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EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Fifty-second Meeting
Montreal, 23-27 July 2007

AMENDMENTS TO THE WORLD BANK WORK PROGRAMME FOR 2007

COMMENTS AND RECOMMENDATION OF THE FUND SECRETARIAT

1. The World Bank is requesting approval from the Executive Committee for US $594,001 in amendments to its 2007 Work Programme Amendments, plus agency support costs of US $46,050.

2. The activities proposed in the World Bank's Work Programme Amendments are presented in Table 1 below:

Table 1: World Bank's Work Programme Amendments

Country	Activity/Project	Amount Requested (US $)	Amount Recommended (US $)
SECTION A: ACTIVITIES RECOMMENDED FOR BLANKET APPROVAL			
A1. Renewal of institutional strengthening projects:			
Jordan	Institutional strengthening renewal: Phase VII	147,333	147,333
Thailand	Institutional strengthening renewal: Phase V	346,668	346,668
	Subtotal for institutional strengthening projects::	494,001	494,001
A2. Regional technical assistance project:			
Global	Assessment of CTC phase-out in the Chlor-alkali sector	100,000	100,000
	Subtotal for regional technical assistance projects:	100,000	100,000
Subtotal for sections A and B:		594,001	594,001
Agency support costs (7.5 per cent for project preparation and institutional strengthening, and for other activities over US $250,000, and 9 per cent for other activities under US $250,000):		46,050	46,050
Total:		640,051	640,051

ACTIVITIES RECOMMENDED FOR BLANKET APPROVAL

A1. Renewal of institutional strengthening projects

Jordan: Institutional strengthening renewal: (Phase VII): US $147,333
Thailand: Institutional strengthening renewal: (Phase V): US $346,668

Project descriptions

3. The World Bank submitted requests for the renewal of the institutional strengthening projects for Jordan and Thailand. The descriptions of the institutional strengthening projects for the above countries are presented in Annex I to this document.

Fund Secretariat's comments and recommendations

4. The Fund Secretariat recommends blanket approval of the institutional strengthening renewal requests for Jordan and Thailand at the level of funding shown in Table 1. The Executive Committee may wish to express to the Governments of Jordan and Thailand the comments which appear in Annex II to this document.

A2. Regional technical assistance project

Global: Assessment of CTC phase-out in the Chlor-alkali sector: US $100,000

Project description

5. The World Bank has submitted a request for the funding of a study to assess the phase out of carbon tetrachloride as a process agent in the chlor-alkali sector. The study has the following objectives:

(a) To assess the consumption levels of CTC used as process agent in the production of chlorine both in Article 5 and non-Article 5 countries; and

(b) To examine technologies and/or production processes relevant to the phase-out of CTC in chlorine production, with the view to identifying cost-effective alternatives for the conversion of the chlor-alkali sector in Article 5 countries.

6. In undertaking this study, the project will look at the global CTC consumption in the chlor-alkali sector, review CTC-free technologies for the sector, review conversion projects in both Article 5 and non-Article 5 countries, look at alternatives for containment pursuant to decision X/14 and provide recommendations on the basis of the most environmentally sound and cost-effective alternatives for conversion in the sector, as well as ensuring workers' safety.

7. In providing a comparison of the different alternative options, the proposal suggests a minimum of five examples from five different countries. The study will also ensure that the examples show a balance between the experiences of Article 5 and non-Article 5 countries.

8. The study will be completed in twelve months, and a final report will be submitted to the last meeting of the Executive Committee in 2008.

Fund Secretariat's comments

9. There are very few chemicals that have been identified that can be used as substitutes for the use of CTC in the chlor-alkali sector with the same versatility and efficiency as CFCs. The production of chlorine is prevalent in many Article 5 countries, and therefore there is a need to look at the options for the phase out of CTC as a process agent in this sector.

10. The study proposed by the World Bank and its accompanying terms of reference provide a comprehensive approach to looking at alternatives for the chlor-alkali sector. The activities listed as part of the methodology describe a magnitude of work that should result in a possible list of chemicals and processes that will enable phase out in the sector, and allow Article 5 countries to comply with their Montreal Protocol commitments.

