

**INTERMEDIATE EVALUATION OF CFC PRODUCTION SECTOR PHASE-OUT  
AGREEMENTS**

**COUNTRY REPORT PR CHINA**

**By**

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## **List of Acronyms and Abbreviations**

CFC	ChloroFluoroCarbon
CNAO	China National Audit Office
CTC	Carbon Tetrachloride
ExCom	Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol
HCFC	HydroChloroFluoroCarbon
HFC	HydroFluoroCarbon
ktpa	Thousand (metric) tons per year (generally used for capacity of chemical plants)
MP	Montreal Protocol
mt, ton	Metric ton (1000 kilograms)
NOU	National Ozone Unit
ODP	Ozone Depletion Potential
ODS	Ozone depleting Substance
RMB	Renminbi (currency in China)
SEPA	China State Environmental Protection Administration
SME	Small and Medium Size Enterprise
TA	Technical Assistance
TCA	Trichloroethane (Methyl Chloroform or T111)
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
WB	World Bank

## EVALUATION OF THE CFC PRODUCTION SECTOR IN THE P.R. CHINA

### 1 Purpose and Scope of the Evaluation

1. The terms of reference, methodology and scope of the evaluation and the proceedings of the mission are described in the synthesis report submitted to the 42<sup>nd</sup> meeting of the Executive Committee (UNEP/OzL.Pro/ExCom/42/??). The itinerary of the mission in China is shown in Annex II.

### 2 CFC Production Sector Phase-out Achieved so far

2. PR China has, at the beginning of 2004, a total of six remaining CFC producers with an allowable production of 25,300 metric tons of CFCs for 2004. From 1999 until the end of 2003, a total of US \$53 million was disbursed from the MLF, according to the 2002 Progress Report.

**Table 1: Overview of the CFC Production Sector Agreement with China**

Year	Maximum Allowable Production as per Agreement (Metric Tonnes)	Verified Actual Gross Prod. (Metric Tonnes)	Production in Excess of Agreement (Metric Tonnes)	Verified Actual Prod. (ODP Tonnes)	A7 Data – CFC Production (ODP Tonnes)	Annual Funding Tranches as per Agreement (US\$)	Approved Funds (US\$)	Funds Disbursed (US\$) <sup>2</sup>
1999	44,931.0	45,667.4 <sup>1</sup>	736.4	44,739.0	44,739.4	20,000,000	20,000,000	20,000,000
2000	40,000.0	40,969.5	969.5	39,990.5	39,962.8	13,000,000	13,000,000	13,000,000
2001	36,200.0	36,941.9	741.9	36,196.1	36,167.2	13,000,000	13,000,000	13,000,000
2002	32,900.0	33,521.0	621.0	32,895.5	32,269.0	13,000,000	13,000,000	7,000,000
2003	30,000.0	30,535.4	535.4	29,985.7	n.a.	13,000,000	13,000,000	
2004	25,300.0					13,000,000		
2005	18,750.0					13,000,000		
2006	13,500.0					13,000,000		
2007	9,600.0					13,000,000		
2008	7,400.0					13,000,000		
2009	3,200.0					13,000,000		
2010	0.0							
<b>Total</b>	<b>261,781</b>	<b>187,635.2</b>	<b>3,604.2</b>	<b>183,806.8</b>		<b>150,000,000</b>	<b>72,000,000</b>	<b>53,000,000</b>

<sup>1</sup> Assuming that in one factory (Jiangsu Changsu 3F Refrigeration Co. Ltd.) where CFC-114 and 115 production is lumped together in the verification report (150 mt), 50% is CFC-115.

<sup>2</sup> According to 2002 Progress Report

3. The World Bank and SEPA always planned and reported the CFC-production for China in ODP tonnes and not in ODS tonnes while the agreement defines the annual limits in MT that means usually ODS tonnes. As a consequence of substantial production in China of CFC-113 for solvent use (with an ODP value of 0.8) and of some CFC-115 (with an ODP value of 0.6), the production figures in MT are in every year above the ceiling by 721 MT on average for the last five years (see table 1 above).

