



**United Nations  
Environment  
Programme**

Distr.  
GENERAL

UNEP/OzL.Pro/ExCom/87/40  
11 June 2021

ORIGINAL: ENGLISH



EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Eighty-seventh Meeting  
Montreal, 28 June-2 July 2021<sup>1</sup>

**PROJECT PROPOSAL: VIET NAM**

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

Phase-out

- HCFC phase-out management plan (stage II, third tranche) World Bank and Japan

<sup>1</sup> Online meetings and an intersessional approval process will be held in June and July 2021 due to coronavirus disease (COVID-19)

## PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

## Viet Nam

(I) PROJECT TITLE	AGENCY	MEETING APPROVED	CONTROL MEASURE
HCFC phase-out plan (stage II)	World Bank (lead), Japan	63 <sup>rd</sup>	28% by 2021

(II) LATEST ARTICLE 7 DATA (Annex C Group I)	Year: 2019	197.55 (ODP tonnes)
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(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP tonnes)								Year: 2020	
Chemical	Aerosol	Foam	Fire fighting	Refrigeration		Solvent	Process agent	Lab use	Total sector consumption
				Manufacturing	Servicing				
HCFC-22				28.44	113.74				142.18
HCFC-141b in imported pre-blended polyols		16.24							16.24

(IV) CONSUMPTION DATA (ODP tonnes)			
2009 - 2010 baseline:	221.2	Starting point for sustained aggregate reductions:	385.77
CONSUMPTION ELIGIBLE FOR FUNDING (ODP tonnes)			
Already approved:	273.77	Remaining:	112.00

(V) BUSINESS PLAN		2021	2022	2023	Total
World Bank	ODS phase-out (ODP tonnes)	33.93	39.42	26.28	99.63
	Funding (US \$)	4,045,945	4,700,992	3,133,995	11,880,932
Japan	ODS phase-out (ODP tonnes)	0.24	0	0	0.24
	Funding (US \$)	29,832	0	0	29,832

(VI) PROJECT DATA			2016*	2017	2018	2019	2020	2021	Total
Montreal Protocol consumption limits			199.08	199.08	199.08	199.08	143.78	143.78	n/a
Maximum allowable consumption (ODP tonnes)			199.08	199.08	199.08	199.08	143.78	143.78	n/a
Agreed funding (US \$)	World Bank	Project costs	302,737	2,179,193	3,781,257	4,393,450	2,928,967	732,242	14,317,846
		Support costs	21,192	152,544	264,688	307,542	205,028	51,257	1,002,249
	Japan	Project costs	43,250	163,980	26,400	0	0	0	233,630
		Support costs	5,623	21,317	3,432	0	0	0	30,372
Funds approved by ExCom (US \$)		Project costs	345,987			2,343,173**			2,689,160
		Support costs	26,814			173,861**			200,675
Total funds requested for approval at this meeting (US \$)		Project costs						3,807,657**	3,807,657
		Support costs						268,120**	268,120

\* Funding updated to reflect the return of US \$93,358, plus agency support costs of US \$6,535 for the World Bank due to change of technology at Midea Consumer Electric (Viet Nam) from R-290 to HFC-32 (decision 82/37(b)).

\*\* The second and third tranche were expected to be submitted in 2017 and 2018, respectively.

Secretariat's recommendation:	For blanket approval
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## PROJECT DESCRIPTION

1. On behalf of the Government of Viet Nam, the World Bank as the lead implementing agency, has submitted a request for funding for the third tranche of stage II of the HCFC phase-out management plan (HPMP), at a total cost of US \$4,075,777, consisting of US \$3,781,257, plus agency support costs of US \$264,688 for the World Bank, and US \$26,400, plus agency support costs of US \$3,432 for the Government of Japan.<sup>2</sup> The submission includes a progress report on the implementation of the second tranche, the verification report on HCFC consumption for 2019 and 2020, and the tranche implementation plan for 2021 to 2022.

### Report on HCFC consumption

2. The Government of Viet Nam reported under the country programme (CP) implementation report a consumption of 142.18 ODP tonnes of HCFC in 2020, which is 36 per cent below the HCFC baseline for compliance. The 2016-2020 HCFC consumption is shown in Table 1.

