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EXECUTIVE COMMITTEE OF
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BILATERAL COOPERATION

This revised document is issued to replace UNEP/OzL.Pro/ExCom/28/20 and Corr.1. It includes the following requests:

Belgium

- Conversion from CFC-11 to HCFC-141b technology in the manufacture of rigid polyurethane in Bolivia

France

- Project preparation of phase out of use of ODS solvent in production of parts working in high voltage conditions in China
- Conversion of ODS-free technology at Dorcharkh Company in Iran
- Halon management program in Iran
- Remaining issues for a RMP and preparation of strategy and projects for reduction of CFC emissions in centrifugal chillers in Lebanon
- Survey for halon banking management plan in West Asia countries (Bahrain, Lebanon, Qatar and Yemen)
- CFC emission reductions in spinning halls air conditioning systems chillers pilot project in Viet Nam

Germany

- Recovery and recycling project in Kenya
- Remaining issues for a RMP and preparation of strategy and projects for reduction of CFC emissions in centrifugal chillers in Lebanon
- Survey for halon banking management plan in West Asia
- Promoting compliance with the Montreal Protocol in countries with economies in transition (Croatia and Romania)

Japan

- Phasing out ODS in the production of compressors at Changshu Refrigerating Equipment Works in China
- Project preparation assistance for enterprises in the city of Shenzhen for the elimination of ODS (CFC-113 and TCA) in the production lines of LC display and TV picture tube in China

United Kingdom

- Chiller concessional lending pilot project in Mexico

REQUESTS FROM THE GOVERNMENT OF BELGIUM

1. The Government of Belgium has submitted a request for bilateral cooperation for a project in Bolivia.
2. The amount requested does not exceed 20 per cent of Belgium's total contributions for 1999.

Conversion from CFC-11 to HCFC-141b technology in the manufacture of rigid polyurethane foam at Quimica Andina (US \$108,480)

Project description

3. Quimica Andina uses 5 tonnes of CFC-11 in the manufacture of rigid polyurethane foam for insulation applications. The production is to be converted to HCFC-141b as an interim step, with a likely permanent solution being water based formulations. The project includes replacement of the low pressure spray foam dispenser with a high pressure spray foam dispenser (US \$35,000), and installation of a metering system to use HCFC-141b for the boxfoam dispenser (US \$15,000). Other costs include trials (US \$10,000), training and technology transfer (US \$10,000) and contingency (US \$7,000). The project also includes incremental operating costs for two years of US \$19,000.

Comments

4. The project has been agreed with the Government of Belgium.
5. The cost-effectiveness of the project is US \$21.33/kg. However since Bolivia's consumption of 46.1 ODP tonnes classifies it as a low volume consuming country (LCV) the threshold does not apply to it.
6. Annexes I and II of this document contain the justifications for the use of HCFC-141b.

Recommendations

7. The Fund Secretariat recommends blanket approval of the Quimica Andina project in the amount of US \$108,480.
8. The Treasurer is authorized to offset the approved amount against the balance of the Government of Belgium's bilateral contribution to the Multilateral Fund for 1999.

REQUESTS FROM THE GOVERNMENT OF FRANCE

9. The Government of France has submitted requests for bilateral cooperation for projects in China, Iran, Lebanon, Viet Nam and for one regional project in West Asia countries (Bahrain, Lebanon Qatar, and Yemen). The Executive Committee decided to allow flexibility in the year for which bilateral projects would be credited provided that bilateral agencies submit their work plans to the first meeting of the year. France submitted its 1999 work plan.

10. The amount requested, including previous approvals offset against France's bilateral contributions, does not exceed 20 per cent of France's total contributions for the 1998 through 1999 triennium replenishment.

Project preparation of phase out of use of ODS solvent in production of parts working in high voltage conditions in China (US \$27,500)

Project description

11. France received a request from SEPA for technical and financial assistance for the elimination of the use of ODS in the solvent sector. SEPA and France discussed several possibilities of bilateral co-operation in solvent sector. France indicated that it and SEPA 'tried to find a way' to avoid any duplication of ongoing activities.