4. In China, the main products are CFC-12, CFC-11 and CFC-113, with some limited production of CFC-13, CFC-114, and CFC-115. Most of the production is consumed domestically, exports of CFC-11 and 12 picked up in 2003 due to low domestic demand. Part of the CFC-113 is used in the manufacture of the chemical intermediate CFC-113a, an isomer of CFC-113, and for other feedstock purposes, but the greater part as solvent, within the gradually declining limits as defined by the agreement on the solvent sector phase-out plan.

**Table 2: CFC Production and Exports in 2001/02**

Year	Chemical	Production (mt)	Exports (mt)	Total of Production Exported (%)
<b>2001</b>	CFC-11	14,099	292	2
	CFC-12	19,330	3,461	18
	CFC-113	4,194	32	-
	<b>Total</b>	<b>37,623</b>	<b>3,785</b>	<b>10</b>
<b>2002</b>	CFC-11	15,771	267	2
	CFC-12	14,775	3,365	18
	CFC-113	2,750	10	-
	<b>Total</b>	<b>33,296</b>	<b>3,642</b>	<b>11</b>

5. CFC-11 and CFC-12 production is reported to have been produced in separate manufacturing units, which typically could not be retrofitted or modified to produce HCFC-22. This is largely the case although one producer Juhua has indicated the technical possibility of manufacturing HCFC-22 on its plant.

6. The CFC-11 and 12 manufacture is concentrated on four producers (three were visited during the evaluation mission) and there are varying degrees of upstream integration to AHF and to chloromethanes (CTC). Most of the CFC-11 and CFC-12 is sold to the domestic market although some exports are also made, most typically during the refrigeration and air-conditioning off-seasons. These four main producers have made, and continue to make, sizeable investments in alternative fluorocarbons manufacture, notably for HCFC-22 (accounting for a calculated ~50% of China's existing HCFC-22 capacity).

7. CFC13 is manufactured by one producer in a small way using purchased CFC-12 feedstock. Changsu 3F makes CFC-113 and CFC-115, and FLTCO CFC-115 and CFC-114 as intermediate product for periodic allowed sales, although at present stocks are high enough to meet some 3-4 years of typical domestic sales.

8. 14 CFC producers with a production capacity of 22,630 tons of CFC had already stopped production at the start of the agreement, and received a limited compensation. Thereafter, in 1999-2001, a process of bidding was initiated, by which CFC producers could bid up to a SEPA-proscribed maximum value per ton of discontinued or reduced CFC production. A further 18 companies were closed down in this process. In 2002, facing a growing reluctance of the remaining producers to further reduce CFC production, SEPA ordered the reduction of a fixed amount of CFC-11 and CFC-12 identical for each of the four remaining producers, the other CFCs (CFC13/113/114/115) being much smaller and remaining untouched. In 1999, the compensation was less than US \$2/kg, the bidding process was in place and enterprises bids were less than US \$2/kg. In 2000 and 2001, the compensation was valued at US \$2/kg, in 2002 around US \$1.8 /kg and in 2003 US \$1.40/kg. In 2004 the reduction formula changed from the same amount for each producer to a percentage of each producer's previous individual quota (15.7% reduction per producer), thereby enabling the smaller producers to continue to produce. If an enterprise has an annual production of below 887 tons per year, it is closed down as uneconomical.

9. Where changes are deemed necessary in the quota allocation they should be well explained. The recent move to proportional reductions should allow keeping the smaller producers longer alive. This should help to maintain some competition needed to keep prices stable. However, such unforeseen changes make it difficult for companies to plan ahead (both CFCs and CTC). The total phase-out is the same whether applied evenly to all companies or proportionately.

### **3 Policy Instruments and Institutions Involved.**

10. In China, the policy framework affecting CFC production, trade and use consists of a number of legislative measures, with an annual tradable quota system as centerpiece based on the “Circular on Implementing the Quota System for CFC Production” issued by the State Environmental Protection Administration (SEPA) and the State Administration of Petroleum and Chemical Industry (SAPCI) on 31 May 1999.

11. These measures are designed to implement the CFC production sector phase-out agreement and relate to:

- (a) Closure of small production enterprises,
- (b) Gradual phase-out and out of CFC production in the remaining larger scale producers,
- (c) Foreign trade limitations and controls,
- (d) Monitoring by means of audits, verifications and supervisions of the compliance with the contracts between SEPA and the CFC producers for the phased reduction and closure.

