UNITED NATIONS

EP

United Nations Environment Programme

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/99/38
18 November 2026

ORIGINAL: ENGLISH

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

PROJECT PROPOSAL: BANGLADESH

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

Phase-down

• Kigali HFC implementation plan (stage I, first tranche)	UNDP and UNEP	Individual consideration

[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.

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

Bangladesh

PROJECT TITLE	AGENCY
Kigali HFC implementation plan (stage I)	UNDP (lead), UNEP

ARTICLE 7 DATA (Annex F)	Year: 2025	3,202.76 mt	5,116,939 CO_2-eq tonnes

COUNTRY PROGRAMME SECTORAL DATA (CO_2-eq tonnes) AND ACTIVITIES								Year: 2025	
	Aerosol	Foam	Fire-fighting	Air-conditioning (AC) and refrigeration				Solvent	Other
				Manufacturing			Servicing		
				Refrigeration	AC	Other			
HFCs	746,944		27,650	12,133	904,924	77,119	3,309,265		
HFCs in imported pre-blended polyols*		28,840							
Planned activities agreed (Y/N)		Y			Y		Y		

*Average consumption of HFCs contained in imported pre-blended polyols in 2022–2024: 15,045 CO_2-eq tonnes, based on data from the project submission. Country programme implementation reports for the period 2020–2025 will be updated to include consumption data on HFC-245fa in imported pre-blended polyols. The Secretariat will report on this matter during the 99th meeting.

AVERAGE 2020–2022 HFC CONSUMPTION IN SERVICING	1,688.27 mt	1,930,073 CO_2-eq tonnes

BASELINE DATA (CO_2-eq tonnes)	2020	2021	2022	Average 2020–2022
HFC annual consumption	4,048,769	4,292,556	4,490,020	4,277,115
HCFC baseline (65%)				1,196,417
HFC baseline				5,473,532

HFC CONSUMPTION ELIGIBLE FOR FUNDING (CO_2-eq tonnes)	
Starting point for sustained aggregate reductions	TBD
Previously approved HFC phase-down investment projects	Yes
Aggregate reductions from previously approved projects	329,801

PROJECT DATA AS AGREED			2026*	2027	2028	2029	2030	2031	Total
Consumption (CO_2-eq tonnes)	Montreal Protocol limits		5,473,532	5,473,532	5,473,532	4,926,179	4,926,179	4,926,179	n/a
	Maximum allowable		5,473,532	5,473,532	5,473,532	4,926,179	4,926,179	4,652,502	n/a
	Reduction from baseline (%)		0.0	0.0	0.0	10.0	10.0	15.0	n/a
Project costs requested in principle (US $)	UNDP	Project costs	2,065,525	0	1,079,581	0	204,000	0	3,349,106
		Support costs	144,587	0	75,571	0	14,280	0	234,438
	UNEP	Project costs	104,000	0	122,500	0	141,101	0	367,601
		Support costs	13,520	0	15,925	0	18,343	0	47,788
Total amounts recommended in principle (US $)		Project costs	2,169,525	0	1,202,081	0	345,101	0	3,716,707
		Support costs	158,107	0	91,496	0	32,623	0	282,226
		Total funds	2,327,632	0	1,293,577	0	377,724	0	3,998,933

* Recommended for approval at the present meeting

Reduction from remaining consumption eligible for funding in stage I (CO_2-eq tonnes)	700,862

Secretariat's recommendation	Individual consideration

PROJECT DESCRIPTION

1. The present document contains the following sections:

I. Summary of the proposal as submitted

II. Background: Status of implementation of the HCFC phase-out management plan and previous HFC-related activities

III. HFC consumption overview: HFC consumption levels, trends, and consumption by sector

IV. Stage I of the Kigali HFC implementation plan, as submitted: Regulatory framework, phase-down strategy, total stage cost, and implementation plan for the first tranche

V. Secretariat's comments, including the agreed cost of activities

VI. Recommendation

I. Summary of the proposal as submitted

2. On behalf of the Government of Bangladesh, UNDP as the lead implementing agency has submitted a request for stage I of the Kigali HFC implementation plan (KIP), at a total cost of US $4,787,804, consisting of US $4,086,369, plus agency support costs of US $286,046, for UNDP and US $367,601, plus agency support costs of US $47,788, for UNEP, as originally submitted.[2]

3. The implementation of stage I of the KIP will assist the Government of Bangladesh in meeting the target of 15 per cent reduction from its HFC baseline consumption by 1 January 2031.

4. The first tranche of stage I of the KIP being requested at this meeting amounts to US $2,775,860, consisting of US $2,487,598, plus agency support costs of US $174,132, for UNDP and US $101,000, plus agency support costs of US $13,130, for UNEP, as originally submitted, for the period of January 2027 to December 2028.

II. Background

Status of implementation of the HCFC phase-out management plan

5. Table 1 presents information on the HCFC phase-out management plan (HPMP) in Bangladesh as of August 2026.

Table 1. HPMP implementation status for Bangladesh

Particulars	Stage I	Stage II	Stage III
Meetings when HPMP was approved or updated	65th/80th	81st/90th/94th	97th
Reduction from baseline	30% by 2018	67.5% by 2025	100% by 2030
Total stage cost (US $)	1,556,074	5,449,814	2,399,415
Date of completion (actual or planned)	March 2019	December 2026	December 2031

[2] As per the letter of 17 August 2026 from the Department of Environment of Bangladesh to UNDP.

Status of implementation of previous HFC-related activities

6. Table 2 presents an overview of activities implemented in Bangladesh in the context of the Kigali Amendment that have been funded by the Multilateral Fund.

Table 2. Previously approved HFC-related activities in Bangladesh

Approval meeting	Project title	Implementing agency	Cost (US $)	Date of completion
75th	Survey of ODS alternatives	UNDP	55,000	December 2017
81st	Enabling activities for HFC phase-down	Government of Canada	75,000	June 2022
		UNDP	14,000	
		UNEP	61,000	
80th	Conversion from HFC-134a to isobutane as refrigerant in manufacturing household refrigerator and of reciprocating compressor of HFC-134a to energy efficient compressor (isobutane) in Walton Hi-Tech Industries Limited	UNDP	3,131,610	December 2019

III. HFC consumption overview

HFC consumption levels

7. Bangladesh only imports (does not produce) HFCs for use in the manufacturing and servicing sectors. The most consumed substances in 2025 were R-410A (31.8 per cent of total HFC consumption in CO_2-equivalent (CO_2-eq) tonnes), HFC-134a (27.0 per cent), R-404A (15.8 per cent), HFC-32 (11.7 per cent), R-407C (11.4 per cent), and other HFCs (2.2 per cent). Table 3 presents the country's HFC consumption as reported to the Ozone Secretariat under Article 7 of the Montreal Protocol, and the country's HFC baseline.

Table 3. 2020–2025 HFC consumption and baseline for Bangladesh (Article 7 data)

HFC	GWP	2020	2021	2022	2023	2024	2025
Metric tonnes (mt)							
HFC-125	3,500	0.00	0.00	3.20	2.40	0.00	1.00
HFC-134a	1,430	1,315.08	1,328.58	1,279.08	1,255.82	1,147.30	967.10
HFC-152a	124	0.00	0.00	0.00	0.00	0.00	1.00
HFC-227ea	3,220	3.56	2.40	48.00	42.00	11.88	9.40
HFC-23	14,800	0.00	0.00	0.36	0.30	0.00	0.02
HFC-245fa	1,030	0.00	0.00	20.00	24.00	0.00	0.00
HFC-32	675	14.00	36.88	86.64	108.30	510.88	887.40
HFC-365mfc	794	0.00	0.00	35.00	40.00	0.00	0.00
R-404A	3,921.6	15.93	12.36	37.28	49.70	139.24	206.01
R-407C	1,773.85	47.05	38.99	32.21	32.21	139.24	329.40
R-410A	2,087.5	958.74	1,065.59	1,043.44	1,082.09	619.86	779.14
R-507A	3,985.0	0.00	4.52	0.37	0.56	5.65	20.31
R-513A	629.20	0.00	0.00	0.00	0.00	0.00	2.00
Total (mt)		**2,354.36**	**2,489.32**	**2,585.58**	**2,637.38**	**2,574.05**	**3,202.76**
In imported pre-blended polyols		*	*	*	*	*	28.00

HFC	GWP	2020	2021	2022	2023	2024	2025
CO_2-eq tonnes							
HFC-125	3,500	0	0	11,200	8,400	0	3,500
HFC-134a	1,430	1,880,564	1,899,869	1,829,084	1,795,823	1,640,633	1,382,947
HFC-152a	124	0	0	0	0	0	124
HFC-227ea	3,220	11,463	7,728	154,560	135,240	38,254	30,268
HFC-23	14,800	0	0	5,328	4,440	0	296
HFC-245fa	1,030	0	0	20,600	24,720	0	0
HFC-32	675	9,450	24,894	58,482	73,103	344,844	598,995
HFC-365mfc	794	0	0	27,790	31,760	0	0
R-404A	3,921.60	62,459	48,471	146,189	194,904	546,044	807,889
R-407C	1,773.85	83,467	69,162	57,127	57,136	246,991	584,297
R-410A	2,087.50	2,001,366	2,224,419	2,178,185	2,258,863	1,293,958	1,626,444
R-507A	3,985	0	18,012	1,474	2,232	22,515	80,919
R-513A	629.20	0	0	0	0	0	1,258
Total (CO_2-eq tonnes)		**4,048,769**	**4,292,556**	**4,490,020**	**4,586,619**	**4,133,238**	**5,116,939**
In imported pre-blended polyols		*	*	*	*	*	28,840

HFC baseline calculation (CO_2-eq tonnes)	
Average HFC consumption in 2020–2022	4,277,115
HCFC baseline (65%)	1,196,417
HFC baseline	**5,473,532**
Average consumption of HFCs in imported pre-blended polyols in 2022–2024	*

* CP implementation reports for the period 2020–2024 do not currently include consumption data on HFC-245fa in imported pre-blended polyols. The reports will be updated to include this information, and the Secretariat will provide an update on the matter during the 99th meeting.

Country programme implementation report

8. The sectoral HFC consumption data provided by the Government of Bangladesh in its country programme (CP) implementation report for 2025 is consistent with the data reported under Article 7 of the Montreal Protocol.

HFC consumption trends

9. Bangladesh's overall HFC consumption remained relatively stable from 2019 to 2024, with temporary declines in 2020 and 2024. The 2020 decrease resulted from restrictions related to the COVID-19 pandemic, while the decline in 2024 was due to civil unrest and political instability, affecting imports and supply chains. Consumption experienced an increase in 2025 as economic activity and cooling-sector demand recovered, exceeding pre-pandemic levels.

10. Recent consumption trends have also been influenced by the phase-out of HCFC-based equipment, which has increased demand for HFC alternatives such as HFC-32, R-404A and R-407C. HFC-32 consumption grew rapidly following the adoption of safety standards and room air-conditioning (AC) manufacturing conversions, while growth in R-404A and R-407C was driven by the expansion of cold-chain, commercial AC and chiller applications.

HFC consumption by sector

11. HFCs are almost evenly consumed in the manufacturing sector (44.8 per cent in mt and 35.0 per cent in CO_2-eq tonnes) and the servicing sector (55.2 per cent in mt and 65.0 per cent in CO_2-eq tonnes).

Within manufacturing, the largest percentage is attributed to residential AC (19.0 per cent in mt and 10.9 per cent in CO_2-eq tonnes), followed by aerosol (16.2 per cent in mt and 14.5 per cent in CO_2-eq tonnes), commercial AC (7.1 per cent in mt and 6.7 per cent in CO_2-eq tonnes), and other subsectors, as shown in tables 4 and 5.

