



**United Nations
Environment
Programme**

Distr.
LIMITED

UNEP/OzL.Pro/ExCom/41/24
22 November 2003

ORIGINAL: ENGLISH

EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Forty first Meeting
Montreal, 17 -19 December 2003

PROJECT PROPOSALS: BOSNIA AND HERZEGOVINA

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

Fumigant

- Phase-out of methyl bromide in tobacco seedling vegetables and flower production sector UNIDO

Phase out

- National ODS phase-out plan UNIDO

**PROJECT EVALUATION SHEET
BOSNIA AND HERZEGOVINA**

SECTOR: Fumigant ODS use in sector (2002): 11.8 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Title:

(a) Phase-out of methyl bromide in tobacco seedling vegetables and flower production sector (first tranche)

Project Data	Fumigant
Enterprise consumption (ODP tonnes)	11.8
Project impact (ODP tonnes)	11.8
Project duration (months)	36
Initial amount requested (US \$)	338,827
Final project cost (US \$):	
Incremental capital cost (a)	474,820
Contingency cost (b)	47,482
Incremental operating saving (c)	(183,475)
Total project cost (a+b+c)	338,827
Local ownership (%)	100%
Export component (%)	0%
Amount requested (first tranche) (US \$)	169,449
Cost effectiveness (US \$/kg.)	
Counterpart funding confirmed?	
National coordinating agency	National Ozone Office
Implementing agency	UNIDO

Secretariat's Recommendations	
Amount recommended (US \$)	
Project impact (ODP tonnes)	
Cost effectiveness (US \$/kg)	
Implementing agency support cost (US \$)	
Total cost to Multilateral Fund (US \$)	

PROJECT DESCRIPTION

1. The Government of Bosnia and Herzegovina is submitting a project to phase out 11.8 ODP tonnes of methyl bromide (MB) used for tobacco seedlings, vegetable and cut flower production, representing the entire MB consumption in the country. The MB baseline for compliance is 3.5 ODP tonnes.
2. In Bosnia and Herzegovina there are several tobacco companies that function as cooperatives enabling tobacco growers access to larger markets. These companies supply fertilizers, fumigant (MB) and sowing material to farmers and supervise the entire production process. Mostly Virginia, Burley and semi-Oriental tobacco are grown in the country. Usually the growers sell the fresh tobacco leaves to the cooperatives. The total amount of MB used for tobacco seedlings is almost 5 ODP tonnes. MB is also used as a soil fumigant for the production of vegetables (mainly tomatoes, cucumbers and peppers) and cut flowers under plastic houses (about 6.8 ODP tonnes).
3. A law on plant protection enacted in 1982 (and now accepted in Bosnia and Herzegovina) banned the use of MB in the production of vegetables; however, application of the law has not been very strict.
4. The alternative technologies to replace MB are in the floating tray system for the production of tobacco seedlings, and biofumigation and solarization for the production of vegetables and cut flowers. The project includes a training programme in the use of the alternative technologies and application of integrated pest management systems. The total project cost is US \$338,897.
5. The Government of Bosnia and Herzegovina is committed to phase out the entire consumption of MB (11.8 ODP tonnes) by end of 2006. Upon completion of the project, the Government will issue a regulation banning the use of MB in soil fumigation in the country.
6. The project will be implemented by UNIDO in coordination with the Ozone Unit (Ministry of Foreign Trade and Economical Relations), and in cooperation with the Ministries for Agriculture, Water and Forestry and the Government of the District Brcko.
7. The estimated time for the implementation of the project is three years.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Non-compliance regarding MB consumption

8. The Government of Bosnia and Herzegovina ratified the Copenhagen amendment to the Montreal Protocol on 8 August 2003. It would, therefore, appear that Bosnia and Herzegovina will be in non-compliance with the 2002 MB freeze, since its 2002 MB consumption is about 8.3 ODP tonnes over its baseline.