12. France plans to use this project preparation to develop one or two demonstration projects to provide technical assistance in the phase out of ODS solvents used for precision cleaning of the production of electrical parts that are used in high voltage conditions.

Comments

13. The Executive Committee approved US \$200,000 for the preparation of a solvent sector strategy to phase-out the sector in China. The strategy is expected to result in an overall plan to phase out all solvent ODS consumption in China through one funding programme.

14. A sub-group is meeting on the strategy at the 28th Meeting. UNDP informed the Secretariat that it does not expect to submit the China Solvent Strategy for funding during its 1999 business plan year.

Recommendation

15. The Secretariat recommends that this project should be deferred.

Conversion to ODS-free technology at Dorcharkh Company in Iran (US \$223,127)

Project description

16. Iran Dorcharkh is a 100% Iranian company producing motorcycles and bicycles and using carbon tetrachloride for the degreasing of tubular metal parts before welding. The purpose of the project is to phase out the use of 11 ODP tonnes of carbon tetrachloride through a new

aqueous degreasing process. The project includes equipment to support this conversion, provisions for technology transfer and training. The main capital expenditure is an aqueous degreasing machine at a cost of US\$ 155,000 including installation and set-to-work costs.

Comments

17. The baseline ODS consumption for Iran (1995-97) was not included in the project document background information and it is stated in the project document that updated sectoral information is not yet available.

18. No policy issues have been identified by the Secretariat. Several issues related to determination of eligible incremental costs were discussed, including costs for site preparation and for technical assistance. A number of minor items including some proposed incremental operating costs have been agreed as ineligible and the project will have a small level of incremental operating savings which have been deducted from the eligible capital cost.

Recommendations

19. The project is recommended for blanket approval in the amount of US \$165,140.

Halon management program in Iran (US \$911,610)

Project description

20. The objectives of the project are to phase out the use of halons for non essential uses, promote use of non-halon fire protection technology, limit safety impacts and halon phase-out costs through fire protection capacity building, implement halon management and banking program. In order to ensure the success of the national halon management program in Iran, technical and financial assistance is requested to provide equipment and training.

21. As accompanying measures, the Government will take the necessary regulation in order to ban the import of halons, except in the framework of the relations with other international bank systems. This project will ensure that Iran will meet the 2002 freeze target.

Comments

22. France's original request was for US \$911,610 (US \$868,200 for the project cost and US \$43,410 for administrative agency support cost). Following discussions with the Secretariat, the request was modified to US \$511,175 (US \$488,950 for the project cost and US \$22,225 for administrative agency support cost).

23. This project complies with the guidelines for halon banking approved at the 18th Meeting (Decision 18/22).

Recommendation

24. This project is recommended for blanket approval in the amount of US \$511,175.

Remaining issues for a RMP and preparation of strategy and projects for reduction of CFC emissions in centrifugal chillers in Lebanon (US \$83,300 – US \$45,750 component from France; US \$37,550 component from Germany)

Project description

25. GTZ and Agence Francaise de Developpement have received an official request from the Government of Lebanon for the identification, preparation and implementation of a customs officer training and a chiller replacement strategy as part of a national refrigerant management plan.

26. The activities under this project are :

- Preparation of a customs officers training workshop.
- Organising a national customs officers' workshop.
- Conducting a survey on the state of the centrifugal water chillers.

27. Thanks to these activities, the following goals will be achieved :

- Enforcement of national regulation for ODS phase out
- Preparation of strategy and projects for reduction of CFC emissions in centrifugal chillers.

28. The project will be developed and implemented jointly by Germany and France.

Comments

29. Legislation will be in place before customs training begins. A great part of the training will be based on new regulations.

30. The project will be fully incorporated into the existing approvals for components of Lebanon's RMP.

Recommendation

31. This project is recommended for blanket approval in the amount of US \$45,750.

Survey for halon banking management in West Asia Countries (Bahrain, Lebanon, Qatar, and Yemen) (US \$35,000 – US \$17,500 component from France; US \$17,500 component from Germany)

Project description

32. Germany and France submitted on behalf the above mentioned countries a Regional halon banking management plan at the 27th Executive Committee.

