United Nations Environment Programme

Evaluation of the project on initiating the early phase-out of methyl bromide in countries with economies in transition through awareness-raising, policy development and demonstration and training activities

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List of abbreviations

CEIT	countries with economies in transition
DTIE	Division of Technology, Industry and Economics, UNEP
EOU	Evaluation and Oversight Unit, UNEP
EU	European Union
GEF	Global Environment Facility
IPM	integrated pest management
MB	methyl bromide
MBTOC	Methyl Bromide Technical Options Committee
MP	Montreal Protocol
NAAS	National Agricultural Advisory Service (Bulgaria**)**
NOU	national ozone unit
ODS	ozone-depleting substance
OLPU	Ozone Layer Protection Unit (Poland)
QPS	quarantine and pre-shipment
RIVC	Research Institute of Vegetable Crops (Poland)
RUMBA	regular update on methyl bromide alternatives
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization

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A. Background

Evaluation methodology: The evaluation methodology employed two approaches: an in-depth evaluation based on a field visit carried out in June 2003 to three of the high methyl bromide (MB)-consuming countries of the region (Bulgaria, Hungary and Poland); a questionnaire-based survey sent out to all project countries (Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia) in May 2002. Since Estonia and Latvia did not respond to the survey, it covers only five countries. The survey complements the in-depth evaluation of Poland, Hungary and Bulgaria and provides the sole source of information on Slovakia and Latvia.

Organizational set-up in the countries: A high level of variability was found among the three surveyed countries with regard to the maturity of the public sector. National ozone units developed very good working relationships and networking capabilities with the agricultural technical and regulatory establishments and demonstrated leadership promoting the MB substitution effort. In spite of successful awareness-raising activities, spearheaded by national ozone units, certain fragments of the systems such as the State agricultural extension service in Poland, the Central Environment Fund and Ministry of Agriculture in Hungary, entertain a different agenda and the search for MB alternatives does not figure high on their priorities. National ozone units are capable entities led by motivated and skilled people.

Legislative framework: The basic legislation, namely the London and Copenhagen amendments of the Montreal Protocol, were ratified by Hungary in 1994, Poland in 1996 and Bulgaria in 1998. The Montreal amendments of the Protocol were ratified in all three countries in 1999, while Hungary ratified the Beijing Amendment in 2002. Over the last couple of years all three surveyed countries embarked on an effort fully to harmonize their legislation with the European Union, more specifically with Union regulation 2037/2000 concerning ozone-depleting substances (ODS), and with Union regulation 91/414 regarding the approval of plant protection compounds. All three countries have developed a consolidated legislation system with well-delegated authorities as far as law-enforcement is concerned. The project catalysed this process and provided tools for its accelerated development.

Problematic areas of management in countries with economies in transition: The public sector enjoys the presence of highly educated and motivated personnel, but this asset is not used at full capacity because of low funding. Growers associations, the main beneficiaries of applied research results, have not yet matured to the level of playing a major role in the definition of research and development policy and sharing its financial burden.

B. Project impact

Survey on MB uses: The United Nations Environment Programme (UNEP) developed a comprehensive questionnaire on MB uses and consumption. The country reports provided for the first time relevant information on the topic.

Awareness-raising: In the first cycle of the awareness-raising process, a nucleus of policy makers, technical leaders in the field of environment protection and agriculture, growers' representatives, purveyors of inputs, etc. was exposed to the project's spirit and activities. The national ozone units showed impressive leadership at this stage. A wider circle of stakeholders was updated in the aftermath of the workshops. The second cycle of awareness-raising would consist of the dissemination of messages to a much larger target audience, all agricultural producers affected by MB phase-out. UNEP backstopped the awareness raising effort by providing UNEP publications, case studies of relevance to the region, launching a discussion forum and the regular update on MB alternatives (RUMBA). UNEP publications as such were not translated into Polish or Hungarian. They were circulated among professionals in all three countries. They served as precious source of information and inspired the formulation of local publications. In Poland, regional extension service newsletters, leaflets handed-out at meetings with growers and professional periodicals addressed to the farming population carried the message of the MB problem. In Hungary, pest control guides and regional warning and recommendation leaflets were issued by the Plant Protection Service of Csongrád County. In Bulgaria, the national ozone unit developed a publication in both English and Bulgarian, entitled "Without MB –but how?" based on material translated from UNEP publications, consumption figures and presentations from the national awareness meeting held in Plovdiv, 2001. A videotape on the topic of MB and radio programmes were broadcast over the national radio service.

Policy development for MB phase-out. The leadership demonstrated by the national ozone units is basically an exercise in strategic planning, even if a fully-fledged multi-annual blueprint was not formally laid out. The regional workshop held at Warsaw on policy development clearly crystallized the strategic measures that the participants had to take in the MB phase-out effort. It advanced the capacity of national ozone units to think in strategic terms. The project was significantly successful in assisting the countries to meet their MB reduction targets; building reliable databases and specific information on the MB consumption complex and reduction targets.

Identification of MB alternatives. The demonstration project carried most appropriately the vision of developing non-chemical MB alternatives. These alternatives are not supported by commercial firms and their promotion was possible only by the project's environment-friendly thrust. The selection of the Research Institute of Vegetable Crops (RIVC), Department of Crop Protection, at Skierniewice in Poland to lead the generation of MB alternatives has proved successful. The demonstration project developed by Dr. Slusarski and his team covers a wide series of crops. The programme was focused on the short-term search for practical. viable non-chemical MB alternatives. The alternatives are highly crop-dependent and the most generally successful and practical results for indoor vegetables were attained with a mixture of Dazomet and *T. viride.* The results generated by RIVC in the framework of the project were not diffused to the surveyed countries. The research and development work invested in the framework of the project is leading, however, to the formulation of possible scenarios which could be adopted in the future once the field experimentation and registration is completed. Right now there is still a scarcity of fully registered chemical MB alternatives. Three main non-chemical MB alternatives were developed in the three surveyed countries. *Trichoderma viride* was developed in the framework of the project in Poland. Rockwool developed for several years in Hungary's indoor vegetables industry was expanded through the project's catalytic effect. Solarization was developed in Bulgaria since 1999. Its expansion was inspired by the technical environment created by the project

Diffusion of demonstration results: Training activities for growers were carried out in Poland under the leadership of the provincial horticultural extension service in Radom and by the subject matter specialists of the RIVC outreach unit at Skierniewice. Activities of the "train-the-trainers" type, focusing on MB alternatives, are offered by the provincial Plant Protection Service Unit of Hódmezővásárhely in Csongrád county, Hungary. In Bulgaria, under the leadership of the newly streamlined Extension Service, regional seminars on MB alternatives were held for grapes and for vegetable growers.

Adoption of MB alternatives: Extension services in Radom, Poland assess the adoption rate of Dazomet for pepper growers at 2 per cent in 2003 and 10 per cent in 2004. A survey was carried out in Bulgaria looking mainly at awareness of the rural population to the MB problem area. Solarization was adopted by an increasing number of Bulgarian growers between 1999-2002. The project promoted expansion of the rockwool substrate in Hungary from 70 to 700 ha.

Development and Implementation of national training programmes: The two regional training workshops convened in the framework of the project successfully created the right framework for interaction among the participating countries themselves, and with UNEP staff and consultants. They served monitoring, educational and training purposes and improved participants' awareness and capabilities to perform their duties.

C. UNEP project management activities

UNEP/DTIE played the major role in project design, management and supervision. To this end UNEP used its past expertise and tools and its study of the needs of countries with economies in transition. The project came across the difficulties of economic and political transition typical of countries with economies in transition. The project was most successful in its awareness-raising, policy-development and training efforts. The technical design of the project , particularly the demonstration portion, would have benefited from the input of an independent technical expert.

D. Conclusion: End-of-project picture, lessons learned and future needs

The project achieved notable successes in assisting the countries in a number of respects: meeting their MB reduction targets; building reliable databases and specific information on the MB consumption complex and reduction targets; creating awareness of a primary nucleus of significant stakeholders; networking with stakeholders and feeding them with updates and information; developing a phase-out policy and building the capacity of focal points and of the pertinent systems to generate strategies and react to any future developments concerning MB phase-out.

The project contributed to the formulation and enforcement of regulatory measures addressing MB phase-out.

Although national ozone units were exposed to additional sources of information and requirements, coming from the Montreal Protocol and the European Union, the project added a new dimension to all on-going activities. It catalysed, accelerated and expanded processes related to MB phase-out and came just in time to boost the MB substitution and phase-out processes.

The vision of developing non-chemical MB alternatives made the project emblematic of a larger issue, that of promoting environment-friendly crop production and protection.

Most countries follow their own established path in the promotion of their principal MB alternative. The project accelerated the expansion of solarization in Bulgaria and the massive expansion of the rockwool substrate in Hungary. The information and technical messages flowing from the project have reached a primary nucleus of stakeholders and of select groups of growers and professionals but have yet to cover the whole community of agricultural producers cultivating MB-consuming crops.

The thrust of the project is sustainable mainly thanks to the evolving capabilities of national ozone units, their imminent challenge being their countries' accession to the European Union. That said, the MB phase-out process acts in a framework still afflicted with the shortcomings characteristic of countries with economies with transition: low government finance and funding for growers; low priority given to MB replacement and applied research on the agenda of funding entities; inadequate strategic interaction between research and extension. Thus, a follow-up project to complete MB phase-out would be necessary.

E. Recommendations for future needs and follow-up activities

In the area of technology generation:

1. The research and development effort carried out by one country for the benefit of the region could be now shifted to the involvement of local, country-specific research and development capabilities for the fine-tuning of recommendations tailored to the needs of specific areas.
2. Efforts need to be made to address issues relating to major crops, prevalent pathogens, soil and soilless culture types and the specific application techniques of major alternatives and of combined MB alternatives.
3. Crop protection research, extension and regulatory functions should incorporate an integrated pest management (IPM) strategy for the control of soil-borne pathogens. Work could be carried out in close collaboration with local extension entities to set up demonstration plots in active production areas.
4. In the long run, research should be carried out into the involvement of a wide array of non-chemical alternatives, such as soil steaming, solarization, soil-less culture and fertigation, biocontrol, organic amendments, grafting, breeding of resistant cultivars, reduced rates of chemicals (through application of virtually impermeable film (VIF) and combinations of various alternatives). This topic could be discussed at one of the regional workshops. Closer attention should be given to the issue of weed control in the post-MB era. The long-term effects of chemical alternatives should be studied.

In the area of technology dissemination:

1. The programme should be geared towards ensuring the dissemination of its experimental results and their demonstration to as many growers as possible.
2. Village-level demonstrations should cover 10-30 per cent of a grower's plot with tested MB alternatives (individual alternatives, various sequences and mixtures of alternatives). Regional demonstration plots should combine a number of MB alternatives which have been tested on farms, leading to the demonstration of an IPM strategy. The main thrust of the demonstration programme is to accelerate the diffusion and adoption of MB chemical and non-chemical alternatives. This programme should be accompanied by an intensive training programme of growers centred on the visiting of the demonstration plots.
3. Regional demonstration plots should be equipped with improved infrastructure, especially in the area of soilless culture and drip irrigation.
4. Extension services or equivalent advisory entities could closely monitor the demonstration activity's impact and adoption rates and adjust the programme accordingly.
5. The extension services should set the dissemination of MB alternatives as a system-level priority for future years.

In the management of the follow-up project:

1. The management of the follow-up project should further intensify networking with all stakeholders and emphasize extension-research collaboration. National ozone units could be assisted by a coordinator in the agricultural area.
2. Future regional workshops should consider such issues as how to extend the programme, demonstration, accelerated delivery and the formulation of an IPM approach for the control of soil-borne pathogens.
3. There is a strong need for more written material in local languages.
4. The policy assistance, capacity-building and awareness-raising provided by UNEP should be further strengthened, by coordinating with an MB alternatives specialist to assist the UNEP task manager in the design of future demonstration-type components. Appropriate implementing agencies, such as the United Nations Development Programme (UNDP), the Food and Agriculture Organization of the United Nations (FAO), the World Bank and others, should also assist countries in the technical aspects of phase-out.
5. Governments should develop economic support systems for the promotion of MB alternatives which require infrastructure investments.

I. Introduction

The final detailed evaluation of the project to initiate the early phase-out of methyl bromide in countries with economies in transition (project GF/40-40-00-10) was conducted under the guidance of the Chief of the Evaluation and Oversight Unit and in close cooperation with the task manager in the Energy and OzonAction Branch of the Division of Technology, Industry and Economics and in collaboration with the programme officer for medium-sized projects in the Division of Global Environment Facility Coordination.

MB was listed as an ODS by the Fourth Meeting of the Parties to the Montreal Protocol on Substances that Deplete the Ozone Layer in 1992. At the Ninth Meeting of the Parties to the Montreal Protocol, held in Montreal in 1997, a global phase-out schedule for MB was established. Developed countries are required to phase out MB by 2005 and developing countries by 2015. Countries with economies in transition that are not categorized as Parties operating under paragraph 1 of article 5 of the Protocol ("non-Article 5 Parties") will have to phase out MB by 2005.

