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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Ninety-fifth Meeting
Montreal, 4-8 December 2024
Item 7(b)(i) of the provisional agenda[1]

Addendum

REPORTS ON PROJECTS WITH SPECIFIC REPORTING REQUIREMENTS: REPORTS WITH NO OUTSTANDING ISSUES

This document is issued to:

- **Add** rows to table 1 as follows:

Table 1. Reports on projects with specific reporting requirements with no outstanding issues

Country	Project title	Paragraphs
D. Request for a change of technology in approved projects		
China	Change of technology for the manufacture of large-scale freezers and refrigeration and condensing units from ammonia to ammonia/CO_2 cascade (stage II of the HPMP - ICR sector plan)	81 - 87

- **Add** section D and paragraphs 81 to 87 as follows:

D. Request for a change of technology in approved projects

China: HCFC phase-out management plan (stage II – industrial and commercial refrigeration sector plan – change in technology) (UNDP)

Background

81. The industrial and commercial refrigeration and air-conditioning (ICR) sector plan of stage II of the HCFC phase-out management plan (HPMP) for China was approved in principle at the 77th meeting in

[1] UNEP/OzL.Pro/ExCom/95/1

the amount of US $89,144,797, plus agency support costs for UNDP, to phase out 480.50 ODP tonnes of HCFCs and achieve a 33 per cent reduction in relation to the 2013 maximum allowable consumption in the sector.[2]

82. At its 86th meeting, the Executive Committee approved the revised plan of action to extend until 2026 stage II of the ICR sector plan in the amount of US $68,158,241 plus agency support costs for UNDP, and the maximum allowable sectoral consumption levels of HCFCs.[3] This approval included *inter alia* an agreement from the Government of China for the conversion of technology from HCFC to ammonia (NH_3) at large-scale enterprises in the cold storage subsector to phase out consumption of at least 80 mt of HCFCs using direct expansion NH_3 in the manufacture of large-scale freezers and refrigeration and condensing units.

83. In line with decision 86/35, the Government of China, through UNDP, has submitted a request for a change in technology from NH_3 to an NH_3/CO_2 cascade system in the manufacture of large-scale freezers and refrigeration and condensing units in the context of stage II of the ICR sector plan of the HPMP for China.

Request for change in technology

84. In explaining the reasons for this request for a change in technology, UNDP noted that China's National Standard GB 18218-2018, Identification of major hazard installations for hazardous chemicals, stipulated that the critical amount charge of NH_3 is 10 mt; thus, a commercial refrigeration unit charged with NH_3 refrigerant exceeding 10 mt would be classified as a "major hazard source" by local licensing authorities, placing it under various strict control requirements that demand additional domestic approval of new NH_3 system projects. The standards also take into consideration other technical factors that may lead to a long approval period. These cause barriers for both the manufacturing enterprise and its clients in the adoption of direct expansion NH_3 technology and may cause reluctance from clients to procure NH_3-based equipment, leading to a risk in the sustainability of the project conversion.

85. UNDP further mentioned that, after taking this into consideration, alternative refrigerants were studied, and it was found that an NH_3/CO_2 cascade system would constitute the best technical solution given the lower charge in the NH_3 cycle, while assuring that only low-GWP refrigerants would be phased in to remain in compliance with the agreement with the Executive Committee.

Secretariat's comments

86. The Secretariat undertook an assessment of the eligible incremental costs to convert this enterprise, which confirmed that there would be no savings associated with the change in technology. UNDP confirmed that the enterprise would co-finance any additional costs associated with the change in technology, if needed. Both NH_3 and NH_3/CO_2 cascade technology are based on low-GWP refrigerants and will yield comparable climate benefits. Accordingly, and noting the Government of China's standard on the use of NH_3 and potential market demand, the Secretariat recommends approval of the change in technology as requested, noting that the date of completion of the conversion of the enterprises would not be delayed due to the change in technology.

Recommendation

87. The Executive Committee may wish:

(a) To note the request, submitted by UNDP on behalf of the Government of China, for a change of technology in the manufacture of large-scale freezers and refrigeration and

[2] Decision 77/49

[3] Decision 86/35 and document UNEP/OzL.Pro/ExCom/86/21/Add.1

condensing units from ammonia to ammonia/CO_2 cascade in the context of stage II of the industrial and commercial refrigeration and air-conditioning sector plan of the HCFC phase-out management plan for the country, as contained in document UNEP/OzL.Pro/ExCom/95/20/Add1; and

(b) To approve the change in technology referred to in subparagraph (a) above.