UNITED
NATIONS

EP

United Nations
Environment
Programme

Distr.
LIMITED

UNEP/OzL.Pro/ExCom/21/13
22 January 1997

ORIGINAL: ENGLISH

Executive Committee of
the Multilateral Fund for the
Implementation of the Montreal Protocol

Twenty-first Meeting
Montreal, 18-20 February 1997

OVERVIEW OF ISSUES IDENTIFIED DURING PROJECT REVIEW

Projects and Activities Presented to the 21st Meeting

Submissions by Agencies and Bilateral Partners

1. The total value of the projects and activities received by the Fund Secretariat from implementing agencies and bilateral partners for consideration at the 21st Meeting, is US $45,341,004. The total is comprised of:

(a) Investment projects:

- 23 proposals for investment projects submitted to the 21st Meeting with a total value, as submitted, of US $32,540,806;

- in accordance with Decision 20/11(b), the investment project proposals originate from the portfolios from UNIDO and the World Bank and represent completion of each agency's 1996 programme.

(b) Bilateral cooperation:

- one project proposal was received from France with a total value of US $16,500 as submitted.

(c) 1997 Work Programmes:

- 126 1997 Work Programme requests totaling US $12,783,698 of which US $1,301,207 has been proposed for country programme preparation and institutional strengthening projects and US $11,482,491 for project preparation and other activities.

Secretariat's Review

2. Of the investment projects reviewed by the Fund Secretariat, six valued at US $1,560,898 have been recommended for blanket approval and six projects valued at US $5,795,730 have been recommended for individual consideration by the Sub-Committee on Project Review (see Annex I). Additionally, three projects already approved by the Executive Committee have been submitted requesting approval of a change in technology, with no change to project funding (see Annex II). Three further investment projects valued at US $2,735,933 have an unresolved policy issue associated with them and are proposed to be deferred (see Annex III). Eight projects valued at US $20,350,355 have been withdrawn.

3. One bilateral project with a value of US $16,500, three country programmes and institutional strengthening activities included in 1997 work programmes, with a value of US $311,247 are also being recommended for approval. 82 non-investment activities with a total value of US $6,015,442 have been recommended for approval.

Status of the Fund

4. At the time of preparation of this paper, the balance of Multilateral Fund contributions available for commitment at the 21st Meeting was US $13,237,693.

Policy Issues arising from Projects

5. The production level of enterprises requesting funding from the Multilateral Fund is an important parameter in the determination of eligible incremental operating cost and in establishing the ODS consumption and thus the cost-effectiveness for the project. For instance, incremental operating costs in domestic refrigeration projects are calculated as the incremental operating cost per refrigerator times the number of refrigerators produced by an enterprise during the year in which the project was prepared and submitted to the Executive Committee. There is uncertainty about the production level to be used when projects are divided into two phases separated by a number of years, and when requests for operating costs are prepared after a conversion has been completed.

6. The issue is directly related to determination of the level of eligible incremental costs for two domestic refrigeration projects in Thailand, submitted to the 21st Meeting. The projects are listed for individual consideration in Annex I, following resolution of the policy issue. The issue is fully described in Annex IV to this paper.

Change of Technology after Project Approval

7. At its 20th Meeting the Executive Committee noted the statement by the Sub-Committee on Project Review that there was a presumption that projects would be implemented as approved. The Committee decided that the implementing agencies should exceptionally be allowed to propose changes in technology and that adequate and detailed justification should be provided.

8. Six proposals for changes in technology were submitted by UNDP to the 20th Meeting and subsequently approved in the light of the above decision. Three more proposals have been submitted to the 21st Meeting by UNDP from enterprises for whom projects were approved in 1994 and 1995 (Annex II). Together, these constitute some nine per cent of the total number of investment projects submitted by all implementing agencies to the 20th and 21st Meetings. So far, none of the proposals has involved extra funding. However, the World Bank has foreshadowed in its 1997 Work Programme Plan that it wishes to prepare proposals for change of technology for 'several' of the 22 World Bank foam projects already approved for China and that some will involve additional funding.

9. The Executive Committee may consider that a nine per cent rate for changes to approved technology arising from the 20th and 21st Meetings constitutes more than an 'exceptional' rate of submission. The Committee may wish to request the Fund Secretariat, together with the implementing agencies, to prepare draft guidelines for proposals for a change in technology for approved projects, taking into account the views expressed by the Project Review Sub-Committee

and the Executive Committee at its 20th Meeting. The Committee might aim to adopt such guidelines at the 22nd Meeting and agree that the three projects submitted to this meeting, should also be considered at the 22nd Meeting in the light of the Committee's conclusion on guidelines.