33. The Executive Committee deferred at its 27th meeting the request for a halon banking management plan for these countries to enable complete halon-consumption data to be proved (Decision 27/26).

Comments

34. The Secretariat had concerns about this request particularly that establishing sectoral consumption data was a priority role of ozone units. The two bilateral donors indicated that it would be necessary to use expert assistance to establish the regional institutional framework of co-operation between these countries and to organise the halon bank. Moreover, they indicated, that it would be difficult to certify the accuracy of the data provided on installed capacity without the assistance from national experts.

Recommendation

35. This project is recommended for blanket approval in the amount of US \$17,500.

CFC emission reductions in spinning halls air conditioning systems chillers pilot project in Viet Nam (US \$251,361)

Project description

36. This pilot project will achieve CFC 11/12 emission reductions for refrigerants used in the centrifugal chillers of six Vinatex large spinning mill air conditioning systems, in Viet Nam, by implementing confinement and recovery and recycling strategies. It will build the capacity of Vinatex service engineers to provide training to technicians working on centrifugal chillers in the Textile Industry. The project also provides for a feasibility study on the replacement of most of the centrifugal chillers.

37. In the first phase, the project will provide some equipment, training and technical assistance to Vinatex in order to:

- a. prepare detailed definitions and specifications of equipment needed and propose it for acceptance by Vinatex
- b. provide first training phase to Vinatex engineers and operation and maintenance teams in three training sessions (HCMC, Nha Trang, and Hanoi)
- c. evaluate the technical and financial possibilities of replacing existing chillers using CFC refrigerants by new ones using CFC-free refrigerants, and

d. make proposals for the dissemination of the project results.

38. In the second phase, the project will supply all equipment defined in the first phase to reduce CFC emissions from existing chillers. After delivery of the equipment the project will undertake the second, practical, training phase for Vinatex engineers and operation/maintenance teams to demonstrate use of the equipment supplied.

Comments

39. Because this is one of the first proposals to fund leak reduction in chillers, the Secretariat discussed a range of issues related to the scope of the project and the activities therein with the Government of France.

40. It was established that funding was only eligible for work related to actual leak reduction and that funding of material or activities for reconditioning of the CFC-based chillers could not be considered as eligible. Minor modifications were made to the project to conform to this requirement, particularly in regard to provision of spare parts.

41. In this regard the Government of France confirmed that the project would only be directed to the 10 operating chillers, out of the 14 existing in the six enterprises, and that the reduction in CFC consumption of 3.6 ODP tonnes proposed to be achieved related only to those 10 chillers.

42. Included in the project is a study of the economic and technical feasibility of replacing the 10 chillers with non-CFC units. It was confirmed that this study will not be based on an assumption of compensation from the Multilateral Fund, rather it will examine economic feasibility of replacement based on savings accruing from increased chiller efficiency and lower energy use.

43. Minor adjustments to the duration of the proposed missions by international experts were agreed.

44. Using the annual reduction in consumption proposed to be achieved, the cost-effectiveness of the project would be US \$52.4 per kg.

45. Since this is the first project of its type, the Executive Committee might consider approving it on a trial basis, and requesting the Government of France to provide a comprehensive report on its implementation for the Executive Committee within 3 months of completion, estimated to be the third quarter of the year 2000.

Recommendation

46. Approval of the project is recommended on a trial basis at a level of funding of US \$197,340, with the proviso that a comprehensive report be prepared for the Executive Committee within three months of completion of the project. The Treasurer should credit this amount against France's bilateral contributions for the period 1997-1999.

REQUESTS FROM THE GOVERNMENT OF GERMANY

47. The Government of Germany has submitted requests for bilateral cooperation for projects in Kenya, and Lebanon and for two regional projects one in West Asia countries, and the other in countries with economies in transition (Croatia and Romania). The Executive Committee decided to allow flexibility in the year for which bilateral projects would be credited provided that bilateral agencies submit their work plans to the first meeting of the year. Germany submitted its 1999 work plan.

