WHO-EM/MAL/326/E

Report on the

# First regional meeting on the GEF-supported project in the Eastern Mediterranean Region

Muscat, Oman
6–8 March 2006

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## EXECUTIVE SUMMARY

A project entitled "Demonstration of sustainable alternatives to DDT and strengthening of vector control capabilities in Middle East and North Africa" is being implemented by the World Health Organization's Regional Office for the Eastern Mediterranean (WHO/EMRO) and the United Nations Environment Programme (UNEP), with financial support from the Global Environmental Facility (GEF). This regional project (2006–2007) covers the following countries of the Eastern Mediterranean Region: Djibouti, Egypt, Jordan, Islamic Republic of Iran, Morocco, Sudan, Syrian Arab Republic and Yemen. A total of US$ 650 000 has been made available to support these countries to develop full project proposals for submission by March 2007. Access to full project support is based on the country having ratified the Stockholm Convention. The Islamic Republic of Iran and Sudan will need to have ratified the Convention at the time of proposal submission.

The first meeting of countries participating in the project was held in Muscat, Oman from 6 to 8 March 2006. Twenty-seven representatives from 8 countries of the Region that are eligible for GEF support were in attendance. A representative from Saudi Arabia was also present, plus seven members of the project's Steering Committee. The objectives of the meeting were to:

- exchange relevant information on the implementation of the GEF-supported project;
- share country experiences in using alternatives to DDT;
- present results of the analysis of good practices;
- review the assessment methodology and instructions on how to conduct the vector control situation analysis and needs assessment;
- review draft selection criteria for demonstration sites and activities.

The meeting reaffirmed that vector-borne diseases continue to be a major public health problem in countries of the WHO Eastern Mediterranean Region and there is danger of their further spread and intensification. Vector control is faced with several challenges that affect its effectiveness, sustainability and acceptability and a need remains to strengthen vector control services.

The meeting assessed the development of the EMRO/GEF proposal that focuses on testing the feasibility and cost-effectiveness of vector control alternatives to indoor residual spraying with DDT in nationally and regionally representative sites. The meeting also reviewed the regional plan for the implementation of the project development facility category B (PDF-B) phase of the EMRO/GEF project over the following 18 months. All countries involved expressed their satisfaction with progress thus far, and approved the work plans for the PDF-B phase of the project at the regional and national levels.

The meeting noted that the GEF project provides an important opportunity to accelerate the process of developing national IVM programmes, while working

towards the goals set by the Stockholm Convention on the reduction and elimination of DDT use for vector control. The vector control needs assessment (VCNA) guidelines were approved and appropriate changes to the questionnaire were proposed.

The meeting recognized that in the majority of countries, intersectoral bodies or mechanisms already exist to deal with a range of cross-sectoral issues. They may address general planning or science and technology issues, have more specific mandates in the area of environmental protection, or be as specific as the national chemical safety programmes that are relevant to the VCNA. The meeting also adopted the criteria and procedures for the selection of demonstration sites.

In reviewing the country reports, two areas were identified that require intensification of efforts at country level. The first was in the area of sound management of pesticides in order to ensure their judicious use for agriculture, livestock and public health purposes and at the household level. The second was in the area of environmental and biological control.

**Recommendations**

*Member States*

1. Countries should follow up implementation of Regional Committee resolution EM/RC52/R.6 on integrated vector management, with special emphasis on strengthening intersectoral coordination.
2. While implementing the PDF-B phase of the project and in line with the requirements of the Stockholm Convention, countries should implement cost-effective alternatives to DDT as part of the goal to establish a national IVM programme.
3. Countries should make use of the VCNA process to build on existing intersectoral mechanisms at country level in order to construct an all-inclusive basis for IVM.
4. The process of VCNA, promotion of IVM and the selection of demonstration sites should be part of a concerted effort to formulate a full-scale proposal for the EMRO/GEF project.
5. Countries should strengthen national procedures and programmes for sound management of pesticides, placing greater emphasis on the environmental and biological control components of IVM (where appropriate) while ensuring that transmission is interrupted to acceptable set targets and the use of chemicals is the last option.

*WHO*

6. WHO should finalize the VCNA guidelines and tools without delay, incorporating the amendments and suggestions presented during the meeting.
7. WHO should identify a group of potential consultants to support countries in carrying out VCNA, in report and project proposal write-up for GEF funding.

## 1. INTRODUCTION

A project entitled "Demonstration of sustainable alternatives to DDT and strengthening of vector control capabilities in Middle East and North Africa" is being implemented by the World Health Organization (WHO) Regional Office for the Eastern Mediterranean (EMRO) and the United Nations Environment Programme (UNEP), with financial support from the Global Environmental Facility (GEF). This regional project (2006–2007) covers the following countries of the Eastern Mediterranean Region: Djibouti, Egypt, Jordan, Islamic Republic of Iran, Morocco, Sudan, Syrian Arab Republic and Yemen. A total of US$ 650 000 has been made available to support these countries to develop full project proposals for submission by March 2007. Access to the full project funds is based on the country having ratified the Stockholm Convention. The Islamic Republic of Iran and Sudan will need to have ratified the Convention at the time of proposal submission.

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The meeting was opened by Dr El Fatih El Samani, WHO Representative in Oman, who delivered a message from Dr Hussein A. Gezairy, WHO Regional Director for the Eastern Mediterranean. In his message, Dr Gezairy highlighted the achievements of Oman in controlling vector-borne diseases and in reducing reliance on insecticides. He referred to the serious challenges that remained in countries of the Region to further diminish the vector-borne disease burden, while at the same time reducing reliance on insecticides in general and DDT in particular. He noted that the joint project on demonstration of sustainable alternatives to DDT and strengthening of national vector control capabilities in the Middle East and North Africa offered the opportunity for countries both to fulfil their obligations under the Stockholm Convention and to strengthen their capacity for cost-effective vector control. Dr Gezairy closed by reminding participants that this regional initiative set the stage for the combined strengthening of policy and institutional frameworks that would foster intersectoral action for disease vector control.

Dr Ahmed Abdulqadar Al-Ghassani, Under-Secretary for Health Affairs, Ministry of Health, Oman, welcomed participants on behalf of H.E. Dr Ali Bin Mohammed Bin Moosa. The Under-Secretary reiterated how political commitment, adequate resources, intersectoral coordination and relevant national strategies had been key to Oman's success in the

elimination of malaria. He called upon the recipient countries of GEF support to ensure that they worked together at country level but also to coordinate with other neighbouring countries in the Region. He expressed the hope that national capacities in the implementation, monitoring and evaluation of vector control interventions would be strengthened as they carry out the agreed activities under GEF support.

Dr Salim Al-Wahaibi (Oman) was elected Chairman and Dr Robert Bos served as Rapporteur. The agenda, programme and list of participants are included as Annexes 1, 2 and 3, respectively.

## 2. BRIEFINGS ON THE WHO/UNEP/GEF PROJECT PROPOSAL ON DEMONSTRATION OF SUSTAINABLE ALTERNATIVES TO DDT

### 2.1 EMRO/GEF project proposal to demonstrate sustainable alternatives to DDT through integrated vector management

*Dr A. Mnzava*

During the Fifty-second session of the Regional Committee for the Eastern Mediterranean, Member States endorsed the regional strategic framework for integrated vector management and issued a resolution (EM/RC52/R.6) In the resolution, the Committee requested Member States to strengthen national capacity to plan and implement IVM, including ensuring adequate human and financial resources, establish a functional intersectoral mechanism for the collaboration and coordination of all related sectors, and develop national IVM strategies and plans of action for all vector-borne diseases. Member States requested WHO to support integrated vector control activities, including providing technical support to countries as necessary.