12. Within servicing, HFCs are mainly consumed in the residential AC subsector (25.5 per cent in mt and 25.5 per cent in CO_2-eq tonnes), followed by industrial refrigeration (10.7 per cent in mt and 13.9 per cent in CO_2-eq tonnes), mobile air-conditioning (MAC) (10.5 per cent in mt and 9.4 per cent in CO_2-eq tonnes), transport refrigeration (4.7 per cent in mt and 11.5 per cent in CO_2-eq tonnes), and other subsectors, as shown in tables 4 and 5.

Table 4. 2025 HFC consumption in Bangladesh by sector (mt)

Sector	HFC-32	HFC-134a	HFC-245fa	R-404A	R-407C	R-410A	Others	Total	Share of total (%)
Manufacturing									
Commercial refrigeration	0.00	3.00	0.00	2.00	0.00	0.00	0.00	5.00	0.2
Residential AC	509.68	0.00	0.00	0.00	0.00	103.16	0.00	612.84	19.0
Commercial AC	90.32	5.00	0.00	2.00	2.00	126.84	2.00	228.16	7.1
PU foam	0.00	0.00	28.00	0.00	0.00	0.00	0.00	28.00	0.9
Aerosol	0.00	520.00	0.00	0.00	0.00	0.00	2.00	522.00	16.2
Firefighting	0.00	0.00	0.00	0.00	0.00	0.00	8.50	8.50	0.3
Other	0.00	0.00	0.00	0.00	27.00	14.00	0.90	41.90	1.3
Subtotal manufacturing	**600.00**	**528.00**	**28.00**	**4.00**	**29.00**	**244.00**	**13.40**	**1,446.40**	**44.8**
Refrigeration and air-conditioning servicing									
Refrigeration subsectors									
Domestic	0.00	90.00	0.00	0.00	0.00	0.00	0.00	90.00	2.8
Commercial	0.00	10.31	0.00	25.25	0.00	0.00	0.00	35.56	1.1
Industrial	0.00	0.00	0.00	25.25	300.39	0.00	20.33	345.97	10.7
Transport	0.00	0.00	0.00	151.51	0.00	0.00	0.00	151.51	4.7
Air-conditioning subsectors									
Residential	287.40	0.00	0.00	0.00	0.00	535.13	0.00	822.53	25.5
Mobile	0.00	338.79	0.00	0.00	0.00	0.00	0.00	338.79	10.5
Subtotal servicing	**287.40**	**439.10**	**0.00**	**202.01**	**300.39**	**535.13**	**20.33**	**1,784.36**	**55.2**
Total	**887.40**	**967.10**	**28.00**	**206.01**	**329.39**	**779.13**	**33.73**	**3,230.76**	**100**

Table 5. 2025 HFC consumption in Bangladesh by sector (CO_2-eq tonnes)

Sector	HFC-32	HFC-134a	HFC-245fa	R-404A	R-407C	R-410A	Others	Total	Share of total (%)
Manufacturing									
Commercial refrigeration	0	4,290	0	7,843	0	0	0	12,133	0.2
Residential AC	344,034	0	0	0	0	215,347	0	559,381	10.9
Commercial AC	60,966	7,150	0	7,843	3,548	264,779	1,258	345,543	6.7
PU foam	0	0	28,840	0	0	0	0	28,840	0.6
Aerosol	0	743,600	0	0	0	0	3,344	746,944	14.5
Firefighting	0	0	0	0	0	0	27,650	27,650	0.5

Sector	HFC-32	HFC-134a	HFC-245fa	R-404A	R-407C	R-410A	Others	Total	Share of total (%)
Other	0	0	0	0	47,894	29,225	2,898	80,017	1.6
Subtotal manufacturing	**405,000**	**755,040**	**28,840**	**15,686**	**51,442**	**509,350**	**35,150**	**1,800,508**	**35.0**
Refrigeration and air-conditioning servicing									
Refrigeration subsectors									
Domestic	0	128,700	0	0	0	0	0	128,700	2.5
Commercial	0	14,743	0	99,020	0	0	0	113,764	2.2
Industrial	0	0	0	99,020	532,847	0	81,215	713,082	13.9
Transport	0	0	0	594,162	0	0	0	594,162	11.5
Air-conditioning subsectors									
Residential	193,995	0	0	0	0	1,117,084	0	1,311,079	25.5
Mobile	0	484,470	0	0	0	0	0	484,470	9.4
Subtotal servicing	**193,995**	**627,913**	**0**	**792,202**	**532,847**	**1,117,084**	**81,215**	**3,345,256**	**65.0**
Total	**598,995**	**1,382,953**	**28,840**	**807,889**	**584,288**	**1,626,434**	**116,365**	**5,145,764**	**100**

Manufacturing sectors

Domestic refrigeration manufacturing

13. Bangladesh has a well-developed domestic refrigeration manufacturing sector with 16 local manufacturers. The industry has largely transitioned from HFC-134a to R-600a and non-HFC foam-blowing technologies, although imports of HFC-134a-based refrigerators are still allowed and account for a portion of the market. Local manufacturing has therefore effectively completed its transition away from high-global-warming-potential (GWP) refrigerants, including through the Multilateral Fund (MLF)-funded conversion of the largest manufacturer, Walton Hi-Tech Industries Limited,[3] from HFC-134a to R-600a (197.3 mt of HFC-134a phased out in 2019).

Commercial refrigeration manufacturing

14. This sector consists of beverage coolers and ice cream display freezers, serving the food and beverage, retail, and supermarket industries. Approximately 60,000 commercial display refrigeration units are manufactured locally each year, while 20,000 units are imported to meet demand. Industry growth is expected to exceed 8 per cent annually, driven by retail expansion, cold-chain development, and increasing demand for larger and more sophisticated refrigeration systems.

15. The sector has largely completed its transition from HFC-134a to low-GWP refrigerants, with most beverage coolers now using R-600a and most display freezers using R-290 or R-600a. However, a small number of smaller enterprises continue to manufacture limited quantities of HFC-134a-based equipment (e.g., one enterprise manufactured approximately 313 such units in 2025), indicating that this sector may require support in future stages of the KIP.

Industrial refrigeration manufacturing

16. The industrial refrigeration sector is primarily composed of engineering, assembly and system-integration enterprises. At least six enterprises fabricate cold-room panels (foamed with HFC-245fa/HFC-365mfc) and assemble refrigeration systems using imported components. Demand is

[3] Approved at the 80th meeting (decision 80/73)

driven by cold storage, food processing, retail, fisheries, pharmaceuticals and agriculture, with R-404A being the principal HFC refrigerant for cold rooms and condensing units, and R-407C, as well as R-513A in small quantities, being used in locally assembled process chillers.

Transport refrigeration manufacturing

17. Although at an early stage of development, the transport refrigeration sector is growing rapidly as the cold-chain infrastructure expands. It consists mainly of vehicle body builders, refrigeration-unit assemblers, importers, and cold-chain logistics operators. Local companies install insulated panels and refrigerated bodies and integrate imported refrigeration units on trucks and vans. The sector relies primarily on R-404A and HFC-134a.

Room air-conditioning

18. Bangladesh's AC industry is largely supplied through local manufacturing and assembly, with more than 95 per cent of air conditioners sold being locally manufactured or assembled. The sector includes both fully integrated manufacturers and completely-knocked-down (CKD)/semi-knock-down (SKD) assemblers. While major components are manufactured locally by larger enterprises, compressors are imported.

19. Residential AC manufacturing is concentrated on split and window units and primarily relies on R-410A and HFC-32. Following the conversion of five AC manufacturers from HCFC-22 to HFC-32 and R-290 under stage II of the HPMP, HFC-32 consumption increased from 2.5 mt in 2019 to 887.4 mt in 2025, while R-410A consumption remains significant (779.1 mt in 2025). R-290 is present in the sector but has limited penetration owing to higher component costs (notably compressors), and manufacturers converted to R-290 under stage II of the HPMP also manufacture HFC-32-based models to remain competitive. Continued growth of HFC-32 will require additional capacity-building to address safety considerations related to flammability.

Metered-dose inhalers

20. Bangladesh has a well-developed pharmaceutical industry and is a recognized regional manufacturer of metered-dose inhalers (MDIs). Ten local manufacturers produce HFC-134a-based MDIs (some also use HFC-227ea), while five manufacturers produce dry-powder inhalers. In 2025, MDI manufacturing consumed approximately 520 mt of HFC-134a (more than half of national HFC-134a consumption), with one enterprise accounting for 40 to 50 per cent of this amount. The sector is export-oriented, supplying at least 40 developing countries, and HFC demand is expected to grow with market expansion. The transition to low-GWP alternatives faces significant barriers related to cost and supply chain availability (HFO-based MDIs are estimated to increase the cost of the final product at least five-fold); one manufacturer imported 1 mt of HFC-152a for trials in 2025. The Government has decided to defer action in the MDI sector to stage II of the KIP or later.

Polyurethane foam for insulation panels

21. The polyurethane (PU) foam sector manufactures insulation panels and related products for construction, cold rooms and industrial applications. Foam manufacture uses HFC-245fa (28.0 mt in 2025 for HFC-245fa contained in imported pre-blended polyols) and HFC-365mfc (35 to 40 mt in 2022–2023, with no imports reported in 2025), although imported finished panels (mainly extruded polystyrene) also compete in the market. The sector is relatively small and highly influenced by construction demand, energy-efficiency requirements and cost considerations.

Solvents, electronics and glass manufacturing

22. No HFC use has been identified in solvent, electronics (e.g., HFC-23 in cleaning and etching) or glass manufacturing (e.g., HFC-152a) applications. The small quantities of HFC-23 and HFC-152a reported in 2025 (0.02 mt and 1 mt, respectively) relate to ultra-low-temperature refrigeration and to trials by an MDI manufacturer.

Fire suppression systems

23. HFC-125 and HFC-227ea are used in fire suppression systems for industrial facilities and large ships. Consumption is small and variable (HFC-227ea decreased from 48 mt in 2022 to 9.4 mt in 2025, and 1 mt of HFC-125 was imported in 2025). The sector is specialized and relatively small, with equipment and technologies largely supplied through imports and international vendors.

Refrigeration and air-conditioning servicing sector

24. There are between 61,000 and 70,000 technicians and between 17,000 and 20,000 workshops consuming HFCs in Bangladesh. Most technicians operate in the informal sector and acquire their skills through apprenticeship and on-the-job training. Formal RAC qualifications are offered through the competency-based Technical and Vocational Education and Training system under the National Technical and Vocational Qualifications Framework, administered by the Bangladesh Technical Education Board under the National Skills Development Authority, and delivered through over 49 polytechnic institutes, 64 technical schools and colleges and more than 70 technical training centres. These qualifications are not linked to refrigerant handling, and there is no mandatory certification or licensing scheme for technicians; codes of practice and a pilot certification scheme were developed under stage II of the HPMP. Some 1,520 and 3,500 technicians were trained under stages I and II of the HPMP, respectively. Bangladesh has no established refrigerant recovery and reclamation infrastructure; three reclamation centres are being established under stage III of the HPMP, the first in Dhaka in partnership with Walton Hi-Tech Industries Limited (expected to be operational by the end of 2026).

Domestic, commercial, industrial and transport refrigeration servicing

25. The sector supports a wide range of refrigeration equipment, including chest freezers, display units, and centralized cooling systems. Most systems use R-404A and HFC-134a, although servicing requirements for HC-based systems are increasing as new equipment transition to lower-GWP alternatives. A key challenge is the limited availability of technicians trained to service systems based on CO_2 and other natural refrigerants.