12. All policy measures related to the Montreal Protocol are compiled in a 460-page book issued in Chinese by SEPA and UNEP in September 2003 entitled “Ozone Action in China: Basic Knowledge and Policy Regulations”. The book is comprehensive and clear. In addition to giving basic facts on the ozone layer and measures taken to protect it, it describes the Montreal Protocol, and the various domestic policies and regulations taken in China to abide to the MP and the related Country Programme.

13. The National Ozone Unit in China is part of the China State Environmental Protection Administration (SEPA). The former State Administration of Petroleum and Chemical Industry (SAPCI) followed closely the negotiations in the Executive Committee on the CFC production sector phase-out agreement of the Montreal Protocol. Soon after approval of the phase-out agreement a quota management system was established in cooperation with SAPCI, defining annual phase-out targets for each producer.

14. The first step of the phase-down and -out process relates to the closing down in 1999 of fourteen small-scale producers who anyway were not producing already as of 1997. The individual compensation allotments were made on the basis of several factors: production capacity, state of the facilities, when they had stopped production and how easily they could restart production.

15. This was followed by the additional closure of three plants in 1999 and, after the initial bidding for 1999 quotas, seven enterprises phased out production. Disbursements in 1999/2000/2001 were done on the basis of annual bidding against a ceiling price of USD 2 per kilo. Lowest bidders were selected. Under the 2002 Annual Programme, since no CFC producer bid to close production lines, production quotas were allocated by administrative measures to the remaining seven producers and to six producers in 2003, since one producer had closed down in the meantime. In 2004 the system was changed again to a reduction in percentage terms of previous actual production on the basis of USD 1.4 per kilo. If an enterprise reaches an annual production of less than 887 tpy, then it is closed down.

16. The management of quotas allows for transfer of quotas between enterprises against payment. This has occurred in a few cases to the satisfaction of both enterprises.

17. SEPA has a 20 person strong body of inspectors dealing with all kinds of pollution. Two are specialized in ODS.

18. A policy and information team in SEPA is charged with the dissemination within the enterprises of technical and legal information related to ODS. A monthly bulletin "Ozone action" is issued in this connection, in English and Chinese versions, which has a wide distribution in Industry.

#### **4 Mechanisms to Audit and Verify Production Phase-out**

19. In addition to the annual international audit foreseen by the agreement and organized by the World Bank, the China National Audit Office verifies once per year production and sales of CFC and feed-stock used. The national audit is undertaken separately from the audit by the World Bank consultant team. However, TOR are also provided by the WB and SEPA, as funding is provided under TA by the WB (about US \$500/plant visited).

20. The national audits look at production records, accounting records, calculated raw materials consumption, material in storage and there are occasional, apparently infrequent, spot checks with suppliers or customers. Exports are reportedly verified via the declaration forms for imports/exports and contacts with traders. Another check made is on VAT receipts but this couldn't contribute much since VAT values are a function of unit price/ton volume sold, so there are two variables. Apparently even internal movements of captive feedstocks are subject to VAT.

21. Quotas have not been exceeded. The system is accepted by the producers and has worked smoothly. There has never been a discrepancy between the national and the international audits. Only one data discrepancy was noted by the evaluators in China. CNAO reported unusually low CFC-12 average pricing for Changshu 3F for 2002 and promised an explanation which was not delivered.

22. SEPA also monitors the compliance with the production quotas of CFC 11/12 and 113 through a system of eight supervisors from competitor enterprises. This system does not apply to CFC-13/114/115 manufacture. All supervisors operate within the same procedures established by SEPA and undergo a 2-3 day training at SEPA. They are selected by SEPA from three candidates supplied by the companies, operate in pairs, and are interchanged every year. They provide information on production every month to SEPA within an established format. Since the supervisors were changed at the beginning of 2004 and consequently none were on board, the evaluation team could not discuss their functioning with them. However, from the standpoint of the enterprises, the system of supervisors has worked well. The cost of this supervisory system is around US \$114,000 per year and is charged to the TA component.

