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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
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PROJECT PROPOSAL: INDIA

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

Phase-out

- CTC phase-out for the consumption and production sectors: 2007 annual programme France, Germany
Japan, World
Bank, UNIDO

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CTC PHASE-OUT FOR THE CONSUMPTION AND PRODUCTION SECTORS: 2007 ANNUAL PROGRAMME

Introduction

1. The World Bank has submitted, on behalf of the Government of India, the 2007 annual work programme to the 52nd Meeting and is requesting the release of US \$4,820,938 plus agency support cost of US \$444,070 to implement it. The submission includes a verification of the achievement of the 2006 annual programme which is mandatory, under the Agreement between the Government of India and the Executive Committee, for releasing the 2007 funding and the proposed 2007 work programme. The verification report and the 2007 work programme are not attached but could be made available upon request.

Background

2. At its 40th Meeting in July 2003, the Executive Committee decided to approve in principle a total of US \$52 million to assist India in complying with the Montreal Protocol control schedule for the production and consumption of carbon tetrachloride (CTC), and disbursed the first tranche of US \$5 million at the Meeting to start implementation of the project. At the following Meeting, the Committee approved the Agreement for the phase-out in the consumption and production of CTC in India and disbursed the balance of US \$3,520,843 for the funding of the 2003 annual work programme. Subsequently the Executive Committee approved the 2004, 2005 and 2006 annual programmes resulting in the total cumulative disbursement of US \$40.75 million as of the end of 2006.

3. A summary of the CTC phase-out targets and funding tranches of the sector plan and the 2007 annual work programme is presented in Table 1:

Table 1

	Baseline ¹	2003	2004	2005	2006	2007	2008	2009	2010
1. Max allowable total consumption (ODP tonnes)	11,505	N/A	N/A	1,726	1,147	708	268	48	0
2. Max allowable total production (ODP tonnes) for this Agreement	11,553	N/A	N/A	1,726	1,147	708	268	48	-
3. WB agreed funding		8,520,843	9,180,112	399,045	9,556,267	4,020,938	3,211,875	3,211,874	-
4. WB support costs		639,063	688,508	29,928	716,720	301,570	240,891	240,891	-
5. France agreed funding		-	1,000,000	1,000,000	500,000	500,000	-	-	-
6. France support costs		-	85,000	85,000	85,000	85,000	-	-	-
7. Germany agreed funding		-	700,000	700,000	300,000	300,000	-	-	-
8. Germany support costs		-	57,500	57,500	57,500	57,500	-	-	-
9. Japan agreed funding		-	2,500,000	2,500,000	-	-	-	-	-
10. Japan support costs		-	280,000	280,000	-	-	-	-	-
11. UNIDO agreed funding				3,500,000	399,046				
12. UNIDO agreed support cost				262,500	29,928				
13. Total agreed funding (US \$)		8,520,843	13,380,112	8,099,045	10,755,313	4,820,938	3,211,875	3,211,874	
14. Total agency support costs (US \$)		639,063	1,111,008	714,928	889,148	444,070	240,891	240,891	
15. Total agreed costs (US \$)		9,159,906	14,491,120	8,813,973	12,073,435	5,265,008	3,452,766	3,452,765	

Verification of the 2006 work programme

The verification framework of the India CTC phase-out programme

4. The verification framework, which was developed by the World Bank and noted by the Executive Committee, requires the verification to proceed from the Montreal Protocol definitions of production and consumption. It covers the total annual CTC production and imports, exports, and the breakdown of CTC production for feedstock and non-feedstock applications, and includes, the checking and validation of records such as production logs, production ratios between product and its feedstock, names, quotas and quantity of imports, excise records and other related documents.

Verification of the 2006 work programme

5. The verification was carried out in 2007 by a team of four from Mukund M Chitale & Co. Chartered Accountants, the firm which was involved in the same exercise last year. Two of the members have extensive experience in the chemical industry while the other two are in finance accounting.

6. The objectives of the verification were to confirm that the CTC production and consumption of controlled uses in 2006 had not exceeded the maximum allowable limits set in the Agreement, namely 1,147 ODP tonnes in each case. The methodology employed was to verify the CTC production and imports from the supply side, and deduct from total supply the CTC used as feedstock in the production of CFCs and dichloro vinyl acid chloride (DVAC). The balance would represent the CTC consumption for non-feedstock uses controlled under the Montreal Protocol.