Fund Secretariat's recommendation

11. The Fund Secretariat recommends blanket approval of the proposal to conduct a study on the phase out of CTC in the chlor-alkali sector, at the funding level indicated in Table 1 above.

Annex I

INSTITUTIONAL STRENGTHENING PROJECT PROPOSALS

Jordan: Renewal of institutional strengthening

Summary of the project and country profile	
Implementing Agency:	World Bank
Amounts previously approved for institutional strengthening (US $):	
Phase I: June 1992, July 1995	170,000
Phase II: May 1997	113,333
Phase III: July 1999	113,333
Phase IV: July 2001	143,333
Phase V: July 2003	147,333
Phase VI: July 2005	147,320
Total	804,652
Amount requested for renewal (Phase VII) (US $):	147,333
Amount recommended for approval for Phase VII (US $):	147,333
Agency support costs (US $):	11,050
Total cost of institutional strengthening Phase VII to the Multilateral Fund (US $):	158,383
Equivalent amount of CFC phase-out due to institutional strengthening Phase VII at US $12.1/kg (ODP tonnes):	n/a
Date of approval of country programme:	June 1993
ODS consumption reported in country programme (1991) (ODP tonnes):	905.0
Latest reported ODS consumption (2006) (ODP tonnes):	117.5
Baseline consumption of controlled substances (ODP tonnes):	
(a) Annex A Group I (CFCs) (Average 1995-1997)	673.3
(b) Annex A Group II (Halons) (Average 1995-1997)	210.0
(c) Annex B Group II (Carbon tetrachloride) (Average 1998-2000)	40.3
(d) Annex B Group III (Methyl chloroform) (Average 1998-2000)	18.2
(e) Annex E (Methyl bromide) (Average 1995-1998)	176.3
Latest consumption of controlled substances (2006) (ODP tonnes):	
(a) Annex A Group I (CFCs)	21.8
(b) Annex A Group II (Halons)	36.0
(c) Annex B Group II (Carbon tetrachloride)	1.1
(d) Annex B Group III (Methyl chloroform)	2.2
(e) Annex E (Methyl bromide)	42.6
(f) Annex C Group I (HCFCs)	13.8
Amount approved for projects (US $):	19,879,185
Amount disbursed (as at March 2007) (US $):	17,308,970
ODS to be phased out (ODP tonnes):	1,916.8
ODS phased out (as at March 2007) (ODP tonnes):	1,695.3

1. Summary of activities and funds approved by the Executive Committee:

Summary of activities		**Funds approved (US $)**
(a)	Investment projects:	17,936,274
(b)	Institutional strengthening:	870,951
(c)	Project preparation, technical assistance, training and other non-investment projects:	1,071,960
	Total:	19,879,185

Progress report

2. Phase VI of the IS project in Jordan was successfully implemented. The National Ozone Unit of Jordan continues to lead the coordination of the various phase out projects in the country efficiently, achieving a number of successes during this phase. Foremost among these is the reduction of the CFC consumption consistent with the national CFC phase out plan agreed for the country. There was also a reduction of around 25 tonnes in methyl bromide use. Training for the military and technical training for teachers was completed during the current phase of the institutional strengthening (IS) project. The NOU has also taken initiative in developing and implementing activities on awareness raising and, during this phase, a poster "Custom Officer's quick tool for screening ODS" was developed and circulated to all custom officers and offices. General public posters were also developed and distributed especially to schools and other similar placed with younger people as the target audiences.

Plan of action

3. During the next phase of the IS project, the NOU will continue the coordination of the national CFC phase out plan in close consultation with the World Bank and UNIDO. The Government will also make the ratification of the Beijing Amendment a priority, particularly in the first year of this new IS phase. This new phase will also see renewed efforts in the full enforcement of the licensing system and a possible review of this system and further strengthening of the cooperation with the Customs department to fight illegal trade. During this period, the methyl bromide activities are also expected to result in the phase out of 80 percent of methyl bromide consumption in the country. Awareness activities will be continued, with a focus on the 20th anniversary of the Montreal Protocol, and the celebration of International Ozone Day.