23. This supervision, the periodic verification by the international audits and the national audits have not identified deviations from the established quotas. Had deviations been found, the penalties for companies found short of their obligations, are severe and consist of:

- (a) Retrieval of the compensation funds paid.
- (b) No production quota awarded for the following year.
- (c) Monetary penalty up to 200,000 Yuan.

24. A broader analysis of companies needs to be adopted by the audits. It is important to recognize that reducing the production of CFC-11 and CFC-12 has ramifications on the feedstock (in this case CTC). The early replacement product HCFC-22 requires the supply of chloroform, which necessarily entails CTC co-production. The evaluation has established that the phase-out of CFC-11/12 has led to intense pressure on CTC management. Some companies have difficulty to sort out this matter by themselves because of the chloroform factor. A broader overview would have enabled better anticipation of such problems. Consequently, movements of CTC should be included in the verification reports, annual progress and work programmes. It would at the same time seem appropriate to challenge the sometimes-stated opinion that CTC cannot be minimized below 13% of overall chloromethanes production. The globally leading producers operate to a factor of some 10% or less on chloroform, or around 5% of total chloromethanes.

25. Specific to the use of CTC in CFCs, licenses to use CTC by CFC manufacturers might be considered. Where the use of CTC is from a captive chloromethanes supply (this is the case at two Chinese producers), supply can be monitored by normal internal documents. Otherwise CTC supply should be traceable back to the manufacturers, and hence import licenses should specify the CTC manufacturer of origin. Then, part of the audit trail might be a spot-check (or a systematic check, as resources allow) that CTC produced and sold by Producer P is indeed finding its way to Consumer C.

26. It is virtually impossible to calibrate production processes such that output can be measured to three decimals (i.e. to the kilogram), and yet this is being presented. It is most likely a calculation and as such relatively meaningless. It might be of course that the plant output is measured to the nearest ton whilst sales volumes are calculated more precisely and that the reported production reflects this balance. It is recommended that output be rounded to the nearest 100 kg.

27. The auditors claim they check the daily log sheets, to see if different shift workers fill them out. In one case, where the writing was uniform for one year, the records apparently had been redone. Systematic inspection and auditing of daily logbooks on a yearly basis add time and seem to make no real contribution since monthly and yearly outputs are readily examined. It may yield some information about maximum operating capability but it is not clear what purpose this information would serve since all plants are on a slow-down regime. There may nevertheless be a value in the day logs in enabling verification that plants are truly shutdown as claimed, and to spot-check data for consistency.

28. With recycling of CFC-11 to CFC-12, absorption of unreacted AHF by water to make and sell aqueous HF and the feed by some companies of AHF from the purchasing tank or internal factory to a general fluorocarbon area, which may include other products, AHF demand may be an estimate, at best, based on typical unit ratios as opposed to a real count. By contrast, as above recommended, it is more useful to count CTC demand, since this generally has no other application in the fluorocarbons area, although there are issues around the specificity of the unit ratios. Even so, this will be directional rather than a specific reality check. It should be noted that CTC is in its own right an ODP, and that there are a large number of emissive uses for the product. Therefore it is more important to manage the CTC trail than the AHF trail.



## 5 Sustainability

29. The evaluators are of the opinion that the perspective for continued compliance with the phase-out schedule as per agreement is positive in PR China. Mechanisms to control illegal production are in place. There is practically no chance that CFC production can be resumed if the plant was destroyed. In case of gradual reduction, compliance is likely, due to periodic controls and because of the potential fines if the company transgresses. Further, all market signs indicate that demand for CFCs is declining faster than expected.