The Methyl Bromide Technical Options Committee under the Montreal Protocol has identified alternatives for more than 95 per cent of MB uses. Effective alternatives include solarization, soil amendments, biological controls and crop rotation that can be used as part of an integrated pest management (IPM) system. Alternatives must be adapted to meet local farming conditions and It is anticipated that farmer education and general training programmes will be needed in countries with economies in transition, to promote the widespread adoption of alternatives. With support from the Global Environment Facility (GEF) and the Multilateral Fund for the Montreal Protocol, activities are under way across the globe to promote the phase-out of MB and implement alternatives.

The present non-investment project was launched as a regional initiative to assist countries with economies in transition in achieving an early phase-out of MB to comply with the provisions of the Montreal Protocol, which requires non-Article 5 Parties to phase out MB by 2005. The short-term objective of the project was to enhance the capacity of the national ozone focal points and agricultural ministries to design and implement effective MB phase-out policies through awareness-raising activities, policy development, demonstration projects and training programmes. The long-term objective was to eliminate the use and production of MB in compliance with the Montreal Protocol and to promote the adoption of effective alternatives that are better for human health and the environment.

II. Scope and methodology of the evaluation

The evaluation was conducted as an independent and detailed evaluation. Its objective was to establish project impact, and review and evaluate the implementation of planned project activities, outputs and outcomes against actual results. The performance indicators provided in the LogFrame project matrix described in the terms of reference were analysed together with the evaluation parameters of appropriateness, effectiveness and efficiency, impact and sustainability.

Initially the project covered eight countries with economies in transition in central and eastern Europe and the Baltic area that are parties to the Montreal Protocol and are non-article 5 countries: Bulgaria, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia. The Czech Republic dropped out from the project right at the outset. The evaluation on the ground was carried out between 1 and 18 June 2003 in three of the active MB consumer countries, namely Poland, Hungary and Bulgaria. These three countries have been selected by the UNEP Division of Technology, Industry and Economics in Paris and the Evaluation and Oversight Unit in Nairobi as by far the most active users of MB in the region and, consequently, the primary target of the project.

Approximately 304 tons of MB were consumed for all uses in the eight countries with economies in transition, with Poland (50 per cent), Hungary (19 per cent), Bulgaria (15 per cent) and Lithuania (10 per cent) emerging as the largest users. Between 1996 and 1999, Lithuania appeared only to use MB for quarantine and pre-shipment. Latvia's use of MB for purposes other than quarantine and pre-shipment is relatively small and is intended primarily for durable commodity treatments, with a minuscule amount reportedly being used for the production of medicines. Estonia and Slovakia consume only very small quantities of MB, predominantly as feedstock for the production of medicines or in universities. In Slovakia, MB use is limited because of regulations that came into force in 1995. Poland, Hungary and Bulgaria account for 85 per cent of the total use of MB in the project countries.

In addition to the detailed evaluation of Poland, Hungary and Bulgaria carried out in June 2003, a survey questionnaire was sent out by UNEP to all seven project countries in May 2002. The survey complements the information on the three high MB-consuming countries and provided the sole source of information on Slovakia and Lithuania. A certain amount of earlier information on the low-consuming countries, however, was made available through a questionnaire (see annexes V and VI). This questionnaire was circulated among all seven project countries at the end of project activities in May 2002 to assess the performance of the UNEP/GEF medium-sized regional project near its completion and to give guidance to UNEP as to what might be done to improve its services. The survey also informed UNEP about further assistance that the countries might need toward the total phase-out of MB in 2005.

The responding countries were Poland, Hungary, Bulgaria, Slovakia and Lithuania. Estonia and Latvia did not respond because the national ozone unit focal points at the time were not available. The questionnaire focuses on four subject matter areas: first, the regional MB survey; second, the awareness-raising activities; third, policy assistance to countries with economies in transition; and, fourth, education on available alternatives and the development of training programmes. The questionnaire contains 18 structured questions and one non-structured one, the latter requesting information about proposals for three main projects in order to meet the MB phase-out in 2005. The questionnaires were filled out by one individual in each of the surveyed countries, with the exception of Hungary, where there were four respondents (two officials and two researchers). A full version of the questionnaire can be found in annex V to the present evaluation. Summarized forms of the questions and the answers are set out in the table in annex VI.

The evaluated objectives and indicators fall under two distinct categories: capacity-building and awareness-raising are non-tangible parameters and consequently their evaluation is qualitative. Project activities and outputs could be measured in tangible quantitative parameters.

The project, which started de facto in March 2000 and ended in September 2002, mean that the host countries were exposed to exogenous information, in particular on the requirements of the Montreal Protocol and its amendments with regard to ODS, and more recently the requirements of the European Union in the same field relating to the new countries acceding to the European Union. Poland and Hungary are to accede to the European Union as soon as in May 2004, while Bulgaria's accession date is 2007. Thus, the project's unique impact has to be separated from the influences of these two sources of information and activities.

The evaluation was conducted in a participatory manner at both field and reporting levels. The focal points, officials and beneficiaries who were interviewed were encouraged to provide not only technical information per se but also a free and critical review of the project's objectives, management and contribution. In addition, a draft of the evaluation report after its first submission to the Evaluation and Oversight Unit will be distributed among national focal points for their comments.

III. Findings

The findings of this evaluation stem from extensive interviews conducted during field visits to three countries – Poland, Hungary and Bulgaria (see annex IV) – and a questionnaire conducted in May 2002 (see annexes V and VI) covering all the project countries.

The evaluation findings are organized, in order of sequence, as follows:

(a) Legislative framework and institutional capacity in the project countries. A detailed analysis is provided on the organizational set-up in Poland, Hungary and Bulgaria and their capacity to lead the MB phase-out process. This includes a cursory look at their institutional and legislative framework, as well as a brief highlight of problematic areas characteristic of countries with economies in transition;

(b) Impact of the project: The project impact is analysed in terms of its component, activity and the objective of the original project document, and any other positive impacts that may have occurred are identified;

(c) Analysis of the UNEP management of the project;

(d) Conclusion: End-of-project picture, lessons learned and future needs. This section completes the analysis of the impacts and lessons learned, and puts forward suggestions on future work necessary for the total phase-out of methyl bromide in the countries.

A. Background: organizational set-up in countries

1. MB uses and consumption

All the countries with economies in transition surveyed by UNEP in Central and Eastern Europe in 2000 – except for the Republic of Moldova (i.e., Bulgaria, Estonia, Hungary, Latvia, Lithuania and Poland) – have either ratified the London and Copenhagen amendments or have internal regulations in force to phase out MB (e.g., Slovakia). Four of the countries have signed the Montreal Amendment. Estonia does not use MB, but expects to ratify the Montreal Amendment. Lithuania has not yet ratified the Montreal Amendment but has had an import and export license system in force since August 2000 which severely limits the use of MB to 10 tons. As mentioned above in the introduction, in 1999, approximately 304 tons of MB were consumed for all uses in the eight countries with economies in transition, with Poland (50 per cent), Hungary (19 per cent), Bulgaria (15 per cent) and Lithuania (10 per cent) using the most. Between 1996 and 1999, Lithuania appeared only to use MB for quarantine and pre-shipment purposes. Latvia's use of MB for purposes other than quarantine and pre-shipment is relatively small and is primarily for durable commodity treatments, with a minuscule amount reportedly being used for the production of medicines. Estonia and Slovakia only consume very small quantities of MB, predominantly as feedstock for the production of medicines or in universities. In Slovakia, MB use is limited because of regulations that came into force in 1995.

2. Institutional framework

There are large variations between the three surveyed countries in terms of their economic situation, the former collectivization and cooperation level of their farming sector and its repercussions on the present system, especially on the maturity of the public sector.

Poland: The Polish Ozone Layer Protection Unit, with a professional staff complement of 1.5, was established in 1994 following an agreement between Ministry of Economy and the Industrial Chemical Research Institute and has been put in charge of the implementation of the Montreal Protocol and its amendments with respect to ODS. The Unit effectively coordinates the activity of all involved stakeholders at the domestic level: the ministries of environment, agriculture, health and the economy, the Office of Statistics, the Customs Service, the Plant Protection Inspectorate, agricultural colleges, representatives of ODS-using sectors, MB users, and importers of ODS and alternatives. A national environmental protection fund provides funding for applied research and activities in the search for alternatives but agriculture is not a high priority area.

The only State agency which has not been involved in collaboration is the State agricultural extension service. Apparently this agency is overloaded with administrative duties preparing the ground for the agricultural sector on the country's accession to the European Union. It did not send representatives to the workshops held in the framework of the project. The Ministry of Agriculture did not place the issue of MB replacement high on its priorities. This notwithstanding, extension services at the provincial level are collaborating with the project. To enhance networking, the Ozone Layer Protection Unit is involved in the establishment of several committees on such issues as the registration of chemicals for plant protection and post-harvest MB alternatives. At the international level, the Unit is liaising with the Ozone Secretariat in Nairobi, the UNEP Division of Technology, Industry and Economics, the Montreal Protocol and the World Bank. The last-mentioned ran an ODS phase-out project (with no MB component) between 1997 and 2001.

Hungary: the national ozone unit is hosted by the Ministry of Environment and Water and its manager coordinates effectively the ODS and MB substitution effort, working on a part-time basis. This effort encompasses a wide array of relevant bodies: the ministries of environment, trade and agriculture, plant protection research and regulatory services, importers and users of MB and MB alternatives, and growers. The country's Central Environment Fund formulates annual objectives and identifies high-priority areas for which it provides funding. MB substitution was not included in its agenda, however. The Ministry of Agriculture, on the other hand, has developed a new programme promoting sustainable rural development with a focus on the promotion of indoor crops cultivated on rockwool. The Ministry supports installation of the rockwool substrate and the adoption of IPM practices by the indoor vegetables industry. Hungary has no agricultural extension service. This lack could slow down the generation and diffusion of agricultural technologies. Technical services of this kind are, however, provided by a large growers' association, Arpad-Agrar Rt. This – Hungary's largest cooperative of indoor vegetable growers (600) – is located in the south-eastern part of the country and employs a team of three professionals to provide advisory services to growers. The State and the respective provincial plant protection and soil conservation service fill the role of applied research in crop protection. The provincial unit in Hódmezővásárhely fine-tunes crop protection know-how to

regional needs, providing training, warnings and licensing to pesticides applicators and growers in an area that accommodates 75 per cent of the country's indoor vegetables and flowers production.

Bulgaria: the national ozone unit housed at the Ministry of Environment and Water entertains an effective networking capability with a broad range of stakeholders: agricultural research and extension, the Plant Protection Service, universities, mills, government production firms (tobacco), purveyors of pesticides and other agricultural inputs. Representatives of many of these agencies were invited and involved in the international and domestic workshops carried out in the framework of the project. The Agricultural extension service has been restructured over the last couple of years and, it is hoped, will become the major technology diffusion vehicle. The University of Plovdiv, which is leading the process of studying and promoting soil solarization as a major non-chemical MB alternative, did not include the National Agricultural Advisory Service among the bodies to which it disseminated its findings.

The focal points in the three surveyed countries all have a background in chemical research and meteorology. Nonetheless they developed very good working relationships with the agricultural technical and regulatory establishment and demonstrate leadership in their efforts to promote MB substitution. In spite of successful aware-raising activities, spearheaded by national ozone units, certain fragments of the system such as the State agricultural extension service in Poland, the Central Environment Fund and the Ministry of Agriculture in Hungary, entertain a different agenda and the search for MB alternatives per se does not figure high among their priorities. All in all, the national ozone units are capable entities led by motivated and skilled people.

2. Relevant legislative framework

Relevant legislation and efficient measures for its enforcement are essential to ensuring compliance with international laws and regulations such as the Montreal Protocol or European Union regulations on ODS and MB. The enactment of legislation is a relatively quick process, while it usually takes research and development systems rather longer to build up a commensurate technology development process. This disparity between the two processes necessitates a concerted research and development effort in order to provide growers in time with appropriate and registered MB alternatives. The basic legislation dealing with ODS and MB, namely the London and Copenhagen amendments of the Montreal Protocol, were ratified in Hungary in 1994, in Poland in 1996 and in Bulgaria in 1998. The Montreal amendments of the Protocol were ratified in all three countries in 1999, while Hungary ratified the Beijing amendment in 2002.