Tobacco Sector Guidelines

10. In response to the Executive Committee's request at the 20th Meeting, the World Bank has submitted two tobacco sector projects in Indonesia. The projects are listed for individual consideration (Annex I). The Secretariat's comments and recommendations can be found in Document UNEP/OzL.Pro/ExCom/21/19. The main issue is that because of the cost structure of the industry, incremental costs of projects calculated in accordance with the draft guidelines for the sector are always likely to have very high cost-effectiveness figures of the order of US $30 to US $40 per kilogram. Additional modification of the guidelines is unlikely to change this situation. Better cost effectiveness will only occur when the enterprise contributes to the cost of conversion. This is the case with the projects presented to this Meeting, in which the enterprise contribution has resulted in a cost-effectiveness of US $13.49/kg. In the Secretariat's comments the Executive Committee is invited to consider establishing a lower cost-effectiveness threshold for the sector commensurate with the highly automated production activities and large production volumes found in tobacco production.

Incremental Operating Costs for Domestic Refrigeration Compressors

11. For three projects submitted to the 20th Meeting, capital costs were approved by the Executive Committee but consideration of operating costs was deferred. Two projects were for conversion of compressor manufacture in Thailand (Decision 20/27). One project was for conversion of domestic refrigerator manufacture in China (Decision 20/22). The three projects have been re-submitted to the 21st Meeting by the World Bank.

12. In each case, the main issues relate to determination of the eligibility and magnitude of any incremental operating costs for the new compressors for use with HFC-134a refrigerants, in circumstances where conversion of both compressors and refrigerators has been funded in the same country.

13. The Secretariat intends to prepare a short policy paper setting out the relevant issues, on the basis of which decisions could betaken on the operating cost component of these three projects. In consultation with the World Bank and to ensure that all relevant implementing agencies would have the opportunity to be fully consulted, it was agreed that the paper should be submitted to the 22nd Meeting of the Executive Committee.

14. In the absence of this policy paper, there is no additional information or guidance on which to base a recommendation on the three projects, which have not changed since the 20th Meeting. Because of this, the Fund Secretariat has not prepared additional comments on the projects and suggests that the Committee give consideration to deferring the projects until the 22nd Meeting. This will not affect project implementation as funding has been approved for the capital costs.

15. The World Bank is of the view that the operating cost elements of the projects could be considered for approval at this meeting, and should be assessed on the basis of the current policies and guidelines, rather than in the light of new guidelines which might be adopted at the 22nd Meeting.

16. The cover sheets of the projects, as submitted to the 20th Meeting, are provided in Annex III.

Issues identified in 1997 Business Plans

17. None of the implementing agencies met their sectoral funding or ODP targets for approvals in 1996 due largely to the fact that guidelines were not in place for the halon, production and tobacco sectors. The Committee might consider if 1997 business plans need to be revised to reflect the Committee's priorities or if they should be approved as submitted for compilation into the Fund's 1997 business plan.

Performance Targets for project implementation

18. The agencies' 1997 business plans are projecting larger amounts of disbursement than that projected in 1996 and similarly high levels of ODP phase-out. The Committee might consider, given the agencies' performance against their 1996 plan, if the 1997 performance targets are achievable and, whether they should become the target for the Fund as a whole.

Performance Targets for project approval

19. All three agencies plan to pursue projects in one or more sectors where final guidelines have not been yet adopted, for instance, the production and tobacco sectors. Over half the ODS arising from the World Bank's proposed project submissions in 1997 will come from the China halon sector plan which, at this stage, has unresolved policy issues. Additionally, The World Bank has noted that it will pursue projects in the aerosol sector on the basis that the policy of the Committee will be revised and plans to prepare projects for retrofitting commercial/industrial facilities in advance of guidelines from the Committee. Preparation of such projects may result in delayed approval and the re-formulation of the projects once guidance is provided. The Committee may wish to consider the priority for project preparation in sectors for which it has not finalized guidance.

Meeting the 1999 freeze requirements

20. Decision 19/4 which was reaffirmed in terms of business planning in Decision 20/9 requests the agencies to focus on projects which assist countries to comply with the Protocol's freeze commitments in 1999.

