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EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Ninety-third Meeting  
Montreal, 15-19 December 2023  
Item 9(d) of the provisional agenda<sup>1</sup>

**PROJECT PROPOSALS: TURKMENISTAN**

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

Phase-down

- Kigali HFC implementation plan (stage I, first tranche) UNIDO

Technical assistance

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

<sup>1</sup> UNEP/OzL.Pro/ExCom/93/1

**PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS**

**Turkmenistan**

<b>(I) PROJECT TITLE</b>	<b>AGENCY</b>
Kigali HFC implementation plan (stage I)	UNIDO

<b>(II) LATEST ARTICLE 7 DATA (Annex F)</b>	Year: 2022	143.08 mt	256,793 CO <sub>2</sub> -eq tonnes
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<b>(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (CO<sub>2</sub>-eq tonnes)</b>								<b>Year: 2022</b>	
Chemical	Aerosol	Foam	Firefighting	AC and refrigeration			Solvent	Other	Total sector consumption
				Manufacturing		Servicing			
				AC	Other				
HFC-32	0	0	0	0	0	905	0	0	905
HFC-134a	0	0	0	0	0	136,422	0	0	136,422
R-404A	0	0	0	0	0	54,510	0	0	54,510
R-410A	0	0	0	0	0	47,950	0	0	47,950
R-407C	0	0	0	0	0	15,787	0	0	15,787
R-427A	0	0	0	0	0	1,219	0	0	1,219

<b>(IV) AVERAGE 2020-2022 HFC CONSUMPTION IN SERVICING</b>	241.93 mt	451,101 CO <sub>2</sub> -eq tonnes
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<b>(V) CONSUMPTION DATA (CO<sub>2</sub>-eq tonnes)</b>			
Baseline: average 2020-2022 HFC consumption plus 65% of HCFC baseline	597,121	Starting point for sustained aggregate reductions	[n/a]*
<b>CONSUMPTION ELIGIBLE FOR FUNDING</b>			
Already approved	0	Remaining	[n/a]*

\*For countries with average 2020-2022 HFC consumption in servicing only and below 360 mt.

<b>(VI) ENDORSED BUSINESS PLAN</b>		<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>Total</b>
UNIDO	HFC phase-down (CO <sub>2</sub> -eq tonnes)	0.00	0.00	0.00	0.00
	Funding (US \$)	45,742	0	45,743	91,485

<b>(VII) PROJECT DATA</b>		<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>2026</b>	<b>2027</b>	<b>2028</b>	<b>2029</b>	<b>Total</b>
Consumption (CO <sub>2</sub> -eq tonnes)	Montreal Protocol Limits	n/a	597,121	597,121	597,121	597,121	597,121	537,409	n/a
	Maximum allowable	n/a	597,121	597,121	597,121	597,121	597,121	537,409	n/a
	UNIDO	Project costs	116,000	0	0	141,000	0	0	68,000
Support costs		8,120	0	0	9,870	0	0	4,760	22,750
Amounts recommended in principle (US \$)	Total project costs	116,000	0	0	141,000	0	0	68,000	325,000
	Total support costs	8,120	0	0	9,870	0	0	4,760	22,750
	Total funds	124,120	0	0	150,870	0	0	72,760	347,750

<b>(VIII) Request for approval of funding for the first tranche (2023)</b>		
<b>Implementing agency</b>	<b>Funds recommended (US \$)</b>	<b>Support costs (US \$)</b>
UNIDO	116,000	8,120
<b>Total</b>	116,000	8,120

<b>Secretariat's recommendation</b>	Individual consideration – all technical and cost issues resolved
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## PROJECT DESCRIPTION

1. On behalf of the Government of Turkmenistan, UNIDO as the designated implementing agency has submitted a request for stage I of the Kigali HFC implementation plan (KIP), at the amount of US \$360,000, plus agency support costs of US \$25,200, as originally submitted.
2. The implementation of stage I of the KIP will assist Turkmenistan in meeting the target of 10 per cent reduction from its HFC baseline consumption by 1 January 2029.
3. The first tranche of stage I of the KIP being requested at this meeting amounts to US \$118,000, plus agency support costs of US \$8,260 for UNIDO, as originally submitted, for the period of January 2024 to December 2025.

### Background

4. The Government of Turkmenistan ratified all the amendments to the Montreal Protocol, including the Kigali Amendment on 31 August 2020. Turkmenistan has an HCFC consumption baseline of 6.80 ODP tonnes or 124.14 metric tonnes (mt) and is set to completely phase out consumption of HCFCs by 1 January 2030.<sup>2</sup>

### Status of implementation of the HCFC phase-out management plan

5. Stage I of the HCFC phase-out management plan (HPMP) for Turkmenistan was originally approved at the 62<sup>nd</sup> meeting<sup>3</sup> and revised at the 71<sup>st</sup> meeting<sup>4</sup> to meet the 35 per cent reduction from the baseline by 2020, resulting in the phase-out of 2.38 ODP tonnes of HCFCs, at a total cost of US \$652,050, plus agency support costs, including institutional strengthening (IS) at the level of US \$319,550 for eight years.
6. Stage II of the HPMP for Turkmenistan was approved at the 86<sup>th</sup> meeting<sup>5</sup> to achieve a sustained reduction of the HCFC consumption by 67.5 per cent from the baseline (2.21 ODP tonnes) by 1 January 2025, at a total cost of US \$308,500, plus agency support costs for UNIDO. Stage II of the HPMP will be completed by 31 December 2026, as stipulated in the Agreement between the Government of Turkmenistan and the Executive Committee.
7. Stage III of the HPMP will be submitted to the first Executive Committee meeting of 2025 and will enable the country to attain total phase-out of HCFC by 1 January 2030, except for those HCFCs allowed for a servicing tail between 2030 and 2040, where required, consistently with the provisions of the Montreal Protocol.

### Status of implementation of HFC-related activities

8. At the 74<sup>th</sup> meeting, Turkmenistan received funding to conduct a survey on the use of alternatives to ozone-depleting substances (ODSs) (US \$70,000), which was completed in September 2017. At the 80<sup>th</sup> meeting, Turkmenistan received funding to implement the enabling activities for HFC phase-down (US \$150,000), which were completed in June 2021. These activities assisted the country inter alia in ratifying the Kigali Amendment; updating its licensing system to include HFCs and HFC blends and developing national custom codes for different individual HFCs to ensure proper monitoring and recording of imports/exports; updating a survey on the imports of HFCs and alternative substances; reporting HFC

<sup>2</sup> Except for those HCFCs allowed for a servicing tail between 2030 and 2040, where required, consistent with the provisions of the Montreal Protocol.

<sup>3</sup> UNEP/OzL.Pro/ExCom/62/53 and Annex XIV of document UNEP/OzL.Pro/ExCom/62/62

<sup>4</sup> Annex XVI of document UNEP/OzL.Pro/ExCom/71/64

<sup>5</sup> Decision 86/82

import data under Article 7 of the Montreal Protocol; identifying capacity-building needs for servicing technicians to support the transition to alternatives; and analysing policy options to facilitate HFC phase-down.

