AFRICAN CSOs AND EXPERTS MEETING ON DDT

Co-organized by

DAR ES SALAAM, TANZANIA 6 - 8 APRIL 2009

African Violet

AGENDA

For Environment and Responsible Development

PAN AFRICA

AFRICAN CSOs AND EXPERTS MEETING ON DDT

DAR ES SALAAM, TANZANIA

6 - 8 APRIL 2009

Co-organized by

AGENDA for Environment and Responsible Development (AGENDA)
& Pesticide Action Network (PAN) Africa

With support from

Marisla Foundation – Global Green-Grants Fund (USA)
International POPs Elimination Network (IPEN)
Pesticide Action Network (PAN) North America

TABLE OF CONTENTS

LIST OF ABBREVIATIONS AND ACRONYMS v
ACKNOWLEDGMENTS vii
1. INTRODUCTION 1
2. OPENING THE MEETING 1
2.1. Welcome Remarks and Workshop Briefing 1
2.2. Opening Speech 2
3. PAPER PRESENTATIONS 2
3.1. Keynote Paper 2
3.2. National papers on Malaria Control plans and DDT experience 3
3.2.1 Panel Discussion 4
3.3. NGO Experiences on Country Malaria Control Programmes/ Plans 5
3.3.1 Physicians for Social Responsibility (PSR)-Kenya 5
3.3.2 PAN-Ethiopia 5
3.3.3 Environmental Youth Action Network (EYAN) - Ghana 5
3.3.4 Uganda Network on Toxic Free Malaria Control (UNETMAC) - Uganda 6
3.3.5 Sustainable Research & Action for Environmental Development (SRADev) - Nigeria 6
3.3.6 AGENDA - Tanzania 7
3.3.7 Justiça Ambiental (JA!) - Mozambique 8
3.3.8 Entomological Society of Zambia (ESZ) - Zambia 8
3.3.9 Indaloyethu Environmnetal Cooperative - South Africa 8
3.4. Experiences with alternatives to DDT 9
3.4.1 Pyrethrum Board of Kenya 9
3.4.2 UNEP 10
3.4.3 KEMRI/ICIPE Malaria Program, Ministry of Health and Municipal Council of Malindi 11
3.4.4 Discussion and way forward 12
3.5. International Influences to National Programmes: Policies and Funding 12
3.5.1 Global Foundations and Initiatives 12
3.5.2 Country Policies on DDT-Germany 13
3.5.3 Country Policies on DDT-USA 13
4. WORKING GROUPS 14
4.1. Task 1: Identification and highlighting common obstacles, needs and strategies for African NGOs in the campaign of effective malaria control without DDT 14
4.2. Task 2: Highlight on the contents of the Programme (What, When, How, Who?) 16
4.2.1 WG themes 16
4.2.2 Short term actions 16
4.2.3 Medium term actions (5 years from 2009-2014) 17
5. CLOSING 17
ANNEXES 19
ANNEX 1: WORKSHOP PROGRAM 19
ANNEX 2: LIST OF PARTICIPANTS 22
ANNEX 3: DAR-ES-SALAAM DECLARATION ON ALTERNATIVE APPROACHES TO DDT USE FOR VECTOR CONTROL – 8TH APRIL 2009 24
ANNEX 4: Statement for COP4: Towards malaria reduction without DDT 27

ANNEX 5: PRESENTATIONS 29
ANNEX 6: WORK GROUP SUMMARY: Common obstacles, needs and strategies for African NGOs 91
ANNEX 7: WORK GROUP SUMMARY: REGIONAL PROGRAMME 94
ANNEX 8: FORMATION OF REGIONAL NETWORK 97
ANNEX 9: MEETING PHOTOS 98

LIST OF ABBREVIATIONS AND ACRONYMS

ACT	Arteminisin-Based Combination Therapy
AGENDA	AGENDA for Environment and Responsible Development
AMREF	African Medical and Research Foundation
CHAI	Clintons HIV/Aids Initiative
COP	Committee of Parties
CPAM	Community Pesticide Action Monitoring
CSO	Community Service Organization
DDT	Dichloro-Diphenyl-Trichloroethane
DSSA	Demonstrating and Scaling-up of Sustainable Alternatives
ESZ	Entomological Society of Zambia
EU	European Union
EYAN	Environmental Youth Action Network
GEF	Global Environmental Facility
GFTAM	Global Fund to Fight Aids, Tuberculosis and Malaria
ICIPE	International Centre of Insect Physiology and Ecology
IPTP	Intermittent Preventive Treatment for Pregnant
ITN	Insecticide Treated Nets
IRS	Indoor Residue Spray
IVM	Integrated Vector Management
JA!	Justiça Ambiental
KEMRI	Kenya Medical Research Institute
PSR	Physicians for Social Responsibility
NEMA	National Environmental Management Agency
NGO	Non-Governmental Organization
NIP	National Implementation Programme
NMCP	National Malaria Control Programme
PAN	Pesticide Action Network
PBK	Pyrethrum Board of Kenya
PMI	President's Malaria Initiative
POPs	Persistent Organic Pollutants
SRADev	Sustainable Research & Action for Environmental Development

TBC	Tanzania Broadcast Corporation
UNEP	United Nations Environmental Programme
UNETMAC	Uganda Network on Toxic Free Malaria Control
WHO	World Health Organization
WG	Working Groups

ACKNOWLEDGMENTS

AGENDA and PAN Africa would like to extend their sincere appreciation to Marisla Foundation – Global Green-Grants Fund (USA), International POPs Elimination Network (IPEN) and Pesticide Action Network (PAN) North America for their financial support to the meeting.

We would also like to thank Governments representatives from Ethiopia, Kenya and Uganda; UNEP/WHO/GEF DSSA Global Programme, Pyrethrum Board of Kenya, KEMRI and ICIPE; and all participants for sharing their experience to make the meeting a success.

1. INTRODUCTION

AGENDA for Environment and Responsible Development (AGENDA) in collaboration with the Pesticide Action Network (PAN) Africa organized an African CSOs and Expert Meeting on DDT use in malaria control programmes for indoor residual spraying (IRS) against available safer alternatives.

The meeting was called in realizing the fact that a number of initiatives have been undertaken to develop alternatives to DDT for disease vector control in some African countries, but they are done in isolation and there are no combined efforts to publicize and implement them on the ground. The meeting therefore brought together some of those who have been working on malaria and DDT including NGOs/CSOs, government representatives, intergovernmental organizations, researchers and academia, with the purpose of sharing information and experiences on current state of national malaria programs and DDT use, alternatives to DDT and international influences to national programmes, especially policies and funding issues, followed by crafting a way forward.

The meeting was able to come up with a regional programme towards safe and sustainable malaria control without reliance on DDT for IRS, a declaration and a Statement for COP4 *"Towards malaria reduction without DDT",* which addresses a concern that DDT use has been on the increase worldwide since the Stockholm Convention, coupled with failure of these countries to use DDT according to guidelines set by the World Health Organization (WHO). The meeting took place at Mbezi Garden Hotel, Dar es Salaam, Tanzania from 6 to 8 April 2009.

2. OPENING THE MEETING

2.1. Welcome Remarks and Workshop Briefing

Executive Chairman of AGENDA, Prof. Jamidu Katima welcomed the participants to Tanzania and to the meeting and very briefly highlighted the aims of the meeting which, were to deliberate activities on DDT in Africa, to come out with something to

share with others as regard to DDT situation in Africa and to develop an agenda to pave way for dealing with DDT in Africa. He thereafter, requested all participants to briefly introduce themselves and their countries, organizations or departments they are representing. He wished all the participants fruitful discussions.

2.2. Opening Speech

In a very brief opening speech, the Regional Coordinator of the Pesticide Action Network (PAN) Africa Dr. Abou Thiam, emphasized on the rationale of the meeting as to bring together key stakeholders in the region for deliberating on what the DDT situation in Africa is, and encouraged the participants to develop a common strategy of action, which will constitute an input to the Fourth Conference of the Parties to The Stockholm Convention on POPs (COP4) to be held in Geneva, in early May 2009. With those few remarks he declared the meeting officially open, and wished the participants focused deliberations.

3. PAPER PRESENTATIONS

3.1. Keynote Paper

The general concept/keynote paper (Annex 5) was presented by Prof. Jamidu Katima from AGENDA (Tanzania). The paper points out some existing debates on DDT which shows overall that most of the figures presented on malaria deaths are unrealistically high and over-exaggerated, especially in Sub-Saharan Africa. The paper also highlights the fact that malaria increase in many countries may be due to a complex array of factors, rather than solely attributing it to reduced use of DDT. The paper analyzes the 2006 WHO position paper on global malaria programme and DDT, which shows various possible options for malaria interventions using IRS, in a logical sequence which shows that DDT IRS for malaria vector control should come as the last resort.

Shortcomings towards implementation of the Stockholm Convention in countries have been pointed out as the absence of stringent measures when applying DDT in many countries, inadequate research for safe, effective and affordable alternatives, uncertainties associated with DDT and its alternatives, and disproportionate funding on malaria interventions, mainly focusing on DDT use for IRS.

Challenges facing NGOs in campaigning against DDT use for malaria vector control in Africa includes lack of political will in some governments, poverty which limits affordability of non-DDT solutions to most local communities, adequacy of research capacity for non-DDT alternatives and inadequate information to convince the COP that non-DDT alternatives for malaria vector control offer a sustainable solution to the problem. The paper calls for importance of sharing information on country experiences in fighting DDT use in malaria vector control programs, alternatives to DDT, building on success stories and constraints, and to have a position statement for the COP4.

3.2. National papers on Malaria Control plans and DDT experience

Three papers presented by Ethiopia, Kenya and Uganda (Annex 5) revealed that Ethiopia and Uganda are using DDT after applying for exemptions from WHO to re-introduce DDT use for malaria vector control programmes, and it is still banned in Kenya. The goal of the Ethiopian government is to eliminate malaria by 2020 by employing such strategies as early malaria diagnosis and prompt treatment, selective vector control (IRS, ITNs), environmental control including abates, early detection and prompt containment of epidemics, supportive surveillance, health education and training. IRS has been implemented in Ethiopia for the past 45 years for malaria epidemic control, by 75% using DDT due to such reasons as cheap, effective and long lasting. Ethiopia demonstrated a well documented DDT IRS program which includes various techniques used, training of applicators, education/preparation of houses for spraying, and provision of safety materials and equipment.

Uganda has DDT IRS policy which was formed by consultation with various stakeholders including Sector Ministries, NEMA, Agro and Fish Export Community, International bodies, etc. The policy formulation also came as a result of scientific studies by local scientists, conducting comparative insecticide studies, literature review on DDT, consultation with other NMCP conducting DDT IRS in other countries. The programme was successfully implemented with high coverage, with more than 92% of targeted houses sprayed in all areas, high compliance and acceptance from the

community members, protecting more than 2 million people in 2 years. Other success stories includes rapid decline of malaria parastemia from 30% to 4%.

The Kenyan national malaria control program embraces non-DDT alternatives such as carbamates, organophosphates and pyrethroids in malaria vector control, which have brought about acceptable results, with so many success stories. DDT use is restricted, and can only be used as the last resort with emerging malaria epidemics, in accordance with the Stockholm Convention on POPs and WHO guidelines.

General challenges associated with DDT use in Ethiopia and Uganda include emerging vector resistance against DDT and alternatives, capacity (lack thereof) to monitor environmental fate and transport of DDT, the absence of information on alternatives to DDT, low awareness on environmental and human health effects of DDT, and failure to comply with WHO and Stockholm Convention guidelines during implementation of DDT IRS programs. In addition, general concerns on non-DDT vector control methods are pointed out as the viability, affordability (cost benefit analysis), acceptability, research capacity, data availability, potential environmental effects, and community awareness. Moreover, limitation to narrow coverage is also an important concern for non-DDT alternatives, coupled with lack of adequate funding for non-DDT alternatives, since very few agencies are interested in funding for non- DDT campaigns for malaria control.

3.2.1 Panel Discussion

After a lengthy Q/A session, a general consensus by the participants is that DDT is not as cheap as it is thought to be, if one considers the whole life cycle of the chemical. There is no need to scale up national malaria control programmes that embrace DDT for IRS currently practiced Ethiopia or Uganda to other countries in the region. The aim should be focusing on non-DDT alternatives, since they have proven to be working, from Kenyan experience. In addition, there is common understanding towards strengthening capacity for vector resistance monitoring, speed up research on non-DDT alternatives, and if need be, appropriately applying the Stockholm Convention and WHO guidelines on DDT IRS, promote experience sharing and use integrated vector management approach, with community involvement as one of the

major components. Questions still remain as to how all these approaches can be clustered have a common ground, how do we get commitments from governments; how to identify funding sources that are sustainable, including funding for procurement.

3.3. NGO Experiences on Country Malaria Control Programmes/ Plans

3.3.1 Physicians for Social Responsibility (PSR)-Kenya

There is an indication of a broad spectrum of NGO involvement in Kenya (Annex 5), including, among others, involvement of PSR-Kenya in establishing National Steering Committee of the Stockholm Convention and chairing Expert committee on DDT and Malaria, involvement in policy formulation, participation in expert debates on Kenyan DDT for malaria policy development, involvement of AMREF in research and capacity building projects.

3.3.2 PAN-Ethiopia

PAN Ethiopia conducted a study on assessment of pesticide use, practice and hazards in the Ethiopian Rift Valley (Annex 5) which showed that about 30% of the targeted population confirmed that they are using DDT for Agriculture. Elderly people drink diluted cup of DDT for "Malaria prevention". Comparative study of impacts of cotton IPM in southern Ethiopia Rift Valley also showed that 30% of farmers use DDT for Agriculture pest control. As a consequence, DDT residues have been found in export coffee. Ethiopia also has a DDT formulation plant at the Ethiopian Rift Valley, whose discharges affect the Rift Valley bio-diversity. Problems associated with DDT in Ethiopia are attributed to misuse of DDT by farmers/sprayers, producers (Adami Tulu pesticide Plant) and retailers; lack of awareness/knowledge at all levels, availability (purchase cost & proximity) and inaccurate estimation of DDT required by Ministry of Health.

3.3.3 Environmental Youth Action Network (EYAN) - Ghana

In Ghana (Annex 5), EPA, which is the regulatory body in Ghana with the mandate to register pesticides for use in the country, approved four products for residual spraying purposes which are Bistar 10WP (Bifenthrin), Icon 10 CS (Lambda

cyhalothrin), Delet 2.5 EC 9 Deltamethrin and Vectorgaurd 40 WP (Pirimiphos methyl). These products have been tried and tested by the WHO and recommended for residual spraying against mosquitoes. Based on these results, EPA recommends that the Government of Ghana should resist any external pressures to re-introduce DDT into the country, since equally effective alternatives have been approved for use in the country.

3.3.4 Uganda Network on Toxic Free Malaria Control (UNETMAC) - Uganda

NGO Experience from Uganda (Annex 5) shows that National Environmental Agency (NEMA) okayed the use of DDT in December 2006. In April-May 2007, DDT spraying was done in the districts of Oyam and Apac. A court injunction on DDT spraying was granted in June-July 2007. NGOs observe major challenges faced on the use of DDT in Uganda, including limited public sensitization, limited training for the spray operators, lack of legal framework (still in draft), inadequate infrastructure (using school buildings as stores), limited financial resources (donor dependence), limited public acceptance, limited monitoring & evaluation. UNETMAC action has been to promote public awareness, distribution of ITNs, resistance on the use of toxic chemicals (DDT inclusive) and research on DDT alternatives.

3.3.5 Sustainable Research & Action for Environmental Development (SRADev) - Nigeria

The observation is that, not much has been carried out on DDT research. This is a potential issue of interest particularly as no known NGO in Nigeria is presently doing anything about DDT or has carried out specific activities beyond academic research. At best, SRADev (Annex 5) has only carried out sampling of DDT in breast milk among rural women in Abeokuta, Ogun state, written a few articles on the Nigeria media and newsletters in the past on DDT E.g. *DDT: WHO - Clean Bill of health?, Malaria is a scourge but DDT is not the cure and DDT conspiracy*, *Through the ED*I participating on the UNEP/WHO human milk survey (Moms and POPs Project -MaPP) under the Stockholm Convention global Monitoring Plan in Nigeria. SRADev supports components to holistic approaches in fighting malaria such as epidemiological surveillance that allows early detection of malaria cases and prompt medical

treatment; community participation to improve home and water sanitation levels and eliminate mosquito larvae sites in streams and standing water; bed nets treated with insecticides other than DDT; and improved medical treatment and drugs. The challenge ahead is to provide many more nations with increased capacity to combat malaria and to assist those nations now using DDT to move toward the adoption of safer alternatives (**Pesticide Action Network Updates Service,** 2004). SRADev is willing to build capacity and actively involve in these issues and serve as the arrowhead in Nigeria.

3.3.6 AGENDA - Tanzania

The campaign by AGENDA (Annex 5) involves production of awareness materials on DDT, organizing meetings with relevant government institutions and individuals, media briefings, trainings on POPs health and environmental effects and existing alternatives (DDT included). AGENDA has been developing articles for mass media on DDT and other POPs, addressing the issue through various newspapers and holding press conferences at least twice every year (since 2005) during the commemoration of Africa Malaria Day (25th April) and World Environment Day. Mostly the information covered re-introduction of DDT and education on Malaria. In addition, AGENDA has held a series of radio and TV interviews on the National Radio, Tanzania Broadcasting Corporation (TBC-*Taifa*/PRT) in 15-minutes programmes, *Urithi Wetu* (our Heritage) part one on 1st April 2008 (DDT, our health and environment). *Urithi Wetu* (Our Heritage) part two was aired on 8th April 2008 and a TV interview on 2 May 2008. AGENDA also held interviews with newspaper in form of Q&A covered by *The Guardian* on 7th April 2008 and news article on *Majira* on 24th April 2008. AGENDA also conducted malaria survey to identify trends of malaria in the country. The survey indicates an urgent need to have a demonstration project in malaria prone areas that will include multiple environmentally safe strategies and involve community participation to manage mosquito densities and enhance control of malaria. The demonstration project will help the government to integrate and prioritise the strategies into the nation policy and also help other stakeholders to incorporate in their malaria control activities.

