UNITED NATIONS

EP

United Nations Environment Programme

Distr.
LIMITED

UNEP/OzL.Pro/ExCom/44/46
31 October 2004

ORIGINAL: ENGLISH

EXECUTIVE COMMITTEE OF
THE MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
Forty-fourth Meeting
Prague, 29 November-3 December 2004

PROJECT PROPOSAL: MOROCCO

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

Fumigant

- Phase-out of methyl bromide for soil fumigation in tomato production: project re-orientation proposal (request for change of technology) — UNIDO

PROJECT DESCRIPTION

Introduction

1. At the 34th Meeting, the Government of Morocco submitted a project proposal for the phase-out of 390 ODP tonnes of methyl bromide (MB) used for soil fumigation in tomato production. Subsequently, the Executive Committee decided to approve in principle US $3,957,844 as the total funding that would be available to Morocco for implementation of the project, and also approved the first tranche of the project (at US $400,000) to phase-out 109.8 ODP tonnes of MB. According to the agreement between the Government of Morocco and the Executive Committee, the remaining level of funding would be disbursed in three additional tranches that could be requested in 2002, 2003 and 2004.

2. The alternative technologies selected in the project for the replacement of MB were: solarization in combination with chemical fumigants (namely metam sodium and 1,3-dichloropropene or 1,3-D), bio-fumigation, and negative-pressure soil steam pasteurization, all used in combination with an integrated pest management programme. These alternatives were selected on the basis of the results achieved from the implementation of two demonstration projects, one approved at the 22nd Meeting of the Executive Committee (US $487,300, implemented by UNIDO) and another at the 26th Meeting (US $229,523, implemented by the Government of Germany).

3. Implementation of the project has been delayed due to difficulties in applying some of the selected alternatives technologies. No additional tranches have been requested subsequent to the original approval. Of the 109.8 ODP tonnes of MB that were proposed to be phased through the implementation of the first tranche of the project, only 33.6 ODP tonnes have actually been phased-out.

4. Therefore, on behalf of the Government of Morocco, UNIDO has submitted to the 44th Meeting of the Executive Committee, a report with a request for a change in technology under the project. The report submitted by UNIDO is summarized below.

Issues encountered during project implementation

5. The following problems with some of the selected alternative technologies were encountered during project implementation:

(a) Soil steam pasteurization: The operational costs associated with this technology became unsustainable for tomato producers in Morocco. When the project was approved in 2001, the price of oil was about US $17 per barrel, while in 2004 the price has been over US $45/barrel. Fuel costs are directly related to the operation of the steam boiler, transportation of the boiler to different locations, water treatment and all other energy-related costs, which represent a considerable portion of the total operational cost;

(b) Solarization in combination with 1,3-D: The project proposed the application of 1,3-D through an injection device mounted on a chisel and driven by a tractor.

However, over the last few years it has been demonstrated that a mixture of 1,3-D and chloropicrin, injected through the drip irrigation system, is more effective than injecting 1,3-D alone into the soil. Given the conditions in Morocco, no additional funding is required for this technology;

(c) Bio-fumigation: Despite promising results obtained in the course of the demonstration project, large-scale application of bio-fumigation has shown very poor performance in the presence of moderate to high soil-borne pest pressure. Furthermore, other factors, such as the availability and quality of the organic matter, have also had a major impact on the performance of this technology. Therefore, farmers are proposing to continue applying bio-fumigation only on surface areas with low soil-borne pest pressure and where other alternatives (such as crop rotation or biocide green manures) can be applied jointly.

Proposed change in technology

6. UNIDO has advised that the Government of Morocco wishes to redesign the project proposal to introduce the following alternative technologies: grafting, solarization in combination with 1,3-D and chloropicrin applied through the currently available drip irrigation system, and bio-fumigation only on surface areas with low pest pressure. These technologies have been selected and fully agreed by major stakeholders (Government authorities, tomato producer associations and UNIDO). The distribution of surface area (ha) where the alternative technologies will be applied is presented in the table below:

Alternative technology	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**Total**
Solarization + metam sodium		0	73	90	123	134	128	548
Solarization + 1,3-D + Pic	160	0	81	105	126	121	109	702
Bio-fumigation		0	13	37	66	84	111	311
Grafting		0	18	38	56	72	112	296
Total surface area (ha)	160	0	185	270	371	411	460	1,857
MB phase-out (ODP tonnes)	33.6	-	39.0	56.4	78.0	86.4	96.6	390