Thailand: Renewal of institutional strengthening

Summary of the project and country profile	
Implementing Agency:	World Bank
Amounts previously approved for institutional strengthening (US $):	
Phase I: July 1993	400,000
Phase II: July 1998	266,667
Phase III: July 2003	346,667
Phase IV: July 2005	346,668
Total	1,360,002
Amount requested for renewal (Phase V) (US $):	346,668
Amount recommended for approval for Phase V (US $):	346,668
Agency support costs (US $):	26,000
Total cost of institutional strengthening Phase V to the Multilateral Fund (US $):	372,668
Equivalent amount of CFC phase-out due to institutional strengthening Phase V at US $12.1/kg (ODP tonnes):	n/a
Date of approval of country programme:	Nov. 1993
ODS consumption reported in country programme (1991) (ODP tonnes):	8,820.7
Latest reported ODS consumption (2005) (ODP tonnes):	2,317.3
Baseline consumption of controlled substances (ODP tonnes):	
(a) Annex A Group I (CFCs) (Average 1995-1997)	6,082.1
(b) Annex A Group II (Halons) (Average 1995-1997)	271.7

(c) Annex B Group II (Carbon tetrachloride) (Average 1998-2000)	7.5
(d) Annex B Group III (Methyl chloroform) (Average 1998-2000)	54.6
(e) Annex E (Methyl bromide) (Average 1995-1998)	183.0
Latest consumption of controlled substances (2005) (ODP tonnes):	
(a) Annex A Group I (CFCs)	1,259.9
(b) Annex A Group II (Halons)	10.9
(c) Annex B Group II (Carbon tetrachloride)	0.0
(d) Annex B Group III (Methyl chloroform)	0.0
(e) Annex E (Methyl bromide)	146.0
(f) Annex C Group I (HCFCs)	900.5
Amount approved for projects (US $):	55,557,205
Amount disbursed (as at March 2007) (US $):	40,864,015
ODS to be phased out (ODP tonnes):	6,744.7
ODS phased out (as at March 2007) (ODP tonnes):	5,585.9

4. Summary of activities and funds approved by the Executive Committee:

	Summary of activities	Funds approved (US $)
(a)	Investment projects:	51,098,637
(b)	Institutional strengthening:	1,498,669
(c)	Project preparation, technical assistance, training and other non-investment projects:	2,959,899
	Total:	55,557,205

Progress report

5. The National Ozone Unit of Thailand is working very closely with the Project Management Unit of the national CFC phase out plan of the country to ensure consistency in its activities, minimize overlaps, and meet the phase out of CFCs by 2010. Phase V of the IS project in Thailand ensured the full implementation of the licensing system, and the setting of quotas for both import and export of ODS. A new regulation was also published during this period, and covers a ban on the use of CFCs in commercial refrigeration manufacturing. Thailand also ratified the Beijing Amendment during this phase. The NOU continued to develop and implement awareness raising activities at the national level. These activities include the upgrading of the NOU webpage, a quiz show for students for the 20th anniversary of the Montreal Protocol, publication of posters and brochures, and developing radio spots. Thailand has also carried out a survey on HCFC use during this IS phase, and will conduct a workshop to discuss survey results.

Plan of action

6. During the next phase of the IS project, the NOU will continue the coordination of the national CFC phase out plan in close consultation with the World Bank, along with the implementation of the national methyl bromide phase out plan. The Government will also focus particularly on the refrigeration servicing sector for both the domestic and MAC sectors, to ensure that there will no backsliding. The full implementation of the licensing system will be closely monitored with the Customs Department. Thailand will also finalise the development of the ODS database so that ODS related data will be consistent. During this phase, awareness activities will also be continued.

Annex II

VIEWS EXPRESSED BY THE EXECUTIVE COMMITTEE ON RENEWALS OF INSTITUTIONAL STRENGTHEING PROJECTS SUBMITTED TO THE 52nd MEETING