3.3.7 Justiça Ambiental (JA!) - Mozambique

In 2005, (JA! and civil society) received information stating that Mozambique was planning to re-introduce DDT for purposes of Malaria control. JA! did some research and generated substantial information on the impact of DDT to public health and existing non-DDT alternatives for malaria vector control. This information was sent together with a letter to the Ministry of Health, with no response from the government. Another local NGO organized a workshop about the DDT issue, with representative from the ministry and WHO invited. The workshop debate was quite lively; as most of the representatives of civil society (including JA!) were against the re-introduction of DDT. JA! gave interviews to media, newspaper and television, again raising the issue of egg testing to see if they were contaminated with DDT. In 2007 the Mozambique re-introduced DDT in Zambezia province and organized a workshop to inform the community about this introduction.

3.3.8 Entomological Society of Zambia (ESZ) - Zambia

DDT was banned in Zambia in 1980s for many reasons already mentioned, but was re-introduced in year 2000 and its use scaled up for malaria vector control. Bed nets are also used for pregnant mothers and children under 5. As an NGO, ESZ has been looking on issues such as monitoring and evaluation, how to convince the civil society that non-DDT alternatives are safe. Currently ESZ is conducting a study on the fate of DDT used in IRS. A machine known as RESIN CATCHER is used for air sampling in sprayed houses at various times after spray to see how long DDT persists in the air after spray. The study is still on-going.

3.3.9 Indaloyethu Environmnetal Cooperative - South Africa

South Africa remains committed to its DDT-based “Roll-back Malaria” program in all areas including the Limpopo province where the only vector is *Anopheles arabiensis* can be controlled effectively by pyrethroids (Annex 5). Department of Health is responsible for the Indoor Residual Spraying programme with good management of DDT inventories and containers. Department of Environment and Tourism is responsible for the Stockholm Convention National Implementation Plan (NIP) However, the SA government has not effectively implemented many of its NIP

commitments. The absence of a NIP DDT action plan has resulted into lack of information on the actual DDT usage in the country, although industry sources suggest that the actual DDT usage is in the order of 33 tons per year. In 2007 South Africa had a DDT stockpile of 274 tons. Evidence shows that the levels of the DDT metabolite, DDE, in the bodies of residents of DDT sprayed houses in the Limpopo province was 216.5 mg/kg.

Major concerns on the usage of DDT in South Africa come from results generated in recent studies which show serious congenital birth defects of children from houses sprayed with DDT, only mud huts are sprayed with DDT, i.e. the poorest of the poor, householders are not warned of the dangers of DDT, DDT used unnecessarily in the Limpopo province where there is no resistance to pyrethroids, and the lack of focus on the development of alternatives such as lippea javanica deterrent and Bt as a vector control, there is a threat from low level contamination of pollen and crop residues from Genetically Modified Bt crops engineered to release Bt toxins on the efficacy of natural Bt vector control. No evidence to show that *Anopheles phenestus* has not once again been eradicated as it was when the DDT indoor residual spraying programme was first introduced more than thirty years ago.

3.4. Experiences with alternatives to DDT

3.4.1 Pyrethrum Board of Kenya

A paper titled "***Pyrethrum as an alternative to DDT in public health: a case for use of pyrethrum products in IRS and as larvicide against malaria vectors***" (Annex 5) was presented by Pyrethrum Board of Kenya (PBK). The paper provides an insight on the results from a study conducted to determine the effect of PYMOS IRS on the prevalence of malaria prevalence vectors, to determine in-house residual efficacy of PYMOS in the sprayed houses and to determine the relative acceptability and perception of PYMOS by the user community. As a conclusion, the study was able to establish that pyrethrum products have good bio-efficacy against mosquitoes, are safe and available for use, they are suitable for integrated vector management through IRS and source reduction, and recommend that the products be given serious consideration as local solution to DDT in the fight against malaria.

3.4.2 UNEP

Presentation titled ***"Demonstrating and Scaling-up of Sustainable Alternatives to DDT in Vector Management (DSSA - Global Programme)"*** (Annex 5) mentioned the objectives of the DSSA-Global Programme as the protection of human health and the environment through the reduction of emission of DDT into the global environment by decreasing the use of DDT through introduction, demonstration and scaling-up of sustainable alternatives to DDT in disease vector management. The paper highlights an important point that *"**The use of DDT for malaria control in the WHO Africa Region the year before signing of the Convention (2000) was less than 2 years after the Convention entered into force (2006)"**.* Reasons for the increase includes fast expansion of vector control programs with Indoor Residual Spraying (IRS), both at country and at regional levels, followed by inappropriate IVM capacity building on technical expertise for policy making and planning. Other reasons for the increase include lack of sound entomological surveillance systems to predict when and where DDT should be used and when and where not, several countries still spraying DDT indiscriminate in the open air rather than targeted through IRS, and countries and aid donors seeking to return to DDT spraying as Indoor Residual Spraying (IRS) as a cheap and quick way of cutting malaria incidence**.**

The paper recommends a global strategy (Business Plan) be put in place to trigger significant action and to develop/deploy alternative approaches to DDT; countries receive funding and technical support to develop their capacities to implement IVM; regional 'alternatives to DDT Projects' demonstrating cost-effectiveness of alternatives to DDT be implemented quickly. Addition, the paper described a Demo Project: Malaria control in Mexico and Central America in the context of elimination of DDT use. In addition, the paper showed a range of projects undertaken under the DSSA - UNEP/WHO/GEF worldwide, identifying the anticipated funding and co-funding sources.

3.4.3 KEMRI/ICIPE Malaria Program, Ministry of Health and Municipal Council of Malindi

A paper titled ***"Integrated Vector Management for Malaria control in Malindi, Kenya"*** was presented (Annex 5) describes a project that aimed at improving human health through integrated vector management in Malindi. Actions outlined to achieve the objective were community empowerment in malaria and mosquito through participative and applicable training in respective techniques and decision making, establishing and implementing a distribution plan for bed nets to increase the bed net coverage to more than 80% and enhancing sustainability of the intervention

Results from this study revealed the following:

- Scaling up interventions (ITNs, EM, Larval control) reduced malaria morbidity in under 5 children and adults (88 deaths prevented per year in the next 3 years).
- Bed net coverage increased from 15% in 2005 to over 60% in 2008.
- Enhanced community participation and built capacity at both community and at the household levels with the ability to generate and analyse entomological information for vector control interventions
- There was significant reduction in anopheline abundance as well as the control of nuisance-biting species. This fostered community support and satisfaction.

According to this study, the challenge for the future is to develop additional effective tools for vector control and combine them logically, so that operational vector control can go beyond bed-nets and beyond DDT, strengthening of basic vector surveillance capacities at the level of the District and national malaria control programs, involvement of District networks for harmonization and coordination of malaria control with other stakeholders, maintaining and sustaining the gains over time will be challenging, if the required technical skills and capacities are not quickly established at all levels and limited infrastructures, human resources, and lack of the technical skills to generate and analyse entomological information for selecting, planning, monitoring and evaluating vector control interventions.

3.4.4 Discussion and way forward

Question: What alternatives to DDT are successful and should be highlighted?

Response from participants:

1. Breaking the life cycle of mosquitoes by highlighting and changing breeding localities by using insectivorous fish and larvae. That could be an important area of intervention
2. For adult mosquitoes, we need to increase the distribution of nets and plant mosquito repellants around residences to limit the chances of mosquitoes going into the houses

Question: What direction are African Malaria Control programs heading and why

Response from participants:

The programs are heading towards using hard chemicals such as DDT that will ultimately damage our environment while resources to clean the environment are limited, solely attributed to lack of commitment of governments into promoting development of effective malaria control programmes without DDT.

3.5. International Influences to National Programmes: Policies and Funding

3.5.1 Global Foundations and Initiatives

Papers under this category look on how international policies and major malaria control programmes affect malaria control in Africa (Annex 5). The Global Fund to Fight Aids, Tuberculosis and Malaria (GFTAM) approved 94 new grants round 8 worth USD 2.75 Billion over 2 years, with an overall portfolio now totaling USD 14.4 Billion in 140 countries. GFTAM receives contributions from the EU and UN along with national governments, civil society and private sector. Multilateral funding agencies such as World Bank and WHO, foundations like Clintons HIV/Aids Initiative (CHAI), provide the necessary technical and financial assistance to malaria programmes. Bilateral aid negotiated agreements between countries, e.g. DFID commitment to fight against malaria. Malaria funding ranked second to HIV/Aids globally in 2007. However, the majority of funding so far has focused on drugs, followed by basic research and preventive vaccine. Vector control products amounted in 3.6% of total malaria fund, which is a major drawback. In addition, the funding process of GFTAM is

complicated and bureaucratic. Funding for non-DDT alternatives for malaria vector control is very limited, with only one project involving Madagascar, Ethiopia and Eritrea, being funded by GEF. GFTAM funding policy has not incorporated Stockholm Convention. Global economic crisis also resulted into USD 3 Billion shortfall for the GFTAM. Overall, there is an indication of good progress on funding levels for malaria control in declining malaria mortality and morbidity in Kenya, Malawi, Rwanda and Zanzibar.

A study by PAN-Germany on non-compliance by countries and financiers/players of malaria control programmes to Stockholm Convention shows that 14 countries are on the edge of non-compliance to Stockholm Convention regarding DDT use, 10 countries implemented the elimination of DDT, 6 countries used DDT illegally as the registration happened too late, 5 countries used DDT illegally as they used it without informing the Stockholm Convention.

3.5.2 Country Policies on DDT-Germany

The Germany government policy on DDT emphasizes eliminating obsolete DDT stockpiles, generation of information and knowledge on alternatives, new insecticides, development and implementation of Integrated Vector Management approaches without DDT. PAN Germany calls for strong focus on non-chemical approaches on DDT.

3.5.3 Country Policies on DDT-USA

The US President's Malaria Initiative (PMI) launched in 2005 under USAID, committed 5 billion dollars funding over 5 year since 2008 with a goal to reduce malaria related deaths by 50% in 15 focus countries. Malaria control interventions being promoted by PMI are ITNs, IRS with WHO-approved insecticides including DDT, intermittent preventive treatment for pregnant women (IPTP) and arteminisin-based combination therapy (ACT). PMI works in close collaboration with international and in-country partners, through strengthening national malaria control programs, build capacity for country ownership of malaria control efforts, strengthening health systems, maternal and child health services and an integrated package of preventive and treatment interventions

4. WORKING GROUPS

4.1. Task 1: Identification and highlighting common obstacles, needs and strategies for African NGOs in the campaign of effective malaria control without DDT

Participants were organized into three (3) Working Groups (WGs) to work on a matrix to identify and highlight common obstacles, needs and strategies for African NGOs in their role for effective malaria control without DDT (See Annex 6). Reports from group presentations identified major obstacles as:

National level

- Lack of information, inadequate funding, lack of political will for some governments to work with NGOs or support NGO activities, negative perception by governments as trouble makers,
- Lack of Collaboration and co-ordination between and among NGOs, between NGOs and Research Institutions; competition between NGOs,
- Inadequate human capacity with the necessary expertise to deal with malaria and DDT, proposal writing and advocacy skills.
- Inadequate institutional capacity to execute various project including malaria and DDT.

Regional level

At regional level, the main obstacles identified were:

- Lack of sufficient information on alternatives
- Lack of adequate success stories on alternatives
- Absence of the full cost benefit analysis for DDT and alternatives, and
- Marginalized position of NGOs with regard to Stockholm Convention.

Needs assessment for NGOs revealed such areas of critical need as:

National level

- Improved access to adequate and relevant information on DDT and Malaria

- Research and dissemination on DDT and alternatives
- Increased involvement of grassroots community in DDT campaigns
- Increased Government recognition of NGO activities and enhanced NGO influence on government decision making process, and
- The need for cooperation with government agencies in implementation of programs on chemicals
- Funds to carry out trainings and build institutional capacity
- Harmony and coordination among NGOs in their work, (e.g. DDT forum)
- Collaboration with research institute/universities
- Developing a database of expertise on DDT/related chemicals
- Human capacity development of NGOs at all levels on proposal writing, advocacy and negotiation, lobbying skills etc.

Regional level

- For NGOs to participate in demonstration of non-DDT alternatives,
- Sharing information about successful stories
- Promoting trans-boundary information exchange
- Empowerment on how to use Community Pesticide Action Monitoring (CPAM)
- To be involved in developing full cost-benefit analysis of DDT and alternatives
- Monitoring and evaluation
- Involvement of NGOs in implementation Stockholm Convention at different levels
- Integration of NGOs in the national and regional implementation programmes and have influence on regional interventions

Strategies developed through WG deliberations included the following:

National level

- Creating awareness on safe DDT use,
- Conducting meetings, seminars, conferences, etc to review communication strategies on malaria control and DDT issues
- Training and engaging the media for community outreach,

- Promoting wider reach through publications and lobbying the governments and relevant authorities to recognize the role of NGOs in DDT campaigns and embrace DDT alternatives
- Building a core fundraising group amongst the NGOs
- Identifying training needs for NGOs on advocacy skills, lobbying techniques, proposal writing and fundraising skills including identification of donor agencies
- Building capacity among NGOs on technical expertise on DDT.

Regional level:

Regionally, NGOs agreed on the strategy to promote exchange of ideas and sharing experiences for example visiting countries which that have successfully effected non-DDT alternatives malaria control and harmonize CPAM activities at national levels.

4.2. Task 2: Highlight on the contents of the Programme (What, When, How, Who?)

4.2.1 WG themes

The three WGs started working on development of Regional Programme (Annex 7) which outlines time frame (when?) for activities(what?), mode of execution (how?) and assign responsibilities (who?) for follow up. Output from group work classified actions into short term and medium term.

4.2.2 Short term actions

Short term actions developed in the programme include:

- Allocating the NIP funds to CSOs & updating the NIP,
- Training and involvement of local experts and CS groups in NIP preparation and update
- Capacity building for the NGOs in countries using and intending to use DDT
- Giving attention to non-compliant countries
- Embarking on full cost benefit analysis & life cycle assessment of DDT and alternatives

- Establishment of National NGOs Committee on implementation of Stockholm Convention (DDT) (to complement the existing designated Focal Points)
- Establishing an interim regional hub (See Annex 8). As a matter of follow up, responsibilities were assigned to NGOs according to experience. PSR-Kenya was unanimously appointed as the interim regional hub. Country focal points were also established and will have a responsibility of coordinating other NGOs in respective countries towards forming permanent National Committees. These are UNETMAC (Uganda), iLIMA-Kenya (Kenya), AGENDA (Tanzania), PAN ETHIOPIA (Ethiopia), Entomological Society of Zambia (Zambia), Justica Ambiental (JA!) (Mozambique), EYAN (Ghana), SRADev (Nigeria) and Indaloyethu Environmnetal Cooperative (South Africa).

4.2.3 Medium term actions (5 years from 2009-2014)

- Developing a project for capacity building for Civil Societies of countries using or intending to use DDT to support the correct implementation of the Stockholm Convention and alternatives to DDT in Vector Control
- Lobbying governments and relevant authorities to embrace DDT alternatives and recognize the role of NGOs in DDT campaigns
- Continue to promote awareness on adverse impact of DDT use amongst all stakeholders
- Developing communication strategy among NGOs at all levels
- Harmonizing CPAM activities at national and regional levels and
- Establishing timeframe for final phasing out of DDT.

The contents from WG task 1 and 2 were then used to develop a position statement from this meeting for COP4 and ICCM2 (Annex 3) and the Dar es Salaam declaration (Annex 4).