## **Stage I of the Kigali HFC implementation plan**

### Policy, regulatory and institutional frameworks

9. The Ministry of Environmental Protection is the authority responsible for Montreal Protocol-related activities in the country, including collecting and reporting data on the consumption of controlled substances, allocating quotas and issuing import permits through the national ozone unit (NOU) and with the support of the State Ecological Control Service. The President of Turkmenistan created a special state commission to ensure that the country's obligations under multilateral environmental agreements are met. One of the working groups under the state commission is responsible for the Vienna Convention and the Montreal Protocol.

10. The main environmental laws governing ozone-layer protection are the "Ozone Layer Protection" (2009), "On Nature Protection" (2014), and "On Atmospheric Air Protection" (2016). Through the enforcement of these regulations all legal entities and individuals manufacturing, operating, and performing maintenance on refrigeration and air-conditioning (RAC), and fire-extinguishing equipment are required to report their consumption.

11. Licensing of the import, production and sale of chemical products is regulated by the law "On Licensing Certain Types of Activities" of 2009 (Article 20, paragraph 22). All controlled substances and ODS-based equipment imported into the country require customs clearance. To ensure proper monitoring and accounting of HFC import/export, the national customs codes for HFCs and blends have been established since September 2019.

12. Turkmenistan began implementing a mandatory licensing system to control HFC import and export on 29 May 2020. The country will issue HFC quotas as of 2024, the first year of the HFC consumption freeze. The national quota will be set per the maximum allowable country limits and distributed to importers by "Turkmenhimiya" State Concern.<sup>6</sup> Each importer will be notified of its maximum annual quota for all HFCs in CO<sub>2</sub>-equivalent (CO<sub>2</sub>-eq) tonnes based on their average imports of HFCs during 2020-2022. The importers will have the flexibility to decide the amount and type of refrigerants imported as long as they are within their maximum quota assignment in CO<sub>2</sub>-eq tonnes. However, the HFC import permits per shipment will only be issued in metric tonnes corresponding to the allocated quota in CO<sub>2</sub>-eq tonnes.

13. Turkmenistan has already adopted the European Standard EN 378 (1-4) 2014 as a national standard of safety and environmental requirements for refrigeration systems and heat pumps.

### HFC consumption

14. Turkmenistan only imports HFCs for covering the mobile air-conditioning (MAC) and RAC new equipment installation and servicing needs. In 2022, Turkmenistan consumed HFC-134a (53.1 per cent of total HFC consumption in CO<sub>2</sub>-eq tonnes), R-404A (21.2 per cent), R-410A (18.7 per cent), R-407C (6.1 per cent), and other HFCs (0.9 per cent). Table 1 presents Turkmenistan's HFC consumption as reported under Article 7 to the Ozone Secretariat.

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<sup>6</sup> "Turkmenhimiya" State Concern was established in 2007 with the aim of organizing the management of enterprises producing mineral fertilizers and chemical products in Turkmenistan.

**Table 1. HFC consumption in Turkmenistan (2019–2022 Article 7 data)**

HFC	GWP*	2019	2020	2021	2022	Share of HFC consumption in 2022 (%)
<b>Mt</b>						
HFC-32	675	0.50	0.07	0.07	1.34	0.9
HFC-134a	1,430	187.84	186.17	139.39	95.40	66.7
R-404A	3,921.6	22.92	15.47	38.82	13.90	9.7
R-410A	2,087.5	64.82	71.85	61.44	22.97	16.1
HFC-23	14,800	0.04	0.00	0.00	0.00	0.0
R-407A	2,107	0.00	0.00	0.06	0.00	0.0
R-407C	1,773.85	24.53	35.22	17.06	8.90	6.2
R-422D	2,728.95	0.00	16.95	0.00	0.00	0.0
R-427A	2,138.25	0.00	0.00	0.00	0.57	0.4
R-507A	3,985	3.31	0.15	0.00	0.00	0.0
<b>Total (mt)</b>		<b>303.96</b>	<b>325.88</b>	<b>256.84</b>	<b>143.08</b>	<b>100</b>
<b>CO<sub>2</sub>-eq tonnes</b>						
HFC-32	675	337.5	47.25	47.25	904.5	0.4
HFC-134a	1,430	268,611	266,223	199,328	136,422	53.1
R-404A	3,921.6	89,883	60,667	152,237	54,510	21.2
R-410A	2,087.5	135,312	149,987	128,256	47,950	18.7
HFC-23	14,800	592	0	0	0	0.0
R-407A	2,107	0	0	126	0	0.0
R-407C	1,773.85	43,513	62,475	30,262	15,787	6.1
R-422D	2,728.95	0	46,256	0	0	0.0
R-427A	2,138.25	0	0	0	1,219	0.5
R-507A	3,985	13,190	598	0	0	0.0
<b>Total (CO<sub>2</sub>-eq tonnes)</b>		<b>551,438</b>	<b>586,253</b>	<b>510,256</b>	<b>256,793</b>	<b>100</b>

\*Global-warming potential

15. The main driver for using HFCs in the servicing and installation of RAC equipment is the increased number of HFC-based equipment installed because of the ban on HCFC-22 equipment imports and the relatively slow introduction of non-HFC alternatives in the country. National economic circumstances, marked by industrial and commercial growth and fast urbanization, expanded the demand of RAC equipment during this period and even in the face of challenges presented by the COVID-19 pandemic, the Government ensured enough refrigerant supply. The construction of a new city, “Arkadag”, required the installation of household, semi-industrial, and industrial RAC systems, with HFC imports falling sharply in 2022 after construction of the city ceased among other reasons related to the economic depression resulting from the pandemic. According to the 2023 import permits already issued,<sup>7</sup> the NOU expects that HFC consumption in 2023 would be at least equivalent to the volume of HFC imports in 2021.

#### *Country programme implementation report*

16. The Government of Turkmenistan reported HFC sector consumption data in the 2022 Turkmenistan programme implementation report that is consistent with the data reported under Article 7 of the Montreal Protocol.

<sup>7</sup> 243 mt in the first half of 2023, and more HFC import permits could be issued before the end of the year according to observations of the last years.

HFC distribution by sector

17. Based on the HFC survey carried out during preparation of the KIP, in 2021,<sup>8</sup> HFCs were consumed for servicing in chillers (36 per cent in mt and 27 per cent in CO<sub>2</sub>-eq tonnes), industrial refrigeration (18 per cent in mt and 19 per cent in CO<sub>2</sub>-eq tonnes), commercial refrigeration (12 per cent in mt and 20 per cent in CO<sub>2</sub>-eq tonnes), and other subsectors as shown in table 2.