**Table 1. HCFC consumption in Viet Nam (2016-2020 Article 7 data)**

HCFC	2016	2017	2018	2019	2020*	Baseline
<b>Metric tonnes</b>						
HCFC-22	3,522.49	3,568.52	3,516.23	3,558.55	2,585.02	3,039.00
HCFC-123	44.62	17.17	16.34	16.34	0.00	8.00
HCFC-141b	0.00	0.00	0.00	0.00	0.00	490.00
HCFC-225	16.00	13.90	26.87	21.46	0.00	0.00
<b>Total (mt)</b>	<b>3,582.84</b>	<b>3,599.59</b>	<b>3,599.44</b>	<b>3,596.36</b>	<b>2,585.02</b>	<b>3,537.00</b>
HCFC-141b in imported pre-blended polyols**	3,237.55	1,879.00	1,145.50	687.29	147.66	1,496.36***
<b>ODP tonnes</b>						
HCFC-22	193.74	196.27	193.39	195.72	142.18	167.15
HCFC-123	0.89	0.34	0.33	0.33	0.00	0.16
HCFC-141b	0.00	0.00	0.00	0.00	0.00	53.90
HCFC-225	1.12	0.97	1.88	1.50	0.00	0.00
<b>Total (ODP tonnes)</b>	<b>195.75</b>	<b>197.58</b>	<b>195.60</b>	<b>197.55</b>	<b>142.18</b>	<b>221.21</b>
HCFC-141b in imported pre-blended polyols**	356.13	206.69	126.00	75.60	16.24	164.56***

\* Data from the verification report on HCFC consumption.

\*\* CP data.

\*\*\* Average consumption between 2007 and 2009.

3. HCFC consumption in Viet Nam consists predominately of HCFC-22, with refrigeration and air-conditioning (RAC) manufacturing accounting for approximately 20 per cent of that consumption and servicing the remainder; small amounts of HCFC-123 are consumed intermittently to service chillers and HCFC-225 for solvent uses. HCFC-141b has not been consumed since 2015, in line with the 1 January 2015 ban on the import and export of HCFC-141b; in contrast, imports of HCFC-141b contained in imported pre-blended polyols initially increased following the ban and have decreased substantially as foam manufacturers decided to convert to alternatives, most likely water-based pre-blended polyols. On a metric tonne basis, the four most commonly consumed HFCs in 2020 are (in decreasing order): HFC-134a, R-410A, HFC-23, and HFC-32; HFC-23 is the most commonly consumed HFC on a CO<sub>2</sub>-eq basis.

<sup>2</sup> As per the letter of 19 April 2021 from the Ministry of Natural Resources and Environment (MONRE) of Viet Nam to the World Bank.

*CP implementation report*

4. The Government of Viet Nam reported HCFC sector consumption data under the 2019 CP implementation report which is consistent with the data reported under Article 7 of the Montreal Protocol.

*Verification report*

5. The verification report, which was conducted virtually given the COVID-19 pandemic, confirmed that the Government is implementing a licensing and quota system for HCFC imports and exports, and that the total consumption of HCFCs for 2019 and 2020 was 197.55 and 142.18 ODP tonnes, respectively. The verification concluded that the consumption of HCFCs in Viet Nam was within the limits stipulated in the Agreement with the Executive Committee, and that the data managed by the national ozone unit, the Department of Import and Export, and the General Department of Viet Nam Customs are complete and consistent. The verification report did not address consumption of HCFC-141b contained in imported pre-blended polyols.

Progress report on the implementation of the second tranche of the HPMP

*Legal framework*

6. Viet Nam has an enforceable licensing and quota system. In 2020, the joint circular, under which the import and export of HCFCs are regulated, was amended to *inter alia* specify the HCFC quota of 2,600 mt for the period 2020-2024 and 1,300 mt for the period 2025-2028, in line with the Montreal Protocol; and to update the list of regulated chemicals to include HCFC-141b pre-blended polyols, thereby requiring registration of importers. A ban on the import and export of (bulk) HCFC-141b is effective from 1 January 2015 and, in line with decision 76/42(c), the Government will implement a ban on the import of HCFC-141b contained in pre-blended polyols by 1 January 2022 and a ban on the import and manufacture of HCFC-22-based air-conditioning (AC) units by 1 January 2022.

