



**United Nations
Environment
Programme**



Distr.
LIMITED

UNEP/OzL.Pro/ExCom/27/33
23 February 1999

ORIGINAL: ENGLISH

EXECUTIVE COMMITTEE
OF THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Twenty-seventh Meeting
Montreal, 24-26 March 1999

PROJECT PROPOSALS: TURKEY

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

Foam:

- Phasing out CFC-11 in the manufacturing of flexible PU slabstock foam through the use of liquid CO₂ blowing technology at Sungersan UNIDO
- Phasing out CFC-11 in manufacturing of flexible PU moulded foam through the use of CO₂ blowing technology at Sungersan, Bursa UNIDO

**PROJECT EVALUATION SHEET
TURKEY**

SECTOR: FOAM ODS use in sector (1993): 500 ODP tonnes

Sub-sector cost-effectiveness thresholds: Flexible Slabstock US \$7.83/kg
Flexible Molded US \$16.86/kg

Project Titles:

- (a) Phasing out of CFC-11 in manufacturing of flexible PU slabstock foam through the use of liquid CO₂ blowing technology at Sungersan.
- (b) Phasing out of CFC-11 in manufacturing of flexible PU moulded foam through the use of CO₂ blowing technology at Sungersan, Bursa.

Project Data	Flexible Slabstock	Flexible Molded
	Sungersan	Sungersan, Bursa
ODS phase-out (ODP tonnes)	78	30
Proposed project duration (months)	18	18
Incremental capital cost (US \$)	580,250	346,500
- including contingency (%)	5	10
Incremental operational cost (US \$)	(112,853)	(19,126)
Total project cost (US \$)	467,397	327,374
Local ownership (%)	100	100
Export component (%)	0	0
Amount requested (US \$) {Original}	467,397	337,274
{Revised}		327,374
Cost effectiveness (US \$/kg)	5.90	11.20
National Coordinating Agency	Ministry of Environment, Ankara, Turkey	
Implementing Agency	UNIDO	
Technical review completed?	Yes	

Secretariat's Recommendations:		
Amount recommended (US \$)	467,397	327,374
Project impact (ODP tonnes)	78	30
Cost effectiveness (US \$/kg)	5.99	10.91
Implementing Agency support cost (US \$)	60,762	42,559
Total cost to Multilateral Fund (US \$)	528,159	369,933

PROJECT DESCRIPTION

- (a) Phasing out of CFC-11 in manufacturing of flexible PU slabstock foam through the use of liquid CO₂ blowing technology at Sungersan.**
- (b) Phasing out of CFC-11 in manufacturing of flexible PU moulded foam through the use of CO₂ blowing technology at Sungersan, Bursa.**

Sector Information

1. Baseline consumption (average 1995-1997) of Annex A Group I substances (CFCs) reported to the Ozone Secretariat: 3,805.3 ODP tonnes.
2. As of November 1998 the amount of US \$8.85 million had been approved to phase out 1,906 tonnes of CFC in the foam sector. US \$1.03 million had been disbursed and 12 tonnes CFC had been phased out.
3. It is reported in the project document that Turkey's consumption of CFCs in 1996 (Annex A Group I substances) in the foam sector was 500 ODP tonnes, which is 13% of the total consumption of Annex A Group I substances (3,788.8 ODP tonnes) reported for 1995. However a report of the Ministry of Environment to the Fund Secretariat in May 1998 indicated the foam sector consumption of CFCs in 1997 to be 61% of estimated 4,006 ODP tonnes. (Actual consumption reported for 1997 was 3,869.6 ODP tonnes). There seems to be inaccuracies in the sector data reported by UNIDO in the project document.
4. The sector background information provided by UNIDO in the project documents is based on the Country Programme approved in March 1993. Since no new information or recent sector data analysis different from that provided in previously approved projects was provided, the sector background information is not reproduced in this document.

