

Document of
The World Bank

Report No: ICR00002994

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(TF-53458)

ON A

GRANT

IN THE AMOUNT OF US\$53.04¹ MILLION

TO THE

REPUBLIC OF INDIA

FOR A

CTC SECTOR PHASEOUT PROJECT (ODSIV)

September 30, 2014

Environment and Natural Resources Global Practice
South Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective September 30 2014)

Currency Unit = Indian Rupee (INR)

61.76 INR = USD1

0.016 USD = 1 INR

FISCAL YEAR

April 1 - March 31

ABBREVIATIONS AND ACRONYMS

CAS	Country Assistance Strategy
CSL	Chemplast Sanmar Limited
CFC	Chlorofluorocarbons
CTC	Carbon tetrachloride
DEA	Department of Economic Affairs, MoF, GoI
DGFT	Directorate General for Foreign Trade
DVAC	DV Acid Chloride
EHS	Environment Health and Safety
EMP	Environmental Management Plan
ExCom	Executive Committee of the MLF
FI	Financial Intermediary
FM	Financial Management
GEF	Global Environment Facility
GEO	Global Environmental Objective
GHG	Greenhouse gases
GIZ	Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation)
GoI	Government of India
GWP	Global Warming Potential
GFL	Gujarat Fluorochemicals Limited
IDBI	Industrial Development Bank of India Limited
ISR	Implementation Status and Results Report
MDG	Millennium Development Goal
MEA	Multilateral Environmental Agreement
MIS	Management Information System
MLF	Multilateral Fund for the Implementation of the MP
MOEF	Ministry of Environment and Forests
MoEFCC	Ministry of Environment, Forests and Climate Change
MoF	Ministry of Finance
MP	Montreal Protocol
MT	Metric Ton (1000 kilograms)
MTR	Mid Term Review
NACEN	National Academy of Customs Excise and Narcotics
NFIL	Navin Fluorine International Limited
OC	Ozone Cell
ODP	Ozone Depleting Potential
ODS	Ozone Depleting Substance
ODS II	Ozone Depleting Substance II Project (P031829)
ODS III	CFC Production Sector Closure Project (P069376)
ODS IV	CTC Sector Phase-Out Project (P085345)
OS	Ozone Secretariat
PDO	Project Development Objective
PMU	Project Management Unit

SRF	SRF Limited
TA	Technical Assistance
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNIDO	United Nations Industrial Development Organization

Vice President:	Philippe H. Le Houerou
Country Director:	Onno Ruhl
Sector Manager:	Herbert Acquay
Project Team Leader:	Laurent Granier
ICR Team Leader	Dora Nsuwa Cudjoe

INDIA
CTC SECTOR PHASEOUT PROJECT – ODSIV

CONTENTS

B. Key Dates	6
C. Ratings Summary	6
D. Sector and Theme Codes.....	7
E. Bank Staff.....	7
F. Results Framework Analysis	9
G. Ratings of Project Performance in ISRs.....	10
H. Restructuring (if any)	11
I. Disbursement Profile	12
1. Project Context, Global Environment Objectives and Design.....	12
2. Key Factors Affecting Implementation and Outcomes.....	19
3. Assessment of Outcomes	26
4. Assessment of Risk to Development Outcome.....	31
5. Assessment of Bank and Borrower Performance.....	31
6. Lessons Learned.....	36
Annex 1. Project Costs and Financing	39
Annex 2. Outputs by Component.....	40
Annex 3. Economic and Financial Analysis	42
Annex 4. Bank Lending and Implementation Support/Supervisions Processes	43
Annex 5. Beneficiary Survey Results	45
Annex 6. Stakeholder Workshop Report and Results	46
Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR	47
Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders	48
Annex 9. List of Supporting Documents	49

Project Data Sheet

A. Basic Information			
Country:	India	Project Name:	CTC Sector Phaseout Project - ODS IV
Project ID:	P085345	L/C/TF Number(s):	TF-53458
ICR Date:	09/26/2014	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	GOVERNMENT OF INDIA
Original Total Commitment:	USD 53.04M	Disbursed Amount:	USD 39.71M
Revised Amount:	USD 39.94M		
Environmental Category: B		Global Focal Area: O	
Implementing Agencies:			
Ministry of Environment and Forests ² (now Ministry of Environment, Forests and Climate Change), Ozone Cell IDBI Bank Limited			
Cofinanciers and Other External Partners:			

B. Key Dates				
Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	10/06/2003	Effectiveness:		12/10/2004
Appraisal:	03/22/2004	Restructuring(s):		09/30/2010 12/31/2012 12/31/2013 02/19/2014
Approval:	09/21/2004	Mid-term Review:	07/06/2009	08/03/2009
		Closing:	09/30/2011	03/31/2014

C. Ratings Summary	
C.1 Performance Rating by ICR	
Outcomes:	Satisfactory
Risk to Global Environment Outcome	Low or Negligible
Bank Performance:	Moderately Satisfactory
Borrower Performance:	Moderately Satisfactory

² At the time of the operation, MoEFCC was called the Ministry of Environment and Forests.

C.2 Detailed Ratings of Bank and Borrower Performance			
Bank	Ratings	Borrower	Ratings
Quality at Entry:	Satisfactory	Government:	Satisfactory
Quality of Supervision:	Moderately Satisfactory	Implementing Agency/Agencies:	Moderately Satisfactory
Overall Bank Performance:	Moderately Satisfactory	Overall Borrower Performance:	Moderately Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	None
GEO rating before Closing/Inactive status	Satisfactory		

D. Sector and Theme Codes		
	Original	Actual
Sector Code (as % of total Bank financing)		
Other industry	100	100
Theme Code (as % of total Bank financing)		
Environmental policies and institutions	33	33
Pollution management and environmental health	67	67

E. Bank Staff		
Positions	At ICR	At Approval
Vice President:	Philippe H. Le Houerou	Mieko Nishimizu
Country Director:	Onno Ruhl	Michael F. Carter
Sr. Global Practice Director	Paula Caballero	
Director	Bilal H. Rahill	
Practice Manager/Manager:	Herbert Acquay	Jeffrey S. Racki
Project Team Leader:	Laurent Granier	Bilal H. Rahill
ICR Team Leader:	Dora Nsuwa Cudjoe	
ICR Primary Author:	Dora Nsuwa Cudjoe	
ICR Secondary Author	Vaideeswaran Sankaran	

F. Results Framework Analysis

Global Environment Objectives (GEO) and Key Indicators(as approved)

1. The global environmental objective of this Montreal Protocol operation is to support international efforts to restore the stratospheric ozone layer to its original level in order to provide the earth's living organisms with the full benefit of the ozone layer's protection from solar radiation.
2. India's effort on the carbon tetrachloride (CTC) front is part of India's national program for the phaseout of ozone depleting substances controlled under the Montreal Protocol. The project will therefore support the India's objective to reduce its Protocol-controlled CTC production and consumption level to zero by 2010³.
3. While it is impossible to directly link India's efforts with specific achievements/development outcomes related to the recovery of the stratospheric ozone layer, it is worth noting that India was the second largest consumer of ozone-depleting substances among developing countries and that its efforts are essential for the long term recovery of the ozone layer.

Revised Global Environment Objectives (as approved by original approving authority) and Key Indicators and reasons/justifications

4. Neither the project objective nor its key indicators were revised in all three restructurings.

(a) GEO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Total Phaseout of CTC production and consumption in all applications controlled by the Montreal Protocol			
Value (quantitative or Qualitative)	11,553 ODP MT (Production) 11,505 ODP MT (Consumption)	0 ODP MT 0 ODP MT		0 ODP MT 0 ODP MT
Date achieved	07/01/2003	12/31/2009		09/30/2010 ⁴
Comments (incl. % achievement)	100% target achieved: Total phaseout of CTC production and consumption in all applications controlled by the MP was zero on 1 January 2010 according to MP schedule and has been at time of project closure on March 31, 2014.			

³ Sourced from the "Memorandum and Recommendation of the Country Director for India for a CTC Sector Plan Implementation Project for India"

⁴ The phase-out was completed in 2010. However, the project was extended to 2014 in order to complete the TA activities associated with the phase-out.

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Issuance and management of quotas for non-feedstock consumption of CTC			
Value (quantitative or Qualitative)	The Quota order for 269 ODP MT was issued in February 2005.		Quota license issued every year for non-feedstock use	Quota license issued every year for non-feedstock use prior to achieving target in 2009
Date achieved	05/06/2005		12/31/2009	03/30/2009
Comments (incl. % achievement)	Target has been 100% achieved. The Quota order for 269 ODP tons was issued in February 2005 and up until achievement of complete phase out, GoI issued Quota license every year for non-feedstock production. No quotas were issued after March 2009.			

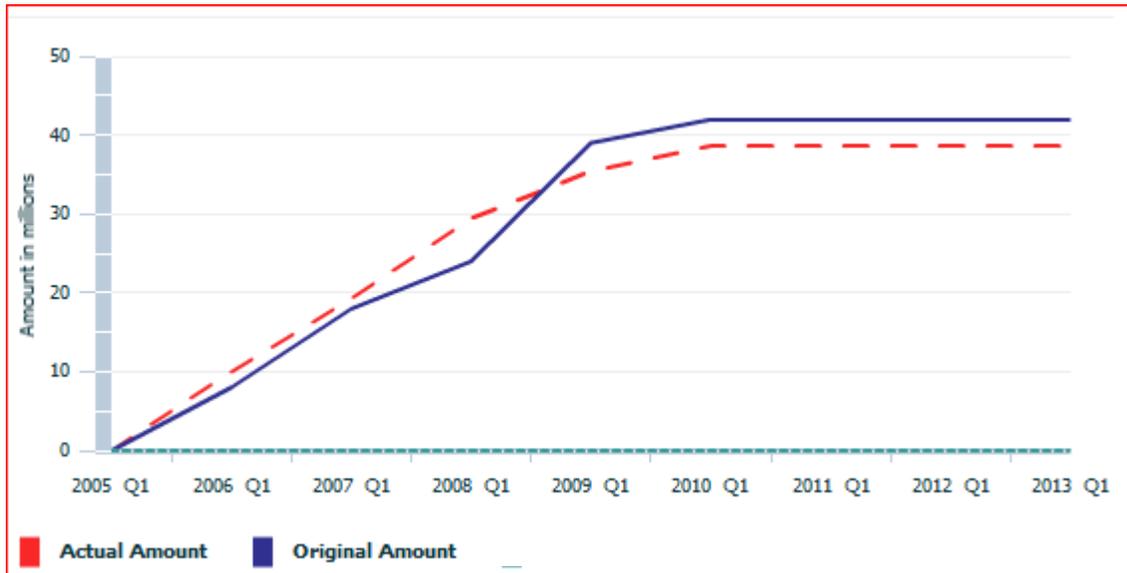
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	GEO	IP	Actual Disbursements (USD millions)
1	12/16/2004	Satisfactory	Satisfactory	0.00
2	06/13/2005	Satisfactory	Satisfactory	5.00
3	03/21/2006	Satisfactory	Satisfactory	12.37
4	07/17/2006	Satisfactory	Satisfactory	17.12
5	02/23/2007	Satisfactory	Satisfactory	21.53
6	09/18/2007	Satisfactory	Satisfactory	29.42
7	12/05/2007	Satisfactory	Satisfactory	31.00
8	06/09/2008	Satisfactory	Satisfactory	31.00
9	12/21/2008	Satisfactory	Satisfactory	35.74
10	04/15/2009	Satisfactory	Satisfactory	38.41
11	05/20/2009	Satisfactory	Satisfactory	38.41
12	11/26/2009	Highly Satisfactory	Satisfactory	38.63
13	05/25/2010	Highly Satisfactory	Satisfactory	38.63
14	12/05/2010	Highly Satisfactory	Moderately Satisfactory	38.63
15	06/25/2011	Highly Satisfactory	Satisfactory	38.63
16	01/16/2012	Highly Satisfactory	Moderately Satisfactory	38.63
17	11/17/2012	Highly Satisfactory	Moderately Satisfactory	38.63
18	04/25/2013	Satisfactory	Moderately Satisfactory	38.63
19	07/30/2013	Satisfactory	Moderately Satisfactory	38.63
20	01/30/2014	Satisfactory	Moderately Satisfactory	38.63
21	03/31/2014	Satisfactory	Satisfactory	39.71