7. While neither a quota nor a licence are required to import HCFC-141b contained in pre-blended polyols, such imports are monitored through the Harmonized System code. HFCs are included in the country's licensing system and monitored through import permits. Viet Nam ratified the Kigali Amendment on 27 September 2019.

8. Under the second tranche, one workshop on controlling and monitoring HCFC import and export was organized, with 60 customs officers attending from 11 local customs departments; a second workshop for approximately 50 customs officers was delayed due to the COVID-19 pandemic and is expected to be held by December 2021. A safety standard in foam production, on-site storage, and handling with flammable blowing agents was developed and is expected to take effect by July 2021.

*Manufacturing sector*

9. Stage II included funding for the conversion of four AC manufacturing enterprises (Hoa Phat, Midea, Nagakawa, and REE), 34 refrigeration manufacturing enterprises, and one extruded polystyrene (XPS) foam manufacturing enterprise (Phu Vuong Corporation Industry) to phase out 595.63 mt of HCFC-22, and 44 polyurethane (PU) foam enterprises to phase out 684.18 mt of HCFC-141b contained in imported pre-blended polyols. An additional 76 mt of HCFC-22 associated with the conversion of a 100 per cent non-Article-5-owned AC manufacturing enterprise and 1,350.82 mt of HCFC-141b contained in imported pre-blended polyols would be phased out without funding from the Multilateral Fund.

10. The XPS foam manufacturing enterprise, Phu Vuong Corporation Industry, was found to be not eligible for funding from the Multilateral Fund due to the date of establishment, and the associated funds of US \$613,568 (plus agency support costs) will be returned to the 87<sup>th</sup> meeting.

11. Under the second tranche, technical assistance was provided to support enterprises in the preparation and implementation of sub-projects in the foam and RAC manufacturing sectors and review of the sub-project proposals, resulting in the development of sub-grant agreements with three enterprises (two in the PU foam manufacturing sector with consumption of 52.22 mt of HCFC-141b contained in imported pre-blended polyols, converting to cyclopentane and pre-blended cyclopentane; and one in the refrigeration manufacturing sector with a consumption of 9.82 mt of HCFC-22, converting to ammonia). A 20 per cent advance was provided to the enterprises upon signature; for the PU foam manufacturing enterprises, the contract with equipment suppliers is expected to be signed in June 2021, while for the refrigeration manufacturing enterprise, equipment was delivered to the enterprise; additional equipment is expected to be purchased in June 2021, though that purchase may be further delayed depending on the evolution of the COVID-19 pandemic. An additional foam manufacturing enterprise and refrigeration manufacturing enterprise interested in participating in the project were identified; those enterprises are expected to sign a sub-grant agreement under the third tranche.

*Refrigeration servicing sector*

12. The following activities were implemented during the second tranche:

- (a) Technical assistance on the safe use of HFC-32 in AC manufacturing, being implemented by the Government of Japan, has begun. A consultant was recruited and has started a review on the standards and regulations related to AC units using flammable refrigerants. Training on HFC-32 safe handling is being prepared, with the start date dependant on restrictions related to the COVID-19 pandemic;
- (b) Initiation of a contract to evaluate leakage management activities at 10 industrial refrigeration end-users, with the evaluation reports expected by December 2022;
- (c) A training curriculum and materials were developed on good servicing practices, recovery and recycling, and handling flammable refrigerants in RAC equipment; and three workshops on good practices to handle HCFCs and flammable refrigerants were organized for 71 trainers from vocational schools; and
- (d) Development of technical specifications for equipment, and identification of beneficiary training schools and servicing shops; tool kits (e.g., leak detector; pressure gauge; refrigerant recovery machine; refrigerant containing tank; vacuum pump; AC unit; tool set of torque wrench, flaring, and tubing cutter; refrigerant scale) were contracted for 65 vocational training schools, and 100 tool kits (e.g., vacuum pump; tool set of torque wrench, flaring, and tubing cutter) for servicing shops were contracted. Delivery of tool kits is expected by June and September 2021.