7. As a result, the team of auditors reviewed the records of:

- (a) Production of CTC by all three local producers;
- (b) Import of CTC by CTC feedstock users as well as one CTC producer that uses CTC as feedstock for CFC production;
- (c) Consumption of the locally procured and imported CTC by all feedstock users, including four CFC producers (two of the four CFC producers are also CTC producers), eight DVAC producers and one vinyl chloride monomer producer (VCM) and one di-fluoro benzophenone (DBBP) producer;
- (d) CTC sale to non-feedstock users as per the dispatches from the CTC producers under the annual quotas issued by the Ozone Cell;
- (e) Registrations of all CTC producers and feedstock users issued by the Ozone Cell, Ministry of Environment and Forests (MoEF). Since under the Environment Protection Act (1986) Ozone Depleting Substances (Regulation) 2000 rules were established by the Government of India to provide that no person shall produce or cause to produce ODS unless he/she is registered with the Ozone Cell, MoEF, all CTC producers and feedstock users have been registered with the Ozone Cell; and

- (f) Registration records, maintained by CTC producers, of all CTC buyers for non-feedstock use. However, since the methodology used was to determine the controlled use by confirming the supply and demand through verification of the levels of CTC production, import/export, and feedstock use, the team did not cover the non-feedstock uses.

8. Prior to visiting the industries, the verification team collected information through the Ozone Cell which forwarded a questionnaire to each CTC producer and feedstock user for completion prior to the site visits. The independent verification team also visited the CTC storage installations at Kandla in Gujarat, the only port where bulk CTC is imported, to assess the actual level of CTC imports and exports.

9. The verification procedures employed during site visits included, amongst others, the following steps:

- (a) Review of the record keeping system of each enterprise such as production logs, issue logs, and dispatch logs;
- (b) Review of the daily raw material consumption data and daily production records for CTC and other chloromethane production;
- (c) Verification of annual production, imports, and local procurement of CTC. This step entailed the following tasks:
 - (i) An initial round of a facility tour to familiarize with the plant layout, and to meet with key personnel;
 - (ii) Verification of the data in the questionnaire completed by respective enterprises. This was carried out based on the documentary evidence called for by the independent verification team. The verification was done by cross-checking the data provided in the questionnaire against the production and excise records, and also comprises of tracking these sets of data from the monthly records on a random basis;
 - (iii) In addition to the above data checking financial, commercial and store records comprising of ledgers, invoices, Goods Receipt Notes (GRN), issue slips, statutory excise records, records of imported consignments including weigh bridge documents, surveyor's certificate, and others, were reviewed; and
 - (iv) Testing of the efficacy of the documents used for these verification purposes to the extent possible. For example, imported consignments were cross checked against the purchase orders, suppliers' invoices, and surveyors' out-turn reports;
- (d) Mass balance analyses were conducted for the production of CFCs during the CFC audits and for the production of DVAC. The purpose was to verify whether CTC consumption for these applications is within the known and available industry norms. The process involved:

- (i) Sighting the documentary evidence of the consumption of the raw materials; and
 - (ii) Comparing the actual consumption with the theoretical (stoichiometric) requirement and the industry norms;
- (e) Verification of cumulative inventory changes for CTC, in case of CTC feedstock users, and for CFC producers and DVAC producers whether they are consistent with the levels of production of CFC and DVAC;
 - (f) Verification of cumulative inventory changes of CTC in transit to ensure no diversion of CTC intended for feedstock applications to non-feedstock applications, to the extent they were made available for verification.

10. The findings of the verification team include, an account of CTC sold by CTC producers for controlled use, and the drawdown from their CTC inventory built up prior to 2004; the results of the audit at the CTC producers, including total CTC production, sales for feedstock and for controlled use; and the results of the audit at feedstock users for CFC, DVAC, VCM and DBBP and the overall mass balance. There is also an attempt to sort the CTC production and consumption according to the Montreal Protocol definitions, and to account for the CTC over-production in 2005 by providing data from inventory change from the CTC producers and CTC users.

11. Attached to the verification report is an annex which provides a summary of the 2006 plant audits at each of the three CTC producers, and each of the CTC feedstock users, including CFC producers and DVAC producers. The summary covering CTC producers describes the CTC production process and history of the plant, data on the CTC opening stock, imports, production, sales for feedstock uses, sales for non-feedstock uses against sales quota, and closing stock. It also provides data on the breakdown of the production levels of co-produced chloromethane products, methylene chloride (C2), chloroform (C3), CTC, the aggregate consumption of methane (methanol) and chlorine.