**Table 2. HFC consumption in the RAC servicing subsectors (2021)**

Sector	HFC-134a	HFC-32	R-404A	R-407A	R-407C	R-410A	Total	Share of consumption (%)
<b>Mt</b>								
Domestic refrigeration	9.75	0	0	0	0	0	9.75	3.8
Commercial refrigeration	5.57	0	24.18	0	0	0	29.75	11.6
Industrial refrigeration	33.44	0	12.42	0.06	0	0.31	46.23	18.0
Residential AC	0	0.05	0	0	0	38.71	38.76	15.1
Other AC <sup>9</sup>	0.42	0.02	0	0	8.19	18.74	27.37	10.7
Chillers	78.85	0	0.89		8.87	3.69	92.30	35.9
Transport refrigeration	9.47	0	0.97	0	0	0	10.44	4.1
MAC	1.54	0	0	0	0	0	1.54	0.6
Medical equipment	0.28	0	0.35	0	0	0	0.63	0.2
<b>Total (mt)</b>	<b>139.32</b>	<b>0.07</b>	<b>38.81</b>	<b>0.06</b>	<b>17.06</b>	<b>61.45</b>	<b>256.77</b>	<b>100</b>
<b>CO<sub>2</sub>-eq tonnes</b>								
Domestic refrigeration	13,943	0	0	0	0	0	13,943	2.7
Commercial refrigeration	7,965	0	94,824	0	0	0	102,789	20.1
Industrial refrigeration	47,819	0	48,706	126	0	647	97,299	19.1
Residential AC	0	34	0	0	0	80,807	80,841	15.8
Other AC	601	14	0	0	14,528	39,120	54,262	10.6
Chillers	112,756	0	3,490	0	15,734	7,703	139,683	27.4
Transport refrigeration	13,542	0	3,804	0	0	0	17,346	3.4
MAC	2,202	0	0	0	0	0	2,202	0.4
Medical equipment	400	0	1,373	0	0	0	1,773	0.3
<b>Total (CO<sub>2</sub>-eq tonnes)</b>	<b>199,228</b>	<b>47</b>	<b>152,197</b>	<b>126</b>	<b>30,263</b>	<b>128,277</b>	<b>510,138</b>	<b>100.0</b>

18. The installation of new equipment in Turkmenistan required 52.86 mt of HFC out of 256.77 mt of HFCs used for servicing, representing 20.5 per cent of the total use of HFC in the country for 2021. The installation of new equipment required: 24.13 mt of HFC-134a in industrial refrigeration and chillers; 19.26 mt of R-404A for commercial and industrial refrigeration, and chillers; 6.06 mt of R-410A and 3.41 mt of R-407C for AC and chillers.

*Refrigeration and air-conditioning servicing sector*

19. There are approximately 2,200 servicing technicians (an estimated 5 per cent are women technicians). Of the total number of servicing technicians, about 800 are working for servicing workshops, while the remaining 1,400 operate as self-employed freelancers. At all levels, most of the technicians have acquired their skills through self-training. The high ambient temperatures, coupled with the country's vast territory, adds complexity to the servicing and maintenance of RAC equipment. Furthermore, the

<sup>8</sup> Due to the drastic reduction of consumption in 2022, the uses in 2021 are around the average of 2020–2022 and therefore more representative than the data corresponding to 2022.

<sup>9</sup> Includes split, multi-split and variable refrigerant flow systems, ducted and package rooftop.

inadequate servicing practices<sup>10</sup> of most technicians result in substantial wastage and emissions of HCFCs and HFCs, intensifying the need for refrigerants.

20. While the respective uses of HFCs and HCFCs in 2021 are 256.77 mt and 79.36 mt, the consumption of low-GWP refrigerants is minor. HCFC-22 and HFCs (HFC-134a, R-404A and R-407C) constitute the refrigerant demand for servicing supermarkets, cold rooms, food production, industrial refrigeration, and refrigerated transport. Ammonia (NH<sub>3</sub>)<sup>11</sup> is still used in large industrial units in old installations with high capacities, but not in new equipment. For servicing small fridges and freezers, the predominant refrigerant is HFC-134a (97 per cent), and there is also a marginal use of R-600a (3 per cent). Currently, most imported domestic fridges are R-600a-based, which has a market share of 12 per cent and continues to increase.

21. Regarding stationary AC demands, R-410A-based AC units are rapidly replacing HCFC-22 units in residential AC since new HCFC-based installations are banned in Turkmenistan. The use of HCFC-22 is still quite significant in servicing chillers and ducted AC units. HFC-32-based AC units are scarce. In the MAC sector, HFC-134a remains the predominant refrigerant for servicing small to medium-sized vehicles. HFO-1234yf (hydrofluoro-olefin) is also used but primarily in the latest generation of vehicles, and its usage remains minimal in comparison to HFC-134a.

#### Phase-down strategy for stage I of the Kigali HFC implementation plan

##### *Overarching strategy*

22. Turkmenistan developed its overarching strategy and proposed funding based on a sectoral approach in RAC servicing and other cross-cutting activities. Although Turkmenistan has high ambient temperature conditions, the country has not requested exemptions for HFC uses in any subsector. The country is proposing four stages for KIP implementation. The submission only includes funding needs for stage I of the KIP (from 2024 to 2029), which will build synergies with the HPMP and the institutional strengthening project.

##### *Established HFC baseline and proposed reductions*

23. The Government of Turkmenistan submitted its report for 2020–2022 as per Article 7 of the Montreal Protocol. By adding 65 per cent of the HCFC baseline (in CO<sub>2</sub>-eq tonnes) to the average HFC consumption in 2020–2022, the established HFC baseline is 597,121 CO<sub>2</sub>-eq tonnes, as shown in table 3.

**Table 3. HFC baseline for Turkmenistan (CO<sub>2</sub>-eq tonnes)**

Baseline calculation	2020	2021	2022
HFC annual consumption	586,253	510,256	256,793
HFC average consumption 2020-2022			451,101
HCFC baseline (65%)			146,020
HFC baseline			<b>597,121</b>

24. Stage I of the KIP aims to enable the country's compliance with the HFC freeze and 10 per cent reduction control measures of the Kigali Amendment as shown in table 4.

<sup>10</sup> Common issues in the servicing practices include flushing with refrigerants, leak testing using compressed air or refrigerant, inadequate evacuation, poor brazing, inaccurate charging, and a lack of or insufficient recovery and recycling of refrigerants.

<sup>11</sup> Since the survey examined only the HFC uses, there is no data analysis of the NH<sub>3</sub> uses for industrial cooling.

**Table 4. HFC consumption limits proposed by stage I of the KIP for Turkmenistan (CO<sub>2</sub>-eq tonnes)**

	2024	2025	2026	2027	2028	2029
Kigali Amendment consumption limits	597,121	597,121	597,121	597,121	597,121	537,409
Consumption limits proposed under the KIP	597,121	597,121	597,121	597,121	597,121	537,409

*Proposed activities*

25. Stage I of the KIP for Turkmenistan aims to establish the primary groundwork for the RAC equipment servicing sector to facilitate the required reduction steps in the country's HFC consumption. The components of stage I with their cost breakdown (as initially submitted) are introduced below:

- (a) *Policy development*: Provide support to assess and strengthen the country's quota system; adopt national norms and standards for the safe operation and maintenance of equipment containing flammable and toxic refrigerants; prohibit HFC venting from end-of-life equipment, and conduct an assessment to determine the proper time for restricting or banning the import of different types of HFC-based RAC equipment, and the necessary enforcement mechanisms (US \$11,000);
- (b) *Training of customs officers and prevention of illegal trade of HFCs*: Provide support to update the curriculum and manuals for training programmes, and training to 100 customs and other enforcement officers about Montreal Protocol controlled substances and revised legislation (US \$17,000);
- (c) *Training of technicians in safe handling, good practices and safety in respect of low-GWP alternatives*: At least 20 of the most skilled local technicians, selected from different regions of the country and including women, will be trained and certified to handle low-GWP refrigerants by an international training centre abroad; update of training programmes and manuals, and training of 50 technicians to handle low-GWP refrigerants and reclamation (US \$225,000);
- (d) *Servicing tools for refrigeration systems*: Training in low-GWP technology and the provision of tools to 10 servicing workshops, to reduce HFC leaks, improve the quality and intensity of work with alternative refrigerants, and increase the energy efficiency of refrigeration systems (US \$15,000); and
- (e) *Recycling and recovery of HFCs*: At least two centres of excellence will be supported with recovery units, vacuum pumps, recovery cylinders, storage tanks, and leak detectors, (US \$56,000).