*Project implementation and monitoring unit (PMU)*

13. Activities undertaken by the PMU included revision of the project implementation manual to allow a more flexible financing approach to facilitate activities at smaller enterprises; organization of meetings, site visits, and workshops and trainings under the technical assistance component, including signature of a contract with the Japan Refrigerants and Environment Conservation Organization, and associated implementation schedule, outputs, and tentative plan for conducting site visits given the evolving COVID-19 situation; review of quotas; annual financial audits of project expenditures; and development of six-month and annual project implementation and financial reports. Disbursements for the PMU, which comprises five staff, included staff salaries (US \$158,314), accounting software (US \$2,464), and operating expenses (US \$28,253).<sup>3</sup>

<sup>3</sup> The reported disbursements encompass disbursements made under the first tranche.

Level of fund disbursement

14. As of April 2021, of the US \$2,689,160 approved so far (US \$2,481,930 for the World Bank and US \$207,230 for the Government of Japan), US \$839,883 (31 per cent) had been disbursed as shown in Table 2. In conjunction with the approval of the third tranche, US \$613,568 (plus agency support costs) will be removed from the second tranche and returned to the Multilateral Fund from the World Bank. The balance of US \$1,235,709 will be disbursed by December 2021.

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

Tranche	Agency	Approved	Disbursed	Disbursement (%)
First	World Bank	302,737	302,737	100
	Japan	43,250	41,817	97
Second	World Bank	2,179,193*	495,329	23
	Japan	163,980	0	0
Total		2,689,160*	839,883	31

\* US \$613,568 (plus agency support costs) will be returned to the 87<sup>th</sup> meeting.

Implementation plan for the third tranche of the HPMP

15. The following activities will be implemented during 2021-2022:<sup>4</sup>
- (a) Six training workshops for approximately 300 customs officers on controlling and monitoring HCFC imports and exports (World Bank) (US \$92,284);
  - (b) Continued technical assistance to support enterprises in the preparation and implementation of sub-projects in the foam and RAC manufacturing sectors (US \$12,800), review of the sub-project proposals (US \$20,000), and completion of leakage management evaluation (US \$17,000) (World Bank);
  - (c) Continued technical assistance on the safe use of HFC-32 in AC manufacturing (Government of Japan) (US \$191,813);
  - (d) 72 training workshops (30 to 35 participants each) for technicians on good servicing practices and the safe handling of flammable refrigerants (World Bank) (US \$332,200);
  - (e) Delivery of 65 tool kits for selected vocational training schools (US \$521,809) and 100 tool kits for servicing shops (US \$78,543) (World Bank);
  - (f) Conversion of the four AC manufacturing enterprises to HFC-32, at least one refrigeration manufacturing enterprise to HFC-32, ammonia, hydrocarbon, or another low-global warming potential (GWP) technology, and at least one foam manufacturing enterprise (Tran Huu Duc) to cyclopentane (US \$2,091,509) (World Bank);
  - (g) Outreach activities and six or seven technical workshops (30 participants each from Government and industry) to raise awareness of alternative low-GWP technologies and the upcoming bans; and a study tour to Thailand to gain experience in developing and implementing the ban on HCFC-22-based AC imports and manufacturing, standards for the safe use of HFC-32-based AC units in buildings, marketing HFC-32-based AC units, and management of HFC-32 in the servicing sector, and visits to system houses to learn

<sup>4</sup> Tranches are not treated as projects in the World Bank system, nor kept in separate subaccounts. Accordingly, the World Bank was not able to allocate activities by tranche and would use remaining balances from the second tranche and funding from the third tranche to implement the planned 2021-2022 activities, which have a value greater than the third tranche.

about low-GWP foam formulations and pre-blended polyols for small- and medium-sized enterprises (World Bank) (US \$70,000);

- (h) Verification of consumption (World Bank) (US \$8,000); and
- (i) The PMU will commission an independent financial audit (US \$15,000); recruit a consultant to identify eligible enterprises to participate in technology conversions (US \$17,500); and support the five project staff comprising the PMU to review quotas, assist enterprises to implement their sub-projects, monitor the implementation of all project activities, conduct annual financial audits of the project expenditures, develop six-month and annual project implementation and financial reports, and coordinate reporting (US \$263,029) (World Bank).