5. CLOSING

The AGENDA Executive Chairman, Prof. Jamidu Katima expressed his appreciation to all participants who committed themselves to attain the meeting objectives. He requested that the spirit continue, and commit their time whenever needed in order to

attain successful campaign against use of DDT in Africa and the world at large. He informed the participants that the meeting declaration and statement will be presented at the forthcoming COP4 in Geneva (May, 2009). He wished all participants safe return back to their home countries and officially declared the meeting closed

ANNEXES

ANNEX 1: WORKSHOP PROGRAM

DAY 1: Monday, 6th April 2009

Goal: Experience sharing on malaria control programs and alternatives to DDT

Time	**Event**	**Responsible**
Opening Ceremony		
08.00 - 08.30	Registration	All
08.30 – 09.15	Welcome Remarks	Prof. Jamidu Katima
09.15 – 09.30	Self Introduction of Participants and their expectations from the meeting	All
09.30 - 09.45	Opening Remarks by Guest of Honor	Stockholm Conv. Focal Point - Tanzania
09.45 – 10.00	Group Photo and Press Conference	Guest of Honor
10.00 – 10.30	**Health Break**	All
National Malaria Program Overview and Experiences - Current state of National Malaria Programs		
10.30 – 11.00	General concept / key note paper* (1)	Prof. Jamidu Katima
11.00 – 12.15	Panel discussion: Malaria Control Plans and DDT Experience (2) What is the current state of national malaria control programs as they related to DDT use and promotion of alternatives?	MoH (Ethiopia, Kenya, Tanzania, Uganda and Zambia)
12.15 – 13.00	NGO Experiences on Country Malaria Control Programs/ Plans (3)	Ethiopia, Ghana, Kenya, Mozambique, Nigeria, South Africa, Tanzania, Uganda, Zambia
13.00 – 14.00	**Lunch Break**	All
Alternatives to DDT - Experiences with alternatives to DDT		
14.00 – 14.30	Pyrethrum as an Alternative to DDT in Public health: A case for use of pyrethrum products in IRS and as larvicide against malaria vectors (4)	Mr. Kefa Sum Pyrethrum Board of Kenya

14.30 – 15.00	UNEP/GEF/WHO Global DDT Alternatives Project (5)	Mr. Jan Betlem - UNEP
15.00 – 15.30	Available Alternatives to DDT: Experiences from ICIPE and Bio-Vision (6)	ICIPE and Bio Vision
15.30 – 16.00	Discussion of presentations (4-6): - What alternatives to DDT are successful and should be highlighted? - What direction are African Malaria Control program heading and why?	All
16.00 – 16.15	**Health Break**	All
International Influences to National Programs: Policies and Funding		
16.15 – 16.45	Global Policy and Funding for DDT - How are international Policies and major malaria program funding affecting effective malaria control in Africa? (7)	Dr. Paul Saoke
16.45 -17.30	Panel Discussions: Global policy & Development Agenda - How is the Development Agenda Affecting Malaria Control Programs in Africa (8)	Dr. Abou Thiam, Dr. Carina Weber and Dr. Paul Saoke
17.30	End of Day 1	All

DAY 2: Tuesday, 7th April 2009

Goal: Setting NGOs/CSOs strategies towards effective malaria control in Africa without DDT

Planning a Regional Program

Time	**Event**	**Responsible**
08.00 - 08.30	Registration	All
08.30 – 09.00	Recap of Day 1	Facilitator/Moderator
09.00-09.15	Introduction of Working Groups (WG)	Facilitator/Moderator
09.15 – 11.00	WG on Matrix: Identify and highlight common obstacles, needs and strategies for African NGOs – National and Regional (9)	All
11.00 – 11.15	**Health Break**	All

11.15 - 13.00	WG report back	All
13.00 – 14.00	**Lunch Break**	All
14.00 – 14.15	Introducing contents of the Regional Programme (What, when, how, who?)	Facilitator/Moderator
14.15 – 16.00	WG – Regional Program	All
16.00 – 16.15	**Health Break**	All
16.15 – 17.30	WG Regional Program (cont)	All
17.30	End of day 2	

DAY 3: Wednesday, 8th April 2009

Goal: Proposing a regional programme on malaria control and future collaboration

Time	**Event**	**Responsible**
Report back from Groups and Drafting the Regional Program		
08.00 - 08.30	Registration	All
08.30 – 09.00	Recap of Day 2	Facilitator/Moderator
09.00 – 10.30	Report back from WGs on Regional Program	Groups Reps
10.30 - 10.45	**Health Break**	All
10.45 – 12.00	Discussion and drawing contents and draft Regional Program	Facilitator Moderator
12.00 – 13.00	Working on the Program Contents	Facilitator/Moderator
13.00 – 14.00	**Lunch Break**	All
14.00 – 15.00	Formation of Regional Network and Lead Team to carry the draft programme forward	All
15.00 – 15.30	Way Forward and closing remarks - Completion of the Reg. program - COP 4 interventions - Country interventions - Closing	Dr. Abou Thiam and Prof. Jamidu Katima
15.30 – 16.00	Press Conference	Prof. Jamidu Katima and Dr. Abou Thiam
16.00	End of the meeting	

ANNEX 2: LIST OF PARTICIPANTS

S/N	NAME	INSTITUTION	ADDRESS	TELEPHONE	E-MAIL
1.	Mr. Robert B. Tumwesigye	PROBICOU	Box 34407 Kampala, Uganda	+255 782 - 393912	tumwesigyeus@yahoo.com
2.	Dr. Abou Thiam	PAN Africa	B.P. 15938 DAKAR FANN, Senegal	+ 221 338 254911	abouthiam@pan-afrique.org
3.	Mr. Griffins Ochieng	iLima Kenya	Box 14,845 00100 Nairobi, Kenya	+ 254 203 42120 / +254 726 931318	ilimakenya@care2.com; ogriffins@yahoo.com
4.	Dr. Kiambo Njagi	Division of Malaria Control DOMC/MPHS	Box 20750, Nairobi, Kenya	+ 254 720 323247	knjagi@domckenya.or.ke
5.	Mr. Kefa Sum	Pyrethrum Board of Kenya	Box 420, Nakuru, Kenya	+254 722 844018	ksum@pyrethrum.co.ke
6.	Ms. Betty Obbo	National Association of Professional Environmentalists (NAPE)	P.O. Box 29909 Kampala, Uganda	+256 782 734849	bettyo@nape.or.ug, nape@nape.or.ug
7	Mr. Seife Bashaye	Vector Control -Federal Ministry of Health	Addis Ababa, Ethiopia		s_bashaye@yahoo.com
8.	Mr. Jan Betlem	UNEP Division of GEF Coordination	P.O. Box 30552 / 00100, Nairobi, Kenya	+254 20 762 4607 Fax:+254 20 762 4041 / 762 4042	jan.betlem@unep.org
9.	Mr. Tadesse Amera	PAN - Ethiopia	Box 171, Code 1110 Addis Ababa, Ethiopia	+251 618 6769	atadesse2002@yahoo.com
10.	Ms. Carina Weber	PAN Germany	D - 22765 Hamburg, Germany	+49-40-3991910-23	carina.weber@pan-germany.org
11.	Mr. Eugene Itua	SRADev	MDS Suite 1, 18 Olorunlogbon Street, Anthony Village, Lagos,	+234 – 802 311 8449 +234 – 803 0610 - 235	eugeneitua@yahoo.com sradevnigeria@yahoo.co.uk

			Nigeria		
12.	Mr. Ellady Muyambi	Uganda Network on Toxic Free Malaria Control (UNETMAC)	P.O Box 34407 Kampala, Uganda	+256 – 414 – 532 676 +256 – 712 – 213 888	elladmuyambi@yahoo.com ; unetmac@yahoo.com
13.	Mr. Arsenio Banze	Justica Ambiental (JA!)	Rua Marconi n110 1 andar, Mozambique Maputo	+258 -824 111 304 +258 – 844 424 480	arseniobanze@gmail.com, tichalemos@yahoo.co.uk, anabela@ja.org.mz
14.	Mr. Osei Akoto	Kwame Nkrumah University of Science and Technology - EYAN	Chem, Dept Kumasi Ghana	+233 208 216 685	wofakmann@yahoo.com, adukumisam@yahoo.com, environyouth@yahoo.com
15.	Mr. Samuel Kahindi	ICIPE - Kenya	Box 30772 Nairobi, Kenya	+254 0728 732270	kahindisamuel@gmail.com
16.	Dr. Paul Saoke	PSR-Kenya	Box 19565, KNH 00202. Nairobi, Kenya	+254- 720 - 264297	psaoke@isde.org psaoke2@yahoo.co.uk
17.	Mr. Crispin K. Kaposhi	PAN Zambia / Entomological Society of Zambia	P.O. Box 350026 Chilanga, Zambia	Mobile + 260- 977 - 79966	kalukaposhi@yahoo.com
18.	Dr. Myres Lugemwa	Malaria Control Programme (MCP), Ministry of Health (MOH)	Box 7272 Kampala, Uganda	Mob: +256-772-466941 Fax: +256-414-231584	myers_1956@health.go.ug
19.	Prof. J.H. Katima	AGENDA	Box 77266, DSM, Tanzania	+255 22 2461052	jamidu_katima@yahoo.co.uk
20.	Dr. Vera Ngowi	Muhimbili University of Health and Allied Sciences (MUHAS)	Box 65015 DSM, Tanzania	+255 784 405415	verangowi@yahoo.com vera.ngowi@gmail.com
21.	Mr. A. Mwakatole	ENVIROCARE	Box 9824 DSM, Tanzania	+255755 812817	amwakatole@yahoo.com
22	Mr. Silvani Mng'anya	AGENDA	Box 77266, DSM, Tanzania	+255 -713 226568	semnganya@yahoo.com,

				+255 22 2461052	agenda@bol.co.tz
23.	Mr. Haji Rehan	AGENDA	Box 77266, DSM, Tanzania	+255 22 2461052	htrehani@yahoo.com agenda@bol.co.tz
24.	Mr. Jamal Kiama	AGENDA	Box 77266, DSM, Tanzania	+255 22 2461052	j_kiama@yahoo.com agenda@bol.co.tz
25.	Ms Cecilia Mwakasege	AGENDA	Box 77266, DSM, Tanzania	+255 22 2461052	cecibm84@yahoo.co.uk
26	Ms. Judica Losai	JET	Box 9191 DSM, Tanzania	+255 713 357713	ndasat@yahoo.com
27	Mr. Mark Wells	TWIG	Box 171 Chintsa, Eastern Cape, South Africa	+27 85 5006216	mark@twig.org.za
28	Mr. Yahya Msangi	IUF/TAPOHE	Box 15482 Dar es Salaam, Tanzania	+255-754-280971	aishamaulid@hotmail.com
29	Dr. William Mwegoha	Ardhi Univerity (ARU)	Box 35176, DSM, Tanzania	+255 717 - 163647	mwegoha@aru.ac.tz

ANNEX 3: DAR-ES-SALAAM DECLARATION ON ALTERNATIVE APPROACHES TO DDT USE FOR VECTOR CONTROL – 8TH APRIL 2009

Acknowledging that malaria is a global crisis, which needs immediate attention and dedication by the global community to roll it back and that public health programmes and poverty reduction need broad-based sustainable/long-term strategies to address malaria as well as other diseases that are preventable and curable with sufficient resources;

Aware that DDT is a persistent organic pollutant , which is a bio-accumulative pesticide, that causes reproductive health and neuro-developmental disorders, pregnancy wastages and shortened lactation in breast feeding mothers ; whose use is to be eliminated under the Stockholm Convention;

Understanding that many Parties to the Convention facing the enormous burden of malaria have requested for exemption to use DDT for malaria control in the short term and that they are bound to observe the conditions as set out in Annex B, Part II of the Stockholm Convention;

Appreciating the efforts of the global community and their commitment to fight malaria through the Global Fund to fight AIDS, Tuberculosis and Malaria, and the Conference of Parties 3 decision to prepare a business plan to develop and deploy alternative methods, strategies and products to combat malaria as well as the initiative to establish a global partnership to develop alternatives to DDT;

Worried that the use of DDT has escalated threefold since the signing of the Convention in 2001 and that many more countries are planning to re-introduce DDT while the Convention demands that Parties reduce reliance on DDT for vector control and work towards eventual elimination;

Seriously concerned that the use of DDT for IRS is being conducted without strict observance of the WHO guidelines and disposal of DDT in accordance with the Basel Convention guidelines and Stockholm Convention BATs/BEPs and, that strategies for monitoring and evaluation are not built into spraying programs;

Noting that the goal of the Stockholm Convention is to "*protect human health and the environment*" , however there is emerging new evidence of environmental and health effects of DDT in newborn children and in male reproductive health disorders due to DDT used in IRS;

Mindful of the global economic crunch that threatens funding for malaria control programs development and deployment of alternatives and that there is a general reluctance by Parties in Africa to embrace and fund alternatives;

Comforted by the results of the UNEP/GEF/WHO project on ***Demonstrating and Scaling-up of Sustainable Alternatives to DDT in Vector Management (DSSA - Global Programme)***in Latin America indicating that malaria can be controlled without the use of toxic chemicals, and that similar projects have been initiated in other continents including Africa;

Now Therefore
We, representatives of the NGO community in Africa, driven by our desire to address the health and environmental problems that affect poor communities especially in the developing countries and countries with economies in transition commit ourselves to;

Create awareness on adverse effects of DDT use, organize meetings, seminars, conferences, etc to review communication strategies on DDT issues and train the media for information dissemination while promoting publications by providing information, education and training to decision makers, health care workers, and the community focusing on the health impacts and non chemical alternatives;

Lobby Governments to recognize the role of NGOs in DDT campaigns and relevant government authorities to embrace DDT alternatives and subsequently work with

national governments and relevant stakeholders to comply with article 7 of the Stockholm Convention;

Build a core fund raising group amongst the NGOs and develop proposals (with emphasis on coordinated initiative and capacity building and fundraising skills) and identify donors to fund them;

Identify training needs for NGOs including training on advocacy, negotiations, lobbying techniques, technical information and monitoring and evaluation;

Exchange information and ideas, share experiences and case documentation of success stories of malaria prevention and control without use of DDT;

Harmonise Community Pesticide Action Monitoring (CPAM) activities at national and regional levels;

Advocate for the development of a full cost benefit analysis and life cycle assessment of DDT and alternative, including social, environmental, health cost and job beneficiation; and

Demand to participate in the UNEP/GEF/WHO program on ***Demonstrating and Scaling-up of Sustainable Alternatives to DDT in Vector Management (DSSA - Global Programme)*** especially in projects designed for the sub-Saharan African region.

ANNEX 4: Statement for COP4: Towards malaria reduction without DDT

Malaria is a global crisis, which requires effective attention and dedication by the global community to roll it back. Bearing in mind, that malaria can be eradicated without DDT, the Parties to the Stockholm Convention committed to *"reducing and ultimately eliminating the use of DDT*."[1] To meet this goal, alternative approaches to eradicate malaria need to be implemented.

IPEN and PAN fully reiterate their support for the implementation of the Stockholm Convention including the mechanism for exemptions for the use of DDT to allow the implementation of cost effective community based long term solutions. However, IPEN and PAN raise concerns, that half a decade after the Stockholm Convention entered into force there has been an increase in the use of DDT while in several countries the use of DDT does not meet the standards set by WHO. This has caused unwarranted problems to the communities. We also note that Article 10 which demands public participation and education has not been complied with by the majority of the Parties to the Convention. Neither have measures to reduce reliance on DDT for malaria control been built into ongoing activities and actions.

We welcome the UNEP/WHO initiative for establishing a global partnership to develop alternatives to DDT. We urge and emphasize the importance of involving civil society organizations in this exercise to ensure that the program addresses the concerns of the public. This is also in the spirit of encouraging community participation in the implementation of the Convention. As such, we call on the GEF through its dedicated Implementing Agency UNEP, to honor positively forthcoming requests to assist NGO communities to support the implementation of the Stockholm Convention.

IPEN and PAN are aware that future initiatives need to broaden the approach to implement the Stockholm Convention in a timely manner. Effective approaches include, *inter alia*:

- Further developing IVM guidelines into Integrated Vector and Disease Management (IVDM) and adjusting them to local needs;
- Carrying out IVDM demonstration projects in Africa including strong involvement of civil society;
- Scaling up IVDM approaches;
- Implementing monitoring and evaluation activities in projects (including bio-monitoring of breast milk as a valuable indicator to determine the status of DDT chemicals body burden) and eco-toxicological outcomes.
- Implementing projects that will enable focalized treatment of malaria victims and reduce reliance on DDT and enable Parties to realize the objectives of the Convention.

International funding mechanisms (like Global Fund, GEF and others) are financing a substantial part of the global initiatives to implement the Stockholm Convention. We encourage the international community to honor their pledges and maintain the flow of funds despite the current financial crisis. In the same vein, we are also raising concerns about the slow, demanding and bureaucratic process of securing GEF funds and about the insufficient involvement of the Global Fund for AIDS, Tuberculosis and Malaria in IVDM approaches to DDT.

While intensive malaria control programs are achieving good results, it is important for Parties and stakeholders to invest in the development and implementation of IVDM including environmental preventive measures and focalized treatment of malaria victims– an approach that has proved to create good results in reducing malaria incidences in various countries.

Parties to the Stockholm Convention must **keep their obligation** to '**reduce and ultimately eliminate'** DDT. The 163 governments that have ratified the Stockholm Convention need to achieve its objectives. Future investments and activities must result in a reduction and ultimate elimination of the use of DDT within a defined time frame. A redoubled effort to introduce safer, effective and more sustainable alternatives according to a defined time table is urgently needed.

IPEN and PAN are aware that Parties at COP4 will ask for exemptions for DDT production and use. We call for thorough assessment and analysis of actions taken by the Parties, including their due diligence with reference to Part II, paragraph 5b of the Stockholm Convention, before granting such exemptions.

One Party is submitting request for exemption to continue using DDT as an intermediate in the production of *dicofol*. In a separate paper IPEN has provided an analysis on the flaws in this application. We sincerely plead that this extension should **not** be granted.

The COP4 will be asked to evaluate the continued use of DDT for disease vector control. IPEN and PAN would like the COP to consider in greater details whether the conditions put in place ensure that DDT does not continue to cause global environmental and health concerns.

ANNEX 5: PRESENTATIONS

GENERAL CONCEPT/KEY NOTE ON DDT

Background and Context

J.H.Y. Katima

Debate on DDT

- Pro and against Indoor Residue Spraying (IRS)
- Marjorie Mazel Hecht (2006) - ***Malaria kills one child every 30 seconds*** (Is this true or a sensationalisation of the malaria occurrence?)