*Project implementation, coordination, and monitoring*

26. The NOU will ensure continuous oversight of project activities of stage I of the KIP, maintain ongoing communication with UNIDO, carry out field visits to stakeholders, and review regularly and prepare reports. The funding requested amounts to US \$36,000, with the following cost breakdown: international and national consultants (US \$28,000), travel for monitoring (US \$2,800), consultation meetings and other expenses (US \$5,200).

*Gender policy implementation*

27. In line with decisions 84/92(d), 90/48(c) and 92/40(b), a gender ratio of participants at the workshops/training sessions and awareness programmes will be determined as a baseline for KIP implementation, to be reassessed and analysed at project closure. The NOU will undertake different steps to maximize the participation of women in customs training and technician training. Gender will be

considered in the recruitment of international and national consultants and some female trainers will be engaged as role models in the implementation of activities under stage I of the KIP. During implementation of the KIP, the NOU will collect gender disaggregated data; include the gender dimension in the selection of beneficiaries for tools; encourage women working in the field of refrigeration; and sensitize stakeholders to the gender policy of the Multilateral Fund.

#### Coordination of activities in the servicing sector under HCFC phase-out and HFC phase-down plans

28. The Government of Turkmenistan commits to harmonize activities for the phase-out of HCFCs and the phase-down of HFCs to the extent possible. The development of regulatory measures and safety standards, the training of customs officers, the training and certification of technicians, the procurement of tools, the promotion of low-GWP technologies, the strengthening of recovery and recycling, and project coordination will be implemented in an integrated manner between the HPMP and the KIP, thus minimizing expenses and logistical costs. Furthermore, awareness raising targeted at main country stakeholders will be developed under the institutional strengthening project. The schedule of HFC phase-down and HCFC phase-out commitments, and of the KIP and HPMP tranches is presented in annex I to the present document. The activities and associated costs of stage I of the KIP and that of stage II of the HPMP as well as that anticipated for stage III of the HPMP is presented in annex II to the present document.

#### Implementation plan for the first tranche of stage I of the Kigali HFC implementation plan

29. As submitted, the first funding tranche of stage I of the KIP in the total amount of US \$118,000 will be implemented between January 2024 and December 2025 and include the following activities:

- (a) *Policy development*: Provide support to assess and strengthen the country's quota system; adopt national norms and standards for the safe operation and maintenance of equipment containing flammable and toxic refrigerants; conduct an assessment to determine the proper time for restricting or banning the import of different types of RAC equipment based on HFCs and prohibiting HFC venting from end-of-life equipment, and the necessary enforcement mechanisms (US \$11,000);
- (b) *Training of customs officers and prevention of illegal trade of HFCs*: Provide support to update the curriculum and manuals for training programmes, and training to 40 customs and other enforcement officers about the controlled substances and revised legislation (US \$10,000);
- (c) *Training of technicians on safe handling, good practices and safety in respect of low-GWP alternatives*: At least 12 of the most skilled local technicians, selected from different regions of the country and including women, will be trained and certified to handle low-GWP refrigerants by an international training centre; update of training programmes and manuals (US \$85,000); and
- (d) Project coordination and monitoring (US \$12,000) with the following cost breakdown: international and national consultants (US \$9,000), consultation meetings and other expenses (US \$3,000).

## SECRETARIAT'S COMMENTS AND RECOMMENDATION

### COMMENTS

30. The Secretariat reviewed stage I of the KIP for Turkmenistan in light of the existing policies and guidelines of the Multilateral Fund, including decision 92/37,<sup>12</sup> stage II of the HPMP, and the 2023–2025 business plan of the Multilateral Fund.

#### Overarching strategy

31. The Secretariat asked for clarifications on how Turkmenistan would achieve the proposed HFC phase-down targets. UNIDO informed that in addition to implementing the HFC quota system, the servicing for residential AC and domestic, commercial, industrial and transport refrigeration are the priority subsectors identified for assistance in stage I. Furthermore, UNIDO reported that the expected technology commercially available in the country over the next five years are based on R-290, R-600A, R-717, R-744, HFC-32, and HFO-1234yf. The set of activities proposed in the KIP would limit the import of equipment with high GWP and facilitate the adoption of low-GWP alternatives, as well as reducing HFC use through better servicing practices and the recovery and recycling of HFCs.

#### HFC baseline, proposed reductions and risk of non-compliance and flexibility provided by the Meeting of the Parties (decision XXXV/16)

32. As shown in table 3 above, the estimated baseline for HFC consumption is 597,121 CO<sub>2</sub>-eq tonnes. The Secretariat exchanged views with UNIDO about forecasted HFC consumption. It is noted that the low consumption in 2022 was due to the construction of the new city “Arkadag” ceased among other reasons related to the economic depression resulting from the pandemic, and the economy has since been recovering as demonstrated in the increase in import permits already issued for 2023 and the expected consumption which would be comparable to that in 2021 (510,256 CO<sub>2</sub>-eq tonnes). It is further noted that starting from the estimated consumption of HFCs in 2023, under a demand growth of 6 per cent expected by the country, and the HFC phased in from the HCFC phase-out, Turkmenistan would be in potential non-compliance with the freeze of HFC consumption and the 10 per cent reduction if no action were taken now.

33. At the 35<sup>th</sup> meeting of the Parties to the Montreal Protocol, the parties addressed the impact of the COVID-19 pandemic on the HFC baseline of countries that (a) have experienced demonstrated reductions in their respective levels of consumption of HFCs during the years 2020-2022, as compared to 2018-2019; (b) are expected to have calculated levels of consumption of HFCs in 2024 that exceed their respective calculated baselines; and (c) have expressed concern in writing to the Ozone Secretariat regarding the impact of the COVID-19 pandemic on their baselines. Accordingly, decision XXXV/16 established inter alia that the Implementation Committee under the Non-Compliance Procedure of the Montreal Protocol should defer, until 2026 data becomes available, any consideration of compliance status with regard to control measures for consumption of HFCs, for eight countries, including Turkmenistan, on the understanding that the country will continue to make every effort to comply with these control measures.

34. The Secretariat notes that the Government of Turkmenistan intends to make every effort to comply with the Montreal Protocol control measures and that it has proposed in its KIP, as presented in table 4 above, that its annual HFC consumption levels do not surpass the Montreal Protocol targets.

35. In light of decision XXXV/16, the Secretariat would seek guidance from the Executive Committee on the procedure to be followed if the HFC consumption level in any of the years 2024 to 2026 is above the Montreal Protocol target.

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<sup>12</sup> Level and modalities of funding for HFC phase-down in the refrigeration servicing sector.

