers, and display cases.

- **Glacial (Metaplus)**

Glacial is a Mexican company, located in Mérida, Yucatán with 40 years in the market. It provides refrigeration solutions through the design, manufacturing, and marketing of commercial ice coolers and freezers for the food and beverage industry, utilizing its own technology and adhering to rigorous environmental policies. It has nationwide coverage and exports to the Caribbean, South America, Central America, and North America.
It offers high-quality products. This presents a great opportunity to strengthen innovation and equipment development, particularly in energy efficiency.

- **Refrigeración Ojeda**

Founded in 1948 in Mexico City, the company began as a small refrigerator repair workshop and gradually evolved into a national enterprise dedicated to the design, manufacture, and commercialization of commercial and industrial refrigeration equipment. It currently has more than 70 years of presence nationwide. The equipment it manufactures includes refrigerated display cases, horizontal freezers, vertical freezers, vertical refrigerators, and open refrigerated display cases.

- **Kaltek**

Kaltek is a small Mexican company specializing in the manufacture of ice-storage freezers. The transition from R-134a to R-290 will be carried out using the company’s own resources; however, the proposed project could help accelerate and optimize this transition, and improving system controls and overall energy efficiency. In particular, the activities could support Kaltek in enhancing the performance and efficiency of its ice-storage freezers while strengthening its capabilities. This would contribute to the development of higher-efficiency, higher-quality, and more environmentally sustainable refrigeration products.

- **REFROD**

REFROD (Refrigeración Rodriguez) is a small, family-owned Mexican company with extensive experience in light commercial refrigeration, including ice-storage freezers, and horizontal and vertical freezers. Although its production has declined in recent years, it continues manufacturing primarily to serve small Mexican businesses. The proposed program would help identify practical technologies to improve its products, particularly in heat exchanger and coil design, compressor capacity and speed control, and compressor efficiency through R-290 integration.

- **ARPIPA:**

Arpipa, a Mexican company focused on the manufacture of ice-storage freezers. The activities would provide opportunities to learn about advances in energy-efficient refrigeration, sustainable technologies, and innovative product design. These exchanges could help Arpipa strengthen its research and development capabilities and identify opportunities to improve the energy performance, quality, and environmental sustainability of its refrigeration equipment.
In addition to the enterprises identified above, Mexico has a broad manufacturing base in the refrigeration and air-conditioning sector, including both multinational and domestic companies. Relevant manufacturers with an industrial presence in Mexico include companies such as Whirlpool, Samsung, LG, Daikin, Carrier, Trane, Rheem and Johnson

Controls, among others. Additional manufacturers, including companies operating in the domestic refrigeration, commercial refrigeration and air-conditioning subsectors, may also be considered. Their specific manufacturing activities, interest in participating, technical characteristics and potential eligibility under Decision 94/60 would be validated as part of the PRP preparation process.

Challenges and Opportunities

Mexico has made progress in developing MEPS for refrigeration and air conditioning equipment, with eight MEPS for this sector. However, some challenges remain:

- **Technical Barriers:** The MEPS update for RAC equipment requires a robust MRV and testing methods infrastructure for conformity assessment for all equipment. Additionally, technicians, engineers, and product development teams require specific training to design, test, and validate high-energy-efficiency units.
- **Awareness and Compliance:** Raising awareness among manufacturers, importers, technicians, and consumers about the benefits of energy-efficient appliances and ensuring compliance with MEPS is crucial.
- **Inter-institutional coordination**: Effective coordination with national institutions, including the Ministry of Energy and relevant standards bodies, is required to harmonize energy efficiency standards and labeling policies, which can present institutional and procedural challenges during implementation.
- **Financial Constraints:** Access to financing is essential for capacity building, data collection, and consumer awareness.
- **Efficiency Gap Assessment in commercial refrigeration systems:** Energy authorities and the national electric utility currently face high electricity demand in these key regions, but they just have aggregated consumption data, limiting visibility into the actual energy performance of RAC systems. Specifically, there is a lack of disaggregated information on the efficiency of condensing units (UCs) and centralized refrigeration systems.

However, these challenges also present opportunities

- **Energy savings and emissions reduction:** Improving minimum energy performance standards (MEPS) in the residential sector and implementing and enforcing MEPS in the commercial sector can generate substantial energy savings and reductions in greenhouse gas emissions, especially with effective reporting, verification, and commissioning (RV) mechanism.
- **Economic benefits:** Promoting energy-efficient appliances can stimulate local manufacturing, create jobs, and reduce electricity costs for consumers.
- **Climate leadership:** Mexico has demonstrated its commitment to climate action by leading the way in energy efficiency in the region and is firmly committed to continuing to work on updating the applicable MEPS for RAC equipment.

