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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Fifty-ninth Meeting
Port Ghalib, Egypt, 10-14 November 2009

PROJECT PROPOSALS: CHINA

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

Foam

- Conversion of the foam part of Jiangsu Huaiyin Huihuang Solar Co. Ltd. From HCFC-141b to cyclopentane — World Bank
- Conversion demonstration from HCFC-141b-based to HFC-245fa-based spray polyurethane foam at Harbin Tianshuo Building Materials Co. Ltd. — World Bank
- Conversion demonstration from HCFC-141b-based to cyclopentane-based pre-blended polyol in the manufacture of rigid polyurethane foam at Guangdong Wanhua Rongwei Polyurethane Co. Ltd. — World Bank

Refrigeration

- Refrigeration servicing sector CFC phase-out plan (sixth tranche) — UNIDO

Solvent

- ODS phase-out in China solvent sector: 2010 annual programme — UNDP

PROJECT EVALUATION SHEET – NON-MULTI-YEAR PROJECT
CHINA

PROJECT TITLE(S)	BILATERAL/IMPLEMENTING AGENCY
(a) Conversion of the foam part of Jiangsu Huaiyin Huihuang Solar Co., Ltd. from HCFC-141b to cyclopentane	World Bank
(b) Conversion demonstration from HCFC-141b-based to HFC-245fa-based Spray Polyurethane Foam at Harbin Tianshuo Building Materials Co., Ltd	World Bank
(c) Conversion demonstration from HCFC-141b-based to cyclo-pentane-based pre-blended polyol in the manufacture of rigid polyurethane foam at Guangdong Wanhua Rongwei Polyurethane Co., Ltd (WHRW)	World Bank

NATIONAL CO-ORDINATING AGENCY	Foreign Economic Cooperation Office of Ministry of Environmental Protection (FECO/ MEP)

LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN PROJECT

A: ARTICLE-7 DATA (ODP TONNES, 2007, AS OF OCTOBER 2009)

HCFCs	17,859		

B: COUNTRY PROGRAMME SECTORAL DATA (ODP TONNES, 2008, AS OF OCTOBER 2009)

ODS				
HCFCs				
HCFC-141b	4,416.2			
HCFC-142b	1,096.0			
HCFC-22	9,560.0			

CFC consumption remaining eligible for funding (ODP tonnes)	

CURRENT YEAR BUSINESS PLAN ALLOCATIONS		Funding US $	Phase-out ODP tonnes
	(a)	Based on decision 55/43 (e)	n/a

PROJECT TITLE:	Huihuang	Tianshuo	Wanhua Rongwei
ODS use at enterprise (ODP tonnes):	5.14	1.67	6.84
ODS to be phased out (ODP tonnes):	5.14	1.67	6.84
ODS to be phased in (ODP tonnes):	0	0	0
Project duration (months):	24	24	24
Initial amount requested (US $):	970,482	272,106	1,625,496
Final project costs (US $):			
Incremental capital cost		80,000	
Contingency (10 %):		8,000	
Incremental Operating Cost:		184,106	
Total Project Cost:		272,106	
Local ownership (%):	100	100	100
Export component (%):	0	0	0
Requested grant (US $):		272,106	
Cost-effectiveness (US $/kg):		162.64	
Implementing agency support cost (US $):		20,408	
Total cost of project to Multilateral Fund (US $):		292,514	
Status of counterpart funding (Y/N):	n/a	n/a	n/a
Project monitoring milestones included (Y/N):	No	No	No
SECRETARIAT'S RECOMMENDATION	Pending	Individual consideration	Pending

PROJECT DESCRIPTION

1. On behalf of the Government of the People's Republic of China (China) the World Bank has submitted to the 59th Meeting of the Executive Committee the following three demonstration project proposals, at a total cost of US $2,868,084 plus agency support costs of US $215,106:

(a) Conversion of the foam part of Jiangsu Huaiyin Huihuang Solar Co. Ltd., from HCFC-141b to cyclopentane, at a total cost of US $970,482 plus agency support cost of US $72,786. Implementation of this project will result in the phase-out of 5.14 ODP tonnes (46.7 metric tonnes) of HCFC-141b;

(b) Conversion demonstration from HCFC-141b-based to HFC-245fa-based spray polyurethane foam at Harbin Tianshuo Building Materials Co. Ltd., at a total cost of US $272,106 plus agency support cost of US $20,408. Implementation of this project will result in the phase-out of 1.67 ODP tonnes (15.2 metric tonnes) of HCFC-141b;

(c) Conversion demonstration from HCFC-141b-based to cyclopentane-based pre-blended polyol in the manufacture of rigid polyurethane foam at Guangdong Wanhua Rongwei Polyurethane Co. Ltd, at a total cost of US $1,625,496 plus agency support cost of US $121,912. Implementation of this project will result in the phase-out of 6.84 ODP tonnes (62.2 metric tonnes) of HCFC-141b.

Jiangsu Huaiyin Huihuang Solar Co. Ltd. (HCFC-141b to cyclopentane)

2. The project is to demonstrate the use of cyclopentane in the production of insulation foam for solar water heaters. This industry has been using HCFC-141b as a foam blowing agent. Jiangsu Huaiyin Huihuang Solar Co., Ltd. (Huihuang) was established in 1997, and is one of the leading enterprises in the solar water heater industry in China. The company has three product lines: solar thermal, solar photovoltaic, and heat pump with annual production capacity of 3,780,000 units. It produced 99,000 units in 2008. Huihuang has been selected to demonstrate the use of polyurethane foam with cyclopentane system considering, *inter alia*, its advantages in scale of production, management capacity, and plant location and conditions. .