26. The domestic refrigeration servicing primarily services an installed base of approximately 10 million older HFC-134a-based refrigerators currently in use across Bangladesh. Servicing is provided mainly by informal technicians, many of whom have received limited training in refrigerant handling and safety practices, as domestic refrigeration servicing was not covered by HPMP training programmes.

27. The industrial refrigeration market is largely organized around engineering and system-integration firms with dedicated industrial service teams. The main refrigerants in use include R-407C, R-404A, R-507A, and HFC-134a. Servicing demand is increasing with the expansion of cold storage facilities.

28. The transport refrigeration servicing sector supports refrigerated trucks, vans, trailers and reefers that are essential for preserving perishable goods throughout the cold chain. Equipment mainly uses R-404A and HFC-134a, although there is an increasing demand for technicians trained in servicing systems using low-GWP refrigerants.

Fishing vessel refrigeration servicing

29. Bangladesh's marine fishing fleet uses onboard refrigeration systems with R-404A and ammonia as the principal refrigerants. As the fishing industry expands, demand for servicing is expected to grow, while capacity-building will be required to facilitate future transitions to lower-GWP alternatives.

Air-conditioning servicing

30. The servicing sector supports a large installed base of residential, commercial and industrial AC equipment. Wall-mounted split air conditioners dominate residential applications, while cassette and ceiling-mounted systems are widely used in commercial and institutional applications. AC systems are extensively deployed across offices, retail establishments, hospitals, educational facilities, telecommunications infrastructure and industrial facilities.

31. Servicing demand is concentrated on equipment using R-410A and, increasingly, HFC-32. Light commercial systems remain heavily reliant on R-410A, while older equipment continues to use R-407C. Chillers primarily use HFC-134a and R-407C, although some HCFC-22 equipment remains in operation. R-410A accounts for the largest share of servicing demand in the sector, followed by HFC-32 and R-407C, with the share of HFC-32 expected to increase as the installed base of HFC-32 equipment grows. The growing penetration of HFC-32 is expected to increase the need for technician training in the safe servicing of mildly flammable refrigerants.

Mobile air-conditioning servicing

32. The MAC servicing sector is one of the largest HFC-consuming sectors in Bangladesh. It services a registered fleet of approximately 3.9 million vehicles (of which an estimated 2.5 million have functioning MAC systems), dominated by imported new and used vehicles, nearly all of which use HFC-134a, with limited availability of low-GWP refrigerants. HFC-134a servicing demand in the sector was estimated at about 338.8 mt in 2025. Growth in hybrid and electric vehicles may increase future demand for specialized servicing, further driving demand for HFC-134a and alternative refrigerants such as R-1234yf. The sector continues to expand due to the growing and aging vehicle fleet and the increased adoption of cooling equipment.

Medical and cryogenic equipment servicing

33. This specialized sector services refrigeration and cooling equipment used for vaccine storage, medical applications, cryogenic storage and health-care facilities. Refrigerants used include HFC-23, HFC-134a, R-404A and R-507A. The sector is relatively small but requires highly specialized servicing practices due to the critical nature of the applications.

Data-centre cooling subsector

34. Bangladesh's data-centre sector is expanding rapidly, driven by growth in cloud computing, telecommunications, fintech, e-commerce and digital government services. New Tier III and Tier IV facilities are expected to significantly increase national data-centre capacity over the coming years.

35. Data centres rely on cooling-intensive technologies such as computer room air-conditioning (CRAC) units, computer room air handlers (CRAHs) and chillers that operate continuously. As the sector grows, demand for refrigerant-based cooling equipment, refrigerant banks and servicing activities is expected to increase substantially, making data centres an increasingly important source of future cooling demand.

IV. Stage I of the Kigali HFC implementation plan as submitted

Institutional, policy and regulatory framework

36. The national ozone unit (NOU), under the Department of Environment (DOE) within the Ministry of Environment, Forest and Climate Change, serves as the national focal point for Montreal Protocol implementation and is responsible for coordinating compliance activities, managing and implementing projects, monitoring controlled substances, and administering the HFC licensing and quota systems. Strategic oversight is provided by the Montreal Protocol Project Steering Committee (PSC), which includes representatives from key government agencies, including the Ministry of Commerce, Ministry of Industries, Ministry of Power, Energy and Mineral Resources, Bangladesh customs, the Bangladesh Standards and Testing Institution (BSTI), and the Bangladesh Investment Development Authority (BIDA), as well as industry, training institutions, NGOs and implementing agencies. For the Kigali Amendment, the PSC was expanded to include additional stakeholders and supports policy development, implementation and capacity-building activities.

37. Following its ratification of the Kigali Amendment in 2020, Bangladesh introduced a regulatory framework for HFC control that includes mandatory import licensing, dedicated Harmonized System (HS) codes for individual HFCs and HFC-based equipment, and an HFC import quota system. HFC controls were incorporated into the Import Policy Order 2021–2024 through a series of gazette notifications issued between 2021 and 2023. Bangladesh established the HFC licensing and quota system in 2022, with the NOU responsible for issuing licences and monitoring compliance in cooperation with Bangladesh customs. The HFC licensing system follows the model already in place for HCFCs and is intended to support compliance with the country's Kigali Amendment obligations.

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

Overarching strategy

38. The Government of Bangladesh's overarching strategy for stage I of the KIP is to maintain the freeze in HFC consumption in 2026, achieve the 10 per cent reduction from the baseline of 5,473,532 CO_2-eq tonnes in 2029, in line with the Kigali Amendment control measures, and a 15 per cent reduction of the baseline by 2031. To this end, stage I combines investment and non-investment activities: the conversion of one PU foam manufacturing enterprise consuming HFC-245fa, together with capacity-building for small- and medium-sized enterprises (SMEs) in the adoption of low-GWP alternatives; the phase-out of HFCs in the residential and light commercial AC manufacturing sector; and activities in the refrigeration servicing sector, supported by regulatory measures. The strategy builds on the experience gained during the implementation of the HPMP and addresses the key needs for achieving sustained reductions in HFC consumption in line with the targets.

Proposed reductions

39. Based on inputs received from industry stakeholders during the KIP survey and technology trends, the Government of Bangladesh forecasted HFC consumption in a business-as-usual scenario using a compounded growth rate of 4.19 per cent during the period 2026 to 2031. Table 6 presents the Montreal Protocol limits, HFC consumption forecast and the proposed reductions for that period.

Table 6. HFC consumption forecast under the unconstrained scenario, Montreal Protocol limits, and proposed HFC reductions under stage I (CO_2-eq tonnes)

	2026	2027	2028	2029	2030	2031
HFC consumption forecast based on a compounded annual growth rate of 4.19 %*	4,873,876	4,975,060	5,271,583	5,326,055	5,372,581	5,509,726

	2026	2027	2028	2029	2030	2031
Montreal Protocol HFC consumption limits	5,473,532	5,473,532	5,473,532	4,926,179	4,926,179	4,926,179
HFC consumption levels proposed under the KIP	5,473,532	5,473,532	5,473,532	4,926,179	4,926,179	4,652,502
Proposed reductions from the HFC consumption baseline (%)	0	0	0	10	10	15

*Calculated based on estimated increases in consumption of different HFCs across various applications, with high growth projected up to 2029, followed by a decline in 2030 and 2031.

Proposed activities

Manufacturing sector

40. Stage I of the KIP for Bangladesh includes investment activities in the PU foam manufacturing sector to phase out pure HFC-245fa by converting one enterprise to low-GWP blowing agent and assisting eight SMEs to adopt low-GWP alternatives to HFCs. The total funding requested amounts to US $199,597.

41. In the residential and light commercial AC manufacturing sector, the manufacturing lines of 11 enterprises will be converted from R-410A to lower-GWP alternatives. Room air conditioners have a cooling capacity of up to 24,000 BTU/h, while light commercial air conditioners have a cooling capacity ranging from 30,000 up to 60,000 BTU/h. Commercial air conditioners refer to variable refrigerant flow (VRF) systems. The total funding requested amounts to US $2,589,275 and would primarily support product redesign, prototype development and testing, manufacturing facility conversion, and the training of in-house technicians. The proposed project costs for the 11 enterprises, as submitted, are presented in table 7.

Table 7. Conversion costs for the air-conditioning manufacturing sector in stage I of the KIP for Bangladesh, as submitted

Enterprise	Applications	2025 R-410A consumption (kg)	Incremental capital costs (US $)	Incremental operating costs (US $)	Total costs (US $)
Trade International Industries Ltd.	R-AC/L-AC	44,767	457,600	(28, 313)	429,287
RFL Electronics Ltd.	R-AC/L-AC	22,582	437,800	(15,934)	421,866
Jamuna Electronics and Automobiles Ltd.	R-AC	11,264	284,350	12,508	296,858
Minister Hi-Tech Park Electronics Ltd.	R-AC	13,774	284,350	15,489	299,839
Walton Hi-Tech Industries Ltd.*	L-AC/C-AC	14,466	287,100	(16,602)	270,498
Elite Hi-Tech Industries Ltd.*	L-AC	39,002	297,000	(26,319)	270,681
Esquire Electronics Ltd.	R-AC/L-AC	14,578	240,350	(6,804)	233,546
AC Bazar Industries Ltd.*	L-AC	3,242	155,100	(2,174)	152,926
Supreme Air-conditioning Co.*	L-AC	16,173	160,600	(10,626)	149,974
Transcom Electronics	SKD assembly – R-AC	3,300	36,300	0	36,300
Rancon Electronics Ltd.	SKD assembly – R-AC	463	27,500	0	27,500
Total		**183,611**	**2,668,050**	**(78,775)**	**2,589,275**

* These enterprises were funded under stage II of the HPMP to convert from HCFC-22 to R-290 and HFC-32.
Note: R-AC = room AC; L-AC = light commercial AC; C-AC = central AC.

Servicing sector

42. Activities in the refrigeration servicing sector will address demand mainly for HFC-134a, R-410A and R-404A; these activities include training and certification of technicians in the safe handling of flammable alternatives, the provision of servicing tools, and refrigerant recovery and recycling, complemented by training of customs officers and public awareness activities. All of these activities, together with those in the manufacturing sector, will be underpinned by policies and regulations to control and monitor HFCs. These include an HFC import licensing and quota system aligned with the HFC phase-down schedule, together with HS codes that distinguish HFCs and HFC blends. They also include restrictions on new HFC-based manufacturing capacity and on imports of HFC-based equipment, as well as strengthened data collection and reporting to keep the data reported under the CP implementation report and Article 7 consistent.

43. Activities proposed for implementation in the servicing sector under stage I and in the first tranche and their cost breakdown are presented in table 8.