9. Pursuant to Decision XIV/21 (e.g., the Parties decided to request Bosnia and Herzegovina to submit to the Implementation Committee a plan of action with time-specific benchmarks to ensure a prompt return to compliance), the Government of Bosnia and Herzegovina submitted to the Implementation Committee at its 30th and 31st Meetings the requested plan of action. Subsequently, the Implementation Committee, at its 31st Meeting noted with appreciation Bosnia and Herzegovina's submission of its plan of action committing to reduce its MB consumption from 11.8 ODP tonnes in 2002 to 5.61 ODP tonnes in 2005 and in 2006, and to phase out MB consumption by 1 January 2007, except for critical uses that might be authorized by the Parties. The Implementation Committee also noted that the measures listed above should enable Bosnia and Herzegovina to return to compliance by 2008, and urged Bosnia and Herzegovina to work with the relevant implementing agencies to implement the plan of action and phase out consumption of MB.

Comments specific to the project proposal

10. Regarding the floating tray system, the Secretariat pointed out that the project has been designed using a tray with 209 cells. However, trays of 264 cells or more are being used successfully for the production of tobacco in other countries. By replacing the 209-cell trays with 264-cell trays, the area required for micro-tunnels could be reduced by a minimum of 20 per cent, with corresponding savings in materials. Further reductions can be achieved if trays with 288 or 338 cells are used. UNIDO informed the Secretariat that local technicians proposed to use the trays with 170 cells; however, after further discussions, it was agreed to use trays with 209 cells for the Virginia and Burley tobacco and 264-cells for semi-Oriental tobacco.

11. The Secretariat and UNIDO discussed issues related to the calculation of operating costs (such as costs of fertilizers, seeds, labour) in the production of tobacco seedlings, and cost issues associated with solarization and biofumigation as alternative technologies in the production of vegetables. UNIDO reported that the costs associated with solarization and biofumigation will be only for training farmers on the use of the new technologies. Costs related with farm materials will be covered by the growers.

12. The Secretariat also pointed out that the request for training and awareness (at US \$70,000) was high, considering the knowledgeable trainers available in the country (one technician for each 100 growers), the technical assistance that is currently provided by the large private tobacco companies, and the experts available at the Faculty of Agriculture. UNIDO reported that the training component is crucial, since it involves direct implementation of new technologies in different regions of the country. Even the technicians that had already tested the technologies had made some mistakes.

13. The Fund Secretariat and UNIDO are still discussing issues related with the cost of the project. The outcome of the discussions will be communicated to the Executive Committee prior to the 41st Meeting.

RECOMMENDATIONS

14. Pending.

**PROJECT EVALUATION SHEET
BOSNIA AND HERZEGOVINA**

SECTOR: Phase out ODS use in sector (2002): 259 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Title:

(a) National ODS phase-out plan (first tranche)

Project Data	Phase out plan
Enterprise consumption (ODP tonnes)	245
Project impact (ODP tonnes)	119,43
Project duration (months)	48
Initial amount requested (US \$)	979,795
Final project cost (US \$):	
Incremental capital cost (a)	
Contingency cost (b)	
Incremental operating cost (c)	
Total project cost (a+b+c)	864,160
Local ownership (%)	100%
Export component (%)	0%
Amount requested (first tranche) (US \$)	226,200
Cost effectiveness (US \$/kg.)	7.24*
Counterpart funding confirmed?	
National coordinating agency	Ministry of Foreign Trade and Economic Relations
Implementing agency	UNIDO

Secretariat's Recommendations	
Amount recommended (US \$)	226,200
Project impact (ODP tonnes)	119.43
Cost effectiveness (US \$/kg)	7.24
Implementing agency support cost (US \$)	16,965
Total cost to Multilateral Fund (US \$)	243,165

(*) Cost-effectiveness of the national ODS phase out plan

Background

15. In 2002, the Government of Bosnia and Herzegovina reported to the Ozone Secretariat a total CFC consumption of 243.6 ODP tonnes of CFCs, 3.6 ODP tonnes of TCA and 11.8 ODP tonnes of MB. Bosnia and Herzegovina's baselines for compliance are: 24.2 ODP tonnes for CFCs, 1.5 ODP tonnes for TCA and 3.50 ODP tonnes for MB.