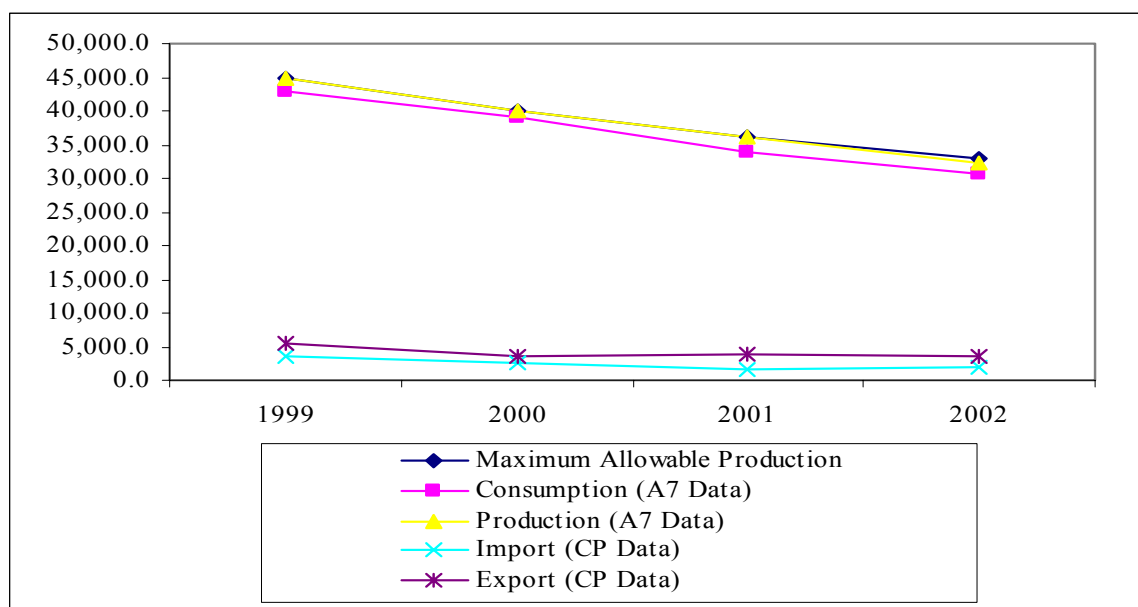
30. Nevertheless, a number of small illegal producers (2 in 2001, 5 in 2002 and 3 in 2003) have been found, either by denouncements, or by the regular environmental inspections carried out at local level by the combined efforts of SEPA and local inspectors. The illegal plants, usually with a small production capacity of 100 to 200 tpy were closed down and dismantled by SEPA. Since the production of CTC is now controlled, illegal production of CFCs is likely to go down.

## 6 Evolution of Basic Sector Data and of Prices for CFCs and Substitutes

31. In the PR China there has not been the significant upward movement in CFC prices that some observers had expected. This is due to the fact that users, who have been kept well informed about the phase-out schedule, have moved away from CFCs to alternatives broadly at the pace at which CFCs were withdrawn. As shown in Figure 1, CFC consumption declined in line with the reduction of production, which contributed to keep prices low.

**Figure 1: Basic CFC Production Sector Data**

	1999	2000	2001	2002
Maximum Allowable Production	44,931.0	40,000.0	36,200.0	32,900.0
Consumption (A7 Data)	42,983.4	39,123.6	33,922.6	30,621.2
Production (A7 Data)	44,739.4	39,962.8	36,167.2	32,269.2
Import (CP Data)	3,703.8	2,592.2	1,534.0	1,782.7
Export (CP Data)	5,459.8	3,431.4	3,778.6	3,644.5



32. The competitive pricing of alternatives such as HCFC-22 and HCFC-141b is an additional factor. This has a positive bearing on the sustainability of the phase-down and -out process.

33. Table 3 below shows CFC prices based on information from producers visited (for 2000-2001), CNAO (for 2002) and the producers again for 2003. Since we did not visit all producers so as to obtain a weighted average, and since the auditors are reporting only median pricing, this table should not be regarded as presenting definitive pricing trends. The price increase for CFC-12 in 2003 is probably due to increased cost of feedstock, rather than scarcity of CFC in the market.

**Table 3: Evolution of CFC Prices in China (RMB/kg)**

	2000		2001		2002		2003	
	Domestic	Export	Domestic	Export	Domestic	Export	Domestic	Export
CFC-11	10,050	10,275	10,400	10,200	11,400	11,820	12,000	
CFC-12	12,100	13,000	11,000	11,950	10,620- 14,500	12,450- 14,400	15,000	

Sources: CNAO, Producers; US \$1= RMB8.2

34. The price of HCFC-22 is widely reported as RMB12,000-12,500/ton (and lower) and HCFC-141b RMB11,000/ton, which makes both substitutes very competitive with CFCs.

