



**United Nations
Environment
Programme**

Distr.
LIMITED

UNEP/OzL.Pro/ExCom/34/44
21 June 2001



ORIGINAL: ENGLISH

EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Thirty-fourth Meeting
Montreal, 18-20 July 2001

PROJECT PROPOSALS: SYRIA

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

Foam:

- Conversion from CFC-11 to methylene chloride in the production of flexible slabstock foam at Al-Muzayek UNIDO

Fumigant:

- Phase-out of the use of methyl bromide in grain storage (first tranche) UNIDO

Halon:

- Sector phase out program: establishing a halon bank and umbrella project for 63 manufacturers Germany
- Sector phase out program: establishing a halon bank and umbrella project for 63 manufacturers France

Refrigeration

- Conversion from CFC-11 to HCFC-141b and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Refrigeration House Co. UNDP

**PROJECT EVALUATION SHEET
SYRIA**

SECTOR: Foam ODS use in sector (2000): 110 ODP tonnes
 Sub-sector cost-effectiveness thresholds: Flexible Slabstock US \$6.23/kg

Project Titles:

(a) Conversion from CFC-11 to methylene chloride in the production of flexible slabstock foam at Al-Muzayek

Project Data	Flexible slabstock	
	Al-Muzayek	
Enterprise consumption (ODP tonnes)		33.70
Project impact (ODP tonnes)		33.70
Project duration (months)		24
Initial amount requested (US \$)		106,789
Final project cost (US \$):		
Incremental capital cost (a)		113,000
Contingency cost (b)		7,200
Incremental operating cost (c)		-13,411
Total project cost (a+b+c)		106,789
Local ownership (%)		100%
Export component (%)		0%
Amount requested (US \$)		106,789
Cost effectiveness (US \$/kg.)		3.17
Counterpart funding confirmed?		Yes
National coordinating agency	Ministry of Environment	
Implementing agency	UNIDO	
Secretariat's Recommendations		
Amount recommended (US \$)		106,789
Project impact (ODP tonnes)		33.70
Cost effectiveness (US \$/kg)		3.17
Implementing agency support cost (US \$)		13,883
Total cost to Multilateral Fund (US \$)		120,672

PROJECT DESCRIPTION

Sector background

- Latest available total ODS consumption (2000)	1,711.98 ODP tonnes
- Baseline consumption of Annex A Group I substances (CFCs)	2,224.60 ODP tonnes
- Consumption of Annex A Group I substances for the year 2000	1,173.78 ODP tonnes
- Baseline consumption of CFCs in foam sector	2,337.00 ODP tonnes
- Consumption of CFCs in foam sector in 2000*	110.00 ODP tonnes
- Funds approved for investment projects in foam sector as of end of 2000	US \$2,693,244
- Quantity of CFC to be phased out in investment projects in foam sector as of end of 2000	506.90 ODP tonnes
- Quantity of CFC phased out from approved investment projects in the foam sector as of end of 2000	232.40 ODP tonnes
- Quantity of CFCs in approved investment projects in the foam sector not yet completed as of end of 2000	274.50 ODP tonnes
- Quantity of CFCs remaining to be phased out in the foam sector as of end of 2000	Exceeds current sector consumption

* Based on data submitted to the Fund Secretariat by the Government of the Syrian Arab Republic on 24 April 2001.

Flexible Slabstock Foam

Al-Muzayek

1. Al-Muzayek (established in 1975) consumed 33.7 tonnes of CFC-11 in 1999 in the production of flexible slabstock foam for products such as sponges, mattresses, and furniture cushions. The company will phase out all 33.7 ODP tonnes of CFC-11 by converting to methylene chloride (MC) technology.

2. The company operates two OMS low-pressure foaming machines of 1977 vintage. The claimed costs of conversion include a MC pumping system (US \$15,000), process and cure area ventilation systems (US \$63,000), safety devices (US \$7,000), trials and start-up (US \$13,000), and technology transfer and training (US \$15,000) amounting to an incremental capital cost (including contingency) of US \$120,200. There will be incremental operating savings of US \$13,411. The total project cost amounts to US \$106,789.

3. UNIDO has stated that after the conversion of Al-Muzayek's production the sub-sector of flexible polyurethane foam will definitely be closed in Syria.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

4. This is the last project in flexible polyurethane foam sub-sector, therefore no other project in this sub-sector will be submitted for funding by the Government of Syria following approval of this project.
5. The components of the project are in line with similar projects approved and implemented in Syria and other Article 5 countries.
6. It would normally be expected that the current consumption of CFCs would exceed the consumption in projects still under implementation. However the reverse is the case showing consumption to be phased out to be about 148 ODP tonnes in excess of the country's current sector consumption. UNIDO and the Government of the Syrian Arab Republic have been requested to offer possible clarification.