12. The summary on CFC producers includes a history of the plant and information on the supply of raw materials, the production process, the consumption in 2006 of CTC and any issues that were identified. The description of each of the eight DVAC producers, VCM and DBBP producers includes the technology used, the data checked at the plant, gross CTC consumption data on opening stock, imports, domestic procurement, quantity used for DVAC production and the closing stock.

13. The findings of the verification are as follows:

- Total CTC production in 2006: 13,878 mt;
- Feedstock use: 23,496 mt;
- Total imports: 8,481 mt;
- Direct sales to non-feedstock users: 1,067 mt, including 42 mt from 2004 inventory;
- Remaining inventory built up from 2004: 651 mt;
- No CTC destroyed; and
- No export of CTC in 2006.

14. In order to account for the increase of 801 mt in the CTC stock from the 2005 CTC verification, as per the Executive Committee decision which “requests the World Bank to ensure that the verification of the 2006 work programme examined the 801 mt of increased CTC stock in 2005 and to report on its use in 2006”, the auditors used the CTC opening and closing stock at the CTC producers and feedstock users to show the decrease in CTC stock in 2006 and where the decrease happened.

Table 2

CTC INVENTORY CHANGE BY USERS

Users	Opening stock on 01.01.2006	Closing stock on 31.12.2006	Difference
CTC producers	698	1,281	584
CFC producers	4,428	1,307	-3,121
DVAC producers	2,489	2,830	342
VCM producer	-	-	-
DBBP producer	1	1	-
Total			-2,196

15. While showing that the decrease comes from the feedstock users, notably the CFC producers, the auditor also confirms that there is little chance that CTC could be diverted from CTC feedstock users to controlled use because the Government regulation prohibits the trading of CTC by feedstock users, and the verification of the feedstock users was thorough enough and accounted for the inflow and outflow of CTC in these plants. Therefore the auditors conclude that the carry-over of the 801 mt of CTC from 2005 was used as feedstock to meet the increased demand in the production of other chemicals in 2006.

Production and consumption of CTC as for the definitions of the Montreal Protocol

16. The verification attempted to measure the CTC production and consumption according to the Montreal Protocol definitions and reports the following results:

Table 3

Production of CTC	mt
Gross Production	13,878
Quantity Used for Feedstock	23,496
Less Stockpile drawdown	42
Feedstock use as per MP	23,454
Destruction	0
Production as per MP	-9,576
Consumption of CTC	mt
Production	-9,576
Import	8,481
Export	0
Consumption	-1,095

Comments of the Secretariat on the 2006 verification report

17. The verification is carried out according to the verification framework, which was reviewed and noted by the Executive Committee at its 43rd Meeting. The team that was contracted has the relevant expertise and experience in their field.

18. The methodology used to confirm the CTC production and consumption in controlled uses consisted of verifying gross CTC production and imports, and the CTC use for feedstock is appropriate under the current Indian Government policy controls on CTC production, imports, consumption and distribution. CTC producers and feedstock users must be registered with the Government and are the only entities allowed to import CTC. CTC dealers and users of CTC for controlled applications are not allowed to import and can only purchase CTC from CTC producers who have a list of all the dealers and the major non-feedstock users. The Government has decided that, for the purpose of the verification of sales by CTC producers to dealers, non-feedstock uses were deemed to be such even if the stock was subsequently diverted to feedstock use. One of the key objectives of the verification is to confirm that CTC imported and locally purchased by feedstock users was not diverted to non-feedstock uses.

19. One of the issues that remained from the 49th Meeting when the 2006 annual work programme was approved relates to the increase of 801 mt in the inventory of CTC in 2005 and the decision of the Executive Committee to ensure that this quantity would be used as feedstock in 2006, as committed by India. The verification of the 2006 CTC production shows that a significant decrease in the CTC inventory of the feedstock users took place in 2006, and since there was rather tight control of CTC sales in India it could be assumed that the feedstock users would have first of all used up the 2005 inventory before acquiring additional quantities to meet their demand.

20. The verification of the production and sales records at the CTC producers indicate that the total CTC sold for controlled use in 2006 was 1,067 mt, which includes 42 mt drawn from

the inventory built up before 2004. Therefore the CTC production and consumption for controlled use is confirmed at 1,025 mt, or 1,127 ODP tonnes which is below the target of 1,147 ODP tonnes set in the Agreement .

21. However the attempt by the verification team to assess the results of the verification in accordance with the definitions of the Montreal Protocol repeated the same errors that occurred at the 2005 verification exercise the company conducted. In determining the 2006 level of production, the verification team has deducted from the gross level of production both the amount of local production for feedstock and the amount of CTC imported for feedstock purposes.