H. Restructuring (if any)

Restructuring Date(s)	Board Approved GEO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in USD millions	Reason for Restructuring & Key Changes Made
		GEO	IP		
09/30/2010	N	HS	S	38.63	i) Extend the project closing date by 27 months from Sept 30, 2010 to December 20, 2012; and (ii) Re-allocate funds between disbursement categories under the Technical Assistance Component being implemented by the MoEF & CC
12/31/2012	N	HS	MS	38.63	(i)Extend the closing date from December 31, 2012 until December 31, 2013
12/31/2013	N	S	MS	38.63	Extend the closing date from December 31, 2013 to March 31, 2014
02/19/2014	N	S	MS	38.63	i) Incorporate under Part A of the Project, as defined in Schedule 2 to the Grant Agreement, the financing of the second tranche of the accelerated phase-out of CFC Production by CFC producers (ii) Cancel US\$13,098,886 to adjust the grant amount and total Project cost to US\$39,941,114 (iii) Re-allocate outstanding undisbursed amounts among the disbursement categories (iv) Retroactively increase the financing percentage for Category (3) - goods;

I. Disbursement Profile



1. Project Context, Global Environment Objectives and Design

Country Background:

1. The stratospheric ozone layer protects life on earth from harmful radiation. It shields the earth and protects human and ecosystems health from the sun's dangerous ultraviolet radiation. Scientific investigation has revealed that certain man-made substances - referred as ozone depleting substance (ODS) that includes carbon tetrachloride (CTC) - caused depletion of this ozone layer, which was confirmed through measurements of the ozone layer at the South and North Poles, and northern latitudes. This stimulated international efforts to arrest and reverse this trend through phased elimination of the use and emission of ODS. These efforts resulted in the Montreal Protocol on Substances that Deplete the Ozone Layer (MP) that binds its signatories to actions limiting and eventually phasing out the use and production of ODS. A multilateral environmental agreement, the MP was adopted in 1987 in response to growing global recognition that concerted international action was required to protect the earth's ozone layer. The MP established time bound targets to reduce the production and consumption of various ODS including CFC, halons, and CTC.

2. The Government of India (GoI) ratified the MP on September 17, 1992. As a developing country, India is classified as a country operating under Article 5, Paragraph 1 of the MP, and is eligible for financial support from the Multilateral Fund (MLF) for the implementation of the MP to cover the incremental costs of phasing out the consumption and production of CTC.

3. Following accession of the MP in 1992, the GoI has since phased out CFC and halons in three earlier ODS-phase out operations and the CTC in ODS-IV. See Table 1 below.

Table 1: Phase-out Schedule for Article 5 Countries

	CFC Annex A, Group 1	Halons Annex A, Group 2	CTC Annex B, Group 2
Base Level	Average of 1995-97	Average of 1995-97	Average of 1998-2000
Freeze at base level	January 1, 1999	January 1, 2002	-
50% reduction	January 1, 2005	January 1, 2005	-
85% reduction	January 1, 2007	January 1, 2010	January 1, 2005
100% reduction	January 1, 2010	January 1, 2010	January 1, 2010

1.1 Context at Appraisal

4. CTC, the target chemical of this project, is an ODS controlled under the MP. At the time of appraisal, India was a significant user and producer of CTC. Following the elimination of ODS production and consumption in developed countries, India became the world's second global leader in ODS production and consumption after China. In India, CTC was primarily used in the chemical/pharmaceutical sector (i) as a major feedstock for the production of Chlorofluorocarbons (CFCs) and DV Acid Chloride (DVAC); (ii) as a process agent and (iii) solvent. For process agents, CTC was used in sectors such as chlorinated rubber, chlorinated paraffin, pharmaceuticals, and agro-industries; and as a solvent in the textile, garment industries, metal cleaning etc. Usage far exceeded production capacity and therefore CTC was significantly imported. In addition, a large percentage of CTC production and usage was for feedstock applications that are taken into consideration by the MP but not subject to phase-out. Only CTC consumption and production for non-feedstock applications are controlled by the MP and subject to the agreed phase-out schedule.

5. The Ministry of Environment, Forests and Climate Change (MoEFCC), then MOEF, was empowered by the GoI with the overall responsibility for implementing the MP. MoEFCC established the Ozone Cell (OC) with the operational responsibility for implementing the MP-related activities including the CTC phase out operation.

6. As part of its obligations under the MP, India prepared the National CTC Phase-out Plan in 2001 with support from the World Bank. At the time of approving the India National CTC Phase-out Plan in 2003, India's CTC production was 11,553 ODP MT with consumption at 11,505 ODP MT.

7. Experience and lessons learned from the design and implementation of the earlier ODS I-III operations were built upon for ODS-IV, integrating the following core design parameters:

- a. development and implementation of a policy and financial incentive structure to drive CTC phase-out, supported by extensive discussions and consultations with participating enterprises, both CTC consumers and producers;
- b. development of comprehensive monitoring, verification, audit and enforcement mechanisms;
- c. development of a ‘low transaction cost’ performance based delivery mechanism for channeling grant funds from the MLF to GoI and beneficiaries;
- d. incorporation of significant flexibility in the deployment of grant resources to achieve timely implementation of project activities; and
- e. a significant TA component to support capacity building of all key stakeholders.

8. Table 2 below gives the year-on-year phase-out schedule for consumption and production levels agreed between India and the MLF Executive Committee (ExCom).

Table 2: Agreed Phase-out Schedule for CTC Non-feedstock Consumption and Production levels for India

	Base	2005	2006	2007	2008	2009	2010
Consumption: Maximum allowable (ODP tons)	11,505	1,726	1,147	708	268	48	0
Production: Maximum allowable (ODP tons)	11,553	1,732	1,147	708	268	48	0

9. At the time of appraisal, the MP required India to reduce its consumption and production of CTC non-feedstock to 15% of base levels (see Table 2 above) by January 1, 2005 and 0 ODP MT by January 1, 2010 corresponding to 1,726 ODP MT and 0 ODP MT for consumption and 1,732 ODP MT and ODP MT for production respectively. The CTC Sector Phase out Implementation Project was designed to assist India in mobilizing CTC users and producers to achieve the interim and ultimate CTC phase-out targets involving the World Bank as the lead agency and other bilateral and multilateral agencies– France, Germany, Japan, UNIDO and UNDP - as cooperating agencies⁵.

10. Within the CTC sector plan, the World Bank worked with the large scale CTC producers and users. GTZ on behalf of the Government of Germany and France had the mandate to strengthen the capacity of the GoI in the implementation of the MP by assisting small to medium scale CTC users in the textile industry and in the metal cleaning sector in the phase-out of CTC. UNDP on behalf of Government of Japan was responsible for executing conversion activities in large and medium metal cleaning sub-sectors. UNIDO was responsible for process agents.

Rationale for Bank’s Assistance

⁵ GTZ (now GIZ) implemented on behalf of France and Germany, and UNDP on behalf of Japan. In the report, GTZ and GIZ are used interchangeably.

11. The World Bank is one of the key implementing agencies for the MLF to assist countries in meeting their respective phase out targets under the MP. At the time of appraisal, GoI and the World Bank enjoyed a ten-year partnership on implementation of the MP. India's MP program implemented by the Bank was the second largest program amounting to over US\$130 million and disbursements of about US\$80 million since 1993. The Bank had established a comparative advantage with large sub-projects - Second Ozone Depleting Substances Phase-out Project (referred as "ODS II") and CFC Production Sector Gradual Phase-out Project (referred as "ODS III"). In consideration of the successful implementation performance of ODS II and ODS III projects, and to build on the long standing engagement between the World Bank and the GoI on cross-sectoral global environmental quality issues, GoI invited the Bank as the lead implementing agency to develop a sector strategy for CTC use in process agent applications and for CTC production sector. This request was further expanded to include project preparation work initiated by other agencies and incorporation of these into a CTC Sector Plan, which forms the technical basis of this project. The Bank also brought in experience of implementing such large MP programs in other countries including China and Turkey. The Bank was therefore well positioned to deliver production phase-out projects in general and the proposed project in particular.

1.2 Original Global Environment Objectives (GEO) and Key Indicators

12. The GEO is to support international efforts to restore the stratospheric ozone layer to its original level in order to provide the earth's living organisms with the full benefit of the ozone layer's protection from solar radiation.

13. The PDO is to support India's objective to reduce its Protocol-controlled CTC production and consumption level to zero by 2010 (Refer to Section F).

14. The key indicator is total phaseout of CTC production and consumption in all applications controlled by MP in India. These were to be regularly monitored, and compliance to the MP requirements were to be confirmed between 2005 and 2010.