16. So far, the Executive Committee has approved five investment projects in the foam and refrigeration sectors for the phase out of 114.1 ODP tonnes of CFCs (US \$1,338,546). The proposed date for completion of the projects is in mid-2004.

17. UNIDO has submitted, for consideration of the Executive Committee at its 41st Meeting, a national ODS phase out plan for Bosnia and Herzegovina to phase out 123.0 ODP tonnes of CFCs, 1.5 ODP tonnes of TCA and 11.8 ODP tonnes of methyl bromide (MB). The project for the phase out of MB is presented in a separate project evaluation sheet.

ODS consumption

18. A group of national experts, under the coordination of the Ozone Unit, was established to conduct a survey on ODS consumption in relevant user sectors in Bosnia and Herzegovina (end of 2002 to August 2003). Information was gathered from major ODS users (industry and SMEs) and statistical data from, among others, the State Agency for Statistics, business associations, Chambers of Commerce and Industry and the State Foreign Trade Chamber. For CFC consumption in the refrigeration servicing sector, data was also gathered from ODS distributors, importers of refrigeration equipment, and service workshops.

19. As a result, eight manufacturing companies using CFCs were identified (all of them established prior to July 1995): one rigid foam manufacturing plant, with a total CFC consumption of 5.6 ODP tonnes, and seven commercial refrigeration manufacturing plants with a total consumption 21.73 ODP tonnes. Relevant data of the enterprises are presented in the following table:

Enterprise	Products	CFC-11	CFC-12	Baseline equipment
Foam sector				
AD Mebos	Water boiler (58,520 units/year)	5.6	0	LP dispenser GH-50 (50 l/min)
Refrigeration sector				
SP Mont	Walk in cabinets, display refrigerators, cold stores, refrigeration trucks and ice makers (283 units/year)	1.2	0.5	Manual mixing; 2VP, 2LD, 1CB
Elit Debejki	Cold stores, horizontal show cases, open vertical show cases (826 units/year)	2.2	0.6	2VP, 1LD
Sofrel	Display refrigerators, open show cases, reach in cabinets (539 units/year)	1.8	0.5	LP dispenser, LP spray and injection; 2VP, 2LD, 2CB
Santa	Show cases (93 units/year)	0.5	0.1	1VP
Ordagić	Horizontal show cases, open vertical show cases, cold chambers, milk chillers, air conditioners (1,210 units/year)	6.7	1.8	LP dispensers (2); 10VP, 4LD, 4CB
Slatkom	Horizontal show cases, open and closed vertical show cases, cold chambers, milk chillers, walk in cabinets (1,782 units/year)	7.8	2.2	1 LP dispenser; VP, 2LD, 4CB
Eko elektrofrigo	Display refrigerators, reach-in cabinets, cold stores, refrigeration trucks (600 units/year)	1.1	0.3	Manual mixing; 2VP, 2LD, 1CB

20. Based on the survey, the CFC consumption in the refrigeration servicing sector increased from 36.1 ODP tonnes in 2001 to 85.0 ODP tonnes in 2002.

21. In addition, one company (MIK) used about 1.5 ODP tonnes of TCA as a solvent for cleaning metal parts for timber and PVC construction furniture.

ODS regulations

22. Since declaring its independence from the former Yugoslavia on 3 March 1992, Bosnia and Herzegovina has become an independent country consisting of two administrative entities: the Federation of Bosnia and Herzegovina and the Republika Srpska (in 1998, the Brčko District of Bosnia and Herzegovina was established).

23. An inter-entity Coordination Board for Environment was established in 1998 by a decision of its administrative entities. Several focal points covering United Nations conventions have been established including an Operational Focal Point for the Ozone Layer Protection, under the Ministry of Foreign Trade and Economic Relations.

