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EXECUTIVE COMMITTEE OF  
THE MULTILATERAL FUND FOR THE  
IMPLEMENTATION OF THE MONTREAL PROTOCOL  
Forty-seventh Meeting  
Montreal, 21-25 November 2005

**PROJECT PROPOSALS: LEBANON**

This document consists of the comments and recommendations of the Fund Secretariat on the following project proposals:

Fumigant

- Sector phase-out of methyl bromide in vegetable, cut flower and tobacco production (fifth tranche) UNDP
- Phase-out of methyl bromide for soil fumigation in strawberry production (fifth tranche) UNIDO

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**PROJECT EVALUATION SHEET – MULTI-YEAR PROJECTS  
LEBANON**

**PROJECT TITLES****BILATERAL/IMPLEMENTING AGENCY**

(a)	Sector phase-out of methyl bromide in vegetable, cut flower and tobacco production (fifth tranche)	UNDP
(b)	Phase-out of methyl bromide for soil fumigation in strawberry production (fifth tranche)	UNIDO

<b>NATIONAL CO-ORDINATING AGENCY:</b>	Ministry of Environment
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**LATEST REPORTED CONSUMPTION DATA FOR ODS ADDRESSED IN PROJECT****A: ARTICLE-7 DATA (ODP TONNES, 2004, AS OF OCTOBER 2005)**

Annex E, methyl bromide	66		
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**B: COUNTRY PROGRAMME SECTORAL DATA (ODP TONNES, 2004, AS OF SEPTEMBER 2005)**

ODS	Foam	Ref.	Aerosol	ODS	Solvents	Process agent	Fumigant
				Methyl bromide			77.16

<b>CFC consumption remaining eligible for funding (ODP tonnes)</b>	n/a
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**CURRENT YEAR BUSINESS PLAN: Total funding US \$322,500 phase-out 21.5 ODP tonnes.**

<b>PROJECT DATA</b>	2001	2002	2003	2004	2005	2006
Montreal Protocol limits	236.5	204.7	158.6	90.4	<b>43.3</b>	0
Annual consumption limit						
Annual phase-out from ongoing projects						
Annual phase-out newly addressed (UNDP)	25.8	36.0	54.0	36.0	<b>34.3</b>	
Annual phase-out newly addressed (UNIDO)	6.0	10.1	14.2	11.1	<b>9.0</b>	
<b>TOTAL ODS CONSUMPTION TO BE PHASED OUT</b>	31.8	46.1	68.2	47.1	<b>43.3</b>	
Project cost as originally submitted (US \$)				400,000	<b>300,000</b>	
<b>Final Project costs (US \$):</b>						
Funding for UNDP	800,000	600,000	500,000	400,000	<b>210,000</b>	
Funding for UNIDO	350,000	421,946	450,000	-	<b>42,504</b>	
<b>Total project funding</b>	1,150,000	1,021,946	950,000	400,000	<b>252,504</b>	
<b>Final Support costs (US \$)</b>						
Support cost for UNDP	98,000	76,000	37,500	30,000	<b>15,750</b>	
Support cost for UNIDO	45,500	54,853	33,750	-	<b>3,188</b>	
<b>Total support costs</b>	143,500	130,853	71,250	30,000	<b>18,938</b>	
<b>TOTAL COST (US \$)</b>	1,293,500	1,152,799	1,021,250	430,000	<b>271,442</b>	
Final project cost effectiveness (US \$/kg)						n/a

**FUNDING REQUEST: Approval of funding for the fifth tranche (2005) as indicated above.**

<b>SECRETARIAT'S RECOMMENDATION</b>	Blanket approval (UNIDO); individual consideration (UNDP)
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## **PROJECT DESCRIPTION**

1. The Government of Lebanon has submitted, through UNDP and UNIDO, the 2005 progress report on the implementation of the projects for the phase-out of all remaining soil uses of methyl bromide (MB) used in the production of cut flowers and tobacco, implemented by UNDP, and the phase-out of MB for soil fumigation in strawberry production, implemented by UNIDO, for consideration by the Executive Committee at its 47th Meeting.

2. Together with the progress reports, the Government of Lebanon has also submitted the 2006 annual implementation plans, with a request for funding of the fifth tranches (and last tranches) of the projects at a total cost of US \$300,000 plus US \$22,500 in agency support costs for UNDP, and US \$42,504 plus US \$3,188 in agency support costs for UNIDO.

### Background

3. At its 34th Meeting, the Executive Committee approved in principle US \$4,421,945 (US \$2,600,000 and US \$1,821,945 for the projects to be implemented through UNDP and UNIDO respectively) as the total funds available to the Government of Lebanon to achieve the complete phase-out of MB used as a soil fumigant in the production of vegetables, cut flowers, tobacco and strawberries (236.5 ODP tonnes).

4. In accordance with the agreed conditions, the Executive Committee has so far allocated US \$1,900,000 plus agency support costs for UNDP to phase out 152.0 ODP tonnes used in the production of vegetables, cut flowers and tobacco, and US \$1,221,946 plus agency support costs for UNIDO to phase out 41.1 ODP tonnes in the production of strawberries.

