



**United Nations
Environment
Programme**

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/57/29
12 March 2009

ORIGINAL: ENGLISH



EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Fifty-seventh Meeting
Montreal, 30 March - 3 April 2009

PROJECT PROPOSAL: CHINA

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

Process agent

- Phase-out of the production and consumption of CTC for process agent and other non-identified uses (phase I): 2009 annual programme World Bank

PHASE-OUT OF THE PRODUCTION AND CONSUMPTION OF CTC FOR PROCESS AGENT AND OTHER NON-IDENTIFIED USES (PHASE I): 2009 ANNUAL PROGRAMME AND VERIFICATION OF THE 2008 ANNUAL WORK PROGRAMME

Introduction

1. The World Bank submitted the 2009 annual programme for the implementation of the Agreement with the People's Republic of China to phase out the production of CTC for controlled uses and the consumption of CTC and CFC-113 as process agents (Phase I) to the 56th Meeting, with the understanding that the funding for 2009 would be released only when the verification of the results of the implementation of the 2008 annual programme was available. The Executive Committee took note of the proposed 2009 work programme of the China sector plan for phasing out the production and consumption of carbon tetrachloride (CTC) and the consumption of CFC-113 as a process agent (25 applications) under Phase I, and also took note of the proposed plan to extend implementation of the CTC phase-out sector plan for Phase I beyond 2010 and the proposal to allocate the estimated unspent fund balance of US \$1.3 million. In addition, the Executive Committee approved the 2009 annual programme at US \$1.0 million and agency support costs of US \$75,000 for the World Bank for Phase I of the sector plan, noting that the request for funding and support costs would be submitted by the World Bank to the Executive Committee at its 57th Meeting together with a verification report on the implementation of the 2008 annual programme.

2. The verification of the production and the consumption of CTC and CFC-113 as process agents in 2008 consists of two parts: the CTC production verification, and the verification of consumption of CTC and CFC-113 as process agents under Phase I. The Secretariat is attaching the summary part of the CTC production verification, which includes important insight into the complex CTC production sector in China as well the methodology and the overall findings of the verification team. The Secretariat is prepared to make the entire submission of the World Bank available to members of the Executive Committee upon request.

Verification of the CTC production in 2008

3. The production verification was carried out between January and February 2009 by a team of three consultants, the same who carried out the verification in the previous year. The team consisted of two technical experts and one financial analyst. The report included a technical audit part and a financial audit part.

4. The summary of the technical audit part contained the results of the visits to and investigation of 12 active CTC producers, two non-active ones and one CTC residue distiller out of the 19 CTC producers in China. The other four producers had closed down and were not visited. The verification team inspected two new plants which had not been visited in the previous year, and had started production in 2008. The first is a plant that had been shutdown in 2004 after an accident but has established a new production facility; and the second one is a new company that constructed a new plant that includes a new process to convert all CTC back to chloroform. Table 1 of the production verification report provides a list of the 19 plants with information on the name of the plant, the 2008 production quota allocated by Ministry of Environmental Protection (MEP), the actual 2008 production verified, comments on the status of the plant (whether closed or in production) and the aggregate data on the total gross production, CTC used as feedstock in the production of non-ODS chemicals, CTC used in new PA applications, and amounts destroyed. The summary also includes a list of CTC used as feedstock, and a list of new process applications including those which were covered in decision XIX/15 of the 19th Meeting of the Parties and those newly identified by MEP.

5. The verification exercise collected from each of the plants the following information: plant identification; plant history, such as date of construction, number of CTC production lines, capacity, and baseline production for 2001 and production between 2002-2008; and plant activities in 2008 such as any process modification, capacity expansion and new facility construction. It also collected data on the production quota for 2008 allocated by MEP, daily production logs for CTC, CM1, CM2 and CM3 product transfer records, daily and monthly CTC inventory, and data on CTC packed for sales from daily transfer records out of the product warehouse. The verification team checked, as a secondary level of information, the consumption of raw materials, chlorine, and organic raw materials like methane, methanol and ethylene from daily shift transfer records and the opening and closing stocks from the monthly production inventory. In addition, the team also calculated the CTC output to raw material consumption ratio and compared it with the theoretical values in order to determine whether or not the values varied within a reasonable range.

6. Since the production of chloromethane products generated a series of other products in addition to CTC, the team also collected information on the production of the co-products methyl chloride, methylene chloride, chloroform and perchloroethylene for a check on material balance. At the same time, the financial analyst of the team reviewed the reliability of the accounting system, invoices of purchases and sales records. The results of the technical audit and the financial audits were then compared for consistency, and on that basis the team drew its conclusion on whether the plant was in compliance with the quota allocated by MEP.