Cost of the project

7. The total cost of the revised project is US $3,912,948 which is US $44,896 lower that the cost of the original project (US $3,957,844). The cost breakdown is as follows:

Incremental capital cost	US $2,907,226
Incremental operating cost	US $385,000
Training	US $330,000
Contingency	US $290,723

8. The cost-effectiveness value of the project is US $10.03/kg. The revised date for project completion is in 2008.

Revised agreement

9. The revised draft agreement between the Government of Morocco and the Executive Committee on the modalities for implementation of the MB phase-out projects approved so far is contained in Annex I to the present document.

SECRETARIAT'S COMMENTS AND RECOMMENDATION

COMMENTS

10. The Secretariat reviewed the project documents in light of the original project proposal approved at the 34th Meeting of the Executive Committee.

Decision on change of technology

11. At its 22nd Meeting, the Executive Committee adopted guidelines for changes in technology for projects already approved (Decision 22/69)[1]. Notwithstanding the terms of Decision 22/69, the Agreement between the Government of Morocco and the Executive Committee covering this project and two other projects also under implementation by UNIDO, provides for flexibility by the Government in implementing the project components it deems to be more important in order to meet its phase-out commitments.

Issues related to the technologies

12. The Secretariat pointed out that the original project proposal was designed on the basis of the results of the two demonstration projects approved for Morocco (at about US $720,000) and prepared according to the guidelines for MB phase-out projects approved by the Executive Committee at its 32nd Meeting (Decision 32/80)[2]. Therefore, the Executive Committee had approved the project as originally submitted on the understanding that the proposed technologies were technically and economically viable.

13. Furthermore, as reported in the progress report, the application of solarization with 1,3-D and chloropicrin over a surface area of 160 ha resulted in substantial incremental operating costs.

[1] According to the guidelines, there is a presumption that the technology selected in all projects will be mature and that the projects will be implemented as approved. Specifically, for projects approved after the adoption of these guidelines (i.e., the MB phase-out project for Morocco), the Executive Committee decided that the projects were to be implemented as approved; and exemptions would be considered when (i) the only other option would be cancellation of the project, or (ii) the project approved was for conversion to a transitional technology, and the revised proposal was for conversion in a single step to non-transitional technology. For these cases, proposals would be submitted to the Executive Committee for individual consideration, together with the Secretariat's review and recommendations; and the revised proposals would be implemented within the level of funding already approved.

[2] According to the strategy and guidelines for projects in the MB sector, the preparation of the proposal should have included, inter alia, workshops with main stakeholders (importers, suppliers of alternative technologies, government agencies, farmers/farmers' associations, fumigation companies, research institutions/universities and NGOs), to decide on the most appropriate alternative technologies; discussion of available alternatives in terms of their costs and benefits, including environmental and human health impacts.

Since this is one of the alternative technologies proposed for Morocco, the Secretariat expressed concern regarding how the long-term sustainability of the technology could be maintained.

14. Subsequently, UNIDO reported that, at the time the project proposal was prepared, steam pasteurization was the only alternative available for surface areas with two crop cycles in which the time available between crops was too short for other alternative soil treatments. However, as stated in the project re-orientation document, steam pasteurization is no longer economically feasible and the only possible alternative for such a short crop-cycle interval is grafting, as there is no need to employ any soil treatment.

15. The application of 1.3-D in combination with chloropicrin as a replacement for MB is currently being offered as a full package service by fumigation companies at a cost of US $2.40 to US $2.60 per m^2, which is about US $0.40 to US $0.60 more per m^2 than MB application. Due to technical constraints, only authorized fumigation companies can apply hot gas MB, while trained farmers can potentially apply the proposed alternative technology themselves, using an easy to handle injection device. In order to reduce the cost of this treatment, the project will provide a number of injection devices to tomato producer associations, which can then perform the application service on their own, thereby eliminating the cost of having fumigation companies apply the treatment. Training courses will be performed to ensure effective dosage and prevent problems.