22. However the Secretariat understands that the Ozone Secretariat does not deduct the CTC imported for feedstock uses from gross CTC production in calculating CTC production for controlled uses because the purpose of the definition in the Protocol is to enable the level of production of CTC for controlled uses to be determined. Furthermore, since imports of CTC into India are not related to the production of CTC in the country, only the CTC which is locally produced for use as feedstock should be deducted from the gross production to arrive at the volume of CTC produced for controlled uses.

23. The second question relates to what should be counted as CTC imports in the calculation of consumption under the Montreal Protocol. The verification team understood that the CTC imported for feedstock use should be included in calculating CTC consumption. However the Ozone Secretariat indicates that it is their practice, in calculating CTC consumption under Article 7 of the Protocol, to deduct from the total quantities reported as imports the amounts identified as being imported for feedstock uses. Since in the case of India, it has been verified that there were no CTC imports in 2006 for non-feedstock uses, all the imports therefore were for feedstock use and should be deducted in calculating the consumption level for 2006.

24. The Secretariat, in its comments on the submission, offered to the World Bank its own assessment of the CTC production and consumption in India according to the interpretations of production and consumption under the Montreal Protocol provided by the Ozone Secretariat, using the results of the verification. The results are as follows:

Table 4

Gross production:	13,878 mt
Feedstock use:	12,853 mt*
Production for controlled use:	1,025 mt
Import:	0
Export:	0
Consumption for controlled use:	1,025 mt

* Feedstock use: $13,878 - 1,067 - 42$ (from Table 3 of the verification report) = 12,853 mt

The 2007 annual programme

A quick overview of the CTC sector in India

25. There are three CTC producers in the country. Apart from being used as feedstock primarily in CFC and DV acid chloride production, CTC is also used in India as a process agent and a solvent. For process agents, CTC is used in such sectors as chlorinated rubber, chlorinated paraffin, pharmaceutical, and agro-industries. As a solvent CTC is used in the textile and garment industries, metal-cleaning industry and as a chemical solvent.

26. A number of implementing agencies are involved in the Indian programme and have been assigned to different sectors. The World Bank is the lead agency and is responsible for the CTC production phase-out and, together with UNIDO, the phase-out of CTC consumption in the process agent and chemical solvent sectors. Japan has contracted UNDP to assist it in phasing out CTC consumption in four enterprises for metal cleaning. France and Germany would assist the small users to stop using CTC in the textile and garment industries.

The 2006 Work Programme

27. The World Bank submission briefly discusses the achievement of the CTC maximum allowable production target, as shown in the 2006 verification, with the verified production of 1,127 ODP tonnes against a target of 1,147 ODP tonnes. There is also a description of the verification results of two CTC applications by the Government of India, namely the vinyl chloride monomer (VCM) and the 4,4-difluoro benzophenone (DFD). A total of 70.4 ODP tonnes of CTC was fed into the VCM process but the result was not successful and CTC came out as a waste stream and was considered as feedstock or destroyed. The technical verification of the DFD process was conducted by the National Chemical Laboratory which determined the process as a feedstock application since CTC was totally transformed in the process.

28. Up until 2006, a total of 107 CTC projects covering both process agent and solvent applications have been identified. A summary presenting the details of the number of enterprises, which are included in various stages of project preparation and approval under the CTC sector plan, is provided below:

Table 5

Particulars	The World Bank	UNIDO	UNDP	Total
Total number of projects	82	21	4	107
Of the above:				
Project completed	5	4		9
Project under implementation	15	7	4	26
Project under review	62	3	-	65

29. The World Bank reports having a signed agreement with 14 SMEs in the metal cleaning sector and disbursed 20 per cent of the funding. Five chlorinated rubber projects were completed. Of the 62 under review, 45 are in the solvent sector and 17 are process agent

applications. Most of them have not put together documentation to become eligible for funding and are being assisted by the PMU to do so.

30. The solvent projects under the responsibility of Japan and UNDP have already had the metal cleaning equipment shipped to site but are awaiting the civil engineering work to be done before the installation could take place. However CTC consumption by the four plants is reported as having stopped in 2005.

31. During 2006, GTZ continued its technical assistance to improve stain removing work stations to make it affordable for small garment manufacturers. A prototype of stain-removing equipment was created and training was planned to introduce it to users, with a subsidy programme to make it accessible to small users. In the meantime alternatives to CTC as cleaning agents were on-going and 29 substitutes have been tested.

