**UNITED NATIONS DEVELOPMENT PROGRAMME**
**Project of the Government of India**
**PROJECT DOCUMENT** 41505

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|---|---|---|
| Project Number | : | IND/PHA/42/INV/376/A/AS/34 |
| Project Title: | | CTC Consumption Phase Out in the Metal Cleaning Sub-Sector – UNDP Component |
| Duration: | | 2 years |
| Source of Funds | | AS – Implementation of the Montreal Protocol Sector Plans |
| Executing Agency: | | UNDP (Direct Execution) |
| Estimated Starting Date: | | 15 September 2004 |
| UNDP Inputs: | | US$ 2,500,000 (first of two funding tranches of a $5,000,000 programme) |

Brief Description: A CTC Phase-out Plan, financed by the Multilateral Fund in the amount of $52 million will completely phase-out carbon tetrachloride (CTC) production and consumption in India by December 2009. This project represents Government of Japan's bilateral contribution, through the Multilateral Fund, to phase out the use of up to 533 ODP tonnes of CTC used at four enterprises and their subsidaries in the metal cleaning sub-sector by end of 2005. This project will contribute to the total phase-out of the CTC Phase-out Plan. Funding tranches of $2,500,000 each will be made available in 2004 and 2005 respectively. CTC is used as cleaning solvent for high voltage switchgear, transportable and stationary electrical motors and oxygen producing equipment, piping and storage vessels in the steel plants, and in the manufacture of components such as copper tubes/coils, evaporators, air conditioners and brass tubes. CTC will be replaced by trichloroethylene (TCE).

Legal Context: This project document shall be the instrument referred to in the Standard Annex to project document as shown in Annex 10 and shall be governed by normal UNDP practices regarding project revisions/monitoring/evaluation and by special procurement procedures applicable to the Montreal Protocol Programme. The project will be implemented under DEX and in accordance with the Agreement between the Executing Committee of the Multilateral Fund for the implementation of the Montreal Protocol and UNDP signed on 21 August 1991, and the 2004 Annual Implementation Programme approved by the Executive Committee at its Forty-second Meeting (29 March – 2 April 2004) held in Montreal, Canada, and also in accordance with the provisions of the Agreement between the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol and the Government of India (Document UNEP/OzL.Pro/ExCom/41/87 Annex XVIII).

The 2004 annual funding tranche was approved at the 42nd Executive Committee Meeting and transferred to UNDP on 20 May 2004. 2005 funding tranche will be approved at the first Executive Committee Meeting of 2005 and the project budget will be subsequently increased to reflect the full funding of $5,000,000.

| On behalf of the | Signature | Name and Title | Date |
|---|---|---|---|
| UNDP | | Resident Representative | 17/11/04 |
| Government (DEA) | | P. K. Deb Joint Secy. | 5-11-04 |
| MOEF | | Usha Chandrasekhar<br>Director, Ozone Cell<br>Ministry of Environment & Forests<br>Government of India<br>New Delhi | 17.9.04 |

# PROJECT COVER SHEET

| | | | |
|---|---|---|---|
| **COUNTRY:** | INDIA | **IMPLEMENTING AGENCY:** | UNDP |

**PROJECT TITLE:** **Conversion from Carbon Tetrachloride (CTC) as a Cleaning Solvent to Trichloroethylene (TCE) at four enterprises and its subsidiaries in the Metal Cleaning Sub-sector in India (Steel Authority of India Limited; Western Engineering Co., Nissan Copper Pvt. Ltd. and Hind Metal & Tubes)**

| | | |
|---|---|---|
| **IMPLEMENTATION MODALITY:** | DEX (Direct Execution) | |
| **SECTOR:** | Solvent | |
| **SUB-SECTOR:** | Metal Cleaning | |
| **ODS USE IN SECTOR:** | | |
| **Baseline (average 1998 - 2000)** | 11,505 | ODP tonnes - Consumption |
| **Current (2001)** | 6,662 | ODP tonnes - Consumption |
| **ODS USE AT ENTERPRISE (Average of 2000-02)** | 412 | ODP tonnes |
| **PROJECT IMPACT:** | 412 | ODP tonnes |
| **PROJECT DURATION:** | 18 | months |
| **PROJECT COSTS:** | | |
| Incremental Capital Cost: | US$ | 3,943,878 |
| Contingency (10%): | US$ | 394,388 |
| Incremental Operating Costs: | US$ | 661,734 |
| Total Project Cost: | US$ | 5,000,000 |
| **LOCAL OWNERSHIP:** | 100% | |
| **EXPORT COMPONENT:** | 0 | |
| **REQUESTED GRANT:** | US$ | 5,000,000 |
| **REQUESTED AGENCY FUNDING:** | US$ | 560,000(UNDP$450,000) |
| **TOTAL COST OF PROJECT TO MULTILATERAL FUND:** | US$ | 5,560,000 |
| **COST EFFECTIVENESS (GRANT/OD KG):** | US$/Kg | 12.14 |
| **STATUS OF COUNTERPART FUNDING:** | Committed | |
| **PROJECT MONITORING MILESTONES INCLUDED:** | Yes | |
| **NATIONAL COORDINATING AGENCY:** | Ozone Cell, Ministry of Environment and Forests | |

## PROJECT SUMMARY

The CTC Phase-out Plan of India will completely phase-out CTC production and consumption from the baseline of 11,553 and 11,505 ODP tonnes respectively. The project, representing Government of Japan's bilateral contribution through the Multilateral Fund, will phase out the use of up to 533 ODP tonnes of carbon tetrachloride (CTC) used at four enterprises and its subsidaries in the metal cleaning sub-sector: specifically seven of the nine plants.at Steel Authority of India Limited (SAIL), two plants at Western Engineering Co. (WEC), one plant each at Nissan Copper Pvt. Ltd. (NCPL), and Hind Metal & Tubes (HMT). CTC is used at SAIL as cleaning solvent for high voltage switchgear, transportable and stationary electrical motors and oxygen producing equipment, piping and storage vessels. At WEC, NCPL and HMT, CTC is used as cleaning solvent in the manufacture of components such as copper tubes/coils, evaporators, air conditioners and brass tubes. CTC will be replaced by trichloroethylene (TCE). Required equipment includes vapour degreasers, cold solvent spray booths, mobile spray cleaners and distillation units for solvent reclamation. Incremental Capital Costs of $4,338,266 will cover major equipment such as top loading vapour degreasers, cold solvent cleaning stations and solvent distillation units, management coordination, monitoring and verification, technical cleaning process and equipment support, contingency of 10% for these ten (10) plants, and $332,891 reserved to cover additional activities at other SMEs to be identified. Net incremental operating costs amounts to US$ 661,734.

Country studies and the country program prepared during 1993 have identified the sector as a high priority area.

## IMPACT OF THE PROJECT ON COUNTRY'S MONTREAL PROTOCOL OBLIGATIONS

The project will eliminate 412 ODP tonnes of CTC consumption from the solvent sector.

# PROJECT OF THE GOVERNMENT OF INDIA CONVERSION FROM CARBON TETRACHLORIDE (CTC) AS A CLEANING SOLVENT TO TRICHLOROETHYLENE (TCE) AT FOUR ENTERPRISES AND ITS SUBSIDIARIES IN THE METAL CLEANING SUB-SECTOR IN INDIA

## 1.0 PROJECT OBJECTIVE

The CTC Phase-out Plan of India will completely phase out carbon tetrachloride (CTC) production and consumption from the baseline of 11,553 and 11,505 ODP tonnes respectively prior to 1 January 2010, in compliance with the Montreal Protocol schedules. This project represents the Government of Japan's bilateral contribution, through the Multilateral Fund, towards India's commitment to phase-out consumption and production of the Montreal Protocol controlled substance carbon tetrachloride (CTC) prior to 1 January 2010, in compliance with Protocol schedules. To achieve these targets, a series of investment, non-investment, technical assistance, and capacity building activities will be jointly implemented by the World Bank and bilateral donors: France, Germany and Japan.

In its role as cooperating implementing agency, the Government of Japan, through the Multilateral Fund, will provide bilateral contribution in the amount of US$5 million, plus $560,000 as agency support cost, to assist India to phase-out the use of up to 533 ODP tonnes of CTC at four enterprises and its subsidiaries: Steel Authority of India Limited (SAIL), Western Engineering Co. (WEC), Nissan Copper Pvt. Ltd. (NCPL) and Hind Metal and Tubes (HMT), a contingency amount of $332,891 has been allocated to cover additional activities that may be added for other SMEs to be identified at a later stage. This project forms an integral effort towards phase-out of consumption in the metal cleaning sub-sector in India. With the concurrence of the Government of India, the Government of Japan has designated the Montreal Protocol Unit of the United Nations Development Programme to implement the phase-out activities.