48. The amount requested, including previous approvals offset against Germany's bilateral contributions, does not exceed 20 per cent of Germany's total contributions for the 1998 through 1999 triennium replenishment.

Recovery and recycling project component in Kenya (US \$98,725)

Project description

49. The objective of the project is to implement a comprehensive National Programme for Recovery and Recycling (R&R) of refrigerant in the refrigeration, mobile air conditioning and air conditioning subsectors.

50. The RMP will provide policy and financial incentives for recovering and recycling of CFC. This will be done through a loan system: "equipment against recovered CFC". The companies benefiting from a recovery unit have to pay back the investment with recovered CFCs. If the company is not able to prove that they have recovered 100kg CFC they have to hand over the equipment to another company.

51. Adequate recovery units for the different sectors will be an incentive for the companies to recover CFC repairing refrigeration systems.

Comments

52. The Executive Committee approved at its 26th Meeting refrigerant management plans for 14 eastern and southern African countries (including Kenya) as a bilateral cooperation by the Government of Germany. While approving these plans, the Committee decided to approve the components for customs training, and the training of technicians in the servicing sector of the Kenya RMP, on the understanding that the technical training and capital costs associated with recovery and recycling would be approved at a later date after resolution of the customs problems that were holding up implementation of other projects in the country (decision 26/18).

53. The Secretariat received an official communication from the Ministry of Environmental Conservation (dated 22 May 1999) stating that the Government of Kenya has granted Duty and VAT exemptions to all materials, equipment, accessories and components previously shipped into Kenya in order to implement ODS phase out projects funded by the Multilateral Fund.

Recommendation

54. The Fund Secretariat recommends blanket approval of the bilateral proposal from the Government of Germany in the amount of US \$98,725.

Remaining issues for a RMP and preparation of strategy and projects for reduction of CFC emissions in centrifugal chillers in Lebanon (US \$83,300 – US \$45,750 component from France; US \$37,550 component from Germany)

Project description

55. See description for France.

Comments

56. See comments for France.

Recommendation

57. This project is recommended for blanket approval in the amount of US \$37,550.

Survey for halon banking management in West Asia Countries (Bahrain, Lebanon, Qatar and Yemen) (US \$35,000 – US \$17,500 component from France; US \$17,500 component from Germany)

Project description

58. See description for France.

Comments

59. See comments for France.

Recommendation

60. This project is recommended for blanket approval in the amount of US \$17,500.

Promoting compliance with the Montreal Protocol in countries with economies in transition (Croatia and Romania) (US \$67,800).

Project description

61. The goal of the project is to enable Croatia and Romania to participate in the project “Promoting compliance with the Montreal Protocol in Countries with Economies in Transition” undertaken for non-Article 5 CEITs by UNEP DTIE with funding provided by the Global Environment Facility (GEF). The project will enhance the capacity of the national ozone focal

points to design and implement effective phase out policies to decrease the incidence of illegal trade in ozone depleting substances.

Comments

62. The Executive Committee approved, at its 27th Meeting, a request from Canada to enable Georgia to participate in this activity. It also approved, at its 25th Meeting, Moldova's participation as part of its overall implementation of its RMP.

Recommendation

63. This project is recommended for blanket approval in the amount of US \$67,800.

REQUESTS FROM THE GOVERNMENT OF JAPAN

64. The Government of Japan has submitted two requests for bilateral cooperation in China. The Executive Committee decided to allow flexibility in the year for which bilateral projects would be credited provided that bilateral agencies submit their work plans to the first meeting of the year. Japan submitted its 1999 work plan.

65. The amount requested, including previous approvals offset against Japan's bilateral contributions, does not exceed 20 per cent of Japan's total contributions for the 1997 through 1999 triennium replenishment.

Project preparation assistance for enterprises in the city of Shenzhen for the elimination of ODS (CFC-113 and TCA) in the production lines of LC displays and TV picture tubes in China (US \$50,000)

Project description

66. Project preparation funds are being requested for the preparation of projects proposals to eliminate 287 MT of CFC-113 (229.6 ODP tonnes) and 100 MT (10 ODP tonnes) used in the production lines for the manufacture of liquid crystal (LC) display and TV picture tubes at ten enterprises in the city of Shenzhen, China. Two CFC-113 projects will be prepared first: one for one individual enterprise and one umbrella project for nine enterprises.