Indoor residual spraying is the main vector control intervention in most countries of the Region. Dichlorodiphenyltrichloroethane (DDT) is used only in Morocco, where its use is restricted to emergency purposes. It is clear, however, that unless sustainable alternatives are made available in the Region there is a potential threat to revert to use of DDT. This takes into account the challenges countries face in implementing alternatives in the context of IVM for epidemiological impact, such as the lack of adequate local capacity (including financial resources) to effectively design, apply and manage the use of pesticides. Therefore, WHO and UNEP have initiated joint activities to address the problems. One such activity is the GEF-supported project to demonstrate sustainable alternatives to DDT through IVM. WHO/EMRO is the implementation agency, while ministries of health work as the national executing agencies in Djibouti, Egypt, Islamic Republic of Iran, Jordan, Morocco, Sudan, Syrian Arab Republic and Yemen. Oman and Saudi Arabia are participating countries in terms of sharing their experiences in reducing reliance on DDT.

The project is divided into two phases: a preparatory phase (PDF) lasting 18 months and supported by US$ 650 000 from the Global Environment Facility (GEF); and an implementation phase (full project implementation) lasting 4 years and supported by US$ 8.5 million. The funds from GEF will:

- complement current national efforts to implement alternative strategies to DDT in different eco-epidemiological settings;
- support the systematic incorporation of alternatives to ensure countries do not revert to DDT;
- strengthen national capacity to review and choose appropriate alternatives to DDT within the IVM framework and design alternatives based on the good practices that already exist in some countries in the Region.

During the preparatory phase, WHO will work with project countries to:

- build consensus on processes and activities for the preparation of the full project proposal;
- complete national needs assessments;
- submit a report that reviews capacity strengthening needs and how to address them;
- select demonstration sites and activities based on agreed criteria;
- plan replication activities with information on how funds will be spent, beyond the project;
- develop country reports and work plans to implement activities that reduce reliance on DDT and strengthen vector-borne disease control programmes;
- submit a completed GEF project brief, including incremental costs, co-financing, stakeholder analysis and a comprehensive monitoring and evaluation plan, i.e. an implementation framework that utilizes and strengthens existing partnerships.

Less reliance on the use of DDT and other pesticides is key to the implementation of IVM. The commitment of countries to promote and implement IVM and to strengthen national capacity to implement sustainable and cost-effective alternatives will be complemented by GEF funding. It is expected that the implementation of alternatives to DDT will lead to reduction in vector-borne disease burden in the Region.

## 2.2 Summary of experiences of DDT projects in the context of the Stockholm Convention in other regions

*Dr J. Williams*

The production and use of DDT for disease vector control, in accordance with WHO recommendations and guidelines, is permitted under the Stockholm Convention on Persistent Organic Pollutants. Countries are, however, to be supported in the development of national action plans, which should include:

- regulatory and other mechanisms to ensure compliance in the use of DDT;
- implementation of suitable alternative products, methods and strategies;
- research and development of alternatives posing less risk to humans and the environment;
- strengthening health care and reducing disease incidence.

The Convention advocates incentives and the use of multiple-source funding mechanisms to strengthen country capacity in order to promote, utilize and evaluate vector

control alternatives. In this connection, a number of GEF-supported regional and country projects are being executed by WHO, with UNEP as the implementing agency.

The GEF project cycle is initiated by the submission of a concept paper which, when approved, leads to a project development facility (PDF) document. WHO/UNEP projects are categorized as B, with a funding ceiling of up to US$ 1 million. Upon successful completion of the PDF-B, a multi-year full project protocol is developed and funded, if approved by the GEF Council.

*Projects under implementation*

WHO Regional Office for Africa: the project "demonstrating cost-effectiveness and sustainability of environmentally sound and locally appropriate alternatives to DDT for malaria control in Africa" has a budget of US$ 11.8 million, of which GEF is contributing US$ 5.8 million. Beneficiary countries are Ethiopia, Eritrea, Madagascar, Namibia and South Africa. The PDF-B has been completed and the 5-year project was approved by the GEF Council in September 2005 and is expected to begin by June 2006.

WHO Regional Office for the Americas/Pan American Health Organization: the project "regional programme of action and demonstration of sustainable alternatives to DDT for malaria vector control in Mexico and Central America" has a budget of US$ 11 million, with a GEF contribution of US$ 7.5 million. Beneficiary countries are Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama. The full 5-year project is currently being implemented.

WHO Regional Office for the Eastern Mediterranean: the project "demonstration of sustainable alternatives to DDT and strengthening of national vector control capabilities in the Middle East and North Africa" has an estimated budget of US$ 16–21 million, with a proposed GEF contribution of US$ 8.5 million. PDF-B implementation was initiated in March 2006.

*Projects in the pipeline*

WHO Regional Office for South-East Asia/Pan American Health Organization: the project "demonstrating and scaling-up sustainable alternatives to DDT and strengthening national vector control capabilities in Southeast Asia and the Pacific" has an estimated budget of US$ 33 million, with a proposed GEF contribution of US$ 13 million. Beneficiary countries are the Indonesia, Marshall Islands, Myanmar, Papua New Guinea, Republic of Korea, Solomon Islands, Sri Lanka, Thailand, Vanuatu, Viet Nam and Philippines. The PDF-B document is being finalized and the expected start date is June 2006.

India: the project "reduction in use of DDT by enhancing capabilities through the implementation of IVM" has an estimated budget of US$ 11.8 million, with a proposed GEF contribution of US$ 5.8 million. The concept has been approved and the PDF-B document is being finalized. The expected start date is June 2006.

*Projects under preparation*

WHO/Duke University/Systemwide Initiative on Malaria and Agriculture (SIMA): the project "strategies for malaria control: a policy framework for evaluating health, social and environmental impacts and trade-offs" has an estimated budget of US$ 2.5 million, with a proposed GEF contribution of US$ 0.9 million.

## 2.3 Incremental cost analysis: a requirement for GEF funding

*Dr Matthias Kern*

The cost of GEF-eligible activity in a project should be compared to that of the activity it replaces or makes redundant. Incremental cost is a measure of the future economic burden on the country that would result from its choosing the GEF-supported activity in preference to one that would have been sufficient to the national interest. To estimate incremental cost, the analyst must estimate both the expenditure on the activity in question and the cost-saving on activities that, as a result of the GEF activity, will no longer be needed. The burden of an activity on a country is the activity's economic cost. This economic cost could be higher than the financial cost of the activity (e.g. when inputs are subsidized) or lower (e.g. when inputs are taxed).

The global environmental benefit of "alternatives to DDT" projects is derived from the objectives of the Stockholm Convention on Persistent Organic Pollutants, i.e. the reduction in the releases of DDT and its metabolites to the environment. The national benefits can be calculated from savings on the health systems resulting from reduced impact of malaria in the areas of demonstration projects. All participating countries of the Middle East and North Africa (MENA) project are already engaged in national and regional actions to control malaria vectors. These activities contribute directly to the baseline in the incremental cost analysis. The baseline analysis draws upon existing studies and sustainable development plans at the country or sectoral level. Such an approach helps to ensure that GEF-supported activities become an integral part of countries' own efforts to protect the environment and helps to maintain mutual understanding. The baseline analysis also determines the amount of co-financing coming from the country. Significant co-financing is available in many countries from malaria control programmes which meet part of the expenses related to the demonstration projects by malaria programme budgets. The co-financing provided by national budgets is estimated from malaria control programmes specifically oriented to the population of the specified project areas.

## 2.4 Discussion

Discussion focused on various aspects related to the use of DDT for disease vector control, the scope of the GEF project (particularly in relation to pesticide management and to disposal of obsolete pesticide stocks) and the nature of the arrangements under the GEF proposal.