Debate on DDT

- The above statement means 15,768,800 die every year
- In 2006 population in sub-Saharan Africa was 770.3 mill.
- Which means the dying children in about 2%.
- But the growth rate of sub-Saharan Africa 2.36%

Debate on DDT

- Considering that the above figure do not include the under 5 and those dying with AIDS and other diseases
- When you combine all these suggest that the sub-Saharan population growth should be negative

Debate on DDT

- Frequently quoted examples:
  - Eradicated in Europe and the USA, and the burden of the disease was reduced in Africa, Asia and Latin America.
  - Greece – achieved a drop from 1-2 million cases a year to close to zero.
  - India, malaria deaths went from nearly a million in 1945 to only a few thousand in 1960 because of stopping use of DDT.

Debate on DDT

- Frequently quoted examples:
  - Sri Lanka, malaria cases went from 2,800,000 in 1948, before the introduction of DDT, down to 17 in 1964 — then, tragically, back up to 2,500,000 by 1969, five years after DDT use was discontinued.
  - South Africa malaria cases increased by 1000% in the late 90s alone (but dropped 80% in 2000 alone in KwaZulu Natal, the one province that made extensive use of DDT).

Debate on DDT

- These data do not look on the other side of the coin:
- The argument disregard the fact that DDT is banned because it is a poison that can kill any living creature, including humans, and can cause sterility – *effects of DDT on human health will be presented by experts.*

Debate on DDT

- While it is true Malaria is increasing in many countries which might be tempting to attribute this increase to reduced use of DDT, in reality the realistic picture is more complex. For example:
  - In some countries, mosquitoes developed resistance to DDT.
  - In others, civil unrest and severe rains have impeded delivery of malaria control services.

Debate on DDT

- In still others, migration into frontier areas lacking adequate shelter has caused malaria to increase. In many instances, severely strained malaria control budgets have limited governments' ability to respond.
- ***In many others poverty severity and persistence undermine majority of non-DDT interventions***
- ***Lack of political commitment (locally and internationally)***

Debate on DDT

- Unless we recognize these complexity even with intensive application of DDT we will never eradicate Malaria

WHO Position

- WHO 2006 – Position Statement
- WHO's Global Malaria Programme recommends the following three primary interventions
  - diagnosis of malaria cases and treatment with effective medicines;
  - distribution of insecticide-treated nets (ITNs) to achieve full coverage of populations at risk of malaria; and
  - IRS as a major means of malaria vector control to reduce and eliminate malaria transmission including, where indicated, the use of DDT.

Question is the above in order of priority? If yes why jump to the last bullet before exhausting 1 and 2

WHO Position

- The damaging statement appears 2.2
- *"However, another important factor has been general disapproval of DDT use, due to fears of its harmful effects on the environment and on human health, fears which are unjustified when DDT is used appropriately for IRS."*
- ***What is appropriate use???***

Concern over Malaria – CSO Perspective

- Many people are dying because of malaria.
- Malaria imposes a horrendous social and economic burden.
- *No body in his right mind will object any intervention that will save lives.*
- But the *Precautionary Principle*, which the Global Community ascribed to it under the Rio Declaration, also recognized under SAICM, cautions us on not doing anything because of lack of adequate information.

Concern over Malaria – CSO Perspective

- Assuming those who are doubting the accuracy of the available evidence of toxicity of DDT they are right – "*It is important to remember that* ***absence of evidence of risk*** *is not the same thing as* ***evidence of absence of risk****".*

POPs and Stockholm Convention

- Concerns over the safety of DDT, have been comprehensively addressed in the framework of the Stockholm Convention on Persistent Organic Pollutants (POPs).
- The Convention bans the use of DDT, except for public health purposes.
- Therefore, DDT can be used for IRS where it is indicated, provided that stringent measures are taken to avoid its misuse and leakage outside public health.
- ***The question is are these stringent measures in place? Or even observed when applying IRS? Some of the presentation will show us that is not the case.***

POPs and Stockholm Convention

- The Convention states that countries that rely upon DDT for malaria control should follow World Health Organization guidelines. These guidelines are intended to help prevent DDT from escaping into the environment.

POPs and Stockholm Convention

- Although the Stockholm Convention allows countries to continue using DDT for malaria control, it encourages them also to consider safe, effective, and affordable alternatives.
- *The question is who is conducting research in order achieve the above?*

POPs and Stockholm Convention

- It worrying that the provisions that will ensure the final phase out are not being given due weight. For example
  - Technical and financial uncertainties associated with DDT and its alternatives is still a huge contentious issue facing the Conference of Parties.
  - Malaria funding is only focusing on single type intervention – why?

POPs and Stockholm Convention

- Searching for alternatives is not given priority

What are the objectives of this meeting

- A lot of efforts (probably un-coordinated) to fight DDT use have been taking place – *are we aware of all them do we know their status and impacts*
- The Developing countries (which have maintained the need to use DDT), Tanzania included, claim that there are no effective alternatives – *do we know them, are there success stories we can tell about them? what are the barriers in using the alternatives*

What are the objectives of this meeting

- COP4 is around the corner. Among the items to be discussed:
  - Evaluation of continued use of DDT for disease vector control
  - DDT Business plan for promoting a global partnership on the development and deployment of alternative products, methods, and strategies to DDT for vector control
  - India intends to request extension of exemption to continue using DDT as an intermediate in the production of pesticide "dicofol" – *IPEN has developed a detailed analysis and a request to COP4 not accept India's request*

What are the objectives of this meeting

- There will also be a DDT side event organized by WHO. IPEN will be given a 10minutes slot to speak – *what should be the topic and message?*

National Malaria Control Program-Ethiopia

Overview of DDT Use In Ethiopia

Information Dissemination Work Shop On the status of DDT use,

Seife Bashaye,

April 2009

Out line

- Back Ground and Introduction
- DDT Assessment at Global level
- Comparison of DDT with Other Insecticides
- Ethiopian Experience in Using DDT:
- Challenges and The way forward

Background

- SA 1.1 million Km^2
- Population estimated73,845,035 (2007 census)
  - 84 % Rural
- There are 9 regional states and 2 city administrative councils
- 736 woredas (districts) and 15,000 kebeles 2HEW for each kebele

Cont..

- Under-five mortality rate 123/1000 live births
- Neonatal mortality rate 39/1000 live births
- Infant Mortality 77/1000live births
- Maternal Mortality Ratio live births4
- Total fertility rate 5,4
- 2007 – DPT1 – HepB – Hib coverage72.6% *
- 2007 – TT2+ for Pregnant women 62.2% *

Introduction

- DDT (para,Para′Dichlorodipheniltrichloroethane) is a persistent Organochlorine compound which was widely used as insecticide in agriculture in different countries including Ethiopia.
- synthesized in 1974 where it's insecticidal properties have been clearly identified in1939.

Cont..

- Was in use in Developed Countries
- USA (Until 1972), United Kingdom (until 1984), Germany (until 1974) Canada (until 1989) Sweden and Norway (until 1970) were some of them
- The Stockholm convention which entered in to force in May 2004 , had a goal of reducing and ultimately eliminating the use of DDT

Cont

- WHO, International Program on Chemical safety (IPCS), United Nations Environmental Program, International Labor Organization (ILO), the initiatives by FAO, and others involved in the issue
- But the continued need for DDT in diseases vector control as indoor Residual spray sustained

DDT Assessments at Global Level

Contemplation in Withdrawal from DDT were largely related to Environmental Concerns

- transportation of DDT far from origin of use via biotic and a biotic factors and its accumulation in the fat tissues of animals, oceans, lakes rivers and air
- its toxicity to aquatic life mainly the fish including the amphibians

DDT ASS Cont..

- The other factor is its Persistence in the environment related to its half life in different media, soil and water. (up to 15 years in soil)
- Some peoples link it to egg shell thinning in birds (controversial).
- These Environmental concern was realized mainly when DDT was released in to open environment linked to agriculture.

DDT Ass Cont

- For instance in USA alone DDT reached up to 36,000 metric tones/year by mid 50s. A total of 613,000 mt tones had been in use there in the USA
- DDT as in IRS no justification on adverse effect has been identified that can Change The WHO Position not to use it.

Some Explicit Documents

- International Program on Chemical Safety (IPCS) assessments conducted as early as 1995 showed that 12 Persistent Organic Pollutants) POPs were identified
- a number of health related concerns like impaired reproduction, endocrine dysfunction and immuno- suppression raised

cont

- The IPCS global Assessment conducted in 2000 reported that the biological plausibility of possible problems to certain human functions like reproductive systems.
- The assessment conducted by WHO was the most recent which considered a number of evaluations undertaken by Joint Meeting on Pesticides Residues (JMPR) in 2000
- concluded that DDT and its metabolites show wide range of long term health effects in laboratory animals

Cont..

- despite the range of effects in animals, epidemiological studies in Humans did not support hypothesis that DDT or its metabolites increased rates of pancreatic cancer, multiple myeloma, breast cancer, uterine cancer or prostate and testicular cancer.

Cont..

- ❑ All studies that were reviewed showed that no correlation between exposure to DDT and still births, miscarriage or premature rupture of fetal membrane
- ❑An over all outcome from the review of JMPR meeting in 2000 agreed the provisional Tolerable Daily intake (PTDI) to 0.01mg/kg bw based on toxicity in rats

Cont..

- JMPR further concluded that the available data on humans did not show causal relationships for carcinogenicity in any organ system or significant adverse effects after repeated exposure to concentrations up to 0.25 mg/kg bw per day.
- The Joint WHO /FAO International DDT risk assessment was the other source

Cont.

- This assessment documented the reproductive ,developmental and other effects on animals **excluding humans.**
- WHO, based on these assessment findings, came to the conclusion that there is no reason to change the use of DDT for Vector Control.
- Different reviews made by WHO in different forums conducted in different countries, i

Cont..

- Different reviews made by WHO in different forums conducted in different countries,
- Consultative meeting Resolution regarding health effects on DDT delivered in Congo Brazzaville in 2006,

Cont..

- Recommended that DDT can be used in malaria endemic Countries in addition to the epidemic affected ones, which was not the tradition before 2006. The most “PRO DDT”

Comparison of DDT with Other Insecticides

- DDT so far is the first line insecticide used for IRS, because it is the cheapest, relatively safe, and effective under close monitoring & long residual effect – greater than 6 months

- DDT may be used for vector control provided that all the following conditions are met.

Conditions

- **It is effective(Bio assay and susceptibility tests should be done regularly (Challenge)**
- For Indoor Spraying (another Challenge in Ethiopia)
- The material is used to the specifications issued by WHO(WHOPES)
- The necessary safety precautions are taken in its use and disposal

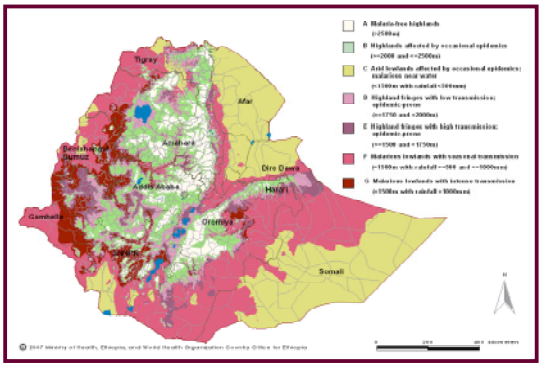
Cont..

Insecticide	Class	Recommended dosage of active ingredients (gm/m²)[a]	Duration of effective action (months)	Estimated cost per house per 6months (US$)[b]	WHO toxicity rating[c]
DDT	Organochlorine	1-2	>6	1.6	II
Fenitrothion	Organophosphate	2	3-6	14.80	II
Malathion	Organophosphate	2	2-3	8.20	III
Pirimiphos-methyl	Organophosphate	1-2	2-3		III
Propoxur	Carbamate	1-2	3-6	18.80	II
Bediocarp	Carbamate	0.1-0.4	2-6	13.80	II
Alphacypermethrine	Pyrethroid	0.02-0.03	4-6		II
Cyfluthrin	Pyrethroid	0.02-0.05	3-6		II
Deltamethrine	Pyrethroid	0.02-0.025	3-6	1.60	II
Etofenprox	Pyrethroid	0.1-0.3	3-6		U
Lambdacyhalothrin	Pyrethroid	0.02-0.03	3-6	8.60	III
Bifenthrine	Pyrethroid	0.025-0.05	3-6		II

Cont..

- Key: Ia=Extremely hazardous; I b=Highly hazardous; II=Moderately hazardous; III=Slightly hazardous; U=unlikely to be hazardous; Source World Health organization, The Who Recommended Classification of pesticides by Hazard, 2005
-

Ethiopian Experience in Using DDT:



Cont…

- Major epidemics occur every 5 - 8 years, but focal epidemics occur every year, before three years.
- Two parasite species
  - *Plasmodium falciparum* (60%)
  - *P. vivax* (40%)
- Main malaria vector
  - *Anopheles arabiansis*
  - *Anopheles pharoensis*

Cont..

- Malaria is a major public health problem in Ethiopia
  - Every year it was the leading cause of out patient consultations, admissions and death
  - Recently, however, the rapid scale up of interventions has brought about significant decline in malaria burden
    - In 2006/7 it become 6th cause of outpatient consultations
    - No malaria epidemic report

Cont

- Depends on topography and climate
- 75% of the land mass malarious
- > 52 million 68% of the population at risk
- 400,000-500,000 microscopically confirmed cases/year
- 4 - 5 million clinical cases/year

Con..Malaria Epidemic

- Malaria epidemics first documented in 1930,
- 1953 -1955 : About 7000 malaria deaths reported from epidemic affected places in Gonder area near Lake Tana,
- In 1953 which further continued to hit Bahir Dar area , south of L. Tana,
- 1958 (June – December) massive epidemic in the Dembia Plains with 3 million cases & about 150,000 deaths (100,000 square miles area of altitude range of 1600-2150 m affected),
- 1987/88, 1994/95, 1997/98, 2003, 2005

Main Strategies

- Early Diagnosis and prompt Treatment
- Selective Vector Control(IRS, ITNs, Environmental control including abates)
- Early Detection and prompt Containment of Epidemics

Supportive(Surveillance, H.ED, Training, Operational R..)

(Goal:To eliminate Malaria by 2020)

DDT Exp .

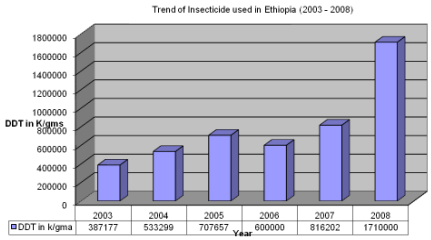
- Indoor residual spraying has been implemented in Ethiopia for more than 4 and half decades. Mainly as epidemic control
- The insecticide used is DDT 75%
- Every year 20% – 40% of spray able localities covered

Cont..

- DDT is the first line insecticide used for IRS, (cheap, effective & long residual effect – up to 6 months),
- Indoor residual spraying is applied in epidemic prone areas on selective basis - once or twice a year

DDT Consumption

- Six years Data



IRS techniques

- **IRS is undertaken in spray teams (a team has 4-5 spray persons)**
- **Spray persons are given training for 6 days on spraying techniques and safety precautions, adequate information to households is also gven.**
- **The spray-men are provided with safety materials like coveralls, straw huts, hand gloves, washing soaps, etc to protect themselves from contamination during and after spraying.**
-

Cont..

- **The insecticide is normally pre-packed in sachets of 535 gms to be added in 8 liters of spray pumps,**
- **After completing the spraying, households are given education to close the door for ½-1 hour before cleaning the floors,**
- **Finally, the left-over insecticide and the dust from the cleaned house is buried in pits.**

Cont..

- **Preparing houses for spraying,**
  - **Shift house furniture**
  - **Protecting bee hives,**
  - **Protecting food items,**
  - **Preparing pits for leftover insecticide trace disposal,**
- **Each team leader and spray men will also inspect and re-ensure that the houses are ready for spraying.**

Main Challenges

- Emerging Vector Resistance against DDT (Susceptibility Study results in Four regions, Afar, Amhara, Oromia and SNNPR specific sites)
- Challenge in Finding Alternative insecticide

Challenges while using DDT

- ❑Shortage of Spray chemical
- ❑ Inadequate supply of Spray apparatus
- ❑Trained man power
- ❑Operational Fund and proper report
- ❑surveillance
- ❑Operational Research
- ❑Challenge related to leakage out door

The way for ward

- Establish and/or strengthen insecticide resistance monitoring, evaluation and management systems and conduct entomological studies;
- Work on finding Alternative Insecticides including Insecticide Treated Nets(20.4 million Nets distributed over three years period) So far Deltamethrine impregnated

Cont

- Apply current WHO guidelines and recommendations for the use of DDT for IRS;
- collect and report to WHO on DDT exposure data;
- Share experiences and information on malaria vector control in general and the use of DDT for IRS in particular;

Cont..

- Establish budget lines for sustainable vector control in particular and malaria control in general;
- Promote inter-sectoral collaboration for the judicious use of DDT for IRS;
- Encourage cross-border collaboration;

Cont

- Establish effective regulatory mechanisms for safe use of DDT;

Thank You !

National Malaria Control Program-Kenya

USE OF DDT ALTERNATIVES IN MALARIA VECTOR CONTROL –KENYA

Dr Kiambo Njagi,
Division of Malaria Control; Ministry of public Health and Sanitation
E-Mail: knjagi@domckenya.or.ke

Malaria

- Malaria, remains the leading cause of morbidity and mortality in Kenya ; accounting for 30% of out patient attendance
- Four interventions:

-case management

-Vector control –insecticide based (ITNs and IRS)

-Prevention of malaria in pregnancy

- Epidemic preparedness and prevention- Insecticide based (IRS)

MALARIA IS A BIGGER PROBLEM THAN DDT, particularly during epidemic

Cerebral malaria in a comatose child with opisthotonus.