The following are the major legislative measures enacted in the surveyed countries with respect to MB substitution:

Poland:

- Act on ODS management, enacted on 1 July 2002, deals with the whole range of ODS use and is in line with European Union regulation 2037/2000 banning MB production, and the import to or export from countries which are not parties to the Montreal Protocol;
- As of 1 January 2005 the import of MB will be banned except for quarantine and pre-shipment and for critical and emergency uses; as of 1 January 2006 MB consumption will be banned, except for the above uses. Labelling and reporting are mandatory;
- Act on Crop Protection, enacted in 1995 and amended in 2002. Permits are requested for MB use (issued by the Ministry of Agriculture) upon the recommendation of the Registration Committee. Repacking and trade are to be authorized by provincial inspectors. Equipment and reporting are defined;
- Decree issued by the Ministry of Health lists MB among hazardous substances;
- Ministry of Environment imposes a charge for MB emissions of 0.1 Polish zlotys per 1 kg of MB (not yet enforced);

Hungary:

- Decree 22/1993 (VII.20) refers to control measures on ODS and MB consumption in line with the Montreal Protocol;
- Decree 112/1990 (XII.23) and 22/1993 (VII.20), as updated and amended by the Ministry of Environment, and 41/1999 (VII.16) issued annually by the Ministry of Economic Affairs regulate the import and use of MB and reporting on ODS uses to the Ministry of Environment through its regional environment inspectorates;
- License 24158/1982 MEM issued by the Ministry of Agriculture defines permits for MB users, requiring soil fumigation to be carried out by qualified and authorized personnel;
- Labelling in line with European Union regulations, enacted 2001;

Bulgaria:

- Regulation 224/2002 fully harmonizes Bulgarian legislation with European Union regulation 2037/2000 with regard to ODS and reflects the spirit of alignment with the Montreal Protocol and its amendments. Accordingly, the marketing of MB is banned as of 31 December 2003 and its use as of 31 December 2004, except for quarantine and pre-shipment and critical and emergency uses. MB users should be licensed. Applicators should minimize releases of MB. A 50 m safety band should separate fumigated fields from housing areas;
- Tobacco growers have renounced all use of MB. They accepted severe regulations, under which growers' license are cancelled in cases where non-registered pesticides are used.

Over the last few years all three surveyed countries have been engaged in an effort to bring their legislation fully into line with the European Union, more specifically with Union regulation 2037/2000 concerning ODS, and with Union regulation 91/414 regarding the approval of plant protection compounds. This is the essential thrust of the new trend evident since the legislation of the various countries was surveyed in 2000 under the UNEP survey of national MB consumption, existing and potential alternatives, regulations and stakeholder involvement. All three countries seem to have a consolidated legislation system with well-delegated authorities as far as law-enforcement is concerned.

Although, at the current time, the system in Hungary – from the point of view of the private sector – is slow in registering new agrochemicals, this is a more or less generic complaint which can be heard in the industrialized world as well. In addition, the registration of several MB alternatives in Hungary suggests application levels that are lower than their biological optimum, rendering them unsuitable for application. Harmonization of the legislation in this area within the European Union would foster acceptance of biological and toxicological evidence achieved in other member countries, streamlining the registration process. The legislative development process follows the Montreal Protocol requirements and the European Union pattern. According to all interviewed officials involved in the process, the project catalysed this process and provided tools for its accelerated development.

3. Traditional problematic areas of management in countries with economies in transition

One of the major constraints of countries with economies in transition is the low availability of funding for local-level activities, which need concerted efforts. The public sector has at its disposal highly educated and motivated personnel but this asset is not used at full capacity because of the lack of funding. Many of the more powerful funding agencies in the environmental field regard agriculture in general and MB substitution more specifically as of low priority. In Poland, for instance, this holds true for the Scientific Committee of the Ministry of Education and Science and for the Ministry of Environment. The Research Institute of Vegetable Crops (RIVC) at Skierniewice, which has been so efficiently engaged in the project through external project funds, has limited funding of its own which could be used mainly within its own region. The Plant Protection State Research Institute at Kostinbrod in Bulgaria suffers from shortages of local funding, which impede efforts by researchers to develop active and problem-oriented research projects. Although the Ministry of Agriculture in Hungary regards the introduction of integrated pest management into the indoor vegetable industry as a major priority, this has not yet been translated into the development of a research and development strategy. Low levels of local funding prevent most countries from providing growers with relevant information on a regular basis.

Growers associations, the main beneficiaries of applied research results, have not yet developed to the level where they can play a major role in the definition of a research and development policy and share its financial burden. The indoor vegetable industry in Bulgaria is heavily affected by rising fuel costs, forcing seasoned growers to drop out of production. This is not a good time to involve this industry in any investment efforts. In the light of this situation, projects carrying external funding could play an important catalytic role in optimizing the performance of their professional staff in the system of countries with economies in transition.

B. Impact of the project

In evaluating the performance of the project, due account must be taken of the original project objectives and outcomes, and the activities that were expected to achieve those outcomes. Accordingly, in this section the original expected project outcomes, along with the corresponding activities, are listed as envisaged in the original project document and then compared with the actual activities executed under the project. In addition, any other impacts are listed under separate headings.

1. Expected outcome 1: Improved understanding of MB consumption, major crops and applications using MB and potential alternatives for each transition economy country; proposed activity: surveys on MB use

The activities and results achieved in pursuance of this objective may be summarized as below:

(a) UNEP developed a comprehensive questionnaire on MB that was distributed to all participating countries in late 2000. With funding assistance provided by UNEP, each country's national ozone unit designated a national survey team to carry out the survey, a report of which was submitted to UNEP. All countries, save for the Czech Republic, submitted their completed surveys, including the methodology of data collections. These individual reports were then compiled into a single report on MB consumption in the region;
(b) This medium-sized project was the first attempt ever to gather information for this region on MB uses and consumption, and also for the first time enabled the countries themselves to carry out their own investigations. The questionnaire circulated later on in May 2002 attempted to assess the efficiency of the 2000 national survey. National ozone focal points of the five responding countries indicated that it improved the understanding of MB use and assisted in the development of an action plan.

2. Expected outcome 2: Increased awareness among national ozone focal points, agricultural ministries, pesticide control authorities, MB users and non-governmental organizations about MB; proposed activity: generation of MB publications and materials to support awareness raising activities

The activities and results achieved in pursuance of this objective may be summarized as follows:
UNEP has provided participating countries with UNEP publications on the MB issue (information and technical brochures, case studies on alternatives and inventory of agricultural resources). UNEP also launched its publication *Methyl Bromide Alternatives Discussion Forum and RUMBA Update* for participating countries and other stakeholders to exchange knowledge about technical and policy issues related to MB phase-out. A report of the consumption surveys has been disseminated to all participating countries. Finally, UNEP has published a volume of case studies for alternatives to MB across six areas of use, suitable for the conditions of countries with economies in transition. This document was disseminated to countries in early 2003.

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UNEP publications as such were not translated into Polish or Hungarian. They were circulated among professionals in all three countries. They served as a precious source of information and inspired the preparation of local publications. In Poland, regional extension service newsletters, leaflets handed out at meetings with growers and trade periodicals targeted at the farming population carried the message of the MB problem and its alternatives. In addition, the Polish ozone layer protection unit is putting together a manual for the training of customs officers, for publication in 2003.

In Hungary, pest control guides and regional warning and recommendation leaflets dealing with MB alternatives were issued by the Plant Protection Service of Csongrád County in the south-eastern part of the country. Professionals of this service published articles in various commodity-oriented professional journals. The same State service was prevented by funding constraints from tackling the issue at State level. This shortcoming was partially made up by the private sector. Thus, Zephyr Commercial and Servicing Co., a distributor of MB and of MB alternatives, has published articles in professional journals. The Hungarian Ministry of Environment and Water published a high-quality brochure on the protection of the ozone layer. All the same, comprehensive guidelines on this particular issue are not easily available to all the producers' clientele. In Bulgaria, in late 2001, the national ozone unit developed a publication in both English and Bulgarian entitled "Without MB but how?" based on material translated from UNEP publications, consumption figures and presentations from the national awareness meeting held in Plovdiv in May 2001. A videotape on the MB topic and radio programmes were broadcast over the national radio service. The BASF agency in Sofia issues weekly bulletins covering, among other things, the MB issue. Several of Bulgaria's awareness materials have been disseminated in the country and to other countries in the region. Plant protection services in all three countries issue periodic pest control guides and these provide the most accurate and official information on pesticides, MB and MB alternatives.

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Countries were also inspired to carry out their own awareness-raising strategies. In the first cycle of the process of raising awareness of MB phase-out issues, a defined group of policy makers, technical leaders in the field of environment protection and agriculture, growers representatives, purveyors of inputs, etc. was introduced to the project's spirit and activities. The national ozone units showed good leadership at this stage. They circulated UNEP publications and both formally and informally updated their counterparts at the various public and private institutions. Representatives of the national contact group were invited to take part in the three workshops organized by the project. The workshops played a major role in creating a primary environment of awareness. A wider circle of stakeholders was updated in the aftermath of the workshops. The second cycle of awareness raising consists in the

dissemination of messages to a much larger target audience. This audience is made up tens of thousands of agricultural producers affected by MB phase-out. In addition, UNEP published a volume of case-studies on methyl bromide alternative technologies of low environmental impact, specifically suited to the environmental conditions of countries with economies in transition.

The questionnaire circulated in May 2002 and filled out by five project countries strengthens the basic assessment of the evaluation with respect to the project's awareness-raising component. Four countries indicated that the materials distributed by UNEP were useful in raising awareness of MB issues. In Hungary, where the questionnaire was filled out by four professionals, the responses differed. Several held the opinion that the material was useful while others that it was only partially useful. Three surveyed countries, namely Poland, Bulgaria and Slovakia developed their own awareness-raising material. No such development was reported by Lithuania. In Hungary, the answers were split between the respondents, some indicating that the country was developing its own material, while others were apparently not aware of this development.

3. Expected outcome 3: Formulation of policies for MB phase-out and implementation of alternatives and a phase-out plan; proposed activity: one regional workshop in 1999 to provide policy assistance to countries with economies in transition for MB phase-out

The activities and results achieved in pursuance of this objective may be summarized as below.

A regional policy development workshop to facilitate MB phase-out in Eastern and Central Europe was held in Warsaw, Poland, 25–27 October 2000, where representatives of national ozone units and agricultural ministries identified preferred policy measures, developed a scenario for the formulation of national action plans for MB phase-out, identified stakeholders to be involved in the process and training and information needs. No formal action plans were drawn up at the workshop, even though this had been declared as one of the workshop's objectives.

That said, the Warsaw workshop on policy development was still considered to be very useful by participants from all three countries. It clearly crystallized the strategic measures that they had to take in the MB phase-out effort. It advanced the capacity of national ozone units to think in strategic terms. In fact the leadership that the national ozone units have demonstrated at system level in the MB phase-out effort is basically an exercise in strategic planning, even if a fully-fledged multi-annual blueprint was not formally laid out.

We should note in this context that, since 1998, when the phase-out dates were known, Poland and Hungary have regarded legislation, the economic factors and technology development as the main vehicles paving the way to the achievement of the strategic objectives of the programme. In the case of Hungary the development of a formal strategic plan would likely have been counterproductive in view of the flexibility required by this country in phasing out methyl bromide. Following the workshop, Bulgaria took a different course. In May 2001 it convened an in-country workshop at Plovdiv on national training and awareness, at which a strategy was discussed and a seven-point action plan formulated (see annex II below). The implementation of most of these points is under way with the exception of point 5, which envisages the establishment of a branch committee for the greenhouse industry.

The questionnaire circulated by UNEP in May 2002 covered additional angles with respect to the impact of the regional workshops on policy development. All five responding countries indicated that the workshop initiated action plans. Only two, however – Bulgaria and Slovakia – reported positively that they had prepared the consequential national action plans. Poland prepared a reference paper while Lithuania did not do even that. Instead of an action plan, these two countries focused on follow-up activities. In Poland, following the workshop, an update letter was circulated among all stakeholders and the Polish participants at the workshop. In Lithuania the information shared at the workshop was used for the formulation of regulations. The answers of the Hungarian team were split. One group argued that the workshop initiated action plans while another stated that the workshop only partially initiated such a move. The five countries have not answered the question whether anything else might have been done in the framework of the workshop. This omission may be read as a high level of satisfaction with this particular workshop's performance.

4. Expected outcome 4: Implementation and enforcement of established policies and regulations to enable compliance with the Montreal Protocol MB phase-out provisions; proposed activity: Policy mentor programme and follow-up with officers in transition economy countries to ensure effective implementation and enforcement of established policies and training programmes

The activities and results achieved in pursuance of this objective may be summarized as set out below.

By and large, the activities developed by the national ozone units could be defined as networking. The awareness-raising programme brought the message of MB phase-out to the attention of a wide array of protagonists, who in turn played a policy mentor role within the national systems. Both policy makers, especially in the environment protection area, and technical personnel in the crop protection area were invited to the regional workshops held in the framework of the project. In addition, they were updated on the outcome of those regional workshops at which they had not taken part. This nucleus of policy makers and professionals received the UNEP publications and were able to update their units, feed back to the national ozone units, write up pertinent publications in local languages and carry the message of MB phase-out. They acted both formally as executives of units and as members of technical and policy committees, and informally in the framework of personal interaction with stakeholders.

As part of the programme to develop a network of policy mentors, UNEP sponsored the participation of a Bulgarian representative from the Higher Institute of Agriculture in Bulgaria to the fifth international symposium on chemical and non-chemical soil and substrate disinfestations held from 11 to 15 September 2000 in Italy. This representative then participated in the UNEP round-table on implementing alternatives to methyl bromide held during the symposium, and attended a short course on alternatives to methyl bromide, to learn at first hand how alternatives to methyl bromide are being applied in Italy, and their applicability to Bulgaria as a country with its economy in transition.

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The questionnaire circulated by UNEP in May 2002 questioned the five surveyed countries about the assistance provided by the regional project for implementation, enforcement of policies and training in the framework of their national projects. The five countries unanimously agreed that the assistance was indeed instrumental to the implementation of activities in all three of those areas.