Traditionally, quantities of DDT used in agriculture have been significantly higher than the amounts used for public health purposes, and the application methods for vector control

much less harmful for the environment than the agricultural use. Since the ban on agricultural use of DDT became effective in most countries, there has been illegal importation as well as illegal use. There was consensus in the group that the Region lacked adequate capacity both to enforce the legal framework for the importation and correct use of DDT as well as to implement a comprehensive programme for chemical safety. In the context of the GEF project, capacity building is necessary and chemical safety, in particular, should have a national, intersectoral programme with designated focal points.

Two countries made specific statements with respect to DDT use for vector control. The Sudanese delegation announced that ratification of the Stockholm Convention was in its final phase: the decision had now passed the Council of Ministers and a formal communication would be forwarded to the Convention Secretariat by the Sudanese Ministry of Foreign Affairs shortly. The Moroccan delegation observed that the use of organochlorine pesticides had been legally banned for agricultural use since the early 1980s. Since then, DDT had been allowed in Morocco only for public health use. Finally, on the issue of DDT, the group emphasized that the focus of the GEF project on malaria vector control was too narrow, and that it should be broadened to cover all vector-borne diseases. However, the project should maintain its focus on demonstrating the feasibility and cost-effectiveness of alternatives to DDT, including other insecticides.

In response, with respect to illegal imports of DDT, it was observed that UNEP and the secretariats of the Basel Convention and the Montreal Ozone Protocol, together with the World Customs Organization and Interpol, had launched the Green Customs Initiative to provide a more generic instrument to deal with illegal trade in a range of chemicals. Financial assistance to countries to help build capacity to deal with this initiative was provided by a separate programme, and was not under the GEF/EMRO project.

The handling of stocks of DDT and of obsolete pesticides in general was then discussed. Many delegates felt that the safe disposal of obsolete pesticides could not be separated from the effort to demonstrate the feasibility of alternatives to DDT. It was apparent that, in a comprehensive approach to chemical safety, this issue was unavoidable in many countries. Linked to this was the issue of effective pesticide management. Had countries had pesticide management procedures and programmes in place, the current problem of obsolete pesticides would be on a much smaller scale. Participants commented that pesticide registration procedures were inadequate, with responsibilities fragmented over different agencies. Yet this was a crucial issue in the testing of the feasibility of alternatives, particularly at the selection stage. It was suggested that the possibility of establishing a uniform registration process for all countries in the Region be addressed under the GEF/EMRO project. Coordination and communication with chemical safety focal points in the context of the project would be essential.

With respect to the disposal of stockpiles of obsolete pesticides, the Egyptian delegation observed that swift action was critical, and bringing in national focal points for chemical safety was not enough. Financial resource requirements also needed consideration. It was also queried whether the countries associated with, but not funded under, the EMRO/GEF project could be eligible for support in relation to the disposal of obsolete pesticides. The group were

reminded that beyond the individual country projects there was also the regional dimension of the project, based on a precautionary approach for substituting DDT with alternatives in vector control. If during the implementation process the project managers came across stocks of obsolete pesticides, then there would be room for safeguarding and testing. However, the budget for the project could not support disposal, which costs more than US$ 1000 per tonne. Currently, a GEF-supported stockpile disposal programme is under way in Africa and the second phase of this programme takes activity to other regions. There should be no integration, however, between the DDT alternatives programme and the obsolete pesticide disposal programme in order to avoid complications. The strong response to the issue of pesticide management was noted and it was advised that every opportunity (including this EMRO/GEF project) be used to strengthen the capacity of each Member State in the field of pesticide management. Clearly, this was an issue that was likely to emerge from the VCNA in the majority of countries.

Requests for clarification were made regarding the roles and responsibilities of different ministries in the governing of the EMRO/GEF project. The meeting was informed that GEF requires ministries of environment to endorse the proposal, since they are the national counterpart of matters pertaining to persistent organic pollutants. However, as part of the preparatory process, ministries of health had also been consulted and their endorsement obtained.

Discussion occurred regarding what could be included in the baseline costs that serve as a basis for calculating the incremental costs. It was pointed out that the baseline costs would include all resources currently used for vector control in the selected demonstration sites; this would include possible donor contributions. For the alternative vector control operations, the costs over and above current expenditures would make up the incremental costs. For specific capital-intensive interventions, such as environmental management works of an infrastructural nature, it was possible to obtain support from interested bilateral donors to supplement the incremental costs provided by GEF. As a general rule, the VCNA would provide information on locally required materials and capacity building. It would also clarify the status and needs in terms of intersectoral links: the current contributions by other sectors to vector control should also be included in the baseline. The incremental costs proposed would need to be justified with respect to substitution of DDT and the cost-effectiveness of vector control.

## 3. COUNTRY PRESENTATIONS

### 3.1 Djibouti

The malaria transmission pattern in Djibouti is epidemic, with a number of high-risk areas. Some 65% of the population is at risk of the disease. The vector breeding places are essentially linked to man-made problems caused by inadequate environmental management, but there are also some natural vector habitats. Since 1980, the use of DDT for vector control has ceased, and vector control is carried out using deltamethrin, malathion and temephos (Abate). In order to establish a proper IVM programme, the Djibouti authorities have agreed

that it is essential to set up a national intersectoral committee for IVM, with the support of the Ministry of Population, Urban Development, Environment and Land Reclamation.

Elements of the malaria control programme include case detection and treatment, epidemiological surveillance, vector control of chemical larviciding and adulticiding, and the promotion of the use of insecticide-treated nets. Current vector control activities focus on the city of Djibouti and include the application of insecticides in stagnant water and septic tanks, space spraying, and the distribution of insecticide-treated nets in and outside of Djibouti city.

In 2004, with the support of WHO, Djibouti established an intersectoral committee for IVM with key national stakeholders including the ministries of health, agriculture and environment, plus municipalities. This has led to the formulation of a 12-month IVM action plan involving all sectors. With improved community participation, environmental management (source reduction, good agricultural practice, landscape management) is currently undertaken. The country has also benefited from a WHO-organized consultancy to identify and map all important vector species. The findings of this mission highlighted again the need for an intersectoral approach to vector control. With the growing importance of nuisance mosquitoes, it is increasingly important to engage the other sectors in control activities.

Djibouti, however, faces a number of constraints and challenges including limited human resources, problems of sustaining intersectoral collaboration, inability of different institutions to exchange relevant information and experiences and lack of up-to-date datasets.

### 3.2 Egypt

In Egypt, vector control operations are performed by staff of the vector control unit in the Ministry of Health and Population. Vector control activities aim to control mosquitoes, sand flies, flies, cockroaches, fleas, scorpions and rodents, using various methods in the framework of an integrated pest management approach. Activities include environmental management methods such as the filling of mosquito breeding sites, vegetation clearing of canals and proper solid waste management for rodent and fly control. Biological control of mosquito larvae is achieved through the use of larvivorous fish and bacterial toxin preparations. Border controls at ports and along the southern border with Sudan are supported by legislation and aim to prevent invasion from malaria vectors such as *Anopheles arabiensis*. Chemical control methods include indoor and outdoor residual spraying, space spraying (thermal fogging and ultra-low volume spraying), larviciding for mosquito and housefly control, dusting and baits for flies and cockroach control, and the pilot introduction of insecticide-treated nets for personal protection from disease transmission by mosquitoes.

Two successful trials have been conducted by the Ministry of Health and Population for integrated vector control, in 1988–1989 in Qalyubia and during 1991–1994 in Giza. Both trials were done in cooperation with WHO/EMRO and with the participation of local communities.