The objective of this project is to phase out up to 221.5 ODP tonnes of CTC used at six of the nine plants of SAIL as cleaning solvent for high voltage switchgear, transportable and stationary electrical motors and oxygen producing equipment, piping and storage vessels, (the remaining two plants report no consumption of CTC); 38.5 ODP tonnes of CTC used at two plants of WEC as cleaning solvent in the manufacture of components such as copper tubes coils, evaporators, and air conditioners; 99 ODP tonnes of CTC used at NCPL as cleaning solvent in the manufacture of copper tubes/coils; 53 ODP tonnes of CTC used at HMT as cleaning solvent in the manufacture of copper and brass tubes. CTC will be replaced by trichloroethylene (TCE). Required equipment includes vapour degreasers, cold solvent spray booths, mobile spray cleaners and distillation units for solvent reclamation

## 2.0 INSTITUTIONAL FRAMEWORK

India ratified the Vienna Convention in March 1991 and the Montreal Protocol in June 1992. In 1993, India prepared a detailed Country Programme to phase out ODS in accordance with its national industrial development strategy and in line with the Montreal Protocol control schedule. The Country Programme was aimed at ensuring that the phase out will be effected without undue economic burden to both consumers and industry and provided India with the opportunity to access the Montreal Protocol Financial Mechanism. The guiding principles of the Country Programme are, to minimize economic dislocation as a result of ODS phase-out, minimize industrial obsolescence, maximize indigenous production, promote one-step phase-out and to emphasize decentralized management.

The Government of India has entrusted the work relating to ozone layer protection and implementation of the Montreal Protocol, to the Ministry of Environment and Forests (MOEF), which is the coordinating Ministry in India for all matters concerning the Montreal Protocol. The MOEF has set up an Ozone Cell, as the national unit to manage and coordinate India's country programme for ODS phase-out.

The MOEF has established an empowered Steering Committee, which comprises of high-level representation from other line ministries and is primarily responsible for formulating and implementing policies and procedures pertaining to India's compliance with the Montreal Protocol. The Steering Committee is supported by three Standing Committees, namely the Technology and Finance Standing Committee (which reviews and endorses ODS phase-out proposals and activities), Standing Committee for Small Scale Industry (which is entrusted with advising on ODS phase-out and compliance by the crucial small industries sector) and Standing Committee for Monitoring and Evaluation (which advises and monitors implementation).

Recognizing the importance of establishing an effective policy framework for the successful implementation of the Country Programme, MOEF has initiated an aggressive programme to create such a framework to reinforce the various ODS phase out measures:

## 2.1 Regulatory Measures

a) The Steering Committee, since its inception, has instituted an elaborate legal procedure for review and endorsement of project proposals, for submission to the Multilateral Fund for funding. Each enterprise seeking assistance is required to make a formal application to MOEF in a prescribed format along with legally binding documentation and certifications for establishing its eligibility, CFC consumption and financial viability. Each proposal is reviewed by the Technology and Finance Standing Committee for technical and policy issues and if acceptable, recommended for acceptance and formal endorsement.

b) Trade in controlled substances with countries not party to the Montreal Protocol has been prohibited.

c) The export of Annex A and Annex B substances to Non-Article 5 Parties has been prohibited.

d) The import and export of all Annex A and Annex B substances are subject to licensing.

## 2.2 Fiscal Measures

a) Full exemption from payment of Customs and Excise tariffs on capital goods required to implement ODS phase out projects funded by the Multilateral Fund. The exemption from Customs and Excise tariffs has been extended to ODS phase-out projects, which were eligible for funding under the Multilateral Fund, whether or not such enterprises actually sought assistance from the fund. This will also cover projects submitted for retroactive financing. The benefit was available subject to the condition that enterprises should give a clear legal commitment to stop using ODS in all future manufacturing operations after the projects were implemented.

b) The duty exemptions were also extended to items of recurring use, including non-ODS alternatives for a duration for which, incremental operating costs were committed by the Multilateral Fund in approved projects.

c) The duty exemptions were also extended to capital goods required for establishing new capacity with non-ODS technology.

d) Indian financial institutions have been advised not to finance/refinance new ODS producing/consuming enterprises.

e) The Tariff Advisory Committee (a statutory body under the Insurance Act, 1938) has decided to grant suitable discounts on fire insurance premiums if alternative agents are used to replace halons.

## 2.3 Legislation

In exercise of the powers conferred under sections 6, 8 and 29 of the Environment Protection Act of 1986, Government of India formulated the draft Ozone legislation called the Ozone Depleting Substances Rules, which were published in the Gazette of India in 1998 for public comments and also circulated in the industry for advance intimation and comments. These have been since been officially notified and have formally come in to effect from January 2000. The provisions of this comprehensive legislation are summarized as below:

*ODS Production*

- Mandatory registration with MOEF
- Restriction on production levels as per "base level" and specified time-bound reductions.
- Prohibition on creating new capacity or expansion of capacity
- Export restricted to countries who are signatory to the Montreal Protocol

*ODS Consumption*

- Ban on new capacity or expansion of capacity for production of ODS based equipment.
- Mandatory registration with designated authorities
- Declaration requirement in prescribed format, to the seller, at the time of procurement of ODS

*ODS Trade*

- Mandatory registration for Exporters & Importers with designated authorities
- No sales without license to persons/organizations which have not intimated the Government of India about use of ODS based equipment (including compressors).

**General**

- Mandatory registration for reclamation and destruction of ODS. All registrations will be valid for specified periods, after which, they are required to be renewed.
- Every person who produces, uses, imports, sells, stocks, reclaims or destroys ODS has to maintain records and file reports as specified.
- Every entity, which has received technical and/or financial assistance from any international agency or financial assistance from Government of India including duty exemptions, is required to maintain records and file reports as specified.

## 3.0 SECTOR BACKGROUND

The Government of India ratified the Montreal Protocol (MP) on Substances that Deplete the Ozone Layer on September 17, 1992. India has been classified as a country operating under Article 5, paragraph 1 of the Protocol. The Ministry of Environment and Forests (MoEF) has been empowered by the Government of India to have overall responsibility for implementation of Montreal Protocol related activities in India. The MoEF has established an Ozone Cell with operational responsibility for implementation of the Protocol-related activities in India.

The Country Program for the Phase-out of Ozone Depleting Substances was submitted for the Executive Committee's consideration in 1993. The 1993 Country Program reported net CTC production and consumption of 1,958 ODP tons and 5,097 ODP tons in 1992, respectively. These figures do not include production and consumption for feedstock applications.

**Table 1: India CTC Consumption and Production Data as per Article 7 of the Montreal Protocol**

(ODP tonnes)

| | 1989 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 |
|---|---|---|---|---|---|---|---|---|---|---|
| Consumption | 4,758 | 5,097 | 10,600 | 8,790 | 3,112 | 8,776 | 7,876 | 6,270 | 16,099 | 12,147 |
| Production | 4,758 | 1,958 | (1,036) | 8,433 | (21,788) | (19,787) | 7,876 | 6,614 | 15,897 | 12,147 |

As a Party to the Montreal Protocol, India is required to submit its annual production and consumption data for all controlled substances under the Montreal Protocol to the Ozone Secretariat of UNEP in Nairobi (Article 7 of the Montreal Protocol). The data reported by the Ozone Cell on behalf of the Government of India, as required by Article 7 of the Protocol, particularly the data for 1998 – 2000, was used for establishing the baseline levels for production and consumption of CTC during the compliance period. The official baseline consumption and production levels for India are 11,505 ODP tons and 11,553 ODP tons, respectively.

**Table 2: Average CTC Consumption and Production (per Article 7) During 1998 – 2000**

| Reported Data (Article 7) | 1998 | 1999 | 2000 | Baseline |
|---|---|---|---|---|
| Consumption (ODP tonnes) | 6,270 | 16,099 | 12,147 | 11,505 |
| Production (ODP tonnes) | 6,614 | 15,897 | 12,147 | 11,553 |

CTC is an ozone depleting substance listed in Annex B, Group II, of the Montreal Protocol. The phase-out schedule of this chemical, that is applicable to Article 5 countries, is as follow:

Consumption

85% reduction of CTC consumption by 1 January 2005;
100% reduction of CTC consumption by 1 January 2010;

Production

85% reduction of CTC production by 1 January 20051;
100% reduction of CTC production by 1 January 20102.