Table 8. Servicing sector activities and their costs in stage I and in the first tranche of stage I of the KIP for Bangladesh, as submitted

Activity	Agency	Cost (US $)	
		Stage I	First tranche
1. Policy and regulatory framework		**153,800**	**77,600**
1.1. Regulatory framework for the RAC servicing sector: Develop and validate a regulatory framework for the RAC servicing sector; establish environmental competency requirements for refrigerant handling; define technician licensing and registration requirements; review and update codes of practice and standard operating procedures; assess enforcement mechanisms and institutional responsibilities to support future technician licensing, certification, refrigerant recovery and leak reduction requirements	UNEP	20,000	20,000
1.2. National RAC technician registry: Design and establish a national digital registry for RAC technicians to record environmental certifications, qualifications and licensing status and support monitoring, verification and future licensing and certification programmes	UNEP	60,000	30,000
1.3. Feasibility study on refrigerant leak management requirements for large end-users: Conduct a national feasibility study on refrigerant leak management requirements for large end-users (commercial buildings, hospitals, shopping centres and cold-chain facilities); assess options for refrigerant use logbooks, leak inspections, maintenance requirements, repair obligations and reporting systems; prepare recommendations for future policy development	UNEP	15,000	0
1.4. Assessment of barriers to female participation in the RAC sector: Assess legal, institutional and workplace barriers limiting women's participation in the RAC sector; develop recommendations to support policies, recruitment practices, training approaches and awareness initiatives that encourage women participation	UNEP	15,000	15,000
1.5. Policy dialogues and stakeholder consultations: Organize at least two stakeholder consultations and policy dialogues involving government agencies, industry associations, training institutions, importers and end-users to review and validate policy proposals related to technician licensing, environmental certification, refrigerant management and refrigerant recovery obligations	UNEP	6,000	0

Activity	Agency	Cost (US $)	
		Stage I	First tranche
1.6. Regulatory measures for the domestic refrigeration sector: Conduct economic impact assessments, supply-chain analyses and stakeholder consultations to support a ban on the manufacture and import of HFC-134a-based domestic refrigerators by 1 January 2028; provide technical assistance for development and enactment of the regulation (US $12,600); *1.7. Regulatory measures for the PU foam sector*: Conduct economic impact assessments, supply-chain analyses and stakeholder consultations to support a ban on imports of HFCs and HFC-based pre-blended polyols for PU foam manufacturing by 1 January 2031; provide technical assistance for development and enactment of the regulation (US $12,600); *1.8. Assessment of the room AC sector and future transition options*: Undertake an economic, social and environmental assessment of the room AC sector and its supply chain; assess barriers to wider adoption of low-GWP alternatives; support preparation for future policy measures, including a potential ban on the manufacture and import of R-410A-based room air conditioners under stage II of the KIP (US $12,600)	UNDP	37,800	12,600
2. Customs capacity-building		**29,000**	**20,000**
2.1. Updating customs training materials and enforcement procedures: Update customs training materials and enforcement guidance on HFCs and alternative refrigerants; incorporate guidance on refrigerant blends, low-GWP alternatives and flammable refrigerants; revise standard operating procedures for refrigerant identification, inspection, seizure, storage and disposal	UNEP	20,000	20,000
2.2. Training of customs trainers on HFC controls: Conduct training-of-trainers programmes for approximately 30 customs instructors and enforcement officers (including at least 20 per cent women) on HFC controls, refrigerant identification, risk-based inspections and enforcement procedures	UNEP	6,000	0
2.3. Customs cooperation meetings and border dialogues: Support participation of at least one customs officer in customs cooperation meetings, international workshops and border dialogues	UNEP	3,000	0
3. Capacity-building for the servicing sector		**173,750**	**15,000**
3.1. Updating RAC and MAC competency standards, curricula and training materials: Review and update national competency standards, curricula and training materials for RAC and MAC technicians to incorporate low-GWP refrigerants, refrigerant recovery and recycling, leak prevention and safe handling of flammable refrigerants; develop dedicated training materials for the MAC sector	UNEP	25,000	0
3.2. Development and introduction of a national environmental technician certification system: Develop a standalone environmental certification framework; establish competency requirements, certification procedures and assessment methodologies; incorporate recognition-of-prior-learning (RPL) mechanisms for experienced technicians	UNEP	15,000	15,000
3.3. Inception of the national environmental certification scheme: Support the inception of the certification scheme, including pilot assessments, certification administrations, issuance of certificates and licences, registration of successful candidates, and establishment of operational procedures required for	UNEP	12,500	0

Activity	Agency	Cost (US $)	
		Stage I	First tranche
implementation; support certification of at least 250 RAC technicians			
3.4. Training of assessors and trainers in RAC and MAC applications: Provide advanced international-level training for at least three national experts to become master assessors (including at least 30 per cent women); establish national assessment procedures; train at least 20 national assessors (including at least 20 per cent women) to undertake theoretical and practical competency assessments; establish a national assessor network; training of trainers for RAC (20) and MAC (10) servicing	UNEP	40,000	0
3.5. RAC training programmes: Train at least 600 RAC technicians, including at least 5 per cent women, on good servicing practices, refrigerant recovery, recycling and reclamation, leak prevention, refrigerant management and safe handling of low-GWP refrigerants	UNEP	75,000	0
3.6. MAC training programmes: Train at least 50 auto-mechanics, including at least 5 per cent women, on refrigerant management, leak reduction, improved servicing practices and safe handling of refrigerants used in current and future vehicle cooling technologies	UNEP	6,250	0
4. Training centres		**320,500**	**320,500**
4.1. Strengthening training centres with low-GWP training equipment: Procure and distribute: 10 HFC-134a MAC training units (US $110,000), two HFO-1234yf MAC training units for hybrid and electric vehicles (US $28,000), 10 R-600a domestic refrigeration training units (US $95,000) and three HFC-32 VRF/ variable-refrigerant-volume (VRV) training units (US $67,500); fees for freight, demurrage and commissioning (US $20,000)	UNDP	320,500	320,500
5. Technical assistance for the servicing sector		**550,697**	**260,836**
5.1. Recovery and recycling equipment for MAC service workshops: Provide 30 HFC-134a recovery, recycling and recharging units to selected MAC workshops and government transport-fleet workshops; promote refrigerant recovery, reuse and reduction of refrigerant leakage	UNDP	172,000	172,000
5.2. Technical assistance to Bangladesh Railway workshops: Provide two railway maintenance workshops with HFC-134a recovery and recycling equipment, recovery units and tanks, two complete servicing tool sets and specialized training for 40 railway maintenance technicians on good servicing practices and leakage reduction	UNDP	28,830	0
5.3. Support to domestic refrigeration technicians: Provide servicing toolkits to at least 150 female technicians servicing domestic refrigerators trained and certified under the KIP to support good servicing and safety practices and leakage reduction (US $157,275); provide one complete servicing tool set to the Bangladesh Refrigeration and Air-conditioning Merchants Association (BRAMA) to support technician training and dissemination of good servicing practices (US $4,578)	UNDP	161,853	0
5.4. Expansion of the refrigerant recovery, recycling and reclamation network: Establish one additional refrigerant reclamation centre outside the greater Dhaka metropolitan area to expand national recovery, recycling and reclamation capacity	UNDP	80,515	80,515
5.5. Assessment of the MDI sector: Conduct a situational analysis and national assessment of the MDI sector; evaluate options for transitioning from high-GWP propellants to lower-GWP	UNDP	20,000	7,321

Activity	Agency	Cost (US $)	
		Stage I	First tranche
alternatives and identify suitable alternative inhaler technologies for consideration under stage II of the KIP			
5.6. Pilot refrigerant leak detection programme for fishing vessels: Install and test refrigerant leak detection and monitoring systems on at least three fishing vessels; assess reductions in refrigerant losses and improvements in system performance and reliability	UNDP	54,500	0
5.7. Pilot leak detection and preventive maintenance programme for large end-users: Implement a pilot refrigerant leak management programme for selected shopping centres, hospitals, commercial buildings, food-processing facilities and cold-chain operators; establish preventive maintenance frameworks; deploy leak detection and refrigerant monitoring systems; document lessons learned and good practices to support future policy development	UNEP	33,000	1,000
6. Awareness and outreach		**15,851**	**0**
6.1. Communication strategy on HFC phase-down commitments and related policies: Conduct at least one national awareness campaign targeting end-users, technicians and policymakers; develop and disseminate printed materials, videos, digital content and awareness products on HFC phase-down obligations, low-GWP alternatives, refrigerant management, leak prevention, and good servicing practices	UNEP	10,000	0
6.2. Industry outreach and technology awareness activities: Organize technology roadshows, industry roundtables, technical briefings and dissemination events on low-GWP technologies, refrigerant management practices, technician certification initiatives and future policy developments; support participation in at least one Ozone2Climate industry event	UNEP	5,851	0
7. PMU activities	**UNDP**	**421,500**	**141,500**
Subtotal for UNDP		**1,297,497**	**734,436**
Subtotal for UNEP		**367,601**	**101,000**
Total		**1,665,098**	**835,436**

Project implementation, coordination and monitoring

44. Stage I of the KIP will build upon the project management unit (PMU) established under stage III of the HPMP. UNDP and the NOU will support project implementation, stakeholder coordination, regulatory and capacity-building activities, procurement, monitoring and reporting, and HFC consumption verification. A budget of US $421,500 is proposed for project personnel (US $225,000); technical experts (US $75,000); operational costs (US $45,000); implementation and monitoring (US $61,500); and ODS verification (US $15,000).

Total cost of stage I of the Kigali HFC implementation plan

45. The budget for stage I has been proposed at US $4,453,970. The costs of activities in the refrigeration servicing sector have been proposed in line with decision 92/37.

46. The proposed activities and cost of stage I of the KIP are summarized in table 9.

Table 9. Proposed cost of activities to be implemented in stage I and in the first tranche of stage I of the KIP for Bangladesh (US $)

Activity	Cost (US $)	
	Stage I	First tranche
Conversion of one PU foam manufacturing enterprise and SMEs	199,597	199,597
Conversion of 11 AC manufacturing enterprises	2,589,275	1,553,565
Servicing sector	1,243,598	693,936
PMU activities	421,500	141,500
Total	**4,453,970**	**2,588,598**
Subtotal for UNDP	*4,086,369*	*2,487,598*
Subtotal for UNEP	*367,601*	*101,000*

Implementation plan for the first tranche

47. The first funding tranche of stage I of the KIP was submitted in the total amount of US $2,588,598, as shown in table 9 above, to be implemented between December 2026 and December 2028. Detailed information on the activities to be implemented under the first tranche, including adjustments and level of funds as agreed, are presented in paragraph 71 and table 16 below.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

V. Comments

Institutional, policy and regulatory framework

HFC licensing and quota system

48. In line with decision 87/50(g), UNDP has confirmed that Bangladesh has an established and enforceable system of licensing and quotas for monitoring HFC imports/exports in place. The Government has issued HFC import quotas for 2026 at 5,468,843 CO_2-eq tonnes, which is lower than the baseline and the maximum allowable consumption proposed in the Agreement. The HFC import quotas for 2027 are expected to be set at the same levels as for 2026.

Ban on the manufacture and import of HFC-134a-based domestic refrigerators

49. The Secretariat noted that 16 local manufacturers have transitioned from HFC-134a to R-600a, owing to the latter's lower GWP and the higher energy efficiency of equipment using that refrigerant. To ensure the sustainable phase-out of HFC-134a in the domestic refrigerator manufacturing sector, the Government of Bangladesh will impose a ban on the manufacture and import of HFC-134a-based domestic refrigerators by 1 January 2028.

Technical and cost-related issues

Residential and light commercial air-conditioning manufacturing sector

50. The Secretariat had detailed discussions with UNDP on the costs associated with the conversion of the AC manufacturing enterprises from R-410A to HFC-32. Taking into account the relevant provisions of decision 95/86 on cost-effectiveness thresholds for the residential and commercial AC sector, the following cost adjustments were agreed with the agencies:

(a) Removal of the request for helium leak detectors for two manufacturers, as such equipment was not determined to be necessary for the types of AC equipment manufactured at those enterprises;

(b) Adjustment of the costs for vacuum pumps, taking into account the requirements associated with the use for A2L refrigerants to be adopted by the enterprises;

(c) Adjustment of the costs for safety training and technical support for project implementation and monitoring of timely project completion; and

(d) As Rancon Electronics Ltd. is a micro-enterprise (consumption of less than 1.5 mt) participating in a sector plan, the Secretariat recommended funding in accordance with decision 95/86(e), at US $34/kg, equivalent to 2.5 times the agreed cost-effectiveness threshold specified in the table contained in subparagraph (a) of that decision.

51. Regarding the consumption to be addressed by enterprises without additional funding, UNDP explained that an estimated 9.71 mt of R-410A and 2.0 mt of R-407C would be phased out by the industry without additional assistance under the project. This corresponds to a reduction of 23,817 CO_2-tonnes equivalent, included in table 15 as HFC consumption to be phased out without additional funding.