- The aggregate cost-effectiveness of projects to be submitted in 1997 exceed the established threshold in several sub-sectors. Planned submissions in 1997 are less cost-effective, overall, than in previous years.
- The World Bank will be pursuing projects for the reimbursement of operating costs and changes in technologies that might require additional funding. UNDP is targeting approval for production sector activities and for several recycling projects.

21. The Committee may wish to consider if the appropriate level of priority has been given to the freeze in 1997 business plans. The Committee might therefore also consider what relative priority should be given in 1997 to projects in high consuming countries, and to projects that are relatively less cost-effective, that do not result in phase-out, or that have long durations.

Methyl bromide demonstration projects

22. In decision 20/49, the Executive Committee decided that the initial tranche of funding for methyl bromide projects should represent a funding level of from US $2 to 3 million. The business plans of UNDP and UNIDO indicate that they intend to prepare projects valued at a total of US $4.5 million. The Executive Committee is being asked to consider if it wishes to allow these agencies to include the expectation of this level of funding in their business plans in light of decision 20/49.

Issues arising from 1997 Work Programmes

Project Preparation

23. The allocation of funding for project preparation provides the Executive Committee with the opportunity to direct the implementation of its priorities through the composition of annual Work Programmes. In reviewing project preparation requests the Executive Committee might consider the likelihood of the projects being approved, bearing in mind that this was a significant factor in the goals of the 1996 business plan not being achieved. For 1997, a significant number of project preparation requests continue to be in sectors with outstanding issues.

24. For example, the World Bank states that it will pursue halon projects in India if implementation modalities are resolved and that it will prepare aerosol and MAC projects in China depending upon implementation progress. Due to the uncertainty associated with these project preparation requests, the Secretariat has recommended reduced funding. The World Bank plans to prepare projects for retrofitting installations in the commercial and industrial refrigeration sectors in Colombia and Mexico in advance of guidelines. Project preparation is being requested for the preparation of an additional sector strategy in China's solvents sector by UNDP whose incremental costs will be determined through economic cost modelling. This approach appears similar to that under preparation by the Bank which is still under consideration of the Committee. UNDP is requesting US $120,000 in project preparation funds for a production sector project in Venezuela and the World Bank plans activities in China and Mexico in the production sector.

UNIDO has also received a request from the Government of Mexico to prepare a production sector project. The Committee has not yet approved production sector guidelines. The Executive Committee might consider whether additional work programme funding should be provided at this stage on the basis of guidelines or strategies that have yet to be finalized.

Country programme updates

25. UNDP has requested US $175,000 for a country programme update in China. The Committee has funded over US $9 million in project preparation, funding for sector strategies, and institutional strengthening in China. From these activities, the ozone unit in China should also be well-equipped to monitor information about the phase-out needs in China.

26. The World Bank has requested a country programme update for Colombia. The Executive Committee has already approved all of the domestic refrigeration projects (including compressor projects) in the country, more foam phase-out than was indicated in the country programme, and it is our understanding that the methyl bromide sector has already been phased out. The Bank has indicated that it will be investigating the commercial/industrial refrigeration sector for a possible sector strategy and has requested US $85,000 for project preparation. Given the approved activities to-date, the Bank's desire to prepare a sector strategy, and the funds approved for institutional strengthening, the ozone unit in Colombia should also be well-equipped to monitor information about the phase-out need in Colombia.

Funding of 'Unallocated' Project Preparation Activities

27. In Decision 19/10 the Executive Committee requested the implementing agencies to set aside 10-15 per cent of the project preparation funding in their 1997 business plans for 'unallocated activities'. This was intended to make provision for project preparation requests which might arise during the year. Implementing agencies have also requested approval of funding at up to the 15 per cent level in their 1997 Work Programmes for as yet unspecified project preparation activities.

28. The Executive Committee might consider whether it wishes to approve this funding now, on a one-off basis for the year. Alternatively, the implementing agencies would be required to submit amendments to Work Programmes up to a level of 10 to 15 per cent of project preparation funds initially approved, throughout the year as the unspecified activities were identified.

UNEP Proposal for an Increase in the Level of 'Core Funding'

29. In Decision 19/12, which approved funding for UNEP's 1996 work programme, the Executive Committee decided that any further activities taken by UNEP should be financed through reprioritization of its core programme. UNEP's core programme has come to be defined as its information exchange, networking and training activities, excluding country specific training projects. Country programme preparation and institutional strengthening projects are also not part of the core programme. The core programme for 1996 was approved at a level of US $2.43 million.

