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EXECUTIVE COMMITTEE OF
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PROJECT PROPOSALS: MACEDONIA

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

Aerosol:

- Phase-out of CFC 11/12 in the manufacture of aerosols by conversion to HFC and hydrocarbon propellants at Alkaloid A.D. UNIDO

Fumigant:

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

PROJECT EVALUATION SHEET MACEDONIA

SECTOR: Aerosol ODS use in sector (1999): 25 ODP tonnes

Sub-sector cost-effectiveness thresholds: Filling plant US \$4.40/kg

Project Titles:

- (a) Phase-out of CFC 11/12 in the manufacture of aerosols by conversion to HFC and hydrocarbon propellants at Alkaloid A.D.

Project Data	Filling plant
	Alkaloid
Enterprise consumption (ODP tonnes)	25.00
Project impact (ODP tonnes)	25.00
Project duration (months)	26
Initial amount requested (US \$)	110,000
Final project cost (US \$):	
Incremental capital cost (a)	170,000
Contingency cost (b)	17,000
Incremental operating cost (c)	150,986
Total project cost (a+b+c)	337,986
Local ownership (%)	100%
Export component (%)	0%
Amount requested (US \$)	110,000
Cost effectiveness (US \$/kg.)	4.40
Counterpart funding confirmed?	Yes
National coordinating agency	Ministry of Environment
Implementing agency	UNIDO

Secretariat's Recommendations	
Amount recommended (US \$)	110,000
Project impact (ODP tonnes)	25.00
Cost effectiveness (US \$/kg)	4.40
Implementing agency support cost (US \$)	14,300
Total cost to Multilateral Fund (US \$)	124,300

PROJECT DESCRIPTION

Phaseout of CFC-11 and CFC-12 in the manufacture of pharmaceutical aerosols by conversion to HFC-134a and hydrocarbon propellant at Alkaloid A.D.

1. The Government of Macedonia is submitting one project proposal in the aerosol sector for Alkaloid A.D., the only company producing aerosols in the country. According to the country programme, in 1994 the total CFC consumption in the aerosol sector was estimated at 20 tonnes, mainly used for production of pharmaceutical and veterinary applications (182,670 cans/year) and different cosmetic products (15,000 cans/year of hair sprays and 115,200 cans/year of deodorants) which were earlier contract filled in Kinkida, Serbia.
2. Implementation of this project will result in the phase-out of 25 tonnes of CFC-12, and the complete phaseout of CFCs in the aerosol sector in the country.
3. Alkaloid A.D., will convert to HFC-134a technology for its pharmaceutical products and to HAP technology for the cosmetics products. Conversion entails installation of an automated indexing gasser with two propellant fillers, gas detection system, a conveyor, a molecular sieve system for hydrocarbon and construction of an external enclosed gassing room.
4. Technical assistance will be provided for performance and supervision of engineering designs, installation of equipment and commissioning of the plant and training.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. The Secretariat and UNIDO discussed cost issues regarding conveyer systems (US \$2,250/m), automated indexing gasser (US \$30,000), propellant transfer pump (US \$5,000) and gas detector system (US \$30,000). Subsequently, UNIDO agreed to adjust the capital cost of the project by US \$11,000.
2. The calculation of the total operating savings in the project has been based on three components: (i) the difference in costs associated with the formulations based on CFCs or HAPs, (ii) increase in maintenance costs (at 5% of capital investment) due to the use of HAP, and (iii) increase in energy consumption due to additional ventilation. The Secretariat pointed out that the incremental costs associated with maintenance are difficult to quantify and not all of them are incremental (for example, old pieces of equipment which will be replaced with new equipment; capital costs associated with racks, external enclosed gassing room, and lighting). Therefore, UNIDO agreed to adjust operating costs to US \$150,986 from the original figure of US \$171,591.
3. The Secretariat also sought clarification on the high costs of request for technology transfer (US \$20,000) and safety audit (US \$8,000). This issue was also raised by the technical

reviewer of the project. UNIDO stated that these requests were based on the type of aerosol products manufactured at the plant (where special formulations would be developed for the pharmaceutical products) as well as other several non-CFC based products using flammable and explosive substances which are manufactured in the complex where Alkaloid is located. Subsequently, UNIDO agreed to adjust these costs by US \$6,000.