52. UNDP confirmed that no additional funding would be requested for the conversion of enterprises manufacturing residential and commercial AC equipment with a cooling capacity of up to 5 TR. Enterprises manufacturing larger-capacity equipment, including chillers and VRF systems, could be considered in future stages of the KIP, as sustainable alternative refrigerant technologies for the safe operation of such systems are not yet commercially viable.

53. Based on the above adjustments, the conversion cost and cost-effectiveness values were agreed at the levels presented in table 10, in accordance with the cost guidelines approved in decision 95/86.

Table 10. Conversion costs for the air-conditioning manufacturing sector in stage I of the KIP for Bangladesh, as agreed

Enterprise	Applications	Consumption (kg)	Incremental costs (US $)	
			As submitted	As agreed
Trade International Industries Ltd.	R-AC/L-AC	44,767	429,287	295,787
RFL Electronics Ltd.	R-AC/L-AC	22,582	421,866	292,416
Jamuna Electronics and Automobiles Ltd.	R-AC	11,264	296,858	202,189
Minister Hi-Tech Park Electronics Ltd.	R-AC	13,774	299,839	247,236
Walton Hi-Tech Industries Ltd.	L-AC/C-AC	14,466	270,498	173,498
Elite Hi-Tech Industries Ltd.	L-AC	39,002	270,681	302,281
Esquire Electronics Ltd.	R-AC/L-AC	14,578	233,546	216,392
AC Bazar Industries Ltd.	L-AC	3,242	152,926	64,197
Supreme Air-conditioning Co.	L-AC	16,173	149,974	196,674
Transcom Electronics	SKD assembly – R-AC	3,300	36,300	33,600
Rancon Electronics Ltd.*	SKD assembly – R-AC	463	27,500	15,742
Total		**183,611**	**2,589,275**	**2,040,011**
Cost-effectiveness (US $/kg)			**14.10**	**11.11**

* Rancon Electronics Ltd. is proposed to be funded at US $34/kg, as it is a micro-enterprise and qualifies for funding at 2.5 times the agreed cost-effectiveness threshold for residential AC manufacturers.
Note: R-AC = room AC; L-AC = light commercial AC; C-AC = central AC.

54. Regarding the sustainability of the conversion of residential and light commercial AC manufacturing, UNDP explained that the Government of Bangladesh intends to implement regulations prohibiting the manufacturing, import and sale of residential and light commercial air conditioners using high-GWP refrigerants. Given the need for stakeholder consultations and socioeconomic assessments of the impact on industry and consumers, the Government is considering implementing these regulations by 1 January 2033. This timeline is expected to align with the completion of the conversion projects at participating enterprises that is expected prior to that date. To ensure that safeguards are in place for timely

enforcement of the regulations, which are critical to creating a level playing field and sustaining compliance under the sector plan, the Secretariat discussed with UNDP, and it was agreed that the release of the final tranche of stage I of the KIP could be contingent upon confirmation that these regulations had been enforced through an appropriate government regulatory instrument.

Polyurethane foam manufacturing sector

55. As of the date of issuance of the document, data on HFC-245fa in pre-blended polyols had not been reported in the CP implementation reports for the period 2020–2024. Therefore, for the purpose of this analysis, data from the project submission was used to calculate the average consumption of HFCs in imported pre-blended polyols in 2022–2024, as shown in table 11.

Table 11. Consumption data on HFC-245fa in pre-blended polyols reported in the project submission, and average 2022–2024 consumption

HFC-245fa	2022	2023	2024
Metric tonnes	12.04	14.45	17.34
CO_2-eq tonnes	12,400	14,879	17,855
Average consumption of HFCs in imported pre-blended polyols in 2022–2024 (CO_2-eq tonnes)			15,045

56. The CP implementation reports will be updated to include this information. The Secretariat will provide an update to the Executive Committee on this matter during the 99th meeting.

57. The Secretariat discussed the HFC consumption of the foam-blowing agent enterprise and the reason for its previous decision not to adopt other low-GWP technologies, such as cyclopentane and methyl formate. UNDP explained that the enterprise had been using imported pre-blended polyols containing HCFC-141b. In 2019, supply constraints and price increases affecting those polyols prompted the enterprise to consider alternatives, including HFCs or cyclopentane. At that time, cyclopentane was considered less suitable because of the higher capital investment required and safety challenges. Consequently, the enterprise adopted HFC-based technologies. The enterprise now considers cyclopentane to be a feasible and cost-effective option for its product markets and is therefore proposing conversion under the current project.

58. The Secretariat had consultations with UNDP on the different cost components for conversion, noting that the enterprise proposed to retrofit its two existing foaming machines and that the associated retrofit costs are high. UNDP explained that, in addition to the retrofit of some components of the machines, additional equipment components were required to ensure the safe use and proper operation of the retrofitted equipment, resulting in higher costs. Following further consultations with the industry, it was agreed that the retrofit costs would be reduced from US $150,000 to US $90,000, with the enterprise co-financing the difference in costs.

59. The Secretariat further discussed with UNDP the proposed technical assistance component for the eight SMEs operating in the foam sector and its role in assisting the industry adopt low-GWP technologies. UNDP explained that the SME industry has limited knowledge of available alternative technologies and that the proposed assistance would support the safe and effective adoption of alternative foam-blowing agents, including flammable ones. UNDP further emphasized the importance of providing technical support and training materials in the local language to ensure that the industry understands the retrofit requirements and can safely adopt the alternatives. Following further discussions on different cost items, the technical assistance component was agreed at US $45,000.

60. With regard to the sustainability of the conversion, it was agreed that, by 1 January 2030, the import and sale of pure HFC-based foam-blowing agents for use by foam manufacturers would be prohibited in the country. Regarding regulations on imported pre-blended polyols using HFCs, consultations with

industry stakeholders would continue during stage I of the KIP, and an appropriate timeline would be established for the introduction and enforcement of a prohibition. In addition, UNDP confirmed that, upon completion of the project, the beneficiary foam manufacturing enterprise would cease using HFC-based foam blowing agents, both pure HFCs and imported pre-blended polyols containing HFCs.

61. Table 12 presents the agreed conversion costs for the foam manufacturing sector.

Table 12. Conversion costs for the PU foam manufacturing sector in stage I of the KIP for Bangladesh, as agreed (US $)

Particulars	As submitted	As agreed
Plant modification, including retrofit of foam equipment	233,000	173,000
Safety infrastructure	60,000	60,000
Technical assistance, including safety audit	25,000	30,000
Sub-total	*318,000*	*263,000*
Contingency	31,800	23,300
Total capital costs	***349,800***	***286,300***
Incremental operating costs	(200,203)	(200,203)
Total incremental costs	***149,597***	***86,097***
Technical assistance for SMEs in foam sector	50,000	45,000
Grand total	**199,597**	**131,097**
Average consumption of HFC-245fa (2022–2024) in kg		14,607
Cost-effectiveness of the plan (US $/kg)		8.98

Note: The total reduction to be achieved under the foam component is 14.61 mt (15,045 CO_2-eq tonnes), calculated based on the average consumption of HFC-245fa contained in imported pre-blended polyols during the period 2022–2024.

Service sector

62. On the need for MDI-related awareness, UNDP explained that continued outreach is necessary to provide updated technical information to the industry and facilitate dialogue between the industry and the Government to support HFC consumption reductions in MDI applications under stage II of the KIP.

63. The Secretariat held detailed consultations with UNDP regarding the implementation of the servicing sector licensing and certification programme. UNDP explained that, given the industry structure in Bangladesh, implementation presents challenges. The Government is therefore implementing various measures related to skills development and technician registration, given that the low-/lower-GWP alternatives in use are flammable and may pose additional safety risks during servicing and maintenance. The Government will continue to closely monitor these activities and report on progress achieved under stage I of the KIP when the second tranche is submitted.

64. The Secretariat also held consultations with UNDP on the need for the proposed recovery and reclamation programme, given the early stage of KIP implementation. UNDP explained that the activity would be implemented in close cooperation with industry, and that one of the identified refrigeration, AC and heat-pump manufacturers would participate through an appropriate public-private-partnership programme. Following further discussions, it was agreed that the activity would be funded under the second tranche and would be designed based on the findings from the implementation of stage III of the HPMP related to refrigerant recovery and reclamation, as well as other relevant policies.

65. The Secretariat had detailed discussions with UNDP on the various servicing sector activities and associated costs, resulting in the following adjustments:

(a) For technical assistance activities related to leak reduction in fishing vessels, the budget for monitoring servicing activities was reduced from US $34,000 to US $19,000, while the number of persons to be trained was increased from 50 to 200;

(b) The budget for activities related to strengthening the policy and regulatory framework was reduced from US $116,000 to US $103,000, reflecting reductions in funding for the activities related to regulations development, stakeholder consultations, servicing sector competency certification for HFC applications, and the national RAC technician registry development;

(c) The budget for training and capacity-building activities in the servicing sector was increased from US $173,750 to US $186,250. The adjustment reflects: a reduction in funding for updating training materials for the national servicing competency standards and MAC technicians from US $25,000 to US $20,000; the removal of activities related to the development and introduction of the standalone national certification programme (US $15,000); a reduction in funding for the MAC technician train-the-trainer programme from US $15,000 to US $10,000; and an increase in the number of RAC technicians to be trained from 600 to 900, resulting in an increase in the corresponding budget from US $75,000 to US $112,500;

(d) The removal of the pilot leak detection and preventive maintenance programme for large end-users (US $33,000), which will instead be integrated into training on good service practices and outreach activities for end users focusing on improved maintenance and leakage reduction steps; and

(e) An increase in the budget for awareness-raising and outreach activities from US $15,851 to US $49,351, to reflect the increase in the budget for general awareness activities and technical outreach to end users on improved operation and maintenance practices, particularly for large-capacity RAC equipment, on leak reduction techniques, preventive maintenance and related activities, as well as an increase in budget for technology outreach to industry on the adoption of low-GWP technologies.

66. Table 13 presents a summary of the agreed costs for the servicing sector.

Table 13. Summary of servicing sector activities and agreed costs (US $)

Particulars	As submitted	As agreed
Policy and regulatory framework	153,800	140,800
Customs and enforcement capacity-building	29,000	29,000
Capacity-building of the servicing sector	173,750	186,250
Training centre	320,500	320,500
Technical assistance to the servicing sector	550,697	517,697
Awareness and outreach activities	15,851	49,351
Total	**1,243,598**	**1,243,598**

67. Based on the cost of activities in the servicing sector, agreed at US $1,243,598, reductions from the remaining HFC consumption eligible for funding in the servicing sector amount to 278,712 CO_2-eq tonnes, as summarized in table 14.[4] Accordingly, the Government of Bangladesh has agreed to reduce its 2031 HFC consumption to 4,652,502 CO_2-eq tonnes, representing 15 per cent of the country's HFC baseline for compliance.

[4] Calculated in line with the methodology presented in annex I of document UNEP/OzL.Pro/ExCom/92/46.

Table 14. Agreed costs and reductions from HFC consumption eligible for funding and final target

Servicing sector		
Average HFC consumption in the servicing sector in baseline years	mt	1,688.27
	CO_2-eq tonnes	1,930,073
Average GWP of all HFCs consumed in the sector		1,143
Agreed funding	US $	1,243,598
Agreed cost-effectiveness threshold	US $/kg	5.10
Reductions in the servicing sector	mt	243.84
	CO_2-eq tonnes	278,712
Reductions from all sectors		
Established HFC consumption baseline	CO_2-eq tonnes	5,473,532
Reductions achieved through conversions in the manufacturing sector	CO_2-eq tonnes	422,150
Phase-in of HFC-32 in the AC manufacturing sector	CO_2-eq tonnes	92,953
Reductions achieved from HFC-134a phase-out of 230.63 mt at Walton Hi-tech Industries Limited		329,801
Reductions achieved through activities in the servicing sector	CO_2-eq tonnes	278,712
Target		
Proposed 2031 target	CO_2-eq tonnes	4,652,502

Project management unit

68. Funding for the PMU was agreed at US $302,000 (US $262,000 for staff and consultants, US $25,000 for awareness and outreach activities and implementation monitoring, and US $15,000 for verification), amounting to 8.84 per cent of total project cost.