Malaria vector control-in Kenya

- Two main methods are LLINs and IRS both dependent on insecticides
- LLINs/ITNs distribution is used as alternative to DDT, with current coverage of 63% of household with one net
- Concern have been raised on environmental impact on used nets; could nets be "POPS"?
- How should they be disposed off safely?
- Are they recyclable, if yes to what products?

Classes of insecticides

- Organo-chlorines –DDT-Useful for IRS
- Organoposphates –Useful for IRS
- Carbamates –Used for IRS
- Pyrethroids –used both for Indoor residual spray and insecticide treated nets
- DDT is restricted due to fear of insecticide resistance, we can use it as the last results, it use has to be according to The Stockholm convention on persistent organic pollutants (POPs) and WHO guidelines.

Insecticides for IRS

- All the four classes may be selected, but consideration on:
- Duration of residual effect on sprayed surfaces, longer with DDT, Pyrethroids; shorter with others and therefore require re-application within same transmission cycle
- Mammalian Toxicity –lower in DDT and Pyrethroids, higher in organophosphates and carbamates

Insecticides for IRS-conted

- Susceptible to local vector, mosquitoes resistance to DDT is documented in most malaria endemic areas, closing monitoring is required to prolong the life of newer insecticides
- Biting/resting pattern of local species of malaria vector.

Insecticides for IRS-contd

- Environmental- DDT NOT bio-degradable trace found along the food chain, others break down to harmless compounds
- cost –Relative, transportation cost, application, protection to human and environmental, bulk in DDT
- Social acceptability to house owners, strains and smell are not tolerated

Use - Article 6 deals with stockpiles, their management & storage.

- Annex B deals with DDT

- **Restrict production & use in accordance with WHO recommendations and guidelines**
- **Every 3 yrs provide information on amount used, conditions of use, relevance to the disease management strategy**

LLINs

- Insecticides used in LLINs belongs to the class pyrethroids

-Deltamethrin
- Permethrin
- Aphacypermethrin
- Lambda cyhalothtrin

Could LLIN be POPS

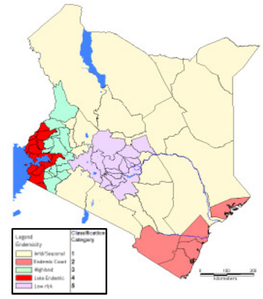
- What happens to used nets? It has insecticide up to 40% and some net are made from non-biodegradable materials polyethylene

IRS

- IRS has been in use since 2002, for prevention of highland malaria epidemics
- From 2008, and with support of PMI, the NMCP is scaling –up IRS to endemic districts
- Pyrethroids –synthetic and natural pyrethrums extract

Conclusion

- DDT is NOT currently used in Kenya as the two major malaria vectors interventions (LLINs & IRS) depends on pyrethroids with acceptable results
- DDT is not de-registered, as it can be used in case of insecticide resistance to other insecticides, with emerging malaria epidemics



National Malaria Control Program-Uganda

Experience Sharing on Malaria Control & Alternatives to DDT

Paper presented at : The African CSOs and Experts Meeting on DDT

Dr. Lugemwa Myers (International Health Specialist) MoH POB 7272 Kampala.e-mail:myers_1956@ health.go.ug

6th. April, 2009
Mbezi Garden Hotel Dar es Salaam

Presentation Format

- History & Malaria Epidemiology
- Burden of Disease
- Background to DDT use in Uganda
- DDT use in other countries
- Why DDT use and How?
- Opposition
- Achievements of recent IRS DDT use in Uganda

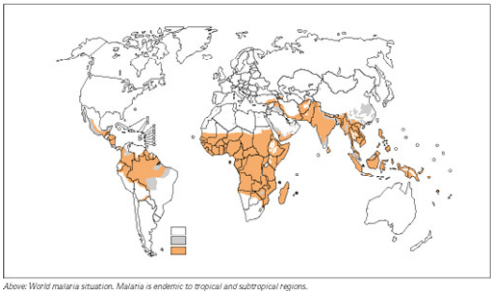
History and Epidemiology of Malaria

- Malaria is as old as man-kind
- Literatures in Chinese history by Emperor Hung Ti 2700 BC
- Hippocratic times 4000 BC
- Romans called it *Mal aria* (bad air from marshes)
- Africa baptized: The Whiteman's Grave/ Black continent by the 1st White man in the 17th Century due to malaria mortality
- Associated with Witch craft in most African countries if associated with convulsions
- Linked to Maize season and mango eating in Uganda

Problem definition: Malaria Situation World

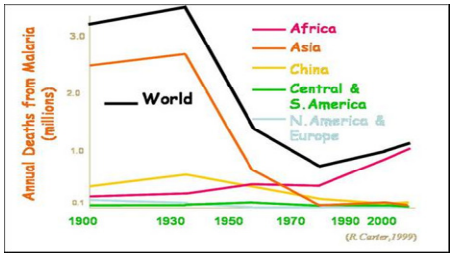
- Globally 350–500 million malaria cases reported annually
- Three million people die from malaria each year
- In Africa one person dies from malaria every 30 seconds. *(80% of global deaths due to malaria)*
- In Uganda 320 people die from malaria each day

Global distribution of malaria



Above: World malaria situation. Malaria is endemic to tropical and subtropical regions.

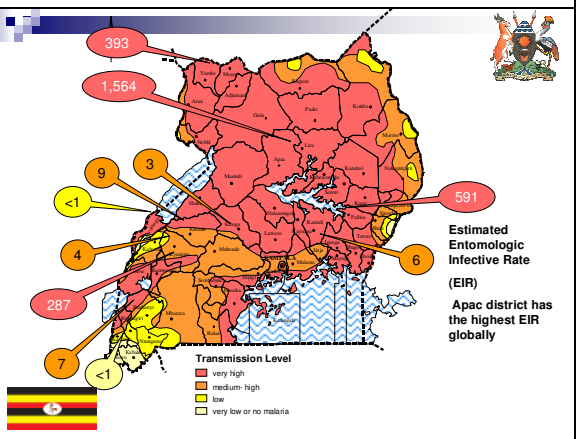
MALARIA DURING THE 20TH CENTURY



Source: Reproduced from a presentation by Dr Andrew Kitua, National Institute for Medical Research, Tanzania

Burden of Malaria in Uganda

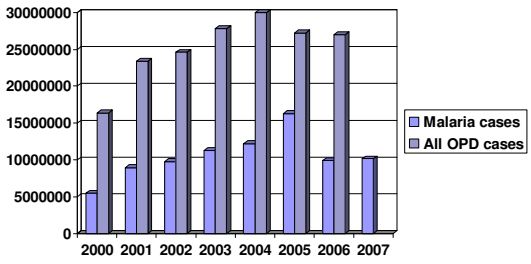
- Malaria accounts for 26% of the burden of Disease in Uganda (BOD Uganda 1995) and is responsible for:
- One in every 3 persons +attending OPD (33%)
- One in every 4 persons admitted in hospitals (25%)
- One in every 5 child deaths in hospital (20%)
- 70,000 – 120,000 child deaths in a year or 320 deaths every day
- Severe anaemia in children/pregnancy ↑abortions, ↑low birth weight ↑MMR ↑IMR
- Severe economic losses, lost school days, low economic productivity, long term disability



Estimated Entomologic Infective Rate (EIR)

Apac district has the highest EIR globally

Uganda; Trend of malaria OPD Cases 2000 to 2006 (HMIS DATA)



Goal and Overall Objective of Malaria Control Strategic plan 2005/6-9/10

- Goal : To control and prevent malaria morbidity and mortality, minimize social effects and economic losses attributable to malaria in the country.
- Overall objective : Go to national scale with effective interventions to prevent and treat malaria and sustain high coverage levels

Malaria Morbidity and Mortality

Malaria at work

Preamble: Use of DDT in Uganda

- In 1959-63, the then Colonial Government, following the overpopulation trends in Kigezi District, decided to migrate some families from Kisoro to part of the Queen Elizabeth National Park. However, due to the high mortality and morbidity due to malaria that subsequently followed, government initiated the N. Kigezi Malaria Eradication Project using DDT.
- Consequent to the results from this project and examples from other countries (S.A, Eritrea, Ethiopia, Israel etc and based on TA from WHO, Stockholm Convention, NEMA MoH decided to use DDT in Malaria Control

Use of DDT in Uganda (1)

- DDT (**Dudumaki**) was used in Uganda on a large scale for agricultural purposes especially for cotton spraying from the 1940s to the 1970s
- DDT in a powder form called **Safi Safi** was used widely for preservation of beans, peas, etc against weevils
- DDT successfully used during the Pilot Malaria Eradication Project in Kigezi between 1959 &1963 resulting in:
  - near elimination of malaria in the area
  - *practical elimination of Anopheles funestus* and the dramatic reduction of *An. gambiae s.l.* densities
  - control of malaria epidemics/foci around the Lakes Bunyonyi, Mutanda, Kimbugu in the current Kabale and Kisoro Districts

Use of DDT in Uganda (2)

- DDT was also used to control Simulium flies along the Victoria Nile at Owen Falls Dam and led to the elimination of the onchocerciasis focus along the Victoria Nile area.

Use of DDT in Africa

Countries currently using DDT in Africa include:

- Ethiopia
- South Africa
- Swaziland
- Eritrea
- Namibia
- Madagascar
- Mauritius
- Morocco
- Mozambique
- Sudan
- Zambia
- Zimbabwe.

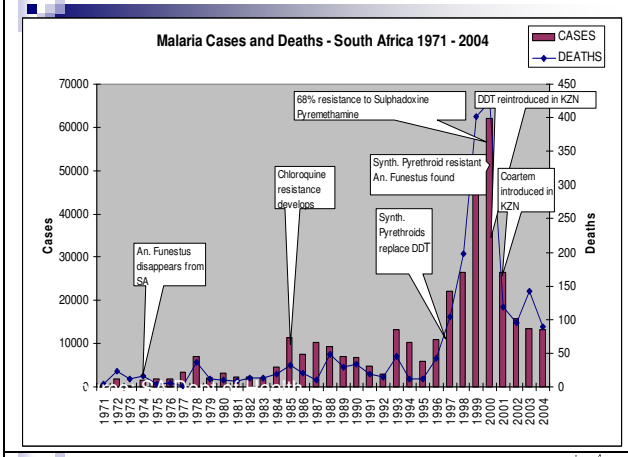
- More countries, especially SADC countries, are coming on board to use DDT for malaria control

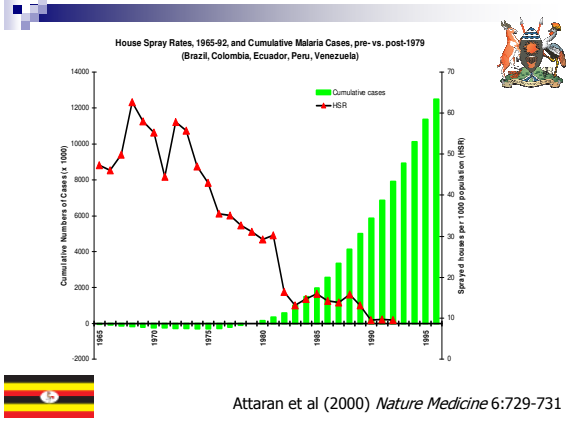
Dates Countries registered with Stockholm Convention Secretariat to DDT use

Country	Registration date
Botswana	29 September 2004
People' Republic of China	2 February 2005
Ethiopia	12 September 2006
India	27 October 2006
Madagascar	27 August 2007
Marshal Islands	22 May 2004
Mauritius	27 September 2007
Morocco	14 April 2005

Dates Countries registered with Stockholm Convention Secretariat to DDT use

Country	Registration date
Mozambique	13 September 2007
Myanmar	8 August 2006
Senegal	9 July 2006
South Africa	24 November 2004
Swaziland	28 June 2006
Uganda	20 July 2008
Republic of Yemen	29 March 2005





Attaran et al (2000) *Nature Medicine* 6:729-731

Incidences of malaria before and after IRS use of DDT (Büchel, 1983)

Country	Year before DDT use	No. of cases	Year after DDT use	No. of cases
Cuba	1962	3,519	1969	3
Jamaica	1954	4,417	1969	0
Venezuela	1943	8,171,115	1958	800
India	1935	>100 million	1969	285,962
Italy	1945	411,602	1968	37
Yugoslavia	1937	169,545	1969	15
Taiwan	1945	>1 million	1969	9
Sri Lanka (Ceylon)	Before 1950	>2 million	1963	17

Reasons for using IRS (including DDT) for Malaria Control in Uganda

- Both WHO and the Stockholm Convention on POPs permit the production and use of DDT strictly for disease vector control, under WHO recommendations and guidelines.
- Despite efforts to control malaria in the Uganda, malaria morbidity and mortality in country continues to increase (as shown in the graph) mainly because of insufficient action to break the transmission cycle.

Reasons for using IRS (including DDT) for Malaria Elimination in Uganda (Cont.)

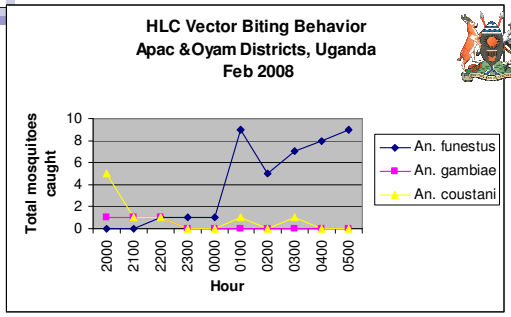
- Vector Control (VC) to reduce malaria vectors is therefore an essential component of any malaria control programme and is very vital for Malaria Elimination.
- The use of IRS, including the use of DDT, is therefore key to reducing the morbidity and mortality associated with malaria
- IRS is also the most cost-effective method for controlling malaria epidemics

Reasons for using IRS (including DDT) for Malaria Control in Uganda (Cont.)

- DDT either kills on contact toxicity, volatile toxicity and repellent toxicity or irritates mosquitoes in a sprayed house and the few mosquitoes that venture in, most exit without biting, thus reducing malaria transmission
- DDT is both cheaper and more effective than any of the alternative insecticides available
- DDT maintains its ability to repel and kill malaria vector mosquitoes after being sprayed on inside walls of houses for >9 months, which is not the case with alternative insecticides.

Reasons for using IRS (including DDT) for Malaria Control in Uganda (Cont.)

- Anopheles Female mosquitoes feed and rest indoors. Therefore, DDT spraying for malaria control is only done **INDOORS** and **NOT OUTDOORS!**
- DDT is sprayed in small quantities indoors and therefore it has minimal environmental effects
- Evidence suggests that the reported environmental effects were a result of DDT overuse in agriculture and **NOT** from indoor spraying for malaria control
- The tremendous public health benefits of DDT outweigh the "feared" health risks.

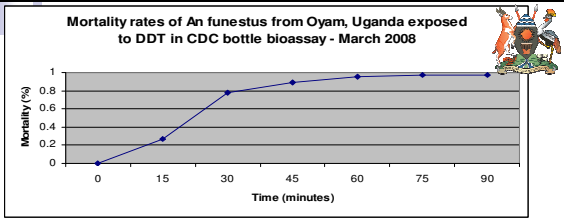


Six individuals were captured outdoors (they are included in the data above). One *An. gambiae* was captured outdoors between 2200-2300 hrs, while five *An. coustani* were captured between 2000-2200hrs. An. funestus after midnight.