5. Expected outcome 5: Identification of effective environmentally sustainable alternatives for fruits and vegetables; proposed activity: one demonstration project to identify effective, environmentally sustainable alternatives for MB used on fruits and vegetables

The activities and results achieved in pursuance of this objective may be summarized as set out below.

(a) Generation of alternative technologies

The technology generation concept followed by the UNEP/GEF project delegated the generation of non-chemical MB alternatives for indoor and outdoor vegetable crops to one research team in one of the project countries. The very term “demonstration project” – although frequently used by GEF, UNIDO and UNEP in the context of research and technology generation – is more appropriate to the technology diffusion stage in which squared away technologies are “demonstrated” to the producers under their local conditions.

The selection of RIVC under the Department of Crop Protection at Skierniewice in Poland to lead the generation of MB alternatives has proved a success, especially in view of the reputation and experience of its team leader. In addition to being a research station, RIVC hosts an outreach unit, which is active in the dissemination of technologies within Poland. The fact that the State extension service in Poland did not cooperate with the project has not reduced its domestic impact, thanks to the professional standing of Dr. Slusarski and his very close collaboration with extension efforts at the regional level. The research proposals were peer-reviewed by a domestic research evaluation committee and the first work plans approved by UNEP.

The applied research programme (demonstration project) developed by the Polish team with project funding in the years 2000-2002 and visible in the fields to date covers a wide series of crops: strawberry for the production of propagating material (for domestic and export purposes); outdoor vegetables (cabbage, celeriac, tomato); pepper grown in unheated tunnels; and greenhouse tomatoes. The programme was focused on the short-term search for practical viable MB alternatives for all these crops. Particular attention was paid to the development of environmentally friendly non-chemical MB alternatives in line with the project’s vision. The alternatives were compared on-farm in large plots and with a few control plots to MB as standard. This experimental pattern promises a low-cost, accelerated development of MB alternatives suiting the conditions of growers.

In addition to participating in the general quest search for MB substitutes, the team leader collaborated with two research soil microbiologists in promoting the development of non-chemical alternatives. These alternatives include: biocontrol with *Trichoderma viride* strain 35, resistant to Benomyl and to Iprodione; *Pseudomonas fluorescens, Bacillus subtilis* and amendments of Indian mustard, shredded wheat straw plus *T. viride* and grafted pepper. The alternatives are highly crop-dependent and the most generally successful and practical results for indoor vegetables

were attained with a mixture of Dazomet and *T. viride.* Dazomet increases yields by 25 per cent on infested plots and by 7-9 per cent on healthy ones. *Trichoderma* is also known for its intensive growth response. The collaboration with the soil microbiologists added a basic dimension to the programme, demonstrating two of *Trichoderma's* modes of action: site-competitivity and induced resistance. Telopic (Telon + Chloropicrin) is under consideration for strawberry grown as fruits. Metam sodium used for strawberry runners caused losses under low temperatures. The submission of the crop for critical uses is considered in lack of an available recommendation. The same is true for fruit tree nurseries, the tomato canker problem (*Clavibacter michiganense*) and certain flower crops.

A comprehensive integrated pest management approach to the control of soil-borne pathogens could not yet be set in place, given the low effectiveness of some of the tested non-chemical alternatives such as *Ps. fluorescens, B. subtilis*, amendments and *Verticillium*-resistant rootstock for pepper. At this point in time *Trichoderma* is produced on a semi-commercial basis at the University of Wroclaw and the collaborating research team is trying to identify a large-scale manufacturer in Germany. In summary, the Dazomet plus *T. viride* mixture is not used on a wide scale and in fact *T. viride* is not yet fully registered in Poland. Efforts still need to be made to step up technological generation. On the other hand, the project accelerated the diffusion of soil solarization in Bulgaria and of rockwool technology in Hungary.

The extensive practical and basic results generated by this team of researchers, together with achievements in diffusing these results at the domestic level, when compared with the relatively modest funding costs ($150,000), demonstrate commendable cost-effectiveness. The impressive domestic results helped in leveraging local funding for early 2002. The demonstration project submitted detailed reports of its research and dissemination activities in 2001, a final report for 2001 and a report for 2002.

The approach whereby technologies are generated in one project country for the direct benefit of the region suffers from a flaw inherent in any technology development continuum: the results achieved in one country do not spill over smoothly to the others unless a fully-fledged bilateral or multilateral research and development programme is put together. This requires not only bilateral collaboration by research teams but also the inclusion of an extension specialist in each national team. Further investigation into the history of the design of the demonstration portion of the project revealed that UNEP had indeed requested an individual national demonstration activity for each participating country. The thinking within GEF at the time, however, was that the resources required to carry out such a task would be too great, particularly as this project marked the first occasion on which MB phase-out was being addressed in the region in any way or form. It was felt therefore that a single regional project would represent a good first step towards identifying prospective alternatives.

With the exception of one trial carried out on pepper and tomato at Hódmezővásárhely, Hungary, with a United States *Trichoderma* product on a terrain which turned out to be nematode and pathogen-free, the results generated by RIVC in the framework of the project were not disseminated to the surveyed countries for a number of reasons. First, *Trichoderma* – the main biocontrol component of the team's findings – is still under semi-commercial production. Second, the climatic and cropping conditions in the various countries are different and they pointed a priori to the adoption of different non-chemical MB alternatives: rockwool as a soilless substrate for the indoor vegetable industry of Hungary, and solarization in the case of Bulgaria. Dazomet has been registered for 25 years and is therefore well-known in Bulgaria and not regarded as novel. Third, being warmer countries, Hungary and Bulgaria are severely affected by root-knot nematodes, which are only a minor problem in the cooler Poland. Fourth, the time span of the project – 24 months extended to 31, is lower than the accepted average duration of research projects – 3 years (36 months). A fully-fledged bilateral or multilateral project would probably have had much more extensive budgetary implications, entailing a funding split between the collaborating research teams, and this line was not adopted by the project.

Neither was the innovative field demonstration methodology conceived by the RIVC team adopted by the participating countries. The interaction among professionals around the demonstration project took a range of forms, including a consultative meeting held in June 2002, visits by an economist-agriculturalist from Hungary to the project site in 2001, a four-day visit by professionals from Bulgaria, Georgia, Hungary and the Republic of Moldova to the project sites in Skierniewice in 2001, feedback by a collaborating nematologist from Hungary on the visit, and the interaction that evolved at the workshops convened by the project. This is especially true of the workshop devoted to MB alternatives held in Hungary in April 2001. This generated valuable two-way feedback on the demonstration programme and provided a focused educational and training framework for all participants. No formal evaluation feedback was received from the countries or from the Methyl Bromide Technical Options Committee, GEF, UNEP and other members on the first year's report distributed in early 2001. There was no regional visit at the demonstration project at its final stage as forecast: this visit was carried out earlier in 2001.

According to the project document, the demonstration component is expected to provide the "identification of effective, environmentally sustainable alternatives for major crop uses of MB in the region". To date, this expected outcome has not been achieved, especially since the yielded results per se did not reach maturity over the project's duration. At the current stage, the given *Trichoderma* strains are neither registered nor commercially manufactured. The demonstration project indicates a strong sense of direction, however, and could encourage the formulation of applicable integrated pest management practices. The broadly structured project document stimulates a participatory approach on behalf of the participating countries, which is most appropriate for project components such as awareness-raising, capacity-building, policy development and training. Research proposals on the other hand are usually rigorously structured to State objectives, a working hypothesis, specified methodology, outcomes, timetable, budget and the skills and academic record of the investigators.

(b) Diffusion of demonstration results

Field activities: In terms of the diffusion of technology at the domestic level, good results were achieved thanks to the team leader's good collaboration with the outreach unit of RIVC and with the regional horticultural extension units. According to the Radom extension office, a 2 per cent adoption of MB alternatives is expected for the current year among pepper growers in the area and this will reach 10 per cent in 2004. Pepper grown in unheated tunnels is not an MB-consuming crop but its declining yields due to monoculture cropping could be remedied by Dazomet applications. The extension service organizes seasonal field days on pepper cultivation that attract large audiences where MB substitution is discussed and demonstrated. The team leader regularly publishes materials on MB-related topics in journals for growers.

Training activities for growers: Such activities were carried out in Poland under the leadership of the provincial horticultural extension service in Radom and by the subject matter specialists of the RIVC outreach unit at Skierniewice. These included lectures, field days, pre-season and season-end meetings and visits to demonstration plots. Activities of the train the-trainers type, focusing on MB alternatives, are offered by the provincial plant protection service unit of Hódmezővásárhely, in Csongrád county, Hungary, to several audiences: these include seasonal weekly one-day re-certification meetings for 80-120 university graduates working in crop protection, certification training for applicators of crop protection chemicals, and meetings at county and village level. Agricultural universities are expected to include the topic in their curricula. In Bulgaria, under the leadership of the newly streamlined extension service, a regional seminar on MB alternatives was held for grapes and another for vegetable growers in Sofia. The tobacco fund convenes training meetings with all growers in the winter. The fund's three agronomists see to it that growers follow European Union quality requirements with regard to pesticides. In fact, tobacco growers stopped fumigating soils with MB in 1992 and stopped using MB in storage facilities in 1997-8.

Adoption of MB alternatives: Very little quantitative work has been done on the adoption rates of new technologies. The horticulture extension service at Radom, Poland, estimated a 2 per cent adoption of Dazomet by pepper growers in 2003 and 10 per cent in 2004. A survey was carried out in Bulgaria looking mainly at awareness of growers to the MB problem area. A surprisingly high percentage of the interviewed farming population – 68 per cent in Stara Zagora and 64 per cent in Plovdiv among the younger group, 28 per cent of the 40–60 years age bracket in Stara Zagora, and 18 per cent in Plovdiv – had not only heard about MB but were acquainted with its uses and ozone-depleting effect. Thirty greenhouse producers of vegetables were interviewed and did not seem to be concerned by MB phase-out as they had heard of the existence of effective alternatives. It is worth noting that soil solarization was promoted in Bulgaria by the Agricultural University of Plovdiv. The solarized greenhouse area measured 1.5 ha in 1999, 4.5 ha in 2000, 1.5 ha in 2001 and 10.5 ha in 2002. In addition, this GEF project has been credited by the Hungarian professionals with the accelerated expansion of the rockwool substrate in Hungary from 70 to 700 ha.

Commercial expansion of MB alternatives was attained in areas in Poland, where the RIVC team's presence is dominant, or among the growers of the Arpad Agrar Rt. Cooperative in Hungary, serviced by a team of advisors, or among the tobacco growers of Bulgaria, tightly overseen by the tobacco fund. Despite the overall increase in the implementation of alternatives in the project countries, there is evidence that the specific technical messages formulated by the countries and by the regional project dealing with MB alternatives did not reach large farming populations.

All five countries surveyed in May 2002 indicated without dissent that both the demonstration project and the regional workshops became more aware of what MB alternatives are available.

6. Expected outcome 6: Development and implementation of national training programmes to promote alternatives for major uses of MB in countries with economies in transition; proposed activity: two regional training courses to develop training strategies for implementation of alternatives and to train extension workers on promoting alternatives

The activities and results achieved in pursuance of this objective may be summarized as set out below.

Two regional training workshops were convened in the framework of the project:

(a) Regional workshop on MB alternatives for soil uses in eastern and central Europe, Szeged, Hungary, 23–25 April 2001;
(b) Regional workshop on MB alternatives for post-harvest treatments in eastern and central Europe, Sofia, Bulgaria, 28–30 May 2002.

The workshops convened by the project successfully promoted a wide range of goals and, with UNEP staff and consultants, they created the right stage for interaction among the participating countries themselves. They served monitoring, educational and training purposes. They improved participants' awareness and capabilities to perform their responsibilities as set by their organizations and by the project. Where Bulgaria was concerned, they were of particular significance for a newly recruited focal point. Focal points, researchers and other professionals from Poland, Hungary and Bulgaria who attended one, two or all of the workshops expressed unanimous praise for their contribution. The workshops facilitated their exposure to the field through the demonstration project, brought first-hand information on international and European Union requirements and presented specific new information on MB alternatives and on IPM concepts. The workshop participants were able to establish personal contacts at the regional and international levels. Nowadays, progress in achieving national goals in MB substitution depends very largely on successful international cooperation. The informal exchange of views, as it were, behind the scenes of the workshops, was also an essential part of their accomplishments. Reports in English were published with the completion of all three workshops. Together with other UNEP documents, these reports acted as background information for locally written material.

All three workshops highlighted alternatives and all that is involved in using them and encouraging their use via training. They always invited the extension and training representatives from each country to the meetings. In Bulgaria, for example, an extensive exhibition and demonstration was mounted of alternative post-harvest fumigation and pest control, at which experts and trainers went through the intricacies of using equipment. This informed the countries about what was affordable, could be replicated and converted into training material.

With the exception of Lithuania, the countries surveyed by UNEP in May 2002 affirmed that the regional workshops had assisted them in the development of training strategies. No training strategy was laid out in Lithuania, but a series of regulations was formulated as an outcome of the regional workshops.