24. The Ozone Unit (under the Ministry of Foreign Trade and Economic Relations) assisted in drafting ODS regulations. However, the license and quota system for ODS import/export will only be adopted by the end of 2003, and will enter into force by June 2004. In this regard, there is a need to implement additional activities to better control import of ODS and reduce the risk of illegal imports, including:

- (a) Development of a national standard for storage of refrigerants including technical specifications on the containers used for CFCs;
- (b) Establishment of an accounting system of imports of CFC with updated information from all entry ports;
- (c) Training for customs officers on the import license system, ODS regulations, CFC identification and illegal trade; and
- (d) Strengthening the import license system and incorporate in it CFC-based equipment (used or new).

Phase out of CFCs in the manufacturing sector

25. The national ODS phase-out plan proposes to implement the following sub-projects for the phase out of CFCs in the manufacturing sector:

- (a) The rigid foam manufacturing plant will replace CFC-11 as a foam blowing agent with HCFC-141b by replacing the existing low pressure unit with a high-pressure dispenser. Technical assistance, trials and training will also be provided. No incremental operating cost is requested. The total cost of the sub-project is US \$53,075.
- (b) The seven companies manufacturing commercial refrigerators will replace CFC-

11 foam blowing agent with HCFC-141b-based technology and CFC-12 with HFC-134a in their refrigerant charging operations. The phase-out plan requests funding for high- or medium-pressure foam dispensers (as applicable), replacement of vacuum pumps, leak detectors and refrigerant charging boards, technical assistance, trials and training. The total cost of the sub-project is US \$293,810. No incremental operating costs are requested.

- (c) The enterprise which produces metallic parts will phase out the use of TCA by converting the current mechanical process using lubricants to volatile lubricants; no cleaning process will be needed after conversion. The total cost of the sub-project is US \$43,000.

Refrigeration servicing sector

26. According to the national phase out plan, there are 1,650,000 domestic refrigerators and freezers in Bosnia and Herzegovina, 60 per cent of which are second hand CFC-based systems. In recent years, approximately 15,000 household and commercial refrigerators have been imported into the country, mainly from Europe.

27. The total number of commercial refrigeration equipment in operation is estimated at 53,500 units, 15,800 of which were imported prior to 1995. The equipment consists of bottle coolers (32 per cent), commercial freezers (61 per cent), show case (5 per cent) and other systems (2 per cent). The average life a system is 15 years. On an annual basis, about 25 per cent of the units need 0.8 kg of CFC-12 for re-charge. There are also 700,000 vehicles and trucks, 10,500 of which are fitted with a CFC-based MAC unit.

28. Industrial refrigeration and air conditioning facilities are installed in food processing industries, pharmaceutical industry, recreation and sport halls, trade centres and airports. They are the largest consumers of CFCs, with a total annual consumption of 35 ODP tonnes.

29. The refrigeration equipment is serviced by about 1,000 service technicians employed by 500 registered service workshops (average of two technicians/workshop). The average consumption of CFCs per service workshop is 175.6 kg/year (for a total annual consumption of 87.8 ODP tonnes). Most of the workshops (80 to 85 per cent) service domestic refrigerators and small commercial equipment. Only large workshops (around 5 per cent) are equipped for servicing MAC units or industrial refrigeration units.

30. The current prices of refrigerants per kg are: US \$2.79 for CFC-12, US \$5.82 for HFC-134a and US \$2.68 for HCFC-22.

Phase out in the refrigeration servicing sector

31. The following activities are being proposed for the implementation of the phase out in the refrigeration servicing sector:

- (a) Training of customs officers (US \$33,450): to train 20 customs officers on ozone related issues, identification of ODSs and ODS-based equipment and data

collection and reporting. ODS identification kits will be provided to ten entry points;

- (b) Training programme for refrigeration technicians (US \$50,360): to enhance the service skill of refrigeration technicians and to introduce good service practices related to non-CFC refrigerants; and
- (c) Establishment of a recovery and recycling programme (US \$363,100), including 250 recovery machines, 300 vacuum pumps, 5 recycling machines, 300 service tools kits and ancillary equipment.