Comments

67. The Executive Committee approved US \$200,000 for the preparation of a solvent sector strategy to phase-out the sector in China. The strategy is expected to result in an overall plan to phase out all solvent ODS consumption in China through one funding programme.

68. A sub-group is meeting on the strategy at the 28th Meeting. UNDP informed the Secretariat that it does not expect to submit the China Solvent Strategy for funding during its 1999 business plan year.

Recommendation

69. The Secretariat recommends that this project should be deferred.

Phasing out ODS in the production of compressors at Changshu Refrigeration Equipment Works in China (US \$3,596,441)

Domestic Refrigeration and Compressor Sector in China

70. In 1993, there were about 16 compressor production enterprises in China with a total output of 5.9 million units. Currently, there are 18 compressor plants in operation in China with a production in 1997 of about 7.4 million units of hermetic compressors.

71. The Executive Committee has approved US \$10.9 million for the conversion of 8 of these plants to non-ODS technology. The combined annual production capacity of these plants after conversion will be 10.75 million compressors.

72. There are 57 domestic refrigerator and freezer plants in China. The total production level of domestic refrigerators and freezers using hermetic compressors was reported by the Government of China to be 14.6 million units in 1997. This represents an increase of 80% over the production level of 8.1 million units in 1993. Detailed information on the production of domestic refrigeration appliances and hermetic compressors has been provided by China in the information document UNEP/OzL.Pro/ExCom/28/Inf.2.

73. The Executive Committee has approved 29 conversion projects in China for manufacturers of refrigerators and freezers. The aggregated annual production of enterprises covered by approved projects is 9.4 million units.

Project description

74. The project proposal was prepared by the Government of Japan and UNIDO upon a request from SEPA, to convert Changshu compressor manufacturing facilities from CFC-12 based technology to HFC-134a technology. The implementation of the project will result also in phasing out of 75 ODP tonnes of CFC-113 used as a cleaning agent.

75. The production of hermetic compressors at Changshu started in 1987 at the same time as several other major compressor manufacturers in China. The current capacity of the plant is 600,000 compressors per year. The average production for 1996 to 1998 was 514,300 units/year.

76. The conversion of Changshu to HFC-134a technology will require the redesign of eleven compressor models according to the new technology taking into consideration the specific characteristics of the new refrigerant. Two of these models were introduced in 1997.

77. The changeover from CFC-12 to HFC-134a technology requires replacement of degreasing/cleaning technology and equipment and improvement of dehydration equipment. All the cleaning equipment is locally made. The project request complete replacement of 9 cleaning lines with new degreasing, passivating and drying lines, including additional drying oven for assembly line. The total cost requested for the equipment amounts to US \$1,460,000.

78. The proposal includes funding of retooling and for new gauges and fixtures needed for production of HFC-134a compressors, including new stamping dies for production of shells, modification of calorimeter for testing of performance of new product and other testing equipment.

79. HFC-134a compressors require new lubricant. The project requests funds for new lubricant handling and filtration equipment at US \$140,000. The project indicates that the enterprise will be converted to the new technology over a 2 to 3 year period. During this period, the enterprise will be producing both CFC-12 and HFC-134a compressors in parallel.

80. All equipment replaced by the project will be sold to enterprises not involved in the use of ozone depleting technologies or, in case it is not feasible, the equipment will be discarded or destroyed. A list of equipment to be destroyed after completion of the project is provided in the project document.

81. The project requests a US \$600,000 fee for technology transfer.

82. The project will be implemented by UNIDO. After competitive bidding, performed according to UNIDO's financial rules and procedures, a technology partner will be appointed by UNIDO for the implementation of the technology transfer, product redesign etc. The selected bidder will be responsible for the supply of machinery and instruments, installation, commissioning and on-the-job training of Changshu's staff. UNIDO with the assistance of the Government of Japan will identify such experienced technology and equipment suppliers in Japan which are capable of participating in the implementation of the project. In the selection of technology partner and suppliers of equipment and services due consideration will be given to the Japanese companies in accordance with UNIDO's rules and procedures.