The Research Institute of Medical Entomology of the Ministry of Health and Population carries out monitoring of vector resistance. Private pest control activities are regulated by the 1986 decree number 268 to ensure the safe use of pesticides. The registration of public health and household insecticides is subject to the law on pharmaceuticals and organized under the 1996 Ministry decree number 224. The documents required for registration are:

- application form from the Drugs Policy and Planning Centre of the Ministry of Health and Population;
- registration and free sale certificate from the country of origin;
- WHO publications that approve the use of the product for public health or household purposes;
- registration approval from Environmental Protection Agency, if available;
- data sheet for the product, including details of its contents, physical properties, method of application, comprehensive toxicological studies and method of analysis.

The registration procedure involves the following steps:

- the application should first be approved by the subsidiary committee for pesticides;
- samples of the product for laboratory and field tests are then presented;
- biological tests (laboratory evaluation for household products; laboratory evaluation and field trials for public health products).

On successful completion of these steps, the product is presented to the registration committee for final approval and a registration number is issued that remains valid for 5 years.

Old stocks of expired, banned or unused pesticides are kept in storage reserved for this purposed by the Ministry of Agriculture, awaiting proper disposal. A high committee for IVM was established by decree of the Minister of Health and Population in 2005 and includes representatives of the ministries of health and population, agriculture, irrigation and water resources and environmental affairs. A high committee on pesticides already exists with participation from the Ministry of Health and Population and the Ministry of Agriculture, with the mandate to review, periodically, all pesticides in use and approve new ones.

### 3.3 Islamic Republic of Iran

Malaria and other vector-borne diseases such as leishmaniasis, Crimean–Congo haemorrhagic fever and schistosomiasis are prevalent in the Islamic Republic of Iran. Insecticides are routinely used to address these diseases. The 1967 Plant Protection Organization Act provides pesticide regulations on registration, production, formulation, packaging and transportation. The Organization is also responsible for national pesticide registration, pesticide removal, and labelling and production (synthesis and formulation).

Three independent bodies are involved in the legislation of pesticides.

1. Plant Protection Organization (executive function)

2. Plant Pests and Diseases Research Institute (research function)
3. Agricultural Support Services Company (commercial function)

The use of persistent organic pollutants for public health purposes has a long history in the Islamic Republic of Iran. From 1954, DDT was used in public health to control the main malaria vectors. After the appearance of DDT resistance in *An. stephensi* and *An. culicifacies*, it was substituted by dieldrin for malaria vector control. DDT application was continued for the control of other susceptible malaria vectors such as *An. superpictus* and *An. d'thali* until 1990. In 1994, the Cabinet approved a national policy for reduction of pesticide use. As a result, a huge decrease in use has been achieved (from 38 000 tonnes to 23 000 tonnes over the last 5 years). In addition, approximately 20% of total pest control has been transformed to non-chemical approaches.

Challenges and constraints faced by the Islamic Republic of Iran include:

- lack of information on the applicability and cost-effectiveness of alternatives to DDT and other pesticides;
- stockpiles of obsolete pesticides (56 tonnes of persistent organic pollutants in agriculture and 17.9 tonnes in public health);
- weak intersectoral collaboration among local, and even national, managers of other sectors.

There is, however, the prospect of improved technical evaluation of the quality of existing stocks of DDT and other obsolete pesticides, and better management of these. Opportunities exist for strengthening intra- and intersectoral collaboration and for stronger political support to reduce reliance on the use of DDT and other insecticides and for the introduction of alternative vector-borne disease control methods. Moreover, continued dialogue for the enactment of appropriate legislation, such as the elimination of import taxes on certain goods for vector control (e.g. insecticide-treated nets), will support the use of appropriate alternatives to DDT.

### 3.4 Jordan

Vector species present in Jordan include mosquitoes, sand flies, flies, cockroaches and other biting insects; however, none of these species contribute significantly to the burden of disease. Malaria was eliminated many years ago and a few cases of zoonotic cutaneous leishmaniasis are reported annually.

Various governmental and nongovernmental organizations are involved in vector control activities in addition to community participation, especially relating to the control of biting insects. Intersectoral coordination has been identified as a major factor in implementing vector control. The process to establish mechanisms for intersectoral coordination at country level was initiated in 2005 with key partners from health, agriculture, environment, irrigation and municipalities.

Jordan has limited resources and needs financial and technical assistance in capacity building and training in entomology, laboratories, Geographic Information Systems technology and disposal of hazardous wastes. The country requires assistance to instigate the national implementation plan on persistent organic pollutants and to dispose of 22 tonnes of DDT and other stocks of obsolete pesticides. Support from GEF will aid Jordan in developing a national IVM plan of action and full project proposal for implementation.

### 3.5 Morocco

In Morocco, the main diseases transmitted by vectors are malaria, schistosomiasis and leishmaniasis. During the last 5 years, there has been clear improvement in the epidemiological situation as a result of successful disease control efforts. However, favourable conditions for the transmission of vector-borne diseases continue to be present in the country. There is also the risk of reintroduction of emerging diseases such as West Nile fever and animal diseases transmitted by vectors, such as bluetongue in sheep.

The objectives of vector control are to protect the health of the human population, to reduce the risk of transmission of vector-borne diseases and to control nuisance insects. The main government institutions involved are the ministries of health, interior and agriculture. The control methods used are environmental management (weeding, filling in, general source reduction), chemical control, biological control and personal protection. The administration of pesticide use in agriculture is well organized and there is a clear procedure for registration. However, this is not the case for pesticides used in public health.

The quantity of pesticides used in public health is approximately 24 tonnes per year and includes organochlorines, organophosphates, carbamates and pyrethroids, rodenticides and molluscicides. DDT 75% wettable powder (WP) is still used in indoor residual spraying in malaria foci. The total amount of obsolete pesticides is estimated at 700 tonnes. In order to reduce dependence on pesticides, the promotion of integrated pest management and IVM is encouraged as the alternative strategy.

Intersectoral collaboration is effective for vector control, especially in response to outbreaks. For example, the prevention of the introduction of plague in 2002 from Algeria demonstrated the importance of the multisectoral approach. Since 2005, an intersectoral committee for IVM has been established and is functional. This committee comprises representatives of the ministries of agriculture, interior, health and environment, and includes representatives from research and academic institutions. The terms of reference for this intersectoral committee on IVM are:

- coordinate the actions carried out by the various departments;
- standardize and harmonize the application of vector control methods;
- determine appropriate operational research agenda;
- discuss the legislative aspects of IVM;
- prepare a national action plan for IVM;
- provide guidance on the implementation of the GEF-supported project on demonstrating sustainable alternatives to DDT at the national level.

The committee met twice during the first half of 2005 and twice during 2006 and is currently discussing how to improve pesticide management at the national level. Morocco has also ratified many international conventions related to pesticides (Basel Convention, Rotterdam Convention and the Stockholm Convention).

### 3.6 Oman

In Oman, DDT was used in malaria control programmes from the 1970s when its use was strictly restricted for indoor residual spraying. It remained the only insecticide used for indoor residual spraying until 1992, when it was replaced by organophosphates and synthetic pyrethroids. Small amounts of DDT, however, were occasionally used between 1994 and 1998 for isolated outbreaks of leishmaniasis. The remaining stock of DDT was donated to another country in May 1998.

Although malaria eradication has ultimately depended on a strategy of chemical larviciding, several other vector control measures have been successfully conducted. One consisted of drying irrigation tanks once a week, as an environmental engineering measure. Covering wells, vegetation removal and the introduction of modern irrigation techniques has also been effective in reducing breeding places and modifying breeding conditions. In addition, biological vector control methods using local larvivorous fish have played an important role in reducing vector densities in a range of mosquito habitats such as wadis, tanks and wells.

