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

PROJECT PROPOSALS: YUGOSLAVIA

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

Refrigeration:

• Replacement of refrigerant CFC-12 with HFC-134a and foam blowing agent CFC-11 with HCFC-141b in the manufacture of commercial refrigeration equipment at seven enterprises	UNIDO
• Replacement of CFC-11 with cyclopentane foam blowing agent and CFC-12 with HFC-134a refrigerant in the manufacture of domestic refrigerators/freezers at Obod Elektroindustrija	Italy

PROJECT EVALUATION SHEET
YUGOSLAVIA

SECTOR: Refrigeration ODS use in sector (1996): 437 ODP tonnes

Sub-sector cost-effectiveness thresholds: Commercial US $15.21/kg
Domestic US $13.76/kg

Project Titles:

(a) Replacement of refrigerant CFC-12 with HFC-134a and foam blowing agent CFC-11 with HCFC-141b in the manufacture of commercial refrigeration equipment at seven enterprises
(b) Replacement of CFC-11 with cyclopentane foam blowing agent and CFC-12 with HFC-134a refrigerant in the manufacture of domestic refrigerators/freezers at Obod Elektroindustrija

Project Data	**Commercial**	**Domestic**
	Seven enterprises	**Obod**
Enterprise consumption (ODP tonnes)	62.10	94.90
Project impact (ODP tonnes)	59.60	94.90
Project duration (months)	28	26
Initial amount requested (US $)	805,831	1,721,735
Final project cost (US $):		
Incremental capital cost (a)	656,100	1,268,220
Contingency cost (b)	34,000	108,350
Incremental operating cost (c)	65,062	306,565
Total project cost (a+b+c)	755,162	1,683,135
Local ownership (%)	100%	100%
Export component (%)	10%	10%
Amount requested (US $)	755,162	1,683,135
Cost effectiveness (US $/kg.)	12.67	17.74
Counterpart funding confirmed?	Yes	Yes
National coordinating agency	Federal Ministry for Development, Science & Enviro	Ministry of Environment & Forests
Implementing agency	UNIDO	Italy

Secretariat's Recommendations		
Amount recommended (US $)	755,162	1,683,135
Project impact (ODP tonnes)	59.60	94.90
Cost effectiveness (US $/kg)	12.67	17.74
Implementing agency support cost (US $)	93,068	180,348
Total cost to Multilateral Fund (US $)	848,230	1,863,483

PROJECT DESCRIPTION

Sector Background

Latest available total ODS consumption (1998)	538.90 ODP tonnes
Baseline consumption of Annex A Group I substances (CFCs)	849.20 ODP tonnes
Consumption of Annex A Group I substances for the year 1998	519.40 ODP tonnes
Baseline consumption of CFCs in refrigeration sector	Not Available
Consumption of CFCs in refrigeration sector in 1999	Not available
Funds approved for investment projects in refrigeration sector as of end of 2000	US $19,992.00
Quantity of CFC to be phased out in investment projects in refrigeration sector as of end of 2000	0.00 ODP tonnes

1. The refrigeration sector in Yugoslavia is comprised of one manufacturer of domestic appliances (Obod) and seven major manufacturers of commercial refrigeration equipment (Jugostroj, Frigozika, Prva Petoletka, EIAD, BS Inzenjering, Soko and Alfa Klima). Additionally, there are a few smaller commercial refrigeration enterprises. The total consumption of CFCs in Yugoslavia in 1999 was estimated at 617 ODP tonnes. According to information from the Government of Yugoslavia, the major part of this consumption is attributed to the refrigeration sector.

Seven enterprises

2. The current project will phase-out 35.2 ODP tonnes of CFC-11 and 26.9 ODP tonnes of CFC-12 in the manufacture of commercial refrigeration equipment at the seven enterprises (Jugostroj, Frigozika, Prva Petoletka, EIAD, BS Inzenjering, Soko and Alfa Klima). 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 enterprises are involved in the manufacture of various models of commercial refrigerators, air-conditioners and freezers. The enterprises employ low-pressure dispensers for foaming operations in the baseline, as well as charging, evacuation and detection equipment in handling CFC-12 refrigerant.