Technical support and management

32. The national phase out plan includes a technical support component (US \$50,000) to ensure that the proposed phase-out actions are technically sound and sustainable, preventing industrial obsolescence. Some of the proposed activities are: establishing quality and performance standards for the CFC-free products and applications; providing technology assistance to industry through workshops and meetings; and establishing a training, certification and licensing programme.

33. An additional US \$93,000 is requested for the management of the national phase-out plan, which includes training of national experts, international consultants, awareness, monitoring and reporting.

34. The Government of Bosnia and Herzegovina is requesting the disbursement of the 2004 funding at the last Meeting of the Executive Committee in 2003. The funds for 2005 and 2006 will be transferred to UNIDO at the last meeting of the Executive Committee in 2004 and 2005 respectively, for the amounts listed in the following table, upon approval of the annual implementation plan and upon confirmation by the Government and UNIDO, that the agreed reduction targets and relevant performance milestones of the preceding year have been achieved:

	Total	2003	2004	2005	2006	2007
Project cost (US\$)	979,795	248,075	249,910	247,460	149,250	85,100
Support cost (US\$)	73,485	18,606	18,743	18,560	11,194	6,383
Total cost (US\$)	1,053,280	266,681	268,653	266,020	160,444	91,483

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Non-compliance with the Montreal Protocol by Bosnia and Herzegovina

35. The Parties to the Montreal Protocol noted at their 14th Meeting that Bosnia and Herzegovina was in non-compliance with its obligations under Article 2A of the Montreal Protocol (the CFC baseline for compliance is 24 ODP tonnes and the 2000 and 2001 reported consumption were 176 and 200 ODP tonnes, respectively). Subsequently, the Parties decided to

request Bosnia and Herzegovina to “submit to the Implementation Committee a plan of action with time-specific benchmarks to ensure a prompt return to compliance...” (Decision XIV/21).

36. Pursuant to Decision XIV/21, the Government of Bosnia and Herzegovina submitted to the Implementation Committee at its 30th and 31st Meetings a plan of action with time-specific benchmarks to ensure a prompt return to compliance. Subsequently, the Implementation Committee, at its 31st Meeting noted with appreciation Bosnia and Herzegovina’s submission of its plan of action committing to reduce its CFC consumption from 243.6 ODP-tonnes in 2002 to 235.3 ODP tonnes in 2003; to 167 ODP tonnes in 2004; to 102.1 ODP tonnes in 2005; to 33 ODP tonnes in 2006; to 3 ODP tonnes in 2007; and to phase out CFC consumption by 1 January 2008, except for essential uses that might be authorized by the Parties. Bosnia and Herzegovina also committed to establish, by 2004, a system for licensing imports and exports of ODS, including quotas and to ban, by 2006, imports of ODS-based equipment;

37. The Implementation Committee also noted that the measures listed above should enable Bosnia and Herzegovina to return to compliance by 2008, and urged Bosnia and Herzegovina to work with the relevant implementing agencies to implement the plan of action and phase out consumption of CFCs.

Foam sector

38. The Secretariat pointed out that no baseline information was provided for the rigid foam manufacturer for which assistance was requested, and therefore, the eligibility of the funding request could not be assessed. In this regard, UNIDO informed the Secretariat that the foam enterprise was identified and verified as eligible for funding through the survey recently conducted in the country. UNIDO also submitted baseline information of the enterprise as provided by the Ozone Unit.

Refrigeration manufacturing sector

39. The Fund Secretariat and UNIDO discussed cost issues related to the foam dispenser for two enterprises with hand-mixing operations for three enterprises with an existing low-pressure dispenser; and the replacement of 7 vacuum pumps and retrofitting of 16 pumps.

Refrigeration servicing sector

40. The national ODS phase-out plan estimated that 30 ODP tonnes of CFCs could be phased out through the recovery and recycling programme. The Secretariat pointed out, however, that the amount appeared to be high when compared to reports on similar recovery/recycling programmes already implemented. Furthermore, of the total CFC consumption in the servicing sector, over 35 ODP tonnes were used for servicing domestic and small commercial refrigeration units where recovery of refrigerant is practically nil. In this regard, UNIDO indicated that according to UNIDO’s experiences with recovery and recycling projects and RMPs, reasonable amounts of CFCs were recovered and recycled.