Jordan

1. The Executive Committee has reviewed the report presented with the institutional strengthening project renewal request for Jordan and notes with appreciation that Jordan reported data to the Ozone Secretariat indicating that the 85 per cent CFC phase-out target for 2007 has been achieved ahead of time. The Executive Committee also notes that within the framework of the institutional strengthening project, Jordan has taken significant steps to phase-out its ODS consumption in other areas such as halons and methyl bromide. Specifically, the coordination of implementation of the national CFC, halon and methyl bromide phase-out plan; the completion of training workshops for customs officers and implementation of an import control system; the continuation of awareness raising activities to ensure stakeholders' commitment to ODS phase-out, and; the development of a methyl bromide strategy. The Executive Committee also noted the steps taken in this critical phase of the program to prevent illegal import of CFCs. The Executive Committee greatly supports the efforts of Jordan to reduce the consumption of ODS. The Executive Committee is therefore hopeful that, in the next two years, Jordan will continue with the implementation of its country programme and activities under the national ODS phase-out plan, with outstanding success in the reduction of current ODS consumption levels towards complete phase out by 2010.

Thailand

2. The Executive Committee has reviewed the report presented with the institutional strengthening project renewal request for Thailand, and notes with appreciation that Thailand has reported 2006 data to the Ozone Secretariat, indicating that it is on track with the phase-out schedule in CFC consumption. The Executive Committee would like to express its appreciation that Thailand had already ratified the Beijing Amendment to the Montreal Protocol. Moreover, Thailand should be congratulated for putting in place a regulation to ban the use of CFC in the manufacturing sector since 2005 and its continuing efforts in preventing illegal trade of ODS. The Executive Committee is therefore hopeful that, in the next two years, Thailand will continue with the implementation of its country programme and related activities with outstanding success, and achieve further reductions in its CFC consumption levels.

2007 WORK PROGRAM AMENDMENT

Presented to the 52nd Meeting of the Executive Committee

WORLD BANK
MONTREAL PROTOCOL OPERATIONS

28 May 2007

The World Bank 2007 – 2009 Business Plan was submitted for the consideration of the Executive Committee (ExCom) of the Multilateral Fund for Implementation of the Montreal Protocol at its 51st Meeting in March 2007 in Montreal, Canada. Except activities related to HCFCs and disposal of unwanted ODS, all activities proposed for the period 2007 – 2009 were approved by the ExCom as per Dec. 51/10. In addition, the ExCom also requested the World Bank to investigate the possibility of undertaking projects for the accelerated phase-out of production of CFC and CTC, and to report back to the Executive Committee on any issues it encountered.

In accordance with Dec. 51/10, there are five non-investment activities to be submitted for the consideration of the ExCom in 2007. These include four institutional strengthening renewal requests from Ecuador, Jordan, Thailand, and Turkey, and one technical assistance activity – Assessment of Phaseout of CTC in Chlo-alkali Sector. This technical assistance activity is included in the Bank's Business Plan as per the recommendation made by the ExCom in 2006.

At the 51st Meeting of the ExCom, the Bank submitted its 2007 Work Program for the ExCom's consideration. The 2007 Work Program contained a proposal for renewal of Ecuador's Institutional Strengthening Project. The request for renewal of Ecuador's Institutional Strengthening Project was approved by the ExCom for a period of one year only, instead of two years (Dec. 51/26). This is due to Ecuador's apparent non-compliance with Annex E of the Montreal Protocol. Ecuador is working with its methyl bromide industry to develop a plan of action to return to compliance. The plan of action will be submitted to the Ozone Secretariat for the consideration of the Implementation Committee in September 2007.

This proposed work program amendment includes two institutional strengthening renewal requests from Jordan and Thailand, and the funding request for undertaking the assessment of phaseout of CTC in the chlo-alkali sector. The plans of action and terminal reports for Jordan and Thailand are included as Attachments 1 and 2.

Regarding the accelerated phase-out of CFC and CTC production, the Bank has been working closely with the Government of India to investigate this possibility. Meetings have already been organized to explore this possibility with the CFC producers and with relevant agencies undertaking CFC consumption phaseout activities in India.

Country	Request (US $)	Duration	Description
Jordan	147,333	July 2007 – June 2009	Institutional Strengthening Renewal
Thailand	346,668	July 2007 – June 2009	Institutional Strengthening Renewal
Global	100,000	July 2007 – December 2008*	Assessment of CTC Phaseout in the Chlo-alkali Sector
Sub-total	594,001		
Support Cost	46,050**		
Total	640,051		

*The assessment report will be submitted to the ExCom at its last meeting in 2008. To meet this submission deadline, the report will be submitted to the Secretariat by end of September 2008. Therefore, the actual time for preparation of this document is about 12 months after the preparation funds are made available to the Bank.