Action on relevant sections of Decision 33/2

Government and Enterprise Commitments

7. The Secretariat received a letter of transmittal of the Al-Muzayek project from the Government of the Syrian Arab Republic in which it stated, inter alia, consistent with Executive Committee Decision 33/2 (c) that:
 - (a) The National Ozone Unit has validated the total CFC-11 consumption of 33.7 ODP tonnes to be phased out by Al-Muzayek and retained in its records for future verification.
 - (b) The Government of Syria has been advised that its agreement with the project indicates a commitment to ensure that the validated phase-out figure of 33.7 ODP tonnes was realized and yielded a sustained reduction from its 2000 foam sector consumption of 110 ODP tonnes.
8. The Secretariat also received a signed commitment note from the Director-General of Al-Muzayek in which the company inter alia affirmed its commitment to completely phase out the CFC-11 and not to revert to its use after conversion, to co-operate with the implementing agency to return any unused contingency funds and funds deemed to have been used in situations of identified serious funding irregularities as well as other commitments stipulated under Decision 33/2 and other relevant rules governing project approval.
9. The above documents are available in the Secretariat and may be made available on request.

Project duration

10. Following discussion with UNIDO consistent with Decision 33/2 (b), UNIDO revised the project duration from 24 months to 16 months.

RECOMMENDATIONS

11. The Secretariat recommends blanket approval of the Al-Muzayek project with the funding level and associated support cost as indicated below.

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(a)	Conversion from CFC-11 to methylene chloride in the production of flexible slabstock foam at Al-Muzayek	106,789	13,883	UNIDO

12. The Secretariat further recommends that the Executive Committee:

- (a) Takes note with appreciation of the commitments made by the Government of the Syrian Arab Republic and Al-Muzayek company as stated in paragraphs 6 and 7 above.
- (b) Also takes note of the undertaking by the Government not to submit any more projects in the flexible foam sub-sector for funding under the Multilateral Fund.

**PROJECT EVALUATION SHEET
SYRIA**

SECTOR: Fumigant ODS use in sector (2000): 113 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Title:

(a) Phase-out of the use of methyl bromide in grain storage (first tranche)

Project Data	Methyl bromide
Enterprise consumption (ODP tonnes)	105.00
Project impact (ODP tonnes)	105.00
Project duration (months)	48
Initial amount requested (US \$)	300,000
Final project cost (US \$):	
Incremental capital cost (a)	1,272,100
Contingency cost (b)	127,210
Incremental operating cost (c)	-315,171
Total project cost (a+b+c)	1,084,139
Local ownership (%)	100%
Export component (%)	0%
Amount requested (US \$)*	300,000
Cost effectiveness (US \$/kg.)	10.32
Counterpart funding confirmed?	
National coordinating agency	Ozone Office of the Ministry of Environment
Implementing agency	UNIDO

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

* First tranche

PROJECT DESCRIPTION

Phase-out of the use of methyl bromide in grain storage (first tranche)

13. About 105 ODP tonnes of methyl bromide (MB) is used in Syria for the fumigation of grains. The storage facilities in Syria consists of silos with a storage capacity of 0.3 million tonnes of grains, warehouses with a total capacity of 2.2 million tonnes, and outdoor storage of grain with a capacity of 1.5 million tonnes that can be increased to 3.5 million tonnes for large harvests.

14. Currently, about 80 per cent of the grains is stored in silos and warehouses and 64 per cent of the outdoor stored grain is treated with MB; the 20 per cent remaining indoor storage is fumigated with phosphine (outdoor grain is almost exclusively treated with MB). Grains are usually fumigated at least twice per year; however, an additional fumigation could be applied during periods with high level of humidity, occurrence of re-infestation or when the grains are re-stored in other facilities.

15. The project is to phase out all uses of MB in storage and structural applications in Syria, through the use of phosphine. This technology has been selected on the basis of the results from the demonstration project on alternatives to the use of MB in horticulture and commodity fumigation in Syria, approved by the Executive Committee at its 24th Meeting (UNIDO, US \$509,850).

16. The project proposal includes procurement of 135 phosphine detectors for monitoring fumigation space, installation of gas sampling lines and enhancement of the sealing of facilities to reduce the consumption of phosphine, at a total cost of US \$1,292,600 and a training programme at a cost of US \$281,100. Operating savings were estimated at US \$315,171 on the basis of the difference in costs between MB and phosphine. Fumigation with phosphine will be implemented in stages, as the grains currently stored (and treated with MB) are being consumed.