7. The verification report provided a summary of the verification carried out at each plant. It included the verification of: the CTC production, stocks and sales; supply and consumption of chlorine; supply and consumption of methane, methanol, and ethylene depending on the technology applied in the plant; a presentation of the results in tabular form of the production of CTC, co-produced chloromethane products, the raw material consumption and the ratios. The verification of each plant concluded with a comparison of results from the technical and financial audits and discussed the reasons, if any discrepancies were found. The report finally presented the findings on the CTC production level, raw material consumption and ratio, and number of operating days.

8. The verification team reported that the total CTC production was 48,289.34 metric tonnes in 2008. However 43,657.97 metric tonnes were reported by MEP as being used as a feedstock in the production of non-ODS chemicals, of which the two largest amounts of CTC went into the production of methyl chloride (21,645 metric tonnes) and perchloroethylene (12,053 metric tonnes). Table 3 in the summary of the 2008 CTC production verification report presents a list of 25 feedstock uses of CTC in the production of non-ODS chemicals, which was provided by MEP with details on the applications, and the purchase of CTC in 2008. Another 26.28 metric tonnes of CTC were reported as destroyed.

9. In addition, a total of 1,118.61 metric tonnes of CTC were reported by MEP as being used in new process agent applications listed in decision XIX/15 of the 19th Meeting of the Parties and those newly identified by MEP. Table 4 in the report provides information on the numbering of the applications from the decision XIX/15, the name of the application, and amount of CTC purchased in 2008.

Verification of the consumption of CTC and CFC-113 as a process agent under Phase I in 2008

10. The verification of the consumption of CTC and CFC-113 was carried out in February 2009 by a team of two, a technical expert and a financial analyst. There was no consumption of CFC-113 in 2008 since all the CFC-113 users had moved to non-ODS technology and the CFC-113 production facility at Jiangsu Changshu 3F was confirmed by the CFC production verification team as closed and dismantled in 2005. Verification of this was not provided, since it had been agreed that, after two years of consumption being verified at zero, no further verification was needed. From Phase I of the sector plan,

there are only three plants which are still producing and using CTC as a process agent, while the other plants had either closed or converted to a non-ODS process. These three plants are

Company name	Process agent application
Jilin Chemical Industrial Co., Ltd.	Chlorosulphonated polyethylene (CSM)
Jiangsu Fasten Fine Chemical Co. Ltd.	Chlorinated Rubber (CR)
Shanghai Chlor Alkali	Chlorinated Rubber (CR)

11. The team verified the consumption of CTC at each of the three plants. The verification began by reviewing the plant history, including date of construction, number of production lines for each CTC application, and their capacities. There was also a discussion of the changes in the plants in 2008, in particular those related to the project activities. It then examined as primary data the following:

- (a) CTC consumption quotas received from MEP for 2008;
- (b) CTC purchase orders and daily movement records (from outside to plant warehouse, and from plant warehouse to bulk storage on site);
- (c) CTC inventory, including the amount of CTC that remained in the plant warehouse and in production system; and
- (d) Monthly CTC consumption which was calculated as: CTC opening stock + CTC purchase – CTC closing stock.

12. The team also collected as supporting data secondary information on packaging and movement records of CR, and CSM from the production line to product warehouse; dispatching and movement records of CR and CSM out of the product warehouse for sales; inventory records of CR and CSM stocks; the number of operating days; and CTC/CR and CTC/CSM consumption ratios.

13. The report provides a summary on each of the enterprises visited, including a description of the enterprises, the verification carried out and the results. The results contain a presentation of the opening and closing stocks, and procurement of CTC for the year. There is also an assessment of the actual production of the final product of the plant obtained by examining the production and movement of the inventory. The CTC purchased by the plant was treated as part of the national consumption in 2008 and was compared to the quota issued by MEP.

14. The verification confirmed that the 2008 CTC purchases in the PA Sector (Phase I) were as follows:

Company name	Process agent application	Consumption in 2008	
Jilin Chemical Industrial Co., Ltd.	CSM	259.08 mt	284.99 ODP tonnes
Jiangsu Fasten Fine Chemical Co. Ltd.	Chlorinated Rubber	100.00 mt	110.00 ODP tonnes
Shanghai Chlor Alkali	Chlorinated Rubber	80.00 mt	88.00 ODP tonnes
Total		439.08 mt	482.99 ODP tonnes

15. Therefore the verified CTC consumption in 2008 was 482.99 ODP tonnes, which was below the 2008 maximum allowable CTC consumption (493.00 ODP tonnes) in the Agreement for Phase I of the CTC sector plan.

