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Executive Committee of
the Multilateral Fund for the
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PROJECT PROPOSAL: CUBA

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

Fumigant

- Phasing out methyl bromide in the tobacco sector

UNIDO

PROJECT EVALUATION SHEET CUBA

SECTOR: FUMIGANT ODS use in sector (1997): 48 ODP tonnes

Sub-sector cost-effectiveness thresholds: N/A

Project Titles:

Phasing out methyl bromide in the tobacco sector

Project Data	Methyl Bromide
	Ozone Technical Office
ODS phase-out (ODP tonnes)	48
Proposed project duration (months)	60
Incremental capital cost (US \$)	1,778,645
- including contingency (%)	10
Incremental operational cost (US \$)	(105,321)
Total project cost (US \$)	1,673,324
Local ownership (%)	100
Export component (%)	-
Amount requested (US \$) {Original}	1,673,324
{Revised}	
Cost effectiveness (US \$/kg)	34.86
National Coordinating Agency	Ozone Technical Office/Ministerio para la Inversión Extranjera y Colaboración Económica
Implementing Agency	UNIDO
Technical review completed?	Yes

Secretariat's Recommendations:	
Amount recommended (US \$)	Pending decision by the Executive Committee
Project impact (ODP tonnes)	
Cost effectiveness (US \$/kg)	
Implementing Agency support cost (US \$)	
Total cost to Multilateral Fund (US \$)	

PROJECT DESCRIPTION

Phasing out methyl bromide in the tobacco sector

1. The total area planted with tobacco in Cuba is estimated at 48,100 ha, with a total production of 30,570 tonnes of tobacco leaves (equivalent to 215 million cigars and 536 million packs of cigarettes).
2. The area dedicated to tobacco seedbeds is estimated at 3,450 ha. However, methyl bromide is only used in 253 ha of seedbeds for the production of “tapado” and “vega fina” tobacco varieties. Cheaper alternative technologies have already been introduced in the production of other tobacco products, but are said not to satisfy the high quality standards required for these tobacco varieties. The land is tilled several times to control weeds, and is rotated with pasture, rice, and corn production. The transplant production season starts in late August until the first week of January. Due to the length of the season, some enterprises apply methyl bromide twice.
3. Extensive use of methyl bromide started in the 1980-1981 season after 75% of the tobacco production was lost (from 32,200 tonnes to 8,200 tonnes) due to the appearance of tobacco blue mold. As a consequence, most tobacco seedbeds were treated with this fumigant (400 metric tonnes). In the 1990's, the use of methyl bromide has decreased from 133 tonnes in 1990 to 80 tonnes in 1998.
4. The main pest attacking tobacco seedbeds are fungi (*Phytophthora parasitica* dastur, *Rhizoctonia solani* khunn, *Phythium* spp. and *Peronospora tabacina*), nematodes: (*Meloidogyne incognita* and *chitwood*); weeds (*Cyperus rotundus*, *Amaranthus dubius*, *Parthenium hysterophorus*, *Echinochloa colonum*, *Eleusina indica*, *Rottboellia cochinchinensis*, *Sorghum halepense*); and insects (*Heteroderes laurentii*, *Grillotalpa hexadactyla*, *Feltia* spp.).
5. The cooperatives do not use any specific equipment to spray methyl bromide. The irrigated soil is covered with a polyethylene sheet (50 microns) where the gas is injected. The soil remains covered for a seven-day period.
6. The objective of the project is to phaseout the use of the remaining 80 metric tonnes (48 ODP tonnes) of methyl bromide used in the production of transplants in traditional tobacco seedbeds by a combination of biocides and soilless cultivation using the floating tray system. This technology has already been tested in Cuba with excellent results. According to data from the Cuban Tobacco Institute, the transplants produced by this method are of the best quality and at almost the same operational cost as those produced by the traditional system. The floating tray technology is the most ecologically friendly of the alternatives tested worldwide (Italy, France, South Africa, Spain and the United States).
7. Since 1985 the Ministry of Agriculture initiated experimental work to develop alternatives to the use of methyl bromide in the tobacco sector. At that time, the use of *Trycoderma harzianum* in the framework of an integrated pest management system (IPM) was not sufficient control for production of high quality tobacco (tapado and vega fina). In 1996 the Ministry of Agriculture introduced the floating tray technology (imported from France) on an

experimental basis. Large tunnels and micro-tunnels equipped with polystyrene floating trays were utilized to produce 1.6 million of seedlings corresponding to about 37 open field hectares. The substrate used, which is a mixture of peat, roasted rice bran and zeolite, is produced locally using the equipment of an animal feed factory. The technology has now been optimized (in the 1997-1998 season, two million seedlings were produced in three large greenhouses and three million seedlings were produced using micro tunnels).