1.3 Revised GEO (as approved by original approving authority) and Key Indicators, and reasons/justification

15. The original GEO and PDO and key indicators were not changed.

1.4 Main Beneficiaries

16. **Direct Beneficiaries:** In terms of receiving the project's grant funds / incremental cost compensation payment for their respective phase-out of CTC, the main beneficiaries targeted under this project were the CTC producers and CTC consuming enterprises that are eligible for funding under the MLF. CTC Producers and CTC Consumers that registered with and received registration certificates from the MoEF were considered eligible to receive assistance under the project. The process involved an independent verification of baseline and post phase-out CTC levels using a verification framework.

Beneficiaries could receive 20% upfront of the estimated incremental cost for CTC phase out and the final tranche of 80% upon verification of having achieved complete phase out.

17. Among the CTC producers, the three main beneficiaries who received the incremental cost compensation payments were Chemplast Sanmar, Gujarat Alkalies and Chemicals Limited and SRF Limited. Among the CTC consumers, 29 eligible enterprises received the incremental cost compensation payments.

18. **Secondary Beneficiaries:** Secondary beneficiaries were the enterprises and institutions that benefitted from the Technical Assistance Component and related project management support activities. A Project Management Unit (PMU), under the Ozone Cell, MoEFCC, was instituted as a separate registered entity with the assigned responsibility for the day-to-day implementation of the project under the close supervision and guidance of the Ozone Cell. The Ozone Cell and the PMU benefitted from institutional strengthening and development of the Management Information System (MIS). MoEFCC received support in establishing the production and consumption quota system and in updating/amending the ODS (Regulation and Control) Amendment Rules (2014). To support the project on the financial aspects, the Industrial Development Bank of India (IDBI) Limited was designated as the financial agent (FI) for channeling the grant to CTC producers, CTC users and the PMU.

19. Considering that at the time of appraisal, India's consumption rate was such that additional CTC had to be imported to complement local production, it was expedient to control illegal import transactions. Thus, other key stakeholders received capacity building and training including the Directorate General for Foreign Trade (DGFT), National Academy of Customs Excise and Narcotics (NACEN) and customs authorities. The metal cleaning and textile industries amongst the solvent sector received awareness training and knowledge with regards to available alternatives that are environmentally benign and that do not compromise worker safety. State Level Pollution Control Boards received training on the environmental and social issues pertaining to the issuance of permits and consents for industrial activities that produce or consume CTC.

20. **Direct Global Benefits:** In view that CTC has a high Ozone Depleting Potential (ODP) of 1.1, meaning that a metric ton of CTC depletes 1.1 times the amount of stratospheric ozone compared to a ton of CFC, India's cessation of MP –controlled CTC production and consumption contributed significantly towards helping to restore the stratospheric ozone layer. A secondary direct global benefit is the reduction of Greenhouse Gases (GHG). Having a high global warming potential (GWP), 1400⁶ times higher than Carbon Dioxide (CO₂), CTC phase-out is a significant contribution to GHG emission reduction. To put this in a broader perspective, the production phase out of 11,553 ODP MT is equivalent to approximately 15 million tons of CO₂eq yearly, or annual emissions from over three⁷ coal-fired power plants.

1.5 Original Components

⁶ IPCC 4th Assessment Report, 2007

⁷ USEPA Greenhouse Gas Equivalencies Calculator

21. The MLF ExCom at its 40th meeting held in November/December, 2003, approved the CTC National Phase out Plan to be implemented jointly with the World Bank as lead implementing agency and the cooperating agencies (GTZ, UNDP, UNIDO) at a total funding level of US \$52 million⁸ (excluding agency fees) to phase out 11,553 ODP tons of CTC production and 11,505 ODP tons of CTC consumption by January 1, 2010. The grant includes US \$10 million under the bilateral assistance program with the Governments of Germany, France and Japan contributing US \$2 million, US \$3 million and US \$5 million respectively.

22. Out of the total grant funds to the GoI for CTC production and consumption sector phase out, US \$28.5 million was allocated for CTC production phase-out, US \$21.5 million for CTC consumption phase-out and US \$2 million for technical assistance. The World Bank umbrella grant ceiling was set at \$53.04 million, representing the total approved by ExCom plus provision for fees for the financial intermediary for the project (2%). This, according to project documentation, was to “allow for the accommodation of any shortfall in bilateral contributions, therefore allowing for additional funds to flow through the Bank instrument with no additional administrative burden. This is proposed as a precautionary measure to avoid disruptions in project implementation in case bilateral donors cannot meet their commitments in part or in full.”⁹

23. Of the total grant ceiling, the World Bank was allocated US\$ 38.1million (excluding the fees for the financial intermediary that were paid from the Agency fee received by the World Bank from the MLF to implement the project) and distributed according to the three components as follows:

Box 1: Allocation of the MP MLF Grant Financing (US\$) to the GoI for CTC Phase out

World Bank:	38,100,954
UNDP/ Japan:	5,000,000
GTZ/ Germany:	2,000,000
GTZ/ France:	3,000,000
UNIDO:	3,899,046
Total:	52,000,000
<i>Total</i>	<i>53,040,000 (including 2% agency fees)</i>

The sub-projects implemented by GTZ, UNDP and UNIDO were implemented in coordination, but independently, and therefore this ICR is focused on the World Bank implemented components for a total of \$38.1 million (less 2% fees to the financial intermediary IDBI). World Bank allocation with 2% agency fee included is US\$38,862,973 million (~US\$38.86million)

Project Amount after Restructuring in February 2014

(Refer to Section H and Table ‘a’ in Annex1)
 US\$13,098,886 was canceled to adjust the total grant amount and total Project cost (through the World Bank) to US\$39,941,114. Also, US\$ 1.06 million was incorporated under Part A of the Project, as the Sub Grants to Former Producers (from CFC III) on account of

⁹ Memorandum of the Country Director for India to the Regional Vice President, South Asia Region, September, 21, 2004

Component 1: ***Incremental Cost Compensation to CTC Users for Conversion to non-ODS Technologies*** (US\$7.6 million): The project provided incremental cost funding to CTC-using enterprises converting their manufacturing operations to non-ODS technologies. The grant-based assistance was determined based on a formula linking the amount of CTC utilized with sector-specific cost-effectiveness criteria. These conversions typically involve minor changes in manufacturing and process equipment to accommodate non-ODS substitutes. In a few cases, the changes were significant, e.g. in the case of chlorinated rubber (refer to Section 2.2).

Component 2: ***Incremental Cost Compensation to CTC Producers for CTC Production Reduction*** (US\$ 28.5 million): Associated with the consumption component described above, the project also supported a phased reduction in CTC production not destined for feedstock applications. This component involved independent verification of CTC production levels and sales along with a comprehensive monitoring and verification of material uses in feedstock applications and sales (refer to Section 2.2).

Component 3: ***Project Management, Technical Assistance and Other Non-Investment Activities*** (US\$ 2.0 million). The CTC Sector Plan also proposed a number of non-investment activities to strengthen capacity of the GoI to effectively address CTC phase-out needs, including those of small CTC users (refer to Section 2.2).

1.6 Revised Components

24. The project components were not revised.

1.7 Other Significant Changes

25. Upon the request of the GoI, the project went through four minor project restructurings. There were no changes to the design, scope, scale and implementation arrangements.

First Restructuring: The changes were as follows: (1) Extension of project closing date by 27 months from September 30, 2010 to December 31, 2012; and (2) Reallocation of funds between the disbursement categories under the third Technical Assistance (TA) component being implemented by the MOEFCC¹⁰.

Second Restructuring: The change was to extend the closing date from December 31, 2012 until December 31, 2013.

Third Restructuring: Here again, the change in project closing date was to extend it by 3 months, from December 31, 2013 to March 31, 2014. However, in this case, the GoI request was to extend the project closing date by 6 months, to June 30, 2014. But the World Bank extended the project closing date by only 3 months.

¹⁰ Unused funds were reallocated to disbursing categories.

Fourth Restructuring: This fourth restructuring involved incorporating under Part A of the Project, as defined in Schedule 2 to the Grant Agreement, the financing of the second tranche of the accelerated phase-out of CFC production by CFC producers (legacy from the closed project ODS III); canceling US\$13,098,886 to adjust the grant amount and total project cost to US\$39,941,114; reallocate the outstanding undisbursed amounts among the disbursement categories; and retroactively increase the financing percentage for Category (3) (goods). The cancellation did not include any cancellation of activities but was only an accounting operation to reflect the amount of the grant approved by the ExCom of the MLF for implementation through the World Bank. As described above, the earlier amount was the total MLF grant to the GoI for the CTC phase-out to cover the entire project size, including the sub-components to be implemented by the other bilateral / multilateral cooperating agencies. By having the entire phase-out as the Bank project, flexibility was retained to implement all tasks / activities if necessary. During implementation, it turned out that it was not necessary and only the grant implemented by the World Bank should be retained.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

26. *Soundness of background analysis.* The project preparation was based on the Sector Strategy for CTC use in process agent applications and for CTC production prepared by the GoI with active support from the World Bank. The substantive analytical work served as a solid foundation for this relatively complicated ODS sub-sector. The variety of CTC applications and the need to continue CTC production due to feedstock applications that are outside the purview of the MP made the sub-sector quite different from the CFC phase-out.

27. *Assessment of the project design.* Project design was simple. The document titled “Memorandum and Recommendation of the Country Director for India for a CTC Sector Plan Implementation Project for India” outlined a straightforward 3-component structure targeted to the CTC users (Component 1); the CTC producers (Component 2) and a TA (Component 3) directed towards building the institutional capacity to address the CTC phase-out issues.

28. *Lessons from earlier operations:* Gleaning lessons from earlier ODS phase out operations, including the ODS-III that was under implementation at the time of preparation, the design included (i) an easy-to-implement financing approach of routing all funds through the financial intermediary IDBI, an arrangement that minimized transaction cost and ensured continuity;¹¹ (ii) a performance-based disbursement approach tied to actual reduction in CTC monitored through third party audits; and (iii) the fast-track approach taken to ensure smooth, effective and timely implementation (also refer to Section 1.1).

¹¹ Having provided similar support under ODS-III, the IDBI role ensured continuity

29. ***Adequacy of Government's commitment:*** As a signatory to the MP, GoI has committed to the provisions for the elimination of Protocol-controlled uses and production of CTC. In the earlier ODS phase-out programs, GoI's commitment was a key factor in successful implementation. At the time of project preparation / design, the level of commitment of the GoI was adequate and found to be of a high order (refer to Section 5.2).