30. UNEP's 1997 work programme proposes a core funding level of US $3.86 million. UNEP has advised that it interpreted Decision 19/12 as relating to the 1996 programme. The Committee may wish to consider whether it wishes to review the level of core funding for UNEP.

31. Specific comments on individual proposals are presented in the Secretariat's comments and recommendations on each agencies' 1997 Work Programmes in the following documents:

- UNEP/OzL.Pro/ExCom/21/15 (UNDP)
- UNEP/OzL.Pro/ExCom/21/16 (UNEP)
- UNEP/OzL.Pro/ExCom/21/17 (UNIDO)
- UNEP/OzL.Pro/ExCom/21/18 (World Bank).

ANNEX I

PROJECTS FOR INDIVIDUAL CONSIDERATION BY THE SUB-COMMITTEE ON PROJECT REVIEW

Evaluation sheets containing the comments of the Fund Secretariat on the issues involved are included in the country project document.

Country & Document N°	Sector	Enterprise	Implementing Agency	Status
INDONESIA UNEP/OzL.Pro/ExCom/21/19 (Pages 4 to 6)	Tobacco Tobacco	Sampoerna Djarum	World Bank World Bank	For individual consideration For individual consideration
THAILAND UNEP/OzL.Pro/ExCom/21/22 (Pages 5 to 9)	Dom.refrigeration Dom.refrigeration Dom.refrigeration	Sanyo Thai Toshiba Kang Yong	World Bank World Bank World Bank	See Note 1 See Note 1 See Note 1
URUGUAY UNEP/OzL.Pro/ExCom/ 21/23 (Pages 2 to 5)	MAC	Panasco	World Bank	For individual consideration

Note:

1. There are no outstanding technical issues. There is a policy issue concerning the level of production of each enterprise for use in calculating ODS consumption and incremental operating costs. Also, funding for these projects is not being sought at the meeting.

ANNEX II

PROJECTS REQUESTING APPROVAL FOR CHANGE OF TECHNOLOGY

The three proposals for change of technology submitted by UNDP to the 21st Meeting are listed below. Project cover sheets for the proposals are appended to this Annex.

Country	Project Title	Date Approved
China	Elimination of the use of CFC-112 and methyl chloroform in the colour picture tube manufacturing process at the Shanghai Novel CPT Corp. Factory	November 1995
Thailand	Elimination of the use of CFCs in the manufacture of flexible polyurethane foam (slabstock) at the Lucky Group	July 1994
	Elimination of the use of CFCs in the manufacture of flexible PUF slabstock at Karn Yang Yeen Yong Industry Ltd. (KYYY) Foam	December 1994

PROPOSED PROJECT REVISION

COUNTRY :	**China**
PROJECT TITLE:	Elimination of the use of CFC-113 and Methyl Chloroform in the color picture tube cleaning processes at the **Shanghai Novel CPT Corp. Factory.**
SECTOR COVERED:	Solvent Cleaning
ODS USE IN SECTOR:	5050MT(ODS) of CFC-113 solvent in 1993 1269MT (ODS) of 1,1,1 trichloroethane (TCA) in 1993 Total ODP-weighted consumption of ODS =4,527 MT
PROJECT IMPACT:	Elimination of 164.4 MT of TCA annually(16 ODP MT) Elimination of 73.3 MT of CFC-113 annually (59 /ODP MT)
PROJECT DURATION:	2 years
TOTAL PROJECT COST: (NO CHANGE)	ODS Reduction Investment Cost: US$ 1,329,000 Incremental Operating Savings: US$ (196,400) Total cost US$ 1,132,600 Net Project Cost (75%local owned) US$ 849.450 Difference (Enterprise participation) US$ 283,150
PROPOSED OTF FINANCING: (NO CHANGE)	US$ 849,450 as grant US$ 283,150 as Enterprise participation
COST EFFECTIVENESS:	\$11.33/Kg (ODP basis) - no change
IMPLEMENTING ENTERPRISE:	Shanghai Novel Color Picture Tube Corporation
COORDINATING AGENCY:	NEPA through MEI
IMPLEMENTING AGENCY:	UNDP

PROJECT REVISION SUMMARY

The Shanghai Novel CPT Factory uses CFC-113 and methyl chloroform in the cleaning steps of picture tube manufacture. Cleanliness and compatibility with the delicate sections of the tube are critical to the desired performance of the finished product. The project will no longer use a multi-stage in-line cleaner followed by a mechanical particulate removal operation. Instead, it will use an aqueous wash rinse, followed by a second, high purity water wash-rinse for better particulate removal, and the project will identify, qualify and install a non-ODS aqueous cleaning process that meets these critical cleaning need, thereby phasing out the use of CFC-113 at this factory.