Policy, regulatory and institutional frameworks*HFC licensing and quota system*

36. Decision 87/50(g) requests bilateral and implementing agencies, when submitting stage I of the KIPs, to include confirmation that the country has an established and enforceable national system of licensing and quotas for monitoring HFC imports/exports in place, consistent with decision 63/17. Accordingly, the Government of Turkmenistan established a licensing system for HFCs and its blends, adopted on 29 May 2020. Because the institutional and legislative capacity for the quota system is already in place, the Government of Turkmenistan will be in a position to promptly issue import quotas for HFCs to each of the registered importers, starting on 1 January 2024.

Technical and cost-related issues

37. UNIDO reported that the demand for refrigerants will continue to increase in coming years because of the economic and social development in the country. The country's main challenge is transforming the demand from HFC to zero and low-GWP refrigerants. Additional safety standards are required to address issues such as pressure safety, toxicity, electrical safety, flammability and explosion protection, and the general safety of machinery and technicians. At the same time, technologies with low GWP are not distributed due to either overregulation, which is the case with NH<sub>3</sub>, or lack of experience in their use, like with hydrocarbons (HCs) or carbon dioxide (CO<sub>2</sub>). Regarding the MAC sector, UNIDO informed that currently, there is a banning on importing vehicles older than five years from the manufacture date, which indirectly contributes to reducing the leakages of HFC-134a.

38. The KIP will include a process for adoption of standards and codes of best practice to guide the installation and maintenance of RAC equipment with flammable refrigerants. The mandatory certification for servicing technicians will be binding in 2024. Furthermore, the country will invest more than 58 per cent of the KIP budget to create a specialized work force for safe work with NH<sub>3</sub>, CO<sub>2</sub>, HC refrigerants and HFOs, handling pressure vessels in industrial refrigeration systems, electrical safety, soldering and tinning, reduction of leakages during installation and maintenance, increasing the energy efficiency of systems and environmental management of refrigerants.

39. In response to the Secretariat's inquires for additional explanation of the training and certification of experts by an international training centre, UNIDO indicated that the training location would be determined by the outcomes of the open international tender, based on the lowest-price technically acceptable offer received. UNIDO emphasized that high-quality training for local experts requires access to specialized equipment, facilities, and hands-on experience that are most readily available at dedicated training centres abroad. The trained experts would then participate in building the RAC sector's capacity, not only as trainers of technicians in good practices and alternative refrigerants, but also in the development of curricula and training materials for vocational education centres, the certification of RAC technicians, advising different stakeholders on the selection and maintenance of energy-efficient RAC equipment, and evaluating safety protocols, as well as introducing new technologies at industry exhibitions and outreach events. UNIDO added that to ensure the experts trained abroad return and contribute to KIP implementation, a multifaceted approach will be adopted, including having the project team sign an after-training service agreement with trainees, ensuring that they serve within the RAC sector in the country for an agreed period post-training and possible penalties or revocation of certification if experts do not fulfil agreements to train others upon their return.

Total project cost and tranche distribution

40. In line with decision 92/37 and given that the average HFC consumption in servicing in baseline years for Turkmenistan reaches 242 mt, the budget for stage I has been agreed at US \$325,000.

41. The revised proposal includes adjustments in the coordination and monitoring category of up to 10 per cent of the total amount requested, an additional awareness workshop on gender initially not planned, and the training and certification of 16 trainers instead of 20 as initially planned. In principle, there are no modifications in procuring tools/equipment for recovery and recycling and training of technicians in low-GWP alternatives and recovery and recycling. However, UNIDO pointed out that the implementation of the KIP will stay within the available budget, and further indicated that the high inflation and cost increases in all economic sectors meant that the scope of some activities might vary along the whole period of implementation. Table 5 below presents the proposed and agreed budget per activity under stage I.

**Table 5. Proposed and agreed cost of activities to be implemented in stage I**

Activity	Proposed cost (US \$)	Agreed cost (US \$)
Policy development and implementation	11,000	11,000
Training of customs officers and prevention of illegal trade of HFCs	17,000	17,000
Certification of 16 trainers <sup>13</sup> abroad and training of 50 technicians in safe handling, good practices and safety in respect of alternatives	225,000	190,000
Workshop seminar on gender in the RAC sector	0	3,500
Servicing tools for refrigeration systems	15,000	15,000
Recycling and recovery of HFCs	56,000	56,000
Project implementation, coordination, and monitoring	36,000	32,500
<b>TOTAL</b>	<b>360,000</b>	<b>325,000</b>

42. The activities agreed for the first tranche will remain as initially planned; however, the monitoring and coordination budget has been reduced from US \$12,000 to US \$10,000. Therefore, the total budget agreed for the first tranche is US \$116,000. The second tranche will continue as planned and the third tranche will be reduced from US \$101,000 to US \$68,000. Table 6 below introduces the funds proposed and agreed per tranche of stage I.

**Table 6. Proposed and agreed tranche budget distribution in stage I (US \$)**

	First Tranche		Second Tranche		Third Tranche		Total	
	Proposed	Agreed	Proposed	Agreed	Proposed	Agreed	Proposed	Agreed
Project costs	118,000	116,000	141,000	141,000	101,000	68,000	360,000	325,000
Project support costs	8,260	8,120	9,870	9,870	7,070	4,760	25,200	22,750
<b>Total</b>	<b>126,260</b>	<b>124,120</b>	<b>150,870</b>	<b>150,870</b>	<b>108,070</b>	<b>72,760</b>	<b>385,200</b>	<b>347,750</b>

#### Impact on the climate

43. The activities planned by Turkmenistan, including its efforts to promote low-GWP alternatives, the training of technicians in good servicing practice as well as the recovery and reuse of refrigerants, indicate that the implementation of stage I of the KIP will reduce the emission of HFCs into the atmosphere, resulting in climate benefits. A calculation of the impact on the climate of the activities in the KIP indicates that Turkmenistan will achieve annual emission reductions of 59,712 CO<sub>2</sub>-eq tonnes of HFCs when the final target in stage I of the KIP is achieved, calculated based on the difference between the HFC baseline and the final target set in stage I.

#### Sustainability of the HFC phase-down and assessment of risks

44. The main risks associated to the successful implementation of the KIP and its sustainability, includes coordinating among government institutions and the private sector, possible challenges in the market uptake of new technologies (technical issues, flammability, and safety) as a country with a high ambient temperature, and limited experience of RAC technicians in working with low-GWP refrigerants. The potential risk of non-compliance will be mitigated by establishing a monitoring and evaluation

<sup>13</sup> Initially plan 20 trainers to be certified abroad and agreed on 16 trainers because of budget adjustments.

framework to assess the effectiveness of the strategy in reducing HFC consumption and facilitating the transition to low-GWP alternatives.

45. Turkmenistan has outlined its strategy for achieving long-term sustainability through a comprehensive capacity-building effort aimed at cultivating a significant critical mass of national RAC specialists and trained technicians. This strategy places a strong emphasis on a training program that prioritizes “learning by doing”. The sustainability of the outcomes is further ensured by the active involvement and empowerment of key Government stakeholders in multi-stakeholder processes within the various components of stage I of the KIP. Furthermore, partnerships with relevant organizations will be reinforced by legislative changes that facilitate their increasing role in transitioning to low-GWP technologies in sectors where they are available, as well as in the processes of reclaiming and recycling HFCs.