The latest CTC consumption and production levels (2001)3 are 42,639 ODP tons and 18,105 ODP tons, respectively. To be in compliance with the Montreal Protocol, India must reduce its consumption and production levels for non-feedstock applications to 1,725.75 ODP tons and 1,733 ODP tons, by 1 January 2005.

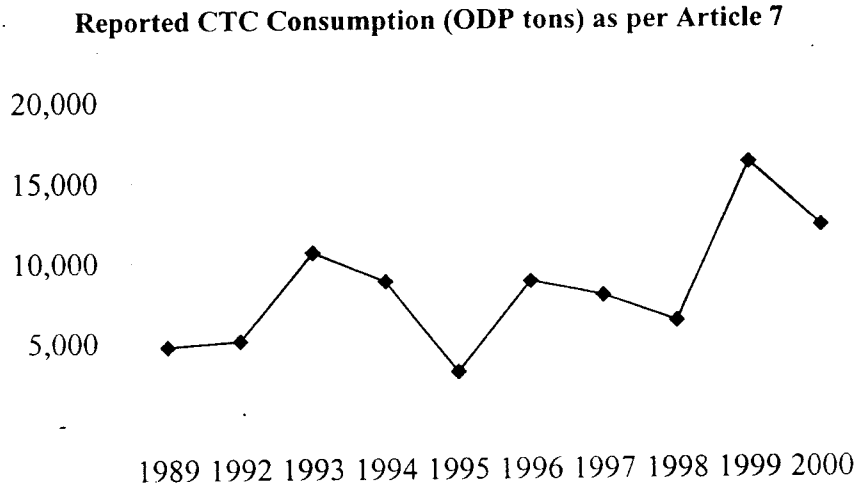



Figure 1 CTC consumption for non-feedstock applications reported by the Government of India as per Article 7 of the Montreal Protocol

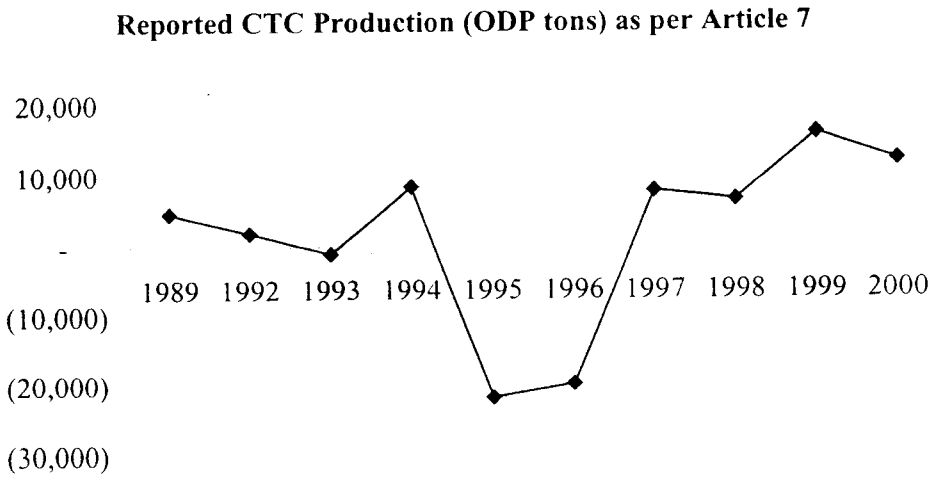



Figure 2 CTC production for non-feedstock applications reported by the Government of India as per Article 7 of the Montreal Protocol

[1] Allowance for production to meet the basic domestic needs of Article 5 parties: 10 percent of base level production.
[2] With possible essential use exemptions.
[3] Production and consumption figures include demand for feedstock and non-feedstock applications.

The definition of production as per Article 1 of the Montreal Protocol is the total production level minus the total tonnage destroyed by technologies approved by the Parties and minus the total tonnage consumed as feedstock. Based on this definition, the reported figures could vary significantly depending on the level of CTC imported for feedstock applications. However, for the purpose of this study and for the purpose of establishing a production and consumption baseline, the reported figures for 1998 to 2000 are used for the development of this CTC phase-out plan.

## 2.4 CTC Consumption and Production in India

The demand for CTC in India for feedstock and non-feedstock applications is more than 40,200 MT per year (average demand during the period from 1998 to 2000). CTC is used as a feedstock as well as a process agent and solvent. The demand is met by both the local production of CTC and imported CTC. The average production level of CTC during 1998 – 2000 is about 19,000 MT, which is supplemented by additional imports of 21,300 MT per year (as per survey results).

In average, about 33,800 MT of the total supply of 40,200 MT was used in the applications considered as feedstock[4] by the Montreal Protocol. Major feedstock applications in India include the use of CTC for the production of CFCs, and the use of CTC for the production of DV acid chloride, an intermediate material for the production of cypermethrin and other synthetic pytheroids. A small amount of CTC was exported in 1998 and 1999. However, export of CTC has stopped since 2000. In addition, small consumption of CTC as laboratory reagents was also identified. The average feedstock use for the production of CFC during the period from 1998 to 2000 is 27,000 MT, and 6,800 for the production of DV acid chloride[5].

The remaining amount of CTC (40,200 MT less 33,800 MT used as feedstock, laboratory reagents and export) is consumed by the process agents industry and the solvent sector in India. The average consumption of CTC in the process agents industry, between 1998 and 2000, is approximately 2,600 MT. A balance of 3,800 MT of CTC is believed to be used in the solvent sector.

In 2001, the total quantity of CTC locally produced was 16,459 MT. This quantity was supplemented by imports of another 24,661 MT. On the demand side, the total CTC requirement for feedstock applications was 32,649 MT. About 6,056 MT was consumed in the applications considered as consumption by the Montreal Protocol. There were about 2,415 MT of CTC unaccounted for by the survey. This could represent the level of inventory maintained by distributors and dealers. About 1,740 MT of the total identifiable consumption of 6,056 MT was for meeting the demand in the process agents industry. The total consumption of CTC in the solvent sector in 2001 was 4,314 MT.

**Table 3: Estimated CTC Consumption and Production in 2001**

| | MT | Total MT |
|---|---|---|
| Supply | | 41,120 |
| Domestic Production | 16,459 | |
| Import | 24,661 | |
| Demand | | 38,705 |
| Feedstock Applications | 32,649 | |
| Consumption* | 6,056 | |

*An estimate based on identifiable consumption

Phase-out activities in the solvent sector include conversion of CTC consuming technologies in the chemical solvent, metal cleaning, and textile industry. All CTC phase-out activities in the chemical solvent sub-sector will be implemented through the World Bank. It is planned to complete the phase-out activities in this sub-sector before the end of 2005. When completed, activities undertaken in this sub-sector will lead to permanent phase-out of 770 ODP tons of CTC.

[4] Feedstock is defined as the use of controlled substances as raw materials for manufacturing of other chemicals.
[5] DV acid chloride is an intermediate chemical for production of cypermethrin and other synthetic pytheroids.

Activities in the metal cleaning and textile industry are expected to involve conversion at four large CTC consuming enterprises and a number of small CTC users in the metal cleaning and textile industry. The four large CTC consuming enterprises are Nissan Copper Pvt., Western Engineering, Steel Authority of India Limited, and Hindustan Metals and Tubes. The total funding to support conversion at these enterprises will be drawn from the bilateral contribution of the Government of Japan. The Government of Japan with concurrence of the Government of India will assign UNDP to undertake implementation of these activities on its behalf. Conversion at these enterprises is expected to complete before the end of 2005. When completed, 533 ODP tons of CTC will be permanently phased out.

CTC phase-out activities in small users in the metal cleaning and textile industries will be jointly implemented by the three bilateral partners (France, Germany, Japan) and the World Bank. Germany is expected to take a leading role in coordinating these activities. Because of the large number of potential beneficiaries to be covered by these activities, it is anticipated that the total phase-out in the small scale users would be achieved by the end of 2009. When completed, 3,462 ODP tons of CTC will be permanently phased out.

| Sector | Impact (ODP tons) | Completion |
|---|---|---|
| Process Agent Sector | 1,243 | End of 2005 |
| Solvent (Chemical) | 770 | End of 2005 |
| Solvent (Metal) | 533 | End of 2005 |
| Solvent (small users for metal cleaning and textile) | 3,462 | End of 2009 |

## 4.0 ENTERPRISE BACKGROUND

### 4.1 Steel Authority of India Limited

With a production capacity of 12 million tonnes of crude steel annually, Steel Authority of India Limited (SAIL) is India's largest and one of the world's leading steel producers. Having 100% Indian equity, its turnover in 2002-03 was over Rs. 190 billion (US $4 billion). SAIL has nine major units, five integrated and four special steel plants.