WHOPES recommended insecticides for IRS against malaria vectors

Compound and Formulation	Class	Dosage g/m2	Duration effective (months)
alpha-cypermethrin – WP; SC	P	0.02 – 0.03	4-6
bendiocarb – WP	C	0.10 – 0.40	2-6
bifenthrin – WP	P	0.025 – 0.050	3-6
cyfluthrin – WP	P	0.02 – 0.05	3-6
DDT - WP	OC	1.0 – 2.0	>6
deltamethrin – WP	P	0.010 – 0.025	2-3
etofenprox – WP	P	0.10 – 0.30	3-6
fenitrothion – WP	OP	2.0	3-6
lambda-cyhalothrin – WP	P	0.02 – 0.03	3-6
pirimiphos-methyl – WP; EC	OP	1.0 – 2.0	2-3
propoxur - WP	C	1.0 – 2.0	3-6

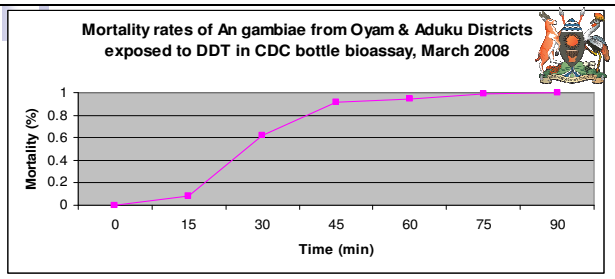
WP = wettable powder, SC = suspension concentrate, EC = emulsifiable concentrate
C = carbamate, OC = organochlorine, OP = organophosphate, P = pyrethroid
Source: Malaria Vector Control – WHO/CDS/WHOPES/2002.5



24 hr mortality = 0.98
[Tests conducted 2-3 days after bottles were charged]
Total An. funestus tested: 234 (219 females, 15 males)
Collection method: human-baited bednet traps and aspiration of resting mosquitoes inside homes

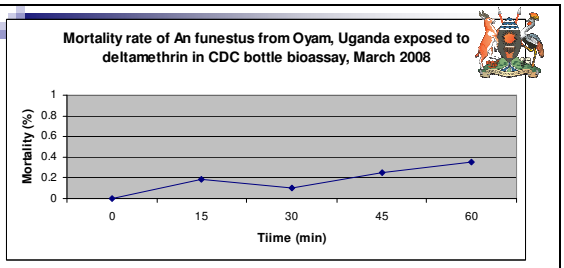
Collection location: Tetoci Village, Aber sub-country, Oyam district

Dose: 100ug DDT/bottle



24 hr mortality = .90

Total An. gambiae tested: 84
Collection method: larvae scooping and rearing
Collection locations: Aduku sub-country, Apac district & Iceme sub-county, Oyam district
Dose: 100ug DDT/bottle



24 hr mortality = 0.46
Total An. funestus tested: 103 (101 females, 2 males)

Collection method: human-baited bednet traps and aspiration of resting mosquitoes inside homes
Collection location: Tetoci Village, Aber sub-country, Oyam district

Program Components

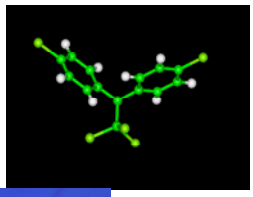
- System for supply of logistics, insecticide and equipment established
- Have trained and deployed 5000+ spray operators and wash persons
- All spray personnel underwent medical exam for fitness and a sample of bio-specimens tested for traces of insecticide
- Environmental monitoring conducted to assess compliance with set standards

Opposition

Environmentalists and other members of society opposed to DDT that it causes, *inter alia:*

- Infertility
- Hepatocellur Cancer & others
- Terratogenicity
- Impotence
- Brain damage
- Persistence in the environment
- Persists in food chain

Main Characters in DDT Controversy:



Disease Control Policies & Strategies

- Public health policies therefore must be based on science and data, not on conventional wisdom or politics or *Malwa* rhetoric.
- There is Scientific and Public Health Programmatic evidence on efficacy of DDT IRS for malaria control and elimination

DDT and Cancer

- There have been many studies conducted which had indicated DDT causes cancer but none has stood rigorous scientific enquiry
- Indeed, there is **no** scientifically replicated study that has been cited as having **unequivocally demonstrated** a case of case of cancer from DDT after >50 years of DDT use

DDT and Cancer

- DDT detractors claim it causes cancer, yet;
- IARC and US National Cancer Institute classifies DDT as "possible carcinogen" with a lower rating than **coffee, peanut butter, beer**;
- DDT factory workers exposed to 600 X the daily accepted level of DDT during 9 to 19 years without elevated cancer Archives of Environmental Health 15:766-775
- Primates fed > 33,000X daily human consumption ≠ cancer; Journal of Cancer Research and Clinical Oncology, 1999; 125(3-4):219-25
- No adverse effects among volunteers ingesting 35mg DDT/day for 21 months
- DDT has reduced tumors in animals... Agency for Toxic Substances and Disease Registry, Sept. 2002
- There is no firm association between elevated exposure to DDE or PCB and breast cancer after 20 years of follow up (<50 years; >55 years?); Cancer Epidemiol. Biomarkers Prev. 1999 June; 8(6):525-32

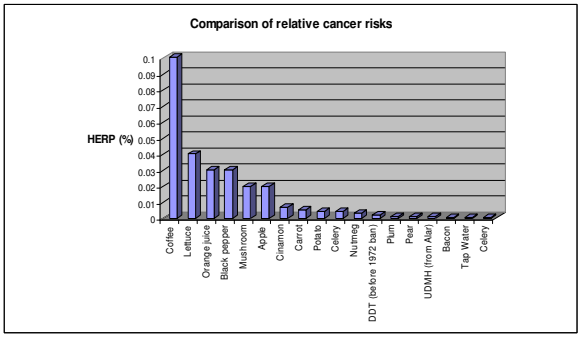
PUBLIC HEALTH USE OF DDT (1):

First large scale use of DDT 1943 - 500 gallons of DDT to fight louse-born typhus epidemic; also used by US army to kill lice

Naples 1944 - 3 million people doused with DDT. Typhus epidemic halted within weeks.

Both WHO and UNEP and the Stockholm Convention support DDT use for IRS

Comparison of Relative Cancer Risks



Arguments: DDT Toxicity and Human Health

- *Dr J. Gordon Edwards eating DDT (Esquire Magazine)*
- Dr Edwards died at a ripe old age of 85 years despite eating DDT every time he gave a lecture on DDT for many years

DDT/DDE Assays in Uganda for DDT IRS > 40 years ago (2005)

A. Plasma levels	Kihihi	Nyarusiza
No.of samples Mean SD of DDT ppb Statistical significance	150 52.41(34.31) 0.000	169 9.65 (10.81)
Interpretation: There is a significant difference between the Mean of plasma DDT in Kihihi and Nyarusiiza people		
B. Levels of DDT in Urine	**Kihihi**	**Nyarusiza**
Number of samples	45	44
Mean (SD) of DDT in ppb	11.66 (17.66)	6.91 (9.67)
Significance of difference between means **0.12**		
Interpretation: **No significant difference**		

DDT/DDE Assays (Cont'd)

C. Soil levels of DDT	Kihihi	Nyarusiza
No. .of samples Mean SD of DDT ppb Significance of difference between means	34 7.28 (5.80) 0.000	35 1.09 (1.37)
Interpretation: **The DDT concentration is significantly differentl in the two areas**		
D. Levels of DDT in beans	**Kihihi**	**Nyarusiza**
No.of samples Mean SD of DDT ppb Significance of difference between means	22 10.12 (14.12) 0.57	15 7.30 (15.81)
Meaning: No difference between the means	11.66 (17.66)	6.91 (9.67)
Significance of difference between means **0.12**		

Maximum DDT found in meat fat (Beef) around the world"

Country	Year	Amount (ppb)
1.Former Soviet Union	1991	2000
2.China	1990	4100
3.India	1993	7000
4.Egypt	1989	4100
5.Spain	1994	9100

Consultation/Coordination issues Prior to DDT use in Uganda 2007 1

- Prior to Formulation of the IRS DDT Policy, consultations and coordination were made with the following:

1. Sector Ministries (Agriculture, Animal & Fisheries, Water and Environment)
2. Bodies such as : NEMA
3. The Agro and Fish Export Community
4. International bodies (WHO, Stocholm Convention)
5. Visitation by MPs in the 6th. Parliament to S. Africa

Consultation/Coordination issues 2

- Scientific Studies by local scientists were conducted in areas where DDT was used in malaria control in the 1950's & 1960's
- Comparative Insecticide studies were conducted
- Literature regarding DDT use in Malaria Control was reviewed by both the academia and technical officers of the MoH
- MoH consulted other NMCP conducting DDT IRS in other countries

Stages taken by MoH prior to DDT IRS program implementation

- Open debates and sensitization of political leaders and the community
- Public Hearing by NEMA
- Application to the Stockholm Convention (SC) and WHO
- Fulfillment of conditions set by SC, WHO & NEMA prior to and after implementation
- Inauguration of the Multi-Sectoral IRS Monitoring Team
- Assurances of purchase of Uganda's Agro-Exports by EU

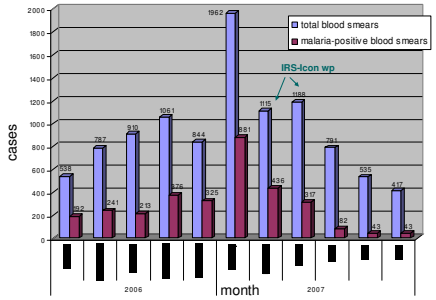
Program Results/Success

- High coverage achieved – more than 92% of targeted homes have been sprayed in all areas.
- High compliance and acceptance from community members.
- More than 2.6 million people protected in past 2 years
- Rapid decline of malaria parastemia from 30% to 4%
- Coartem stocks high/fear of expiry.

Summary IRS Coverage Data in Uganda (July'06 – April'07)

District	No. & % HH Sprayed	Population Protected
Kabale 1st & 2nd rounds	103,329 (96%)	488,509
Kanungu	45,3219(100%)	191,399
Kitgum	67,201 (95%)	297,237
Pader	138,458 (97%)	538,752
Amuru	102,247 (98.5%)	399,175
Gulu	122,607 (99.9%)	497,164
Apac	95,228 (92.4%)	322,697
Oyam	96,155 (93.9%)	315,595
Total	**657,860**	**2,602,237**

Malaria-positive Blood Smears,
Kihihi Health Center IV, Kanungu District
Aug 2006-June 2007



Challenges

- **Adequate funding to sustain IRS.**
- **IRS currently dependant on donor funds**
- **Human resource issues including Attrition of Health Workers due to lack of incentives**
- **Negative publicity perpetuated based on political inclinations rather than technical reasons**
- **Economic interests by both local and foreign business community over the health of the *wananchi***
- **Uncalled for Court Injunction, with resultant delay in program implementation**

Table 2: Fecundity of sampled men from (A) Kihihi n=21 & (B) Nyarusiza (n=21)

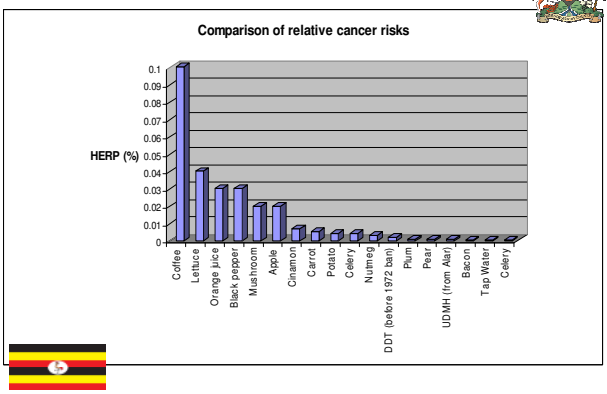
Sample	A	B
Mean No. of wives	1.3	1.2
Mean No. of children	9	8
Mean No. of Grand children	14	9

Observations:

- There is DDT in both Kihihi and Nyarusiza people's plasma, the Kihihi levels on average being significantly higher than that of Nyarisiza. Nevertheless, these levels are in parts per billion (ppb) are 1000 times lower than the range of 5-10 parts per million (ppm) expected in an average American
- On average Kihihi people excrete more DDT in urine than the Nyarusiza people do although the difference is not significant
- Kihihi soils have higher concentration of DDT that Nyarusiza soils and the difference is significant

DISCUSSION

- QENP which drains Kihihi boasts of 100 mammal species, a remarkable 606 bird species and claims the highest biodiversity rating of any game reserve in the world[3].
- In comparison to our findings, DDT in blood drawn from European Ministers of Health and Environment[4] were reported to the tune of 3300 ppb which is 66 fold of that found in Kihihi people.
- DDT is found in trace levels almost all over the world[5].



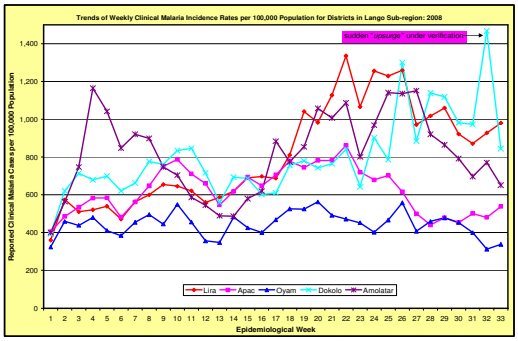
Reasons for using IRS (including DDT) for Malaria Control in Uganda

- Both WHO and the Stockholm Convention on POPs permit the production and use of DDT strictly for disease vector control, under WHO recommendations and guidelines.
- Despite efforts to control malaria in the Uganda, malaria morbidity and mortality in country continues to increase (as shown in the graph) mainly because of **insufficient action to break the transmission cycle**

Chemical management in IRS

- Mgt of pgms using insecticides in public health is more strict than in agriculture
- There is very strict management of insecticides for IRS irrespective of class (OC, OPh, Py or Ca)
- All spray personnel are tested before and after IRS
- Pregnant women are not allowed to be involved in IRS
- Only well trained and closely supervised spray personnel are used
- There is close monitoring insecticide use to ensure strict accountability of insecticides
- The spray personnel, the community members, domestic animals and the environment are protected

Trends in Clinical Malaria Cases in districts in Lango Sub region, Week 1-33, 2008



DDT/DDE in food stuffs in Toronto, Canada (1996)[6]

Food code	Name of food	DDT/DDE ppb
G16	Raw potatoes	0.49
G18	Boiled unpeeled potato	0.54
G08	Celery	0.64
G04	Broccoli	2.30

DDT/DDE in Kihiil Fish samples 2005

Type of fish	DDT/DDE (ppb)
Clarius (Male)	0.00
Tilapia (Ngege)	0.12
Haprochromis (Njunguli)	3.94
Protopterus (Mamba)	4.92
Bagrus (Semutundu)	22.98

Coincidental DDT in Pre Spray samples in Northern Uganda 2008

Location	No.of samples	# samples with DDT below detectable level	# samples with detectable level DDT	DDT ppm
Homesteads	75	48	27	615
Cotton Building Dust	6	2	4	1.8
Soil	83	75	8	0.2
Human Urine	100	63	37	0.4
Serum	100	48	52	0.65

Way Forward

- Build capacity for IRS, both at national and district level
- Initially, utilize pyrethroids to build a strong IRS system in the country and build capacity and confidence amongst spray personnel before re-introducing DDT IRS
- Document lessons learnt from pyrethroid IRS for going to scale with IRS
- **Conduct routine IRS in a phased & mosaic manner – start with a few districts and extend to more districts.**
- **Recrute CSO as allies in the monitoring and sensitization of communities in IRS and other malaria control programs**

REFERENCES

1. de Zulueta J, Kafuko GW, Cullen JR and Pedersen CK. The results of first year of malaria eradication project in Northern Kigezi, Uganda. East Afr Med J 1961; 38:1-26.
2. de Zulueta J, Kafuko GW, McCrae WR, Cullen JR, Pedersen CK. A Malaria Eradication Experiment in Highlands of Kigezi, Uganda. East Afr Med J 1964;41(3):102-120
3. Uganda's National Parks: Queen Elizabeth National Park.
4. http://www.accessugandatours.com/naparksqe.htm
   Bad Blood? A survey of Chemicals in blood of European Ministers. http://www.panda.org/detox
5. Andrea Dankwardt 1999
   Recommendations about the use of Immunochemical methods for the FAO/IAEA Training reference centre for food and pesticide control sension GmbH, UTG centre for Environmental Technologies 86167 Augsburg, Germany.
6. Htt://www.hc – sc.gc,ca/food-aliment/cs-ipc/fr-ra/e-pesticide-conc-toronto. 96 html
7. Htt://www.hc – sc.gc,ca/food-aliment/cs-ipc/fr-ra/e-pesticide-conc-toronto. 96 html
8. Apac and Oyam (USAID, CDC, MoH) Spray Report

Malaria and Poverty or Poverty and Malaria ?

Disease Control Policies & Strategies

- Public health policies therefore must be based on science and data, not on conventional wisdom or politics or *Malwa* rhetoric.
- There is Scientific and Public Health Programmatic evidence on efficacy of DDT IRS for malaria control and elimination

Environmentalists Perception of Malaria Control Programs...

Thank you!

NGO Experiences on Country Malaria Control Programmes/ Plans

ETHIOPIA

THE STATUS OF DDT USE IN THE ETHIOPIAN RIFT VALLEY

By
Tadesse Amera
PAN-Ethiopia

April 6-8,2009
Dar-es-Salaam, Tanzania

Based on two studies

- An assessment of pesticide use, practice and hazards in the Ethiopian Rift Valley.
  - About 30% of the study participants confirmed that they are using DDT for Agriculture.
  - Elderly people drink diluted cup of DDT for "Malaria prevention"
- Comparative study of impacts of cotton IPM in southern Ethiopia Rift Valley
  - About 30% of farmers use DDT for Agriculture pest control

Other cases of DDT

- DDT residue obtained in export coffee and Japan Banned import
- DDT resistance not studied
- DDT use increase every year
- DDT formulation plant at the Ethiopian Rift Valley
  - Affecting the Rift Valley bio-diversity

Efforts for mitigation

- Fund obtained from SAICM
- A one day workshop organized
- People from
  - Health, Agriculture, Quality and standard, Trade and industry of the government
  - Universities
  - NGOs
  - UN Agencies and
  - Private sector were invited

Participants of the Workshop

What was presented

- The case of Malaria and DDT by MoH of Ethiopia
- The status of DDT Use in the Ethiopian Rift Valley by PAN-Ethiopia
- DDT-RRA by PAN-Ethiopia

Group Discussion

Group Discussion Results

- **Major Problems attributed to DDT use:**
  - Public Health
  - Environmental contamination
  - Affect national economy
  - Negative image on the country

Group Discussion

- **Causes of the problem are:**
  - Misuse of DDT by farmers/sprayers, producers (Adami Tulu pesticide Plant), retailers
  - Lack of awareness / Knowledge at all levels
  - Pest identification & pesticide selection
  - Source of DDT
  - Availability (price & nearby)
  - Contraband trade across border and in country
  - Inaccurate estimation of DDT required by Ministry of Health

Group Discussion…

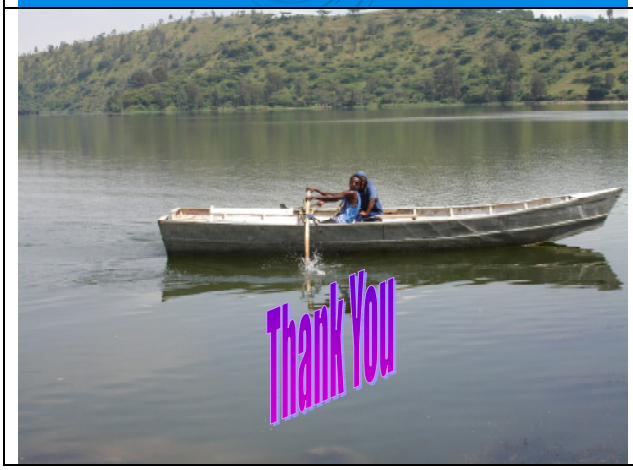
- **Solutions:**
  - Training of Trainers for Health Extension Workers, Development Agents and Woreda experts
  - Awareness creation campaign to farmers, sprayers, authorities and retailers
  - Coordination among Ministry of Health, Ministry of Agriculture and Rural Development, Ministry of Trade and Industry, Ministry of Education etc
  - Create information network
  - Alternative pest controlling mechanism

Group Discussion…

- Solution…
  - Community participation
  - Hiring responsible sprayers and incentive mechanisms
  - Using different media (Radio, TV, news papers, posters, leaflets etc)
  - Legal enforcement on across border & in country contrabands
  - Border commission collaboration
  - Involvement of Adami Tulu Pesticide Factory

Challenge

- The Coordination and Fundraising for the solution is left to PAN-Ethiopia



SOUTH AFRICA

African CSOs and Experts Meeting on DDT
South African Update

April 07, 2009
By Mark Wells
mark@twig.org.za

TWIG.ORG.ZA
third world investment gateway

Malaria is found in areas of Limpopo and Kwa-Zulu Natal Provinces

Main vector is *Anopheles arabiensis* which is not resistant to pyrethroids.