Total project cost

69. At a total cost of US $3,716,707, stage I of the KIP for Bangladesh will result in a reduction of 677,045 CO_2-eq tonnes from the country's HFC consumption eligible for funding, as summarized in table 15. At the 80th meeting, the Executive Committee approved an HFC investment project for the conversion of a domestic refrigerator manufacturing facility from HFC-134a to isobutane as a refrigerant and conversion of a compressor manufacturing facility from HFC-134a-based compressors to isobutane-based compressors at Walton Hi-tech Industries Limited.[5] Combined with the reductions to be achieved in stage I of the KIP, total reductions from the country's remaining HFC consumption eligible for funding amount to 1,006,846 CO_2-eq tonnes.[6]

Table 15. Agreed cost of activities to be implemented during stage I of the KIP in Bangladesh

Sector	IA	HFC	Phase-out to be achieved				Cost	CE*	
			mt		CO_2-eq tonnes		US $	US $/ kg	US $/ CO_2-eq tonnes
			Funded	Non-funded	Funded	Non-funded			
Manufacturing (AC and foam sector)	UNDP	HFC-245fa	14.61**		15,045**	0	2,171,108	10.34	5.14
	UNDP	R-410A, R-407C	183.61	11.71***	383,288	23,817****			
Servicing	UNDP	Multiple HFCs	171.76		196,326		875,997	5.10	4.46
	UNEP		72.08		82,386		367,601		

[5] To achieve HFC reductions of 230.63 mt (329,801 CO_2-eq tonnes) (decision 80/73).

[6] This does not include 23,817 CO_2-eq tonnes of consumption of R-410A and R-407C that would be voluntarily phased out as indicated in the footnote of table 15.

Sector	IA	HFC	Phase-out to be achieved				Cost	CE*	
			mt		CO_2-eq tonnes		US $	US $/ kg	US $/ CO_2-eq tonnes
			Funded	Non-funded	Funded	Non-funded			
PMU	UNDP	n/a					302,000		
Total			**442.06**	**11.71**	**677,045**	**23,817**	**3,716,707**	**8.19**	**5.30**

*CE=cost-effectiveness

**Average consumption contained in imported pre-blended polyols during the period 2022–2024.

***This includes 9.71 mt of R-410A and 2.0 mt of R-407C in AC manufacturing reported in 2025 consumption, which would be phased-out without MLF funding support. Based on the Executive Committee's decision and guidance on the starting point for aggregate reduction in funding, this will be used for calculating reductions from the country's remaining HFC consumption eligible for funding and applied when stage II of KIP is considered by the Executive Committee.

70. Stage I of the KIP will be implemented in three tranches.

Implementation plan for the first tranche of the Kigali HFC implementation plan

71. The agreed plan of action for the first tranche will include the following activities, at a total cost of US $2,169,525:

Table 16. Activities and their costs in the first tranche of the KIP for Bangladesh, as agreed

Activity	Agency	Cost (US $)
Manufacturing Sector (US $1,355,104)		
Initiate the conversion of 11 unitary AC manufacturers	UNDP	1,224,007
Conversion of one PU foam enterprise	UNDP	131,097
Servicing sector (US $814,421)		
1. Policy and regulatory framework		
Develop a regulatory framework for the RAC servicing sector, including competency requirements, updated codes of practice, and a standalone environmental certification system; establish a pathway for technician qualification, competency assessment, registration and licensing, including RPL and recommendations for a national licence-to-practise system	UNEP	40,000
Conduct a national feasibility study on refrigerant leak management requirements for large end-users (commercial buildings, hospitals, shopping centres and cold-chain facilities)	UNEP	15,000
Conduct an assessment of employment and career outcomes following RAC training programmes, including barriers to workforce entry, retention and advancement. Develop recommendations to strengthen links between training, certification and employment, and identify good practices to support broader workforce participation	UNEP	12,000
Conduct economic impact assessments, supply-chain analyses and stakeholder consultations to support a ban on the manufacture and import of HFC-134a-based domestic refrigerators by 1 January 2028	UNDP	12,600
2. Customs capacity-building		
Update customs training materials and enforcement guidance on HFCs and alternative refrigerants; incorporate guidance on refrigerant blends, low-GWP alternatives and flammable refrigerants; revise standard operating procedures for refrigerant identification, inspection, seizure, storage and disposal	UNEP	20,000
3. Capacity-building for the servicing sector		
Provide international-level training for three master assessors on assessment methodologies, candidate evaluation, practical testing protocols, quality assurance procedures and certification governance	UNEP	15,000
4. Training centres		
Procure and distribute: 10 HFC-134a MAC training units (US $110,000), two HFO-1234yf MAC training units for hybrid and electric vehicles (US $28,000), 10 R-600a domestic refrigeration training units (US $95,000), three HFC-32 VRF/VRV	UNDP	320,500

Activity	Agency	Cost (US $)
training units (US $67,500) and fees for freight, demurrage and commissioning (US $20,000)		
5. Technical assistance for the servicing sector		
Provide 30 HFC-134a recovery, recycling and recharging units to selected MAC workshops and government transport-fleet workshops, inclusive of fees for freight, demurrage and commissioning	UNDP	172,000
Procure and distribute 100 servicing tool sets to trained and certified female domestic refrigeration technicians, including freight, demurrage and internal distribution, to support safe servicing practices and refrigerant leak prevention	UNDP	104,000
Initiate the national assessment of the MDI sector on supply chain	UNDP	7,321
6. Awareness and outreach		
Organize nine industry roundtables and consultation workshops on low-GWP technologies, refrigerant management practices, technician certification initiatives and future policy developments	UNEP	2,000
PMU activities		
Project monitoring including personnel (US $59,000); technical experts (US $25,000); and implementation and monitoring (US $10,000)	UNDP	94,000
Subtotal for UNDP		**2,065,525**
Subtotal for UNEP		**104,000**
Total		**2,169,525**

Co-financing

72. Co-financing is expected to comprise cash and in-kind contributions from participating enterprises to cover the capital costs not eligible or not funded under the Multilateral Fund, as well as additional costs that are likely to be incurred through the procurement of equipment for conversion to alternatives, including manufacturing modifications exceeding the cost-guidelines thresholds. In addition, industry support for training activities with their own resources, as well as in-kind contribution for project management and monitoring by various Government authorities, would also contribute to co-financing. The exact levels of co-financing cannot be estimated at this stage.

2026–2028 business plan of the Multilateral Fund

73. UNDP and UNEP are requesting US $3,716,707, plus agency support costs, for the implementation of stage I of the KIP for Bangladesh. The total value of US $3,621,209, including agency support costs, requested for the period of 2026–2028, is US $3,230,102 above the amount in the business plan.

Gender policy implementation

74. In line with decisions 84/92, 90/48 and 92/40, the Government of Bangladesh incorporated the Multilateral Fund's operational policy in this area into the preparation of stage I of the KIP. During project preparation, an assessment of women's participation in the RAC sector workforce was undertaken, and its recommendations were incorporated into project activities under stage I of the KIP, and an action plan was developed. During stage I of the KIP, the NOU will continue to assess women's participation in the RAC sector workforce and implement the resulting recommendations; develop an action plan to address identified barriers; undertake awareness-raising activities to encourage women to join the RAC sector and participate in training sessions and consultations; and continue collecting sex-disaggregated data during project implementation. These activities will be coordinated with stage III of the HPMP to maximize women's participation.

Sustainability of the HFC phase-down and assessment of risks

75. The projects in the foam and AC sectors build on Bangladesh's experience with cyclopentane and HFC-32 conversions implemented during HCFC phase-out; therefore, the expected risks associated with technology conversion in manufacturing are considered low. Regulatory interventions promoting the safe use of alternative technologies will continue to facilitate their safe adoption. Activities in the servicing sector, together with policy and regulatory interventions, will support the adoption of the proposed alternative technologies, promote good servicing practices, including leakage reduction, and engage industry in implementing measures to phase out the manufacture and import of high-GWP HFC-based AC and refrigeration equipment, with the exception of high-capacity AC equipment. Servicing sector activities will be implemented in close coordination with ongoing HPMP capacity-building activities to maximize synergies. Over time, through information exchange and industry consultations on technology options, alternatives for high-capacity equipment are expected to be adopted in the country. The MDI industry will continue to be engaged, and the phase-out of HFCs in MDI manufacturing will be addressed in future stages of the KIP. The Government is proceeding carefully, in consultation with the industry, with timely implementation of regulations affecting HFC-based refrigeration equipment, and residential and light commercial air-conditioners; this is critical to ensuring the timely phase-out of high-GWP HFCs in manufacturing. As a safeguard, it was agreed that, prior to the approval of the final tranche, the Government of Bangladesh would confirm enforcement of regulations prohibiting the manufacture and import of such equipment. Through these measures, the Government of Bangladesh is expected to achieve its HFC consumption reduction targets proposed under the KIP and build a platform for further HFC consumption reductions in subsequent KIP stages.

Impact on the climate

76. The activities proposed, including efforts to promote alternatives with low GWP, refrigerant recovery and reuse, and conversion projects in residential and commercial AC applications, as well as PU foam applications, indicate that the implementation of stage I of the KIP will reduce refrigerant emissions in the atmosphere, resulting in climate benefits. A calculation of the impact on the climate of the activities in the KIP indicates that by 2031, Bangladesh will have reduced its HFC emissions by approximately 821,030 CO_2-eq tonnes, calculated as the difference between the HFC baseline for compliance and the 2031 target, assuming that all consumed HFCs would have eventually been emitted.

Draft Agreement

77. A draft Agreement between the Government of Bangladesh and the Executive Committee for stage I of the KIP is contained in annex I to the present document.

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

78. Activities under stage I of the KIP will be implemented in coordination with those under the HPMP. This will include building on the existing regulatory framework, including the quota system, established under the HPMP, with appropriate adjustments to support KIP implementation; coordinating technician training activities, particularly in AC applications; and implementing awareness-raising and outreach activities jointly with the HPMP, wherever feasible. Annex II summarizes the simultaneous implementation of activities under the HPMP and the KIP.