Prepared by Clinton Norris
Reviewed by Dr William Kenyon

PROJECT COVER SHEET

COUNTRY:	Thailand
PROJECT TITLE:	**LUCKY GROUP** - Elimination of the use of CFCs in the manufacture of flexible polyurethane foam (slabstock).
SECTOR COVERED:	Foamed Plastics
ODS USE IN SECTOR:	1510 T CFCs (=ODP) in 1991
PROJECT IMPACT:	187 tons (base 1993)
PROJECT DURATION:	One Year
PROJECT ECONOMIC LIFE:	10 Years
TOTAL PROJECT COSTS:	USD 1,078,000 Incremental Capital Cost
PROPOSED MLF GRANT:	USD 1,078,000
GRANT EFFECTIVENESS:	USD 3.24/kg/y
COORDINATING NATIONAL BODY:	Department of Industrial Works (DIW) Ministry of Industry
IMPLEMENTING AGENCY:	UNDP
APPRAISAL DATES:	June 1994/December 1996

PROJECT SUMMARY

The Lucky Group is a 100% Thai owned enterprise comprising of four subsidiaries: Eastern Foam Product Co., Ltd., Lucky Foam Industry Co., Ltd., Southern Foam Co., Ltd. and Thai Develop Foam Co. Ltd. Lucky manufactures flexible PU foam for mattresses, cushions and other products, mainly for the furniture and bedding industry. The group consumed in 1993 187 MT CFC-11, used as auxiliary blowing agent in the foam manufacture.

The Fund approved a grant to the amount of 605,000 to replace these CFCs by methylene chloride with the support of forced cooling.

PROJECT COVER SHEET

COUNTRY:	Thailand
PROJECT TITLE:	**KYYY** elimination of the use of CFCs in the manufacture of Flexible PUF Slabstock
SECTOR COVERED:	Foamed Plastics
ODS USE IN SECTOR:	1510 T (1993)
PROJECT IMPACT:	Phase out of 110 t of CFC-11
PROJECT DURATION:	One Year
PROJECT ECONOMIC LIFE:	10 Years
TOTAL PROJECT COSTS:	USD 475,000
PROPOSED MLF GRANT:	USD 170,000
GRANT EFFECTIVENESS:	USD 1.55/kg/yr
COORDINATING NATIONAL BODY:	Ministry of Environment Department of Industrial Works (DIW)
IMPLEMENTING AGENCY:	UNDP
APPRAISAL DATES:	September 1994/December 1996

PROJECT SUMMARY

Karn Yang Yeen Yong Industry Ltd. Part. ("KYYY") is a 100% Thai owned private enterprise which produces flexible slabstock PUF. Originally the enterprise would, under this project phase out the use of CFC-11, substituting it with a combination of water/methylene chloride for its production of low density flexible slabstock foam. After learning about the commercialization of liquid carbon dioxide (LCD) technology, the enterprise requested a modification of its project to include a shift to such a technology. The project document has been changed accordingly while maintaining the original grant that was approved at the 14th ExCom meeting in December 1994.

ANNEX III

The following projects are recommended for deferral on the basis of outstanding policy issues:

Country	Project Title
CHINA	Conversion of manufacturing facilities from CFC-11 foaming agent to cyclopentane and CFC-12 refrigerant to HFC-134a at Gansu Changfeng Baoan Industry Co. Ltd.
THAILAND	Conversion of compressor manufacture from CFC-12 to HFC-134a, Phase II, at Kulthorn Kirby Public Co. Ltd.
	Conversion of compressor manufacture from CFC-12 to HFC-134a designs at Sanyo Universal Electric Co. Ltd.

Project cover sheets for the proposals are appended to this Annex.

THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEPLETE THE OZONE LAYER

PROJECT COVER SHEET

COUNTRY: The Peoples Republic of China

PROJECT TITLE: Conversion of Manufacturing Facilities from CFC11 Foaming Agent to Cyclopentane and CFC12 Refrigerant to HFC134a

SECTOR COVERED: Domestic Refrigeration

ODS USE IN SECTOR: 7784 MT CFC-11
2109 MT CFC-12

PROJECT IMPACT: 65.2 MT of CFCs

PROJECT DURATION: 2 years

PROJECT ECONOMIC LIFE: 15 years

TOTAL PROJECT COST:

Total Investment Cost[1]:	**US$ 618,000**
Contingency 10%:	US$ 61,800
Incremental Operating Costs	US$ 320,380
Total Project Cost	**US$ 1,000,180**

PROPOSED OTF FINANCING: **US$1,000,180**[2]

GRANT COST EFFECTIVENESS: $ 11.68 per kg ODP

IMPLEMENTING ENTERPRISE: Gansu Changfeng Baoan Industry Co. Ltd.

COORDINATING MINISTRY: National Environmental Protection Agency (NEPA)
National Council of Light Industry (NCLI)

IMPLEMENTING AGENCY: The World Bank

PROJECT SUMMARY

This project will phase out chlorofluorocarbons (CFCs) used in household refrigerators manufactured by Changfeng. The project includes two items: (1) Replacement of CFC12 refrigerant with HFC134a, and (2) Replacement of CFC with cyclopentane in the generation of insulating foam for refrigerators. The project will be conducted in two phases. In phase one, a limited number of refrigerators will be produced with alternative materials (HFC134a and cyclopentane). The facilities will be fully converted to use of alternative materials in Phase 2. The project will result in the elimination of 65 MT/year of CFCs based on current 1995 production rates and a 100% CFC use basis. The project will be supported by the China Household Appliance Research Institute for refrigerant and by CANON (Singapore) for foam. No additional funds will be requested to complete the phaseout of CFCs at Changfeng.

TECHNICAL ASSESSMENT: The project has been reviewed and is supported by Dr. Lambert Kuijpers. OORG Refrigeration Expert and by Dr. G.M.F. Jeffs OORG Foam Expert. (rev. 8/9/96)

---

[1] Total Investment Cost is net of salvage value for replaced equipment and 10% Contingency.

[2] The OTF Grant is based on 100% Chinese ownership.

MONTREAL PROTOCOL
SUBSTANCES THAT DEPLETE THE OZONE LAYER

PROJECT COVER SHEET

COUNTRY	Kingdom of Thailand
PROJECT TITLE	**Conversion of Compressor Manufacture from CFC-12 to HFC-134a, Phase 2**
SECTOR COVERED	Household Refrigerator
ODS USE IN SECTOR	430 MT CFC-12 in 1991 230 MT CFC-12 in new appliances 500 MT CFC-11 in 1991 Total of 930 MT (930 ODP weighted MT)
PROJECT IMPACT	Indirect
PROJECT DURATION	1 Year
PROJECT ECONOMIC LIFE	10 years
TOTAL PROJECT COST	Incremental Capital Costs US$1,893,000 15% contingency 284,000 Incremental Operating Savings 1,200,000 Total Incremental Project Costs US$3,377,000 Foreign Ownership 30% Export to Non-Article Countries 25%
GRANT EFFECTIVENESS	Not applicable
PROPOSED OTF FINANCING	US$2,010,000 (Total MF Grant approved for Phase 1 = US$665,000
IMPLEMENTING ENTERPRISE	Kulthorn Kirby Public Company Limited
CO-ORDINATING NATIONAL BODY	Department of Industrial Works (DIW), Ministry of Industry, Kingdom of Thailand
IMPLEMENTING AGENCY	The World Bank

PROJECT SUMMARY

This project is Phase 2 of the Kulthorn Kirby Public Company Limited (KKPC) conversion programme of compressor manufacture from CFC-12 to HFC-134a. The initial Phase 1 project that embraced the HFC-134a design testing of the currently produced small hermetic reciprocating compressor models used for such refrigeration systems as refrigerator freezer and water cooler, was successfully completed in 1995; thus permitting commencement of the final stage of the conversion programme, the Phase 2 project. At the time of Phase 1 of this project KKPC's share of the local hermetic compressor needs in Thailand represented 54%. This value has been retained now in 1996, however, due to an overall general increase in the market place quantity wise, our own manufacturing activity has increased by some 25%.