Comments

83. The cost of the project at US \$3.2 million (excluding agency support costs) is one of the highest ever submitted to the Executive Committee.

84. The Secretariat discussed with the Government of Japan the eligibility and cost of several items proposed in the project. Most of the equipment to be replaced is of local manufacture. The Executive Committee has approved 20 investment projects for the conversion of hermetic compressor manufacturing facilities (including 8 from China). The production capacity of these enterprises ranges from 100,000 units/year to 2 million units/year. The eligible incremental costs per project approved by the Executive Committee are between US \$330,000 to US \$2.25 million.

85. Given the fact that the baseline of this enterprise is very similar to those for which conversion projects have been approved, eligible cost of conversion of the Changshu enterprise to HFC-134a technology should be comparable to other conversion projects approved for China and other Article 5 countries in the same sector. It is noted that the costs of redesign and tooling for the two models introduced in 1997 are not eligible incremental costs.

86. The major component in the proposal is related to provision of cleaning equipment. The proposal contains a request for installation of 9 new phosphating, degreasing, passivating, and drying lines at a total cost of US \$1,460, 000. Both the number of requested lines and the cost of individual items significantly exceed requests for similar equipment in other projects approved by the Executive Committee. The Government of Japan and UNIDO have been informed about costs for this equipment in approved projects and were requested to consider reducing the funding level.

87. The project document indicates that modification of existing machinery and equipment will be applied wherever technically and economically feasible and/or necessary. The Secretariat proposed to examine the possibility of modifying the existing cleaning equipment at a reduced cost. This was based on information obtained from a company in an Article 2 country

with experience in retrofitting cleaning equipment in China similar to those installed at Changshu.

88. Replacement equipment include passivating equipment for providing resistance to corrosion of metal parts of compressors which was not part of the baseline. This technology is not essential for the conversion to HFC-134a and therefore, not eligible for funding from the Multilateral Fund. Less expensive processes are available and should be considered in Changshu's conversion.

89. According to the proposal, the conversion to non-CFC cleaning process will lead to phasing out of 93 tonnes (75 ODP tonnes) of CFC-113. This will result in significant incremental operating savings (IOS). The Government of Japan has been requested to include IOS in the calculation of net incremental costs.

90. The proposal indicates also that some equipment replaced by the project might be sold for use in non-ozone depleting technologies. The Secretariat proposed to assess the salvage value of this equipment and deduct this value from the requested incremental costs.

91. The requested technology transfer fee at US \$600,000 is double the maximum amount approved so far by the Multilateral Fund for this item at US \$300,000 per compressor project. The Secretariat proposed to follow the same policy in case of Changshu.

92. The Secretariat has concluded its discussion with the Government of Japan regarding the issues mentioned above. The Government of Japan, taking into consideration the comments and points raised by the Secretariat, agreed to a level of incremental cost for the project of US \$2.25 million, consistent with the levels of funding previously approved by the Executive Committee for domestic refrigeration compressor conversion projects in China, plus an administrative support cost of US \$257,500.

Recommendation

93. The Secretariat recommends blanket approval of the project in the amount of US \$2,507,500 and this amount should be credited against Japanese bilateral contributions for the period 1997 through 1999.

REQUESTS FROM THE GOVERNMENT OF THE UNITED KINGDOM

94. The Government of United Kingdom has submitted a request for bilateral cooperation for a project in Mexico.

95. The amount requested does not exceed 20 per cent of the United Kingdom's total contributions for the year 1999.

Chiller concessional lending pilot project in Mexico (US \$1,184,984)

Project description

96. The project intends to use a grant from the Multilateral Fund to leverage matching funds from local sources to set up a revolving fund to finance replacement of 20 CFC chillers in Mexico with high-energy efficient chillers using HFC-134a (and HCFC-123 when necessary) as refrigerants.