## SECRETARIAT'S COMMENTS AND RECOMMENDATION

### COMMENTS

#### Report on HCFC and HFC consumption

16. Consumption of HCFC-141b contained in imported pre-blended polyols fell substantially in 2020 notwithstanding that no conversions in the foam manufacturing sector had been implemented under stage II. Noting the 1 January 2022 ban on HCFC-141b contained in imported pre-blended polyols, and that enterprises that converted with their own resources to water-blown pre-blended polyols or other technologies would not be eligible for funding, which could result in a substantial return of funding to the Multilateral Fund, the Secretariat encouraged the World Bank to undertake additional efforts to ensure the participation in the HPMP of as many foam manufacturing enterprises as possible. Regarding the reduction in consumption of HCFC-22, HCFC-123, and HCFC-225 in 2020, the World Bank explained that those reductions were driven by, respectively: the implementation of the mandatory quota, in line with the Montreal Protocol control schedule; reliance on stocks and potential delays in maintenance due to the COVID-19 pandemic; and the conversion of one HCFC-225-consuming enterprise to HFCs, while noting that there was at least one other enterprise that continued to consume HCFC-225 to clean needles.

17. In line with paragraph 9 of decision XIX/6, the Secretariat sought confirmation that the HCFC phase-out was not driving the rapid rise in consumption of HFC-23. In particular, while Viet Nam had not reported consumption of HCFCs in the fire-fighting sector, the phase-out of HCFCs in the refrigeration manufacturing and servicing sectors could contribute to HFC-23 consumption in (low-temperature) refrigeration. The World Bank indicated that HFC-23 was believed to be used in the fire-fighting sector and in thermal shock test chambers;<sup>5</sup> therefore, the HCFC phase-out was unlikely to be a driver for HFC-23 consumption.

18. The Secretariat noted that a significant quantity of HFC-32 was consumed in the country, notwithstanding that the four AC manufacturing enterprises that will participate in the project had not yet started their conversion. The World Bank clarified that two additional AC manufacturing enterprises, one of which is non-Article-5-owned, manufacture both fixed-speed and inverter-based HFC-32-based AC units; and confirmed that the four AC manufacturing enterprises participating in the project do not manufacture R-410A-based AC units, though three of the enterprises import R-410A-based units, as well as HFC-32-based units, to market under their brand names. As penetration of HFC-32-based units in Viet Nam is already substantial, the Secretariat considers it likely that the four AC manufacturing enterprises would not face substantial hurdles to sell their equipment on the market once their conversions are complete.

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<sup>5</sup> An automated test chamber wherein a product is subject to the shock of extreme thermal temperature changes to test its performance.

## Progress report on the implementation of the second tranche of the HPMP

### *Legal framework*

19. The Government of Viet Nam has already issued HCFC import quotas for 2021 in accordance with the Montreal Protocol control targets.

### *Manufacturing sector*

20. The conversions of two AC manufacturing enterprises to HFC-32; five refrigeration manufacturing enterprises to HFC-32, ammonia, and hydrocarbon technology; and seven foam manufacturing enterprises to cyclopentane and hydrofluoroolefin technology, approved under the second tranche (December 2019), had been delayed due to the COVID-19 pandemic.

21. Stage II of the HPMP included funding for the conversion of 43 foam manufacturing enterprises with a total of 64 manufacturing lines; to date, only two foam enterprises have signed subgrant agreements for conversion, and a third enterprise has indicated interest to participate in the project. The COVID-19 pandemic and availability of water-blown pre-blended polyols likely contribute to the hesitancy of enterprises to participate in the project. The Government of Viet Nam and the World Bank acknowledged the challenge to increase participation and, noting the 1 January 2022 ban, agreed to undertake additional efforts through direct engagement with the sector, including site visits, workshops, and other means, to encourage more of the remaining 40 foam manufacturing enterprises to participate in the HPMP. The World Bank would return to the Multilateral Fund the funds associated with the conversion of enterprises that converted to water-blown or other technologies with their own resources.