The success of Oman in controlling malaria relied to a large extent on political commitment to ensure that appropriate resources were made available but also critical was intersectoral coordination by the different sectors, including affected communities. Given the absence of malaria in Oman, the challenge remains of maintaining appropriate vigilance and response capacity especially with the potential risk of malaria reintroduction and the spread of other vector-borne diseases such as cutaneous leishmaniasis. Although not a recipient of the GEF resources, Oman is committed to sharing its experiences of reducing reliance on the use of DDT and other insecticides with project countries.

### 3.7 Saudi Arabia

Indoor residual spraying is the main strategy for malaria control in Saudi Arabia. DDT was used until 1986 when it was replaced with organophosphates, which were then replaced in 1994 with pyrethroids because of insecticide resistance. Larviciding with temephos 50% emulsifiable concentrate (EC) was replaced in 2003 by insect growth regulators, *Bacillus thuringiensis israelensis* and larvivorous fish when *Culex* species (vectors of Rift Valley fever) were reported resistant. In the past 5 years, a total of 1 million insecticide-treated nets have been distributed to complement indoor residual spraying. Space spraying has been used to respond to epidemics. For both interventions, health education and continuous training are key components.

In terms of insecticide management, insecticides for public health are registered, legislated and licensed through the Saudi Arabia Standards Organization (SASO) and not by

the Ministry of Health. In all cases, a certificate of analysis should be provided by potential suppliers. Since quality control monitoring of insecticides is an essential component of pesticides management, it is mandatory that all insecticides used must be tested by SASO. The Ministry of Health, however, is responsible for disposal of expired insecticides and has adhered to WHO recommendations regarding application and disposal.

There are four pesticide factories in Saudi Arabia. Each factory follows its own formulation procedure, therefore insecticides are not re-packaged. In terms of storage, transport and distribution of insecticides, the country unfortunately has no legislation. Insecticides procured by the Ministry of Health through a tendering process are transported to the regions and to the field using ministry vehicles. Of the procured amount, 10% is stored in the Ministry of Health for emergency purposes. Monitoring of insecticide resistance has been crucial to technical decisions on which insecticides and strategies to use.

In implementing vector control interventions for elimination of malaria and other vector-borne diseases, in particular those interventions that rely on the use of insecticides, Saudi Arabia faces a number of challenges, including:

- the use of insecticides by a number of different sectors, making coordination problematic;
- no agency, other than the Ministry of Health, is monitoring insecticide resistance;
- management of pesticides is spread across all sectors;
- purchases of local products by some sectors are not according to prescribed specifications.

It is therefore recommended that Saudi Arabia ensures the implementation of a standardized pesticide policy, strengthens national capacity for routine monitoring and management of insecticide resistance in sentinel sites, strengthens the early warning system for vector-borne disease response, and strengthens border coordination with Yemen (an objective that has witnessed a dramatic decline in malaria cases in recent years) as the country aims at malaria elimination.

### 3.8 Sudan

Vector control interventions are integral components of the national strategic plan in Sudan, in line with the adopted stratification of malaria endemicity. The following interventions are being employed.

- In holo/hyperendemic areas (mainly in the South), insecticide-treated nets, environmental management and intermittent treatment are used.
- At irrigation schemes, the promotion of insecticide-treated nets, environmental management and indoor residual spraying are used.
- In urban areas, insecticide-treated nets, environmental management and chemical larviciding are used.
- In seasonal/mesoendemic areas (central Sudan), insecticide-treated nets and environmental management are used.

Space spraying is applied selectively during epidemics of malaria and other vector-borne diseases. Vector control policies have been directed to the use of chemicals only where and when necessary. Rather than the continuous use of a single product, there are regular shifts to various insecticides based on resistance monitoring and management strategies, applying the principles of rotation and mosaic in both agriculture and public health. A good example of this is the Gezira irrigation schemes, which are carried out in collaboration with the agriculture sector.

Pesticide management practices, in terms of policies and legislative frameworks, are governed by the 1974 Pesticide Act (later amended to the 1994 Pesticide and Pest Control Act). This legislation regulates all activities related to pesticides import, transport, storage, uses, formulation and disposal. The National Pesticides Committee is a multidisciplinary inter-ministerial committee, in which all stakeholders are represented. It is responsible for regulating pesticides for agricultural, public health and veterinary use.

The main challenge faced by Sudan is the management of obsolete pesticide stockpiles. Persistent organic pollutants total 229 tonnes, contaminated soils total 8861 tonnes and containers total 529 tonnes. In addition, there are approximately 901 tonnes of cotton seeds dressed with persistent organic pollutants.

The existing mechanisms for intersectoral collaboration on vector control include the following principal stakeholders.

- Federal Ministry of Health (National Malaria Control Programme, Occupational Health Department and State ministries of health), which is responsible for coordination.
- Multidisciplinary National Pesticide Council (Federal Ministry of Health, Ministry of Agriculture and Ministry of Environment and Tourism), which is responsible for developing regulations governing use of all insecticides, including DDT.
- Ministry of Agriculture and the Ministry of Irrigation and Water Management, which have a cooperation function.
- Nongovernmental organizations, community-based organizations (e.g. Sudanese Women's Union) and the private sector, which work in partnership.

### 3.9 Syrian Arab Republic

The main vector-borne diseases prevalent in the Syrian Arab Republic include three types of endemic leishmaniasis: anthroponotic cutaneous leishmaniasis, zoonotic cutaneous leishmaniasis and zoonotic visceral leishmaniasis. Indigenous malaria is also present due to *Plasmodium vivax*, combined with imported malaria (*P. falciparum*, *P. vivax* and mixed infections) and urinary schistosomiasis. In terms of the epidemiological situation of vector-borne diseases, cutaneous leishmaniasis is currently the primary public health problem and is spreading from two foci (Aleppo and the Euphrates plain) into eight other provinces.

In 2005 a total of 21 951 cases of cutaneous leishmaniasis were reported. Moreover, 18 cases of visceral leishmaniasis, 5 cases of schistosomiasis, and 18 cases of imported malaria were reported. The vector control plan of the Ministry of Health consists of early active case

detection, diagnosis and treatment, vector control (chemical and biological), training for capacity strengthening, cooperation and coordination with other concerned sectors and authorities, health education and community participation, and environmental management.

Between 1955 and 1970, the only pesticide used to control malaria vectors was DDT 75% WP; however, importation of this compound was stopped in 1976. Pesticides for public health purposes are used by the private sector as household pesticides, totalling 700 tonnes per year. In the public sector, the Ministry of Health uses 40 tonnes per year of vector control pesticides and the Ministry of Local Authority uses 200 tonnes per year to control pests. The source of 75%–90% of all pesticide needs in the country is from local formulators where the active ingredient is imported from outside.Pesticide registration, trade, handling and monitoring in the Syrian Arab Republic are regulated by decrees of the Ministry of Health. The following international conventions have also been ratified: the 1992 Basel Convention, and its amendments in 2004; the 2003 Rotterdam Convention on Prior Informed Consent; the 2005 Stockholm Convention on Persistent Organic Pollutants; and the revised text of the International Plant Protection Convention, 2004.

A three-stage project for centralization and safeguarding of obsolete pesticides is executed by the ministries of agriculture and local authority and environment under the direct supervision of experts from the Food and Agriculture Organization of the United Nations (FAO). An initial survey was carried out to estimate the quantities of obsolete pesticides in storage. A total of 580–600 tonnes of obsolete pesticides were found, of which 1575 kg DDT and a package of 450 tonnes have been centralized in two stores. The remaining 150 tonnes will soon be re-packaged and centralized. Finally, it is planned that the total quantities of obsolete pesticides will be transported abroad for safe disposal. International organizations are therefore invited to financially support the disposal of the abovementioned pesticides. The total estimated cost is about US$ 1.5 million to cover transportation and incineration.