97. Currently there are 114 CFC-based chillers in the city of Monterrey from an estimated 1,500 of them in Mexico. Typically a chiller contains about 400 kg. of CFC, with an annual leakage of 15% (60 kg.) of the CFC. Assuming the project is successful, the CFC saved through 2010 would amount to 52 MT, which would be recovered to service the existing chillers, thus reducing the demand for virgin CFC. The date of installation of these chillers ranged from 1963 to 1990.

98. The replaced chillers would be primarily HFC-134a-based; HCFC-123 will be used only in those situations where no other alternative is viable. Compared to existing CFC chiller (12-15 years old), the new chillers are known to be more energy-efficient and thus reduce electricity costs over the life of the system. However two factors deter investment in chiller replacements, (1) the high investment cost and lack of adequate financing; and (2) the uncertainty about the actual level of electricity savings.

99. The purpose of the project is to test various financing conditions to assess which are acceptable to chiller owners while charging a reasonable rate of interest on fund-users to minimise erosion of the revolving fund. The project will also try to ensure chiller performance by linking it to chiller purchase and installation contract.

100. The project will be implemented in two phases. Phase I will be funded by US\$500,000 of the UK share for bilateral activities and a matching US\$500,000 from the Mexican executing entity (FIDC). Another US\$150,000 will be financed from the building owners. The total US\$1,15 million will purchase 10 new chillers in the first year. An additional US\$1,15 million of the same financing combination, will be implemented as Phase II after an evaluation of the first phase according to indicators such as owner acceptance of financing options, timeliness of repayments, cost-savings in contract packaging and electric efficiency performance. Phase II may also raise additional funding from other sources.

101. The replacement of the 10 chillers in the first year will lead to a direct phase out of 5 MT of CFCs, and assuming a successful implementation of the 20 chillers with the loan recovered, the US\$2.3 million (with US\$1 million from the Multilateral Fund) will support 113 chiller replacements after 11 years (to year 2010) and reduce the consumption of CFC by 52 MT.

Comments

102. This is the second project that has been proposed to replace chillers in Article 5 countries. The other proposal was the Thai EGAT concessional loan project jointed funded by the Global Environment Facility (GEF) and the Multilateral Fund.

103. The Government of the United Kingdom is requesting US \$1,184,984 to be credited against its 1999 contributions to the Multilateral Fund for a grant that will be internalised into on-lending.

Recommendation

104. The Executive Committee may wish to consider the above in its discussion of this project proposal.

Annex I

JUSTIFICATION FOR THE USE OF HCFC-141b

(Extract from the Project Document)

Quimica Andina - Conversion from CFC-11 to HCFC-141b Technology in the Manufacture of rigid polyurethane foam

The presently available ODS phase-out technologies for rigid polyurethane insulating foams are:

CLASSIFICATION	LIQUID TECHNOLOGY	GAS TECHNOLOGY
LOW ODP TECHNOLOGIES (INTERIM)	HCFC-141b HCFC-141b/22	HCFC-22, -142b HCFC-22/142b
NON-ODS TECHNOLOGIES (PERMANENT)	(CYCLO)PENTANE, WATER, HFC-365, HFC-245fa	HFC-134a

The selection of the alternative technology is governed by the following considerations:

- a) Proven and reasonably mature technology
- b) Cost effective conversion
- c) Local availability of substitute, at acceptable pricing
- d) Support from the local systems suppliers
- e) Critical properties to be maintained in the end product
- f) Meeting established standards on environment and safety

Following is a discussion of the mentioned technologies in view of these criteria specifically applied for the operations of Quimica Andina (QA)(50% spray foam, 50% discontinuously produced slabstock):

HCFC-141b has an ODP of 0.11. Its application is proven, mature, relatively cost-effective and systems that fit QA's applications are locally available. HCFC-141b can, however, be destabilizing in higher concentrations, being a strong solvent, which would lead to the need to increase the foam density. Being an interim option, its application would only be recommended if permanent options do not provide acceptable solutions.