The Phase 2 project is entirely associated with KKPC's HFC-134a mass production plan, aimed at serving local market demand, which is the only acceptable technology for replacement of CFC-12 in the above refrigeration field in Thailand. The activities involved will include procurement of new manufacturing tools/equipments, also modification to some of the existing manufacturing facilities, acquisition of foreign experts for technical advice and staff training.

KKPC project is scheduled for completion in December 1996. This will achieve the target set by the Thailand governmental office, Department of Industrial Works, Ministry of Industry for local refrigeration sector to completely phaseout CFC-12 use on January 1, 1997; thus achieving the country's ODS phaseout programme. The 1997 conversion of the compressor production line at KKPC from CFC-12 to HFC-134a will indirectly eliminate approximately 115 metric tons of domestic CFC-12 annual consumption in the refrigeration systems. The total estimated cost for this Phase 2 project is US$3.78 million.

COUNTRY:	Kingdom of Thailand	
PROJECT TITLE:	Conversion of Compressor Manufacture from CFC-12 to HFC-134a Designs at Sanyo Universal Electric Co., Ltd.	
SECTOR COVERED:	Household Refrigerator	
ODS USE IN SECTOR:	430 MT of CFC-12 in 1991 (230 MT in new appliances) 500 MT of CFC-11 in 1991 Total of 930 MT (930 ODP-weighted MT)	
PROJECT IMPACT:	Indirect	
PROJECT DURATION:	Phase I: 3 years Phase II: 6 months	
PROJECT ECONOMIC LIFE:	10 years	
TOTAL PROJECT COST:	Total Project Cost (Phase I & II):	US$ 3,290,000
	Phase I Grant (received)	US$ 721,000
	Phase II Grant (proposed)	US$ 1,410,000
	Total Grant (Phase I & II)	US$ 2,131,000
Eligible Costs Phase II:	Investment Costs (incl. contingency)	US$ 1,196,000
	Incremental Operating Costs	US$ 221,000
	Total	US$ 1,417,000

PROPOSED OTF FINANCING: **US$ 1,417,000**

COST EFFECTIVENESS: Not Applicable

IMPLEMENTING ENTERPRISE: Sanyo Universal Electric Co., Ltd. (65% Thai; 35% Japanese)

COORDINATING MINISTRY: Department of Industrial Works
Ministry of Industry
Kingdom of Thailand

IMPLEMENTING AGENCY: The World Bank

PROJECT SUMMARY

This project will eliminate the production of CFC-12 household refrigerator compressors at Sanyo Universal Electric Co., Ltd (SUE) in Thailand. This project will support the Thai government's commitment to eliminate the use of CFCs in household refrigerator manufacturers by the end of 1996.

Compressor manufacturer conversion investment projects in Thailand were among the first of their type considered by the Executive Committee. Because of uncertainties about costs, it was decided to separate these projects into two phases. According to the agreed implementation strategy, during the first phase the two compressor manufacturers in Thailand would conduct product development investigations and determine the exact changes in manufacturing technologies and equipment needed. The second phase projects would then cover the actual conversion of the factories. As described in detail below, HFC-134a will be used as the new refrigerant.

The Executive Committee approved at its tenth meeting financial support of US$ 1.0 million for the first phase of the compressor project at SUE. The Executive Committee, at the same meeting, also gave permission to proceed for the second phase. Sanyo Electric of Japan has been providing engineering assistance and training to SUE during the product development phase, and will continue providing necessary support until SUE completes the conversion process. The project will enable the refrigerator sector in Thailand to eliminate half of the total CFC-12 consumption (230 MT/year) in this sector after the conversion is completed. The market share of SUE's compressors is approximately 50 percent.

To carry out the Phase II project, SUE would require additional support of US$ 1.4 million from the Multilateral Fund. The total grant amount used during the Phase I was $ 0.72 million. Since it was disbursed under a separate grant agreement, the balance will be returned to the Fund, rather than being carried over to Phase II.

ANNEX IV

Multiphase Projects and Operating Costs

1. Most of the investment projects funded by the Multilateral Fund were approved on the basis of a single project involving full conversion from ODS-based technology where the production level was always specified in the project. The exceptions to this general practice have been 11 projects approved in 1993 and 1994 for implementation by the World Bank in Thailand (4 projects), the Philippines (4 projects) and China (5 projects). In these projects the World Bank requested funding for the first phase, involving only partial conversion, with the intention to submit the second phase to complete the conversion to a future meeting of the Executive Committee.