### 3.10 Yemen

Among the seven countries of the Arabian peninsular, Yemen has by far the highest malaria burden, combined with the most difficult terrain. Other vector-borne diseases include onchocerciasis in small foci, lymphatic filariasis and widespread leishmaniasis. In 2000, the country was hit by a major epidemic of Rift Valley fever, and an outbreak of dengue fever transmitted by *Aedes aegypti*. There have been dengue outbreaks as recently as 2005.

Vector control methods deployed include chemical, environmental and biological measures. Indoor residual spraying is generally the preferred intervention over insecticide-treated nets. Larviciding and environmental management are implemented, as well as the use of larvivorous fish in appropriate situations. Insecticide space spraying has had good impact, especially against outbreaks of other diseases caused by arboviruses, such as dengue and Rift Valley fever.

In view of the extensive use of pesticides in agriculture, the Ministry of Agriculture is the agreed regulatory authority for pesticides. The Ministry of Health is an active member of the pesticide board. Since 1990, Yemen has banned the use of the nine persistent organic

pollutants, namely: aldrin, toxaphene, DDT, chlordane, dieldrin, endrin, hexachlorobenzene, heptachlor and mirex. Yemen neither produces nor formulates pesticides, except aerosol formulations for household purposes. All imported pesticides enter Yemen in their original packaging. Applications of pesticide products are in accordance with FAO and WHO guidelines. Accurate records are kept of application sites, amounts and dosage. There is regular monitoring of resistance to insecticides used by the National Malaria Control Programme following WHO guidelines.

The IVM steering committee was established by ministerial decree number 12/2 in 2005. The first meeting, in March 2005, discussed the following issues:

- a transition from vector-borne disease-specific programmes to a unit that addresses all vector-borne diseases;
- the role of different sectors in the implementation of IVM;
- policy and institutional framework (supporting legislation, regulations).

The biggest challenge is to sustain the important component of intersectoral coordination for IVM implementation. Yemen regards GEF support as an opportunity to strengthen and sustain intersectoral coordination and national capacity for vector control.

## 4. TECHNICAL PRESENTATIONS ON INTERSECTORAL ACTION FOR HEALTH, PESTICIDE MANAGEMENT AND VECTOR CONTROL NEEDS ASSESSMENT

### 4.1 Implementation of vector control and the process to establish national intersectoral action

*Dr R. Bos*

The nature of sectors, the intersectoral dimension of IVM and the mechanisms of intersectoral action for health need to be examined. The following definition of IVM has explicit and implicit references to intersectoral action: a process of evidence-based decision-making procedures aimed to plan, implement, monitor and evaluate targeted, cost-effective and sustainable combinations of regulatory and operational vector control measures, based on the principles of subsidiarity, intersectoral collaboration and partnership.

Sectors represent societal interests that have gained sufficient political weight to claim their own segment of the governance structure. Within this structure, sectors have to compete for limited financial resources. Logically, in this context, intersectoral collaboration requires incentives. In addition, sectors tend to have a disciplinary focus, and professionals in different sectors have difficulties in understanding each other.

Cross-cutting issues such as health and environment require particular arrangements at policy, regulatory and programme level, and special financing to get them started or even to keep them going. They also require staff with skills in intersectoral negotiation and decision-making.

An understated aspect of IVM is the incremental construction of IVM programmes. They should be built up from components, in the following order.

| **Collective measures** | **Personal protection** |
|---|---|
| Environmental management | Housing improvement |
| Manipulation (recurrent) | |
| Modification (permanent) | |
| Biological control | Repellents |
| Larvivorous fish | |
| Other predators | |
| Bio-regulators | |
| Bio-toxins | |
| Chemical control | Insecticide-treated nets |
| Larviciding | |
| Indoor residual spraying | |
| Insecticide-treated nets (high-use coverage) | |
| Space spraying | |

In this incremental process, intersectoral links would depend on the composition of the IVM programme. For example, if the emphasis is on environmental management, intersectoral links would relate to sectors with an impact on environmental determinants of transmission in a specific setting. However, if the emphasis is on chemical control, the intersectoral links would need to address issues of pesticide registration, management and disposal with ministries of environment and agriculture and with customs authorities.

A conducive policy framework is essential for intersectoral collaboration, and relevant policies for IVM include the health sector, the environment (with specific reference to persistent organic pollutants), natural resources (e.g. a national water policy), and the development policies of different "productive" and "service-providing" public sectors. Institutional arrangements for an intersectoral implementation of policies should first consider existing intersectoral structures, such as the National Economic Planning Council, the Environmental Protection Agency or the Science and Technology Council. The most appropriate arrangement to suit the specific needs of intersectoral collaboration may be through these existing structures, or a special time limited arrangement under a memorandum of understanding may be created. High-level intersectoral committees will only work if they are properly resourced and if their responsibilities are clearly defined.

Finally, a programme of human resources development aimed at developing skills of intersectoral negotiation and decision-making among professionals, irrespective of their sectoral affiliation, can support efforts to engage other sectors in alternative vector control approaches.

### 4.2 Pesticide management: common ground for health, environment and agriculture

*Dr M. Zaim*

The diminishing arsenal of safe and cost-effective public health pesticides, and the increasing challenges of their management under decentralized health systems, as well as the increasing use of pesticides by individuals and communities for personal protection and vector control, requires national policies, legislation and appropriate guidelines for their safe and effective use. This requires effective intersectoral collaboration, notably with ministries of agriculture and environment.

While most countries have legislation for registration of agricultural pesticides, a significant number have yet to establish such regulations for vector-control pesticides, professional pest control products and household pesticides. The resources and infrastructure for efficient registration of public health pesticides is inadequate in the majority of developing Member States, where they are at the highest risk of vector-born diseases, and post-registration monitoring and evaluation of public health pesticide applications is notably weak.

In recent years, WHO has intensified its efforts to promote sound management of public health pesticides, in collaboration with FAO and UNEP, with the following methods:

- Development and promotion of *Guidelines on the management of public health pesticides*, to promote judicious pesticide management practices that minimize potential health and environmental risks.
- Establishment of a joint programme with FAO on development of specifications for pesticides and the establishment of a harmonized procedure for development of standards for quality control and international trade.
- Development of guidelines for national laboratories, jointly with FAO and the Collaborative International Pesticides Analytical Council (CIPAC), to assist countries in strengthening their pesticide quality control activities and expanding the network of WHO collaborating centres on quality control of pesticides to support countries that lack capacity.
- Development of a global strategic framework for IVM to address deficiencies in vector control and to improve the efficacy, cost-effectiveness, ecological soundness and sustainability of vector-borne disease control programmes.
- Development of training materials on decision-making for judicious use of insecticides and organizing workshops on training-of-trainers for respective national courses.
- Development of a multi-level course on the sound management of pesticides and on diagnosis and treatment of pesticide poisoning and formulation of training courses adapted to the specific needs of different target group(s).
- Development of guidelines on situation analysis for public health pesticide management, to assist countries in needs assessment and the development of sound action plans to strengthen such practices at national level.

### 4.3 Introduction to the VCNA tools and guidelines

*Dr J. Williams*

Countries face significant challenges to vector control, such as:

- ineffective national intersectoral action to properly address the causes of local disease burdens;
- diminishing resources available to national programmes, which limits their management and technical scope;
- constraints to the implementation of cost-effective and sustainable interventions, resulting from increasing vector resistance to pesticides and inadequate national capacity for the evaluation of local eco-epidemiology of diseases.

In order for vector control to be effective it should address the vector carrier of the disease, the human target of the disease (individual and community), and the milieu within which at-risk individuals and communities live. The implementation of vector control needs to be innovative, enabling the scale-up of cost-effective and sustainable interventions through delivery systems that are responsive to changing local situations and which protect the continued utility of existing tools. This is in agreement with the policy of IVM advocated by WHO. National action to improve vector control will only be realistic if it is based on a comprehensive assessment of needs and opportunities within the context of current and predicted vector-borne disease burdens. VCNA is, therefore, a rational first step to establishing effective national IVM.