3. The company currently operates three modified 8 kg/min sprayfoam machines, installed in 1998, 2003 and 2004. The conversion to cyclopentane involves installation of a double-walled underground carbon steel 20 m^3 storage tank, premixing facility, and provision of safety measures. The three sprayfoam machines will be replaced with two high pressure foam units for cyclopentane (max output 100kg/min) since the original machines cannot be retrofitted. The conversion will also require retrofit or replacement of the conveyor line from open mold casting to closed mold casting, which will be done by the company. The price of cyclopentane is US $1.91 compared to HCFC of US $1.40.

Harbin Tianshuo Building Materials Co. (HCFC-141b-to HFC-245fa)

4. Harbin Tianshuo Building Materials Co., Ltd. (Tianshuo) is a locally owned private enterprise established in 1993. It specializes in building insulation and building waterproofing, and started sprayfoam operations in 2004. Tianshuo is reported to be a leader in research and development of spray foam technologies in China and owns over 30 patents in this field.

5. The company currently operates four spraying machines purchased from Beijing Jinghua Park Polyurethane Equipment Co, Ltd, one in 2004 and three others in 2006. Since currently, there is no existing experience in the use of alternatives to HCFC-141b in the spray foam sector in China, the project will be set up as a demonstration project taking advantage of the company's influence in the spray foam sector and its management capacity. Tianshuo will blend polyol with HFC-245fa in-house and conduct

trial production for validation of formulations, equipment and process. Experts will be invited to train the staff of Tianshuo, and will include variation of polyol formulation and construction spraying, raw material storage and transportation process, and how to deal with potential health and safety hazards in spray foam operations. The main items of equipment are polyol and a HCFC-245fa pre-mixing machine, including a pre-mixing tank, delivery pump and piping system as well as material cooling system at the cost of US $50,000. No changes to the existing spray foam machines are expected. The price HFC-245fa is US $11.76 compared to HCFC of US $1.40. No differences in energy consumption of the HFC-245fa blown foam and HCFC-141b blown foam are expected.

Guangdong Wanhua Rongwei Polyurethane Co., Ltd (HCFC-141b to cyclopentane)

6. Guangdong Wanhua Rongwei Polyurethane Co., Ltd (WHRW) is a local systems house in China, founded in 1997 focusing on research, development and production of polyurethane rigid foam polyols and systems with annual polyol production capacity of 30,000 tonnes. It is one of the few systems houses in China that has base polyol production, with customers all over China. Customers include those that buy blowing agent and mix it themselves with pre-blended polyol systems from WHRW and those that purchase pre-blended polyol systems with HCFC-141b. The HCFC-141b consumption of WHRW in pre-blended polyol systems was 360 metric tonnes in 2008.

7. The main objective of the WHRW project is to demonstrate the feasibility of pre-blending polyol with cyclopentane and the supply of the pre-blended polyol to foam producers**.** WHRW has already developed and tested this technology on an in-house trial basis and needs to confirm it at the operational and commercial levels. It is therefore proposed to test this approach in four foam producing companies. The project will be in two parts to be implemented sequentially, namely:

(a) Setting up commercial scale cyclopentane pre-blending facility in WHRW for demonstration purposes and future promotion of cyclopentane pre-blended systems; and

(b) Phase-out of HCFC-141b at four small enterprises with different lines of foam products (i.e., wine cabinet and small fridge, electric water heater and water tanks, commercial refrigerator and discontinuous sandwich panel) by the use of cyclopentane pre-blended system purchased from the system house at WHRW. The four enterprises operate high pressure dispensers (made in China), one of which is about 17 years old while the others are 2 to 6 years old.

8. The first stage of the project, will include installation of a 35 m^3 underground cyclopentane tank, 2 premixing machines, packaging system for steel drum packaging, buffer tanks and safety measures. WHRW will introduce the cyclopentane pre-blended system to their customers after the conversion, formulation development, and some trials and tests have been conducted. The delivery system for the cyclopentane pre-blended polyol systems will also be part of the project implementation. The cost of the WHRW component as submitted is US $484,785. The second stage of the project will include the replacement of the foaming machines at the four enterprises with new ones at the cost of US $122,500 and US $160,000 depending on the output of the machine. Safety measures will also be provided at the cost of US $66,000. The total cost for the downstream foam companies is US $922,312 as submitted.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

9. The Secretariat reviewed the projects in the context of the policy paper on the revised analysis of relevant cost considerations surrounding the financing of HCFC phase-out submitted to the 55th Meeting (UNEP/OzLPro/ExCom/55/47), relevant decisions adopted on HCFC phase-out, as well as relevant guidelines and policies relating to approval of foam projects under the Multilateral Fund.

Dissemination of project results

10. The Secretariat drew the World Bank's attention to the fact that the mode of dissemination of the results of the demonstration projects is not explicit in the description of the projects. The World Bank indicated that the key purpose of the demonstration projects is to find cost-effective approaches to HCFC phase-out, to gain experiences on performance and quality of foam produced with substitute blowing agents in relation to their specific uses, and to gain other practical experiences on replacing HCFC-141b in the foam sector. The experience gained in the demonstration project will be disseminated by the industry association, which will disseminate findings to its member companies (the industry association is already collaborating closely with the Ministry of Environmental Protection on HCFC-phase-out). It will also be disseminated by the Ministry of Environmental Protection, through the drafting process of the polyurethane foam sector phase-out strategy, which will refer to the results of the demonstration projects and be widely consulted within the industry.