Within this context, this preparatory funding request seeks to define practical and cost-effective pathways for improving energy efficiency in parallel with refrigerant transitions within Mexico's refrigeration manufacturing sector. The initiative will examine opportunities for the introduction of advanced components, including high-performance compressors, heat exchangers, and control systems, while assessing technical feasibility, economic implications, and policy alignment. Close coordination with national institutions, including the Ministry of Energy and relevant standards bodies, will be necessary to ensure harmonization of energy efficiency standards and labeling policies and to inform the development of a comprehensive project proposal for submission to the Multilateral Fund.

Project Objectives

This preparatory project aims to lay the groundwork for improving energy efficiency while phasing down HFCs in the refrigeration sector by:

- **Data Collection and Verification: Gather and validate data on the current market, enterprise landscape, and technical opportunities for improving equipment energy efficiency. Calculate additional component costs, considering commercial factors and the characteristics of domestic companies.**
- **Selection of Opportunities:** Identify and prioritize the most cost-effective options for component upgrades in each company based on the identified opportunities.
- **Project Document Development:** Prepare a comprehensive project document to enhance energy efficiency in the Refrigeration sector.

Expected Outcome

The primary outcome of this preparatory project is to deliver a comprehensive, evidence-based project document to

improve energy efficiency levels while phasing down HFCs in Mexico's RAC manufacturing sector. The document will detail specific opportunities for enhancing energy performance for each of the selected manufacturers, including baseline data on current energy efficiency levels and a proposal with costs for cost-effective technological upgrades. This document will be instrumental in securing additional funding and guiding the implementation of comprehensive energy efficiency measures, ultimately leading to the following:

- **Clear Roadmap for Energy Efficiency: The project document will provide a detailed action plan, encompassing technical assistance, financial mechanisms, and policy recommendations tailored to the specific needs and challenges of the Mexico refrigeration sector.**
- **Enhanced Manufacturing Practices:** By implementing improvements in energy efficiency standards, the refrigeration manufacturing sector in Mexico will experience a significant transformation, producing appliances with superior energy performance.
- **Reduced Energy Consumption and Emissions: The widespread adoption of energy-efficient RAC equipment will result in substantial energy savings at both the household and commercial buildings; yielding significant national levels energy savings. This in turn will contribute to reduced greenhouse gas emissions and a more sustainable energy landscape.**
- **Strengthened Local Capacity: The project activities, particularly the workshops, will empower national policymakers, private sector entities, and other stakeholders with the knowledge and skills necessary to drive energy efficiency improvements in the RAC sector.**
- **Investment Attraction:** The well-structured project document, backed by robust collected data and analysis, will serve as a compelling tool for attracting additional funding from investors, enabling the scale-up of energy efficiency initiatives in Mexico.
- **Potential for Regional Impact:** Mexico's leadership in energy efficiency conversion through this project will create a path for regional impact through of exporting higher performance equipment.

Key Deliverables

In addition to the project document, the following deliverables will support the achievement of the project's objectives:

- **Comprehensive Survey Data:** Detailed information on the energy efficiency levels of refrigeration products manufactured in Mexico, providing a baseline for future improvements and calculating investment needed.
- **Technical Analysis and Gap Assessment:** Expert analysis of the survey data and identification of key gaps in technology, financing, and policy to guide the formulation of targeted interventions. This activity will implement sub-metering and data analysis to quantify the real contribution of these systems to energy consumption and peak demand, based on their current efficiency levels. It will also enable benchmarking against modern, energy-efficient technologies, identifying the potential for energy savings and demand reduction through system upgrades and technology transition.
- **Capacity Building and Knowledge Transfer:** Successful completion of workshops, empowering stakeholders to actively contribute to the advancement of energy efficiency in the sector.

Project Activities

- **Data Collection and Analysis: Collect and analyses data on the current market, potential beneficiaries, energy consumption patterns, and appliance stock to identify key challenges and opportunities.**
- **Stakeholder Consultations: Engage with industry representatives, government officials, and other relevant stakeholders to gather input and ensure broad support for the project document.**
- **Training Workshops: Conduct targeted training sessions on MEPS compliance by the manufacturing sector of Mexico for relevant private and public sector stakeholders.**
- **Project Document Development: Prepare a comprehensive project document that outlines a clear roadmap for achieving energy efficiency goals in the sector.**

Budget and Timeline

A detailed budget is outlined in the table below. The preparatory project duration is estimated to be 24 months.