The framework proposed by the guidelines is both comprehensive and flexible. It permits adaptation to suit the existing stage of national programme development or complexity, and allows discrete evaluations on specific vector control aspects as well as general system-wide evaluations. The outline of the VCNA guidelines is as follows.

Chapter 1 (Introduction) covers the purpose, specific objectives and scope of the guidelines, as well as the intended users. The guidelines: a) provide a framework for assessing needs for introducing or improving vector control programmes; b) propose a national processes, and methodology and tools for the needs assessment; and c) provide guidance on the use of assessment outcomes for improving vector control programmes. The intended targets are government officials, who are normally charged with the planning and design of health sector programmes.

Chapter 2 (Assessment procedure) defines basic concepts and principles, and discusses procedures for conducting the VCNA. A three-phase assessment approach is proposed. Firstly, a preparatory phase which covers the establishment of intersectoral mechanisms for overseeing the conduct of the VCNA, national consultation and consensus building. The second phase involves the actual conduct of the assessment and a third (or follow-up) phase proposes procedures for using the assessment outcomes to develop IVM strategies and plans of action.

Chapter 3 (Tools and methods) describes specific tools and methods for conducting the VCNA. Firstly, priority areas for situation analysis are proposed, each with primary information requirements as well as methodologies for collecting the needed information. Then, methodologies for identifying the major constraints faced by the national vector control are proposed, citing the root causes of major constraints, and determining the needs and

opportunities for establishing or strengthening the national programmes. Finally, the primary products of the VCNA are outlined.

Chapter 4 lists the references and suggested further reading.

### 4.4 Summary of the outcome of the group work on the VCNA guidelines and tools

*Dr A. Mnzava*

Members of the working groups suggested the inclusion of community mobilization and pesticide management practices in the VCNA guidelines. It was also proposed that intrasectoral coordination be included as an important aspect, in addition to intersectoral collaboration. Appropriate questions should be developed to address these areas of the guidelines in the questionnaire. The participants concurred with the recommendation of the Steering Committee on the identification of consultants to be briefed on the guidelines and the tools to assist countries in the carrying out of the VCNA, report and project proposal write-up. A request was made to translate the guidelines into French.

In terms of the tools, the groups proposed that the scoring section of the questionnaire be avoided. This was also suggested by the Steering Committee, with the concern that criteria and cut-off points for scoring were not completely clear. To ensure consistency with the information contained in the guidelines, it was felt that the same titles and subheadings should be used in the questionnaire and a clear distinction made between situation analysis and needs assessment. It was recommended that the questions be rephrased and that the use of tables be avoided, as far as possible, as these would limit the amount and content of information collected.

There were differing opinions regarding the level of detail required from the information sought by the questionnaire. This focused on the questions regarding vector bionomics. Some members felt that a needs assessment focusing on the management system would get diverted from its objectives by detailed questions, e.g. on peak biting times or blood meal preference of the vectors. Others argued that detailed information on vector bionomics and local epidemiology would be essential to put the management needs into perspective and prioritize capacity-building efforts.

Clearly, a balance had to be struck between a questionnaire that provided superficial information that had little meaning for decision-making on vector control needs, and a questionnaire with so great a level of detail as to make the exercise impractical. It was observed that the purpose of the VCNA guidelines went beyond its application in the context of the EMRO/GEF project. Therefore it needs to be comprehensive, and user groups should consider the questionnaire as a menu from which to select the relevant focus and questions for a particular objective. A lack of justification through appropriate evidence presentation would make it a bureaucratic exercise that had lost the potential of a real analysis.

As indicated by the Steering Committee, one of the needs that should be addressed was the gap in the information and knowledge base. Such needs could be detected only by the preparation of an inventory of the current knowledge on vector bionomics and vector-borne

disease epidemiology at the national level, and evaluating the reliability of the information. The overall impression for the Eastern Mediterranean Region was that in most countries the knowledge base on vector-borne diseases was weak and the datasets supporting it often outdated.

The plenary also addressed the issue of user-friendliness. It had been acknowledged that the guidelines and questionnaire were addressing a complex issue and that for that reason they themselves could not be oversimplified. It was, however, requested that the questionnaire be accompanied by an explanatory brochure that clarified, for each question, the objectives, relevance and expected contribution to the overall process. Finally, the major areas absent from the questionnaire were identified. These included questions about the procurement system, the position of vector control and vector-borne disease control in the context of regular health services, and the facilities for prevention and control of pesticide poisoning.

Further questions were raised regarding the expected outcome of the VCNA (i.e. an action plan to address the needs, focusing on demonstration sites selected in accordance with agreed criteria). Participants agreed that for demonstration projects to be meaningful, they should be of a considerable size, and this raised the issue of whether funds could be solicited from sources other than GEF. Also, should demonstration projects show the feasibility of eliminating DDT by the introduction of alternative vector control methods, but at an elevated cost, this cost would have be covered on a permanent basis.

The reality is that current vector control programmes are centred on the use of insecticides. The VCNA would allow countries to explore options for alternatives without prejudice. It should also link to the national implementation plans for the Stockholm Convention. The permanent dynamics around vector ecologies and behaviours and the transmission of vector-borne diseases mean the VCNA should not be a static one-off exercise. For GEF, the VCNA was simply a tool to support the development of demonstration projects. If the needs identified included environmental modifications requiring substantial capital investments, then there would be no objection to countries approaching bilateral or multilateral donor agencies for additional funding. However, GEF also had a history of providing capital investments, when needed, in other areas such as biodiversity conservation.

### 4.5 Selection criteria for demonstration sites

*Dr J. Williams*

The selection of demonstration sites will be primarily determined by the outcome of the VCNA. The criteria for selection should include, but not necessarily be limited to, the following elements.

- The existence of an ongoing vector control programme to which the project will provide significant incremental activities and potential benefits. Indoor residual spraying with DDT should be a real or potential component of this vector control programme.
- A representative scenario of the country vector control situation, so that lessons learnt from the demonstration would have the best chance of successful replication in other parts of the country. This could include:

  - the presence of major vector-borne disease(s) which could make possible an appropriate introduction of alternative intervention to DDT, preferably within the context of a multi-disease control approach;
  - opportunities for joint IVM and IPM implementation;
  - opportunities for proactive community participation and empowerment.
- At regional level, the various national demonstration sites should make up a comprehensive and fully representative picture of the ecotypes that sustain vector-borne disease transmission.
- Opportunities to implement major activities and outcomes envisaged in the project (PDF-B) document.
- The presence of critical mass and range of local technical expertise to assure sustainability of efforts and benefits, both during and after project implementation.

Although the project indicates two demonstration sites, it is reasonable to expect that in some countries a single demonstration site be chosen rather than two. The recommendations concerning the demonstration sites will require clear justification, with reference to the criteria. The final selection of the demonstration sites will, however, need the concurrence of the project Steering Committee at its second meeting.

### 4.6 Regional and country work plans

*Dr A. Mnzava*

Regional and country work plans have already received input from the countries as a result of intercountry meetings and previous visits to the countries, as well as by e-mail. Feedback from the first Steering Committee meeting included concern over the time-frame of the PDF-B phase. It was queried whether it could realistically be expected that countries would complete an in-depth VCNA and develop the proposal in the period of time allocated. It was clarified that these were not two separate items; the implementation of the VCNA would provide the baseline and other information required for the formulation of the project brief, and that formulation was, in fact, an integral part of the VCNA. It was acknowledged, however, that sufficient time was required to appraise all country proposals at the regional level, to ensure there were no serious discrepancies between countries and to consolidate the proposals into one regional project brief.