In 1999 and 2000 *Anopheles phenestus* re-emerged during the poorly managed 1999-2000 malaria epidemic.

DDT reintroduced after the 2000 malaria epidemic on the basis that *Anopheles phenestus* is resistant to pyrethroids.

No evidence to show that *Anopheles phenestus* has not once again been eradicated as it was when the DDT indoor residual spraying programme was first introduced more than thirty years ago.

TWIG.ORG.ZA
third world investment gateway

South Africa remains committed to its DDT based "Roll-back Malaria" programme in all areas **including the Limpopo province where the only vector is *Anopheles arabiensis* can be controlled effectively by pyrethroids.**

Department of Health responsible for the Indoor Residual Spraying programme with good management of DDT inventories and containers.

Department of Environment and Tourism is responsible for the Stockholm Convention National Implementation Plan (NIP)

Government has not effectively implemented many of its NIP commitments

The division of responsibility on DDT has further contributed ineffective NIP implementation.

In the absence of a NIP DDT action plan it is not clear what the actual DDT usage is, although industry sources suggest that the actual DDT usage is in the order of 33 tons per year.

In 2007 South Africa had a DDT stockpile of 274 tons

Evidence shows that the levels of the DDT metabolite, DDE, in the bodies of residents of DDT sprayed houses in the Limpopo province was 216.5 mg/kg[1]

[i] C de Jager1, NH Aneck-Hahn1, G Schulenburg, P Farias, MS Bornman, 'Reduced Seminal Parameters Associated With Environmental DDT Exposure In Men From Limpopo Province, South Africa.', Environmental Health, School of Health Systems & Public Health, University of Pretoria, 2006.

Concerns:

1. Studies by Bornman *et al* show serious congenital birth defects of children from houses sprayed with DDT
2. Only mud huts are sprayed with DDT, ie. the poorest of the poor
3. Householders are not warned of the dangers of DDT
4. DDT used unnecessarily in the Limpopo province where there is no resistance to pyrethroids
5. No focus on the development of alternatives such as lippea javanica deterrent and Bt as a vector control
6. Efficacy of natural Bt vector control under threat from low level contamination of pollen and crop residues from Genetically Modified Bt crops engineered to release Bt toxins. (The Agricultural Research Centre have show that the SA Bolworm has become resistant to Bt due GM crop exposure)

EYAN-GHANA

FIGHTING MALARIA IN GHANA

BY

OSEI AKOTO

ENVIRONMENTAL YOUTH ACTION NETWORK

GHANA

@

African CSOs and Experts Meeting on DDT,

Mbezi Garden Hotel, Dar es Salaam, Tanzania,

6-8 April 2009

INTRODUCTION

- 17 Million Ghanaians are infected by malaria every year
- It cost the nation US$94 million for treatment alone

USE of DDT in Ghana for Malaria Control

- For Agricultural and public health purposed was banned in 1985
- Due to its damaging effects on human health and the environment
- Recently, the WHO has recommended the re-introduction of DDT for disease vector control
- The EPA is the regulatory body in Ghana with the mandate to register pesticides for use in the country

Status of DDT in Relation to the Pesticides Control and Management Act, 1996 (Act 528)

- The Act stipulates that 'no person shall import, export, manufacture, distribute, advertise, sell or use any pesticide in Ghana unless the pesticide has been registered by the EPA in accordance with this Act'
- Section 2 of the Act, however, stipulates that the Agency may authorise the importation of an unregistered pesticide in the event of national emergency

Alternative to DDT

- EPA has approved four products for residual spraying purposes
  - Bistar 10WP (Bifenthrin)
  - Icon 10 CS (Lambda cyhalothrin)
  - Delet 2.5 EC 9Deltamethrin
  - Vectorgaurd 40 WP (Pirimiphos methyl)
- These products have been tried and tested by the WHO and recommended for residual spraying against mosquitoes

Possible Problems associated with DDT use in Ghana

- **Environmental Problems**
  - It is persistent in the environment
  - Effects of such pesticides will increase if appropriate measures are not taken to control its use
- **Possible Misuse in Agriculture**
  - Banned in 1985
  - DDT is however very cheap compared to either pesticides and also known to be very effective against a broad range of insect pests
  - These properties of the chemical will make it very attractive to farmers to misapply on their crops

CONCLUSION

- Based on the above, EPA recommends that the Government of Ghana should resist any external pressures to re-introduce DDT into the country
  - Since equally effective alternatives have been approved for use in the country

MALARIA AND DDT USE - *NIGERIAN EXPERIENCE*

PRESENTED

BY

EUGENE O. ITUA

SUSTAINABLE RESEARCH & ACTION FOR ENVIRONMENTAL DEVELOPMENT (SRADev)

@

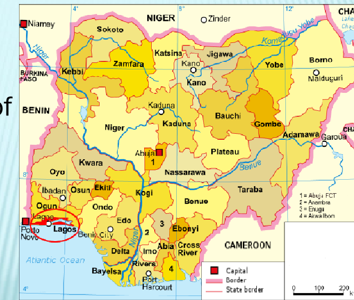
AFRICAN CSOS AND EXPERTS MEETING ON DDT,

MBEZI GARDEN HOTEL, DAR ES SALAAM, TANZANIA,

6-8 APRIL 2009

INTRODUCTION

•Nigeria is home to a population of 150 million people.



MALARIA IN NIGERIA

- Malaria is highly endemic in Nigeria and its remains one of the leading causes of morbidity and mortality in the country
- Malaria accounts for 40% of disease burden reported at the public health facilities.
- It accounts for 30% of all childhood deaths and is associated with 11% of maternal deaths.
- The burden of disease of malaria on the Nigerian population is self-evident.

MALARIA IN NIGERIA, *CONT'D*

- Over 99% of Nigerians living in Nigeria have malaria parasites living in their liver (Offeboche, 2005).
  - The malaria parasites will emerge from the liver into the blood stream when the immune defenses against malaria are low.
  - It is from the blood stream that malaria causes fever and end-organ effects such as muscle pains, cerebral malaria with convulsions, anaemia and kidney failure.
- These effects lead to absenteeism from school and work, avoidance of resorts, economic loss, poverty and death.
- Malaria is no respecter of persons. It kills politicians and academics, civil servants and self-employed, the rich and the poor, young and old. Some of our foreign European visitors have returned home only to suffer from malaria and die.
- In fact, the loss to the economy as a direct result of malaria infections has been estimated as Naira 132 billion (£530 million).
- Malaria is both a cause and a consequence of poverty in Nigeria

FIGHTING MALARIA

- Nigeria is deeply committed to making progress toward the achievement of the Millennium Development Goals and it recognises the fact that, without firm efforts to control malaria, achievement of the targets related to child mortality, maternal mortality, and reducing the burden of communicable disease will not be possible.
  - Malaria therefore constitutes a significant development challenge for Nigeria.
- Previous efforts to control malaria in Nigeria have not led to a sustained reduction in the burden of mortality and morbidity pre-1998.

FIGHTING MALARIA, *CONT'D*

- In 1998 the Roll Back Malaria (RBM) Partnership was launched in Nigeria as a dynamic movement involving all stakeholders affected by or concerned with malaria.
  - Nigeria (in 1998) participated in pre-testing situation analysis instruments.
- Roll Back Malaria (RBM; www.rbm.who.int), a global partnership that includes the WHO and the United Nations, was launched in 1998, and endorsed two years later (Abuja Declaration) by African heads of state in Abuja, Nigeria, with a commitment to halve the number of deaths from malaria worldwide by 2010.

GENERAL EFFORTS TO ERADICATE MALARIA

- Measures have been undertaken in the country to develop a dynamic national RBM movement. These have involved all levels of the political structure and a broad range of partners.
- A National Malaria Control Committee has been inaugurated to play a pivotal role in advocacy, social mobilization and implementation of RBM in Nigeria. This has included expertise in the various areas and key representatives from the civil society.
- Four sub-committees were inaugurated to look into key areas of RBM—including publicity and community mobilization; case management and drug policy.
- The Federal Ministry of Health has accorded malaria control as one of its priorities in the current health sector development programme.
- Nigeria has reduced taxes and tariffs on bed nets from 50% to 5% and waived taxes and tariffs on insecticides.
- Manufacturers have committed to RBM and given assurances of their capacity to manufacture 10,000 bednets per month to meet the country's needs.
- A stakeholders and partners Round Table meeting was held in January, 2001. It adopted a six-months intensive plan which included the development of a medium to long-term national strategic plan.

EFFORTS TODAY

- SUPPORT TO THE NATIONAL MALARIA PROGRAMME (SuNMaP),NIGERIA - A DFID-FUNDED PROJECT 2008-2012
- OUTPUTS
  - + Improved National, State and LGA level capacity for policy development, planning and coordination.
  - + Effective harmonisation of all agencies' support for the malaria subsector at federal, state and local levels.
  - + Improved population coverage of effective measures for the prevention of malaria.
  - + Improved access of the population to effective treatment for malaria.
  - + Increased community awareness and demand for effective malaria treatment and prevention.
  - + Operational research into key areas of prevention and treatment provides the evidence base for more effective strategies.

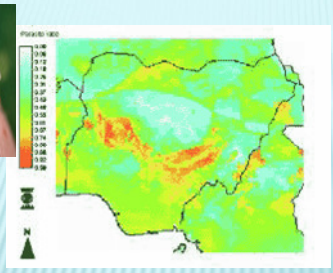
LATEST REPORT

- The Abuja targets have not been achieved.
- Reports (2005) show that
  - +only 11.3% of children under 5 years are able to access currently recommended treatment;
  - +only 8.4% of pregnant women and children benefit from ITNs; and
  - +9.4% of pregnant women at risk of malaria have access to presumptive treatment.
  - +malaria is a leading cause of death among children in the country.

LATEST REPORT , CONTD

- Recently, Minister of State for Health, said that
  - +about 30% of deaths among children under age five and that 25% of deaths among infants are caused by malaria.
  - +300,000 Nigerian children die annually from malaria and that about 50% of adults contract malaria at least once annually.
  - +In addition, 11% of deaths among pregnant women are caused by malaria

Anticipated parasite prevalence in children aged 1-10 years in Nigeria



(www.mara.org.za

VECTOR CONTROL USING THE DIRECT ATTACK METHOD: USE OF DDT

- Although some studies have reported the presence of DDT resistant mosquitoes, it is still one of the most effective and economical forms of insecticide in the control of malaria.
- Environmental laws are leading towards the total ban of the use of DDT.
  - + Due to its persistence in the environment and its effect on the ecosystem, it is regarded as a persistent organic pollutant.
- Nigeria is signatory to
  - + Stockholm Convention on Persistent Organic Pollutants (POPS).
  - + the Rotterdam Convention
- Thus the Nigeria government policy is that DDT use is banned. There is no permit to use like about 18 African Countries.

ALTERNATIVES TO DDT USE IN NIGERIA

- Recognize the home as the first point of treatment and strengthen home care with training and information packages for easy use of antimalarial drugs.
- Recognize the role of patent medicine vendors, improve their knowledge, encourage better practice and monitor the quality of their products.
- Ensure continued monitoring of the efficacy of first-line antimalarial drugs.
- Integrate micronutrient supplementation in malaria case management in collaboration with reproductive health and others.
- In an integrated disease control approach, village health workers and traditional birth attendants will be involved with malaria control in the context of other health care programmes.
- Improve regulation in collaboration with the National Agencies for Food Drugs and Control and intensify inspection of drug providers' and suppliers' premises.
- Reducing duty on imported anti-malaria drugs which cannot be manufactured in Nigeria.

ALTERNATIVES TO DDT USE IN NIGERIA, *CONT'D*

- Promote local manufacture of antimalarials, including research into combination drugs and local herbal remedies. Create/promote a network of community pharmacies in line with the Bamako initiative for improved drug distribution.
- Review school curricula to include malaria issues.
- Regular updating of treatment protocols and distribution to all health care providers, including community-based health providers, private health providers, NGOs, Community-Based Organizations, and the private sector.
- Establish an adequate incentive system for motivating health care providers at all levels, which may lead to improved attitudes, and subsequently, improved services.
- Use a community education programme to mobilize men to encourage their pregnant spouses to use ante natal services and take appropriate actions to prevent and treat malaria. Mothers and care-givers of children under-5 will be encouraged to use maternal and child health services and take prompt, appropriate actions during illness.
- Increase accessibility and affordability of ITMs through reducing or waiving taxes and tariffs, targeted subsidies and promotion of local ITM production.
- Mount community-based education programmes to improve malaria awareness and the usefulness of ITMs. Establish mechanisms for advocacy at all levels.
- Build up numbers of skilled research workers through training and scientific exchange visits and establish an adequate infrastructure for conducting research.
- Nigeria not too long ago announced a policy trust for the provision of free insecticide treated bed nets for children under five and pregnant women.

INSECTICIDE TREATED NETS

- While insecticide treated nets have a place in malaria control, they often get torn.
- They only protect one person at a time.
- People often don't use them,
  - because the insecticide irritates their skin – or
  - they forget
  - ...don't have enough for every family member ... or
  - are still doing homework or housework when mosquitoes arrive
  - ... kick them off when it gets too unbearably hot under the net to sleep
    - Sleeping under a bed net is nearly impossible during torrid African nights, Use the net anyway, and you get heat rashes all over your face and body, most locations have no electricity to power fans or air conditioners, Even in cities like Lagos power outages are frequent, rendering fans and AC useless. "Even if you have a generator, you don't want to put it on throughout the night, for fear of carbon monoxide poisoning," says Omololu Falobi, a journalist in Nigeria
    - DDT IS USED ILLEGALLY

SUSTAINABLE RESEARCH & ACTION FOR ENVIRONMENTAL DEVELOPMENT (SRADev)'s Efforts

- For now much has not been carried out from our end on DDT
- It is a potential issue of interest particularly as no know NGO in Nigeria is presently doing anything about DDT or has carried out specific activities beyond academic research.
- At best, SRADev
  - have only carried out sampling of DDT in breast milk among rural women in Abeokuta, Ogun state.
  - Written a few articles on the Nigeria media and newsletters in the past on DDT E.g. *DDT: WHO - Clean Bill of health?, Malaria is a scourge but DDT is not the cure and DDT conspiracy*
  - *Through the EDI* participating on the UNEP/WHO human milk survey (Moms and POPs Project -MaPP) under the Stockholm Convention global Monitoring Plan in Nigeria.

(SRADev)'s Efforts

- We support components to holistic approaches in fighting malaria:
  - epidemiological surveillance that allows early detection of malaria cases and prompt medical treatment;
  - community participation to improve home and water sanitation levels and eliminate mosquito larvae sites in streams and standing water; bed nets treated with insecticides other than DDT; and
  - improved medical treatment and drugs.
- The challenge ahead is to provide many more nations with increased capacity to combat malaria and to assist those nations now using DDT to move toward the adoption of safer alternatives (Pesticide Action Network Updates Service, 2004)
- SRADev is willing to build capacity and actively involve in these issues and serve as the arrowhead in Nigeria.
- We believe this meeting will serve as an opportunity for adequate preparation in this direction.

THANK YOU

UNETMAC –UGANDA

AN NGO EXPERIENCE ON COUNTRY MALARIA CONTROL PROGRAMMES. A CASE OF UGANDA NETWORK ON TOXIC FREE MALARIA CONTROL (UNETMAC) IN UGANDA

By
Ellady Muyambi
E-mail: elladmuyambi@yahoo.com

AFRICAN CSOs & EXPERTS MEETING ON DDT
6-8 APRIL, 2009, MBEZI GARDEN HOTEL, DARES-SALAAM, TANZANIA.