46. As described in detail in paragraphs 32 to 35, the potential risk of non-compliance with the Montreal Protocol targets due to the low consumption in baseline years is being addressed through the application of decision XXXV/16, and the Government will closely monitor HFC consumption and work with stakeholders to promote alternative solutions, so demand could be managed within the threshold established by the KIP.

47. The commitment under stage I of the KIP will be sustained over time with the implementation and strengthening of the licensing and quota system for HFCs, coordination among the relevant authorities to monitor the refrigerant market, strengthening the records of HFC use, particularly the record keeping by end users, and the continuous supervision by the NOU of all the activities being implemented.

#### Co-financing

48. UNIDO explained that a total in-kind contribution equivalent to US \$40,000 will be provided as co-financing under stage I of the KIP, including in-kind time and resource support from the beneficiaries for the consumables of training courses, maintenance of the granted equipment and tools, establishment of the F-gas record-keeping system at the enterprise level, and technical measures to minimize refrigerant leaks and improve the energy efficiency of the refrigeration systems.

#### 2023-2025 business plan of the Multilateral Fund

49. UNIDO is requesting US \$347,750, plus agency support costs, for the implementation of stage I of the KIP for Turkmenistan. The total value of US \$124,120, including agency support costs, requested for the period of 2023–2025, is US \$32,635 above the amount in the business plan.

#### Draft Agreement

50. A draft Agreement between the Government of Turkmenistan and the Executive Committee for stage I of the KIP has not been prepared as the Agreement template is still under consideration by the Executive Committee.

51. If the Executive Committee so wishes, the funds for stage I of the KIP for Turkmenistan could be approved in principle, and funds for the first tranche could be approved on the understanding that the Agreement would be prepared and presented at a future meeting, before the submission of the second tranche, and once the Agreement template has been approved.

## RECOMMENDATION

52. The Executive Committee may wish to consider:

- (a) Approving, in principle, stage I of the Kigali HFC implementation plan (KIP) for Turkmenistan for the period 2023–2029 to reduce HFC consumption by 10 per cent of the country's baseline in 2029, in the amount of US \$325,000, plus agency support costs of US \$22,750 for UNIDO, as reflected in the schedule contained in annex I of the present document;
- (b) Noting that if the HFC consumption level for Turkmenistan in any of the years 2024 to 2026 is above the Montreal Protocol control limits, the Secretariat would inform and seek guidance from the Executive Committee on the procedure to follow in light of decision XXXV/16;
- (c) Approving the first tranche of stage I of the KIP for Turkmenistan, and the corresponding tranche implementation plan, in the amount of US \$116,000, plus agency support costs of US \$8,120, for UNIDO; and
- (d) Requesting the Government of Turkmenistan, UNIDO and the Secretariat to finalize the draft Agreement between the Government of Turkmenistan and the Executive Committee for the reduction in consumption of HFCs, including the information contained in the annex referred to in subparagraph (a) above, and to submit it to a future meeting once the KIP Agreement template has been approved by the Executive Committee.

**PROJECT EVALUATION SHEET – NON-MULTI-YEAR PROJECT**

**TURKMENISTAN**

**PROJECT TITLE**

**BILATERAL/IMPLEMENTING AGENCY**

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

The proposal seeks to provide comprehensive support on energy efficiency in the context of HFC phase-down, such as enabling the country to build capacity to develop minimum energy performance standards (MEPS) and labelling schemes for refrigeration, air-conditioning and heat pump (RACHP) equipment, energy efficiency monitoring, and testing and certification processes for these categories of equipment.
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<b>NATIONAL CO-ORDINATING AGENCY</b>	Ministry of Environment
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<b>LATEST ARTICLE 7 DATA (Annex F)</b>	<b>Year:</b> 2022	143.08 mt	256,793 CO <sub>2</sub> -eq tonnes
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<b>Particular</b>	<b>Non-investment activities</b>
Project duration (months):	18
Initial amount requested (US \$):	172,000
Final project costs (US \$):	142,000
Requested grant (US \$):	142,000
Implementing agency support cost (US \$):	12,780
Total cost of project to Multilateral Fund (US \$):	154,780
Status of counterpart funding (Y/N):	N
Project monitoring milestones included (Y/N):	Y
Minimum energy performance standards available for the relevant sector (Y/N):	N

<b>SECRETARIAT'S RECOMMENDATION</b>	Individual consideration – all technical and cost issues resolved
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## PROJECT DESCRIPTION

### Background

53. On behalf of the Government of Turkmenistan, UNIDO has submitted, in line with decision 91/65, a request for a pilot project to enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities), in the amount of US \$172,000, plus agency support cost of US \$15,480, as originally submitted.<sup>14</sup>

### Energy efficiency pilot project

54. Information on the country's status of ratification to the Kigali Amendment, the policy, regulatory and institutional frameworks for the implementation of the Montreal Protocol, HFC consumption and its distribution by sector, the established HFC baseline, and relevant activities from the request for stage I of the Kigali HFC implementation plan (KIP) and the first tranche submitted to the current meeting, is available in paragraphs 9 to 29 of the present document. The country has not yet requested funding for energy efficiency related activities under decision 89/6.

### Policy, regulatory and institutional framework

55. The national authorities responsible for energy efficiency are the Ministry of Energy, which develops policies, regulations, and guidelines on energy efficiency, and the Ministry of Construction and Architecture, which consistently improves work on designing energy-efficient objects in the industry and construction engineering sector.

56. The key institutions responsible for enforcing MEPS are the Ministry of Energy, which would lead the development and approval of the MEPS regulations, and the State Service for Standardization and Metrology, which would be responsible for incorporating the MEPS into official standards for imported and locally manufactured refrigeration and air-conditioning (RAC) equipment. If required, the Ministry of Industry would ensure MEPS compliance among local RAC manufacturers. The Ministry of Environmental Protection will coordinate and constitute a working group with those institutions to implement this proposal in consultation with Turkmenistan's largest refrigerating and building companies and with technical support from international experts.

57. Turkmenistan enacted a construction energy-efficiency standard<sup>15</sup> assigning to buildings energy-efficiency classes that correspond to specific indicators of primary energy consumption for heating, cooling and ventilation. Furthermore, a draft of the new law, "On Energy Efficiency and Energy Saving", is being considered by the Assembly of Turkmenistan, and contains an article on prohibiting the import of any equipment without certificates/labels/other documents confirming its energy efficiency. However, the country has neither adopted MEPS nor mandatory energy efficiency labelling requirements for RACHP equipment.

### Project objective

58. The proposal seeks to provide comprehensive support on energy efficiency in the RACHP sector in the context of HFC phase-down, such as enabling the country to build capacity to develop MEPS and labelling schemes for RACHP equipment, energy efficiency monitoring, and testing and certification processes for these categories of equipment.

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<sup>14</sup> As per the letter of 20 June 2023 from the Ministry of Environmental Protection of Turkmenistan to UNIDO.