2. The requests for Phase I included information about the level of ODS consumption and the number of units produced by each enterprise at the time of project preparation. Proposals to complete the conversion (Phase II) have indicated that the level of production of some of the enterprises has increased since the Phase I projects were approved, creating uncertainty about the figure to be used in calculation of consumption and incremental operating cost.

3. This uncertainty may also arise in the future in the context of three other projects approved for Turkey and one for Brazil in 1994, in the domestic refrigeration sub-sector. Incremental operating costs were not included in these projects at the time of approval but can be submitted to the Executive Committee after the conversion is completed, in accordance with the decision taken at the 13th Meeting:

> "to approve incremental costs of one year's duration calculated on the basis of costs prevailing following the start of operations if that modality is requested or incremental operating costs of six months' duration calculated on the basis of prices prevailing when projects were approved". (UNEP/OzL.Pro/ExCom/13/47, para 159(b)).

4. The World Bank's Work Programme for 1997 indicates that several such requests could be submitted to the Executive Committee in 1997. The Executive Committee has not clarified, however, what level of production should be applied if operating costs are requested for one year's duration.

5. The projects referred to above raise the following issues:

   (a) Should the incremental operating costs be requested on the basis of production levels reported in Phase I, or in accordance with production levels reported in Phase II, or in the case of incremental operating costs sought for one year, production level at the time the project is completed?

(b) Which of these two figures should be used to calculate the cost-effectiveness of the combined phases?

6. In considering the issue raised in para (a) above, the Executive Committee may wish to recall its decision at the 16th Meeting which states:

> "ODS consumption should be calculated on the basis of either the year, or an average of the three years immediately preceding project preparation." (UNEP/Ozl.Pro/ExCom/16/20, para 32(b)).

7. The Executive Committee may wish to take into consideration the following:

- Phase II may be submitted up to three years after approval of the Phase I request, during which time the enterprise may have expanded its CFC-based activities
- there should be equity with other projects with a similar total implementation time but which were not split into two phases and which would have to use the lower initial production figures
- initial consideration and approval of Phase I by the Executive Committee amounted to endorsement of the entire projects in concept, including the ODS phaseout target and the levels of production stipulated at the time in the project documents; a later increase in production figures amounts to increasing the liability of the Fund *post-facto*.

8. Two projects in domestic refrigeration for Thailand have been submitted to the 21st Meeting, for consideration of Phase II. The first phase of each project which was for product development, testing and training was approved at the 10th Meeting of the Executive Committee in 1993. The Committee also gave 'permission to proceed' with the development of the second phase of the projects.

9. Implementation of Phase I took about 2 years. During the transition period both CFC and non-CFC refrigerators were being produced simultaneously. The ODS consumption and the production level at the time of submission of Phase II are substantially higher than the figures reported in Phase I of each project. The increases in production levels and ODS consumption are due to expansion of production facilities, and/or an increase in the number of hours for which the facilities are operated (i.e., additional shifts). For example, one of the enterprises established new, additional production line in parallel with the existing line after the request for Phase I had been approved.

10. On the other hand, in relation to multi-phase projects, the implementing agency has pointed out that the second phase is presented as a separate project, and that in its view, the Committee's current policy provides for the use of production numbers and the calculation of consumption for the year preceding preparation of the Phase II projects. In the case of the Thailand projects, this would mean the use of 1995 production figures which are some 30 per cent

higher than the figures for 1993 when the projects were first presented to the Committee with the proposal for funding of Phase 1. Use of the 1995 figures would provide a commensurate increase in the level of grant from the Multilateral Fund. The two projects for Thailand in this category are listed in Annex I to this paper. The Secretariat's comments and recommendations on the projects, including project costs using the two sets of production figures, are contained in UNEP/OzL.Pro/ExCom/21/22, pages 5 to 9.

11. The Executive Committee may wish to provide guidance on the following issues:

(a) if the conversion of an enterprise is presented and funded in two phases, should the production and consumption be calculated on the basis of the levels prevailing when the second phase was prepared, or the levels provided in Phase I when the project was first approved?

(b) should an enterprise which opted to collect incremental operating costs after the project had been implemented, be compensated on the basis of its production when the initial project was submitted, or on the basis of its production after the project has been implemented?