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EXECUTIVE COMMITTEE
OF THE MULTILATERAL FUND FOR THE
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**CIRCUMSTANCES FOR THE CONSIDERATION OF ODS PHASE OUT IN THE
COMMERCIAL REFRIGERATION END-USER SECTOR**

Background

1. At its 21st Meeting, the Executive Committee decided 'to request the World Bank, in conjunction with the Fund Secretariat, to prepare draft guidelines for the consideration of the Executive Committee at its Twenty-second Meeting.' After considering an executive summary of draft guidelines at its 11th Meeting (Montreal, 18-19 September 1997)¹, the Sub-committee on Project Review:

- requested a more complete examination of the sector covering, *inter alia*, projects for users with an installed capacity of less than 10 tonnes, taking into account a report being prepared on the Mexican experience in this sub-sector;
- noted that consideration should be given to associated policy issues to ensure that users did not revert to using ODS after the conversion of their equipment, especially where such substances were still cheap and/or where enforcement capacities are lacking, and;
- requested that information obtained during the development of refrigerant management plans be used to analyse the commercial refrigeration sector *per se*.

2. Subsequently, at its 25th Meeting the Executive Committee considered a paper jointly prepared by the World Bank and the Fund Secretariat (UNEP/OzL.Pro/ExCom/25/58). *Inter-alia*, the paper:

- outlined the profile of the sub-sector and its possible ODS consumption;
- indicated the high level of ODS emissions from equipment used in the sub-sector;
- recalled current policies of the Parties and the Executive Committee;
- discussed the risks associated with sustainability of end-user conversion projects;
- outlined technical options for retrofit;
- presented costs as experienced by conversion of a large supermarket chain in Mexico, and;
- based on these costs, determined that the potential liability of the Multilateral Fund might lie between US \$581 million and US \$1.4 billion.

3. Finally the paper sought the guidance of the Executive Committee as to the circumstances under which projects could be considered and how incremental costs should be calculated.

4. In Decision 26/38, the Executive Committee decided, in the light of the information contained in the World Bank's report and the views expressed at the 26th Meeting, to request the Secretariat, in conjunction with the implementing agencies to prepare a paper on the circumstances under which the Committee could consider projects from Article 5 countries to retrofit commercial refrigeration appliances and on how the incremental costs of such projects

¹ The report of the Sub-Committee's deliberations is contained in UNEP/OzL.Pro/ExCom/23/10.

should be calculated. The draft paper would be sent to Executive Committee members for review and would subsequently be finalised by the Secretariat with the aim of giving the Sub-Committee information on which to base a recommendation on the subject to the Executive Committee at its next meeting.

Discussion

ODS phaseout and sustainability

5. End user conversion projects in the refrigeration sector are different to industrial conversion activities. In the majority of cases, once a production line has been converted the phase-out is permanent. Additionally, the ODS phased-out is related to the level of production and can be well established. On the other hand, retrofitted equipment can usually be operated with CFC refrigerants. When leakage rates are high, owners may decide to revert to cheaper CFC refrigerants where these are readily available, thus reversing the phase-out. The quantity of ODS phased out annually depends on the leakage rate and cannot easily be established for individual projects. These fundamental differences indicate the need for a different approach to the development of a programme in this sub-sector.

Timing

6. Experience in Article 2 countries indicates that when they are expending their own funds, many owners will keep on using CFC refrigerants as long as they are available at affordable cost. They will avoid paying for retrofits until it is the only economic option because CFC prices have become too high.

7. This means that end-user conversion is normally one of the last activities undertaken in a country's phase-out programme. End-user conversion may not be advantageous economically for a country in which CFCs remain available at affordable cost, if the country can meet its Montreal Protocol obligations, including the 50 percent freeze in 2005, largely through industrial conversion projects, including for small and medium sized enterprises. End-user conversion is less a means of reducing consumption, and more a response to reduced availability of CFC refrigerants.

8. It cannot be over-emphasized that retrofit activities, like recovery and recycling, are unlikely to be sustainable in the absence of effective policy and legislative support measures and where CFCs are plentiful and cheap. For instance, the first three recovery and recycling projects for which preliminary information on operations after implementation has been provided to the Fund Secretariat (in Guatemala, Jamaica and Uruguay) are reported as not being successful, since among other important prerequisites, CFCs are still sufficiently cheap that it is not worthwhile recycling them. If they are to be sustainable, retrofit activities should take place only after the supply of CFCs in a country has been reduced through market or policy measures, and prices have increased.