32. In order to reach out to the diverse users in the metal cleaning fields, pamphlets with details of the successful substitutes have been published and distributed to the potential users to create awareness for changing the use from CTC as a solvent to its alternatives. This effort has been expanding state by state.

33. The total CTC consumption by industries under the UNIDO project portfolio was 173 ODP tonnes and 11 companies which were considered eligible have completed their conversion.

34. In 2006, the Government of India continued to implement a number of policy related activities in connection with the CTC sector plan, namely:

- (a) Registration of CTC Producers, Importers, and Exporters – Registration of ODS users was available until 31 December 2005. The registration was done with the Ozone Cell at New Delhi for those with more than 1 crore (10 million Rs) capital investment and with the small industry service institute for those under 1 crore capital investment. Only registered users and producers of CTC would be eligible for assistance under the project, including project funding. A total of 213 industries have been registered using CTC, of which 71 have an investment of more than 1 crore and 142 have less than 1.
- (b) Import Quota System for CTC – Import of CTC for feedstock applications will continue and any imports for applications controlled by the Montreal Protocol will continue to be prohibited.
- (c) CTC Production Quota System – The CTC production quota order for the calendar year 2005 was issued. Based on the verification framework, production and sale of CTC from producers for non-feedstock applications is controlled through the Government Quota Order and is subject to verification.

35. Further progress is reported on the programme of activities implemented by the PMU, and the operation of the management information system and the public outreach programme, especially the activities undertaken by GTZ to reach the small industries.

36. Of the total approved funding of US \$40.75 million, approximately US \$20.6 million, or 50 per cent has been disbursed by the end of 2006.

The 2007 work programme

37. The 2007 annual programme proposes to reduce the CTC production and consumption from the actual level in 2006 of 1,128 ODP tonnes to 708 ODP tonnes under each category. A comparison with the 2006 performance is presented below, with information on the number of projects to be completed as well as their impact.

Table 6

	Actual consumption preceding year (2006) (1)	Consumption year of plan (2007) (2)	Reduction within year of plan (1)-(2)	Number of projects completed*	Number of servicing related activities	ODS phase-out (in ODP tonnes)
Manufacturing						
Process Agents	173	120	53	7		53
Solvents	955	588	367	26		367
Other						
Total	1,128	708	420	33		420
Servicing						
Total						
Grand total	1,128	708	420	33		420

*Excluding SMEs in textile and metal cleaning industries.

38. The plan claims to maintain the momentum of CTC phase-out in the production sector and to accelerate implementation of consumption sector projects. The Government intends to continue a number of actions to facilitate the implementation of the 2007 annual work programme, among them production and sales quota licenses and requesting CTC feedstock users to file quarterly use returns. Under the technical assistance programme, efforts will be made to develop a safety manual for CTC alternatives and hold a symposium on CTC alternatives for the solvent sector.

39. The programme anticipates using the funds under the sector plan to finance enterprises that were established after July 1995, which was not in line with Executive Committee decision 17/7, which prohibited funding of these enterprises. The World Bank requests the approval of the Executive Committee to do so in accordance with decision 51/12, citing the flexibility clause in the Agreement for the sector plan and the commitment to giving funding priority to those enterprises that were established before July 1995. The programme claims that this would enable the Government to achieve full compliance with the Montreal Protocol commitment.

40. For the 2007 work programme, the World Bank is requesting a total of US \$4,820,938 as programme cost and US \$444,070 as support cost. The distribution between the World Bank and the bilateral agencies would be: US \$4,020,938 plus US \$301,570 as support cost for the World Bank; US \$500,000 plus US \$85,000 as support cost for France; and US \$300,000 plus US \$57,500 as support cost for Germany.

Comments of the Secretariat on the 2007 annual work programme

41. From the description of progress in the document, it is very hard to determine the actual impact of the 2006 work programme and the achievements in the various sectors which are being managed by the different implementing agencies. For instance, the four projects by UNDP/Japan are listed as under implementation, however it is stated in the document that CTC consumption in the four plants already ceased in 2005. In order to gain some insight on the real progress made in 2006, the Secretariat has provided the following format to be completed by the World Bank and the other implementing agencies.

Table 7

Implementing Agency	Sector(s) covered	Consumption in 2005	Consumption in 2006	# of projects planned for completion in 2007
World Bank				
UNIDO				
UNDP/Japan				
GTZ/France				
Total				

RECOMMENDATIONS

42. As of the time of dispatch, the Secretariat has not received the response from the World Bank on its comments and therefore is not in a position to formulate its recommendations.