17. The project will be implemented by UNIDO in cooperation with the General Establishment for Cereal Processing and Trade (GECPT). Upon approval of the project, the Government is committed to reduce the aggregate consumption of MB by 105 ODP tonnes by 2005; establish a register of MB importers and to ban any import authorisation over the consumption limits established and revoke the registration of MB as a grain storage fumigant and ban its use once the project has been implemented.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

18. The Secretariat pointed out that the project is to retrofit the existing 130 facilities (silos, warehouses and outdoor storage) for the use of phosphine fumigation. However, not all the

storage facilities are currently fumigated with MB. As reported in the project proposal, only 64 per cent of outside storage facilities in Homs district was treated with MB; and phosphine is currently used in about 20 per cent of the warehouses. UNIDO informed the Secretariat that while phosphine is applied in 20 per cent of indoor storage facilities, these facilities are not equipped with monitoring lines for pest control; samples are extracted by punching the plastic cover and the holes made in the cover cannot be sealed properly; therefore, the potential for the presence of water and/or moisture increases and the amount of phosphine used also increases. The issue of the leakage of phosphine may be addressed by increasing the number of fumigation; however, the presence of water and phosphine creates a potentially explosive situation and causes fire. The use of a gas sampling line and a phosphine meter makes the extraction of samples unnecessary because the level of phosphine can be monitored in the stack as frequently as needed without the need of making any hole, thus keeping the tightness of the plastic cover, and also reduces the need of continuous re-fumigation's. Subsequently, UNIDO agreed to revise the capital cost of the project according to the storage facilities where MB is currently used (US \$1,072,400).

19. The Secretariat indicated that phosphine meters and gas sampling lines could be shared among different facilities in the same industry group or district taking into consideration that the duration of phosphine application is about 5 to 7 days and not more than one or two applications/year might be required. UNIDO stated that sharing of equipment between storage facilities was not technically feasible. By removing the gas-sampling lines, the grain stacks become unprotected and prone to insect attacks. Phosphine meters are needed to monitor at least weekly the phosphine concentration in the grain stacks; an adequate concentration prevents re-infestation and therefore leads to a lower use of phosphine

20. The Secretariat also pointed out that actual phase out of MB will start only in 2003. In this regard, UNIDO stated that since the harvest season in Syria finished in June, it is not feasible to use phosphine for the new harvested grain. The option of using phosphine in the grain which is currently in bag stacks is not economically feasible, since the cost for demolishing them, re-building them properly with palettes and installing phosphine sampling lines is very high. Therefore, the use of phosphine could only start in the harvest season of 2002. The funding level requested on a yearly basis is based on the material needed for the preparation of new stacks for the 2002 harvest (in 130 facilities) and for the training programme; furthermore, purchase in stages is generally more expensive than a single purchase. Subsequently, UNIDO considered that a small amount of MB (5 ODP tonnes) could be phased out in 2002.

21. The Fund Secretariat and UNIDO discussed the size of the training programme taking into account that phosphine is already used in some storage facilities in the country; a training programme on the use of phosphine was included in the demonstration project; and fumigation is carried-out by staff from GECPT, irrespective of fumigant used. Subsequently, the size of the training programme was adjusted to US \$199,700.

22. The project proposal included a proposal for an agreement between the Executive Committee and the Government of Syria with the commitments proposed and an action plan for the phase out of MB used for grain storage in Syria (attached).

RECOMMENDATION

23. The Fund Secretariat and UNIDO have agreed on the total cost of the project (US \$1,084,139). Based on the above considerations, the Executive Committee may wish to consider approval of the project for Syria. The Committee may also wish to request UNIDO to disburse the funds allocated in tranches according to the proposed MB phase out schedule indicated in the project proposal; if Syria does not meet the reduction requirements outlined in the proposal, the Multilateral Fund, through UNIDO will withhold funding for the subsequent tranche until such time as the required reduction has been met.

**AGREED CONDITIONS FOR THE-PHASE-OUT OF THE USE OF
METHYL BROMIDE IN GRAIN STORAGE IN SYRIA
(DRAFT)**

1. The Executive Committee agrees to approve in principle (US \$1,084,139) as the total funds that will be available to achieve the commitments noted in this document for the phased reduction in the use of MB in Syria subject to the following understandings and considerations:

2. As reported to the Ozone Secretariat and consistent with information in the project document presented to the Executive Committee, Syria had a total consumption of 113 ODP tonnes of MB (imports) in the year 2000 of which 105 ODP tonnes were used for storage and commodities fumigation. In accordance with the data submitted to the Ozone Secretariat by Syria for the years 1995-1998, Syria had a MB consumption baseline of 220.85 ODP tonnes. Syria has already complied with the year 2002 freeze and the 20 per cent reduction due in 2005, and is committed to reduce total national consumption of controlled uses of MB to no more than the following levels during the 12-month period of the following listed years:

2001	113.0 ODP tonnes (no reduction)
2002	108 ODP tonnes (5 ODP tonnes reduction)
2003	78.2 ODP tonnes (29.8 ODP tonnes reduction)
2004	43.4 ODP tonnes (34.8 ODP tonnes reduction)
2005	8.0 ODP tonnes (35.4 ODP tonnes reduction)

3. In addition, upon successful completion of the project, Syria commits to sustain this phase out of MB through the use of adequate regulations. Syria may have additional projects approved in non-storage and commodity fumigation that will add to the reductions noted above and subsequently allow total phase out of MB.

4. In the context of the extensive training to be carried out during the implementation of this project, UNIDO agrees to train related personnel in ways to limit the use of phosphine through careful monitoring of concentration in order to avoid insect resistance. UNIDO shall also report back to the Executive Committee annually on the progress in meeting the MB reductions required and the expenditures realised. Following initial disbursement of 35 per cent in the year 2001, funding for late years will be disbursed in accordance with the following schedule and with the understanding, that a subsequent year's funding will not be disbursed until the Executive Committee has favourably reviewed the prior year's progress report:

2002:	30 per cent
2003:	20 per cent
2004:	15 per cent

5. UNIDO agrees to manage the funding for this project in a manner designed to ensure that the specific annual reductions agreed are met.

**PROJECT EVALUATION SHEET
SYRIA**

SECTOR: Halon ODS use in sector (1998): 409.5 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Titles:

- (a) Sector phase out program: establishing a halon bank and umbrella project for 63 manufacturers
 (b) Sector phase out program: establishing a halon bank and umbrella project for 63 manufacturers

Project Data	Banking	Banking
Enterprise consumption (ODP tonnes)		
Project impact (ODP tonnes)	205.00	205.00
Project duration (months)	36	36
Initial amount requested (US \$)	332,445	338,435
Final project cost (US \$):		
Incremental capital cost (a)		
Contingency cost (b)		
Incremental operating cost (c)		
Total project cost (a+b+c)		
Local ownership (%)	100%	100%
Export component (%)	0%	0%
Amount requested (US \$)	161,000	161,000
Cost effectiveness (US \$/kg.)		
Counterpart funding confirmed?		Yes
National coordinating agency	National Ozone Unit	National Ozone Unit
Implementing agency	France	Germany

Secretariat's Recommendations		
Amount recommended (US \$)	161,000	161,000
Project impact (ODP tonnes)	205.00	205.00
Cost effectiveness (US \$/kg)	n/a	n/a
Implementing agency support cost (US \$)	20,930	20,930
Total cost to Multilateral Fund (US \$)	181,930	181,930

PROJECT DESCRIPTION

24. The Governments of France and Germany submitted a joint proposal to develop a halon banking programme for Syria. The main objective of the project is to install a national halon bank in Syria in time to assist Syria to meet its 2002 halon freeze obligations. The national halon bank will be designed to ensure enough halons for essential uses in the country. An additional objective of the project is to eliminate the demand for halon 1301 systems through a training programme for fire experts and engineers on the design of fire protection systems operating with water sprinklers, fine water mist, FM200, argon, CO₂, Inergen and other halon alternatives.

25. The activities in the projects include the formulation of a national halon banking management plan, the provision of reclamation equipment for halon 1211/1301 and 2404, recovery and recycling equipment, storage tanks, quality control equipment, and a training programme on the design of fire protection systems not using halons. The project was prepared on the basis of project preparation approved by the Multilateral Fund. The focal point for the joint project will be Germany.

26. Syria has reported an annual consumption ranging from 467 ODP tonnes in 1994 to 413 ODP tonnes in 1999. The project would be completed in three years.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

27. The Government of Syria confirmed in a letter to the Secretariat that legislation prohibiting the import of newly produced halons would be in place within six months after the halon bank was operational, the halon bank will be sustained through the commitments of the Government and the military, and Syria would not request any further funding for halon projects.

28. The request complies with the guidelines for halon banking pursuant to Decision 18/22.

RECOMMENDATIONS

29. The Fund Secretariat recommends blanket approval of this project in the amounts indicated in the following table.

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(a)	Sector phase out program: establishing a halon bank and umbrella project for 63 manufacturers	161,000	20,930	France
(b)	Sector phase out program: establishing a halon bank and umbrella project for 63 manufacturers	161,000	20,930	Germany

**PROJECT EVALUATION SHEET
SYRIA**

SECTOR: Refrigeration ODS use in sector (2000): 865 ODP tonnes
 Sub-sector cost-effectiveness thresholds: Commercial US \$15.21/kg

Project Titles:

- (a) Conversion from CFC-11 to HCFC-141b and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Refrigeration House Co.