<sup>15</sup> CST of 2.01.03-16 "Construction heat engineering"

Proposed activities

59. Activities with their cost breakdown (as initially submitted) are proposed below:

- (a) Institutional strengthening and developing an action plan on energy efficiency to enable the elimination of institutional barriers that hinder the distribution of energy-efficient technologies during the transition to low-GWP technologies (US \$82,000):
  - (i) Analysis of the existing national and international legislation on energy efficiency for the RACHP sector, identification of existing gaps in the country legislation and outlining ways to update the regulatory framework on energy efficiency for these types of equipment in the country (US \$6,000);
  - (ii) Two coordination meetings among the country's main stakeholders and international experts for approximately 20 participants to draft a road map for developing the legislation on the energy efficiency of the RACHP sector (US \$15,000);
  - (iii) Establishment and operation of a working group for developing MEPS, energy-efficiency labels and testing programmes, and standards for RACHP equipment for the consideration of the corresponding authorities (US \$35,000);
  - (iv) Drafting a National Plan for Energy Efficiency to set the framework on energy efficiency improvement and the transition to zero and low-GWP safe technologies in the RACHP sector (US \$20,000); and
  - (v) Drafting two annual progress reports and the final report of all work conducted under the project. (US \$6,000);
- (b) A five-day study tour with 15 participants from the private sector and relevant authorities to a country with a similar profile to Turkmenistan that has implemented demonstration projects with natural refrigerants (carbon dioxide (CO<sub>2</sub>), ammonia (NH<sub>3</sub>), and R-290), an energy-efficiency labelling scheme and an energy-efficiency rating for the RACHP equipment (US \$40,000);
- (c) Establishment of an energy-efficiency RACHP testing centre at the Yagshygeldi Kakayev International Oil and Gas University to enable importers and suppliers to voluntarily provide reliable information about RACHP equipment energy efficiency to consumers (US \$30,000); and
- (d) Production of awareness-raising and outreach information materials to promote MEPS, energy-efficiency labelling systems, and the installation of energy-efficient RACHP equipment operating with low or zero-GWP through three awareness seminars for 50 main institutional stakeholders and representatives from about 100 end users; publications on websites and participation in industry exhibitions or any other relevant ecological event in the country to inform general users interested in energy saving and environmental protection (US \$20,000).

Total cost of the pilot project

60. The project is expected to be completed in 36 months after approval, between January 2024 and December 2026, for a total cost of US \$172,000, as initially submitted.

**SECRETARIAT'S COMMENTS AND RECOMMENDATIONS**

**COMMENTS**

61. The Secretariat has reviewed the project proposal in light of the activities and criteria under decision 89/6 and decision 91/65.

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

Policy, regulatory and institutional framework

63. The Secretariat asked whether energy-efficiency activities should incentivize country opportunities to avoid the continued growth in the use of controlled substances, where feasible. UNIDO confirmed that the proposal's potential was to promote low-GWP alternatives and avoid continued HFC growth by systematically addressing the lack of knowledge access and other barriers through regulations and awareness raising. Furthermore, the proposal intended to demonstrate the viability of natural-refrigerant-based systems to meet performance needs safely and efficiently if designed, installed and serviced correctly, building confidence in natural refrigerant alternatives.

64. On the scope of the legislation analysis, UNIDO cited various framework laws in Turkmenistan to review, such as the environmental protection laws, industry regulations, and standards for refrigerants and equipment. Likewise, the proposal included identifying best practices from countries with a more advanced HFC phase-down and globally proven approaches that Turkmenistan might adapt. Stakeholder consultations across government, industry and civil society to get input on perceived barriers and proposed solutions would count toward the report of existing regulations on energy-efficiency-related matters. In addition to developing MEPS, links with public procurement and updating the building standards on heat engineering would be examined during the implementation of the pilot project.

65. Regarding the added value of developing a National Plan for Energy Efficiency in the RACHP sector, UNIDO explained that it would be a strategic document to clearly articulate the approach for achieving the country's energy-efficiency objectives, allowing for adaptation to emerging challenges and opportunities. Additionally, the plan would assess low-GWP technology options, identify policy and capacity-building initiatives, propose a timeline for the implementation of various components of the plan, recommend tools and mechanisms for monitoring progress and evaluating outcomes, estimate the financial resources required, examine potential sources of funding, and recognize potential risks and mitigation strategies.

66. The Secretariat confirmed with UNIDO that the development of MEPS will include a process or mechanism to monitor and assess their implementation in the RACHP equipment. The Secretariat also explored whether it might be meaningful as part of the activities to enhance coordination and cooperation to seek formal confirmation (e.g., a memorandum of agreement or equivalent) with energy efficiency authorities on collaboration and information sharing when developing energy efficiency standards and associated regulations for RACHP equipment. UNIDO confirmed that such a formal agreement for further cooperation among the designated authorities would reinforce the process of development and implementation of MEPS for RACHP equipment.

67. Noting that Turkmenistan did not manufacture but instead imported RACHP equipment, the Secretariat sought additional information on whether there would be coordination on MEPS and energy-efficiency-related issues with the neighbouring countries. UNIDO clarified that no initiatives for regional energy-efficiency standards on RACHP equipment were under consideration. However, since Turkmenistan participates in the European and Central Asia network meetings, that network is an additional information exchange platform on lessons learned.

#### Technical and cost-related issues

68. The Secretariat enquired why 15 participants should learn about alternative refrigerants by visiting pilot projects abroad when the KIP foresees the international certification of 16 RAC trainers in the same subject. UNIDO clarified that the proposed study tour serves an important awareness-building role that is complementary but distinct from the hands-on technician training under the KIP. UNIDO added that different stakeholder groups needed tailored messaging and takeaways to support their role in the national HFC phase-down process. Specifically, the study tour proposed under the pilot project will help to build stakeholder support for natural refrigerant use and capacity building by demonstrating first-hand to policymakers and industry leaders the safety, reliability and energy efficiency of propane, NH<sub>3</sub>, CO<sub>2</sub> and other natural refrigerant systems in real-world settings, and inspiring them with potential business opportunities. In summary, by exposing decision-makers directly to well-managed uses of flammable refrigerants abroad, the tour will bring unique insights and momentum to the regulatory adoption process and help develop tailored regulations for Turkmenistan.

#### Agreed cost of the pilot project

69. The Secretariat asked UNIDO to remove the establishment of a testing centre from the project proposal on the understanding that the criteria for funding pilot projects did not include such activities, and it would remain under discussion within the operational framework on energy efficiency.<sup>16</sup>

70. Table 7 provides the proposed and revised activities and agreed funding for the pilot project to maintain energy efficiency in the servicing sector.