RECOMMENDATION

1. The Fund Secretariat recommends blanket approval of the project with associated support costs at the funding level shown in the table below:

	Project Title	Project Funding (US\$)	Support Cost (US\$)	Implementing Agency
(a)	Phase-out of CFC 11/12 in the manufacture of aerosols by conversion to HFC and hydrocarbon propellants at Alkaloid A.D.	110,000	14,300	UNIDO

PROJECT EVALUATION SHEET MACEDONIA

SECTOR: Fumigant ODS use in sector (1999): 27.24 ODP tonnes

Sub-sector cost-effectiveness thresholds: n/a

Project Titles:

- (a) Phase-out of methyl bromide in tobacco seedling and horticulture production sector

Project Data	Methyl bromide
Enterprise consumption (ODP tonnes)	48.40
Project impact (ODP tonnes)	48.40
Project duration (months)	60
Initial amount requested (US \$)	1,520,929
Final project cost (US \$):	
Incremental capital cost (a)	1,382,663
Contingency cost (b)	138,266
Incremental operating cost (c)	
Total project cost (a+b+c)	1,520,929
Local ownership (%)	100%
Export component (%)	0%
Amount requested (US \$)	0
Cost effectiveness (US \$/kg.)	55.83
Counterpart funding confirmed?	
National coordinating agency	Ministry of Environment
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

Phase-out of methyl bromide in tobacco seedling and horticulture production sector

Background

2. The Government of Macedonia is submitting a project to phase out 27.2 ODP tonnes of methyl bromide (MB) use for tobacco seedlings and for the horticulture sector, representing the entire MB consumption in the country.

3. Tobacco is cultivated over 21,900 ha of land with a total production of 34,700 tonnes of tobacco leaves per year. The production cycle is from February to October. The two main tobacco varieties cultivated in Macedonia are Oriental (94 per cent of the total production) and Virginia (6 per cent of the total). About 10 per cent of the total population of Macedonia is employed in the production of tobacco, with a revenue estimated at US \$2,000/ha.

4. In total, 438 ha of land is used for the production of tobacco seedlings. Each seedbed (with an area of 10 m²), produces an average of 10,000 seedlings of Oriental tobacco or 5,000 seedlings of Virginia tobacco. Between 150,000 and 200,000 seedlings of Oriental tobacco or 20,000 seedlings of Virginia tobacco are needed to cover a surface area of one ha.

5. The production of tobacco in Macedonia is by farmers organized in co-operatives and through tobacco companies, known as "kombinats." They purchase tobacco leaves from the farmers for the manufacture of cigarettes, provide a variety of technical services (one technician per 200 farmers) and financial support to their members, including plant protection during the production of seedlings, for transplanting to the open fields, and cropping. About 10 per cent of Oriental tobacco seedlings are cultivated as a security stock in case of major disease or other hazards. Soil fumigants are used extensively. The agricultural policy in Macedonia encourages the kombinats to provide financial support to farmers for sowing material, chemicals and fertilisers as well as machinery. Any expenses incurred are deducted from the by-out price of the tobacco at the end of the harvest.

MB consumption

6. The total MB consumption in Macedonia has been estimated at 27.3 ODP tonnes, mainly in tobacco seedbeds (24.8 ODP tonnes), vegetable seedlings in greenhouses (glass or plastic covers) and protected crops such as tomato, cucumber and pepper (2.5 ODP tonnes).

Export

7. The total production of tobacco leaves in Macedonia is used for the manufacture of cigarettes for the local market.

Alternative technologies selected

8. The alternative technology to replace MB in the production of tobacco seedlings is the floating tray system, which has been tested in Macedonia with excellent results giving better developed seedling roots; healthier and more uniform plants; and more efficient transplanting to open fields (farmers do not need to sort the best seedlings, thus reducing the time for transplanting). Implementation of this technology requires installation of micro-tunnels with a surface area of 10 m², covered with polyethylene sheets, with 36 plastic trays. The unitary cost of a micro-tunnel is about US \$60, including US \$54 for the trays (representing 90 per cent of the total cost of the micro-tunnel).