The five integrated steel plants are located at:

- Bhilai Steel Plant (BSP) in Bhilai, Chhattishgarh
- Bokaro Steel Limited (BSL) in Bokaro, Jharkhand
- Durgapur Steel Plant (DSP) in Durgapur, West Bengal
- Rourkela Steel Plant (RSP) in Rourkela, Orissa
- Indian Iron & Steel Company (IISCO), a subsidiary in Burnpur, West Bengal

The four alloy and special steel plants are located at:

- Alloy Steels Plant (ASP) in Durgapur, West Bengal
- Maharashtra Elektrosmelt Limited (MEL), a subsidiary in Chandrapur, Maharashtra
- Salem Steel Plant (SSP) in Salem, Tamil Nadu
- Visvesvaraya Iron and Steel Limited (VISL) in Bhadravati, Karnataka

### 4.2 Western Engineering Co.

Western Engineering Co, New Delhi and Srinagar plants, (WEC) has been supplying heating, ventilation, air conditioning (HVAC) and refrigeration plants and parts for the last 35 years. It is a 100% Indian entity. WEC has two production units at Delhi and Srinagar, (Jammu & Kashmir). Operations take place in Plot No 8, Friends Colony, Industrial Area, G.T. Road, Shahdara, Delhi and 270, Nursingarh, Srinagar, J & K. The company was incorporated in 1964 with its head quarters at 3785, Subhash Marg, Darya Ganj, New Delhi-110002. The total manpower of these two plants is 150 and there is one shift worked per day for most of the operations in the plants.

### 4.3 Nissan Copper Pvt. Ltd.

Nissan Copper Pvt. Ltd, Umbergaon, Gujarat, (NCPL), a 100% Indian entity, produces non-ferrous tubes, pipes and coils. These products are drawn from raw stock (mother tubes) at its plant in J 20, GIDC, Umbergaon, District

Valsad, Gujarat. The company has its head quarters at 8, Badrika Ashram, 1st Khetwadi Lane, Bombay-400004. NCPL was established in 1989. The total manpower of the plant is 90 and there are 3 shifts working per day in most of the operations in the plant.

The company primarily produces seamless solid drawn bright-annealed copper tubes and coils of continuous length up to 15 meters.

### 4.4 Hind Metal & Tubes

Hind Metal and Tubes (HMT) Umbergaon, a 100% Indian entity, produces non-ferrous tubes. These products are drawn from raw stock (mother tubes) at its plant in A/2, 228/1, GIDC, Umbergaon, Dist. Valsad, Gujarat. The company has its office at 20, Kandivali Suresh Baug, Co-Op Housing Society Ltd, 249, Mathuradas Road, Kandivali (W), Bombay-400067. HMT was established in 1988. The total manpower of the plant is 28. Two shifts are worked per day, six days a week in most of the operations in the plant.

The company primarily produces seamless solid drawn copper and brass tubes of length up to 15 meters. Copper tube products are for the refrigeration industry and brass tubes are for furniture, ballpoint pen, stove burners and decorating purpose.

## 5.0 PROJECT DESCRIPTION

### 5.1 Steel Authority of India Limited (SAIL)

Steel Authority of India Limited produces saleable steel for a variety of applications. CTC is relied upon extensively as an industrial solvent in support of the production processes. Specific uses include cleaning high voltage switchgear, transportable and stationary electrical motors and oxygen producing equipment, piping and storage vessels. For these purposes CTC has several very useful characteristics including being non-flammable, strong cleaning power, fast evaporation rate, no post-evaporation residue, and low cost. Unfortunately, it is very toxic, believed to be carcinogenic and known to deplete the ozone layer with a high ODP.

#### 5.1.1 Solvent Consumption

CTC consumption at the nine major units can be seen in Table 4:

**Table 4: CTC Consumption in Metric Tonnes**

| Time / Plant | 1999-2000 | 2000-2001 | 2001-2002 | 3 year average |
|---|---|---|---|---|
| Bhilai | 124 | 120 | 95 | 113 |
| Bokaro | 20 | 21 | 31 | 24 |
| Durgapur | 11 | 11 | 9 | 10 |
| Rourkela | 40 | 39 | 43 | 41 |
| IISCO | 11 | 11 | 9 | 10 |
| Alloy | 0 | 0 | 0 | 0 |
| Maharashtra | 0 | 0 | 0 | 0 |
| Salem | 3 | 3 | 3 | 3 |
| Visvesvaraya | 0 | 0 | 0 | 0 |
| Total | 209 | 205 | 190 | **201** |

The baseline for CTC use is therefore the average of the three years, that is, 201.3 metric tonnes/yr (221.5 ODP tonnes/yr).

### 5.1.2 Proposed Cleaning Processes and Requirements

TCE will be used as alternative solvent for high voltage switchgear, transportable and stationary electric motors and cleaning applications at oxygen plants. Table 5 below provides a breakdown on equipment requirements:

**Table 5: Equipment Requirements**

| Cost Item (US$ in thousands) | Required Cleaning Equipment | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Electrical Motor Repair Shops | | | | | | Stationary Motors | | Oxygen Plants | | | | | |
| | 1.0m x 1.0m x 1.5m basket VD* with still | 1.0m x 1.5m x 2.5m basket VD* with still | Hoist | Cold Solvent Cleaning Station | Safety shower & eyewash | Shop modificat-ions (civil work) | Exhaust fans | Spray wands | 1.0m x 1.0m x 1.5m basket VD with still | Hoist | Mobile spray apparatus | Still and transfer pumps | Safety shower & eyewash | Shop modificat-ions (civil work) |
| Plant | | | | | | | | | | | | | | |
| Bhilai | 1 | 1 | 2 | 2 | 2 | 2 | 12 | 12 | 2 | 2 | 1 | 2 | 2 | 2 |
| Bokaro | 1 | 1 | 2 | 1 | 2 | 1 | 8 | 8 | 1 | 1 | 1 | 1 | 1 | 1 |
| Durgapur | 0 | 1 | 1 | 1 | 1 | 1 | 8 | 8 | 1 | 1 | 1 | 1 | 1 | 1 |
| Rourkela | 1 | 1 | 2 | 1 | 1 | 1 | 12 | 12 | 2 | 2 | 1 | 2 | 2 | 2 |
| IISCO | 0 | 1 | 1 | 1 | 1 | 1 | 8 | 8 | 1 | 1 | 1 | 1 | 1 | 1 |
| Alloy | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Maharashtra | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Salem | 1 | 0 | 1 | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 |
| Visvesvaraya | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |

* VD = Vapour Degreaser

## 5.2 Western Engineering Co. (WEC)

WEC produces a large variety of cooling and heating systems. CTC is relied upon as the industrial solvent in support of their production processes. Specific uses include the cleaning of tubes between various steps of the manufacturing process and final cleaning of both components and final products. For these purposes CTC has several very useful characteristics including being non-flammable, strong cleaning power, fast evaporation rate, no post-evaporation residue, and low cost. Unfortunately, it is very toxic, believed to be carcinogenic and known to deplete the ozone layer with a high ODP.

### 5.2.1 Solvent Consumption

CTC consumption can be seen in Table 6.

**Table 6: CTC Consumption in Metric Tonnes/Year**

| Year | CTC consumption (metric tonnes/year) | | |
|---|---|---|---|
| | Delhi | Srinagar | Total |
| 2000 | 20 | 15 | 35 |
| 2001 | 19 | 10 | 29 |
| 2002 | 25 | 16 | 41 |

The baseline for CTC use is therefore the average of the three years, that is, 35 metric tonnes/yr (38.5 ODP tonnes/yr).

### 5.2.2 Proposed Cleaning Processes and Requirements

TCE is recommended for cleaning needs at WEC. Table 7 below provides a breakdown on equipment requirements:

**Table 7: Equipment Requirements**

| Required Cleaning Equipment | | | | |
|---|---|---|---|---|
| 1.0m x 1.5m x 3.0m basket Vapour Degreaser (VD) with still | Hoist | Cold Solvent Cleaning Station | Safety shower & eyewash | Shop modifications (civil work) |
| 2 | 2 | 2 | 2 | 2 |

## 5.3 Nissan Copper Pvt. Ltd. (NCPL)

NCPL produces non-ferrous tubes and coils in a large variety of sizes for several applications. Carbon tetrachloride (CTC) is relied upon as the industrial solvent in support of their production processes. Specific uses include the cleaning of tubes between various steps of the extrusion process and final cleaning of both tubes and coils. CTC is also used to clean the vertical bright annealing ovens between batches. For these purposes CTC has several very useful characteristics including being non-flammable, strong cleaning power, fast evaporation rate, no post-evaporation residue, and low cost. Unfortunately, it is very toxic, believed to be carcinogenic and known to deplete the ozone layer with a high ODP.