**Table 7: Requested and agreed funding and activities for the pilot project proposal**

Component and activity descriptions	Proposed costs (US \$)	Agreed costs (US \$)
<b>Component 1: Institutional strengthening and developing an action plan on energy efficiency</b>		
Carrying out an analysis of the current legislation and standards of Turkmenistan in the energy-efficiency sphere	6,000	6,000
Coordination and drafting of a road map for developing the legislation on energy efficiency for the RACHP sector	15,000	15,000
Developing and implementing MEPS, labelling and testing programmes, and standards for RACHP equipment	35,000	35,000
Drafting a national plan on energy-efficiency improvement and the transition to zero and low-GWP safe technologies in the RACHP sector	20,000	20,000

<sup>16</sup> UNEP/OzL.Pro/ExCom/93/98

<b>Component and activity descriptions</b>	<b>Proposed costs (US \$)</b>	<b>Agreed costs (US \$)</b>
Two progress reports and a final report on project implementation	6,000	6,000
<i>Subtotal Component 1</i>	<i>82,000</i>	<i>82,000</i>
<b>Component 2: Training of main stakeholders</b>		
Visiting demonstration projects abroad about energy-efficiency standards, energy-efficiency labelling, and low-GWP alternatives in the RACHP sector	40,000	40,000
<i>Subtotal Component 2</i>	<i>40,000</i>	<i>40,000</i>
<b>Component 3: Establishment of EE testing centre</b>		
Establishment of an energy-efficiency RACHP equipment testing centre at the Yagshygeldi Kakayev International Oil and Gas University	30,000	0
<i>Subtotal Component 3</i>	<i>30,000</i>	<i>0</i>
<b>Component 4: Awareness and Outreach</b>		
Preparation of special information materials	8,000	8,000
Information outreach	12,000	12,000
<i>Subtotal Component 4</i>	<i>20,000</i>	<i>20,000</i>
<b>Total</b>	<b>172,000</b>	<b>142,000</b>

#### Sustainability of the pilot project and assessment of risks

71. By implementing this pilot project proposal to develop the energy-efficiency regulatory framework while phasing down HFCs in the servicing sector, the main country stakeholders will have gained experience in identifying challenges and opportunities related to institutional coordination, market response to energy-efficient technology, and monitoring the performance of energy-efficient equipment. The development of the national plan on energy-efficiency improvement and the transition to zero and low-GWP safe technologies in the RACHP sector is a dynamic strategy to adjust the approach for adopting and implementing MEPS long-term, ensuring sustainability of the project proposal objective.

#### **RECOMMENDATION**

72. The Executive Committee may wish to consider:

- (a) Approving the pilot project to maintain and/or enhance the energy efficiency of replacement technologies and equipment in the context of HFC phase-down (non-investment activities) for Turkmenistan, in the amount of US \$142,000, plus agency support costs of US \$12,780 for UNIDO, noting:
  - (i) That the Government of Turkmenistan has committed to the conditions referred to in decision 91/65(b)(iv)b. to b(iv)d.; and
  - (ii) That the project would be operationally completed no later than 31 December 2026 and a detailed project report would be submitted to the Executive Committee within six months of the date of completion of the project.

**Annex I**

**SCHEDULE OF HFC PHASE-DOWN AND HCFC PHASE-OUT COMMITMENTS AND FUNDING TRANCHES  
UNDER THE KIGALI HFC IMPLEMENTATION PLAN AND THE HCFC PHASE-OUT MANAGEMENT PLAN FOR TURKMENISTAN**

**Kigali HFC implementation plan (stage I)**

Row	Particulars	2023	2024	2025	2026	2027	2028	2029	Total
1.1	Montreal Protocol reduction schedule of Annex F substances (CO <sub>2</sub> -eq tonnes)*	n/a	597,121	597,121	597,121	597,121	597,121	537,409	n/a
1.2	Maximum allowable total consumption of Annex F substances (CO <sub>2</sub> -eq tonnes)	n/a	597,121	597,121	597,121	597,121	597,121	537,409	n/a
2.1	Lead IA (UNIDO) agreed funding (US \$)	116,000	0	0	141,000	0	0	68,000	<b>325,000</b>
2.2	Support costs for Lead IA (US \$)	8,120	0	0	9,870	0	0	4,760	<b>22,750</b>
3.1	Total agreed funding (US \$)	116,000	0	0	141,000	0	0	68,000	<b>325,000</b>
3.2	Total support costs (US \$)	8,120	0	0	9,870	0	0	4,760	<b>22,750</b>
3.3	Total agreed costs (US \$)	124,120	0	0	150,870	0	0	72,760	<b>347,750</b>

\*Stage II of the HPMP has an established target up to 2025.

**HCFC phase-out management plan (stage II and stage III)**

Row	Particulars	2023	2024	2025	2026	2027	2028	2029	2030	Total
1.1	Montreal Protocol reduction schedule of Annex C, Group I substances (ODP tonnes)	4.42	4.42	2.21	TBD					
1.2	Maximum allowable total consumption of Annex C, Group I substances (ODP tonnes)	4.42	4.42	2.21						
2.1	Lead IA (UNIDO) agreed funding (US \$)	0	0	40,000						
2.2	Support costs for Lead IA (US \$)	0	0	2,800						
3.1	Total agreed funding (US \$)	0	0	40,000						
3.2	Total support costs (US \$)	0	0	2,800						
3.3	Total agreed costs (US \$)	0	0	42,800						

\*TBD = to be determined



**Annex II**  
**IMPLEMENTATION OF BOTH THE HCFC PHASE-OUT MANAGEMENT PLAN (HPMP)**  
**AND THE KIGALI HFC IMPLEMENTATION PLAN (KIP) IN TURKMENISTAN (US \$)**

Area of work	HPMP	HPMP stage II	HPMP stage III	KIP	Stage I	Combined cost
	Activity	Cost	Estimated cost	Activity	Cost	
Provision of tools and equipment for technicians	Provision of tools to enhance good practices to RAC service companies		20,000	Provision of tools to enhance good practices to 10 RAC service companies	15,000	35,000
Training of trainers and refrigeration and air-conditioning (RAC) technicians	Training of five trainers abroad under international standards; training of 150 service technicians on certification standards	45,500	50,000	Certification of 16 trainers on low-GWP alternatives; and training of 50 technicians on safe handling, good practices and safety in respect of flammable/toxic alternatives	190,000	285,500
RAC training centres	Delivery of eight zero and low-global warming potential (GWP) alternative refrigerant training simulators	130,000	150,000			280,000
Centres of excellence	Provision of a reclamation unit, refillable containers, and accessories for recovery and recycling	68,000	0	Additional recovery units, vacuum pumps, recovery cylinders and storage tanks, and leak detectors	56,000	124,000
Development of code of practice/technical standards	Development of a code of practice for flammable or toxic refrigerants	0*	10,000	Adopt national norms and standards for safe operation and maintenance of equipment containing flammable and toxic refrigerants	0*	10,000
Certification of technicians	Establishing a mandatory certification system for service technicians	0*	14,000			14,000
Strengthening licensing and quota system and development of regulations	Establishing a ban on total HCFC imports since 2030, except for the servicing tail uses according to the Montreal Protocol provisions		5,000	Strengthening HFC quota system; prohibit HFC venting from end-of-life equipment; and assessing options for restricting or banning the import of HFC-based equipment	11,000	16,000
Provision of tools to customs	Provision of five refrigerant identifiers	20,000	0			20,000
Training of customs officers	Updating 100 customs officers and 20 inspectors from the Ministry of Environment on revised ODS regulation	15,000	10,000	Training to 100 customs officers about the Montreal Protocol controlled substances and revised legislation	17,000	42,000
Awareness and outreach	Updating information of 50 key stakeholders and government officers on low-GWP alternative technologies.	10,000	20,000	Workshop seminar on gender mainstreaming in the RAC sector	3,500	33,500
Coordination & monitoring	Project implementation, coordination, and monitoring	20,000	30,000	Project implementation, coordination, and monitoring	32,500	82,500
<b>Grand total</b>		<b>308,500</b>	<b>309,000</b>		<b>325,000</b>	942,500
<b>Percentage of total</b>		<b>33%</b>	<b>33%</b>		<b>34%</b>	<b>100%</b>

(\*) cost already included in other area of work