Project Data	Commercial	
	Refrigeration House	
Enterprise consumption (ODP tonnes)		18.62
Project impact (ODP tonnes)		17.55
Project duration (months)		36
Initial amount requested (US \$)		266,981
Final project cost (US \$):		
Incremental capital cost (a)		183,500
Contingency cost (b)		18,350
Incremental operating cost (c)		127,888
Total project cost (a+b+c)		329,738
Local ownership (%)		100%
Export component (%)		0%
Amount requested (US \$)		253,653
Cost effectiveness (US \$/kg.)		14.45
Counterpart funding confirmed?		Yes
National coordinating agency	National Ozone Unit	
Implementing agency	UNDP	

Secretariat's Recommendations		
Amount recommended (US \$)		253,653
Project impact (ODP tonnes)		17.55
Cost effectiveness (US \$/kg)		14.45
Implementing agency support cost (US \$)		32,975
Total cost to Multilateral Fund (US \$)		286,628

PROJECT DESCRIPTION

Sector Background

Latest available total ODS consumption (1999)	4,626.80 ODP tonnes
Baseline consumption of Annex A Group I substances (CFCs)	2,224.60 ODP tonnes
Consumption of Annex A Group I substances for the year 1999	1,270.40 ODP tonnes
Baseline consumption of CFCs in refrigeration sector	775.17 ODP tonnes
Consumption of CFCs in refrigeration sector in 2000	865.00 ODP tonnes
Funds approved for investment projects in refrigeration sector as of end of 2000	US \$11,583,518.00
Quantity of CFC to be phased out in investment projects in refrigeration sector as of end of 2000	799.08 ODP tonnes

30. The total consumption of CFCs in the refrigeration sector for the year 2000, according to information from the government of Syria, was 865 ODP tonnes. The refrigeration sector in Syria consists of four large enterprises (all have received assistance from the Multilateral Fund) with a consumption of about 174 ODP tonnes. The sector is also comprised of several medium-sized enterprises, three of which have received assistance from the Multilateral Fund. Additionally, it is estimated that there are more than 70 small-sized commercial refrigeration enterprises in the sector. The total 2000 consumption in the refrigeration sector (865 ODP tonnes) is sub-divided into 308 ODP used for manufacturing of new refrigeration equipment and 557 ODP for servicing.

31. The Executive Committee has approved about US \$11,583,518 for 33 projects to phase out 799.08 ODP tonnes of CFC for enterprises manufacturing refrigeration equipment in the refrigeration sector in Syria as well as a Refrigerant Management Plan to address ODS consumption used for servicing.

Project description

32. The project for Refrigeration House Co. will phase-out 14.53 ODP tonnes of CFC-11 and 4.09 ODP tonnes of CFC-12 in the manufacture of commercial refrigeration equipment. This will be achieved by converting from CFC-11 to HCFC-141b as the foam blowing agent and from CFC-12 to HFC-134a as the refrigerant. The enterprise operates two low-pressure dispensers for foaming operations and CFC-12 charging, evacuation and detection equipment in the baseline.

33. Under the current project, the existing low-pressure foam dispensers will be replaced by one high-pressure foam dispenser. The enterprise will require provision of portable refrigerant charging units and vacuum pumps. Other costs include redesign, testing, trials, training and technical assistance. Incremental operating costs are requested for a period of two years by the enterprise reflecting the higher cost of chemicals and an increase in foam density.

Justification for the use of HCFC-141b

34. Justification for the use of HCFC-141b by Refrigeration House Co. has been provided and is available in the Secretariat. The Government of Syria has also provided a letter endorsing the use of HCFC-141b.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS**COMMENTS**

35. The Secretariat discussed with UNDP the implications of Decision 31/45 on the new sector for installation, assembly and servicing for production of insulation panels for walk-in refrigerators. It was proposed to treat the production of insulation panels according to rules and policies for the rigid foam sector. The level of grant has been recalculated accordingly.

RECOMMENDATIONS

36. The Fund Secretariat recommends blanket approval of the commercial refrigeration project from UNDP with the level of funding and associated support costs as indicated below.

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(a)	Conversion from CFC-11 to HCFC-141b and from CFC-12 to HFC-134a technology in the manufacture of commercial refrigeration equipment at Refrigeration House Co.	253,653	32,975	UNDP