22. The Secretariat noted the limited time for the conversion of the four AC manufacturing enterprises before the 1 January 2022 ban on the import and manufacture of HCFC-22-based AC units, and that the approved funding associated with the conversion of AC manufacturing enterprises that did not participate in the HPMP would need to be returned to the Multilateral Fund. The World Bank confirmed that the enterprises remain committed to the conversion to HFC-32; sub-project proposals for three of the enterprises will be submitted or resubmitted to the PMU by June 2021, while the fourth enterprise is expected to confirm its participation by September 2021.

23. Three of the four AC manufacturing enterprises had participated in a project funded by the Kigali Cooling Efficiency Program to increase their capacity to design and market HFC-32 inverter-based AC units alongside their planned manufacturing line conversions; the fourth enterprise already possessed inverter technology and the associated know-how. The three enterprises were expected to first manufacture fixed-speed HFC-32 AC units, and would subsequently transition to manufacturing inverter-based HFC-32 AC units; the timeline for when the enterprises would be able to do so was not yet clear. Despite the delay in the completion of the conversions, the ban on the import and manufacture of HCFC-22-based AC units will be in effect as of 1 January 2022.

### Gender policy implementation<sup>6</sup>

24. The World Bank clarified that stage II of the HPMP did not include a formal results framework on gender mainstreaming as it was designed and approved prior to decision 84/92. The World Bank would discuss with the Government and the PMU the collection of information on gender balance through workshop participant lists, and when reviewing sub-projects submitted by enterprises wishing to participate in the HPMP, so that this practice can be incorporated into the project implementation manual.

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<sup>6</sup> Decision 84/92(d) requested bilateral and implementing agencies to apply the operational policy on gender mainstreaming throughout the project cycle.



Sustainability of the HCFC phase-out

25. The Government of Viet Nam has an enforceable licensing and quota system, and has implemented a ban on the import and export of HCFC-141b (effective 1 January 2015). Forthcoming bans on the import of HCFC-141b contained in pre-blended polyols and on the import and manufacture of HCFC-22-based AC units will ensure the sustainability of the phase-out in the foam and AC manufacturing sectors. The PMU has developed a comprehensive project implementation manual that specifies the requirements and processes for sustainable conversions. Planned technical assistance activities to train stakeholders, including technicians, trainers, policymakers, and customs officers, will help further ensure the sustainability of the phase-out.

Conclusion

26. The verified 2019 and 2020 consumption of the country was within the targets stipulated in the Agreement between the country and the Executive Committee. The import licensing and quota system is operational and will enable HCFC consumption reductions in line with the Montreal Protocol's phase-out schedule. As the second tranche of stage II of the HPMP was approved shortly before the outbreak of the COVID-19 pandemic, limited progress could be made in the planned manufacturing conversions. Nonetheless, consumption of HCFC-22 fell considerably between 2019 and 2020 to meet the Montreal Protocol control targets. Progress is expected to continue given the focus on accelerating the sub-project conversions during the third tranche. Notwithstanding the balances under the second tranche, the Secretariat considers that implementation of the 1 January 2022 bans on HCFC-141b contained in pre-blended polyols, and on the manufacture and import of HCFC-22-based AC units, provides an urgency for the approval of the third tranche.

**RECOMMENDATION**

27. The Fund Secretariat recommends that the Executive Committee:

- (a) Takes note of the progress report on the implementation of the second tranche of stage II of the HCFC phase-out management plan (HPMP) for Viet Nam; and
- (b) Notes the return to the 87<sup>th</sup> meeting of US \$613,568, plus agency support costs of US \$42,950 from the World Bank, associated with the extruded polystyrene foam manufacturing enterprise Phu Vuong Corporation Industry, which was found not eligible for funding.

28. The Fund Secretariat further recommends blanket approval of the third tranche of stage II of the HPMP for Viet Nam, and the corresponding 2021-2022 tranche implementation plan, at the funding levels shown in the table below:

	<b>Project title</b>	<b>Project funding (US \$)</b>	<b>Support cost (US \$)</b>	<b>Implementing agency</b>
(a)	HCFC phase-out management plan (stage II, third tranche)	3,781,257	264,688	World Bank
(b)	HCFC phase-out management plan (stage II, third tranche)	26,400	3,432	Japan