30. ***Assessment of the risks:*** The GoI's strong commitment resulted in establishing a dedicated institutional structure to provide sustained support to the national ODS phase-out program including the CTCs. Regular consultations with the industry served a key feature of the GoI's phase-out approach further reducing the risks of implementation failure. As mentioned earlier project also benefited from integrating lessons from over a decade of MP implementation in India. The CTC Sector posed two new challenges: i) tight schedule for India to meet the 85% reduction of its CTC production and consumption in non-feedstock applications by 2005 and complete phase-out by 2010; and ii) reach out to a large number of enterprises requiring an effective mechanism to deliver financial and technical support. To address the former, the project design included mechanisms such as stockpiling before end-2004 to ensure MP compliance. And for the second challenge, GoI engaged with bilateral and multilateral (cooperating) agencies that have comparative advantages in managing technology transfer to small enterprises, while the Bank focused on CTC phase-out activities in the production sector and larger users. The cooperating agencies had committed to provide funding of US\$10 million to support this project. To mitigate the risk in the situation whereby one or more such agencies were unable to fulfill their commitments, the operation set the maximum funding at US\$52 million (exclusive of the fee paid to the financial intermediary). This was to make up for any shortfall of bilateral contribution to be channeled through the Bank following GoI's request to the ExCom (refer to Box 1).

2.2 Implementation

31. The GoI adopted implementation measures based on the CTC National Strategy to control and restrict the supply and uses of CTC for all non-feedstock applications. Salient features included:

provision of incremental cost compensation and regulatory measures to restrict production and supply of CTC to all uses controlled by the MP, supported by technical assistance from cooperating agencies to reach small users of CTC, largely in the informal sector supported by a comprehensive monitoring, verification and audit framework;

- given the limited time remaining before the first target of 85% reduction in CTC production and consumption, the GoI allowed CTC producers to build up a small amount of inventory of CTC to be used for non-feedstock applications in 2005, in accordance with provisions allowing such action under the MP. This was particularly important issue given that additional CTC material available as stockpile would facilitate the downward adjustment in CTC consumption required during 2005, and reduce the possibility of disruption in industrial activity thereby minimizing the risks of non-compliance;

through the existing ODS Rules (2000), all CTC consumers (feedstock and non-feedstock applications) were required to register their uses of CTC with the OC. By January 2006, the use of CTC in certain applications (such as process agent applications and chemical solvents) were prohibited;

provision of financial assistance to larger enterprises using CTC for metal cleaning and spot cleaning in the textile industry through this operation in order to accelerate their CTC phase-out by January 2005;

restriction of total supply of CTC for users by imposing sales quotas on non-feedstock applications to all CTC producers from 2005 onwards. A quota system was developed for non-feedstock consumption and quotas allocated to the producers in line with their production quantities. The Quota Order¹² required that CTC production for non-feedstock applications (controlled under the MP) not exceed the levels agreed as part of the *Agreement between India and the MLF ExCom for the CTC phaseout*;

restriction of CTC import through the requirement of advanced import licenses after 2009;

provision of TA and some financial assistance, if necessary, to smaller CTC users in the metal cleaning and textile industry through complementary efforts of bilateral cooperating agencies in order to assist them to phase out before 2010 (refer to Section 1.2) ; and

working closely with CTC distributors and dealers through GOI's outreach program in order to identify and channel available technical and financial assistance to small CTC users to accelerate their CTC phase-out adopting environmentally-friendly and economically viable alternatives.

32. The implementation of the first two components pertaining to the CTC users and CTC producers proceeded satisfactorily all through the project period. The phase-out targets were met, the monitoring was done through audits and the disbursements of grants were made in line with the agreements. The project did not have an adverse risk status at any stage.

33. Given the need to achieve 85% phase-out target in the first year, the project did very well in effectively using a 'quick-start' strategy to expedite project initiation towards achieving the set targets. With assistance from the World Bank, the OC adopted the 'quick-start' strategy enabling actual project implementation to proceed right after signing of the Grant agreement. Activities agreed under the strategy included expedited identification and preparation of sub-projects, development of project's institutional framework, policy framework, and monitoring-verification-data management. The project also adopted a 'fast-track' approval process to streamline the approval process of large number of small CTC consuming enterprises in the metal cleaning sector with CTC consumption below 10MT. Enterprises within this sector were identified to have similar CTC usage applications and CTC conversion options across the sector and thus enabled a cluster approval of sub-project proposals. Process involved entering into agreements / arrangements with these enterprises for the phase-out, conducting the baseline

12 G.O. No. 37/2/2005-OC Implementation of Quota System for CTC Production for Non Feedstock Applications in India

verification of their CTC consumption, executing agreements with them about compensation payments, and conducting post-phase-out verification.

34. The adjustment required by Indian industry in terms of reduction of consumption of CTC is probably the most challenging amongst India's various phase-out targets for substances controlled under the MP. There were no implementation issues in this regard. In fact, India's efforts and achievements on the monitoring and verification front were recognized by the MLF and its ExCom as a model of transparency and thoroughness.

35. Although the first two components proceeded according to the time-bound schedule leading to the complete phase out of non-feedstock CTC in production and consumption sectors, implementation of the third component on TA was delayed and did not progress as originally planned. Designed to strengthen the institutional, policy, operational, monitoring and verification, and reporting dimensions of the project during the time-bound implementation phase, and to sustain the phase out of non-feedstock CTC once the project closed, the TA component was considered important to the overall GEO and PDO. This was more so since CTC will continue to be produced and used as feedstock in compliance with the MP.

36. Factors deduced as contributing to the delayed implementation of the remaining TA activities included:

- Staffing gaps in the PMU (refer to Section 5.2): From November 2008 until 2013 the position of the Project Coordinator and Audit Coordinator were vacant affecting management of the PMU daily activities particularly the planning and implementation of the TA activities;
- Gaps in understanding that, even when operating as implementing agency of the MLF, the World Bank was bound to its rules and procedures and the terms of the Grant Agreement (refer to section 2.4 and Section 6);
- Inconsistencies in the OC/PMU compliance with the procurement guidelines per Legal Agreement between the World Bank and the GoI (MoEF) (refer to Section 5.2)
- Communication channels (refer to Section 5.2);
- Failure to transfer implementation of TA activities to UNEP (refer to Section 5.1);
- Delay in securing ExCom approval of the TA workplan: Through decision 67/21, the ExCom requested the World Bank to “*submit a work plan covering the funds remaining in the CTC phase-out plan in India to the 68th meeting of the Executive Committee*”. However, upon submission, it was withdrawn from the 68th meeting in 2012 to allow for further consultation with stakeholders, and only approved in July 2013 at the 70th ExCom meeting.

37. The draft TA workplan that was approved by Excom in June 2013 outlined the following activities/studies:

- Analysis of post conversion market of alternatives to CTC in consumption sector and their availability;
- Awareness workshops on alternatives and sustainability of CTC phase out;

- Training of State Governments and pollution control board officers to ensure that CTC is mainstreamed at the SPCB/regional level to ensure sustainability (building on GTZ's training success);
- Success Story publication about “A decade of ODS phase out”;
- Strengthening of the MIS, including updated hardware;
- Sustainable monitoring framework for CTC; and
- Support on-going PMU activities to ensure oversight and full support to the above activities.

38. In view of the relevance of the TA activities to sustaining the development outcomes and impacts beyond the project closing, substantive efforts were put in place to complete the remaining TA activities. This necessitated the three project restructurings that were done (refer to Section H). Although there were no adverse implications in terms of meeting the phase-out schedule, the non-completion of the TA component in a timely manner resulted in lapses in further strengthening the institutional capacity critical to sustaining the project outcomes. This lack of capacity may have a negative bearing if CTC use were to resume in the non-feedstock sectors that are controlled under the MP. However, this appears unlikely given the market conditions – availability of alternatives, CTC market prices and demand for feedstock applications coupled with the impetus for changeover to green/clean alternatives from international pressures, and improved GoI enforcement.

39. The IDBI Limited was involved to support the project as the financial intermediary (FI) channeling the grant to CTC producers, CTC users and the PMU. For this role, it was paid a fee of 2% of the amount disbursed to the enterprises and the Ozone Cell.

40. Throughout the implementation, the project coordinated and cooperated with the other bilateral / multilateral MP cooperating implementing agencies, namely GIZ, UNDP and UNIDO. The World Bank in its role as the lead implementing agency was responsible for combined reporting of all activities implemented under this program to the ExCom. The Bank was effective in strategically using its convening power to facilitate dialogue on annual programs preparation, and other reporting to the ExCom on behalf of the GoI. The MoEF routinely called inter-agency coordination meetings among the lead and cooperating agencies.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

Design

41. Monitoring and Verification Framework was designed to include the verification of CTC production at each CTC producing facility and that of its use as a feedstock application. CTC consumption in non-feedstock applications was calculated as CTC production minus CTC for feedstock consumption. Any CTC destroyed and net import-export was also provisioned in determining the CTC for non-feedstock consumption. The Management Information System (MIS) was mainly for the use of the PMU, which was

responsible for the operational aspects and the OC had the overall responsibility for monitoring compliance.

Implementation

42. The CTC phase-out MIS designed for supervision and monitoring of implementation activities worked satisfactorily during project implementation. With a focus on the performance indicators, i.e. total phase-out of CTC production and consumption in all applications controlled by the MP, the MIS was used as a tool for monitoring project disbursements, performance audits of the CTC producing enterprises, and generating progress reports and impact analysis. It tracked implementation progress of Annual Programs and overall phase-out, including investment and non-investment activities.

43. The MIS design was to evolve and be revised as needed, based on project implementation experiences and changing reporting requirements. Up until the complete phase-out targets were achieved in 2010, the M & E was reported to have progressed well. Regular audits served as a tool of the monitoring & verification framework. Annual audit verification which formed the basis for the mandatory reporting to the MLF was properly implemented until 2011, a year after the CTC phase-out was completed. The annual audit verification reports documented and served as the evidence of impact analysis. Data triangulation through the licensing system and obtaining data from customs was also instituted under the project as a means to cross-verify the data.

Post Project Utilization

44. Continuing CTC phase-out monitoring (audits/verification and reporting) following project closure is particularly important to ensure that no CTC manufactured for feedstock use can be diverted to non-feedstock use. Therefore, the capacity of the OC/PMU would have to be retained in order to operate the critical CTC monitoring system and sustain the outcomes from the efficient CTC phase-out. Considering the non-availability of the OC for discussions as a part of this ICRR preparation, it was not possible to determine whether post phase-out audit verifications and post-project monitoring systems are fully established and functional, thereby able to ensure the sustainability of the M & E efforts.

2.4 Safeguard and Fiduciary Compliance

2.4.1 Safeguard

45. The project was classified as **Category B**. The phasing out of CTC yielded both global and local environmental benefits (refer to Section 1.3). Global benefits are towards reduced depletion of the ozone layer, whereas local benefits accrue with reduced worker exposure to CTC, a toxic substance and a suspected carcinogen, in non-feedstock applications. To address environment and social issues, the project included an environmental and social screening review framework that was implemented as part of the project management activities.