Conclusion

This preparatory project is a critical step towards achieving energy efficiency improvements while phasing down HFC in Mexico's refrigeration manufacturing sector.

8. Activities to be undertaken for preparation of the investment project and funding requested

Activity	Indicative funding (US $)	Bilateral/implementing agency
1. Survey, Data Collection: Collect data on production capacities, production lines, energy efficiency levels, and refrigerant use for participating companies to lay the foundation for feasibility studies and guide investment strategies.	$12,000	UNIDO
2. Technical Feasibility Studies: Assess current systems and evaluate potential for integrating energy-efficient technologies and low-GWP refrigerants for participating companies.	$14,000	UNIDO
3. Preparation of Business Plans: Assist manufacturing companies in developing business plans for new investments or retrofitting existing production lines to incorporate energy-efficient technologies.	$4,000	UNIDO
4. Drafting of Investment Project Document: Prepare a comprehensive investment project document to secure funding for energy efficiency improvements.	$15,000	UNIDO
TOTAL	**$45,000**	**UNIDO**

PROJECT CONCEPT – JORDAN

MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL

FUNDING REQUEST FOR THE PREPARATION OF ENERGY EFFICIENCY PILOT PROJECT UNDER DECISION 95/87

Part I: Project information

Project title:	Energy Efficiency Project for Heat Exchanger Manufacturing in the RAC Sector
Country:	Hashemite Kingdom of Jordan
Lead implementing agency:	UNIDO
Meeting where request is being submitted	ExCom 99
Implementation period	2027
Duration of implementation (i.e., time (in months)) from the approval of PRP to submission of the project (please specify): 12 months	
Funding requested:	
Agency	**Funding requested (US $)***
UNIDO	**10,000**

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

Item	Yes	No
Official endorsement letter from Government, indicating roles of respective agencies (where more than one IA is involved)	☒	☐
Project included in the bilateral/IA business plan?	☐	☒
If **NO**, The modality for heat exchanger manufacturers was set out in document UNEP/OzL.Pro/ExCom/95/87 at the 95th meeting.		

A. Information required for PRP funding request for the preparation of Energy Efficiency Project Document

1. Brief overview of the concept, methodology and approach to be taken for the preparation of the EE Project and how it is linked to other activities in the country (i.e., national plans like the KIP)

Stage I of Jordan's KIP (decision 93/84) aims to reduce HFC consumption by 54% from the baseline by 2030 and converts domestic refrigeration, commercial refrigeration and residential air-conditioning manufacturers to low-GWP refrigerants. The proposed project will help a local heat exchanger manufacturer produce more energy-efficient coils for this lower GWP equipment.

The enterprise that has expressed interest produces about 50,000 coils per year mainly for use in its own HVAC units. About 3% of production is sold directly to customers, and most output goes to the local market. During the PRP, efforts will be made to get data from more relevant industries that may be given consideration during the main implementation. The preparatory assistance will confirm the project scope and costs, set a target of at least 20% improvement in overall heat conductance across all models covered measured against baseline products, estimate sales as the basis for funding, and plan monitoring for three years after project completion. A technical assessment will measure the overall heat conductance using applicable technical standards or validated simulation. It will review design options suited to lower-GWP refrigerants and identify the production line changes needed with costs.

A policy and standards review will be carried out with the NOU and the Jordan Standards and Metrology Organization (JSMO). It will propose a national test and rating method for heat exchanger coils based on relevant international standard to enable the verification of overall heat conductance. It will also review safety standards for coils used with lower-GWP refrigerants.

Consultations and workshops shall be carried out with government stakeholders and the industries to propose target EE performance for coils and for the equipment using them in line or above the existing MEPS.

Based on the commitments provided by the stakeholders, the project document shall be prepared for submission to the Executive Committee within 12 months of PRP approval.

2. Description of activities that will be implemented during the preparation of the EE Project and an indication of the estimated costs for the activities described broken down per agency

Activity	Description	Agency
Data collection and analysis	Data collection of one enterprise that manufactures heat exchangers: production lines, product mix, sales refrigerants, ownership and baseline coil performance.	**UNIDO**
Development of the proposal	Full proposal for the submission to ExCom101	

3. Funding for the activities described in 2 above

Activity	Indicative funding (US $)	Agency
Full proposal development	10,000	UNIDO
TOTAL	**10,000**	

4. How will the Multilateral Fund gender policy be considered during project preparation?

Participation from different genders shall be ensured and at least 20% of the total input of female professionals shall be included in the project.