7. Additional impacts: Leveraging of national funding towards methyl bromide phase-out activities

As mentioned above, in each of the surveyed countries there are examples of the medium-sized project directly leading to the leveraging of national funding towards MB phase-out activities. The project helped catalyse a series of processes already in operation. For example, although the development of rockwool as a major MB alternative in Hungary was already under way at the start of the project, the project accelerated its expansion from 70 ha to 700 ha. The funding of the medium-sized project prompted the provision of matching funds by the Bulgarian Government, and the country's solarized greenhouse area grew from 1.5 ha in 1999 to 10.5 ha in 2002. The same holds true for the legislative process in Bulgaria. The country had already started to comply with the Montreal Protocol and European Union requirements but the project catalysed that process. In Poland, the demonstration project generated new research on MB alternatives and their diffusion and opened up new prospects for the search for MB alternatives. These stimulating domestic results helped leverage national funding for RIVC in early 2002.

C. UNEP project management activities

Despite two replacements over the project's relatively short duration, task managers showed remarkable devotion and motivation and made up for the lack of continuity. With a few exceptions in the project's first year, no administrative or disbursement problems were met. Project supervision relied on regular written reporting, interaction with country representatives at the regional workshops and visits of various consultants.

As the project's implementing agency, UNEP/DTIE played the major role in project design, management and supervision. The project was guided by a commendable vision of promoting non-chemical MB alternatives which usually do not enjoy the backing of the commercial sector. UNEP used its past expertise in dealing with ODS phase-out across 140 countries, as well as its Multilateral Fund-supported publications to underpin awareness-raising efforts relating in particular to policy, regulations and training. UNEP also made creative use of the funding provided under the project to arrange exchanges for participants so that they could see relevant work in other countries, such as Italy and Spain. UNEP/DTIE has worked in the past with transition economy countries in the framework of four regional meetings, and completed a joint study with Danish environment protection agency on the needs of countries with economies in transition in accelerating ODS phase-out.

This experience was helpful in the identification of stakeholders, first the focal points and subsequently a network of policy makers, technical and executive personnel, private sector and growers' representatives. The project encountered the difficulties posed by economic and political transition in the eight project countries with economies in transition. These obstacles included, among other things, lack of funding and institutional capacity to undertake projects, inadequate information and training on the Montreal Protocol and technically feasible alternatives, communication difficulties and lack of familiarity with work within the international environment system. In this respect, the three sample countries, consumers of 85 per cent of the total regional MB use, are among the more progressive countries in the region and exposed to additional sources of information.

As a non-investment project, in its design the medium-sized project presented a framework for participating countries to follow and flesh out in a participatory and modular way. Furthermore, the project design did not require a technical review, since the GEF financing was not above the $750,000 threshold for medium-sized projects. Most of the necessary background information on MB use in the region was gathered as part of the project's activities, such as the national surveys on MB consumption and existing or potential alternatives, providing indispensable information for its forthcoming stages. As suggested earlier in this document, however, the technical design of certain aspects of the project, in particular the demonstration portion, would have benefited from the input of an independent technical expert to oversee the technology development process. Such input would have assisted UNEP and the UNEP task manager in initial project design, as well as in assessing the quality of demonstration results and design during the course of the project.

D. Conclusion: End-of-project picture, lessons learned and future needs

1. End-of-project picture

The following table shows the figures for MB reduction in the countries surveyed – both the actual levels achieved and the future targets.

Table 1: MB reduction figures (metric tons – actual levels and forecast targets)

Years	**Poland**			**Hungary**			**Bulgaria**		
	MP	EU	Total (+QPS)	MP	EU	Total (+QPS)	MP	EU	Total (+QPS)
2001	100	100	157.6	26.5	26.5	45.0	43.2	34.5	39.5
2002	100	100	146.6	26.5	26.5	29.5	43.2	34.5	39.5
2003	60	50	117.6	16.0	13.0	24.0	25.9	21.6	26.6
2004	60	50	53.3	16.0	13.0	3.7	25.9	21.6	26.6
2005	0	0	QPS+ criticals	0	0	3.7	0	0	QPS+ Criticals

(a) Chemical MB alternatives

Table 2: Available chemical MB alternatives in the three surveyed countries.

Country	MB alternative	Registration	Remarks
Poland	Basamid ("Dazomet") Telopic (Telon+Chloropicrin) Metam Sodium ("Nemasol")	+ 2004 under registration	Plastic cover. esp.for fruit strawberry. Injected with subsoiler.
Hungary	Vapam ("Ipam"), Dazomet Metam Sodium ("Nemasol") Oxamyl, ("Vydate 10 G"), granular Phosthiazate 10 G ("Nemathorin")	Under registration + +	CP, Telon and liquid Oxamyl are phased out. Cadusafos and Fenamiphos are not registered.
Bulgaria	Basamid ("Dazomet") granular 97% Oxamyl, ("Vydate 10 G"), granular Oxamyl ("Vydate 10 L"), liquid Mocap (Etoprophos) Metam Sodium	+ + under registration + under registration	Mechanical incorporation and plastic cover. Registration of Cadusafos and Fenamiphos expired ant not renewed. Mocap is registered but not used. CP, Telon were registered in the past.

The research and development work invested in the framework of the project leads to the formulation of possible scenarios which could be adopted in the future once the field experimentation and registration were completed. In Poland, for instance, there is no need for alternatives on outdoor vegetables as Poland had no MB consumption. Dazomet and *Trichoderma* could be used for vegetables grown in greenhouses, and soilless culture is used in certain areas for greenhouse tomato. Telopic could be used for strawberry grown for fruit production. No appropriate MB alternatives have been found to date for strawberries grown for propagation and the crop is under consideration for critical MB uses.

At present there is an evident scarcity of chemical MB alternatives. Two backbone nematicides – Cadusafos and Fenamiphos, although organo-phosphorous compounds and earmarked for possible toxicological restrictions – are not registered. Telon in the form of a Telon+Chloropicrin mixture is about to be registered in Poland but not in Hungary or Bulgaria. Oxamyl is the available nematicide while Phostiazate is registered only in Hungary. The fungicides are all methyl iso-thiocyanate (MITC) inducers: Metam sodium as a liquid formulation, and Basamid as a granular one. They are not used commercially in mixtures with non-chemical MB alternatives such as solarization or *Trichoderma viride* and very seldom in mixture with other chemicals.

The shrinking greenhouse industry of Bulgaria explains the reluctance of that country's chemical industry to develop the market. By and large the chemical industry does not appear keen on the re-registration of expired chemicals, most probably because most of them are toxicologically restricted, the market is limited, and the demand low due to the relatively high prices of imported pesticides to the average producer. The registration process is lengthy and its streamlining and full harmonization with the European Union system would enrich the arsenal of MB alternatives.

Unfortunately, nowhere in the world has the phase-out of MB been accompanied by the development of new or innovative chemical alternatives. Almost all the chemical MB alternatives which could be adopted in the short term are obsolete carbamates or organo-phosphorous compounds. The present situation in the surveyed countries is even worse. Their range of registered and available chemical MB alternatives, especially essential fungicides and nematicides is very narrow. It is to be hoped that European Union legislation (especially regulation 91/414) could be harnessed to broaden this spectrum. based on a rapid borrowing of existing biological and toxicological evidence from established member countries. Close collaboration with manufacturers, agents and distributors of pesticides could enhance the registration process of a broader range of MB alternatives.

(b) Non-chemical MB alternatives

Table 2: Use of non-chemical alternatives in the surveyed countries

Country	Alternatives	Remarks
Poland	*Trichoderma viride* strain 35 Soilless culture	Not registered. Greenhouse tomato.
Hungary	Rockwool (Grodan) Floating beds (for tobacco) "Mycostop" based on *Streptomyces griseoviridis*	High investment costs. Breeding for resistance (tomato, pepper) is underway. Need for high investment to cover all 2500 ha of production area.
Bulgaria	Solarization Soil steaming Bioact VG Floating trays (for tobacco)	 Steaming used only by 2 firms. Registration of Bioact for control of root-knot nematodes is under way. Cost of floating trays keeps back their adoption.

Three main non-chemical MB alternatives were developed in the three surveyed countries:

(a) *Trichoderma viride,* a fungal biocontrol agent developed in the framework of the project in Poland;
(b) Rockwool, developed for several years in Hungary's indoor vegetables industry and expanded through the project's catalytic effect and a grant from the Netherlands Government;
(c) Solarization, developed in Bulgaria since 1999. Its expansion was inspired by the technical environment created by the project.

In all three countries, research groups are involved in experimentation with additional non-chemical MB alternatives. In this context, the efficacy of additional *Trichoderma, Pseudomonas fluorescens and Bacillus subtilis* strains, the antifungal effect of crop residues, shredded straw plus nitrogen, and grafting are being investigated (Poland), as well as crop residues such as of *Phacelia tanacetifolia* and breeding for resistant varieties (Hungary), and entomopathogenic bacteria, amendments and breeding for resistant varieties (Bulgaria). In summary, rockwool used in Hungary and the soilless culture of indoor tomato in Poland are the only non-chemical MB alternatives applied on a commercial scale. All other major non-chemical methods, such as *Trichoderma* and solarization, are being applied on a limited scale. Experimentation with additional non-chemical methods is under way but it would yield practical results in the foreseeable future only if expedited by increased funding and bilateral or multilateral cooperation.

(c) MB alternatives for structure treatments

Treatments of stored products are of major importance in Poland and Bulgaria. Without being formally involved in the project, Warsaw Agricultural University, which sent its representative to attend the workshop held in Sofia, developed an MB replacement strategy and launched a series of activities in line with the project's goals and spirit in the area of stored products' control. One thrust of this activity is the establishment of a national working group on MB alternatives for post-harvest treatments. The search for MB alternatives and Integrated Urban Pest Control are part of the teaching curriculum at the Department of Applied Entomology. Subsequently, several papers were published on the topic in the journal of the Polish Association of Disinfectors and Pest Control Operators and University faculty have trained several large groups of pest control operators. The strategy stipulated by this group includes gamma radiation and biocontrol. The Bulgarian entomologists are interested in developing Phosphine used in combination with CO2 , and the development of cooling, ozonation and gamma radiation.

The following are the available MB alternatives for pest control . It should be noted that only 1 per cent of Hungary's MB consumption is devoted to non-QPS commodity treatments.

Table 3: Available MB alternatives for pest control

Country	MB alternatives	Remarks
Poland	Phosphine	Threat of resistance
Bulgaria	Phosphine	
	CO_2	For herbs and tobacco
	Fenitrothion, Pyrimiphos methyl, Cypermetrin, Fusalon, Deltamethrin, Dichlorvos	Less effective than Phosphine and need serial treatments

(d) Sustainability of the project's thrust and achievements

In terms of strategic thinking and policy development, the national ozone units are very actively involved in the project and therefore fully capable of leading any future moves. The most significant of such possible future developments is the accession to the European Union, necessitating full harmonization with its legislation, fiscal and administrative procedures. The research and development area, in particular, could be negatively affected by the termination of this project. The current research and development funding provided by the Governments is low and the same holds true for the growers' contribution to applied research and extension. Working together with research centres, the national ozone units should do the necessary groundwork to promote local-level involvement and an increased share of local funding and to place applied research concentrating on MB alternatives on the agenda of the domestic research funding bodies. Research and development groups involved in the project, such as RIVC in Poland, the plant protection and soil conservation service of Hungary and the University of Plovdiv in Bulgaria, are capable of developing research proposals and applying for international grants, especially if they collaborate with universities or basic research institutes. The main problem is one of a structural mature: applied research is not a prioritized area of the European Union or of the international funding establishment. Accordingly, a lack of interest in funding MB alternatives could be expected after the phase-out date.

The formulation and delivery of IPM strategies for the control of soil-borne pathogens could be a more appealing research area and should be explored by the research groups dealing with MB alternatives in countries with economies in transition. To this end, strategic, interdisciplinary and bilateral thinking at research centres should be encouraged in order to engender competitive proposals. The University of Plovdiv, for instance, is engaged in such a bilateral project with Greece and Germany, focused on the promotion of the attractive field of organic farming. It is collaborating with the North Atlantic Treaty Organization (NATO) in work on radiation, and is part of an international consortium of European countries coordinated by the University of Bari, Italy, and involved in research into soil-borne diseases. Together with the European Union assistance, the university has set up an agro-ecological centre to equip new generations of professionals for the new era of biotechnology.

The future diffusion of research results is impeded in Hungary by the lack of an agricultural extension service and this indispensable function will have to be undertaken by other public and private entities. In Bulgaria, the restructured extension service could play a major role in technology diffusion if sound collaboration is established with research bodies. It is to be hoped that, with accession to the European Union fast approaching, the Polish State extension service could emerge as a partner in the next stages of the dissemination of MB substitutes. With the termination of this project, national ozone units could initiate strategic discussions with the respective ministries in order to elevate the status of applied research geared to the formulation of IPM strategies in the field of soil-borne pathogen control in a post-MB era.