Time frame for project implementation

11. Noting that each demonstration project will be completed in two years, the World Bank was advised to explore the possibility of moving the completion time forward in order to better benefit the HCFC phase-out process. The Bank responded that the target time frame for the demonstration projects is only through to the end of 2010. All three projects will be implemented as quickly as possible in order to provide useful inputs to the foam sector HCFC phase-out plan. In addition, interim findings will be used as inputs to the HPMP. Workshops on disseminating know-how from the demonstration project will be conducted as part of the development of the polyurethane foam sector plan. Interested experts from other Article 5 countries will be invited to attend the workshop and share experience from the demonstration projects.

Cost and other related issues

Jiangsu Huaiyin Huihuang Solar Co. Ltd

12. Concerns were raised regarding the proposal to replace the three existing 8 kg/min spray foam machines by two new 100 kg/min dispensers, which cannot be deemed to be consistent with the company's production baseline. This will also represent a technological upgrade which has not been accounted for in the calculation of the incremental cost of the project. This issue is under discussion between the Secretariat and the World Bank. The Executive Committee will be advised of the outcome of these discussions.

13. The Secretariat pointed out that although cost-effectiveness thresholds for HCFCs have not yet been established by the Committee, the cost effectiveness of the project of US $20.78/kg was more than double the cost effectiveness of the rigid foam sector (US $7.83/kg). Furthermore, if the cost-effectiveness is in relation to other mature technologies, this should be demonstrated through comparative analysis of the costs involved as well as possible environmental benefits. In response to this concern, the World Bank provided a cost comparison and environmental impact of replacing HCFC-141b with cyclopentane (as proposed) compared to HFC-245fa, as shown in the table below:

	Cyclopentane	**HFC-245fa**
Capital cost (US$)	815,650	45,000
Operating cost (US$)	121,832	884,262
Total cost (US$)	937,482	929,262
CO_2-eq (tonnes/year)*	(35,699)	2,813

(*) These numbers represent the net emission of greenhouses, in CO_2-eq tonnes, compared to HCFC-141b. A negative value (i.e., 35,699) represents CO_2-eq tonnes that would not be emitted into the atmosphere once the conversion from HCFC-141b to the alternative blowing agent (i.e., cyclopentane) is completed). This infers that use of HCFC-245fa would result in higher CO_2 emissions.

14. The Secretariat notes that operating costs were calculated over a two-year period.

Harbin Tianshuo Building Materials Co.

15. In the case of Tianshuo, the company has selected HFC-245fa as a foam blowing agent, which is currently a global standard for spray foam applications and it is widely used in Europe and North America. The Secretariat pointed out that HFCs are among the gases controlled under the Kyoto Protocol, and that the Parties to the Montreal Protocol are considering including these gases under its Protocol. The World Bank indicated that China is fully aware of the issue, which relate to other sectors as well. It will also hav e to be addressed in the HPMP. As stated in the project proposal, in the spray foam sector here are no other alternative technologies that are more suitable than HFC-245fa. Due to the high GWP value and cost of HFC-245fa, the ratio of HFC-245fa in polyol is reduced by 40 per cent compared to that of HCFC-141b, which leads to lower greenhouse gas emissions.

16. On the issue of the selection of HFC-245fa technology, the Secretariat notes that, at their 21st Meeting, (4-8 November 2009) the Parties to the Montreal Protocol will have to discuss several issues pertaining to HFCs, in particular a proposal submitted by the Federated States of Micronesia and Mauritius to amend and strengthen the Protocol to regulate HFCs. Any decisions that the Parties may wish to adopt on HFCs could have an impact on the future use of these substances.

17. The Secretariat and the World Bank agreed on the costs of the project, in light of the Bank's explanations regarding the mode of dissemination of project outcomes and time frame for implementing the projects. The total cost of the project as agreed is US $272,106 (i.e., US $88,000 capital cost and US $184,106 operating cost). The cost-effectiveness of the project is US $162.64/kg (US $17.92 metric kg). A copy of the tables with agreed costs are attached to this document.

Guangdong Wanhua Rongwei Polyurethane Co

18. The Secretariat raised concerns regarding the strategy for implementing the WHRW project. The Technical Reviewer of the Bank, noting "the lack of prior experience and information on the process of dealing with the supply and use of pre-blended cyclopentane-based formulations", proposed the implementation of the project in two-stages. Stage I, will carry out trial pre-blending and delivery on a small scale and lower initial cost to assess the feasibility and overcome technical problems (one small tank, one more modest pre-blending unit and only one foam manufacturer as the recipient of the formulations). Stage II, relates to full project implementation, after the results and experience gained through stage I are being assessed by the World Bank with experienced safety experts. The Technical Reviewer also raised the issue of the transportation and handling of pre-blended polyol from the systems houses to the end-user company. At present, there is no means of making any judgment of the costs of the initial phase and overall project as well as the implementation time frames and how this could impact dissemination of information or the technology within China.

19. The Secretariat also pointed out that the most significant objective of this demonstration project is the verification of the possibility of supplying cyclopentane pre-blended systems by systems houses in China and in other Article 5 countries, rather than the establishment of cyclopentane blending capacity *per se* as the know-how has been well established in several foam producing enterprises in China with the support of the Fund. Therefore, given the suggestions provided by the Technical Reviewer, it proposed the project document be revised taking account the comments above, and clearly delineating the description, costs and the implementation time frame of the pilot phase (stage I) from the description, costs and implementation time frame of the full-scale implementation phase (stage II). Although the overall funding could be indicated in the project document, only funding of the pilot phase would be transferred to the World Bank. Release of funding for the full project would be subject to successful completion of the pilot phase and submission of the relevant report by the World Bank supporting the technical feasibility and safety of the full scale demonstration project.