Country:	ALBANIA
Title:	Institutional Strengthening for the implementation of Montreal Protocol in Albania
Project Duration:	36 months (June 2027 – May 2030)
Project Budget:	270,408 (excl. 7% Agency Support Costs)
Implementing Agency:	UNIDO
Coordinating Agency:	National Ozone Unit (NOU)/ Ministry of Environment

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Project Summary

During Phase XI (July 2024-October 2026), the National Ozone Unit of Albania continued to coordinate implementation of the Montreal Protocol and Kigali Amendment, with emphasis on the HFC licensing/quota system, strengthening ODS/F-gas legislation, annual data verification and reporting, Customs cooperation and prevention of illegal trade. The NOU coordinated HPMP Stage II implementation and supported preparation and approval of HPMP Stage III and KIP Stage I at the 98th Executive Committee meeting in June 2026. Capacity-building and awareness activities involved Customs, RAC associations, technicians, vocational schools, universities and other stakeholders, including World Refrigeration Day, World Ozone Day and sector forums. Albania also remained active in ECA regional cooperation and relevant Montreal Protocol meetings. Overall, the Phase XI objectives were substantially achieved, with continued work required on secondary legislation, enforcement, integrated data systems, refrigerant lifecycle management and gender-responsive participation.

During Phase XII (June 2027-May 2030), the NOU will maintain the institutional capacity required for full compliance with the Montreal Protocol and Kigali Amendment and will coordinate implementation of HPMP Stage III and KIP Stage I. Priority actions will include completing and enforcing ODS/F-gas secondary legislation; administering and monitoring HFC/HCFC licensing and quotas; strengthening integrated data collection and Customs/importer cross-checks; improving enforcement and prevention of illegal trade; supporting technician certification and safe servicing with low-GWP alternatives; expanding recovery, recycling and reclamation and end-of-life refrigerant management; ensuring timely Article 7, Country Programme and project reporting; and maintaining active Steering Committee, RAC-sector, education and regional cooperation. Public awareness will continue through World Ozone Day, World Refrigeration Day, schools and targeted stakeholder communication, with stronger gender mainstreaming and systematic monitoring of women's participation.

Country: OMAN

Title: Institutional Strengthening for the implementation of Montreal Protocol in Oman

Project Duration: 36 months (January 2027 – December 2029)

Project Budget: 181,410 (excl. 7% Agency Support Costs)

Implementing Agency: UNIDO

Coordinating Agency: National Ozone Unit (NOU)/ Environment Authority

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Project Summary

During the current phase, the National Ozone Unit, operating under the Environment Authority, continued to strengthen Oman's implementation of the Montreal Protocol and ensure compliance with its obligations. Key achievements included the ratification of the Kigali Amendment in November 2024 and commencement of its preparatory activities in May 2025, continued enforcement of the national licensing and quota system for controlled substances, and strengthened coordination with Customs authorities to monitor imports and prevent illegal trade. The NOU also ensured the timely submission of Article 7 and Country Programme data reports, supervised the implementation of the HCFC Phase-out Management Plan (HPMP), and advanced preparations for the establishment of a national refrigerant recovery, recycling and reclamation (RRR) centre. Cooperation with relevant stakeholders was further strengthened through the signing of an agreement with OPAL to develop a professional competency certification programme for refrigeration and air-conditioning technicians. In addition, the NOU implemented public awareness campaigns, including World Ozone Day activities, promoted women's participation in Montreal Protocol-related activities, and actively participated in regional network meetings and international Montreal Protocol meetings. These efforts contributed to strengthening national institutional capacity, enhancing stakeholder coordination, and supporting Oman's continued compliance with the Montreal Protocol and its amendments.

During the next phase, the National Ozone Unit will focus on strengthening Oman's institutional and regulatory capacities to ensure continued compliance with the Montreal Protocol and its amendments. Key priorities will include updating national legislation and regulations to incorporate the requirements of the Kigali Amendment, strengthening the national licensing and quota system, and enhancing cooperation with Customs authorities to monitor controlled substances and prevent illegal trade. The NOU will also continue supervising the implementation of the HPMP (as well as preparing for extension of the next tranche) and advance preparations for the phase-down of hydrofluorocarbons (HFCs), including updating the Bayan electronic customs system to support future HFC monitoring and reporting requirements. Further priorities include establishing a national refrigerant recovery, recycling and reclamation (RRR) centre, implementing a professional competency certification programme for refrigeration and air-conditioning technicians, and strengthening coordination with relevant government institutions, private-sector stakeholders and implementing agencies. The NOU will also ensure the timely submission of Article 7 and Country Programme data reports, continue public awareness and capacity-building activities, promote gender mainstreaming, and maintain active participation in regional and international Montreal Protocol meetings to facilitate knowledge exchange and technical cooperation.