46. Per safeguard procedures, CTC producers were required to submit an Environmental Management Plan (EMP) to MoEFCC “before modifying or dismantling (partially or fully) any production lines as a consequence of reduction or cessation of CTC production or destruction of any surplus CTC”. However, there is no foreseen cessation of CTC production in the foreseeable future due to continuing CTC production for feedstock applications not covered by the MP. Producers have not had to modify or dismantle production lines, thus the environmental health and safety requirement was met.

47. With regards to the CTC consumption sector, release of funds to project beneficiaries occurred only after verification¹³ that they had implemented required environmental and safety measures, in addition to other technical GoI requirements. The initial and post-completion verification reports that were furnished by the independent Verification Consultants and reviewed by the World Bank ensured that these requirements were met prior to disbursements being approved/made by the Bank. The biggest challenge for CTC phase-out was in small and medium enterprises (SME) sector where they tend to use cheaper alternatives such as Trichloroethylene (TCE), which, while less toxic than the CTC they replace, still present significant health and safety hazards. The GIZ’s ODS phase-out support program addressed these issues through the comprehensive guidance manuals and capacity-building efforts that benefited the CTC users as a whole during the project period.

48. Under the GTZ window, technical assistance (TA) was provided to replace CTC used in stain removal work for small garment manufacturers and metal cleaning in 2009. GTZ did extensive work in testing alternatives that meet health, safety and environment standards. The achievement of the CTC phase-out in these two widely dispersed industry sectors - garment and metal cleaning - has also been realized through awareness programs and GoI policy measures, especially those which influenced the availability and pricing of CTC and its alternatives.

2.4.2 Fiduciary Compliance

49. There were no major financial management (FM) or procurement issues during implementation. This was due to the simple project FM design, which involved IDBI as the FI responsible for the annual financial audits. The auditing process coordinated by IDBI was streamlined. The audit findings revealed minor observations that were subsequently addressed. At the time of closing, the FM rating was satisfactory. On procurement, there were not many transactions, as most of the financial resources were disbursed to CTC producers and users as compensation for the phase-out activities. There were minor lapses, e.g. the hiring of a technical auditor in May 2008 was done without

¹³ Verification was conducted by an independent technical/verification Consultant contracted by the MOEF. The consultant confirmed the baseline CTC consumption data as furnished by the beneficiaries in addition to other technical implementation requirements including compliance with safeguards standards.

the prior approval of the Bank (refer to Section 5.2). For such minor lapses, appropriate corrective and preventive follow-up actions were undertaken.

2.5 Post-Completion Operation/Next Phase

50. The Bank has been the lead agency in coordinating with the OC and the cooperating agencies in furnishing progress reports to the MLF. Also, the MLF requires that a Project Completion Report be submitted. The Bank would have to coordinate and submit the same as a part of the post-project activities.

51. From 1993 to 2014, a 21 year period, the Bank has actively supported the GoI in four separate but interlinked operations (ODS I-IV) resulting in the successful phasing out of Halons, CFC and now the CTC. Given that the CTC phase-out is complete, there is no need for a follow-on project in the ODS sub-sectors that have been covered in the four operations. There are other MP controlled ODSs that will subsequently require a phase-out. This project implementation experience could be gainfully used in developing the design of similar future projects, e.g. HCFC phase-out projects that are being considered.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

52. **Highly Relevant.** The objectives of the project are highly relevant to the global priorities of phasing-out ODS, including CTC, and GoI's priorities under the MP.

53. In phasing out CTC, a toxic and carcinogenic chemical compound, the project is helping GoI in 'moving closer to achieving the MDGs by 2015'¹⁴, having leveraged available resources to improve health and *quality of life* through reducing direct worker exposure to CTC and overall human exposure to harmful ultraviolet radiation. The project also supported the CAS FY09-12 by reducing the burden of environmental degradation from toxic compounds.

54. The current CPS (2013-17) recognizes the use of Trust Funds for implementing global conventions and support global partnerships / global public goods, and to support activities in country programs that implement country, regional and sector priorities. In Annex 6, the CPS explicitly states the program under the Ozone Trust Fund, which assists countries in phasing out ODS as agreed under the MP for the protection of the Ozone Layer, with funding from the MLF of the MP.

55. The design and implementation were in line with the support required by the GoI to meet its CTC phase-out targets. The implementation outcomes are that a complete phase-out has been achieved as per the schedule agreed with the MLF. Although the TA component could not be fully implemented, the scope of activities was designed, based on lessons from earlier operations, to address identified capacity gaps and help sustain

¹⁴ World Bank CAS FY 05-08

project outcomes. In all aspects, the relevance of this project is high both in terms of replicability of the project design and implementation mechanism adopted, as well as the local and global benefits accrued from the investments.

3.2 Achievement of Global Environmental Objectives

Rating: Satisfactory vis a vis Achievement of the GEO and the PDO

56. The objectives were fully achieved. The financial assistance provided to the GoI to phase out its MP-controlled CTC production and consumption levels allowed India to achieve its targets and obligations to reduce its production and consumption including both imports and exports in line with the MP agreed phase-out quantitative targets for the period 2005-2010 in a timely and cost effective manner. India's achievements under this operation are very important on the global front in that at the time of project conceptualization, it represented one of the largest global producer and consumer of CTC. Successful phase out of CTCs therefore represents a significant progress in reducing anthropogenic pressure on the stratospheric ozone layer. Through the sub-projects administered by the cooperating bilateral and other multilateral agencies, alternative substances have been recommended and well received resulting in the conversion from ODS based solvents and process agents. Conversion has been verified by well-structured monitoring systems. The outcome of the project in terms of the phase-out accomplished is included in the Table 4 below.

Table 3: Phased-out CTC Consumption and Production in India 2005-2011

Year	CTC Consumption* (ODP MT)		CTC Production* (ODP MT)	
	Allowed	Verified	Allowed	Verified
Base	11, 505	N/A	11, 553	N/A
2005	1,726	1,657	1,726	(15,289)
2006	1,147	(1,002) ¹⁵	1,147	(9,483)
2007	708	(1,037)	708	(7,623)
2008	268	267	268	267
2009	48	29	48	29
2010	0	0	0	0
2011	0	0**	0	0***

Source: Bank's Aide Memoire, Apr-May 2013 which is compiled from the Annual Verification Audit reports as submitted by the GoI to the Executive Committee of the MP

Note: (1) * Consumption and Production as defined by the MP. (2) ** Verified consumption based on independent verification of the absence of CTC sale from the four producers other than non-feedstock use, and that no CTC were imported; and (3) *** Verified production based on independent verification both of producer stocks and flows, and of feedstock user stocks and flows.

¹⁵ Bracketed numbers are actual verified quantities. These bracketed numbers need not be in line with the allowed figures. In the years, 2005-7, the differences between the allowed and verified are due to allowances given for consumption, and inclusion of production for feedstock applications.

3.3 Efficiency

57. The impacts demonstrated above were achieved with **high efficiency**, as assessed based on the cost-effectiveness of phase-out achieved. Cost effectiveness is defined as the amount of MLF grant per unit of ODS phased-out in ODP/ Kg. The overall allocation for the CTC phase-out from the MLF was US\$ 52 million plus agency fees (includes allocation to the World Bank and other multilateral/bilateral agencies) altogether, i.e. for both the production and consumption phase-out. The ODP phased-out was 11,553 ODP MT of the CTC production and 11,505 ODP MT of CTC consumption. This works out to be US \$ 2.30/kg ODP for the CTC phase-out in India.

58. An average cost-effectiveness of US\$3.54/Kg ODP was achieved in the CFC production phase-out component (ODS III project) and the average cost- effectiveness of the Halon production phase-out component was US\$7.98/Kg ODP. In China, the average cost of ODP phase-out achieved across all sectors was \$1.93/kg ODP, while unit costs ranged from \$1.00/kg to \$12.37/kg depending on the sector. The average cost-effectiveness across all ODS sectors in Malaysia was US\$10.19/kg ODP, in Indonesia was US \$4.41/kg ODP and in the Philippines was US \$4.28/kg ODP (Refer to Annex 3).

59. When comparing the average cost-effectiveness of CFC and halon phase-out in India and also of all ODS phase-out in other countries, the CTC phase-out in India is highly cost-effective.

3.4 Justification of Overall Outcome Rating

Rating: **Satisfactory**

60. The relevance of the Project's objectives, design, implementation and efficiency are rated high. All the targets were fully met at the 100% level. It is worth noting that in the first year of the project implementation, in 2005, GoI's challenging target was achieved, i.e. it reduced its Protocol-controlled CTC production and consumption level to 15% of its baseline level. Specifically,

- the project helped India comply with its obligations under the MP. Through implementation of the CTC sector phase out plan, and earlier phase out plans for CFC and Halons, India has made a significant and long lasting impact in the ODS phase out agenda
- the CTC sector phase out plan was developed based on results, lessons learned and innovations achieved during implementation of ODS I-III
- cost effective use of the MLF grant resources, evidenced in cost savings/efficient use in spite of gaps in complete implementation of the TA component
- overall, capacity of the OC improved relatively having been provided the basis for building needed support to sustain the monitoring program developed to reduce/eliminate potential leakage of CTC to non-feedstock uses.

61. In view of the high relevance, satisfactory efficacy and high efficiency, the project outcome rating is **satisfactory**.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

62. Phasing out CTC typically yields significant environmental benefits, both local and global, especially since CTC is a toxic substance and a suspected carcinogen. The project was designed to primarily implement global conventions and to support global partnerships / global public goods but it also contributed to reducing poverty, creating greener jobs, addressing related social development issues and supporting GoI's goals on environmental health, quality of life and overall sustainable development objectives.

63. (refer to Section 3.1) Owing to the contribution of phasing out CTC, a toxic and carcinogenic chemical compound, and recommending relatively safer and environmentally benign alternatives, the ODS-IV operation helped in reducing worker exposure to harmful compounds and helped to “leverage available resources to improve the *quality of life* of some of the world's poorest citizens” per the India CAS FY05-08.

64. The ODS-IV also contributed to the GoI 10th Five Year Plan – to better support the private sector and ensure widespread improvement in well-being. Actions in support of CTC phase out encouraged the adoption of modern alternatives to CTC-based process agents and solvents thereby contributing to removing some of the future threats to growth of private sector companies in the form of pollution constraints, and related health threats from CTC exposure.

65. The GTZ's contribution in a complementary fashion helped to support CTC dependent industries in managing the challenge of the phase-out and changeover to non-ODS substitutes without jeopardizing the process economy and product quality which indirectly helped to reduce industry fold-ups and layoffs.