(e) Priority projects suggested by Poland, Hungary, Bulgaria, Slovakia and Lithuania in the framework of the May 2002 UNEP-circulated survey

The countries suggested activities for future follow-up. Poland, Hungary and Bulgaria requested, first, future regional cooperation for a review of the projects; second, the initiation of specific pilot activities; and, third, the exchange of information and training in the areas of both soil fumigation and post-harvest applications. They all emphasize the need for support to accelerate the development, registration, and dissemination of new MB alternatives, as well as a move towards the development of non-chemical alternatives. Slovakia and Lithuania suggest a somewhat narrower scope for future activities. Slovakia hopes to resolve air pollution problems associated with the use of fumigants while Lithuania aims to overcome problems associated with organophosphate applications.

2. Lessons learned

The following may be identified as lessons learned from the project:

(a) The project was highly successful in assisting the countries in a series of parameters: meeting their MB reduction targets; building reliable databases and specific information on the range of issues relating to MB consumption and reduction targets; creating awareness of a primary nucleus of significant stakeholders; networking with stakeholders and feeding them updates and information; and developing a phase-out policy and building the capacity of focal points and the relevant systems to generate strategies and react to any future developments concerning MB phase-out;

(b) The project contributed to the formulation and enforcement of regulatory measures addressing MB phase-out;

(c) The project encouraged regional interaction between transition economy countries, especially through a successful series of three regional workshops which focused on the key areas of policy development and MB alternatives for soil fumigation and post-harvest treatments. Regional interaction in the MB phase-out process is an essential generic element of this process. Although the policy workshop did not stimulate the development of action plans in all cases, even in Hungary, however, where such a formal plan was not formulated, it contributed to the strategic thinking of the professionals involved. Lithuania too did not develop a national action plan following the workshop but concentrated its subsequent efforts on the formulation of regulations. The regional training workshops were unanimously commended for the assistance that they provided in the development of training strategies for the implementation of MB alternatives;

(d) While the national ozone units were exposed to additional sources of information and requirements, in particular from the Montreal Protocol and the European Union, the project added a new dimension to all activities already under way. For the first time, exact figures on MB imports, uses and consumption were gathered and served as a solid base for decision-making. Further, the project initiated systematic field-work in the framework of the demonstration project and catalysed, accelerated and expanded processes related to MB phase-out. It came just in time, boosting the MB substitution and phase-out processes;

(e) The vision of developing non-chemical MB alternatives made the project emblematic of a larger issue, that of promoting environment-friendly crop production and protection. Non-chemical MB alternatives do not enjoy the backing of commercial firms and their promotion is made possible only by this kind of environment-friendly endeavour;

(f) The project's demonstration component led by RIVC was well conducted and it generated new technologies but they have not fully matured over the project's relatively short lifespan. There was no direct spillover of the demonstration project's results and methodologies to the project countries, although this was in part due to the failure to take on board the original design proposed by UNEP, envisaging national demonstrations in each country;

(g) Most countries follow their own established path in the promotion of their principal MB alternative. The project accelerated the expansion of solarization in Bulgaria and the massive expansion of the rockwool substrate in Hungary. The information and technical messages emerging from the project have been received by a primary nucleus of stakeholders and select groups of growers and professionals but have yet to reach the whole community of agricultural producers cultivating MB-consuming crops. There is still a scarcity of registered chemical alternatives;

(h) The project's thrust is sustainable mainly because of the evolving capabilities of national ozone units, their imminent challenge being accession to the European Union. The MB phase-out process acts in a framework still afflicted with the shortcomings characteristic of countries with economies in transition: low government and growers' funding, low priority attached to MB replacement and applied research on the agenda of funding entities, lack of strategic interaction between research and extension activities. Thus, a follow-up project to complete MB phase-out would be necessary;

(i) As early as May 2002, in the framework of the questionnaire, the countries put forward ideas for future follow-up activities. Thus, Poland, Hungary and Bulgaria requested future regional cooperation for a review of the projects, the initiation of specific pilot activities and an exchange of information and training in both the soil fumigation and post-harvest application areas. They all emphasized the need for support to accelerate the development, registration, and dissemination of new MB alternatives, as well as a move towards the development of non-chemical alternatives. Slovakia and Lithuania suggested a somewhat narrower scope for future activities, with Slovakia hoping to resolve air pollution problems associated with the use of fumigants, and Lithuania drawing attention to problems of use associated with organophosphates.

In the light of these lessons, it is most fortunate that preparations have already been launched for the next stage of the project, prepared under the GEF PDF-B facility.

3. Success of project implementation

In appraising the success of the project, a rating scale of 1–5 was used, with 1 representing the highest rating and 5 the lowest. Accordingly, the following ratings were accorded for the various parameters assessed:

1.	Timeliness	1
2.	Attainment of outputs	2
3.	Completion of activities	2
4.	Project executed within budget	1
5.	Impact created by the project	2
6.	Sustainability	2
	Overall rating	**2 (very good)**

All interviewed stakeholders commended the project on its timeliness. It was launched four years before full phase-out. It essentially developed the necessary awareness and tools to enable the countries to prepare for the reduction rates imposed by the Montreal Protocol and the European Union.

Not all the outputs have been attained, however. This applies principally to the targeted outputs of the project's demonstration component. The demonstration component did not reach full maturity over the project's lifespan and, as it stands, its output is not yet fully applicable. That said, the demonstration project was well managed and generated both valuable methodologies and outputs. There is a generic barrier in the transportability of findings from one country to other and the demonstration component, although well managed by the team leader, is affected by this factor. Its high rating (2) is awarded for the professionalism of the demonstration team.

In the domains of awareness-raising, policy development, legislation and training, the project has attained its defined outputs and completed its activities. The impact of the project is very beneficial and the outputs of the demonstration project may be expected to mature with time. The project was unanimously praised for its contribution to the implementation and enforcement of established policies and training programmes. A capable nucleus of stakeholders was created in the three surveyed countries under the leadership of the national ozone units, which will help ensure the sustainability of the MB substitution thrust. Certain elements of the country systems are not yet fully involved in this effort. Their involvement should be one focus of the programme's planned next stage.

4. Recommendations for future needs and follow-up activities

In the light of the findings of the evaluation and the ratings accorded under the various parameters, the following sets of recommendations have been formulated, with regard to technology generation; technology dissemination; and management of the follow-up project.

(a) Technology generation

1. The research and development effort carried out by one country for the benefit of the whole region could be now shifted to the involvement of local, country-specific research and development capabilities to foster the fine-tuning of recommendations tailored to the needs of specific areas.
2. Efforts must be made to address issues related to major crops, prevalent pathogens, soil and soilless culture types, and the specific application techniques of major alternatives and of combined MB alternatives.
3. Crop protection research, extension and regulatory functions should incorporate an IPM strategy for the control of soil-borne pathogens. Work could be carried out in close collaboration with local extension entities to set up demonstration plots in active production areas.
4. In the long run, research should be carried out into the involvement of a wide array of non-chemical alternatives, such as: soil steaming, solarization, soil-less culture and fertigation, biocontrol, organic amendments, grafting, breeding of resistant cultivars, reduced rates of chemicals (through the application of virtually impermeable film (VHF) and combinations of various alternatives). This topic could be discussed at one of the regional workshops. Closer attention should be given to the issue of weed control in the post-MB era. The long-term effects of chemical alternatives should be studied.

(b) Technology dissemination

1. The programme should be geared towards ensuring the dissemination of its experimental results and their demonstration to as many growers as possible.
2. Village-level demonstrations should cover 10-30 per cent of a grower's plot with tested MB alternatives (individual alternatives, various sequences and mixtures of alternatives). Regional demonstration plots should combine a number of MB alternatives which have been tested on farms, leading to the demonstration of an IPM strategy. The main thrust of the demonstration programme is to accelerate the diffusion and adoption of MB chemical and non-chemical alternatives. This programme should be accompanied by an intensive training programme of growers centred around the visiting of the demonstration plots.
3. Regional demonstration plots should be equipped with improved infrastructure, especially in the area of soilless culture and drip irrigation.
4. Extension services or their equivalent advisory entities could closely monitor the demonstration activity's impact and adoption rates and adjust the programme accordingly.
5. The extension services should set the dissemination of MB alternatives as a system-level priority for future years.

(c) Management of the follow-up project

1. The management of the follow-up project should further intensify networking with all stakeholders and emphasize extension-research collaboration. National ozone units could be assisted by a coordinator in the agricultural area.
2. Future regional workshops should consider such issues as how to extend the programme, demonstrations, accelerated delivery, and the formulation of an IPM approach for the control of soil-borne pathogens.
3. There is a strong need for more written material in local languages.
4. The policy assistance, capacity-building and awareness-raising provided by UNEP should be further strengthened by coordinating with an MB alternatives specialist to assist the UNEP task manager in the design of future demonstration-type components. Appropriate implementing agencies, such as UNDP, FAO and the World Bank, should also assist countries in the technical aspects of phase-out.
5. Governments should develop economic support systems for the promotion of MB alternatives which require infrastructure investments.

Annex I

Terms of reference for the evaluation of the project on initiating early phase out of methyl bromide in countries with economies in transition through awareness raising, policy development and demonstration training activities GF/4040-00-10

Under the guidance of the Officer-in-charge of Evaluation and Oversight Unit (EOU) and in close co-operation with the Task Manager, Energy and OzonAction Branch in the Division of Technology, Industry and Economics (DTIE) and collaboration with the Programme Officer for Medium Sized Projects (MSP) in the Division of Global Environment Facility (DGEF), the evaluator shall undertake a detailed review and evaluation of the Initiating Early Phase Out of Methyl Bromide in Countries with Economies in Transition project GF/4040-00-10. The evaluation shall be conducted by a consultant and EOU during the period between 26th May - 3rd August 2003 (1 month spread over 10 weeks).

1. Background

This project was launched as a regional initiative to assist CEITs in achieving an early phase out of methyl bromide to comply with the provisions of the Montreal Protocol, which requires non-Article 5(1) countries to phase out methyl bromide by 2005. The short term objective of the project was to enhance the capacity of the national ozone focal points and agricultural ministries to design and implement effective methyl bromide phase-out policies through awareness-raising activities, policy development, demonstration projects and training programmes. The long term objective was to eliminate the use and production of methyl bromide in compliance with the Montreal Protocol and to promote the adoption of effective alternatives that are better for human health and the environment. The results of the project would be an accelerated ODS phase out, greater protection of the stratospheric ozone layer and the adoption of environmentally sustainable pest management practices.

The Parties to the Montreal Protocol have established a Multilateral Fund to meet the incremental costs of the implementation of the Montreal Protocol of signatory developing countries those consumption of ODS is below the ceiling specified in Article 5 of the agreement. The eight (8) project countries (i.e. Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland and Slovakia) were not eligible to receive assistance from the Multilateral Fund. The project was therefore to enable assistance to be provided to CEITs to implement the needed policy measures, awareness raising and training activities necessary to meet the requirements under the Montreal Protocol.

The project activities were focused in areas of:

1. development and translation of public awareness materials;
2. demonstration projects;
3. regional training activities and;
4. policy development.

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Project duration was initially 22 months (March 2000 to December 2001), which was extended for another 9 months for completion in September 2002. The budget was initially US $ 700,000 funded by the GEF Trust Fund (US $ 663,000) and UNEP in kind (US $ 37,000) and later revised to include Counterpart Contribution (US $ 106,195) provided by the Government of Canada, thereby increasing the budget to a total of US $ 806,195.

1.1 Legislative mandate

The project is consistent with the decisions of the Parties to the Montreal Protocol and Amendments to establish a phase-out schedule for methyl bromide in non-Article 5 countries.

The project refers to UNEP's programme of work 2000-2001, sub-programme 4 "Technology, Industry and economics", programme element 4.4 "Energy and OzonAction" with the objective "to provide policy makers in governments and industry with relevant, practical, timely information and improve their skills so that they can make better, more informed decisions concerning energy policies, practices, and investments".

The project also supports the GEF Operational Strategy in which "GEF activities will be designed to support capacity building, human resource development and skills that are necessary to achieve global environmental objectives" and the GEP Operational Strategy for the Ozone Depletion Focal Area, which "…support activities to phase out ozone depleting substances that are committed under the Montreal Protocol, with special emphasis on short-term commitments and enabling activities".