### 5.3.1 Solvent Consumption

CTC consumption can be seen in Table 8:

**Table 8: CTC Consumption in Physical Tonnes**

| Year | Copper tubes/ coils (tonnes) | CTC, (tonnes) |
|---|---|---|
| 1999-2000 | 545 | 75 |
| 2000-2001 | 554 | 85 |
| 2001-2002 | 622 | 110 |

The baseline for CTC use is therefore the average of the three years, that is, 90.00 metric tonnes/yr (99.00 ODP tonnes/yr).

### 5.3.2 Proposed Cleaning Processes and Requirements

TCE is recommended for both cleaning needs at NCPL. Table 9 below provides a breakdown on equipment requirements:

**Table 9: Equipment Requirements**

| Required Cleaning Equipment | | | | | | |
|---|---|---|---|---|---|---|
| Product Cleaning | | | | | Bright-annealing oven cleaning | |
| 1.0m x 1.0m x 16m basket VD with still | Hoist | Cold Solvent Cleaning Station | Safety shower & eyewash | Shop modifications (civil work) | Oven liner | Safety shower & eyewash |
| 1 | 1 | 1 | 1 | 1 | 3 | 1 |

* VD = vapour degreaser

## 5.4 Hind Metal & Tubes (HMT)

HMT produces non-ferrous tubes in a variety of sizes for several applications. Carbon tetrachloride (CTC) is relied upon as the industrial solvent in support of their production processes. CTC is used to clean tubes between various steps of the extrusion process as well as final cleaning. For this purpose CTC has several very useful characteristics including being non-flammable, strong cleaning power, fast evaporation rate, no post-evaporation residue, and low cost. Unfortunately, it is very toxic, believed to be carcinogenic and known to deplete the ozone layer with a high ODP.

### 5.4.1 Solvent Consumption

CTC consumption can be seen in Table 10:

**Table 10: CTC Consumption in Metric Tonnes**

| Year | Tubes (tonnes) | CTC, (tonnes) |
|---|---|---|
| 1999-2000 | 380 | 55 |
| 2000-2001 | 380 | 45 |
| 2001-2002 | 360 | 44 |
| **Total** | **1,120** | **144** |
| **Average** | **373** | **48** |

The baseline for CTC use is therefore the average of the three years, that is, 48 metric tonnes/yr (53 ODP tonnes/yr).

### 5.4.2 Proposed Cleaning Processes and Requirements

TCE is recommended for cleaning at HMT. Table 11 below provides a breakdown on equipment requirements:

**Table 11: Equipment Requirements**

| Required Cleaning Equipment | | | |
|---|---|---|---|
| Product Cleaning | | | |
| 1.0m x 1.0m x 16m basket Vapour Degreaser with still | Hoist | Safety shower & eyewash | Shop modifications (civil work) |
| 1 | 1 | 1 | 1 |

## 6.0 PROJECT COSTS

The project costs refer to all costs including incremental operating costs. As shown in Table 12, the total project cost of US$5,000,000 was calculated as the incremental capital cost of US$ 4,327,663 plus net incremental operating costs of US$672,337 for 4 years discounted at 10%.

### 6.1 Incremental Capital Cost (ICC)

As given in Annex 1, the total incremental capital cost is US$ 4,338,266. The major components of this cost included technical cleaning process support, equipment support, management, coordination, monitoring and verification, purchase and installation of equipment to permit the conversion to TCE, solvent and 10% contingency.

### 6.1.1 Cleaning Process and Equipment Support

As previously explained the change from CTC to TCE needs careful study and process standardisation. Material compatibility testing will be required to ensure TCE is not too aggressive for electrical components such as motor winding insulation. The ability to remove all traces of TCE from the different oxygen system components must be ensured. A standardised method must be developed and instituted to measure whether all TCE has been removed. If these conditions cannot be met then another solution will be required for large portions of the oxygen system that are cleaned in place. Standardised testing procedures need to be established and instituted to meet existing cleanliness standards.

Pre-commissioning of complex equipment should be carried out at the site of the Original Equipment Manufacturer (OEM) prior to shipment. Prior to shipment of equipment, batches of actual work-pieces from the factory should be sent to OEM to clean with the proposed alternative and returned to the factory to evaluate if it meets the cleanliness requirements. If the pieces are too heavy to transport, then the work pieces are to be simulated. An expert from the OEM should be present during the installation and start-up at the eleven plants. The existing engineers, operators and maintenance personnel will be trained in operating and maintaining the new equipment.

### 6.1.2 Technical Consultancy

Technical consultancy will be required to research, propose and document alternative selection. Equipment specifications will be required for the purchase of custom cleaning equipment described in Tables 5, 7, 9 and 11. Also, staff training is required in safety, health and environmental aspects of TCE use.

### 6.1.3 Equipment to be Purchased and Installed

Equipment to be purchased is outlined in Tables 5, 7, 9, and 11. The project includes funding to prepare the sites for equipment installation. Scope of this work includes providing a foundation with sealed containment, utilities, and existing equipment rearranges.

## 6.2 Incremental Operating Costs/Savings (IOC/IOS)

If the project were not undertaken, the annual operating cost would be US$ 504,160. . The annual operating cost of the implemented project will be US$ 712,910, resulting in annual operating cost of US$ 208,750. Given an equipment lifetime of 10 years and discount rate of 10%, the net present value of the first 4 years of incremental operating costs is US$ 661,734. The details are provided in Annex 2.

## 6.3 Revenues

This project provides the four enterprises with US$ 208,750 in net annual incremental operating costs per year.

## 6.4 Local Ownership Ratio

All these four enterprises are 100% Indian owned therefore, the total proposed Multilateral Fund financing, including $332,891 reserved for additional SMEs, is equal to the total incremental cost of US$ 5,000,000.

## 6.5 Exports

Exports are nil.

## 6.6 Proposed MLF grant

The proposed MLF grant for this project is calculated as follows:
To the total incremental capital cost of US$ 4,338,266 was added the net present value of the incremental operating costs over the first 4 years of the project, which is US$ 661,734. The sum was then multiplied by the 100% Indian ownership ratio of these four enterprises, to yield the resultant grant of US$ 5,000,000. Exports to non-Article 5 countries are less than 10% so the grant remains at US$ 5,000,000.

An amount of $332,891 was reserved within the total project cost of $5,000,000, to be utilized to implement phase-out activities at other SMEs to be identified jointly by Government of India and Government of Japan.

## 6.7 MLF Grant Calculation

**Table 12: Total Project Grant**

| Cost / Plant | ICC | ICC contingency | ICC total | IOC | NPV of 4 years IOC | Total Project Cost |
|---|---|---|---|---|---|---|
| SAIL | | | | | | |
| Bhilai | 682,400 | 68,240 | 750,640 | 25,577 | 81,079 | 831,719 |
| Bokaro | 471,350 | 47,135 | 518,485 | 40,646 | 128,848 | 647,333 |
| Durgapur | 361,100 | 36,110 | 397,210 | 31,796 | 100,793 | 498,003 |
| Rourkela | 615,400 | 61,540 | 676,940 | 44,876 | 142,257 | 819,197 |
| IISCO | 361,100 | 36,110 | 397,210 | 31,796 | 100,793 | 498,003 |
| Alloy | 0 | 0 | 0 | 0 | 0 | 0 |
| Maharashtra | 0 | 0 | 0 | 0 | 0 | 0 |
| Salem | 131,650 | 13,165 | 144,815 | 3,345 | 10,603 | 155,418 |
| Visvesvaraya | 0 | 0 | 0 | 0 | 0 | 0 |
| **Sub-Total for SAIL** | **2,623,000** | **262,300** | **2,885,300** | **178,036** | **564,373** | **3,449,673** |
| Western Engineering Co. | 371,500 | 37,150 | 408,650 | 16,912 | 53,612 | 462,262 |
| Nissan Copper Pvt. Ltd. | 335,500 | 33,550 | 369,050 | 23,322 | 73,929 | 442,979 |
| Hind Metal & Tubes | 291,250 | 29,125 | 320,375 | -9,520 | -30,180 | 290,195 |
| Management Coordination, Monitoring and Verifications | 20,000 | 2,000 | 22,000 | | | 22,000 |
| Reserved for SMEs | 302,628 | 30,263 | 332,891 | | | 332,891 |
| **Total** | **3,943,878** | **394,388** | **4,338,266** | **208,750** | **661,734** | **5,000,000** |

## 6.8 Financing Plan

MLF funding is a grant and is limited to the incremental capital and incremental operating costs as calculated above. Funding for this project will be financed from the bilateral contributions of the Government of Japan to the MLF.