(b) Institutional Change/ Strengthening

66. During implementation notably between 2004 and 2009, substantive institutional expertise was built through the project in assisting GoI to meet the CTC phase-out targets. This expertise was routed through the PMU, a legal entity that was created as a special vehicle for the ODS phase-out under the earlier ODS III project. CTC phase-out required significant coordination between the bilateral/multilateral agencies including the World Bank that the PMU effectively executed, particularly during the initial part of the project period. As a legal entity, the PMU is intended to continue beyond the project period with the expectation to help sustain project outcomes beyond project closing.¹⁶

¹⁶ As meetings with the PMU / Ozone Cell was not possible during this ICRR preparation, the current status of the PMU is not known.

67. Under the project, the following capacity building initiatives were implemented: (i) development and deployment of MIS, (ii) monitoring and audit verification framework protocols for phase-out in producing, consuming and storage facilities, (iii) awareness/skill-building of CTC producers and CTC consumers in non-feedstock application, (iv) amendment to the ODS Rules 2000 as required for the CTC sub-sector (v) training workshops for custom officials across the country, and (vi) targeted outreach activities to create awareness of CTC phase-out. All of these resulted in direct and indirect improvements in the capacity of the various Government agencies primarily the MoEFCC Ozone Cell, IDBI, the respective state Pollution Control Boards that participated in training sessions, Customs offices, and CTC producers and consumers involved. Provided that the reporting framework established for producers and consumers for CTC feedstock remains functional, the OC maintains its routine monitoring, backed by the improved capacity of Customs for tracking CTC imports and exports, a functional MIS, and a supportive policy environment per the recent amendment to the Ozone Rules (2014), India should maintain its position to sustain the successful phase out of CTC non-feedstock use and production.

(c) Other Unintended Outcomes and Impacts

68. The GWP of CTC is 1,400 times higher than that of CO₂, the main GHG. By phasing-out CTC production and use in non-feedstock applications, the release of GHG has been reduced by approximately 15 million tons of CO₂ equivalent on an annual basis. This is a significant outcome of this project.

69. The project objective was to support the GoI's efforts to phase-out CTC. While the major part of the project was completed by 2010 (when the phase-out of CTC production and use in the non-feedstock application), the third TA component was not completed. As explained earlier, the OC / GoI requested for the extension of the closing date of the project. In line with the request, the Bank had extended the closing date from September 30, 2010 to December 31, 2012 in the first instance and from December 31, 2012 to December 31, 2013. In the third instance, the OC/ GoI request was to extend the closing date from December 31, 2013 to June 30, 2014. However, the Bank extended the closing date only to March 31, 2014. This was due to the very late arrival (31 December 2013) of the formal request of the extension of the closing date and partly due to that both requests for earlier closing date extensions had been to complete TA activities.

70. This among other reasons (refer to Section 2.2) resulted in non-completion of the TA activities planned by the OC in the last few months of the project period. However, this may only have minor implications on the development outcomes as the major part of the phase-out had already been completed.

71. In spite that 3-month adjustment in final closing date will not affect overall project outcomes, it has resulted in the straining of relationships between the OC and the Bank's Task Team, and may have a bearing on possible future initiatives. These are unintended negative outcomes of the project implementation.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

Not applicable

4. Assessment of Risk to Development Outcome

Rating: **Low**

72. GoI / OC has put in place a system under the Ozone Rules to ensure that CTC production and consumption for controlled use will continue to be monitored. This monitoring system, which is one of the outputs of the ODS IV project, requires all producers manufacturing CTC for feedstock use – not controlled by the MP – to report to the OC their CTC production, opening and closing stocks, and sales to feedstock users, on a quarterly basis. CTC feedstock users are also subject to similar reporting requirements. Both producers and feedstock users are also obliged to submit independent audits of CTC production and feedstock use on an annual basis. This system allows the OC to accurately confirm that no CTC produced is diverted to non-feedstock use. Also the ODS (Regulation and Control) Amendment Rules, 2014 will enforce that CTC is not used for non-feedstock applications.

73. The CTC market conditions have been influenced substantively by the phase-out in both the production and consumption sector in line with the MP requirements. The value-addition of its use in the feedstock applications has since become so important that its leakage or illegal sale to the non-feedstock applications is highly unlikely. Furthermore, the global market for CTC has shrunk, making production and consumption outside non-MP controlled uses uneconomical and less attractive. The likelihood of any leakage of CTC for non-feedstock use given the high degree of import licensing control that is in place is very insignificant/minimum. Therefore, in spite of the TA component to support post phase out activities having not been completed, risk to development outcomes is low.

5. Assessment of Bank and Borrower Performance

5.1 Bank

(a) Bank Performance in Ensuring Quality at Entry

Rating: **Satisfactory**

74. In terms of design and quality at entry, there were no inadequacies (refer to Section 2.2). The Bank project team ensured to use the lessons learned during the previous three ODS projects but the risks with implementing TA activities in earlier operations were not fully reflected in design of the TA component for the ODS-IV. In the design, the main component of disbursing grant to the beneficiaries for CTC production and consumption phase-out for non-feedstock applications was supported with a TA component that built on the capacity to ensure and sustain phase-out. The performance-based programmatic approach adopted in the project design, sound institutional arrangement including use of a FI, and the fast track approval process that helped to streamline the process of sub-project preparation of small-scale solvent projects thereby accelerating the verification process, also contributed to the project's quality at entry. In

fact, 85% phase-out was successfully achieved in the first year of project implementation with a disbursement rate for the calendar year of 20% (US\$10.3 million) of original project total amount and this is evidence enough of the effectiveness of the design and quality at entry.

(b) Quality of Supervision

Rating: **Moderately Satisfactory**

75. The World Bank's performance in supervision is rated moderately satisfactory. The World Bank conducted regular implementation support missions to proactively identify and address key issues. These missions were systematic and held routinely throughout the project period with some mission jointly fielded for the ODS III project that was being implemented concurrently. The structured Aide Memoires were useful to facilitate timely resolution of implementation gaps, if any. The World Bank also provided constant, close follow-up and support to the PMU throughout the CTC phase-out particularly during the first year when 85% of the CTC phase-out was achieved. The Bank engaged an independent team to conduct regular and systematic verification audits that formed the basis of monitoring the phase-out. Coordination with the World Bank project team was effective due to their physical presence in New Delhi during this period. Substantive technical support for the third TA component was also provided.

76. Although the Bank conducted regular supervision and implementation support missions, the Mid-Term Review exercise was significantly delayed with implications for identifying and addressing in a timely manner substantive issues affecting project implementation. The February 2009 MTR mission noted that given the past performance of TA disbursement, it was evident that OC would not be able to disburse the remaining funds for the TA over the remainder of project life. During the June 2010 World Bank supervision mission, it was discussed that focus for 2010 onwards would be on post phase-out monitoring and building capacity of stakeholders to continue monitoring activities at various locations. It was then agreed that the Bank would transfer the TA activities to UNEP to support the OC in implementing some of the capacity building and awareness activities including replicating GTZ's work on Occupational Health and Safety related to CTC alternatives. Towards this, UNEP developed a draft Action Plan which details the activities, timelines and associated budget. However, after 9 months of discussions, the proposed agreement had to be abandoned due to apparent distinct legal and procurement requirements of UNEP and the World Bank. Failure to negotiate a contractual agreement with UNEP further slowed down TA implementation in 2011.

77. Towards the end period of the original project closing date (September 30, 2010) and extended project period, there were issues between the OC/PMU and the World Bank related to the TA component. These were procedural and not technical in nature. Though some of these were addressed, not all of them were resolved. The Bank team solicited assistance from the GoI DEA and the World Bank India Country Management Unit in attempts to resolve the strained relations but without any significant success. This was evident in the correspondence received from the OC after project closure on March 31, 2014. With hindsight, with most funds disbursed by 2009 and the project development

objective having been met, the Bank could have pursued much more aggressively options to close the project and transfer the remaining TA activities. In view that the quality of supervision had been high during the earlier operational part of the project, and also since the Bank team had consistently offered hands-on help aimed at facilitating implementation of the TA component, quality of Bank supervision could have been rated satisfactory. However, failure to take more decisive action after the mid-term review eventually led to friction between the Bank team and the client.

78. In the agreement between the World Bank and the IDBI as the FI, the payments to be made to the IDBI were to be based on a percentage of the disbursements. After 2010, once the phase-out was completed, the disbursements were minimal but the IDBI noted that it continued to incur transaction costs such as staff salaries, office overheads and conduct of financial audits, and that extension of closing dates implied further costs to the IDBI that was not commensurately compensated since the percentage-based payments did not compensate for the costs incurred by the IDBI. In addition, the project size was indicated to be US\$ 53.04 million, the overall outlay for the CTC phase-out that included funds implemented separately by UNDP, UNIDO and GIZ (refer to Section 1.5). Of this amount, the World Bank was directly administering only US\$ 38.1 million through the IDBI. As the IDBI Bank fee was linked to disbursements through them, the project agreement should have reflected US\$ 38.63 million (including the 2% financial intermediary fee), the actual amount once that was clear. The agreement with the IDBI was formally modified to reflect this amount but rather late in the project period.

79. As the phase-out has been completely achieved, neither of the above shortcomings has a direct bearing on the project development objective. However, the issues outlined reduce the Bank's overall performance rating to moderately satisfactory.

(c) Justification of Rating for Overall Bank Performance

Rating: **Moderately Satisfactory**

80. Given the quality of the Bank's performance at entry and during supervision, that led to efficient (effectively managing several sub-project components using the performance based programmatic approach in line with a sector plan, and an expedited cost effective delivery of the project goals) and sustained relevance of the project outcomes for the CAS FY05-08, CAS FY09-12 and CPS FY13-17, the overall Bank performance could be rated satisfactory. Overall, the outcome has been successful in assisting India to meet the phase-out as per the agreed phase-out schedules under the MP. However, due to the couple of implementation lapses, the Bank performance during supervision is rated as moderately satisfactory reducing the overall Bank Performance to moderately satisfactory.

5.2 Borrower

(a) Government Performance

Rating: **Satisfactory**

81. As of January 2010, the project under the execution of the MoEFCC (then MoEF) had fully met its PDO of supporting the GoI and stakeholders using or producing CTC in fully phasing out MP-controlled production and consumption of CTC. Overall Government performance ratings across the stream of project activities could be rated satisfactory as the project has benefitted from sustained political commitment (quite evident even over the first three ODS operations). During design and implementation of the ODS-IV, the GoI remained a consistent advocate in support of the MP in complying with the ODS-phase out control measures. Results from the ODS-IV and three prior ODS operations have informed MoEFCC in the updating of the Ozone Rules, 2000 as well as the prospective HCFC phase out plan. Multisectoral government agencies played strategic roles in adopting the CTC phase out sector plan, in transitioning to viable alternative substances, and in promoting awareness about the importance of phasing out ODS to control impact on the ozone layer.