20. Responding to the proposal by the Secretariat, the World Bank raised two concerns. Firstly, the implementation period of the demonstration project would be very long, and would affect the submission of the HPMP as well as the 2013 and 2015 HCFC phase-out compliance targets. Secondly, as the four downstream enterprises belong to different sub-sectors, if one company is selected during stage I, it would not be possible to test the use of hydrocarbon pre-blended polyol in different sub-sectors in the available time. China is confident that this project can address the issues of small- and medium-size enterprises for replacing HCFC-141b with hydrocarbon. Therefore, China continues to recommend choosing four different enterprises, each covering a different application to test the use of cyclopentane pre-blended systems. If the project were to be implemented in two stages, the Government of China would like to request that total funding be approved up front and transferred to the World Bank. Under this option, funding for stage II could be released based on an assessment by the World Bank that stage I was acceptable. These issues are under discussion between the Secretariat and the World Bank. The Executive Committee will be advised of the outcome of these discussions.

Impact on the environment

21. The Secretariat attempted to make a preliminary calculation of the impact on the climate of the phase-out of HCFC consumption through the three foam projects in China, based only on the GWP values of the blowing agents and their levels of consumption before and after conversion. According to this methodology, once the project is completed, a total of 13.65 ODP tonnes (124.1 metric tonnes) of HCFC-141b will be phased-out, 9.3 tonnes of HFC245fa will be phased-in, and 77,453 tonnes of CO_2 that would have been emitted into the atmosphere would be avoided.

Substance	GWP	Tonnes/year	CO2-eq (tonnes/year)
Before conversion			
HCFC-141b (Huihuang)	713	46.70	33,297
HCFC-141b (Tianshuo)	713	15.20	10,838
HCFC-141b (WHRW)	713	62.20	44,349
Total		124.10	88,483
After conversion			
HC (Huihuang)	25	25.50*	638
HFC-245fa (Tianshuo)	1,030	9.26**	9,538
HC (WHRW)	25	34.20*	855
Total		68.96	11,030
Net impact			
Huihuang			(32,660)
Tianshuo			(1,300)
WHRW			(43,494)
Grand total			(77,453)

(*) Based on a HCFC-141b:HC ratio of 1.00:0.55.
(**) Based on a HCFC-141b:HFC-245fa ratio of 1.00:0.60.

RECOMMENDATIONS

22. The Executive Committee may wish:

(a) To consider whether it wishes to approve the demonstration project for the conversion from HCFC-141b-based to HFC-245fa-based spray polyurethane foam at Harbin Tianshuo Building Materials Co. Ltd., at a total cost of US $272,106 plus agency support cost of US $20,408 for the World Bank, in light of the Secretariat's comments above and the results of the discussions of the Parties to the Montreal Protocol at their 21st Meeting on the proposal submitted by the Federated States of Micronesia and Mauritius to amend and strengthen the Protocol to regulate HFCs;

(b) In the event that the Harbin Tianshuo Building Materials project is approved:

(i) To request World Bank and the Government of People's Republic of China to deduct 1.67 ODP tonnes (15.2 tonnes) of HCFCs from the starting point for sustained aggregate reductions in eligible consumption as set by China's HCFC phase-out management plan; and

(ii) To further request World Bank to provide to the Secretariat at the end of each year of the projects' implementation period or part thereof progress reports which address the issues pertaining to the collection of accurate data in line with the objectives of decision 55/43(b).

23. The recommendations on the two other HCFC foam demonstration projects are pending.

Agreed level of funding for the HCFC conversion of Harbin Tianshuo Building Materials Co., Ltd

Table 1: Tianshuo - Project Cost

Description	**US$）**
Polyol and HCFC-245fa pre-mixing machine（US$45,000） a) Pre-mixing tank b) Delivery pump and piping system	 30,000 15,000
Material Cooling System（US$5000） a) Cooling Machine b) Assistant System	 4,000 1,000
Technique Transfer Cost	10,000
Trial production for validation of formulations, equipment and process	10,000
Training Cost	10,000
Sub-total incremental capital cost	80,000
Contingencies（10%）	8,000
Total incremental capital cost	88,000
Incremental operating cost	184,106
Total project cost	272,106

Table 2: Prices of blowing agents

Blowing agent	**US $/kg**
HCFC-141b	1.40
cyclo-Pentane	1.91
HFC-245fa	11.765

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

China

(I) PROJECT TITLE	AGENCY
Refrigeration Servicing	Japan, UNEP, UNIDO

(II) LATEST ARTICLE 7 DATA (ODP Tonnes)			Year: 2007	
CFC: 5,832.1	CTC: 265.1	Halons: 594.5	MB: 384.1	TCA: 251.1

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP Tonnes)						Year: 2008							
Substances	Aerosol	Foam	Halon	Refrigeration		Solvent	Process Agent	MDI	Lab Use	Methyl Bromide		Tobacco fluffing	Total Sector Consumption
				Manufacturing	Servicing					QPS	Non QPS		
CFC								437.8					437.8
CTC									219.2				219.2
Halons			977.3										977.3
Methyl Bromide										713.7	371.3		1,084.9
Others													0
TCA						168.3							168.3