8. Cuba is prepared to phase out the use of methyl bromide in tobacco seedbeds as soon as the new technology has been acquired, the necessary equipment has been installed, and its technical staff has been trained. Local enterprises, cooperatives and farmers' groups have accepted replacing methyl bromide with the biocide/soilless float tray system technology. It is proposed that local farmers cannot afford the necessary investment and need equipment and training to implement the alternative system. The use of other chemicals such as dazomet, although less environmentally damaging than methyl bromide, has been rejected due to the high cost and inadequate control of pests and diseases.

9. The project will apply the biocide/soilless technology in two different sizes: (i) Large plastic tunnels of 10.5 meters wide with lengths varying from 40 to 60 meters in enterprises and cooperatives with large surfaces and transport facilities able to cover such large areas; and (ii) small micro-tunnels of 27 meters by 1.4 meters to be used by individual farmers planting relatively small surfaces. The total capital cost estimated at US \$1,357,000, is for the construction of these tunnels which are a specialized form of greenhouse.

10. Two training programmes would be implemented in order to transfer the technology to more than 2,000 farmers and cooperative personnel: (i) training of trainers, namely technicians, from enterprises and cooperatives (about 30 local technicians will be educated in a practical training course); and (ii) transfer of this technology to the technicians already working in large enterprises and cooperatives. This technological transfer will be done through five three-day workshops per year to be implemented by the technicians previously trained. Forty farmers will be trained in each workshop, which totals 200 farmers per year and 1,000 farmers in five years. The cost of the training programme (including training in greenhouse installation and in soilless system) is US \$250,000.

11. The incremental operating savings were estimated at US \$105,300 (NPV for 4 years), based on the costs of raw material (methyl bromide, seeds, substrate, Trichoderma), plastic sheets, labor and rental of seedbed land).

12. The project will be implemented by UNIDO, in close cooperation with the coordinating institutions, namely the MINVEC (Ministerio para la Inversion Extranjera y la Colaboración Económica de Cuba) and the OTOZ (Oficina Técnica de Ozono) of the CITMA (Ministerio de Ciencia, Tecnología y Medio Ambiente). As implementing agency, UNIDO has the necessary experience and capabilities for the successful implementation of projects at the enterprise level.

13. The Government of Cuba, through INISAV, will be responsible for: ensuring that the new technology complies with established national standards; all activities needed to accommodate the new greenhouses and micro-tunnels through the tobacco cooperatives; the cost of the construction work for the installation of the greenhouses according to the specifications

prepared by the contractor and under his supervision. The preparation of the specifications for construction work will be drawn up by the general contractor after the project is approved and the site is inspected; providing the technical staff needed during erection, commencement and commissioning of the greenhouses and tools; providing lifting equipment, if necessary; providing, if deemed necessary, internal transportation costs for the equipment purchased externally.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

1. This is the first investment project for phasing out methyl bromide submitted for consideration by the Executive Committee. The Secretariat sought technical assistance from an international expert during the project review process.
2. The guidelines for methyl bromide investment projects require that policy measures to ban methyl bromide use in the country be in place before an investment project is implemented. The Secretariat sought confirmation of the policy measures proposed in the project. UNIDO informed the Secretariat that all matters regarding the use of pesticides in Cuba are regulated by the Ministry of Agriculture (which includes the Registration Department, the Department of Plant Protection and the Department of Quarantine). The Government also informed UNIDO that at the end of the project the use of methyl bromide in tobacco cultivation will be de-certified, and a ministerial decree will be issued sanctioning the use of methyl bromide in tobacco cultivation (as the government is the sole importer of methyl bromide in Cuba, licensing is superfluous).
3. The Secretariat also raised the issue that the investment project appeared not to be based on knowledge derived from a demonstration project to assess the feasibility of alternative technologies to methyl bromide. In this regard, the Secretariat's reviewer strongly recommended that a demonstration project be implemented in Cuba before committing to an investment project with a technology that has not been proven at the local level. In this regard, UNIDO stated that during project preparation, the team working in Cuba verified in the field that demonstration projects on alternatives to methyl bromide were already implemented in Cuba by the Ministry of Agriculture without assistance from the Multilateral Fund and that a large experience has been accumulated during the last four years to support the decision taken in a sector which is very important for the economy of the country. Furthermore, UNIDO considered that a new demonstration project will be redundant and a waste of resources.

RECOMMENDATION

Taking into consideration the above comments, the Executive Committee might consider whether it wishes to approve this investment project.