(b) Implementing Agency or Agencies Performance

Rating: **Moderately Satisfactory**

82. While the PMU had the main day-to-day responsibility, the OC provided the guidance and supervision. The PMU's role during the phase-out period until 2010 was sufficient. In particular were the effective way in which the OC/PMU employed the quick start and the fast track phase-out in 2005 and 2006, which resulted in a steep reduction of CTC production and consumption, and the strategic approach of focusing on the large CTC consumers in order to meet the MLF phase-out schedule. The PMU also coordinated effectively both with the lead and coordinating agencies and with OC/MoEFCC. Considering the complexity of the CTC phase-out, i.e. multiple sectors using CTC and need to continue production for feedstock applications, managing the phase-out issues was quite a challenge. Sufficient awareness and capacity creation were provided.

83. Following the completion of the phase-out, there were some staffing issues within the PMU as reflected in subsequent Aide-Memoires. At the time of the project mid-term review (November 2008-February 2009), the position of the Project Coordinator (PC) and the Audit Coordinator had been vacant for two months. Absence of a PC put stress on the existing institutional capacity of the OC and PMU, on leadership from the PMU, and effective supervision and management of the project particularly the TA component. Furthermore, the non-responsiveness of the OC to Bank correspondence posed limitations to the dialogue between the Bank as the lead agency and the GoI. While these might have affected the third TA component¹⁷, they did not have a bearing on the CTC phase-out that was completed by 2010.

84. Per the legal agreement, Project management including the TA activities was to be implemented by the OC, in a manner consistent with the Project Agreement between India and the World Bank. Part C of Schedule 1 of the Project Agreement dated Dec. 10,

¹⁷ As meetings with the PMU / Ozone Cell were not possible during this ICR preparation, the implementation issues with the PMU or its current status are not known.

2004 (page 7) states that “A plan for selection of which shall include contract cost estimates, contract packaging, and applicable selection criteria and procedure, shall be furnished to the trustee for its review and approval prior to the issuance to consultants of any request for proposals”. In May 2008, the hiring of a technical auditor was done without the prior approval of the Bank. Also the requirement to clearly delineate funding request against specific activities was not followed by the OC. Request for funds under the TA component were submitted to the World Bank without the requisite itemization/procurement plan thereby slowing the Bank’s no-objection process.

85. During the final year of implementation of the project, procurement of consulting services planned under the TA workplan could not take place as the PMU would not readily prepare a procurement plan. The OC had sent requests to the World Bank to release funds to implement remaining TA activities without the requisite procurement plan/itemized budget proposal. Partially due to (i) paragraph 8 of the agreement between the GoI and the ExCom whereby “...funds provided to India pursuant to this [GoI-MLF] agreement may be used in any manner that the country believes will achieve the smoothest and most efficient CTC phase-out”. Therefore the OC did not want to be inhibited by the World Bank’s internal procurement procedures which were considered onerous.

86. The Bank’s standard procedure and agreement with GoI require channeling all substantive correspondences through the DEA, the Banks’s official counterpart. As per this protocol, all correspondence related to legal agreements including request for extension of project closing date were to be submitted to the Bank through the DEA. Under such an overarching agreement, the World Bank procedures, correspondence and terminology therefore do not distinguish between the source or nature of funding of different programs. On the contrary, the OC expected to communicate directly with the World Bank on all legal issues for example pertaining to extending project closing dates thereby delaying the process for submitting restructuring requests to the World Bank.

87. Considering that the closing date had a three and half year extension, i.e. from September 30, 2010 to March 31, 2014, the project had sufficient time post phase-out to mainstream tracking and managing CTC so that there are no environmental releases due to its production and use for feedstock applications, as explained above. In the correspondence from the OC to the Bank in April 2014, however, it is clear that the post phase-out activities are still to be completed. In spite of the considerable delay in securing ExCom endorsement of the TA workplan, in July 2013 only, the shortcomings described above led to that workplan not having been implemented at time of project closure, March 31, 2014, thereby reducing the MoEF performance to moderately satisfactory. This rating is given based on the information available. The non-availability of the OC for discussions as a part of this ICRR preparation was a serious constraint, as the information arising from discussions with them would have had an important influencing role in determining the rating.

88. IDBI’s role as FI spanned the crux of activities that cumulated in the CTC phase out. Responsibilities included entering into Sub-Grant Agreements with beneficiaries, including small CTC producers and consumers and managing the SGA process, receiving

and reviewing proposals to determine eligibility and transferring grant funds to qualified beneficiaries and furnishing audit reports. Throughout the project period, the IDBI carried out its role as FI in conformity with appropriate financial and administrative practices. The financial management (FM) arrangements were satisfactory throughout the project period. The FM Reports to the Bank were submitted in a consistent manner. Financial audits were conducted annually and follow-up to the audit observations were also undertaken. All the activities were carried out in a satisfactory manner and in full compliance of financial covenants. Effective and productive cooperation among the PMU /OC / MoEFCC, the World Bank, beneficiaries and IDBI was key for this satisfactory performance.

(c) Justification of Rating for Overall Borrower Performance

Rating: **Moderately Satisfactory**

89. The outcome has been successful in assisting India to meet the CTC phase out as per the agreed phase out schedules under the MP. However, in view of the implementation challenges outlined, the overall Borrower Performance is moderately Satisfactory.

6. Lessons Learned

90. As the project achieved its development outcomes effectively, there are positive lessons to be learned:

- **Project design should be kept simple even if the issues are complex.** The CTC sub-sector was perhaps the most complicated one among the ODS sub-sectors. However, retaining a simple design with separate components for producers and consumers, and a TA component to support the overall phase-out, including coordination with other multilateral / bilateral agencies, facilitated implementation and monitoring.
- **Continuance of key staff in linked/programmatic operations facilitates effective implementation.** Ideally, in programmatic or linked operations (such as ODS-III and ODS-IV) maintaining the same key operational staff help in transferring lessons and enhancing coordination. During the critical period of the CTC phase-out, i.e., between 2005 and 2010, stability in the team within the different organizations - PMU / OC, World Bank, IDBI and the verification auditors made coordination easier resulting in more effective implementation. Once the staffing of the PMU changed, continuity was lost and progress in the TA component suffered.
- **More structured co-ordination between the various multilateral and bilateral agencies enhances effectiveness:** Based on the experience from the earlier ODS phase-out initiatives, this project ensured that there was better co-ordination between the various cooperating agencies from the onset. This was even more important in this project as the responsibility of support for the CTC phase-out

activities was divided among the agencies, i.e. UNDP, UNIDO, GIZ and the World Bank. The structured coordination enhanced implementation effectiveness especially where outputs required joint interventions between the Bank and a cooperating agency.

- **Long-term partnership between the World Bank and IDBI in ODS phase-out served a big advantage.** The World Bank and IDBI have had a long-term partnership that started with the first ODS phase-out project. Being the fourth project in the series, the capacity and expertise within IDBI, and the well-established relationship with the PMU / OC and the World Bank has been an important aspect of this CTC phase-out project as well as the overall successful MP program in India.
- Relating to the **use of a financial intermediary**, IDBI's role was strategic in facilitating a seamless financial/disbursement and technical link between beneficiaries and the OC thereby enabling the OC to focus on the broader policy reform, donor collaboration, overall monitoring and reporting to the Bank and the MLF.
- Regarding the project design, the **performance-based disbursement** where funds are released on annual basis based on pre-determined phase-out schedules and verified targets did provide an excellent implementation structure which served as a motivation and incentive to stakeholders/beneficiaries to find cost effective ways of phasing out production and use of CTC.
- The programmatic approach of using a CTC sector plan framed within a national ODS-phase out framework lent itself to effective planning and supervision which helped in generating higher level sustainable results.
- Ideally, an **effective MIS** as adopted under this operation complemented by a verification of both financial and technical results helped in determining the accuracy of the results achieved by the project.

91. In terms of how implementation could have been done better in the context of this project, the following are the lessons learned:

Supporting national Governments with ODS phase-out in line with the MP commitments is different from the World Bank's regular operations of development funding / lending. As it is, **the OC tended to view the World Bank more as an executing agency** that disburses the MLF grant in line with ExCom's decisions and therefore did not want to be inhibited by the World Bank's internal procedures *even though the client agreed at the time of signing the project agreement to conform to World Bank operational standards*. There is the need to be clear upfront of roles and expectations in project legal agreements. This is the root cause of the relationship issues between the OC and the World Bank that emerged during the project implementation.

Signing project agreements with the DEA on behalf of GoI, and acting through, eg, MOEF makes it unambiguous that DEA is the main interlocutor for the Bank. With the ODS-IV, the project agreement was signed with MOEF directly which gave room to the OC to refuse to deal with the Bank through the DEA.

The project should have implemented the establishment and maintenance of a knowledge website. During implementation, the project generated a lot of good practice

information that will be useful even beyond the project period. Even though CTC is phased-out for non-feedstock applications, there is information pertaining to the use of CTC substitutes. For instance, there are Environment, Health and Safety (EHS) issues with the substitutes that users will benefit from. Providing web access to the online knowledge and learning self-help materials such as those produced with GTZ support would help bridge knowledge gap with the handling of non-ODS solvent / process agent substitutes.

Setting the financial intermediary fees based mainly on disbursement levels might have limitations. The financial intermediary, IDBI, had a role of coordinating the conduct of the financial audits which in the case of this operation extended even beyond disbursements. As their management fees were based solely on disbursements, IDBI notes that they had to provide their services without a mechanism for compensation once disbursements were completed. Given their continued role, the IDBI notes that they incurred fixed costs for their staff and overheads more than 3 years after the bulk of the disbursements were completed.

MTR process should consider all aspects of the project design, including agreements and should initiate any agreed actions/restructurings. In this project, the MTR was done between November 2008 and February 2009, and along with the implementation support mission of the ODS III project that was being implemented concurrently. During the MTR, it was explicitly recognized that the funding that will be routed through the World Bank would be less than the US\$ 53.04 million that was originally included in the umbrella Grant Agreement. Once this was clear, all the agreements should have been reviewed and appropriate modifications should have made. In this case, the agreement between the IDBI and the World Bank was not revised and only done towards the end of the project period.