VI. Recommendation

79. The Executive Committee may wish to consider:

(a) Approving, in principle, stage I of the Kigali HFC implementation plan (KIP) for Bangladesh for the period 2026–2031 to reduce HFC consumption by 10.0 per cent of the

country's baseline by 2029 and 15.0 per cent by 2031, in the amount of US $3,998,933, consisting of US $3,349,106, plus agency support costs of US $234,438, for UNDP and US $367,601, plus agency support costs of US $47,788, for UNEP;

(b) Noting:

(i) The strong commitment of the Government of Bangladesh to support reductions in HFC consumption in advance of the Montreal Protocol targets, including through the adoption of relevant regulatory measures to reduce dependence on HFCs;

(ii) That 700,862 CO_2-equivalent tonnes of HFCs will be deducted from the starting point for sustained aggregate reductions in HFC consumption that will be established on the basis of guidance provided by the Executive Committee;

(iii) That, in line with decision 80/73, an additional 329,801 CO_2-eq tonnes of HFCs will be deducted from the starting point for sustained aggregate reductions in HFC consumption to be established on the basis of guidance provided by the Executive Committee;

(c) Noting also:

(i) That the Government of Bangladesh will ban the manufacture and import of HFC-134a-based domestic refrigerators by 1 January 2028;

(ii) That approval of the final tranche of stage I of the KIP would be contingent upon confirmation by the Government of Bangladesh that the national regulations for prohibiting the manufacture and import of high-global-warming-potential HFC-based residential and light commercial air conditioners with a capacity of up to 5 ton of refrigeration would be enforced by 1 January 2033;

(d) Noting further:

(i) That the average amount of HFCs contained in imported pre-blended polyols during the period 2022–2024 was 15,045 CO_2-equivalent tonnes;

(ii) That stage I of the KIP included funding for the plan for the complete elimination of HFCs contained in imported pre-blended polyols in the polyurethane foam sector (foam sector plan), in the amount of US $131,097, plus agency support costs of US $9,177, for UNDP;

(iii) The commitment of the Government of Bangladesh to ban the imports and/or use of pure HFCs, by the time the final foam manufacturing plant had been converted to a non-HFC technology and no later than 1 January 2030;

(e) Approving:

(i) The draft Agreement between the Government of Bangladesh and the Executive Committee for the reduction in consumption of HFCs in accordance with stage I of the KIP, contained in annex I to the present document; and

(ii) The first tranche of stage I of the KIP for Bangladesh and the corresponding tranche implementation plan, in the amount of US $2,327,632, consisting of

US $2,065,525, plus agency support costs of US $144,587, for UNDP and US $104,000, plus agency support costs of US $13,520, for UNEP.

Annex I

DRAFT AGREEMENT BETWEEN THE GOVERNMENT OF BANGLADESH AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE REDUCTION IN CONSUMPTION OF HYDROFLUOROCARBONS IN ACCORDANCE WITH STAGE I OF THE KIGALI HFC IMPLEMENTATION PLAN

(Period: 2026–2031)

Purpose

1. This Agreement represents the understanding of the Government of Bangladesh ("the Country") and the Executive Committee with respect to the reduction of controlled use of Annex F substances set out in Appendix 1-A ("The Substances") to a sustained level of 4,652,502 CO_2-equivalent (CO_2-eq) tonnes by 1 January 2031 in compliance with the Montreal Protocol schedule and the terms of this Agreement.

2. The Country agrees to meet the annual consumption limits of Annex F substances as set out in row 1.2 of Appendix 2-A ("The Targets, and Funding") in this Agreement as well as in the Montreal Protocol reduction schedule for Annex F substances mentioned in Appendix 1-A. The Country accepts that, by its acceptance of this Agreement and performance by the Executive Committee of its funding obligations described in paragraph 3, it is precluded from applying for or receiving further funding from the Multilateral Fund in respect to any consumption of Annex F substances that exceeds the level defined in row 1.2 of Appendix 2-A as the final reduction step under this Agreement for Annex F substances specified in Appendix 1-A, and in respect to any consumption of Annex F substances that exceeds the levels defined in rows 4.1.3 and 4.2.3 (remaining consumption eligible for funding).

3. Subject to compliance by the Country with its obligations set out in this Agreement, the Executive Committee agrees, in principle, to provide the funding set out in row 3.1 of Appendix 2-A to the Country. The Executive Committee will, in principle, provide this funding at the Executive Committee meetings specified in Appendix 3-A ("Funding Approval Schedule").

4. The Country agrees to implement this Agreement in accordance with stage I of the Kigali HFC implementation plan ("the Plan") as approved. In accordance with subparagraph 5(b) of this Agreement, the Country will accept independent verification of the achievement of the annual consumption limits of Annex F substances set out in row 1.2 of Appendix 2-A of this Agreement. The aforementioned verification will be commissioned by the relevant bilateral or implementing agency.

Conditions for funding release

5. The Executive Committee will only provide the Funding, in accordance with the Funding Approval Schedule, when the Country satisfies the following conditions at least 10 weeks in advance of the applicable Executive Committee meeting set out in the Funding Approval Schedule:

(a) That the Country has met the Targets set out in row 1.2 of Appendix 2-A for all relevant years. Relevant years are all years since the year in which this Agreement was approved. Years for which there are no due country programme implementation reports at the date of the Executive Committee meeting at which the funding request is being presented are exempted;

(b) That the meeting of these Targets has been independently verified for all relevant years, unless the Executive Committee decided that such verification would not be required;

(c) That the Country had submitted a Tranche Implementation Report in accordance with Appendix 4-A ("Format of Tranche Implementation Reports and Plans") covering each previous calendar year; that it had achieved a significant level of implementation of activities initiated with previously approved tranches; and that the rate of disbursement of funding available from the previously approved tranche was more than 20 per cent; and

(d) That the Country has submitted a Tranche Implementation Plan in accordance with Appendix 4-A covering each calendar year until and including the year for which the Funding Approval Schedule foresees the submission of the next tranche or, in case of the final tranche, until completion of all activities foreseen.

Monitoring

6. The Country will ensure that it conducts accurate monitoring of its activities under this Agreement. The institutions set out in Appendix 5-A ("Monitoring Institutions and Roles") will monitor and report on implementation of the activities in the previous Tranche Implementation Plans in accordance with their roles and responsibilities set out in the same appendix.

Flexibility in the reallocation of funds

7. The Executive Committee agrees that the Country may have the flexibility to reallocate part or all approved funds, according to the evolving circumstances, to achieve the smoothest reduction of consumption and phase-down of Annex F substances specified in Appendix 1-A, in accordance with the following considerations:

(a) Reallocations categorized as major changes must be documented in advance, either in a Tranche Implementation Plan as foreseen in subparagraph 5(d) above, or as a revision to an existing Tranche Implementation Plan to be submitted 10 weeks prior to any meeting of the Executive Committee, for its approval. Major changes would relate to:

(i) Issues potentially concerning the rules and policies of the Multilateral Fund;

(ii) Changes that would modify any clause of this Agreement;

(iii) Changes in the annual levels of funding allocated to the individual bilateral or implementing agencies for the different tranches;

(iv) Provision of funding for activities not included in the current endorsed Tranche Implementation Plan, or removal of an activity in the Tranche Implementation Plan, with a cost greater than 30 per cent of the total cost of the last approved tranche;

(v) Changes in alternative technologies, on the understanding that any submission for such a request would identify the associated incremental costs, the potential impact on the climate, and any differences in CO_2-eq tonnes to be phased down if applicable, as well as confirm that the Country agrees that potential savings related to the change of technology would accordingly decrease the overall funding level under this Agreement;

(b) Reallocations not categorized as major changes may be incorporated into the approved Tranche Implementation Plan, under implementation at the time, and reported to the Executive Committee in the subsequent Tranche Implementation Report;

(c) Any enterprise included in the Plan that would be found to be ineligible under the policies of the Multilateral Fund (i.e., due to foreign ownership or establishment after the applicable cut off date) would not receive financial assistance. This information would be reported as part of the Tranche Implementation Plan; and

(d) Any remaining funds held by the bilateral or implementing agencies or the Country under the Plan will be returned to the Multilateral Fund upon completion of the last tranche foreseen under this Agreement.

8. Specific attention will be paid to the execution of activities in the refrigeration servicing sector included in the Plan, in particular that the Country may use the flexibility available under this Agreement to address specific needs that might arise during project implementation.

Bilateral and implementing agencies

9. The Country agrees to assume overall responsibility for the management and implementation of this Agreement and of all activities undertaken by it or on its behalf to fulfil the obligations under this Agreement. UNDP has agreed to be the lead implementing agency (the "Lead IA") and UNEP has agreed to be the cooperating implementing agency (the "Cooperating IA") under the lead of the Lead IA in respect of the Country's activities under this Agreement. The Country agrees to evaluations, which might be carried out under the evaluation work programme of the Multilateral Fund or under the evaluation programme of the Lead IA and/or Cooperating IA taking part in this Agreement.

10. The Lead IA will be responsible for ensuring coordinated planning, implementation and reporting of all activities under this Agreement, including but not limited to the independent verification as per subparagraph 5(b). The Cooperating IA will support the Lead IA by implementing the Plan under the overall coordination of the Lead IA. The roles of the Lead IA and Cooperating IA are contained in Appendix 6-A and Appendix 6-B, respectively. The Executive Committee agrees, in principle, to provide the Lead IA and the Cooperating IA with the fees set out in rows 2.2 and 2.4 of Appendix 2-A.

Non-compliance with the Targets in the Agreement

11. Should the Country, for any reason, not meet the Targets for the elimination of Annex F substances set out in row 1.2 of Appendix 2-A or otherwise does not comply with this Agreement, then the Country agrees that it will not be entitled to the Funding in accordance with the Funding Approval Schedule. At the discretion of the Executive Committee, funding will be reinstated according to a revised Funding Approval Schedule determined by the Executive Committee after the Country has demonstrated that it has satisfied all its obligations that were due to be met prior to receipt of the next tranche of funding under the Funding Approval Schedule. The Country acknowledges that the Executive Committee may reduce the amount of the Funding by the amount set out in Appendix 7-A ("Reductions in Funding for Failure to Comply") in respect of each CO_2-eq kg of reductions in consumption not achieved in any one year. The Executive Committee will discuss each specific case in which the Country did not comply with this Agreement and take related decisions. Once decisions are taken, the specific case of non-compliance with this Agreement will not be an impediment for the provision of funding for future tranches as per paragraph 5 above.

12. The Funding of this Agreement will not be modified on the basis of any future Executive Committee decisions that may affect the funding of any other consumption sector projects or any other related activities in the Country.

13. The Country will comply with any reasonable request of the Executive Committee, the Lead IA and the Cooperating IA to facilitate implementation of this Agreement. In particular, it will provide the Lead IA and the Cooperating IA with access to the information necessary to verify compliance with this Agreement.

Date of completion

14. The completion of the Plan and the associated Agreement will take place at the end of the year following the last year for which a maximum allowable total consumption level has been specified in Appendix 2-A. Should at that time there still be activities that are outstanding, and which were foreseen in the last Tranche Implementation Plan and its subsequent revisions as per subparagraph 5(d) and paragraph 7, the completion of the Plan will be delayed until the end of the year following the implementation of the remaining activities. The reporting requirements as per subparagraphs 1(a), 1(b), and 1(d) of Appendix 4-A will continue until the time of the completion of the Plan unless otherwise specified by the Executive Committee.

Validity

15. All conditions set out in this Agreement are undertaken solely within the context of the Montreal Protocol and as specified in this Agreement. All terms used in this Agreement have the meaning ascribed to them in the Montreal Protocol unless otherwise defined herein.

16. This Agreement may be modified or terminated only by mutual written agreement of the Country and the Executive Committee of the Multilateral Fund.