9. The alternative technology selected for the seedlings in greenhouses and protected crops is solarization in combination with biofumigation; it is adequate for controlling most pathogens found within the top 20 cm of soil. Farmers readily accept this alternative technology since it is an effective method for soil treatment, improves soil fertility and is cheap.

Training programme

10. The project includes training programmes in the use of the alternative technologies. The training will be organised in collaboration with the kombinats and provided by the staff of the Faculty of Agriculture. Approximately 12,570 farmers will be trained in the use of the floating tray system (i.e., installation of micro-tunnels; handling and cleaning a seeder and pelletized seeds; preparation of trays; monitoring water conductivity; clipping the seedlings; selecting pesticides; transplanting of the seedlings to an open field).

11. In addition, 1,200 farmers will be trained in the used of solarization in combination with biofumigation technology.

Policy measures

12. The Government of Macedonia is committed to phase out the entire consumption of MB by 2005, with the following phaseout schedule: 2.7 ODP tonnes in 2001-2002; 5.4 ODP tonnes in 2002-2003; 8.1 ODP tonnes in 2003-2004; an additional 11.0 in 2004-2005. Upon completion of the project, the Government will issue a regulation forbidding the use of MB in the entire tobacco and horticultural producing subsectors.

Implementation modalities

13. The project will be implemented by UNIDO in cooperation with the Ozone Office at the Ministry of the Environment. UNIDO will inform the Executive Committee about the progress achieved (through annual reports) indicating phase out achievements and costs involved. UNIDO will also inform the Committee on cases of unjustified project delays, which could potentially result in cancellation of the project.

14. The estimated time for the implementation of the project is 5 years.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. At its 26th Meeting, the Executive Committee approved a project to demonstrate three alternatives to the use of methyl bromide (non soil cultivation, biofumigation and low dose chemicals) in tobacco and horticultural production, and allocated US \$259,600 to UNIDO for its implementation. The investment project submitted to the 32nd Meeting has been prepared based on results of the demonstration project.

Incremental costs

2. The cost of the investment project was based on 12 per cent loss of viable transplants, similar to the loss rate from traditional seedbeds treated with MB, notwithstanding the higher performance rates of plants grown in floating trays. Results obtained from the demonstration project, indicated that the percentage of germination in the floating tray system (tested in different kombinats) was 90 per cent or higher, compared to 56 per cent when applying MB. Furthermore, the survival rate recorded two weeks after transplanting plants from the floating tray system ranged from 90 per cent to 95 per cent while the percentage from plants treated with MB ranged from 65 per cent to 70 per cent. UNIDO indicated that 20 per cent loss is considered a normal value for many multinationals. However, taking into consideration the good results obtained in Macedonia during the demonstration project, a 12 per cent loss rate was considered when designing the project.

3. The Secretariat also questioned the dosage of fertilizers in the floating tray system (4 times higher than the rate applied in traditional seedbeds treated with MB) and the costs of fertilizers (almost 15 times higher than the cost of fertilizers applied in traditional seedbeds), substrate (US \$57.14/m³) considering that four different substrates are locally available trays (US \$1.50/tray of 589 cells), and the big difference in labour (1.25 w/d for traditional beds with MB and 6.6 w/d for the floating tray system).

Training programmes and farm associations

4. The Secretariat and UNIDO discussed cost issues regarding logistical arrangements for workshops, production of brochures, transportation and co-ordination.

Policy measures

5. UNIDO has prepared an agreement between the Executive Committee and the Government of Macedonia with the commitments proposed and action plan for the phase out of MB in the tobacco sector in Macedonia.

Phase out schedule

6. Based on the experience gained during the implementation of the demonstration projects, the availability of high-level national experts, the organization scheme of the tobacco industry (through kombinats) and the existing training and research infrastructure in the country, the Secretariat considered that the project could be fully implemented in a shorter period of time (less than the proposed 5 years). In this regard, UNIDO indicated that the Government of Macedonia requested implementation of the project in five years; furthermore, as proposed, the project will achieve the 2002 freeze, and a complete phase out by 2005.

RECOMMENDATION

1. The Fund Secretariat and UNIDO are still discussing cost issues. The results of the discussion will be conveyed to the Executive Committee.