## 6.9 Project Budget

| Line-Item | TOTAL | 2004 | 2005 |
|---|---|---|---|
| International Consultant | 133,000 | 66,500 | 66,500 |
| Testing, Trial, Commissioning and Training | 70,000 | 35,000 | 35,000 |
| Management Support, verification | 20,000 | 10,000 | 10,000 |
| Shop modifications | 290,000 | 100,000 | 190,000 |
| Equipment | 3,158,250 | 2,288,500 | 869,750 |
| Reserved for SMEs | 272,628 | | 272,628 |
| Incremental Operating Costs | 661,734 | | 661,734 |
| Contingencies | 394,388 | | 394,388 |
| **TOTAL** | **5,000,000** | **2,500,000** | **2,500,000** |

## 7.0 Project Implementation

The project will be carried out at the four enterprises: Steel Authority of India Limited, West Engineering Co., Nissan Copper Pvt. Ltd., and Hind Metal & Tubes.

### 7.1 Required Regulatory Action

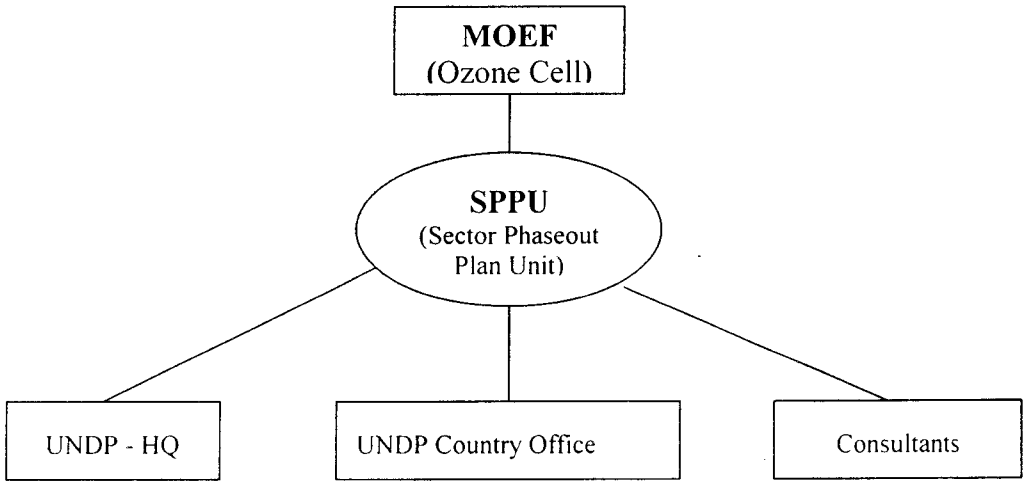
No regulatory action, other than routine permitting, will be required to implement this project.

### 7.2 Direct Project Impacts

The project will eliminate annually 374.3 metric tonnes/yr (412 ODP tonnes/yr) at eleven plants of the four enterprises.

### 7.3 Project Management and Implementation

Ozone Cell, Ministry of Environment and Forest will administer the Project, an amount of US$20,000 plus 10% contingency has been allocated to facilitate management coordination, monitoring and performance verification responsibilities of the MoEF. As designated by the Government of Japan, with the concurrence of the Government of India, UNDP will implement this project under Direct Execution (DEX) modality. In close coordination with the Ozone Cell and the Sector Plan Phase-out Unit (SPPU), UNDP India Country Office and Montreal Protocol Unit will undertake all phase out activities at these four enterprises. As such, the programme will be implemented using the following structure:




The attached Operational Mechanism for Implementation (OMI) developed under IND/02/G66 – Foam Sector Phase-out Plan and IND/03/G62 – Refrigeration (Manufacturing) Sector Phase-out Plan that has been successfully applied to facilitate implementation of these two sector plans, will serve as a framework for implementation of UNDP activities under this project, to the extend relevant and applicable, generally in line with the role and responsibilities of various actors as described in the OMI.

### 7.4 Implementation Schedule

| TASK | 2004 | | | | | | | | | | | | 2005 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 1.a) MLF approval & funding | | | | X | | | | | | | | | | | | | | | | | | | | |
| b) Financial appraisal | | | | X | | | | | | | | | | | | | | | | | | | | |
| c) sub-grant agreement | | | | | | X | | | | | | | | | | | | | | | | | | |
| 2. a) Equipment. Specification | | | | | | X | X | X | | | | | | | | | | | | | | | | |
| b) Equipment. Selection | | | | | | | | X | X | X | | | | | | | | | | | | | | |
| c) Equipment Procurement | | | | | | | | | | X | X | X | X | X | | | | | | | | | | |
| d) Installation | | | | | | | | | | | | | | X | X | X | | | | | | | | |
| 3.a) Trial & start up | | | | | | | | | | | | | | | | X | X | X | | | | | | |
| b) Training/Certification | | | | | | | | | | | | | | | | | | X | X | X | | | | |
| 4.a) First disbursement | | | | | | | | | | | | | | X | X | X | | | | | | | | |
| b) Second disbursement | | | | | | | | | | | | | | | | | X | X | X | | | | | |
| c) Final disbursement | | | | | | | | | | | | | | | | | | | | X | X | X | | |
| 5. Report submission | | | | | | | | | | | | | | | | | | | | | | | X | X |

### 7.5 Milestones for Project Monitoring

| ACTIVITY | No later than |
|---|---|
| Grant Agreement submitted to beneficiary | June 2004 |
| Grant Agreement signature | July 2004 |
| Bids prepared and requested | July 2004 |
| Contracts awarded | November 2004 |
| Equipment delivered | April 2005 |
| Commissioning and trial runs | June 2005 |
| De-commissioning and/or destruction of redundant baseline equipment | August 2005 |
| Submission of project completion report (needed to satisfy the requirements for project completion reports) | December 2005 |

## 8 ANNEXES

Annex 1 Incremental Capital Cost Calculations
Annex 2 Incremental Operating Cost Calculations
Annex 3 List of Equipment to be destroyed for Project Completion
Annex 4 Agreement between India and the Executive Committee of the Multilateral Fund for the Phase Out in Consumption and Production of Carbon Tetrachloride
Annex 5 Operational Mechanism for Implementation
Annex 6 Project Proposal: Umbrella project for the Conversion from carbon tetrachloride (CTC) as a cleaning solvent to trichloroethylene (TCE) at 9 plants of Steel Authority of India Limited (SAIL)
Annex 7 Project proposal: Conversion of Carbon Tetrachloride (CTC) as Cleaning Solvent to Trichloroethylene at Western Engineering Co., New Delhi and Srinagar Plant
Annex 8 Project proposal: Conversion of Carbon Tetrachloride (CTC) as Cleaning Solvent to Trichloroethylene at Nissan Copper Pvt. Ltd. (NCPL), Umbergaon
Annex 9 Project proposal: Conversion of Carbon Tetrachloride (CTC) as Cleaning Solvent to Trichloroethylene at Hind Metal and Tubes (HMT), Umbergaon
Annex 10 SBAA

## Annex 1: Incremental Capital Cost Calculations

**Breakdown of Incremental Capital Costs**

| Incremental Capital Costs Calculation | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Description of cost item** | **SAIL (US$)** | **WEC (US$)** | **Nissan (US$)** | **Hind (US$)** | **Reserved for SMEs** | **Misc.** | **Total (US$)** |
| 1 | **Technical Cleaning Process and Equipment Support** | | | | | | | |
| 1.1 | Material compatibility testing, Cleaning process standardization, Reliability testing, Equipment commissioning and user training | 53,000 | 5,000 | 5,000 | 3,000 | 4,000 | | 70,000 |
| 1.2 | Alternative research, proposal and documentation, Equipment specifications, Environmental, Health and Safety training | 102,000 | 10,000 | 10,000 | 5,000 | 6,000 | | 133,000 |
| 1.3 | Management Coordination, Monitoring and Verification | | | | | | 20,000 | 20,000 |
| | **Sub-total** | **155,000** | **15,000** | **15,000** | **8,000** | **10,000** | **20,000** | **223,000** |
| 2 | **Equipment to Purchase and Install** | 2,468,000 | 356,500 | 320,500 | 283,250 | 292,628 | | 3,720,878 |
| | **Total** | **2,623,000** | **371,500** | **335,500** | **291,250** | **302,628** | **20,000** | **3,943,878** |
| | **Contingency, 10%** | 262,300 | 37,150 | 33,550 | 29,125 | 30,263 | 2,000 | 394,388 |
| | **Total Incremental Capital cost, US$** | **2,885,300** | **408,650** | **369,050** | **320,375** | **332,891** | **22,000** | **4,338,266** |

For detailed breakdown at each enterprise, please refer to the individual project document for each enterprise.