HCFC-22 has an ODP of 0.05 and is under ambient conditions a gas. It is not offered in the applicable regional area as a premixed system and would require an on-site premixer. It is not suitable for spray foam/slabstock applications. Its insulation value is somewhat less than with HCFC-141b.

HCFC-141b/HCFC-22 blends can reduce the solvent effect of HCFC-141b alone and therefore allow lower densities while maintaining acceptable insulation values. The blends are, however, not available in Bolivia or neighbouring countries. On-site blending would significantly increase the one-time project costs. In addition, the technology is not proven for

spray foam applications. Being an interim option, the same restrictions as for HCFC-141b would apply.

(CYCLO-)PENTANE meets all selection criteria, except that local availability. The use of hydrocarbons is a preferred solution when feasible from a safety and cost effectiveness standpoint. The relatively high investments for safety costs tend to limit pentane use to relatively large CFC users. In addition, the use of pentane is limited to those enterprises whose facilities can be adapted to meet safety requirements, and can be relied on to maintain safe operations. While it may be applicable albeit connected with high investments and density limitations for the slabstock operation, it cannot be used and never has been used for (on-site) spray foam applications, where ever-changing ambient conditions never could provide for the required safety.

WATER-BASED systems are an alternative in cases where pentane is not feasible due to safety concerns, cost efficiency or availability. Water-based systems are, however, more expensive (up to 50%) than other CFC-free technologies due to reductions in insulation value (requiring larger thickness) and lower cell stability (requiring higher densities). They are also currently not available in the region, although this may change in the next two years based on MLF-sponsored activities in Brazil and Argentina. Water-based formulations tend to be most applicable in relatively less critical applications, such as in situ foams and thermoware. In spray foam, while in principle feasible, it is reported that the current technology does not allow for overhead spraying and is therefore limited applicable. For boxfoam, the technology is not applicable as it would lead to an unacceptable high increase in the reaction temperature, leading to severe scorching and even spontaneous combustion.

LIQUID HFCs do not meet requirements on maturity and availability. However, trials show that systems based on these permanent options would be feasible in spray foam as well as slabstock.

HFC-134a is under ambient conditions a gas. It is not offered in the applicable regional area as a premixed system and would require an on-site premixer. It is not suitable for spray foam applications. It is also less energy efficient, and expensive compared to most other technologies.

Based on the before mentioned, the enterprise has the following options under this project:

Spray foam: HCFC-141b or all water based
Slabstock: HCFC-141b or n-pentane

Project costs for HCFC-141b for both spray foam and slabstock operations would amount to projected conversion costs of US\$ 96,000 (US\$ 21.30/kgODP/y).

Project costs for all-water (spray)/n-pentane (slab) would amount to projected conversion costs of US\$ 448,500 (US\$ 89.70/kgODP/y).

Project costs for HCFC-141b (spray)/n-pentane (slab) would amount to projected conversion costs of US\$ 434,500 (US\$ 89.22/kgODP/y).

(The relatively small difference between the threshold for water/pentane and 141b/pentane is related to the residual ODP in case of HCFC-141b).

Note that the project would have exceeded in any configuration the applicable standard threshold were it not for the status of Bolivia as an LVC country.

After considering these alternatives, and realising that:

- the extra costs related to zero ODP technology amount to about five fold of the 141b technology,
- pentane and water-based technologies are not readily available in Bolivia and carry process as well as product quality restrictions and are even in other countries seldom practised for the pertinent applications;

It is recommended to employ HCFC-141b as an interim solution. This can be followed in the future by water-based technology or liquid HFCs for spray foam and just liquid HFCs for slabstock. The equipment retrofitted/replaced under this project allows these technologies without further adaptations. If the enterprise were to choose pentane for the slabstock operations as a permanent technology, significant capital investments would be required.

The enterprise has accepted this recommendation. It has also been informed that HCFCs are transitional substances, and that under present Multilateral Fund rules, they will not be able to seek additional funding from the Fund at a later date to convert to zero-ODP technologies.

Annex II

Supporting letter from the Government of Bolivia on the use of HCFC-141b by Quimica Andina, submitted in accordance with Executive Committee Decision 27/13.