Based on the experience of other regions, the time-frame was considered realistic. It would, however, require strict monitoring to ensure that objectives were met in time. The timing of some items, in particular the organization of Steering Committee meetings and intercountry meetings, should remain flexible and be linked to progress made in the delivery of tangible outputs. As a resource-saving measure it was agreed that the two planned Steering Committee meetings would be organized back-to-back with the two planned country meetings. There were no major changes proposed on the regional and country plans.

## 5. CONCLUSIONS

Vector-borne diseases continue to be a major public health problem in countries of the WHO Eastern Mediterranean Region and there is a clear and present danger of their further spread and intensification. Vector control continues to be a key element in the overall strategy for management of vector-borne diseases; however, several challenges remain that affect its effectiveness, sustainability and acceptability and a need to strengthen vector control services is apparent.

The meeting reviewed progress in the development of the EMRO/GEF proposal that focuses on testing the feasibility and cost-effectiveness of vector control alternatives to indoor residual spraying with DDT in nationally and regionally representative sites. In six of the eight countries eligible in principle for GEF support, the Stockholm Treaty has been ratified (a condition to receive support under the main phase of the project); in the remaining two countries, the ratification process is well under way. The meeting also reviewed the regional plan for the implementation of the PDF-B phase of the EMRO/GEF project over the next 18 months. All countries involved expressed their satisfaction with progress thus far, and approved the work plans for the PDF-B phase of the EMRO/GEF project at the regional and national levels.

The meeting noted that the GEF project provides an important opportunity to accelerate the process of developing national IVM programmes, while working towards the goals set by the Stockholm Convention on the reduction and elimination of DDT use for vector control. The meeting also approved the VCNA guidelines and proposed some changes to the questionnaire, such as restricting the use of tables as much as possible.

The meeting recognized that in the majority of countries, intersectoral bodies or mechanisms already exist to deal with a range of cross-sectoral issues. They may address general planning or science and technology issues, have more specific mandates in the area of environmental protection, or be as specific as the national chemical safety programmes that are relevant to the VCNA. The meeting also adopted the criteria and procedures for the selection of demonstration sites.

In reviewing the country reports, the meeting identified two areas that require intensified efforts at country level. The first was in the area of sound management of pesticides, in all their aspects from registration and importation to safe disposal, in order to ensure their judicious use for agriculture, livestock and public health purposes and at the household level. The second was in the area of environmental and biological control.

## 6. RECOMMENDATIONS

*Member States*

1. Countries should follow up implementation of Regional Committee resolution EM/RC52/R.6 on integrated vector management, with special emphasis on strengthening intersectoral coordination.

2. While implementing the PDF-B phase of the project and in line with the requirements of the Stockholm Convention, countries should implement cost-effective alternatives to DDT as part of the goal to establish a national IVM programme.

3. Countries should make use of the VCNA process to build on existing intersectoral mechanisms at country level in order to construct an all-inclusive basis for IVM.

4. The process of VCNA, promotion of IVM and the selection of demonstration sites should be part of a concerted effort to formulate a full-scale proposal for the EMRO/GEF project.

5. Countries should strengthen national procedures and programmes for sound management of pesticides, placing greater emphasis on the environmental and biological control components of IVM (where appropriate) while ensuring that transmission is interrupted to accepted targets and the use of chemicals is the last option.

*WHO*

6. WHO should finalize the VCNA guidelines and tools without delay, incorporating the amendments and suggestions presented during the meeting.

7. WHO should identify a group of potential consultants to support countries in carrying out VCNA, in report and project proposal write-up for GEF funding.

## Annex 1

## AGENDA

1. Opening session

2. Strengthening national capacities in vector control in countries of the Region

3. Country experiences in meeting the obligations of the Stockholm Convention on Persistent Organic Pollutants

4. An overview of the EMRO/GEF project proposal to demonstrate sustainable alternatives to DDT through IVM

5. Strengthening intersectoral action for health at country level as a pre-requisite for IVM implementation

6. Review of the regional and national work plans for the EMRO/GEF project with emphasis on the PDF-B activities

7. Review guidelines and tools for carrying out VCNA as part of the PDF-B activities

8. Criteria for the identification of districts for demonstration activities

9. Conclusions and recommendations

10. Closing session

**Annex 2**

## PROGRAMME

**Monday, 6 March 2006**

| | |
|---|---|
| 08:30–09:00 | Registration |
| 09:00–09:45 | Opening session<br>• Message from Dr Hussein A. Gezairy, Regional Director, WHO/EMRO<br>• Message from H.E. Minister of Health, Oman<br>• Introduction of participants |
| 09:45–10:15 | Objectives of the workshop, method of work and nomination of officers/ *Dr Z. Hallaj* |
| *Briefing on the EMRO/GEF project* | |
| 10:15–10:30 | EMRO/GEF project to demonstrate sustainable alternatives to DDT through IVM/ *Dr A. Mnzava* |
| 10:30–11:00 | Summary of experiences of GEF/DDT projects in the context of the Stockholm Convention in other regions/ *Dr J. Williams* |
| 11:00–11:20 | Co-financing and incremental cost: requirements for GEF funding/ *Dr M. Kern* |
| 11:20–12:10 | Discussion |
| *Country experiences* | |
| 12:10–12:40 | The experience of Oman in reducing the reliance on the use of DDT and pesticides in public health/ *Dr S. Wahaibi* |
| 12:40–13:10 | Country reports on vector control interventions, intersectoral coordination, status of obsolete stocks<br>• Sudan<br>• Republic of Yemen |
| 13:10–14:20 | Discussion |
| 14:20–15:20 | Country reports on vector control interventions, intersectoral coordination, status of obsolete stocks<br>• Djibouti<br>• Egypt<br>• Islamic Republic of Iran<br>• Morocco |
| 15:20–16:00 | Discussion |
| 16:00–17:00 | Country reports on vector control interventions, intersectoral coordination, status of obsolete stocks<br>• Jordan<br>• Saudi Arabia<br>• Syrian Arab Republic |
| 17:00–17:30 | Discussion |

**Tuesday, 7 March 2006**

*Strengthening intersectoral action for health*

08:30–09:00 Process for establishment of national intersectoral coordination, policy and institutional frameworks/ *Dr R. Bos*

09:00–09:20 Pesticide management: common ground for health, environment and agriculture/ *Dr M. Zaim*

09:20–09:50 Discussion

*VCNA guidelines and tools for IVM*

09:50–10:30 Introduction to the draft VCNA guidelines and tools/ *Dr J. Williams and Dr R. Bos*

10:30–16:00 Group work to review content and relevance of the VCNA guidelines and tools at country level

- Morocco and Djibouti
- Jordan, Syrian Arab Republic, Islamic Republic of Iran and Egypt
- Sudan and Oman
- Yemen and Saudi Arabia

16:00–17:00 Working group presentations and discussions on the draft VCNA tools and guidelines

**Wednesday, 8 March 2006**

08:30–10:15 Working group presentations and discussions on the draft VCNA tools and guidelines

10:15–11:00 Introduction to the overall and specific national work plans of the GEF project/ *Dr A. Mnzava*

*Regional and country work plans on project implementation*

11:00–12:00 Working groups

- Djibouti
- Egypt
- Islamic Republic of Iran
- Jordan
- Morocco
- Sudan
- Syrian Arab Republic
- Yemen

12:00–14:00 *Plenary session*
Working group presentations and discussions on the overall and specific national work plans of the GEF project

*Format for full project proposal*

14:00–14:30 Introduction to the format for full project proposal/ *Dr M. Kern and Dr J. Williams*

14:30–15:15 Discussion

15:15–16:15 Conclusions and recommendations

16:15–16:45 Closing session

**Annex 3**

## LIST OF PARTICIPANTS

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