16. The revised project proposes the implementation of grafting technology to cover a surface area of 296 ha. In this regard, the Secretariat requested additional information on the logistical arrangements required to distribute grafted plants among all farmers. For example, the costs associated with transporting grafted plants could make the technology economically non-viable. UNIDO indicated that the farmer association would manage the nursery for grafted seedling production and provide seedlings to all tomato producers. The nursery will be built in the Agadir area, which has the highest concentration of tomato producers, and therefore seedlings can easily be distributed by truck. Unlike in the past, tomato seedlings are largely produced by specialized nurseries and are currently being delivered by truck. Homemade seedlings have practically disappeared because of seed costs and the high risk of viral infection.

RECOMMENDATION

17. Based on the above comments, the Executive Committee may wish:

(a) To consider the request for change of the technologies in the project for the phase-out of MB for soil fumigation in tomato production in Morocco;

(b) To consider approving the revisions to the agreement between the Government of Morocco and the Executive Committee as contained in Annex I to this document, that would:

(i) include a revised completion date of 2008;

(ii) reduce the overall cost for equipment in principle from US $3,957,844 to US $3,912,948.

Annex I

AGREED CONDITIONS FOR THE PHASE-OUT OF METHYL BROMIDE IN MOROCCO

1. The Executive Committee:

   (a) At its 29th Meeting, approved US $1,006,652 as the total funds available to Morocco to achieve the complete phase-out of methyl bromide (MB) used in cut flowers and banana production (61 ODP tonnes);

   (b) At its 32nd Meeting, approved an additional US $2,189,729 as the total funds that will be available to Morocco to achieve the complete phase-out of MB used in the strawberry sector (additional 151.6 ODP tonnes); and

   (c) At its 34th Meeting, approved in principle an additional US $3,957,844 as the total funds that will be available to Morocco to achieve the complete phase-out of MB used in the tomato sector (additional 389.9 ODP tonnes).

   (d) At its 44th Meeting, agreed to endorse a change of technology in the tomato sector from the negative pressure steam pasteurization proposed in the original project to grafting technology, and to revise the project cost from US $3,957,844 to US $3,912,949.

2. As reported to the Ozone Secretariat, the methyl bromide baseline is 697.10 ODP tonnes. Despite an increase in methyl bromide consumption in 2000 (870.20 ODP tonnes) and 2001 (1,621.4 ODP tonnes), Morocco achieved the Protocol's freeze obligation in 2003, reducing MB consumption to 672.2 ODP tonnes.

3. Through the implementation of the above investment projects, the Government of Morocco commits to a permanent reduction in aggregate consumption of controlled uses of MB to no more than the following levels:

Year	Maximum level of methyl bromide consumption by crop (ODP tonnes)				
	Strawberry	Banana, flowers	Tomato	Total phased out	Total
2001	23.4	-	-	23.4	744.0
2002	15.6	40.0	-	55.6	688.4
2003	20.4	21.0	34.1	75.5	612.9
2004	42.2	-	-	42.2	570.7
2005	50.0	-	39.0	89.0	481.7
2006	-	-	56.4	56.4	425.3
2007	-	-	78.0	78.0	347.3
2008	-	-	86.4	86.4	260.9
2009	-	-	96.0	96.0	164.9
Total	151.6	61.0	389.9	602.5	

4. Upon completion of the projects, the maximum methyl bromide consumption in Morocco shall not exceed 164.9 ODP tonnes. Morocco also commits to permanently sustain the consumption levels indicated above through import restrictions and other policies it may deem necessary. UNIDO shall report annually to the Executive Committee on the progress achieved in meeting the reductions required by the projects.

5. For the implementation of the tomato sector MB phase-out project, after the initial disbursement of US $400,000 in the year 2001, funding will be disbursed by UNIDO in accordance with the following schedule, and with the understanding that a subsequent year's funding will not be disbursed until the Executive Committee has favourably reviewed the prior year's progress report:

2004	US $1,007,513
2005	US $1,270,995
2006	US $411,633
2007	US $424,381
2008	US $398,427

6. The Government of Morocco will have flexibility in implementing the project components it considers important to meet its phase-out commitments. UNIDO agrees to manage the funding for the projects in a manner designed to ensure that the agreed specific annual reductions are met.

7. These agreed conditions between the Government of Morocco and the Executive Committee have taken into account the already approved methyl bromide phase-out projects in the cut flower, banana and strawberry sector and, therefore, supersede the agreements approved at the 32nd and 34th meetings of the Executive Committee.
