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PROJECT PROPOSAL: CHILE

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

Fumigant:

- Demonstration and phase-out project for methyl bromide soil fumigation for fruit tree production and replant

UNDP

**PROJECT EVALUATION SHEET
CHILE**

SECTOR: Fumigant ODS use in sector (1998): 204 ODP tonnes
76.2 ODP in replants and nurseries

Sub-sector cost-effectiveness thresholds: n/a

Project Titles:

(a) Demonstration and phase-out project for methyl bromide soil fumigation for fruit tree production and replant

Project Data	Methyl bromide
Enterprise consumption (ODP tonnes)	76.20
Project impact (ODP tonnes)	76.20
Project duration (months)	66
Initial amount requested (US \$)	1,251,747
Final project cost (US \$):	
Incremental capital cost (a)	1,137,952
Contingency cost (b)	113,795
Incremental operating cost (c)	
Total project cost (a+b+c)	1,251,747
Local ownership (%)	100%
Export component (%)	5%
Amount requested (US \$)	0
Cost effectiveness (US \$/kg.)	
Counterpart funding confirmed?	
National coordinating agency	CONAMA
Implementing agency	UNDP

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

Background

1. The Government of Chile is submitting a project to phase out 76.2 ODP tonnes of methyl bromide (MB) mainly used for replanting fruit trees and vines, and to a lesser extent for tree nurseries.
2. Chile produces a wide variety of tree fruit (plums, peaches, nectarines, apricots, cherries, citrus, kiwifruit, apples, pears, table grapes, avocados, olives, walnuts, almonds). The total surface area planted with fruit trees and nurseries, where MB use is important, is 108,731 ha and 1,127 ha, respectively. The fruit industry is the third largest economic sector in the country.
3. Many of the products are exported (fresh or processed) mainly to Japan, European countries and the United States; however, most growers sell their fruit to other companies who supply and export fresh or processed products (about 5 per cent of growers export fruit themselves). Plants from tree nurseries (mainly grape vines and walnut trees) are exported only to Article 5 countries (almost all farms and nurseries in the sector are owned by local enterprises). Growers' associations are separate institutions from the exporters' associations and have different economic and technical interests.

Consumption of MB

4. The MB baseline for compliance calculated by the Ozone Secretariat is 212.5 ODP tonnes. Between 1990 and 1998 MB imports increased by an average of 15 ODP tonnes per year; in the last four years, however, the rate increased to 36.6 ODP tonnes per year. In 1998, 298 ODP tonnes of MB were imported (as reported to the ozone Secretariat), almost 160 ODP tonnes more than the previous year. Of this amount, 76.2 ODP tonnes is used for tree replanting and production of small trees (mainly peaches, plums, citrus, avocado and vines for table grapes) and in nurseries.
5. MB is used only at the time a tree/vine is replanted. A typical MB application rate for replant is 400 kg/ha, which equates to an annual area of 245 ha. Trees have crop cycles of about 10 to 30 years, and therefore, the total area treated with MB for replant is 2,450 ha in any 10 year period (calculated as the factor of the replant area treated with MB in one year (245 ha) by the frequency of replant applications (conservatively 10 years)). There are also 145 ha of nurseries treated with MB of which about 72.5 ha are treated with MB annually. Most nurseries use MB every two years, therefore about 145 ha of nurseries rely on MB at present.
6. There are at about 4,400 farmers who use MB for tree/vine replants and 725 individual nurseries.

Alternatives selected

7. The project will be implemented in two phases. In Phase I, alternative technologies to MB will be adapted and their technical and economic feasibility in key agricultural regions will be assessed during two agricultural seasons. Conditional on identifying effective and economically viable alternatives for this sector, Phase II will develop training and extension programmes to ensure that the alternative technologies are adopted by MB users. Phase II will proceed only if effective and economically viable alternatives are identified; however, Phase I has been designed to ensure successful adaptation of viable alternative technologies.

8. The following alternatives are proposed to be tested in the field: chemical controls; integrated pest management (IPM) system and cultural practices; solarization in combination with IPM system (in selected regions); and substrates and steam in nurseries.

Implementation modalities

9. The project proposes, as the first activity, to hold workshops (one in each demonstration region) to assist in the design of the project and establish stakeholders' consultative groups for growers to be informed and consulted with during project implementation. This activity will help to ensure that the project continues to be supported by stakeholders (growers, growers' associations, investigators, extension agents).

10. The project also includes an overseas trip for three national experts to visit MB alternatives at farms and institutes, and to learn about the relevant techniques from researchers, extension personnel and farmers.

11. Using the results from Phase I, the project proposes a 'train the trainers' programme for extension staff, technicians and farmers; and training programmes for farmers on how to use the best alternatives. It will include field days (key stakeholders will be brought to demonstration sites to see alternative results in each region); and preparation of brochures, technical manuals and a video.