APPENDICES

APPENDIX 1-A: THE SUBSTANCES

Substances	Starting point for aggregate reductions in consumption (CO_2-eq tonnes)
HFCs	To be determined (TBD)
HFCs contained in imported pre-blended polyols	15,045

APPENDIX 2-A: THE TARGETS, AND FUNDING

Row	Particulars		2026	2027	2028	2029	2030	2031	Total
1.1	Montreal Protocol reduction schedule of Annex F substances	%	freeze	freeze	freeze	10	10	10	n/a
		CO_2-eq tonnes	5,473,532	5,473,532	5,473,532	4,926,179	4,926,179	4,926,179	n/a
1.2	Maximum allowable total consumption of Annex F substances	Reduction in %	0.0	0.0	0.0	10.0	10.0	15.0	n/a
		CO_2-eq tonnes	5,473,532	5,473,532	5,473,532	4,926,179	4,926,179	4,652,502	n/a
2.1	Lead IA (UNDP) agreed funding (US $)		2,065,525	0	1,079,581	0	204,000	0	3,349,106
2.2	Support costs for Lead IA (US $)		144,587	0	75,571	0	14,280	0	234,438
2.3	Cooperating IA (UNEP) agreed funding (US $)		104,000	0	122,500	0	141,101	0	367,601
2.4	Support costs for Cooperating IA (US $)		13,520	0	15,925	0	18,343	0	47,788

Row	Particulars	2026	2027	2028	2029	2030	2031	Total
3.1	Total agreed funding (US $)	2,169,525	0	1,202,081	0	345,101	0	3,716,707
3.2	Total support costs (US $)	158,107	0	91,496	0	32,623	0	282,226
3.3	Total agreed costs (US $)	2,327,632	0	1,293,577	0	377,724	0	3,998,933
4.1.1	Deductions of HFCs agreed under this Agreement (CO_2-eq tonnes)							662,000
4.1.2	Deductions of HFCs from previously approved projects (CO_2-eq tonnes)							*
4.1.3	Remaining eligible consumption for HFCs (CO_2-eq tonnes)							TBD
4.2.1	Deductions of HFCs contained in imported pre-blended polyols agreed under this Agreement (CO_2-eq tonnes)							15,045
4.2.2	Deductions of HFCs contained in imported pre-blended polyols from previously approved projects (CO_2-eq tonnes)							n/a
4.2.3	Remaining eligible consumption for HFCs contained in imported pre-blended polyols (CO_2-eq tonnes)							0

* 230.63 mt (329,801 CO_2-eq tonnes) of HFC-134a from the conversion of domestic refrigeration and compressor manufacturing at two facilities of the enterprise Walton Hi-Tech Industries Limited (US $3,131,610, plus agency support costs of US $219,213 for UNDP, by decision 80/73) would be deducted from the starting point for sustained aggregate reductions from HFC consumption.

APPENDIX 3-A: FUNDING APPROVAL SCHEDULE

1. Funding for the future tranches will be considered for approval at the second meeting of the year specified in Appendix 2-A.

APPENDIX 4-A: FORMAT OF THE TRANCHE IMPLEMENTATION REPORTS AND PLANS

1. The submission of the Tranche Implementation Report and Plans for each tranche request will consist of four parts:

(a) A narrative report, with data provided by tranche, describing the progress achieved since the previous report, reflecting the situation of the Country in regard to phase-down of Annex F substances, how the different activities contribute to it, and how they relate to each other, including, where applicable, activities related to energy efficiency approved in the context of HFC phase-down pursuant to decision 91/65. The report should include the amount of Annex F substances consumption reduced as a direct result of the implementation of activities, by substance, the alternative technology used and the related phase in of alternatives, to allow the Secretariat to inform the Executive Committee on the resulting change in climate relevant emissions. The report should also include quantitative information on the activities implemented and further highlight the successes, experiences, and challenges related to the different activities included in the Plan, reflecting any changes in the circumstances in the Country, and providing other relevant information. The report should also include information on and justification for any changes vis-à-vis the previously submitted Tranche Implementation Plan(s), such as delays, use of flexibility for the reallocation of funds during implementation of a tranche as provided for in paragraph 7 of this Agreement, or other changes;

(b) An independent verification report on the Plan's results and the consumption of Annex F substances, as per subparagraph 5(b) of the Agreement. If not decided otherwise by the Executive Committee, such a verification of consumption data must be provided with each tranche request, covering all relevant years for which a verification report has not yet been acknowledged by the Committee, as specified in subparagraph 5(a) of the Agreement;

(c) A written description of the activities to be undertaken during the period covered by the requested tranche including quantitative information, highlighting implementation

milestones, the time of completion and the interdependence of the activities, and taking into account experiences made and progress achieved in the implementation of earlier tranches; the data in the Plan will be provided by calendar year. The description should include a reference to the overall Plan and progress achieved, as well as any possible changes to the overall Plan that are foreseen. The description should also specify and explain in detail such changes to the overall Plan. This description of future activities can be submitted as a part of the same document as the narrative report under subparagraph 1(a) above; and

(d) An Executive Summary of about five paragraphs, summarizing the information contained in subparagraphs 1(a) to 1(c) above.

APPENDIX 5-A: MONITORING INSTITUTIONS AND ROLES

1. The national ozone unit (NOU), operating under the Ministry of Environment, Forest and Climate Change, will be responsible for monitoring the implementation progress of the Plan's tranches and ensuring the efficient and effective execution of planned activities, including training, throughout the implementation period. The NOU will coordinate with relevant line Ministries, regulatory bodies responsible for safety, and authorities overseeing energy-efficiency matters to support the implementation of project activities. In addition to monitoring overall project coordination, stakeholder engagement and delivery of outcomes, the NOU will facilitate the verification of HFC consumption to be undertaken by UNDP. The Ministry of Environment, Forest and Climate Change will be responsible for ensuring the sustainability of the consumption reductions achieved under this Agreement.

APPENDIX 6-A: ROLE OF THE LEAD IMPLEMENTING AGENCY

1. The Lead IA will be responsible for a range of activities, including at least the following:

(a) Ensuring performance and financial verification in accordance with this Agreement and with its specific internal procedures and requirements as set out in the Country's Plan;

(b) Assisting the Country in the preparation of the Tranche Implementation Reports and Plans as per Appendix 4-A;

(c) Providing independent verification to the Executive Committee that the Targets have been met and associated tranche activities have been completed as indicated in the Tranche Implementation Plan, consistent with Appendix 4-A;

(d) Ensuring that the experiences and progress are reflected in the updates to the overall Plan and in the future Tranche Implementation Plans, consistent with subparagraph 1(c) of Appendix 4-A;

(e) Fulfilling the reporting requirements of the Tranche Implementation Reports and Plans and of the overall Plan as specified in Appendix 4-A for submission to the Executive Committee including the activities implemented by the Cooperating IA;

(f) In the event that the last funding tranche is requested one or more years prior to the last year for which a consumption target had been established, annual Tranche Implementation Reports and, where applicable, verification reports on the current stage of the Plan should be submitted until all activities foreseen had been completed and HFC consumption targets had been met;

(g) Ensuring that appropriate independent technical experts carry out the technical reviews;

(h) Carrying out the required supervision missions;

(i) Ensuring the presence of an operating mechanism to allow for an effective and transparent implementation of the Tranche Implementation Plan and accurate data reporting;

(j) Coordinating the activities of the Cooperating IA and ensuring the appropriate sequence of activities;

(k) In case of reductions in funding for failure to comply in accordance with paragraph 11 of the Agreement, to determine, in consultation with the Country and the Cooperating IA, the allocation of the reductions to the different budget items and to the funding of the Lead IA and each Cooperating IA;

(l) Ensuring that disbursements made to the Country are based on the use of the indicators;

(m) Providing assistance with the policy, management and technical support when required;

(n) Reaching consensus with the Cooperating IA on any planning, coordination and reporting arrangements required to facilitate the implementation of the Plan; and

(o) Timely releasing funds to the Country/participating enterprises for completing the activities related to the project.

2. After consultation with the Country and taking into account any views expressed, the Lead IA will select and mandate an independent entity to carry out the verification of the Plan's results and of the consumption of Annex F substances mentioned in Appendix 1-A, as per subparagraph 5(b) of the Agreement and subparagraph 1(b) of Appendix 4-A.

APPENDIX 6-B: ROLE OF THE COOPERATING IMPLEMENTING AGENCIES

1. The Cooperating IA will be responsible for a range of activities. These activities are specified in the Plan, including at least the following:

(a) Providing assistance for policy development when required;

(b) Assisting the Country in the implementation and assessment of the activities funded by the Cooperating IA, and referring to the Lead IA to ensure a coordinated sequence of activities;

(c) Providing reports to the Lead IA on these activities, for inclusion in the consolidated reports as per Appendix 4-A; and

(d) Reaching consensus with the Lead IA on any planning, coordination and reporting arrangements required to facilitate the implementation of the Plan.

APPENDIX 7-A: REDUCTIONS IN FUNDING FOR FAILURE TO COMPLY WITH THE TARGETS IN THE AGREEMENT

1. In accordance with paragraph 11 of the Agreement, the amount of funding provided may be reduced by US $10.6 per CO_2-eq tonne of consumption beyond the level defined in row 1.2 of Appendix 2-A for each year in which the Target specified in row 1.2 of Appendix 2-A has not been met, on the understanding that the maximum funding reduction would not exceed the funding level of the tranche being requested. Additional measures might be considered in cases where non-compliance extends for two consecutive years. Where the Country has failed to comply with the Agreement due to illegal trade, the reduction in

funding would not be applied if the illegally traded controlled substances are seized and subsequently confiscated, destroyed, exported, or returned to the country of origin.

Annex II

SIMULTANEOUS IMPLEMENTATION OF THE HCFC PHASE-OUT MANAGEMENT PLAN AND THE KIGALI HFC IMPLEMENTATION PLAN IN BANGLADESH

	HPMP – stage III		KIP – stage I		HPMP+KIP combined cost (US $)
Category of activity	**Activity**	**Cost (US $)**	**Activity**	**Cost (US $)**	
Policy, regulations and enforcement	Strengthening HCFC monitoring and control and HCFC consumption trend assessment refrigerant consumption in chillers and fisheries	59,000	Industry consultations on enforcement of regulations for HFC phase-out in manufacturing and regulations for enforcement of service sector certification, green procurement and policies for maximizing service sector training outreach	140,800	199,800
Capacity-building of customs and enforcement officers	Customs training for customs officers and one border dialogue relating to HCFC phase-out	16,000	Customs and enforcement training relating to control and monitoring of HFCs	29,000	45,000
Phase-out of HFCs in PU foam manufacturing			Phase-out of manufacturing HFC-based PU foam in one enterprise and capacity-building of small-scale enterprises in adopting alternatives	131,097	131,097
Sector plan for high-GWP HFC phase-out in manufacturing RAC equipment			Phase-out of manufacturing HFC-based residential and commercial AC equipment in 11 enterprises	2,040,011	2,040,011
Capacity-building for RAC servicing technicians	Training of trainers and technicians on good service practices and safe handling of alternatives in HCFC-based equipment in air-conditioning and refrigeration servicing sector	242,900	Equipment support for training institutions for training on good service practices for HFC-based equipment and leakage minimization	734,867	977,767
	Update of training materials for servicing equipment	14,000	Technical assistance for railways on good service practices in HFC-based equipment servicing	28,830	42,830
	Pilot technician skill assessment/certification and support for service technicians	30,000	Service sector training for technicians, including MAC technicians; upgrade of training materials and strengthening of certification programme	186,250	216,250
	Procurement of equipment and tools for air-conditioning service training for training centres and tools for service workshops for good servicing and recovery of HCFCs	1,174,681	Technical support for fishing industry on leak minimization and good service and maintenance practices	54,500	1,229,181

	HPMP – stage III		KIP – stage I		HPMP+KIP combined cost (US $)
Category of activity	**Activity**	**Cost (US $)**	**Activity**	**Cost (US $)**	
Establishment of recycling and reclamation centres	Establishment of three reclamation centres, preparation of standard operating practices for proper and safe use of facilities and training of technicians on reclamation procedures	336,010			336,010
Public awareness and outreach	Awareness and outreach activities on safe adoption of alternatives, information sharing on low-GWP alternatives in different applications for different target audience to promote adoption of these alternatives	114,064	Technical information exchange and consultations relating to MDI phase-out and awareness and outreach on HFC phase-down and adoption of low-/lower-GWP alternatives	69,351	183,415
Coordination and monitoring	Project coordination, technical support and monitoring	229,100		302,000	531,100
Total		**2,215,755**		**3,716,707**	**5,932,462**
Percentage of total (%)					**100**