Low-volume consuming countries

9. Some countries, generally those with low ODS consumption, may have few if any options to reduce consumption through conversions of industrial production. For these countries, meeting the 50 percent reduction in 2005 may only be achievable by reducing ODS consumption in the servicing sector.

10. If additional consideration is to be given to the servicing sector, possibly including a broader programme of retrofitting projects, countries which need to take action in this sector to meet their Montreal Protocol obligations may be the logical starting point.

Related activities

11. It should be recognised that activity to reduce consumption in the servicing sector has already commenced. The paper presented to the 25th Meeting explained how significant reductions can be achieved through better maintenance practices, leading to reduced leakage rates. 54 training programmes for refrigeration technicians in 34 countries and 16 regional training programmes have already been funded by the Multilateral Fund: as of December 1998, 27 had been implemented. Material provided by UNEP indicates how such programmes can lead to ODS phase-out through reduced leakage of ODS refrigerant.

12. Leakage reduction is integral to any end-user conversion programme. It is an essential first step. The training of technicians is a key to leakage reduction and could, without further interventions, lead to reduced consumption over time as technicians improve refrigeration systems, and their own practices, in the course of ongoing maintenance activities. Again, this will be influenced by CFC prices and the effectiveness of policy and legislative support measures put in place by the country concerned.

13. Thus technical support and training should be recognised as part of the end-user conversion sector. It should continue to receive a high priority, especially for low-volume consuming countries. It should be recognised that reduction of emissions arising from better maintenance practices can play a significant part in assisting Article 5 countries to meet their Montreal Protocol obligations.

Relation to Refrigerant Management Plans

14. To ensure sustainability, leakage reduction and retrofitting need to be supported by effective policy measures (to reduce the supply of CFCs) in the same way as recovery and recycling projects. The Executive Committee has already determined that recovery and recycling projects must be presented in the context of an RMP. The Committee has also decided that funds should not be expended on R&R projects until the required policy measures are in place. It would be appropriate for leakage reduction and retrofitting activities to meet similar requirements.

15. Technician training is already a major component of RMPs. Future retrofitting activities should also be linked to the training of technicians and should be the second step in emissions reduction for the servicing sector to be undertaken once policy and legislative support measures are implemented and operating effectively.

16. There is scope for activities now being funded as part of refrigerant management plans to be a source of information on the actual leakage rates being experienced in installed equipment, and the reduction being achieved as a result of better trained technicians. It would be useful to include such information when submitting future RMPs for approval.

Costs

17. The paper for the 25th Meeting provided cost-effectiveness of US \$50-165/kg based on conversion of a large metropolitan supermarket chain in Mexico, and cost-effectiveness of US \$35-85/kg in developed countries.

18. Additionally, retrofit projects have been funded by the Multilateral Fund in LVCs for conversion of cold stores in Cote D'Ivoire, Mauritius and Mauritania. The estimated cost-effectiveness of these projects is US \$39/kg, US \$10/kg and US \$76/kg respectively. However, these projects were prepared before the guidelines for RMPs were developed.

19. In the final analysis, the costs to the fund of end-user conversions are likely to be determined chiefly by the nature of the interventions required, and thus the definition of what is eligible for funding.

20. For instance, if, over a period of time, the effective implementation of policy support measures, reduced availability of cheap CFCs and the training of technicians through MLF projects results in reduced emissions from systems which are now poorly maintained, the requirement to fund separate leak reduction activities could diminish, with significant reductions in costs to the Multilateral Fund.

21. Secondly, if it were decided to initially fund only the minimum interventions, that is, retrofits using alternative refrigerants which need little change to existing equipment, costs would again be at or below the figures now indicated¹. While the availability of alternative refrigerants is not yet universal, substantial investments have been made in facilities to produce them and manufacturers and distributors are keen to provide supplies when the market for them starts to increase. This has already happened with new chemicals and blowing agents for foam production and is likely to be repeated in the commercial refrigeration sector. When this happens, unit costs are also likely to decrease.

22. Thirdly, conversion of small unitary display refrigerators or freezers is a simple activity similar to a repair using CFC refrigerant. Such conversions are likely to take place in the

¹ Equipment replacement would then only be necessary when the equipment reached the end of its useful life, in which case replacement would not be an incremental cost.

community on a piecemeal basis in the course of routine repair activities, without intervention by the Multilateral Fund when technicians become familiar with the new refrigerants and CFCs become more costly. Each individual activity produces little phase-out and would be unlikely to take place in any event until the supply of CFCs in the market place had largely ceased. This would not seem to be a priority area for intervention by the Multilateral Fund.