Impact of the Projects on the Country's Montreal Protocol Obligations

5. The project documents state that when the projects are implemented as scheduled a total of 21% of the CFC consumption in the flexible foam sub-sector of Turkey will be phased out. However, this conclusion is based on 1993 consumption data which are no longer relevant. Based on available baseline information the 108 tonnes ODP to be phased out from the projects represents 3% of Turkey's baseline consumption of Annex A Group I CFCs. The impact of the project on the foam sector cannot be determined for lack of data.

- (a) Phasing out of CFC-11 in manufacturing of flexible PU slabstock foam through the use of liquid CO₂ blowing technology at Sungersan.**

6. This project will phase out 78 tonnes of CFC-11 from the production of flexible polyurethane slabstock foam used for the production of foam for mattresses, furniture cushions, etc. The chosen replacement alternative is liquefied carbon dioxide (LCD), a technology for blowing low density polyurethane foams. The project will be implemented through modification of existing production facilities and installation of supplementary equipment and instruments for

a total cost of US \$460,000. These include LCD system (US \$320,000), high pressure transfer and metering unit (US \$80,000), high pressure CO₂ transfer and control unit (US \$35,000). The bulk LCD storage tank will be rented. Other capital costs include licensing fee (US \$50,000), training, consultancy services (US \$45,000) and contingency US \$25,200. Incremental operating savings amount to US \$112,853.

(b) Phasing out of CFC-11 in manufacturing of flexible PU moulded foam through the use of CO₂ blowing technology at Sungersan, Bursa.

7. This project will phase out 30 tonnes of CFC-11 from the production of flexible PU moulded foam used for cushioning components (arm and back-rests, mattresses, pillows), automobile seats for locally produced cars and buses, seat components for railway and for office equipment. The chosen replacement alternative is liquefied carbon dioxide (LCD). The project will be implemented through modification of existing production facilities and installation of supplementary equipment. These include retrofit of two existing high pressure machines (US \$20,000), 2 LCD units for US \$190,000 and storage and transfer systems for two production units (US \$40,000). The total cost of equipment modification and installation of new ones is US \$250,000. Ancillary costs including training, trials, verification testing, engineering and consultancy services etc amount to US \$74,000. Incremental operating savings amount to US \$19,126.

Equipment to be destroyed or rendered unusable

8. UNIDO stated in the project documents that Sungersan and the National Ozone Officer are aware that UNIDO, as an implementing agency, is obliged to confirm and submit a certificate duly signed by the national authorities stating that during conversion, the CFC-11 related equipment and systems were rendered unusable. The certificate will be attached to the Project Completion Report.

9. A list of equipment or parts to be destroyed was provided for each of the project. For the flexible slabstock foam production this includes the low pressure mixing head, CFC-11 storage tank and metering unit, several pumps and motors. For the flexible moulded foam production the list includes two mixing heads and two CFC-11 pumping and dosing units.

SECRETARIAT S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The two production units, i.e. flexible slabstock foam and flexible moulded foam belong to the same company, Sungersan.
2. All the costs of the two projects have been agreed between UNIDO and the Secretariat. Analysis of the technological options for converting the flexible moulded foam production, i.e. water blown and LCD technologies, showed that the use of the LCD technology would be the more cost-effective option.
3. The sector background information provided in the project documents by UNIDO is out of date. It will be more relevant if the information is based on more recent data and demonstrates the significance of foam sector projects on the country's ODS phase out.

RECOMMENDATIONS

1. The Fund Secretariat recommends blanket approval of the two projects with the level of funding and associated support costs indicated below.

Project Title	Project Cost US \$	Support Cost US \$	Implementing Agency
Phasing out of CFC-11 in manufacturing of flexible PU slabstock foam through the use of liquid CO ₂ blowing technology at Sungersan.	467,397	60,762	UNIDO
Phasing out of CFC-11 in manufacturing of flexible PU moulded foam through the use of CO ₂ blowing technology at Sungersan, Bursa.	327,374	42,559	UNIDO

2. The Executive Committee may wish to request the implementing agencies when preparing projects for the country to provide data in the sector background information that demonstrates the relationship of the ODS phased out in projects in the sector with the country's overall ODS phase out programme or its obligations under the Montreal Protocol.