16. The verification provided an update on the struggling CTC emission control project for CSM, which had experienced severe technical problems with imported equipment. As a result of efforts in 2008 the CTC emission level was slightly reduced to 0.3 metric tonnes of CTC per metric tonne of CSM produced (from the previous value of 0.32-0.35); this remains significantly higher than the desired level

of 0.06 metric tonnes. The verification team was advised in January 2009 that a final decision had been made to build a CSM/CTC aqueous separation system based on the in-house technology. An internal project has been approved. Detailed discussions on technical issues are ongoing.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

Verification of the 2008 CTC production and the consumption of CTC and CFC-113 as process agent under Phase I of the sector plan

17. The verification was carried out in accordance with the verification framework developed by the World Bank for carrying out verifications of CTC phase-out sector plans for China and India, and which was noted by the Executive Committee. The teams that implemented the exercises have the relevant expertise and have undertaken the same verifications in the previous years.

18. According to the arrangement set out in the Agreements for Phase I and Phase II of the CTC sector plan, this verification covers the CTC production for both phases but only the consumption in Phase I of the sector plan. The verification of the CTC consumption in Phase II will be submitted by the World Bank to the 58th Meeting of the Executive Committee, as per decision 56/61, because for that verification the team will need to visit a significant number of CTC-consuming companies that cannot be done in time for the first meeting of the Committee. The Agreement for Phase I of the sector plan sets four criteria for assessing the success or otherwise of the annual work programme and these are presented in the following table, with the results of the years completed, including 2008.

CTC PRODUCTION AND CONSUMPTION IN ODP TONNES

Year	CTC production (Row 1 of the agreement)		Use of CTC for CFC feedstock consumption (Row 2 of the agreement)		Use of CTC for the 25 PA applications (Row 4 of the agreement)		Use of CFC-113 for 25 PA applications (Row 6 of the agreement)	
	Allowed	Verified	Allowed	Verified	Allowed	Verified	Allowed	Verified
Base	86,280	N/A	N/A	N/A	3,825	N/A	17.2	N/A
2001	64,152	N/A	55,139	NA	4,347	N/A	17.2	N/A
2002	64,152	N/A	45,400	NA	5,049	N/A	17.2	N/A
2003	61,514	59,860	45,333	39,839	5,049	3,080	17.2	17.1
2004	54,857	50,195	39,306	34,168	5,049	3,886	14	10.8
2005	38,686	33,080	28,446	25,811.3	493	485.02	14	3.2
2006	28,662	28,470	21,276	18,590.9	493	461.4	10.8	0
2007	18,782	13,438	11,396	8,987	493	482	8.4	0
2008	8,188	3,835	847	715.62	493	483	0	N/A¹

19. The results from the verification, as shown against the targets in the Agreement in the last row of the table above, indicate that China achieved all the targets in the Agreement for Phase I of the sector plan for the year 2008. However since the verified CTC production of 3,835.1 ODP tonnes includes the maximum allowable consumption for Phases I and II of the sector plan and the allowance for CFC production, there is still a balance of approximately 3,350 ODP tonnes of CTC from the 2008 production not accounted for, after deducting the 483 ODP tonnes consumed by the three applications from Phase I as shown in this verification. This could represent the CTC consumed by applications in Phase II of the sector plan, which will be examined by the World Bank in the verification of the Phase II to be submitted to the 58th Meeting.

¹ No verification has been required after two consecutive years with a consumption of zero

20. A total of 1,118.6 metric tonnes, or 1,230.5 ODP tonnes of CTC was reported by MEP in 2008 as being used in process agent applications listed decision XIX/15 of the 19th Meeting of the Parties and those newly identified by MEP. It is significantly below the ceiling of 14,300 ODP tonnes which was set in the Agreement for Phase II to cover these applications.

21. In the verification, the issue of the reporting related to the residue from CTC production appearing to be inconsistent was raised, and as a result has created challenges in the verification. Such residue can contain a significant proportion of CTC, and the uncertainty of the verification increases because of the lack of data regarding CTC contained in the residue.

22. The Secretariat informed the World Bank that it is concerned about this issue, both in terms of verification as well as emissions of CTC from the residue. To further enhance the certainty of the verification, but also because of concerns on emission of CTC from the residue, the Secretariat concurs with the verifiers that measures for quantification of the CTC content in residue need to be introduced.

RECOMMENDATION

23. The Secretariat recommends that the Executive Committee:

- (a) Takes note of the verification report of the CTC production and consumption for process agent of Phase I of the China CTC sector plan for 2008;
- (b) Requests the World Bank to provide, as part of their verification of the 2009 CTC production, for each enterprise data on the amount of residue from production, as well as the CTC content of the residue. It should be ensured that the measurements and data reported are sufficiently accurate and reliable to support the verification. The next verification report should contain a section describing how this requirement was enacted, and the results. It should also contain, on a plant-by-plant basis, data about quantity of residue, CTC content, and subsequent treatment or use of the residue. The information needs to be sufficiently detailed to allow calculation of probable CTC emissions; and
- (c) Releases the 2009 annual tranche of US \$1.0 million and the associated support costs of US \$75,000 for the implementation of the 2009 work programme of Phase I of the sector plan, since the verification indicates that China met the criteria of the Agreement of Phase I of the sector plan in 2008.