5. At its 43rd Meeting, the Executive Committee considered a request by the Government of Lebanon for a change of technology in the UNIDO project covering the phase-out of MB for soil fumigation in strawberry production (UNEP/OzL.Pro/ExCom/43/36). Subsequently, through its decision 43/28, the Executive Committee decided to approve the requested change of technology and amended the agreement between the Government of Lebanon and the Executive Committee.

### 2005 progress report

6. During 2005, a total of 103.8 ha of land were converted to the use of alternative technologies in the vegetable sector; 45 million tobacco seedlings were produced through the new floating tray technique and transplanted in 300 ha of land. In total, 36 ODP tonnes of MB were phased out. Training programmes were provided to 2,620 farmers in the appropriate application of the alternative methods proposed by the project.

7. In the strawberry sector, 11.1 ODP tonnes of MB were phased out through the following MB alternative technologies applied over 41.13 ha of land: crop rotation, soil solarization and alternative chemical fumigation. A total of 115 farmers have participated in the phase-out programme and a total of 267 agricultural people have been trained in the appropriate application of the alternative technologies selected.

8. In coordination with the Ozone Office and the Legal Department of the Ministry of the Environment, and with the assistance provided by UNDP and UNIDO, a decree on regulating MB imports in Lebanon was drafted and submitted to the Council of Ministers for its approval.

2006 plan of action

9. The Government of Lebanon has submitted a funding request for implementation of the fifth (and final) phase of the projects, as follows:

- (a) US \$300,000 to phase out an additional 34.3 ODP tonnes used in the production of cut flowers and tobacco, under UNDP's implementation. The proposed activities include, inter alia:
  - (i) Continue implementation of the floating tray technique for the production of tobacco seedlings. The 6.4 ODP tonnes of MB still used in the tobacco sector will be phased out during the coming season;
  - (ii) Based on lessons learnt in the application of steam in the strawberry sector, alternative technologies such as low-dose chemicals and volcanic rock substrates will be tested in the cut-flower sector instead of introducing the negative-steam technology. Results based on trials using these alternatives are expected by spring 2006. The amount of MB still used in this sector (17.0 ODP tonnes) will be phased out during the 2006-2007 growing seasons;
  - (iii) Ongoing administration of field operations begun in 2003, aimed at monitoring, supervising and enabling the proper application of alternatives by farmers;
  - (iv) Finalization of procurement of materials and equipment to be used in the tobacco and cut flower sector, and initiation of production of tobacco seedlings using the floating tray system in the major tobacco production areas; and
- (b) Phase-out of an additional 9.0 ODP tonnes used in the production of strawberries, implemented by UNIDO. The proposed activities include, inter alia:
  - (i) Identification of farmers to be included in the 2006 phase-out programme;
  - (ii) Continued implementation of training programmes for farmers on the MB alternatives they have selected and on integrated pest management systems;
  - (iii) Procurement and distribution of supplies for alternatives to farmers, to support them in the adoption of the MB alternatives (as revised at the 43rd Meeting of the Executive Committee);

- (iv) Monitoring the proper application of the alternatives by the project team; and
- (c) Coordination with the Ministry of Agriculture and the Ministry of the Environment's Ozone Office to finalize the new legislation aimed at controlling and decreasing MB imports in the next three years.

## **SECRETARIAT'S COMMENTS AND RECOMMENDATIONS**

### **COMMENTS**

10. The Government of Lebanon submitted comprehensive reports on the implementation of phase IV of the two MB phase-out projects under current implementation.

11. As reported under Article 7 of the Montreal Protocol, MB consumption in Lebanon has been reduced from 285.6 ODP tonnes in 1998 to 66.0 ODP tonnes in 2004, which is below the maximum allowable consumption level in the agreement (i.e., 90.4 ODP tonnes). Lebanon's MB baseline for compliance is 236.4 ODP tonnes.

#### Sustainability of the MB phase-out

12. The extraordinary political events that occurred in early 2005 in Lebanon paralyzed economic activities in the country, including those related to the agricultural sector. This situation, in a way, favoured the reduction in 2005 MB consumption in the country since, for example, less surface area was cultivated. In this regard the Secretariat sought a clarification on whether or not MB consumption will increase in future once the agricultural sector is fully restored. The Secretariat was informed that the agricultural sector in Lebanon was not heavily impacted in terms of production output, and therefore no increase in MB consumption is expected. As a result of implementation of the projects, key farmers have shifted to MB alternatives; all farmers are fully aware of the ban on MB consumption in the near future.

13. In regard to the delay experienced with the enactment of the decree controlling MB consumption in the country, the Secretariat was advised that the decree is not expected to generate much debate in the Council of Ministers and a smooth endorsement process is anticipated by early 2006. The decree was prepared through a full stakeholder consultation process (the section that pertains to MB regulations is in line with the commitments taken by the Government under the agreed conditions of the MB phase-out projects).