(IV) PROJECT DATA			2004	2005	2006	2007	2008	2009	2010	Total
Montreal Protocol Consumption Limits		CFC	57,818.7	28,909.4	28,909.4	8,672.8	8,672.8	8,672.8	0.	
Maximum Allowable Consumption (ODP Tonnes)		CFC-12	5,083.	4,572.	3,790.	2,997.	2,317.	1,786.	1,181.	
Project Costs (US$)	Japan	Project Costs	1,000,000.	3,000,000.						4,000,000.
		Support Costs	130,000.	390,000.						520,000.
	UNIDO	Project Costs	550,000.		700,000.	700,000.	700,000.	785,000.		3,435,000.
		Support Costs	41,250.		52,500.	52,500.	52,500.	58,880.		257,630.
	UNEP	Project Costs		450,000.						450,000.
		Support Costs		58,500.						58,500.
Total Funds Approved in Principle (US$)		Project Costs	1,550,000.	3,450,000.	700,000.	700,000.	700,000.	785,000.		7,885,000.
		Support Costs	171,250.	448,500.	52,500.	52,500.	52,500.	58,880.		836,130.
Total Funds Released by the ExCom (US$)		Project Costs	2,000,000.	3,450,000.	0.	1,400,000.	700,000.	0.		7,550,000.
		Support Costs	205,000.	448,500.	0.	105,000.	52,500.	0.		811,000.
Total Funds Requested for Current Year (US$)		Project Costs						785,000.		785,000.
		Support Costs						58,880.		58,880.

(V) SECRETARIAT'S RECOMMENDATION:	For blanket approval

REFRIGERATION SERVICING SECTOR CFC PHASE-OUT PLAN (SIXTH TRANCHE)

PROJECT DESCRIPTION

24. On behalf of the Government of China UNIDO, as the lead implementing agency, has submitted to the 59th Meeting of the Executive Committee a funding request for the sixth tranche of the refrigeration servicing sector CFC phase-out plan for China, at a total cost of US $785,000 plus agency support costs of US $58,880. The request was accompanied by a report on project implementation during 2008 as well as for part of 2009, and an annual implementation plan for 2010. The submission also contained a verification report for the CFC-12 consumption for China in 2008; under this sector plan, the CFC-12 consumption of China is the basis for the agreed maximum allowable consumption for the sector.

Background

25. The refrigeration servicing sector CFC phase-out plan for China was approved at the 44th Meeting of the Executive Committee, with UNIDO as lead agency and Japan as cooperating bilateral agency. The total funds approved in principle for the plan amounted to US $7,885,000 plus agency support costs of US $836,130. The Agreement was amended at the 45th Meeting to also include UNEP as a cooperating implementing agency. The refrigeration servicing sector CFC phase-out plan is aimed at supporting China in meeting its Montreal Protocol obligations, including the complete phase-out of the controlled use of CFCs prior to 2010. In order to achieve these targets, a series of investment, non-investment, technical assistance and capacity-building activities will be, and are being, implemented by China with the assistance of the agencies.

Verification of the consumption for the year 2008

26. The Agreement between China and the Executive Committee specifies a maximum allowable CFC-12 consumption for the refrigeration servicing sector. This consumption is determined by verifying the Article 7 data, deducting from it verified consumption data from various sector plans where CFC-12 is being phased out in parallel, as well as the establishment of a national stockpile, meant to supply CFC-12 to the refrigeration servicing and MDI sectors beyond the accelerated closure of the production sector in 2007.

27. The Agreement between China and the Executive Committee requires that the Article 7 consumption of CFC-12 in China be independently verified, while consumption in the refrigeration servicing sector is to be confirmed through China's own monitoring and auditing activities. The verification of the 2008 consumption of CFC-12 was in itself based on two verifications: the results of the World Bank's production sector verification, and the results of the verification of imports and exports, both of which were carried out under this sector plan. The import of CFCs to China in 2008 was zero. With production of 404.8 ODP tonnes and exports from new production of 110.0 ODP tonnes (plus exports from stocks of 115.6 ODP tonnes), the total consumption of CFC-12 in China was 294.8 ODP tonnes in 2008. This consumption is 111.2 ODP tonnes below the limit of 406.0 ODP tonnes specified in the Agreement between China and the Executive Committee.

28. In addition to the information in the verification, UNIDO also provided information regarding the annual use of all CFCs in the sector, based on information from monitoring CFC production, consumption, use and stockpiles in China. According to this information, the use of CFCs in China for the servicing of refrigeration equipment was 912.3 ODP tonnes, as compared to 2,688.5 ODP tonnes of use in 2007; China has thus reduced its CFC use in the service sector by 66 per cent within one year.

Annual implementation report for the year 2009

29. Several achievements were realized under the technical assistance component of the plan, including the continued operation of the Monitoring and Management Information System (MIS), through which CFC recovery data and related training was monitored and reported on a quarterly basis, and a number of awareness activities, with a focus on the general public as well as on the sectors of MAC, domestic, commercial and industrial refrigeration. Special attention was paid to distributing information regarding recovery and recycling. Further activities were related to information for local environmental protection bureaus and the updating of information on the internet. The activities also included a "Study on the operation mechanism of reclamation centre and destruction of ODS residue", looking into a number of different aspects of reclamation.