23. Under this scenario the priority area for initial activity in LVCs would be for conversion of cold stores in the agricultural, fisheries or other food-chain industries, (a) which are important for the economies of the countries concerned, (b) which offer the opportunity of greater CFC phase-out per activity or project, and (c) which have more chance of being sustainable (as they are more likely to be in the formal sector in which technicians and managers would be better trained and informed as a result of RMP activities).

Principles for moving forward

24. At the beginning of a possible expansion of activities in the service sector with potentially large implications for the Fund, two factors appear to be of particular relevance:

- in circumstances in which there is uncertainty about the extent of interventions required and results that can be obtained for a given level of expenditure, a start should be made with minimum relevant level of interventions and feedback obtained on the results of some trial projects.
- priority should be given only to low-volume consuming countries which have no other alternative but to reduce consumption in the refrigeration service sector to meet their Montreal Protocol obligations, in particular the 50 percent reduction in 2005.
- Such low-volume consuming countries should have already implemented and provided feedback on the success of relevant parts of their refrigerant management plans, including training of technicians, and policy initiatives to support leakage reduction and restrict the supply of CFC refrigerants. This information should have been used to inform and guide the development of the end-user conversion projects.

Proposed initial guidelines

25. Retrofitting of refrigeration equipment should continue to be assessed on a case by case basis taking into consideration the importance of the commercial refrigeration sub-sector in the economy of the country (as decided by the Executive Committee at its 14th Meeting).

26. Training of refrigeration technicians should be recognised as part of end-user conversion activity in the refrigeration sector. It should continue to be encouraged as part of a refrigerant management plan.

27. Retrofitting of commercial refrigeration equipment could be considered for funding after assessing the experience gained from implementation of the relevant parts of a refrigerant management plan in low-volume consuming countries which must reduce consumption in the refrigeration servicing sector to meet their Montreal Protocol commitments.
28. Retrofitting projects should not be funded until the necessary policy support measures enunciated in the refrigerant management plan are in place and demonstrated to be effective.
29. For the initial period, pending review, priority should be given to projects for the conversion of cold stores in the agricultural, fisheries or other food-chain industries which are important for the economies of the countries concerned.
30. For the initial period, the costs associated with replacement of the refrigerant, replacement of the oil and minor capital items where necessary, and labour at the local labour rate, will be eligible as incremental costs. More extensive conversions including reconditioning or replacement of compressors and major overhaul of refrigeration systems will not be considered under the initial guidelines. Incremental operating costs and savings should be calculated as for other commercial refrigeration projects for a two year period.
31. Enterprise consumption will be the average annual quantity of CFC refrigerant which can be established as having been added to the refrigeration system over a minimum of the last three years.
32. No cost effectiveness threshold needs to be established for this initial period as thresholds are not applied in projects emanating from LVCs. However a funding window of US \$10 million could be established, from within the investment project allocation.
33. These guidelines should be reviewed after being in operation for 18 months.

Coordination with the implementing agencies

34. UNDP considers that the cost of refrigerant would have the largest impact on forcing the end-user to reduce leaks and stop venting. UNDP noted that the proposed MLF funding would be very limited and suggested that only a very dynamic governmental support policy could make the retrofits proposed under the guidelines work as long as CFC-12 remained cheap and readily available. These issues are addressed in paragraphs 6 to 8 and in paragraph 24.
35. UNEP believes that there is a strong case for parallel and coordinated actions for policy setting and retrofitting. UNEP also drew attention to countries' strategies and commitments as expressed in their country programmes and advocated a range of support measures for training and retrofitting including manuals and demonstration projects. Relevant issues are addressed in paragraphs 13 and 24. The Committee might consider that proposals for manuals and demonstration projects should be based on advice from the implementing agencies which are

developing projects in this emerging sector and on the evaluation of related activities now being implemented.

36. UNIDO is in full agreement with the paper.

37. The World Bank considers that the proposed interim guidelines ought to be extended to include non-LVCs to assist them to meet the mandated 50 percent reduction in consumption by 2005. The World Bank drew attention to the 1996 TEAP report which indicates *inter alia* that industrial conversion projects can address from 30 to 60 per cent of the ODS consumption to be phased out and that if a project addresses consumption beyond the level of 30 percent it is likely to be dealing with servicing and other operations undertaken by small and medium sized enterprises.

Recommendation

38. As indicated in Decision 26/38, members of the Executive Committee may wish to provide comments to the Fund Secretariat on the paper and the interim guidelines proposed therein. Alternatively, the Committee might consider whether it wishes to adopt interim guidelines for end-user conversions at the 27th Meeting.