1.2 Scope of the evaluation

The evaluation shall be conducted as an in-depth evaluation. The objective of the evaluation is to establish project impact, and review and evaluate the implementation of planned project activities, outputs and outcomes against actual results. The performance indicators provided in the LogFrame/project matrix (see table below) should be used together with the evaluation parameters of appropriateness, effectiveness and efficiency, impact and sustainability. Guidelines on performance indicators are provided in the UNEP project manual pp. 13/89-13/99 and also available on http://www.unep.org/Project_Manual/

Table: Logical framework/project matrix

Project strategy	**Objectively verifiable indicators**
Objectives	
To promote the early phase out of methyl bromide in Central & Eastern Europe and Baltic CEITs through awareness raising, policy development and demonstration/training activities	Improved capacity, and establishment of policies, awareness-raising and demonstration/training activities to enable CEITs to comply with Decision IX/3 of the 9th Meeting of the Parties, requiring the phase out of methyl bromide.
Results (i.e. outcomes)	
~~a)~~(a) Comprehensive data of methyl bromide consumption and production in each CEIT country, major crops/sectors using methyl bromide, and existing/potential alternatives; ~~b)~~(b) Awareness-raising publications and activities to inform methyl bromide users and the public about the health and environmental effects of methyl bromide, requirements under the Montreal Protocol and the existence of effective alternatives; ~~c)~~(c) National action plans (including establishment of national methyl bromide phase-out schedules with specific reduction targets in sub-sectors, policy measures, training activities and economic instruments to comply with Decision IX/3 of the Meeting of Parties) designed; ~~d)~~(d) Identification of effective, environmentally sustainable alternatives for major uses of methyl bromide in CEITs; ~~e)~~(e) Training programmes to implement identified alternatives; ~~f)~~(f) Improved date reporting and compliance with the methyl bromide provisions of the Montreal Protocol; and ~~g)~~(g) Adoption of methyl bromide alternatives that are environmentally sustainable.	• Improved understanding of methyl bromide consumption, major crops/applications using methyl bromide, and existing and potential alternatives for each CEIT country; • Increased awareness among National Ozone Focal Points, Agricultural Ministries, Pesticide Control Authorities, Methyl Bromide Users and NGOs about methyl bromide, the availability of alternatives and initiating activities in their countries for methyl bromide phase out; • Successful organization and implementation of a workshop on policy development to provide CEITs with knowledge, skills and tools needed to establish policy measures and action plans for phasing out methyl bromide; • Adoption of effective and environmentally sustainable alternatives; • Trained extension workers who can help implement alternatives and train farmers on replacing methyl bromide; • Implementation of established action plans and policy measures for establishing phase out in each CEIT country; and • Decreased use of methyl bromide.
Outputs	
• Surveys on methyl bromide use and existing/potential alternatives for CEIT countries; • Methyl bromide publications and materials to support awareness-raising activities;	• Availability of comprehensive data on methyl bromide use and existing/potential alternatives for CEIT countries; • Increased awareness about methyl bromide's impact on the ozone layer and the availability of alternatives;

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Activities	
• One regional workshop in 1999 to provide policy assistance to CEITs for methyl bromide phase-out; • Policy mentor programme and follow-up with CEIT officers to ensure effective implementation and enforcement of established policies and training programmes; • One demonstration project to identify effective, environmentally sustainable alternatives for methyl bromide used on fruits and vegetables; • Two regional training courses to develop training strategies for implementation of alternatives and to train extension workers on promoting alternatives.	• Formulation of policies for methyl bromide phase out and implementation of alternatives and a phase-out plan for the region; • Implementation and enforcement of established policies and regulations to enable compliance with the Montreal Protocol methyl bromide phase-out provisions; • Identification of effective, environmentally sustainable alternatives for fruits and vegetables; • Development and implementation of national training programmes to promote alternatives for major uses of methyl bromide in CEITs.

The findings of the evaluation will be based on:

(a) Desk review of the project documents, outputs, monitoring reports (such as the quarterly reports to UNEP and the GEF annual Project Implementation Review reports), and relevant correspondence;

(b) Specific products including datasets, surveys, methyl bromide publications and materials, reports of training courses and workshop highlighting presentations, case studies, technical information, strategies and recommendations for action on topics selected for discussions;

(c) Interviews with programme and project management at UNEP DTIE in Paris;

(d) Interviews with stakeholders from all participating project countries at governmental and non-governmental levels, which were involved with this project. This will also entail visits to three project countries: Poland, Hungary and Bulgaria.

The evaluator should develop a participatory evaluation methodology to carry out this exercise.

2. Terms of reference

The evaluator shall:

~~a)~~(a) Assess the overall appropriateness of the objectives of the project to the pertinent UNEP mission, mandate and sub-programme objectives and activities related to the ratification and implementation of the Montreal Protocol and its Amendments.

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~~b)~~(b) Establish to what extent the project's objectives were met and planned results obtained, taking into accounts the indicators listed in the project document and whether it has been a cost-effective way of obtaining these results, particularly focusing on:

- Availability of comprehensive data on methyl bromide use and existing/potential alternatives for CEIT countries;
- Overcome identified barriers such as language and communication difficulties;
- Increased awareness about methyl bromide's impact on the ozone layer and the availability of alternatives;
- Establishment and sustainability of policy mentor networks;
- Formulation of policies for methyl bromide phase out and implementation of alternatives and a phase-out plan for the region;
- Implementation and enforcement of established policies and regulations to enable compliance with the Montreal Protocol methyl bromide phase-out provisions;
- Identification of effective, environmentally sustainable alternatives for pest control for growing fruits and vegetables;
- Development and implementation of national training programmes to promote alternatives for major uses of methyl bromide in CEITs.

~~e)~~(c) Determine the quality and usefulness of the project's outputs and activities, in particular, training courses and material and publications translated and distributed, including UNEP publications (such as case studies, crop manuals and extension guides) used in the training courses.

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~~d)~~(d) Examine the impact of the project activities to assist the participating countries in the phase-out of methyl bromide in terms of the level of improvement in capacity; establishment of policies; and level of awareness raised at local, national and regional levels. Particular attention should be paid to evaluating UNEP's role in achieving any observed results in the following areas:

- Adoption of effective and environmentally sustainable alternatives to methyl bromide use;
- Assisting in the development of strategies to train ~~Trained~~ extension workers, who can then help implement alternatives and train farmers on replacing methyl bromide;
- Implementation of established action Plans, training strategies and policy measures for establishing phase out in each CEIT country;
- Decreased use of methyl bromide;
- Improved understanding of methyl bromide consumption, major crops/applications using methyl bromide, and existing and potential alternatives for each CEIT country;
- Increased awareness among National Ozone Focal Points, Agricultural Ministries, Pesticide Control Authorities, Methyl Bromide Users and NGOs about methyl bromide, the availability of alternatives and initiating activities in their countries for methyl bromide phase out.
- Successful organization and implementation of a workshop on policy development to provide CEITs with knowledge, skills and tools needed to establish policy measures and action plans for phasing out methyl bromide.

~~e)~~(e) Determine the sustainability of project activities and securing of funding for follow-up activities carried out by the project countries in order to sustain methyl bromide phase-out.

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~~f)~~(f) Establish the effectiveness of interagency collaboration, in particular, with FAO and co-ordination with similar activities implemented by other international agencies and institutes in Central and Eastern Europe and the Baltics.

~~g)~~(g) Determine the level of stakeholder involvement and participation in project activities, in particular workshop and training courses, and level of collaboration between stakeholders at local, national and regional levels, especially between the National Ozone Units, Agricultural and Environmental Ministries and Pest Control Authorities.

~~h)~~(h) Assess the effectiveness of the institutional arrangements and administrative and financial support provided by UNEP and GEF.

~~i)~~(i) Identify problems encountered and lessons learned during project implementation in particular with regards to awareness-raising, demonstration and training activities and policy development.

~~j)~~(j) Provide recommendations on how to improve future projects 1) of this type and project design and 2) in methyl bromide phase-out activities in CEITs.

3. Evaluation report format and procedures

The evaluation report shall be a detailed report, written in English, of no more than 15 pages exclusive executive summary and evaluation findings and recommendations and include:

~~i)~~(i) A concise summary (no more than 2 pages)
~~ii)~~(ii) Separate section on lessons learned
~~iii)~~(iii) Separate section on findings and recommendations
~~iv)~~(iv) All annexes should be typed.

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The success of project implementation will be rated on a scale of 1 to 5 with 1 being the highest rating and 5 being the lowest. The following items should be considered for rating purposes:

- Timeliness
- Attainment of outputs
- Completion of activities
- Project executed within budget
- Impact created by the project
- Sustainability

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Each of the items should be rated separately and then an overall rating given. The following rating system is to be applied:

1 = Excellent	(90 % – 100 % achievement)
2 = Very Good	(75 % – 89 %)
3 = Good	(60 % – 74 %)
4 = Satisfactory	(50 % – 59 %)
5 = Unsatisfactory	(49 % and below)

In accordance with UNEP/GEF policy, all GEF projects are evaluated by an independent evaluator contracted by the EOU, and not associated with the implementation of the project. The contract will begin on 26 May 2003 and end 3rd August 2003 (One month spread over ten weeks). The consultant will submit a first draft to EOU on 4 July 2003. A draft version will be forwarded to the Task Manager, DTIE and MSP Programme Officer, DGEF for initial comment. Comments to the final draft report will be sent to the consultant after a maximum of 3 weeks after which the consultant will submit the final report.

The evaluator will travel to DTIE, Paris at the initiation of the contract (2–5 June 2003) and interview staff in DTIE. Meetings will be arranged by UNEP's DTIE office. UNEP DTIE will arrange the schedule of visits to the three selected countries for in-depth review.

The final report shall be written in English and submitted in electronic form in MS Word Format by 25 July 2003 to the task manager, DTIE and the Chief, Evaluation and Oversight Unit. The evaluation report will be printed in hard copy and published on the Evaluation and Oversight Unit's web-site www.unep.org/eou.

4. Schedule of payment

The evaluator will receive an initial payment of 30% of the total amount due upon signature of the contract. An intermediate payment of 30% of the total amount will be made upon assessment of satisfactory progress (upon submission of draft report). Final payment of 40% will be made upon satisfactory completion of work (upon submission of final report). The fee is payable under the individual SSAs of the evaluator and is inclusive of all expenses such as travel, accommodation and incidental expenses.

In case the evaluator cannot provide the products in accordance with the TORs, the timeframe agreed, or his products are substandard, the payment to the evaluator could be withheld, until such a time the products are modified to meet UNEP's standard. In case, the evaluator fails to submit a satisfactory final product to UNEP, the product prepared by the evaluator may not constitute the evaluation report.

15 April 2003

Annex II

GEF evaluation mission schedule, June 2003

1. Departure Tel Aviv
2. UNEP/DTIE briefing meetings
3. UNEP/DTIE briefing meetings
4. Transfer Paris-Warsaw
5. Meeting with National Ozone Unit, Industrial Chemistry Research Institute, Warsaw
6. Meeting at Ministry of Environment, Warsaw
7. Field visit to Radom Extension Center, Radom, Grabowa, Potworow, Klinow
8. Warsaw and transfer to Skierniewice
9. Skierniewice, Research Institute of Vegetable Crops (RIVC), visit to Lodz, "SOLFUM" firm
10. Visit to Trzemeszno, "PLANASA" firm and strawberry fields
11. Transfer to Budapest, meeting at Ministry of Environment and Water
12. Visit to Szentes, "ARPAD AGRAR RT".growers cooperative and Hódmezővásárhely, Provincial Service for Plant Protection and Soil Conservation
13. Meeting at Central Service for Plant Protection and Soil Conservation, Budapest
14. Budapest
15. Transfer to Sofia
16. Meetings at Ministry of Agriculture, Ministry of Environment and Water, National Ozone Unit; visits with BASF and DuPont representatives
17. Visit to Plovdiv, Tobacco Research Institute, National Tobacco Fund, University of Plovdiv
18. Meetings at Ministry of Environment, Extension Service and Plant Protection Research Institute, visit to Loulis Mills. Departure for Tel Aviv.
19. Arrival Tel Aviv

Annex III

National training and awareness workshop on MB alternatives for soil uses in Bulgaria, Plovdiv, 18 May 2001

Adoption of an action plan

During final discussions all recommendations were taken into account, weak points were considered and an action plan worked out.

Action plan

Promoting MB alternatives shall continue in mass media, TV programmes and radio broadcasts;
New developments related in any way to the issue of MB phase-out shall be published in as many specialized and popular editions as possible and a regular news site in the weekly magazine *Plant Protection* will keep an open rubric for this purpose;
Importers of alternatives and substrates shall be supported in organizing presentations of their products;
Training courses for regional extension service staff shall be periodically organized; MB alternatives shall become regular subject in the curriculum of the University of Agriculture;
Bulgarian branch organization of greenhouse stakeholders shall develop phase-out strategy;
IPM system shall become subject for acquiring Ph.D. degree; and
Manual, listing alternatives for major crop uses shall be prepared, published and distributed.