30. A number of activities were undertaken for the industry. Preparations for further training in the domestic, commercial and industrial refrigeration sectors as well as in the chiller sector were carried out. In the MAC sector, 675 technicians were trained bringing the total in this sector to 6,067 technicians. The establishment of reclamation centres was further advanced, and domestic, commercial and industrial refrigeration servicing enterprises and training centres were equipped with R&R equipment. Also, activities to recover refrigerant from retired ships were undertaken. The Government continued efforts to develop a decree to restrict the venting of CFCs, and to monitor CFC production, import and export.

31. In 2009, the maximum allowable consumption of CFC-12 is 406 ODP tonnes, and the total allowed use of all CFCs in the service sector is 1,786 ODP tonnes. In the industry using CFCs, activities to support refrigerant recovery will continue, in particular the recovery from domestic equipment and appliance dismantling stations; in order to do so, the beneficiaries of a pilot scheme will be identified, and the equipment is planned to be delivered by the third quarter of 2010. The plan for 2010 includes a number of technical assistance activities, such as the continued operation of a management information system as well as monitoring in the MAC sector and the domestic, industrial and commercial refrigeration sectors. Another activity will be the Article 7 CFCs consumption verification, and the compilation of the progress report and annual implementation programme. The Government also plans to conduct a study on possibilities for the establishment of a servicing engineer certification system. At the end of the implementation of the plan, a closing workshop is expected to summarize the lessons and experience gained in project implementation, and form a report as reference for the HCFCs phase-out in the servicing sector of China and other countries. The Government will continue to develop the government decree to restrict the venting of CFCs, and will also monitor the CFC production, import and export. Finally, the Government will take measures to facilitate the establishment of a CFC collection and reclamation system.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

32. The refrigeration servicing sector plan for China, for which the last tranche is now being requested, showed a clear structure and a number of innovative and broadly directed activities. In particular, it has remained the only sector plan focussing significant resources on the collection of CFCs from equipment at the end of its useful life, for recycling and re-use in equipment that is still operating. The activities covered also in several cases the basic research for technical, administrative and legal issues needed for further advancement of government legislation. The activities in the final tranche, and those funded in previous phases that are still ongoing, wrap up the implementation of the plan. The CFC use in the sector dropped very significantly in the last year by over 60 per cent, and China has still significant, government-controlled stocks to ensure the supply for the dwindling CFC demand in the sector beyond 2010. The fund management in the project lead to expenditures following the available funding very closely; at the moment, from the US $7.1 million approved, only 0.6 per cent remains uncommitted as of August 2009.

33. The Secretariat had requested additional information from UNIDO regarding a number of technical details, as well as on the study on the operating mechanism for the reclamation centre and destruction of ODS residue. Finally, the verification report contained a critical remark of the verifier regarding problems with the internet representation of "Ozone Action in China". The different phase-out plans in China, including this one, had and have a significant amount of expenditures foreseen for information distribution through the internet. The Secretariat requested information as to how the Government of China intends to take the remarks of the verifier into consideration. A reply from UNIDO was not received in time to be included in this document.

RECOMMENDATION

34. The Secretariat recommends that the Executive Committee:

(a) Takes note of the progress report on the implementation of the refrigeration servicing sector CFC phase-out plan for CFCs (fifth tranche) in China during the year 2008 and the verification report for the year 2008; and

(b) Approves the implementation programme for 2010, on the understanding that UNIDO will provide annually, by calendar year, reports on the activities undertaken until the financial closure of the phase-out plan.

35. The Secretariat further recommends blanket approval of the sixth tranche (2009) of the refrigeration servicing sector CFC phase-out plan for CFCs for China with associated support costs at the funding level shown in the table below:

	Project Title	Project Funding (US$)	Support Cost (US$)	Implementing Agency
(a)	Refrigeration servicing sector CFC phase-out plan (sixth tranche)	785,000	58,880	UNIDO

PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS

China

(I) PROJECT TITLE	AGENCY
Solvent	UNDP

(II) LATEST ARTICLE 7 DATA (ODP Tonnes)			Year: 2007	
CFC: 5,832.1	CTC: 265.1	Halons: 594.5	MB: 384.1	TCA: 251.1

(III) LATEST COUNTRY PROGRAMME SECTORAL DATA (ODP Tonnes)						Year: 2008							
Substances	Aerosol	Foam	Halon	Refrigeration		Solvent	Process Agent	MDI	Lab Use	Methyl Bromide		Tobacco fluffing	Total Sector Consumption
				Manufacturing	Servicing					QPS	Non QPS		
CFC								437.8					437.8
CTC									219.2				219.2
Halons			977.3										977.3
Methyl Bromide										713.7	371.3		1,084.9
Others													0
TCA						168.3							168.3