3. The project includes incremental capital costs covering five high-pressure foam dispensers and the necessary modifications to evacuation, charging and testing equipment for refrigeration operations. Other costs include re-design, testing, trials and training. Incremental operating costs are requested for a period of one year to cover the higher cost of chemicals and components, and an increase in foam density.

Justification for the use of HCFC-141b

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

Obod

5. Obod is the only manufacturer of domestic refrigerators and freezers in Yugoslavia. The company consists of three factories. Two of them are located in the same manufacturing area. The company has six foaming lines equipped with seven high pressure dispensers and foaming jigs and fixtures. The company also has four lines for assembly and charging of appliances with the refrigerant.

6. The project proposal is for phasing out of 94.9 ODP tonnes of CFC-12 and CFC-11 from production of domestic refrigerators and freezers. Obod gradually converted the refrigerant part of its production from CFC-12 to HFC-134a technology. Currently, all refrigerators are charged with HFC-134a refrigerant. The proposal requests funding incremental capital and operating costs for conversion to HFC-134a at US $302,152 retroactively. Capital cost (US $103,500) is associated with replacement of charging boards, new leak detectors and renovation of vacuum pumps. Incremental operating cost is related to the higher price of HFC-134a refrigerant and is requested for six months.

7. Foaming operations in all foaming lines in the three factories of Obod will be converted to cyclopentane. The conversion involves modification of existing six high pressure foaming machines, foaming fixtures, installation of new pre-mixing stations, a cyclopentane storage tank, and safety equipment associated with the flammable nature of cyclopentane blowing agent. The proposal includes engineering, commissioning, start-up services, cost of transportation and trials.

8. Incremental operating cost is related to the higher price of foam chemicals and is requested for six months.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

9. The Secretariat requested UNIDO to provide the most recent data on ODS consumption in the refrigeration sector in Yugoslavia. UNIDO obtained 1999 data from the Government of Yugoslavia on the total CFC consumption which amounts to 617 ODP tonnes. It is estimated that the major part of this consumption is in the refrigeration sector which includes servicing.

Seven enterprises

10. The Secretariat questioned the use of CFC-12 by EIAD and Soko in packaged air-conditioning systems due to the fact that HCFC-22 is typically the refrigerant of choice in such systems. UNIDO clarified that CFC-12 is used in these systems due to special circumstances in the country related to the comparative availability and price of these two refrigerants.

11. Given the level of production at Jugostroj, the Secretariat recommended to apply one high pressure foaming machine equipped with two mixing heads for replacement of two existing low pressure dispensers. UNIDO accepted this proposal.

12. The Secretariat discussed with UNIDO the implications of Decision 31/45 on the new sector for installation, assembly and servicing for Soko and Alfa Klima. Part of incremental operating cost was recognised as ineligible. The Secretariat has also recommended to apply prices of chemicals prevailing in this region in calculating incremental operating costs. The level of grant has been adjusted accordingly.

Obod

13. The project was submitted for consideration by the Executive Committee at its 27th Meeting. The project was reviewed by the Secretariat and the incremental capital and operating costs were agreed with UNIDO. The project was deferred in accordance with Decision 27/73.

14. The proposal has been resubmitted as an Italy/Yugoslavia bilateral project with implementation by UNIDO. The most recent 2000 production data were used in determination of project impact and for calculation of incremental operating costs.

15. The Secretariat recommended to apply US $2.00 as incremental operating costs for compressors in the calculation of incremental operating costs.

16. The Secretariat also recommended to apply established rates for administrative fee of the implementing agency. The project cost and eligible level of grant were recalculated accordingly.

RECOMMENDATIONS

17. The Fund Secretariat recommends blanket approval of the two refrigeration projects from UNIDO with the level of funding and associated support costs as indicated below.

	Project Title	Project Funding (US$)	Support Cost (US$)	Implementing Agency
(a)	Replacement of refrigerant CFC-12 with HFC-134a and foam blowing agent CFC-11 with HCFC-141b in the manufacture of commercial refrigeration equipment at seven enterprises	755,162	93,068	UNIDO
(b)	Replacement of CFC-11 with cyclopentane foam blowing agent and CFC-12 with HFC-134a refrigerant in the manufacture of domestic refrigerators/freezers at Obod Elektroindustrija	1,683,135	180,348	Italy

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