41. The Secretariat sought a clarification on whether an incentive programme for retrofitting or replacing CFC-based equipment would be submitted at a later stage as it was indicated in the

project proposal. UNIDO informed the Secretariat that the Government of Bosnia and Herzegovina will not request any additional funding for replacing/retrofitting CFC-based equipment.

42. The Secretariat also sought a clarification from UNIDO on the large number of domestic refrigerators/freezers in operation (1,650,000 units, or two units per household). This situation is most unlikely given the economic circumstances of the country. In this regard, UNIDO indicated that the number of household refrigeration units were estimated by the Ozone Unit and a national experts' team on the basis of data reported in a project by the World Bank and UNDP on the "Life of BiH households in post-war reconstruction period".

43. The recovery and recycling project component included a request for five expensive recycling machines (US \$8,000 each) and 250 recovery machines and ancillary equipment. However, no rationale was provided for the number of machines being requested. In this regard, the Secretariat pointed out that the large number of recovery and recycling units being requested were not fully justified. Furthermore, through its Decision 38/38, the Executive Committee decided that the implementing agency concerned would, consistent with previous decisions, not commence the recovery and recycling component of the RMP until the legislation controlling CFC imports was in place and measures had been taken to ensure that the local market prices of CFCs and non-ODS refrigerants were similar. UNIDO indicated that well-equipped centres are essential for the success of the programme and therefore efficient recycling equipment is being requested. It is proposed to provide equipment to 50 per cent of the registered service shops. The Government of Bosnia and Herzegovina is aware of the Decision 38/38; in this regard, legislation to control CFC imports is expected to be adopted by the end of 2003.

Solvent sector

44. The Secretariat and UNIDO discussed issues related to the new equipment (at a cost of US \$43,000) for the enterprise using TCA as a solvent, considering that no cleaning would be required in the future.

Project implementation and monitoring

45. The Secretariat and UNIDO also discussed the level of funding requested for project management and technical support (US \$143,000) which represents about 15 per cent of the total project cost. The Secretariat noted, that, the level of costs for monitoring terminal plans that have been approved by the Executive Committee are all between 5 and 10 per cent of the total project cost.

Conclusion

46. Subsequently, UNIDO submitted a revised project proposal, addressing the issues raised by the Secretariat. The revised proposal has a total cost of US \$864,160, with the following distribution:

Foam sector	US \$43,850
Refrigeration manufacturing sector	US \$273,000

Servicing sector:

Customs empowerment programme	US \$32,450
Training for refrigeration service technicians	US \$65,860
National recovery and recycling project	US \$369,000
Technical assistance for solvent sector programme	US \$20,000
Project management	US \$60,000

47. The draft agreement between the Government of Bosnia and Herzegovina and the Executive Committee will be finalized prior to the 41st Meeting.

RECOMMENDATIONS

48. The Fund Secretariat recommends approval of the project proposal at the funding level indicated below, on the understanding that, under the draft agreement:

- (a) The Government of Bosnia and Herzegovina would have flexibility in utilizing the resources available under the recovery and recycling programme, to address specific needs that might arise during project implementation;
- (b) The recovery and recycling programme would be funded in stages so that resources can be diverted to other activities, such as additional training or procurement of service tools, if the proposed results from the programme are not achieved;
- (c) The recovery and recycling programme should not commence until the legislation controlling CFC imports is in place and measures have been taken to ensure that the local market prices of CFCs and non-ODS refrigerants are similar;
- (d) UNIDO would provide appropriate monitoring throughout project implementation; and
- (e) Approval of the project would be without prejudice to the operation of the Montreal Protocol's mechanisms dealing with non-compliance issues.

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(a)	National ODS phase-out plan	226,200	16,965	UNIDO