## 7 Foreign Trade in CFCs

35. The National Management Office of ODS Import & Export (from now on called Office) based in SEPA was established in 2000 and is composed of representatives of the Ministry of Commerce (MOC), General Administration of Customs and SEPA. SEPA provides its three full time staff members. The other bodies are represented, as needed, by resource persons.

36. A study on the options to monitor foreign trade and to prevent illegal trade in Halons and CFCs was completed in July 1999. On the basis of this study, a “Circular on Control Mechanisms of Import/Export of ODS” and a “Circular on Strengthening the Management of ODS Import/Export” were issued in December 1999 and April 2000 respectively.

37. Imports of all ODS are subject to import quotas, established annually by MOC upon proposal of the Office. This is based on the circulars mentioned above. Exports of ODS are not subject to quotas but require export licenses, which are issued by MOC upon clearance by the Office. Once a year, the traders of ODS supply information on the related foreign trade to the Office.

38. The question of illicit trade in ODS has also occupied the Office. International meetings on the subject, sponsored by UNEP, have already been undertaken in Nepal and Mongolia, with active participation by the head of the Office.

39. The Office is also responsible for training of custom officials. Three workshops in 2001, 2002 and 2003, with an average participation of 50 each, were already undertaken, financed under the TA component. The last workshop had the benefit of a PowerPoint presentation and a 94 page comprehensive booklet comprising the training materials with an explanation of the international and national policy framework, the phase out approach adopted in China and the controls affecting foreign trade. However, custom officers lack specialized detecting equipment for ODS and the related training.

40. The Office would need to increase the exchange of trade information with other countries, as well as to refine the foreign trade policy regarding ODS and its implementation.

41. CTC imports into China were banned in 2000 when SEPA, through their CTC team, in cooperation with the China Petroleum and Chemical Industries Association and the China Chloro Alkali Industries Association determined that the installed capacity for CTC was severely underutilized.

42. Through the system of quotas and licenses, the legal foreign trade of CFCs in China seems to be well controlled. In order to prevent illegal sales of CFCs, SEPA is developing a related regulation, to be issued in 2004.

## **8 Substitutes**

43. Several companies in PR China invested in the development of fluorocarbon-based alternatives to CFCs, and most larger CFC producers in feedstocks such as AHF and/or fluorocarbons. The most dramatic and visible case is that of HCFC-22, where Chinese capacities now exceed 200 ktpa. Around 50% of this is in the hands of four existing CFC producers, while the largest plant with a further 50 ktpa, or perhaps more, is operated by a former CFC producer who chooses an early closure.

44. There has also been a comparable investment in the development of capacity for the HCFC-22 feedstock chloroform, but large as this is, imports continue to be required in a major way. It might be noted that the production of chloroform necessarily means the co-production of methylene chloride, which is readily used as a blowing agent in flexible polyurethane foam formulations. Still with the HCFCs, there has been a large investment in HCFC-141b capacity by at least three producers, and some of this entails HCFC-142b production which is used in closed-cell foams but more importantly as a chemical intermediate for advanced engineering polymers.

45. Considering HFCs, the largest identified product is HFC-152a, which has some use in Chinese refrigerant blends but also is important in aerosol formulations. Some 3-4 producers have, or are expanding to, capacities in the 5-15 ktpy range. HFC-32 has 3-4 identified producers up to 5 ktpy, and the SEPA-sponsored investment in 5 ktpy HFC-134a was just preceded by a 200 tpa pilot plant and a 1.5 ktpy capacity plant at another site, and itself just precedes an announced 6 ktpy plant elsewhere in China. Other identified HFC projects that already have semi-commercial plants up to 1 ktpy include HFC-125 (2 plants), HFC-143a (1 plant), HFC-227ea (3 plants), and HFC-236fa (2 plants).