## Annex 2: Incremental Operating Cost Calculations

### Breakdown of Incremental Operating Cost

| Incremental Operating Costs Calculation | | | | | | |
|---|---|---|---|---|---|---|
| | **Description** | **SAIL (US$)** | **WEC (US$)** | **Nissan (US$)** | **Hind (US$)** | **Total (US$)** |
| **1.0** | Pre-project Total Costs | 270,140 | 53,900 | 118,200 | 61,920 | 504,160 |
| **2.0** | Post-project Total Costs | 448,176 | 70,812 | 141,522 | 52,400 | 712,910 |
| **3.0** | Total Incremental Operating Costs or (Savings)/Year | 178,036 | 16,912 | 23,322 | (9,520) | 208,750 |
| **4.0** | Net Present Value of IOC/IOS | 564,373 | 53,612 | 73,929 | (30,180) | 661,734 |

For detailed breakdown at each enterprise, please refer to the individual project document for each enterprise.

## Annex 3: List of Equipment to be Destroyed for Project Completion

None

**Annex XVIII**

# AGREEMENT BETWEEN INDIA AND THE EXECUTIVE COMMITTEE OF THE MULTILATERAL FUND FOR THE PHASE OUT IN CONSUMPTION AND PRODUCTION OF CARBON TETRACHLORIDE

1. This Agreement represents the understanding of India (the "Country") and the Executive Committee with respect to the complete phase-out of consumption and production of the Montreal Protocol controlled substance set out in Appendix 1-A (the "Substance") prior to 1 January 2010, in compliance with Protocol schedules.

2. The Country agrees to phase out consumption and production of the Substance, as defined by the Montreal Protocol[1], in accordance with the annual phase-out targets set out in rows 1 and 2 of Appendix 2-A (the "Targets") for this Agreement, which at a minimum, correspond to the reduction schedules mandated by the Montreal Protocol. The Country accepts that, by its acceptance of this Agreement and performance by the Executive Committee of its funding obligations described in paragraph 4, it is precluded from applying for or receiving further funding from the Multilateral Fund in respect to the Substance.

3. The Country considers that the use of the Substance in the production of DV acid chloride (DVAC) to be a feedstock use. If either the Country or the Parties ever reclassify that use or any other feedstock use to a controlled status, the Country agrees that it would phase out that use with no compensation from the Multilateral Fund.

4. Subject to compliance by the Country with its obligations set out in this Agreement, the Executive Committee agrees in principle to provide the funding set out in row 11 of Appendix 2-A (the "Funding") to the Country. The Executive Committee will, in principle, provide this funding at the Executive Committee meetings specified in Appendix 3-A (the "Funding Approval Schedule").

5. The Country will meet the consumption and production limits for the Substance as indicated in rows 1 and 2 in Appendix 2-A. It will also accept independent verification by the relevant Implementing Agency of achievement of these consumption and production limits as described in paragraph 9 of this Agreement.

6. The Executive Committee will not provide the Funding in accordance with the Funding Disbursement Schedule unless the Country satisfies the following conditions at least 30 days prior to the applicable Executive Committee meeting set out in the Funding Disbursement Schedule:

(a) That the Country has met the Targets for the applicable year;

(b) That the meeting of these Targets has been independently verified as described in paragraph 9; and

[1] Consumption and production as per the Montreal Protocol definitions do not include the consumption and production of the Substance for feedstock applications.

(c) That the Country has submitted and received endorsement from the Executive Committee for an annual implementation programme in the form of Appendix 4 - A (the "Annual Implementation Programs") in respect of the year for which funding is being requested.

7. The Country will ensure that it conducts accurate monitoring of its activities under this Agreement. The institutions set out in Appendix 5-A (the "Monitoring") will monitor and report on that monitoring in accordance with the roles and responsibilities set out in Appendix 5-A. This monitoring will also be subject to independent verification as described in paragraph 9.

8. While the Funding was determined on the basis of estimates of the needs of the Country to carry out its obligations under this Agreement, the Executive Committee agrees that the Country will have full flexibility in the use of Multilateral Fund assistance to achieve the overall objectives of this Agreement and to meet its obligations to the Montreal Protocol. Therefore, specific funds that were thought to be needed for specific items originally proposed in the Plan for the Phase out of Consumption and Production of CTC, except the US $2 million which must be used by the Country solely to implement, monitor and effectuate full compliance with this Agreement, can be reallocated to other activities as long as expenditures are consistent with this Agreement and eligible within the context of the Montreal Protocol. Any remaining funds provided to the Country pursuant to this Agreement may be used in any manner that the Country believes will achieve the smoothest and most efficient CTC phase out.

9. The Country agrees to assume overall responsibility for the management and implementation of this Agreement and of all activities undertaken by it or on its behalf to fulfil the obligations under this Agreement. The World Bank (the "Lead IA") has agreed to be the lead implementing agency and France, Germany and Japan (the "Cooperating IAs") have agreed to be cooperating implementing agencies under the lead of the Lead IA in respect of the Country's activities under this Agreement. The Lead IA will be responsible for carrying out the activities listed in Appendix 6-A, including performance and financial verification in relation to all activities, within the purview of the World Bank, in accordance with this Agreement and with specific World Bank procedures and requirements. The Country also agrees to periodic evaluations, which will be carried out under the monitoring and evaluation work programmes of the Multilateral Fund. The Cooperating IAs will be responsible for carrying out activities listed in Appendix 6-B, including performance and financial verification in relation to activities implemented under their supervision.

10. The Lead IA will assist the Country to implement activities required for achieving the Targets specified in this Agreement and also to assist the Country to carry out activities related to policy and regulatory development to support sustainable phase-out of the Substance in both the consumption and production sectors. The Cooperating IAs will, in collaboration with the Lead IA, provide support for activities related to investment activities to support the phase-out of the Substance in the metal cleaning applications and in the textile industry as described in the sector plan (IND/PHA/40/INV/363). In addition, France will also provide technical assistance to the producers of the Substance to explore technically and economically viable options to reduce/eliminate production of the Substance. The funding for

activities implemented by the Cooperating IAs will be counted against their bilateral contributions to the Multilateral Fund in annually specified tranches. In case the Lead IA or any of the Cooperating IAs would like to sub-contract part of their activities to other implementing agencies, concurrence of the Country must be sought and the description of such an arrangement should be reported in the annual implementation programmes.

11. The Executive Committee agrees, in principle, to provide the Lead IA and the Cooperating IAs with the respective fees set out in rows 4, 6, 8 and 10 of Appendix 2-A.

12. Should the Country, for any reason, not meet the Targets for the elimination of the Substance or otherwise does not comply with this Agreement, then the Country agrees that it will not be entitled to the Funding in accordance with the Funding Disbursement Schedule. At the discretion of the Executive Committee, Funding will be reinstated according to a revised Funding Disbursement Schedule determined by the Executive Committee after the Country has demonstrated that it has satisfied all of its obligations that were due to be met prior to receipt of the next installment of Funding under the Funding Disbursement Schedule. The Country acknowledges that the Executive Committee may reduce the amount of the Funding by the amount set out in Appendix 7-A in respect of each ODP tonne of reductions in consumption and production not achieved in any one year.

13. The Funding components of this Agreement will not be modified on the basis of any future Executive Committee decision that may affect the Funding of any other consumption/production sector projects or any other related activities in the Country.

14. The Country will comply with any reasonable request of the Executive Committee, the Lead IA, and the Cooperating IAs, to facilitate implementation of this Agreement. In particular, it will provide the Executive Committee, the Lead IA and the Cooperating IAs, with access to information necessary to verify compliance with this Agreement.

15. All of the agreements set out in this Agreement are undertaken solely within the context of the Montreal Protocol and as specified in this Agreement. All terms used in this Agreement have the meaning ascribed to them in the Protocol unless otherwise defined herein.