(IV) PROJECT DATA			2000	2001	2002	2003	2004	2005**	2006	2007	2008	2009***	2010	Total
Montreal Protocol Consumption Limits		CFC	57,818.7	57,818.7	57,818.7	57,818.7	57,818.7	28,909.4	28,909.4	8,672.8	8,672.8	8,672.8	0.	
		TCA				721.2	721.2	504.8	504.8	504.8	504.8	504.8	216.4	
		CTC						5,733.1	5,733.1	5,733.1	5,733.1	5,733.1	0.	
Maximum Allowable Consumption (ODP Tonnes)*		CFC	3,300.	2,700.	2,200.	1,700.	1,100.	550.	0.	0.	0.	0.	0.	
		CTC	110.	110.	110.	55.	0.	0.	0.	0.	0.	0.	0.	
		TCA	621.	613.	605.	580.	502.	424.	339.	254.	169.	85.	0.	
Project Costs (US$)	UNDP	Project Costs	6,750,000.	6,955,000.	6,330,000.	5,755,000.	5,555,000.	5,680,000.	5,055,000.	5,480,000.	1,480,000.	1,480,000.	1,480,000.	52,000,000.
		Support Costs	675,000.	695,500.	633,000.	431,625.	416,625.	426,000.	379,125.	411,000.	111,000.	111,000.	111,000.	4,400,875.
Total Funds Approved in Principle (US$)		Project Costs	6,750,000.	6,955,000.	6,330,000.	5,755,000.	5,555,000.	5,680,000.	5,055,000.	5,480,000.	1,480,000.	1,480,000.	1,480,000.	52,000,000.
		Support Costs	675,000.	695,500.	633,000.	431,625.	416,625.	426,000.	379,125.	411,000.	111,000.	111,000.	111,000.	4,400,875.
Total Funds Released by the ExCom (US$)		Project Costs	6,750,000.	6,955,000.	6,330,000.	5,755,000.	5,555,000.	10,735,000.	5,480,000.	1,480,000.	1,480,000.	0.	0.	50,520,000.
		Support Costs	675,000.	695,500.	633,000.	431,625.	416,625.	805,125.	411,000.	111,000.	111,000.	0.	0.	4,289,875.
Total Funds Requested for Current Year (US$)		Project Costs										1,480,000.		1,480,000.
		Support Costs										111,000.		111,000.

***refers to consumption in the sector, not to national consumption**

****approval in 2005 was provided at the first meeting for the 2005 plan and at the last meeting for the 2006 plan**

*****approval of the 2010 tranche is foreseen for the last meeting in 2009**

(V) SECRETARIAT'S RECOMMENDATION:	For blanket approval

ODS PHASE-OUT IN CHINA SOLVENT SECTOR: 2010 ANNUAL PROGRAMME

PROJECT DESCRIPTION

36. On behalf of the Government of China, UNDP as the implementing agency has submitted the 2008 annual progress report and the annual implementation programme for 2010 for the solvent sector plan for ODS phase-out in China for consideration by the Executive Committee at its 59th Meeting. The total cost of the eleventh and final tranche for the 2010 annual implementation programme as submitted is US $1,480,000 plus support costs for UNDP of US $111,000.

Background

37. The solvent sector plan for China was approved at the 30th Meeting of the Executive Committee at a total cost of US $52 million plus support costs for UNDP. Funds totalling US $50,520,000 plus support costs of US $4,289,875 for UNDP have so far been approved for the first ten annual tranches from 2000 to 2008 inclusive.

38. The phase-out is being achieved through a combination of investment activities targeting specific enterprises and a technical assistance programme for smaller enterprises managed through a voucher system. Consumption limits are maintained through regulation of production and imports. The reductions in production are controlled under China's production sector phase-out plans for CFCs and CTC. The use of CTC as a cleaning solvent has been prohibited since 1 June 2003, and CFC-113 as a solvent since 1 January 2006. The only ODS solvent with remaining consumption is methyl chloroform (1,1,1-TCA) which, under the Plan, will be completely phased out by 1 January 2010.

Phase-out from investment projects and activities

Enterprise-level activities

39. Under the solvent sector plan, the phase-out of TCA recorded in 2008 was achieved by the completion of phase-out activities at enterprises under the ODS reduction contract project initiated in 2007 and 2008 to phase out TCA used as solvents.

40. A reimbursement mechanism was adopted in 2006, funding the enterprises only after they have completed their phase-out activities on their own. Activities from the 2006 tranche related to three enterprises covered by this activity, which completed phase-out activities in 2008 with 25.6 ODP tonnes of TCA achieved. The implementation in another 25 enterprises from those selected for the 2007 tranche was ongoing during 2008, with an associated phase-out of 112.9 ODP tonnes, where, an actual phase-out of 4.6 ODP tonnes was achieved in 2008. Eleven enterprises were included in the 2008 programme, of which five had completed the activities in that year achieving a phase-out of 7.5 ODP tonnes. The 2009 programme had started off in 2008 with the selection of another five enterprises, with an associated consumption of 5.5 ODP tonnes.

Technical assistance and public awareness

41. A number of technical assistance activities continued in 2008. These were related to combating concrete illegal activities as reported in conjunction with the last tranche as well as increased capacity building to further suppress illegal activities, and achieve greater progress in the ozone friendly provinces/cities demonstration activities, and capacity building of the local environmental protection bureau. In addition, a research activity on TCA substitutes and technology in the solvent sector aims at identifying specialized substitutes and alternative technologies for TCA that can be applied effectively to the different industrial sectors. So far, major experiments have been completed and the appropriate and effective substitutes for major TCA consuming sub-sectors have been found.

42. During the process new applications of TCA were identified, one of them being silicon rubber coating in the power industry. A substitute technology for this application is hard to find and the alternative solvent has to be tested to meet the national standard, at the same time the total consumption by this industry soared to quite a large amount accounting for almost half of the annual total TCA consumption. An independent research project for this industry, using in the meantime half of the annual TCA consumption, was commissioned in 2008. One of the outputs achieved in 2009, was a compilation of TCA substitutes, which has been printed and distributed to TCA consuming enterprises and local environmental protection bureaus in China.

43. The public awareness activities were increasingly moved to the internet during 2008, including adding functional modules to the website of the sector plan and organising the visible placement of the web page in internet search engines. Activities such as meetings and providing posters continued. To develop and strengthen its meeting and training facilities and reduce rental costs, network and conference facility equipment was installed.