46. The funding of a 5 ktpa HFC-134a plant built by Xi'an Jinzhu Modern, with some USD17 million from the CFC production sector agreement was successful in creating a high quality production facility but might be seen also as causing disadvantages for potential competitors. One of two other bidding companies, with considerable fluorocarbon production experience, had been handicapped by the fact that the manufacturing technology had to be acquired at a high price (US\$20 million was mentioned) from third parties. Another one's technology was locally developed but evaluated by SEPA as being less advanced than the process developed by Xi'an Jinzhu. The evaluators suggest that another bidding takes place before granting further funds are granted to the company for the planned expansion to 10 ktpa, with the aim to create a competitive environment rather than a monopoly.

## 9 Technical Assistance

47. China has no amount pre-defined for technical assistance (TA) in the agreement. In the annual programmes from 1999 to 2002, the total amount budgeted for TA is US \$4 million (US \$1 million per year). There is also the intention to use up to 33% of the total funding of the agreement, which would correspond to US \$50 to 60 million, to invest in the production of alternatives, and to use a portion of this for TA.

48. Technical Assistance undertaken under the CFC production sector phase-out agreement for PR China comprises the following number of projects and funding volumes:

**Table 4: TA Projects and Funding**

Year	Number of Projects	Total Disbursement in US \$
1999	17	661,997.54
2000	9	216,165.66
2001	5	244,064.35
2002	10	293,703.97
2003	7	113,106.50 <sup>1</sup>

<sup>1</sup> Amount contracted since disbursement has not been completed.

49. The numbers of projects are shown as planned but some of the previous year projects are again listed in the following year, if they were not completed. Hence, there is a double counting of projects. Actually, there are 32 instead of 48 TA projects funded under the CFC production sector phase-out agreement.

50. The evaluation mission was unable to analyse in detail all the projects above. However from their titles and the in-depth perusal of a representative sample of four projects, it was found that around 26%, in financial terms refer to the management of the CFC Production Sector Phase out plan for China (awareness building, monitoring, information systems, audits and supervisions) while the rest refers specifically to TA proper. The evaluators define technical assistance as an organized external technical support to a project, the project in this case being the process of phasing out the production of CFCs and not the management of the process.

51. From the funds allocated under TA, the disbursement made to Xi'an Jinzhu Modern Chemical Industry to support a production facility of HCFC-134a was the most important. US \$1.2 million was provided to support plant design, training of production staff, pilot operations and testing, market research, incorporated in the overall grant of up to US \$ 25 million allocated, of which almost US \$17 million has been already spent. Only the amount of US \$33,000 is specifically shown as TA and listed in the 1999 annual program for a feasibility study for the construction of a HFC-134a plant.

52. Most TA projects originate at SEPA. While SEPA claims that technical assistance is implemented in close cooperation with the enterprises, these feel somewhat left out of its planning and implementation.

53. Projects are included in the annual work programme with a budget forecast, which are sent to the implementing agency, in this case the World Bank, for approval. Execution is awarded following competitive bidding. Terms of Reference for individual TA projects are prepared on the basis of a three-page guideline. While the guideline and the TORs analysed by

the evaluation team are exhaustive and clear, they would benefit from a rearrangement following the logical framework approach, even in a simplified version. Most proposals for TA are accepted. There is only one instance of a proposal rejected, namely the preparation of a sector plan for process agents which qualified for project preparation funding rather than TA. A limited number has been cancelled for lack of interest or actuality.

54. At the end of each year the WB conducts an ex-post review of the TA projects implemented and results are included in the WB memorandum. The enterprises singled out as two successful examples of TA projects the formulation of standards for HFC-152a and the design of the strategy for CFC phase-out.

55. A weak point often mentioned by SEPA and the enterprises refers to the long timing required for approval of individual projects under TA. Proposals are awarded after competitive bidding. A fast track procedure exists, where bidding is waived, for projects of limited size implemented directly by SEPA.

56. For 2004, three TA activities are envisaged to be funded. They relate to training of personnel involved in phase-out activities, supervision and audits.

57. Certain TA activities have had an impact on company level, such as the ones supporting the creation of the HFC-134a plant at Xi'an. Others, like the funding of activities to establish and maintain the relevant national infrastructure to manage and monitor the implementation of the agreement and for awareness building, do not constitute, in strict sense, technical assistance. The enterprises have different expectations with regard to the technical assistance. They view TA as a possible source of funding for individual or common R&D and would like to see this happen more often.

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