14. It is reported that some farmers continue to use MB-based technologies since they are very well known, faster to apply compared to other alternatives, and they are also cheaper since, for example, improvements to irrigation systems are needed when applying alternative fumigants. As this situation could have negative effects on the phase-out of MB in Lebanon, the Secretariat sought further explanations from the implementing agencies on this issue. UNDP and UNIDO indicated that ongoing awareness activities managed by the national project teams are geared to achieve the maximum outreach possible so as to convince growers of the benefits of

alternatives to MB, even in the absence of the regulatory framework. As of today, MB distributors have been steadily decreasing imports of MB due to decreasing demand by farmers.

15. In the past, 8.4 ODP tonnes of MB were permanently phased out in the strawberry sector through three steaming machines that were purchased prior to the approval of the change of technology by the Executive Committee. In UNIDO's progress report, it is reported that no soil steaming had been carried out in 2005 due to cost limitations associated with the technology. Furthermore, the acceptance of soil steaming by farmers has further decreased due to the very high price of fuel. Under these circumstances, the Secretariat sought advice on whether or not farmers that used steam pasteurization in the past had reverted back to the use of MB. Subsequently, UNIDO stated that "farmers who previously used steam pasteurization did not revert to the use of MB; they all adopted the new MB alternatives". Given the limitations of the steam technology, the boilers are not currently used for soil pasteurization in Lebanon. However, UNIDO is still studying their potential future uses.

#### Change of technology in the cut-flower sector

16. In regard to the request for the change of technology in the cut-flower sector, the Secretariat noted as follows:

- (a) Although the negative steam technology had been selected by the Government of Lebanon and national experts as the most-cost effective and viable MB alternative for the cut flower sector, the issue of its long-term sustainability was first raised by the Secretariat when reviewing the project proposal that had been submitted to the 34th Meeting of the Executive Committee. However, on the basis of the potential benefits of the technology, and the fact that farmers did not want to adopt chemical technologies and were willing to meet the additional operating costs after the project was completed, the Executive Committee decided to approve the project based on the negative steam technology (UNEP/OzL.Pro/ExCom/34/33);
- (b) The proposed alternatives to negative steam are alternative chemicals (metam sodium, 1,3 D and chloropicrin) and volcanic rock substrate. However, the Secretariat pointed out that farmers wanted to adopt non-chemical technologies; moreover, the Government of Lebanon had enacted regulations to encourage the implementation of non-chemical alternatives for MB in cut-flower production; and
- (c) According to the original project proposal, of the total cost for equipment requested (over US \$1.3 million) more than US \$560,000 was related to the steam technology. The alternative technologies being proposed involve substantially reduced capital and operating costs. However, an analysis of the revised incremental costs associated with the proposed alternative technologies was not included in UNDP's revised proposal.

17. In addressing the above issues, UNDP advised that UNDP' staff hosted a technical and policy mission to Lebanon in October 2005. During the mission, the request for the change in technology was fully discussed with project stakeholders. UNDP reported that:

- (a) At the time of the project's approval, steam technology was indeed proposed as a technically viable and economically sustainable alternative to MB use for high value crops like cut flowers. Cut flowers are grown in the higher altitudes of Lebanon. Accessibility of steam technology to growers, given geographic considerations, compounded by the reliance of the technology on transportation and fuel, compelled major stakeholders to request a shift from steam technology to other alternatives;
- (b) Steam technology was in line with the Government's interest in the long-term adoption of non-chemical alternatives. However, this last consideration is results-based and, when non-chemical alternatives show themselves to be impracticable chemical alternatives are considered acceptable solutions. Of the alternatives to steam currently being considered for the change in technology, the most effective appears to be 1.3-D mixed with chloropicrin;
- (c) Almost all greenhouses are equipped with basic drip irrigation systems, through which farmers apply soluble fertilizers and soil treatment chemicals. It is proposed to provide and install injector devices in the irrigation systems available to 224 farms to prevent farmers from coming into direct contact with the alternative chemical during application; and
- (d) The total cost of the three steam boilers and related equipment as included in the approved project proposal was about US \$530,000. The costs associated with the proposed 1.3-D/chloropicrin technology is US \$440,000.

18. Subsequently, UNDP agreed to adjust the request of the last funding tranche of the project by US \$90,000, representing the difference in cost between the steam and the 1-3DD/chloropicrin technologies.

## RECOMMENDATIONS

19. The Executive Committee may wish to consider:

- (a) Blanket approval of the fifth (and last) tranche of the project for the phase-out of MB used for soil fumigation in strawberry production at the amount of US \$42,504 plus agency supports costs of US \$3,188 for UNIDO;
- (b) The request for a change of technology in the project for the phase out of MB in vegetable, cut flower and tobacco production in Lebanon;
- (c) Approval of the revisions to the agreement between the Government of Lebanon and the Executive Committee that was approved at the 34th Meeting of the

Executive Committee that would reduce the overall cost of the project for the phase out of MB in vegetable, cut flower and tobacco production from US \$1,821,945 to US \$1,731,945; and

- (d) Approval of the fifth (and last) tranche of the project for the phase-out of MB in vegetable, cut flower and tobacco production at the amount of US \$210,000 plus agency supports costs of US \$15,750 for UNDP.

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