Draw on lessons from related operations from across the Bank to duly inform project design and to help address implementation challenges. Some other ODS operations from other regions across the Bank were encountering similar delays and difficulties with implementing the TA component at about the same time. Drawing on such experiences could have helped take more aggressive steps and not extend the project closing date three times.

Decision on canceling portion of project funds, when essential: By the MTR stage, the core of the PDO which was to reduce CTC production and consumption to zero by January 1, 2010 was near completion and considering that non-completion of the TA activities did not affect achievement of the PDO, the project team could have canceled the remaining project funds. Attempts to extend the project closing to implement the remaining TA component rather spurred strained relations between the Bank and the MOEF which could affect potential future operations

Annex 1. Project Costs and Financing

Table a: Project Cost by Component (in USD Million equivalent)

Components	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Agency Service Fee	1.04	0.78	75%
Sub-Grants:	50.0		
Sub-Grants (Other than Sub-grants for Former CFC Producers)		36.10	
Sub Grants to Former Producers on account of successful acceleration of the phase out of CFC Production		1.06	NA
Goods including equipment for Part C of the Project	0.03	0.06	200%
Consultants' services, training, workshops and supervision activities under Part C of the Project	1.04	1.20	115%
Operating Costs for Part C of the Project	0.93	0.74	80%
Amount cancelled as of January 2, 2014		13.10	
Total	53.04	53.04	

Table b: Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (USD millions)	Actual/Latest Estimate (USD millions)	Percentage of Appraisal
Borrower		0.00	0.00	.00
Multilateral Fund (MLF)		53.04	53.04	100.00

Annex 2. Outputs by Component

Component 1: Incremental Cost Compensation to Producers for CTC Production Reduction

As of January 1, 2010, the Government of India (GoI) had fulfilled its obligations under the MP and phased-out production and consumption of CTC used in non-feedstock applications, as detailed in the Table 3 of the main report).

The annual verification audit for 2011 was done in May 2012, when the Bank's audit team undertook field visits to the designated beneficiaries (The three primary beneficiaries were Chemplast Sanmar, Gujarat Alkalis and Chemicals, and SRF Limited) and feedstock users. The gross production reported for feedstock use was 17,740 MT in 2011. Total sales and use for feedstock purposes was 17,404 MT. The difference represents differences in stocks at closing and opening. As noted above, sales for non-feedstock use was nil, which confirmed that India was in compliance with production and consumption limits for 2011. This was the last verification audit that the Bank was tasked by the ExCom to conduct.

Component 2: Incremental Cost Compensation to CTC Users for Conversion to non-ODS Technologies

In June 2012, the OC has supported the technical and financial completion of 26 sub-projects in the CTC consumption sector. Three projects are being closed by IDBI due to the enterprises failing to submit appropriate documentation. The second installment (80%) was not paid to these 3 enterprises. However, since CTC is no longer available on the market, the enterprises can no longer be consuming CTC. Therefore, the main objective of even these sub-projects has been met. As the consumption for non-feedstock use is banned, all consumption sector enterprises are expected to have converted to non-CTC alternatives.

Component 3: Project Management and Technical Assistance

As a part of the Project Management, the functioning of the PMU throughout the project period was the output.

The following capacity building initiatives were implemented: (i) development and deployment of MIS, (ii) monitoring and audit verification framework protocols for phase-out in producing, consuming and storage facilities, (iii) awareness/skill-building of CTC producers and CTC consumers in non-feedstock application, (iv) amendment to the ODS Rules 2000 as required for the CTC sub-sector (v) training workshops for custom officials across the country, and (vi) targeted outreach activities to create awareness of CTC phase-out. All of these resulted in direct and indirect improvements in the capacity of the various Government agencies primarily the MoEFCC Ozone Cell, IDBI, the respective state Pollution Control Boards that participated in training sessions, Customs offices, and CTC producers and consumers involved.

In terms of outputs of the TA, during the April-May 2013 implementation support mission, the OC has also confirmed that the GoI had already put in place a monitoring system under the Ozone Rules to ensure that CTC production and consumption for controlled use will continue to be monitored by the government. The monitoring system, which is one of the outputs of the ODS IV project, requires all producers manufacturing CTC for feedstock use – not controlled by the MP – to report their CTC production, opening and closing stocks, and sales to feedstock users, on a quarterly basis to the Ozone Cell. CTC feedstock users are subject to similar reporting requirements. In addition, both producers and feedstock users are obliged to submit independent audits of CTC production and feedstock use on an annual basis. This system allows the OC to accurately confirm that no CTC produced is diverted to non-feedstock use.

Further information on the final outputs of the TA was not available.¹⁸ It is known that many of the TA activities relevant to this project were done under the ODS III project, which was implemented by the same PMU. Many of the TA activities were common and relevant to both the projects. The TA funds under the ODS III project were first used. The balance and those pertaining only to CTC phase-out was done under ODS IV.

¹⁸ The information for this Annex has been compiled using the aide-memoires and other documents. As meetings / discussions with the OC for the preparation of the ICR could not be held by time of writing, compiled information regarding the outputs of the third TA component, in particular, was not available.

Annex 3. Economic and Financial Analysis
(including assumptions in the analysis)

For ODS phase-out projects, the analysis of the economic soundness of the project could be either done through a cost-benefit analysis or a cost-effectiveness analysis. The benefits derived from all ODS phase-out projects are global in scope and thereby difficult to measure in monetary terms. Therefore, the cost-effectiveness analysis is preferred, as it does not require benefits to be quantified in monetary terms. In the cost-effectiveness analysis, unit costs are used for comparing the efficacy of interventions across countries. In this case, the comparison of the costs is based on the unit costs incurred per kg of ODP. And, cost effectiveness is defined as the amount of MLF grant per unit of ODS phased-out in ODP Kg.

The following table gives the compilation of the average cost of ODP phase-out achieved in other countries in all or in specific sectors.

Table c: Average cost of ODP phase-out achieved in other countries

Country	Sectors	Cost / Average Cost
China	All	US\$ 1.93 / kg ODP
China	CTC as process agent and CTC production	US\$ 1.00 / kg ODP
China	CTC in pharmaceuticals	US\$ 12.37 / kg ODP
China	CTC in foam sector	US\$ 4.46 / kg ODP
Malaysia	All	US\$ 10.19/kg ODP
Indonesia	All	US\$ 4.41/kg ODP
Philippines	All	US\$ 4.28/kg ODP
India	CFC	US\$ 3.54/kg ODP
India	Halon	US\$ 7.98/kg ODP
India	CTC	US\$ 2.30/ kg ODP

Source: Compiled primarily from China ODS Phase-out ICR Report, Dec 2013 and India CFC Production Phase-out ICR Report, June 2012. Pertains only to Bank-funded projects

The overall allocation for the CTC phase-out was US\$ 53.04 million (includes allocation to the World Bank and other multilateral / bilateral agencies). The ODP phased-out was 11, 553 ODP MT of the CTC production and 11, 505 ODP MT of CTC consumption. On the average, this works out to be US \$ 2.30/kg ODP in the CTC phase-out in India.

Annex 4. Bank Lending and Implementation Support/Supervisions Processes

Table d: Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Supervision/ICR			
Laurent Granier	Sr. Environmental Specialist	CCGIA	Team Leader (2012-14)
Ruma Tavorath	Senior Environmental Specialist	SASDI	Team Leader (2007-2012)
Bilal H. Rahill	Senior Manager	CESI2	Team Leader (2004-2007)
Dora Nsuwa Cudjoe	Environmental Specialist	SASDI	ICR Team Leader
Philip Beauregard	Senior Human Resources Officer	HRDCO	Legal
Martin Serrano	Senior Counsel	LEGES	Legal
Manoj Jain	Lead Financial Management Specialist	SARFM	FMS
Papia Bhatacharji	Sr Financial Management Specialist	SARFM	FMS
Atul Bhalchandra Deshpande	Senior Public Sector Specialist	AFTP3	FMS
Arun Manuja	Sr Financial Management Specialist	SARFM	FMS
Arvind Prasad Mantha	Financial Management Specialist	SARFM	FMS
Anantha Krishna Karur	Financial Management Analyst	SARFM	FMS
Atin Kumar Rastogi	Procurement Specialist	SARPS	Procurement
Santhanam Krishnan	Consultant	EASOS	Procurement
Kumaraswamy Sankaravadivelu	Consultant	SASDC	Procurement
Viraj Vithoontien	Senior Environmental Specialist	EASER	ODS Technologies
Sidney Thomas	Consultant	CESI2	ODS Technologies
Vaideeswaran Sankaran	Consultant	SASDI	ICR Author
Erik Pedersen	Consultant	EASER	ODS Technologies
Srinivas Ravindra	Consultant	SASDI	ODS Technologies
Shubhendu Mudgal	Consultant	SASHN	Environment Management
Bela Varma	Senior Program Assistant	SASDO	Program Support
Genevieve Maria Dutta	Program Assistant	SASDO	Program Support
Rachel S. Palmer	Program Assistant	SASDO	Program Support
Kumudni Choudhary	Program Assistant	SASDO	Program Support

Table e: Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY04	23.77	110.41
FY05	4.5	28.78
FY06	0.00	0.00
FY07	0.00	0.00
FY08	0.00	0.00
Total:	28.27	139.19
Supervision/ICR		
FY04	0.00	0.00
FY05	20.23	121.56
FY06	14.12	268.68
FY07	8.97	171.39
FY08	16.64	150.75
FY09	7.07	53.25
FY10	6.40	85.28
FY11	4.12	83.21
FY12	5.14	35.77
FY13	8.12	129.46
FY14	5.45	33.02
Total:	96.26	1132.37

Annex 5. Beneficiary Survey Results
(not applicable)

Annex 6. Stakeholder Workshop Report and Results
(not applicable)

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

The borrower did not prepare a separate evaluation of the project as required and did not provide comments on the draft ICRR prepared by the World Bank. The World Bank ICCR team held extensive discussions with the IDBI during preparation of the draft ICRR but it did not receive comments from the IDBI on the draft report shared with the MoEF.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders
(Not applicable)

Annex 9. List of Supporting Documents

1. MLF for the Implementation of the MP: Memorandum and Recommendations of the Country Director for India of the IBRD to the RVT, SAR on a Proposed Ozone Projects Trust Fund Grant (Report No.20613) June 7, 2000
 2. Sector Strategy for CTC
 3. All 21 ISRs
 4. Aide-Memoires/Management letters
 5. Ozone Projects Trust Fund (OTF) Grant Agreement (TF053458) December 10, 2004
 6. Amendment to the OTF Grant Agreement (TF053458) December 3, 2009/September 18, 2010/June 18, 2011/December 27, 2012/December 27, 2013
-