## Appendices

## Appendix 1-A: The Substance

| | | |
|---|---|---|
| Annex B: | Group II | CTC |

## Appendix 2-A: The Targets, and Funding

| | Baseline[1] | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 |
|---|---|---|---|---|---|---|---|---|---|
| Montreal Protocol Consumption Reduction Schedules (ODP tonnes)[2] | 11,505 | N/A | N/A | 1,726 | 1,726 | 1,726 | 1,726 | 1,726 | 0 |
| 1. Max allowable total consumption (ODP tonnes) | 11,505 | N/A | N/A | 1,726 | 1,147 | 708 | 268 | 48 | 0 |
| Montreal Protocol Production Reduction Schedules (ODP tonnes)[3] | 11,553 | N/A | N/A | 1,733 | 1,733 | 1,733 | 1,733 | 1,733 | - |
| Production Allowance for basic domestic needs of A5 countries (ODP tonnes)[4] | | - | - | 1,155 | 1,155 | 1,155 | 1,155 | 1,155 | 1,733 |
| Total production allowed by the Montreal Protocol (ODP tonnes) | | N/A | N/A | 2,888 | 2,888 | 2,888 | 2,888 | 2,888 | 1,733 |
| 2. Max allowable total production (ODP tonnes) for this Agreement | 11,553 | N/A | N/A | 1,726 | 1,147 | 708 | 268 | 48 | - |
| 3. WB agreed funding | | 8,520,843 | 9,180,112 | 3,899,046 | 9,955,313 | 4,020,938 | 3,211,875 | 3,211,874 | - |
| 4. WB support costs | | 639,063 | 688,508 | 292,428 | 746,648 | 301,570 | 240,891 | 240,891 | - |
| 5. France agreed funding | | - | 1,000,000 | 1,000,000 | 500,000 | 500,000 | - | - | |
| 6. France support costs | | - | 85,000 | 85,000 | 85,000 | 85,000 | - | - | |
| 7. Germany agreed funding | | - | 700,000 | 700,000 | 300,000 | 300,000 | - | - | |
| 8. Germany support costs | | - | 57,500 | 57,500 | 57,500 | 57,500 | - | - | |
| 9. Japan agreed funding | | - | 2,500,000 | 2,500,000 | - | - | - | - | |
| 10. Japan support costs | | - | 280,000 | 280,000 | - | - | - | - | |
| 11. Total agreed funding (US $) | | 8,520,843 | 13,380,112 | 8,099,045 | 10,755,313 | 4,820,938 | 3,211,875 | 3,211,874 | |
| 12. Total agency support costs (US $) | | 639,063 | 1,111,008 | 714,928 | 889,148 | 444,070 | 240,891 | 240,891 | |
| 13. Total agreed costs (US $) | | 9,159,906 | 14,491,120 | 8,813,973 | 11,644,461 | 5,265,008 | 3,452,766 | 3,452,765 | |

1/ Baseline consumption and production levels are defined as the average levels of consumption and production during the period from 1998 - 2000.
2/ Maximum allowable consumption levels stipulated in the Montreal Protocol (85% reduction in 2005 and 100% reduction by 2010).
3/ Maximum allowable production levels stipulated in the Montreal Protocol (85% reduction in 2005 and 100% reduction by 2010).
4/Allowable production levels for meeting basic domestic needs of Article 5 countries as per the Beijing Amendment (10% of base level from 2005 and 15% of base level from 2010).

## Appendix 3-A: Funding Approval Schedule

1. The annual funding allocations, except those for 2004 and 2005, as shown in Appendix 2-A will be considered for approval at the second meeting of the year of the annual plans. The funding allocations for 2004 and 2005 will be submitted for approval at the first meeting of the respective annual plans.

## Appendix 4-A: Format of Annual Implementation Programme

1. **Data**

Country _____
Year of plan _____
# of years completed _____
# of years remaining under the plan _____
Target ODS consumption of the preceding year _____
Target ODS consumption of the year of plan _____
Level of funding requested _____
Lead implementing agency
Co-operating agency(ies) _____

2. **Targets**

| **Indicators** | | **Preceding year** | **Year of plan** | **Reduction** |
|---|---|---|---|---|
| Supply of CTC | Import | | | |
| | Production* | | | |
| | **Total (1)** | | | |
| Demand of CTC | Process Agents | | | |
| | Solvent | | | |
| | **Total (2)** | | | |

*For ODS-producing countries

3. **Industry Action**

| Sector | Actual Consumption preceding year (1) | Consumption year of plan (2) | Reduction within year of plan (1)-(2) | Number of projects completed | Number of servicing related activities | ODS phase-out (in ODP tonnes) |
|---|---|---|---|---|---|---|
| Manufacturing | | | | | | |
| Process Agents | | | | | | |
| Solvents | | | | | | |
| Other | | | | | | |
| Total | | | | | | |
| Servicing | | | | | | |
| | | | | | | |
| Total | | | | | | |
| Grand total | | | | | | |

## 4. Technical Assistance

Proposed Activity: _____
Objective: _____
Target Group: _____
Impact: _____

## 5. Government Action

| Policy/activity planned | Schedule of implementation |
|---|---|
| Type of policy control on ODS import: | |
| Public awareness | |
| Others | |

## 6. Annual Budget

| Activity | Planned Expenditures (US $) |
|---|---|
| | |
| Total | |

## 7. Administrative Fees

### Appendix 5-A: Monitoring Institutions and Roles

1. The Country will be responsible for implementing the CTC phase-out plan. To strengthen capacity of the Country to undertake a series of activities required to achieve permanent phase-out of CTC in accordance with the agreed Targets, a small management unit with a high degree of decentralization to ensure maximum coverage of all residual CTC users, will be established.

2. The management unit will be established within the Ministry of Environment and Forests. The role of the management unit entails development of detailed implementation plan and overall monitoring and supervision of the CTC phase-out plan. The responsibility of the management unit includes:

(a) Preparation and implementation of the annual implementation programme with assistance from the Lead IA and Cooperating IAs;

(b) Identification and assistance in the design of sub-projects under the plan;

(c) Monitoring and supervision of project implementation at the national level including coordination of independent verification of the ODS phase-out by the beneficiary enterprises;

(d) Information exchange support to the Ozone Cell, regional centers and beneficiary enterprises;

ANNEX V

# INDIA

# FOAM SECTOR PHASE-OUT PLAN

## Operational Mechanism for Implementation

Draft 2: Prepared 19 October 2002

Revised: 31 July 2004

# CONTENTS

# 1. INSTITUTIONAL FRAMEWORK

## 1.1 INTRODUCTION

This document describes the Operational Mechanism for Implementation (OMI) for the Sector Phase-out Plan for CFCs in the Foam Sector in India and the roles and responsibilities of the Government of India (GOI), United Nations Development Programme (UNDP) and the prospective Recipient Enterprises (CFC consuming enterprises to be covered under this Plan).

The OMI has been prepared by UNDP in collaboration with the Ozone Cell, Ministry of Environment and Forests, Government of India (hereinafter referred to as "MOEF") for implementation of the Sector Phase-out Plan for CFCs in the Foam Sector.

The OMI should be read in conjunction with the following documents:

- Agreement between the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol - Document UNEP/OzL.Pro/ExCom/37/71, Annex-VII.

- Approved project document for the project "Sectoral Phase-out Plan for Elimination of CFCs in the Foam Sector in India"

This OMI is not intended to supersede any of the existing legal and other obligations or new legal or other obligations emanating from the above documents, of the Government of India. It is to be considered as a dynamic and evolving document and may be revised as required during the course of implementation of the project.

## 1.2 BACKGROUND

On behalf of Government of India (GOI), UNDP submitted a proposal entitled "Sectoral Phase-out Plan for Elimination of CFCs in the Foam Sector in India", in July 2002 to the Executive Committee (ExCom) of the Multilateral Fund (MLF) for Implementation of the Montreal Protocol for the phase-out of Ozone Depleting Substances (ODS). The proposal was reviewed and evaluated by the Multilateral Fund Secretariat (MLFS) and was approved by ExCom at its 37th Meeting in July 2002.

The project provides India with an overall framework for phase-out of CFCs in the Foam Sector within the time frame provided by the Montreal Protocol (by 31 December 2006) and generates additional responsibilities and obligations for GOI in implementation and management of the project. The project comprises a funding agreement over the duration of the project and links stipulated annual CFC phase-out targets to annual funding tranches. The funding includes provisions for incremental costs for Investments, Technical Support and Policy & Management Support.

The main characteristics of the Sector Phase-out Plan in the Foam Sector in India are as follows:

- The responsibility for meeting the agreed annual CFC phase-out and consumption levels in the Foam Sector rests with GOI.
- It incorporates reporting mechanisms for GOI (MOEF/Ozone Cell) for disbursement of agreed annual funding tranches. In accordance with the agreement, Annual Implementation Programs will need to be developed for each calendar year and submitted to the last ExCom meeting in the preceding year. Through its endorsement of the Annual Implementation Programs and subject to achievement of agreed annual targets in the preceding year, ExCom will approve and release the annual grant tranches.
- It incorporates verification of achievement of annual CFC phase-out and consumption targets in the Foam Sector and that the associated policy actions, technical support and training activities have been carried out according to the Annual Implementation Program.