**7.5% support cost is applied to funding related to the two IS projects, and 9% is applied to the proposed CTC study.

TERMS OF REFERENCE

EVALUATION OF ALTERNATIVES FOR THE PHASEOUT OF CARBON TETRACHLORIDE AS PROCESS AGENT IN THE PRODUCTION OF CHLORINE

1. BACKGROUND

Liquid chlorine is produced by electrolysis of sodium chloride brine. Even after undergoing purification, the natural rock salt used as raw material in the preparation of the brine contains impurities, leaving traces of ammonium and nitrogen in the electrolyte solution. These impurities are entrained by the chlorine gas after the electrolysis process is completed. As chlorine gas is liquefied it may react with these impurities, and the result is Nitrogen Trichloride (NCl_3). NCl_3 is a highly explosive compound when present in concentrations over three percent (3%), and it must therefore be periodically removed from the chlorine production process.

The chlor-alkali industry around the world traditionally used Carbon Tetrachloride (CTC), CCl_4, to extract NCl_3 from liquid chlorine. The chemical properties of CTC are ideal for this process, since it is both soluble in chlorine and a solvent for NCl_3, and it therefore mixes well with the two compounds. Moreover, the boiling point of CTC is 77°C, which is significantly higher than that of chlorine (-34°C) and similar to that of NCl_3 (71°C). It is therefore possible to keep NCl_3 in solution with CTC, at a range of temperatures where liquid chlorine is no longer present. CTC is inert, non-corrosive, and it is stable in a relatively wide range of temperatures[1].

CTC is controlled by the Montreal Protocol on Substances that Deplete the Ozone Level[2]. It has been recognized as a controlled substance used as process agent[3] by the Meeting of the Parties to the Montreal Protocol (Decision XV/6) when used to eliminate NCl_3 in the production of chlorine. Therefore, as countries phase out their consumption of Ozone Depleting Substances (ODS) in accordance to their commitments to the Montreal Protocol, the use of CTC by the global chlor-alkali sector has decreased, particularly in non-Article 5 countries (UNEP PATF, 1997). The overall consumption of CTC as a process agent in Article 5 countries is not, at present clearly known, but is expected to be relatively small. A report prepared by the Technology & Economic Assessment Panel (TEAP) is expected to be released in June 2007 and will provide insight on this matter.

A few chemicals have been identified that can be used as substitutes for CTC in the production of chlorine for the removal of NCl_3, but none is as versatile or as efficient. Therefore, in spite of having relatively low levels of CTC consumption, in absence of suitable alternatives, Article 5 countries that produce chlorine risk being out of compliance to their Montreal Protocol obligations before 2010. In an effort to identify potential countries that may need additional assistance to meet their target ODS reductions, the Executive Committee of the Montreal Protocol has requested the World Bank to carry out an assessment of the global chlor-alkali sector and to identify technically and economically viable alternatives to the use of CTC in the production of chlorine in Article 5 countries.

[1] UNEP, 2001. Report of the Process Agents Task Force (PATF), Case Study #1.

[2] CTC is an Annex B – Group II substance. Non-Article 5 countries phased out their baseline 1989 consumption of CTC in 1996, while Article 5 countries reduced their baseline 1998-2000 baseline consumption by 85% in 1995 and have committed to phase out 100% of their consumption by 2010 (with possible essential use exemptions).

[3] Process Agent is defined as a controlled substance, that because of its unique chemical and/or physical properties, facilitates an intended chemical reaction and/or inhibits and unintended chemical reaction (UNEP PATF, 1997).

2. PROJECT OBJECTIVE

The main objectives of this project are to:

- Assess consumption levels of CTC used as process agent in the production of chlorine both in Article 5 and non-Article 5 countries
- Examine technologies and/or production processes relevant to the phaseout of CTC in the production of chlorine, with a view to identifying cost-effective alternatives for the conversion of the chlor-alkali sector in Article 5 countries.