Status of legislation

44. A quota and licensing system for TCA production, consumption and distribution was installed in 2006, under which applications for production, consumption and distribution licenses can be made. In 2008, a total of 34 dealers and 56 consumers applied and received distribution licenses for 2009.

45. CTC used as a cleaning solvent has been banned since 1 June 2003, and CFC-113 as a solvent has been banned since 1 January 2006. CTC and CFC-113 consumption in 2008 has been verified to be zero for both. The Government of China will continue to monitor annually the non-consumption of CTC as a cleaning solvent and CFC-113 as solvent use.

Verification

46. As part of the implementation, both a verification of the 2008 national level consumption based on production, import and export data as well as an implementation performance verification were conducted. The performance verification confirms that the 2008 consumption control limits stipulated in the Agreement between the Executive Committee and the Government of China have been met, with an annual consumption of 168.25 ODP tonnes versus a maximum allowable consumption of 169 ODP tonnes.

47. For projects initiated between 2006 and 2009, site verification was conducted before the contract was signed between the Government and the enterprises; China will continue this procedure for future activities as well. For on-going projects initiated earlier, site verifications are performed on a sampling basis during the financial audit and performance verification each year.

Plan

Unspent balances

48. The Executive Committee has so far released US $50.52 million, of which US $7.02 million or 14 per cent remain uncommitted. The Government was for several years intending to use remaining funds from implementation for unforeseen activities. Since the plan is now nearing its conclusion UNDP, on behalf of the Government of China, proposed the following activities for the uncommitted funds:

(a) For the strengthening of monitoring of the ODS production, distribution and consumption, US $1 million is foreseen. This will cover activities such as strengthening of law enforcement capacity towards sustainable monitoring, data collection on ODS production, distribution and consumption and effective measures against illegal activities;

(b) For further capacity building of local environmental protection bureaus, towards support in achieving compliance with the Montreal Protocol, US $3.5 million is foreseen. The existing activities are to be continued and extended;

(c) For the training of programme management officers, US $1.5 million is planned. The Government of China has advised that due to a variety of different programme management approaches and the complex implementation it is necessary and important to organize training projects for Programme Management Officers who are pivotal to ODS phase-out activities; and

(d) For all phases of development of ODS policies, regulation and bans, US $1 million is foreseen. The work to be carried out includes research necessary to develop regulatory instruments, their publication including public awareness promotion, training workshops for local environmental protection bureaus and enterprises. Research to gain a better understanding of alternatives to ODS, and an investigation into a certification procedure for ODS substitutes are envisaged as further areas of work.

2010 Annual implementation programme

49. The 2010 annual implementation programme will continue to implement and complete the TCA phase-out activities initiated in 2007, 2008 and 2009. Activities initiated in 2009, together with the completion of those initiated in 2007 and 2008, will contribute to the phase out of 85 ODP tonnes of TCA through direct phase-out and retroactive reimbursement. The TCA project phase-out contracts for 2009 are expected to be signed in Autumn 2009 and the project will be completed during 2010.

50. Necessary and relevant technical assistance activities, legislative measures, monitoring and enforcement mechanism are also included in the 2010 annual implementation programme. The solvent sector plan was meant to draw to a close in 2010, and all activities related to the conversion or support of industry will have been completed. Consequently, activities for public awareness as well as an evaluation and review will also be carried out in 2010. Such activities include a final report on the solvent sector plan implementation from 2000-2010, brochures, videos and further website development.

51. UNDP plans to use the requested budget of US $1.48 million for the eleventh tranche for the retroactive reimbursement of enterprises (US $1,040,000), technical assistance related to public awareness (US $100,000), implementation of the TCA quota and licensing system (US $50,000), enforcement (US $80,000), closing conference (US $100,000), evaluation and completion report (US $80,000) and hiring of international and national technical experts (US $30,000).

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

52. The Secretariat had already raised at the 56th Meeting the issue that the current year is the last year before phase-out, and that at that time the uncommitted balance was more than US $6 million. In the meantime however this balance has increased to uncommitted funds of more than US $7 million. UNDP, on behalf of the Government of China, has provided an implementation outline for these funds comprising of four fields of activities.

53. The Secretariat is supportive of the activities outlined, which represent a logical continuation and extension of existing activities already implemented under this phase-out plan. Due to reasons related to fiduciary responsibility, the Secretariat will continue to require annual reports of activities undertaken with these funds. The decision proposed for the Executive Committee has been phrased accordingly.

54. The submission of UNDP on behalf of China provided an excellent and very detailed overview of the activities under this plan, and results achieved both for the year 2008 as well as from the beginning of the plan. The implementation is progressing well, focussing on the consumption of TCA since the other two solvents covered, CTC and CFC-113, have been completely phased out in the solvent sector. The verification appears sufficient and shows that in 2008 China succeeded in reducing its consumption below the maximum allowable level specified in the agreement for TCA.

RECOMMENDATION

55. The Secretariat recommends that the Executive Committee:

(a) Takes note of the 2008 progress report and the associated verification report;

(b) Approves the proposed use of remaining funds as outlined in document UNEP/OzL.Pro/ExCom/59/23 and the 2010 annual implementation plan for the solvent sector in China on the understanding that UNDP will provide annually, by calendar year, reports on the activities undertaken until the financial closure of the phase-out plan; and

(c) Approves the funding for the eleventh tranche of the phase-out plan with associated support costs at the level shown in the table below:

	Project Title	Project Funding (US$)	Support Cost (US$)	Implementing Agency
(a)	ODS phase-out in China solvent sector: 2010 annual programme	1,480,000	111,000	UNDP