12. The training programme will commence as soon as viable alternative technologies to MB are identified by the trials. A detailed training package will be prepared, including technical manuals and teaching material. One 10-day training workshop will train 17 leading trainers in practical and theoretical aspects of alternatives to MB and effective training methods. In addition, 40 extension personnel and technicians (who can act as leading extension and diffusion agents) will be trained in similar workshops.

13. Subsequently, the leading trainers will train 1,000 technicians, extension personnel and farmers, to be selected on the basis that they are able to extend the alternatives effectively to others in the sector (farmers will be selected on the basis of respect by other farmers who tend to copy their production methods, and willingness to allow other farmers to visit their farms to see alternatives and related extension activities). Leading trainers will hold one-day meetings for 10 people on farms, and will make 5 follow-up visits to trainees during the active season. The project will provide funds for the leading trainers, transportation and related costs.

Policy measures

14. With assistance from the consultative groups, the project also proposes to hold several workshops to enable stakeholders to discuss and develop a package of measures and an action plan that will assist MB phase-out in a practical manner in all the regions, as well as activities to prevent the reintroduction of MB. These discussions will lead to the production of a policy package and action plans for the sector in the third year.

15. The national agency responsible for the implementation of the project is the Agricultural Research Institute (INIA). They will provide facilities (including cultivation fields which can be used for some trials) and technical personnel to carry out laboratory analyses and other activities. The Agricultural Development Institute (INDAP) will also participate in activities related to technology transfer, distribution of information, training and technical assistance. The Ozone Unit will be in charge of co-ordinating and monitoring all the activities related to the Montreal Protocol.

Project cost

16. The total project cost has been estimated at US \$1,251,747 with the following distribution: US \$708,080 for personnel; US \$23,060 for laboratory analysis; US \$137,479 for equipment and materials; US \$82,160 for events and workshops; US \$187,173 travel costs; and US \$113,795 as contingency. Incremental operating costs/savings have not been claimed. The cost effectiveness of the project is US \$16.42/kg.

17. The estimated time for the implementation of the project is 5.5 years.

SECRETARIAT'S COMMENTS AND RECOMMENDATIONS

COMMENTS

Consumption of MB

1. The Secretariat was informed by UNDP that the significant increase in MB consumption between 1997 and 1998 was due partly to increased demand in specific agricultural sectors, such as replanting trees/vines. A Chilean expert panel which evaluated MB consumption figures for 1998 believed that some of the additional imports were carry-over stocks.

Implementation modalities

2. The Secretariat pointed out that the project appears to be more of a demonstration project than an investment project; the second phase being conditional on identifying viable alternative technologies to MB.

3. UNDP informed the Secretariat that the project is a phase-out (investment) project with a small demonstration component. Demonstration trials are absolutely essential in the case of replant and propagation (nursery) materials, because alternatives have to be adapted and tested in order to identify technically and economically viable alternatives for Chile's pests and conditions. To gain the farmers' full support it was necessary to state in the project proposal that the extension/training phase can only proceed if viable alternatives are identified. Experts who were consulted are confident that alternatives will be adaptable to local conditions.

Incremental costs

4. The Secretariat pointed out that detailed specification for equipment and material requested (US \$137,479) and a breakdown of the request for laboratory analysis (US \$23,060) was not provided in the project proposal; some of the items requested (video production, data loggers, training packs) are not justifiable. Subsequently, UNDP provided specification of equipment and laboratory analysis and informed the Secretariat that training packs (materials for the training courses) are essential; the proposed video will be a cost-effective part of the technology transfer; and data loggers are necessary for the adaptive trials.

5. The Secretariat considers that some of the costs associated with the training programme and extension services (US \$708,080 for personnel, US \$82,160 for workshops and US \$187,173 for travel) are not incremental, and others are high. UNDP indicated that the training and extension programmes are essential for implementing alternatives at farm level and therefore phasing-out MB. Most of the cost of the technology transfer lies in personnel (essential for technology adaptation, training, extension), workshops/events (necessary for training and field days) and travel (necessary for technology adaptation, training and extension). The travel costs are justified and necessary in a country with Chile's geography (the country spans half the length of South America, and MB is used in 10 of the 13 Regions of Chile). Travel costs are subsidised by INIA.

6. The Secretariat also discussed with UNDP inclusion of operating costs/savings in the calculation of the total project costs. UNDP indicated that when calculating the project budget, estimates on incremental operating costs/savings were made. UNDP could not use actual costs on alternatives because there have not been demonstrations for this sector in Chile; therefore UNDP estimated costs based on the technologies that are most likely to be successful for this sector. The resulting operating costs have not been claimed.

Policy measures

7. UNDP informed the Secretariat that an action plan and policy package to ensure that MB will be phased out permanently in this sector will be prepared during project implementation. In submitting this project the Government of Chile is committed to phasing out MB in soil fumigation in the fruit tree and tree nursery sectors. The transmittal letter from the Government stresses the importance of this project and notes that it will lead to the phase-out of 34 per cent of the baseline MB consumption.

RECOMMENDATION

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