3. PROJECT ACTIVITIES

Activities to be conducted under this project are as follows:

Task 1: Global CTC consumption by chlor-alkali sector

The first activity under this project consists of establishing the current global context of CTC consumption as process agent for chlorine production. The consultants will determine remaining CTC consumption as a process agent for NCl_3 removal by the chlor-alkali sector in both Article 5 and non-Article 5 countries. Data shall be presented in a disaggregated manner, by country and by production facility.

Task 2: Review of CTC-free technologies for the chlor-alkali sector

Consultants will provide a detailed review of currently existing technologies or processes for the production of chlorine, which do not use CTC as a process agent for the removal of NCl_3. Consultants will specify if and how NCl_3 is removed from the final chlorine stream and whether any ODS are produced as byproducts (*e.g.* conversion of chloroform into CTC).

Task 3: Review of conversion projects

Consultants will review conversion projects that have been carried out over the past 10-15 years, through which chlor-alkali facilities have phased out the use of CTC as process agent in the production of chlorine. The review will include information on conversion projects in both Article 5 and non-Article 5 countries. The evaluation should include, but not be limited to, the following:

i. Overall plant characteristics (*e.g.* age of relevant equipment at the time of conversion, type of electrolytic cell, compressor types) and pre-conversion production procedures
ii. Annual level of production of chlorine (pre and post-conversion) and consumption of CTC (pre and post-conversion)
iii. Detailed description of methodology or technology used to achieve the phaseout of CTC and of new production processes
iv. Operational considerations associated with phaseout (*e.g.* down time of plant, required training of personnel, maintenance, safety issues)
v. Percent of NCl_3 in final chlorine product and related safety considerations
vi. Duration and cost of conversion project
vii. Post conversion issues and solutions

A minimum of five examples describing different conversion alternatives shall be provided. Consultants shall also provide contact details of technical personnel who can be approached for additional information at each of the facilities described.

Task 4: Review of containment alternatives

In its Decision X/14 of 1998, the Meeting of the Parties to the Montreal Protocol noted that process agent used in non-Article 5 countries should not be taken into account in the calculation

of a country's consumption or production, if the emissions of controlled substances had been reduced to "insignificant" levels as defined in the text of the Decision, through operating processes and containment technologies.

Consultants will review current CTC emission levels in a sample of non-Article 5 chlor-alkali plants where containment approaches have led to acceptable losses of CTC, as per Decision X/14. Consultants will estimate the cost effectiveness of containment alternatives and will make recommendations on the feasibility of adopting them in Article 5 production facilities.

Task 5: Analysis and recommendations

Based on their evaluation of the chlor-alkali sector, of the existing types of production facilities and of the alternatives for NCl_3 removal in the production of chlorine, consultants will propose possible scenarios for CTC phaseout in Article 5 countries (*e.g.* most suitable types of technical and procedural alternatives depending on the various types of production facilities). Recommendations should be made on the basis of the most environmentally sound and cost effective alternatives for conversion or containment, which at the same time ensure the safety of the workers at the production plant and of the chlorine costumers (*e.g.* level of NCl_3 in final product). Consultants will specify expected cost-effectiveness ranges of each alternative proposed.

4. MANAGEMENT AND IMPLEMENTATION ARRANGEMENTS

The World Bank will be the implementing agency for this proposed project. The Montreal Protocol Unit in the Environment Department will directly oversee the work of the consultants.

5. TIMELINE AND DELIVERABLES

Consultants are expected to spend a maximum of four (4) months completing their assignment. Based on the objectives and activities stated, deliverables from the project are as follows:

i. Progress report to be submitted two months after signature of the contract
ii. Final report to be submitted two weeks before the end of the contract

The progress report will be reviewed by the World Bank and comments will be provided within a week. Final reports must be cleared by the World Bank before final payment is made to consultants.

6. CONSULTANT'S QUALIFICATIONS

The firm selected to carry out this project must meet the following requirements:

- Consulting firm with a minimum of ten years of experience working with the chemical industry, with specific experience in the chlor-alkali sector
- Demonstrated technical capacity to carry-out the analysis in question
- Knowledge of the Montreal Protocol and of policies governing Multilateral Fund financing of operations in developing countries

7. BUDGET

The total budget for this project will be in the order of US$100,000.