Annex IV

List of persons interviewed during the mission

UNEP/DTIE, Paris

Mr. Rajendra Shende, Director DTIE
Ms. Christine Wellington, Associate Program Officer, Project Task Manager
Dr. Suresh Raj, Capacity-building Manager
Mr. Leo Heileman, Network and Policy Manager
Mr. Jim Curlin, Publications Manager

Poland

Ms. Jadwiga Makosa, ODS Specialist, Industrial Chemistry Research Institute, Warsaw
Dr. Janusz Kozakiewicz, Head, Ozone Layer Protection Unit, Ind. Chem. Res. Inst., Warsaw
Dr. Czeslaw Slusarski, Research Institute of Vegetable Crops, Skierniewice, team leader, demonstration project
Prof. Stanislaw Kaniszedwski, Director, RIVC, Skierniewice
Prof. Stanislaw Pietr, microbiologist, University of Wroclaw, associated with the demonstration project
Dr. Ryszard Pulski, Coordinator, Ozone Layer Protection, Ministry of Environment, Warsaw
Ms. Camilla Marek, Plant Protection Inspection, Airports, Warsaw
Mr. Stanislaw Oboza, Director Solfum, Lodz
Mr. Jerzy Waliszewski, Deputy Director, Solfum, Lodz
Mr. Roman Skalski, Director, Planasa, Trzemeszno
Prof. Zbigniew T. Dabrowski, entomologist, Warsaw Agricultural University
Ing. Krystyna Grzelak, Head, Agricultural Extension Office, Radom
20 vegetable growers interviewed in field visits

Hungary

Mr. Robert Toth, coordinator, National Ozone Unit, Ministry of Environment and Water, Budapest
Mr. Dobo Laszlo, consultant, Ministry of Environment and Water, TEAP member, Budapest
Dr. Zoltan Ocsko, Director, Central Plant Protection Service, Budapest
Dr. Zoltan Ilovai, entomologist, Central Plant Protection Service, Budapest
Dr. Geza Ripka, Plant Protection Dev. Dept, Central Plant Protection Service, Budapest
Dr. Agnes Pethoe, registration officer, Central Plant Protection Service, Budapest
Mr. Tibor Baranyi, registration officer, Central Plant Protection Service, Budapest
Mr. Gyulai Bela, Director, Zephyr Ltd., Keskemet
Ms. Marcinkovics Rezsone, Zephyr Ltd., Budapest
Mr. Laszlo Kovacs, Marketing Director, Arpad-Agrar Ltd., Szentes, associated with the demonstration project (Poland)
Mr. Jozsef Gavaller, Director, Csongrád Region Plant Protection Service
Dr. Budai Csaba, nematologist, Csongrád Region Plant Protection Service, associated with the demonstration project (Poland)
Ms. Erzsebet Dormanns Simon, plant pathologist, Csongrád Region Plant Protection Service
Ms.Ibolya Hatalane Zseller, biocontrol specialist, Csongrád Region Plant Protection Service

Bulgaria

Ms. Lidia Assenova, Head Global Atmospheric processes, Ministry of Environment and Water, Sofia
Dr. Boyko Boev, Deputy Minister, Ministry of Agriculture and Forestry, Sofia
Ms. Lyubka Koleva, chief registration, National Plant Protection Service, Sofia
Dr. Doncho Obretenchev, Director, Plant Protection Research Institute, Kostinbrod
Prof. Margarita Nikolova, Director, National Agricultural Advisory Service, Sofia
Mr. Veselin Radev, Programs Officer, National Agricultural Advisory Service, Sofia
Dr. Atanas Dimitrov, Sr. Research Associate, Tobacco Research Institute, Plovdiv
Ms. Kostadina Jeljazkova, Director, Tobacco Fund, Plovdiv
Prof. Georgi Neshev, Vice Rector, Agricultural University, Plovdiv
Prof. Mateeva, research entomologist, Agricultural University, Plovdiv

Dr. Samoilev, research nematologist, Agricultural University, Plovdiv
Ms. Lilia Daraktschieva, agronomist, BASF, Sofia
Mr. Nikolay Nikolov, agronomist, BASF, Sofia
Mr. Lubomir Nikolov, President, Agrobio Ltd., Sofia
Mr. Peter Stanishev, Sales Manager, Agrobio Ltd., Sofia
Mr. Vesselin Petkov, Sales Manager, Agrobio Ltd., Sofia
Mr. Dimitrios Ch. Koutsoukos, Director, Loulis Group Mill, Sofia
Mr. Konstantinos I. Stavrou, Director, Loulis Group Mill, Sofia

Annex V

UNEP questionnaire (2002)

Division of Technology, Industry and Economics
Energy and OzonAction Unit
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E-mail: unepie@unep.fr URL: http://www.unepie.org/

Evaluation of the Outputs of the UNEP/GEF Funded Medium-sized Regional Project "Initiating Early Phase Out of Methyl Bromide in Countries with Economies in Transition (CEITs) through Awareness Raising, Policy Development and Demonstration/Training Activities"
2000-

Dear colleagues,

We are conducting a brief survey in order to assess the performance of the UNEP/Gef Medium-sized Regional Project "Initiating Early Phase Out of Methyl Bromide in Countries with Economies in Transition (CEITs) through Awareness Raising, Policy Development and Demonstration/Training Activities".

This project is nearing completion, and so at this time your input is important to direct UNEP as to what might be done to improve our services to countries as an implementing agency, as well as to inform us about what further assistance you may need to see the total phase-out of methyl bromide in 2005.

We thank you in advance your cooperation in this exercise.

QUESTIONNAIRE

NAME: ……

ORGANISATION/ADDRESS/COUNTRY:……
……
……

Please tick the appropriate boxes.

Section 1: Regional Survey on methyl bromide use and existing/potential alternatives for CEIT countries.

1. Did conducting your own country's national survey improve your understanding of methyl bromide use in your country?

Yes ☐ No ☐

2. Did the national survey assist you in developing a framework for your country's national action plan for methyl bromide phase-out? (eg. By helping to identify methyl bromide consuming sectors?)

Yes ☐ No ☐

3. If the answer to the question 2 is 'no', explain what else you think was needed.

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Section 2: Awareness Raising Activities

4. Were the awareness-raising materials, distributed and developed within the project (eg. posters, brochures, documents, reports) useful in increasing awareness in your country?

Yes ☐ Partly ☐ No ☐

5. Did you develop your own awareness materials from those that UNEP has provided you?

Yes ☐ No ☐

6. If your answer to question 5 was yes, how were these materials disseminated in your country?

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7. If your answer to question 4 and 5 is 'partly' or 'no', what else do you think was needed?
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Section 3: Policy Assistance to CEITs

8. Did the Regional Workshop to provide Policy Assistance for CEITs for Methyl Bromide Phase Out (held in Poland, October 24-26, 2000), provide adequate information for you to initiate preparation of your country's Methyl Bromide Policy and/or National Action Plans for Methyl Bromide phase-out?

Yes ☐ Partly ☐ No ☐

9. If your answer to question 8 was 'partly' or 'no', what else might have been done to assist you?

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10. Have you prepared National Action Plans for the Phase Out of Methyl Bromide, and/or associated policy and legislation as a result of this workshop?

Yes ☐ No ☐

11. If your answer to question 10 was 'yes', please provide a copy of your National Action Plan, policy, or a description of it (include the sectors targeted by your phase-out plan and policy, and your national phase-out targets by year).

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12. If your answer to question 10 was 'no', please indicate the follow up actions that you have done in your country as a result of the workshop, and identify three (3) main things you might need to prepare a national action plan and/or policy.

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13. Do you feel that this project has provided you with sufficient assistance to ensure effective implementation and enforcement of established policies and training programmes?

Yes ☐ Partly ☐ No ☐

14. If the answer to the question above is 'partly' or 'no', what are the three (3) main things needed to assist you in ensuring effective implementation and enforcement of measures to phase out methyl bromide?

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Section 4: Education on Available Alternatives, and the Development and Implementation of National Training Programmes to Promote alternatives for major uses of methyl bromide in CEITs

15. Did the Demonstration Project[1] and the Regional Training Workshops[2] raise awareness of what methyl bromide alternatives are available?,

Yes	Partly	No
☐	☐	☐

16. If the answer to the above question is 'partly' or 'no', what else do you think might have been done to assist you?

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17. Did the Regional Training Workshops assist you in developing training strategies for the implementation of methyl bromide alternatives in your country?

Yes	Partly	No
☐	☐	☐

18. If the answer to the above question is 'partly' or 'no', what else do you think might have been done to assist you?

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19. What are the three main priority projects (both investment and non-investment) that you would like to propose, in order to meet the MB phase-out in 2005 under the Montreal Protocol?

National Activities:

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[1] *Identification and Evaluation of Environmentally Sustainable Alternatives for Methyl Bromide Used on Horticultural Crops in Eastern and Central Europe*, carried out in Poland across 2000 and 2001

[2] *Regional Workshop on Methyl Bromide Alternatives for Soil Uses in Eastern and Central Europe*, held in Hungary, 23-25, April, 2001 and *Regional Training Workshop on Methyl Bromide Alternatives for Post-Harvest Treatments in Central and Eastern Europe*, Bulgaria, 28-30 May, 2002

Regional Activities:
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PLEASE RETURN THIS FORM TO
MS CHRISTINE WELLINGTON (christine.wellington@unep.fr**) AT THE WORKSHOP**

OR FAX IT TO UNEP AT
331 44 37 14 74 ATTENTION: Christine Wellington
NO LATER THAN 7 JUNE.

Annex VI

Evaluation of low MB-consuming countries

Information on the low-consuming countries was made available through a questionnaire (see annex V above). This questionnaire was circulated among all seven project countries at the end of project activities in May 2002 to assess the performance of the UNEP/GEF medium-sized regional project near to its completion and to direct UNEP as to what might be done to improve its services. The survey also served to inform UNEP about what further assistance the countries may need toward the total phase-out of MB in 2005.

The responding countries include Poland, Hungary, Bulgaria, Slovakia and Lithuania. Estonia and Latvia did not respond to the questionnaire owing to the non-availability of the national ozone unit focal points at the time. The questionnaire focuses on four subject matter areas: first, the regional MB survey; second, the awareness-raising activities; third, policy assistance to countries with economies in transition; and, fourth, education on available alternatives and the development of training programmes. The questionnaire contains 18 structured questions and one non-structured one, the latter requesting information about proposals for three main projects in order to meet the MB phase-out in 2005. The questionnaires were filled out by one individual in each of the surveyed countries, with the exception of Hungary, where four individuals (two officials and two researchers) answered the questions. The following table represents the abridged questions and the answers to the questionnaire (Y = yes, N = no, P = partly). A full version of the questionnaire can be seen in annex V.

Questions	Poland	Hungary	Bulgaria	Slovakia	Lithuania
1. Did conducting the survey improve understanding of MB use?	Y	Y	Y	Y	Y
2. Did the survey assist in developing an action plan?	Y	Y	Y		Y
3. If the answer is no, explain					
4. Were the materials distributed useful in awareness-raising?	Y	Y, P	Y		Y
5.Did you develop your own awareness-raising material?	Y	Y,N	Y	Y	N
6. How were these materials disseminated?	Courses, films, slides	--	NAAS, PP Service	Ozone Protection Act	--
7. If answer to 4 and 5 is partly or no, what else is needed?		Limited no. of users			Problem of capabilities, planning under way
8. Did the Policy Workshop initiate action plans?	Y	Y, P	Y	Y	Y
9. What else might have been done?	--	--	--	--	--
10. Have you prepared nat'l action plans?	Reference paper (N)	Y, N	Y	Y	N
11. If yes, provide copy or phase-out targets	done	--	done	Ozone Act	--
12. If answer to 10 is no, indicate follow-up actions	Letters to stakeholders and UNEP workshop participants	--	--	--	Info used for regulations
13. Did the project assist in implementation, enforcement, of policies and training?	Y	Y	Y	Y	Y

14. If the answer is no, what are main things to assist you?	--	--	--	--	--
15. Did the demo project and workshops raise awareness of what MB alternatives are available	Y	Y	Y	Y	Y
16. If the answer is no or partly, what else might assist you?	--	--	--	--	--
17. Did the workshops assist in developing training strategies?	Y	Y	Y	Y	P
18. If the answer is no or partly, what else could assist you?	--	--	--	--	No strategy was prepared but regulations
19. What are the 3 main priority projects you would propose to meet phase-out?	Polish plan of action. Grain protectants. Regional review projects and pilot projects.	Registration of new alternatives, non-chemicals, training, workshops-exchange of info.	Research on alternatives, dissemination of results; workshops: training for soil and post-harvest	Solving problem of air pollution.	Implications of QPS and possible options

The findings of the questionnaire may be summarized as follows.

The responses to the questionnaire support the findings of the in-depth survey carried out in Poland, Hungary and Bulgaria, in that they indicate a great appreciation of the ends and means utilized in the project, namely: the MB survey, which provided the primary factual findings on the status of MB consumption in the transition economy countries; all three regional workshops; and the demonstration project for raising awareness of what MB alternatives are available. Even the responses of the low consumption country of Slovakia – in most of the surveyed parameters – followed the pattern of the higher consuming countries.

The policy workshop did not in all cases stimulate the development of action plans. Even in Hungary, however, where such a formal plan was not formulated, it contributed to the strategic thinking of the involved professionals. Lithuania too did not develop a national action plan but concentrated efforts on the formulation of regulations.

The regional training workshops were unanimously appreciated for assisting in developing training strategies for the implementation of MB alternatives.

By and large the countries have used the material distributed by UNEP for training, awareness-raising and capacity building, although Hungary stated that they did not make full use of it, citing a low number of potential users. A similar reason was cited by Lithuania, which did not develop its own awareness raising material claiming low capabilities for use.

The project was unanimously appreciated for its contribution to implementation and enforcement of established policies and training programs.

The countries suggested activities for future follow-up. Poland, Hungary and Bulgaria requested: first, future regional cooperation for a review of the projects; second, the initiation of specific pilot activities; and, third, exchange of information and training in both the soil fumigation and post-harvest application areas. They all emphasize a need for support to accelerate the development, registration, and dissemination of new MB alternatives, as well as a move towards the development of non-chemical alternatives. Slovakia and Lithuania suggest a somewhat narrower scope for future activities, with Slovakia expecting to resolve air pollution problems associated with the use of fumigants, while Lithuania cites use problems associated with organophosphates.