Malaria control challenges in Uganda

- Poor Treatment Seeking Behavior
- Limited awareness and lack of capacity to recognize Severe Malaria
- Lack of compliance with treatment regimes
- Lack of up-to-date information/material for the case management at health facilities

Challenges Cont'd

- Poor packaging of the home based management of fever (HBMF)
- Lack of compliance in the IPT approach
- Too much dependence on presumptive approaches
- No consideration of the environmental control measures

Challenges Cont'd

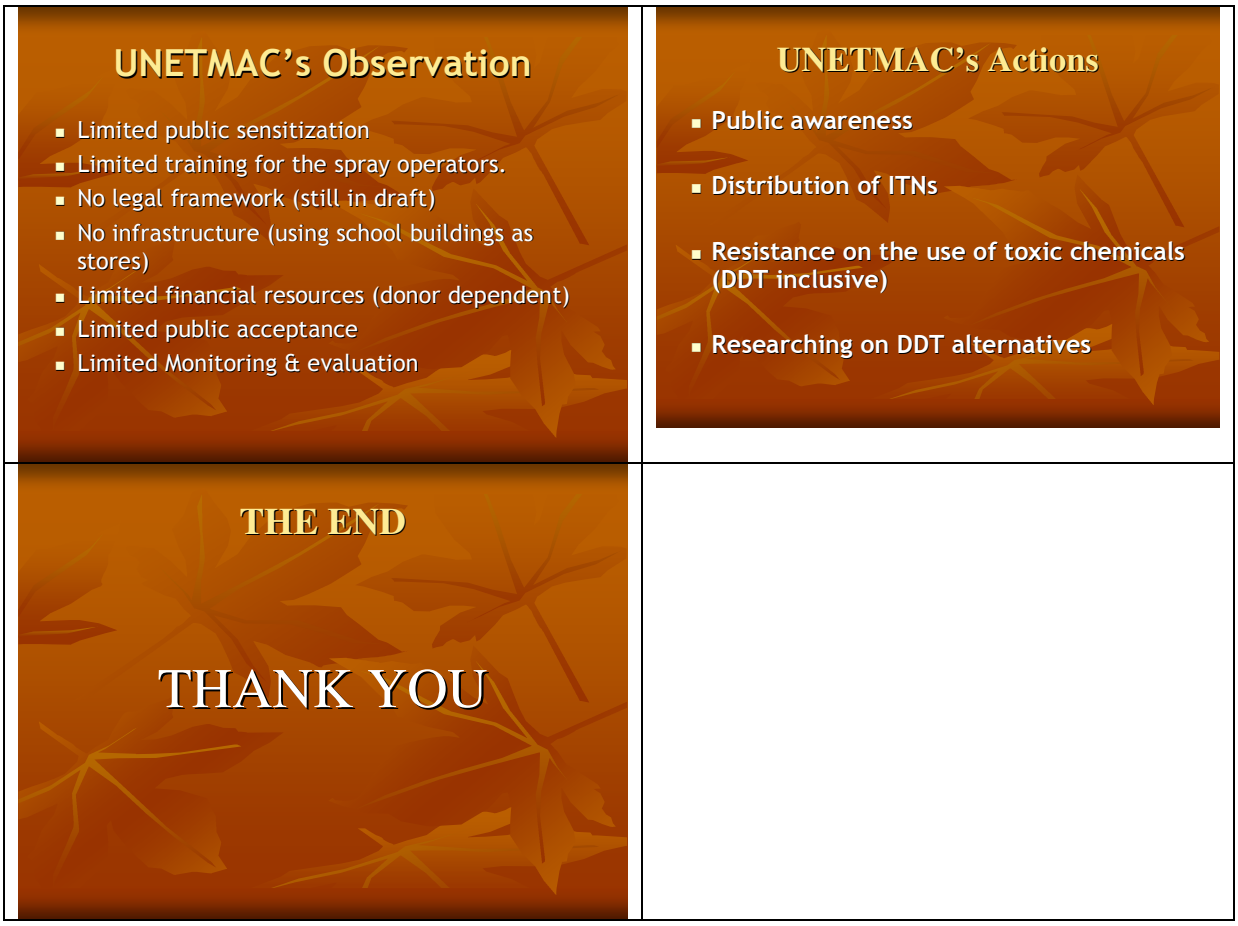
- Limited & inadequate use of insecticide-treated mosquito nets (ITNs)
- Lack of capacity for the epidemic preparedness and response
- Lack of compliance in the indoor residual spraying (IRS) intervention

DDT use in Uganda

- First used between 1959-1963
- Subsquently stopped in 1980's
- Debate for re-introduction began in 2004
- In June-July 2005, an EIA was commissioned
- In early 2006, a study on the effects of DDT was done

DDT use Cont'd

- In November 2006, a public hearing was conducted
- On 22nd December 2006, NEMA okayed the use of DDT
- In April-May 2007, DDT spraying was done in the districts of Oyam and Apac
- Between June-July 2007, a court injunction on DDT spraying was granted.



AGENDA-TANZANIA

DDT-Malaria Campaign in Tanzania

The campaign by AGENDA involved production of awareness materials, organizing meetings with relevant government institutions and individuals, media briefings, trainings on POPs health and environmental effects and existing alternatives (DDT included).

Production of Awareness Materials

AGENDA produces posters (A2) size 500 copies each in English and Kiswahili, highlighting the harmful effects of re-introducing DDT for malaria control. It insisted on alternatives to DDT and community participatory approach for mosquito control as a sustainable way for malaria vector control.

Also produces posters (A3) size 500 each in English and Kiswahili, explaining environmental and health impacts of DDT, the way malaria is transmitted and breeding ground for Anopheles mosquito. It also highlighted reasons for increased

malaria in Africa, Tanzania malaria situation, prevention options and proposed approach including some few recommendations.
These materials and DDT fact sheets have been disseminated to government ministries and institutions, agricultural extension officers working with farmers, NGOs/CSOs, research institutions, some private companies and media. Also posters distributed to some other partners outside the country.

Media Coverage

- AGENDA has been developing news articles on DDT and other POPs and disseminate through various newspapers.
- AGENDA has also held Press conferences every year (since 2005) during the commemoration of Africa Malaria Day (25th April) and World Environment Day. Mostly the information covered re-introduction on DDT and education on Malaria.
- AGENDA has held a series of radio and TV interviews on the National Radio, Tanzania Broadcasting Corporation (TBC-Taifa/PRT) in a 15minutes programmes, Urithi Wetu (our Heritage) part one on 1st April 2008 (DDT, our health and environment). Urithi Wetu (Our Heritage) part two was aired on 8th April 2008 and a TV interview on 2 May 2008. AGENDA also held interviews with newspaper in form of Q&A covered by The Guardian on 7th April 2008 and news article on Majira on 24th April 2008.

Appeal to the Government

AGENDA drafted a letter that was then signed by 44 environmental and health related NGOs/CSOs (36) and individuals (8) from 18 (out of 21) Tanzania mainland Regions. The letter was submitted to the ministry of Health and Social Welfare (April 2008) with other related materials.

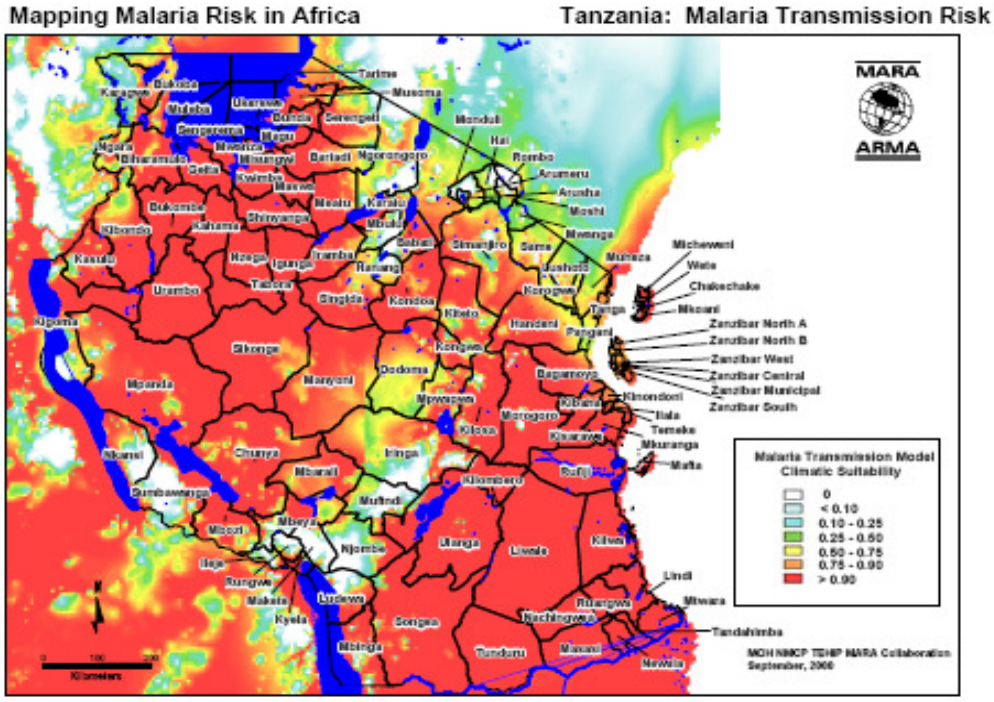
1. Malaria Survey

The survey was conducted and completed in September 2007 and produced survey report.

- The survey identified trends of malaria prevalence in different periods and places in Tanzania,
- Malaria curative measures available in the country,
- Vector control measures in place,
- Alternatives to DDT
- Analyzed different non-spraying control interventions and their success stories.

Key Findings

Trend and Prevalence



- 93 % of population in Tanzania is at risk of malaria (results into up to 125,000 deaths)
- 25% of the country population is considered to live in malaria epidemic prone areas (8% live in fringe highlands and Rift Valley, 17% live in Semi arid districts)
- About 26 districts are classified as malaria epidemic prone areas
- Estimates for overall number of cases of malaria were between 14 – 19 million cases/annually (95% of cases of malaria are produced by *Plasmodium falciparum,* and the rest is caused by either *Plasmodium malariae, Plasmodium ovale*, and *Plasmodium vivax)*
- There has been 8 epidemic incidences in Tanzania between 1982-2006 (resulted into more than 2,524 deaths)

Incidence of Epidemic Occurrences in Tanzania from 1982 to 2006

Location	Period	Cases	Deaths	Predisposing Factors
Hanang and Babati Districts (Manyara Region)	November 1982 – June 1983	108,243	334 (0.31%)	Non-immune population moving to high transmission areas for labour
Lushoto-Ubiri village (Tanga)	March 1986 – April 1986	67	27 (40.3%)	Increase in breeding sites created from limestone

				quarries
Mvumi (Dodoma)	March 1987 – April 1987	713	93 (13%)	Heavy, prolonged rainfall in January (330 mm annual, mean 300-400mm)
Babati District (Manyara)	January 1987 - August 1987	70,721	63 (0.09%)	Lack of anti-malaria drugs in health facilities during transmission season
Korogwe District (Tanga)	February 1987 – March 1987	1122	40 (3.6%)	Movement of people to high transmission areas for rice irrigation
Babati District(Manyara)	January 1997 – June 1997	Not Known	227	Unusually heavy rains and lack of anti-malaria drugs
Muleba District (Kagera)	October 1997 -March 1998	133,866	1740 (1.3%)	El-Nino rains, lack of anti-malaria drugs and ineffective drugs-Chloroquine
Muleba and Karagwe	2005 and 2006			

Source: A Concept Paper on the re-introduction of Indoor Residual Spraying in Tanzania, Vector Control Cell, National malaria Control Programme, Ministry of Health and Social Welfare, 2007

- During the survey some experts reported that
  - There was no routine registration of deaths in Tanzania and method like the Demographic Health Survey (DHS) do not produce data on cause specific mortality
  - Sometimes malaria cases reported from districts are randomly estimated when demanded by the National Chief Medical Officer under the Ministry of Health and Social Welfare (MOHSW)
    - The NMCP estimates that only about 500 facilities out of approximately 5,000 have a working microscope (70% of febrile illness is seen in primary level facilities where there is usually no microscope)
- Healthcare Seeking Behaviour
  - Children who were sick with malaria taken to a health provider 47% of the time (DHS 2004/05)
  - The NMCP reported that more than 50% of all malaria deaths cases involve the patients who attended formal health services during their final stages of illness.
  - A traditional illness called *degedege* which is associated with convulsions and correlates closely with severe malaria presents a special problem
    - the first response to *degedege* is to seek help from a traditional healer

Factors relevant for health seeking behaviour includes

- Lack of knowledge; unavailability of health facilities especially in rural areas; lack of drugs and lack of money to pay for preventive or treatment costs

Malaria curative measures available in the country

Malaria case management is based almost on chemotherapy, mainly using of anti-malarial drugs (13 Mono therapies and 1 Combination) were registered

- Tanzania Food and Drug Authority (TFDA): the primary causes of resistance to malaria medicines are
  - Improper administration, Use of poor quality and substandard anti-malaria medicines, and Compliance of users
- WHO reported that, the problem of counterfeit drugs in African countries is estimated to be 30% which has contributed to the number of malaria deaths in the continent (The problem of counterfeit drugs in Tanzania is estimated to be 90%)
- Coartem® during introduction was US$2.40 (WHO-negotiated price for an adult dose in the public sector)
  - the price has been rising and as of 2007 the retail price was reported to be between US$ 8 – 15 in private sector

Vector control measures in place

- Prevention and Control Measures (*National Guidelines for Integrated Malaria Vector Control)*
  - Methods of Reducing Human Contact
    - Mosquito nets and insecticides treated mosquito nets (Various initiative to provide ITNs in place e.g. Global Fund to fight Aids, TB and Malaria(GFATM)) – ***This is by far the most important vector control method available and in use in Tanzania***

There are four types of bed nets used in Tanzania which includes regular bed net that is not impregnated with an insecticide; bed net that is impregnated with an insecticide every 6 months (ITN); long lasting insecticidal nets (LLIN) that may last 3-5years without re-impregnation and up to 7 years as far as the component material is concerned; and bed nets that is impregnated with an insecticides every 6 month plus an added resin that would make it long lasting. The chemical used to impregnate nets is a pyrethroid insecticide.

Other methods include: House protection with screening of windows; eaves and doors; Use of repellents and Fumigant insecticide dispensers (form of mosquito coils and, in urban areas, electrically heated dispensers)

Methods of Reducing Vector Density (Lavicidial scheme)

- Use of Larval control such as Organophosphates, Microbial insecticides (Biocides) and Insect Growth Regulators (IGRs)

Lavicidial scheme is the second approach used by the NMCP for vector control. A pilot project in Dar es Salaam funded by United States Agency for International Development (USAID) and Japan International Control Agency (JICA), as well as the Municipal council was in implementation process in which 15 wards in three districts of Dar es Salaam were to be covered in the baseline survey. The initial survey results show that the drainage system in Dar es Salaam is not functioning effectively, as a result Anopheles breeding sites are produced, which inevitably results in an increased malaria cases in the surrounding areas. The project adopted two strategies i.e. cleaning of existing anti-malaria drains and community mobilization.

During the interview, personnels from JICA expressed concerns on the sustainability of the project in the future after it has been handed to local authority (municipals) unless municipals integrate the budget for the community activities into their municipal plans.

National guidelines for integrated malaria vector control emphasize on the environmental management intervention but is not practiced in many places in the country.

- Methods of Increasing Adult Vector Mortality
  Indoor Residual Spraying (IRS)
  - According to the National Guidelines for Integrated Vector Control, in Tanzania DDT is recommended as the first line insecticides for IRS
  - Second line insecticides recommended for IRS is Synthetic Pyrethroids, followed by Organophosphates (Malathion, Fenitrothion) and Carbamates (Propoxur, Bendiocarb)

DDT Use in Tanzania

Dichloro-Diphenyl-Trichloroethane (DDT) was introduced in Tanzania by the British colonial government in 1946 for residual spraying on the walls inside houses. It was used together with other interventions in 1960s. After the ban of DDT in 1972 by US-EPA, the Government of Zanzibar banned the use of DDT for malaria control programmes in 1988, whereas in Tanzania Mainland, the Government order to prevent the formulation and use of DDT for agriculture purposes was made in 1997. The decisions were solely based on effects of DDT to human health and the environment. However, the use of DDT was still restricted for use in disease vector control during epidemics only.

In May 2006, the Government of Tanzania announced its intention of lifting the ban of DDT for malaria vector control. According to NMCP, 26 malaria prone epidemic districts, which includes Muleba, Karagwe (Kagera), Lushoto, Hanang, Same, Babati, Ngorongoro, Hai, Karatu (Northern highlands), Dodoma Rural, Mpwapwa, Kongwa (Cetral Zone), Njombe, Ludewa, Makete, Iringa Rural, Kilolo, Sumbawanga, Chunya, Mufindi, Rungwe, Songea, Mpanda, Nkasi and Kyela (Southern Zone) was to be sprayed with DDT from January 2008.

The Ministry of Health and Social Welfare (MOHSW) emphasized that an Environmental Impact Assessment (EIA) was to be conducted to identify and assess the risks with a view to providing recommendations on the way forward to the MOHSW.

Later on, the NMCP reported that DDT spraying for IRS was to start September 200 in Muleba and Karagwe Disricts. Moreover the Hai District Health Officer in Kilimanjaro Region reported that the district was to start spraying DDT in September 2007 where education on how to use DDT was to be provided to civilians.

Alternatives to DDT and analyzed different non-spraying control interventions and their success stories

- Community wide use of insecticide treated nets
  When a large proportion of the population in a community is protected by ITNs, there may be a significant reduction of vector survival, density and sporozoite rate ("mass impact") and hence of malaria transmission
- Research Programmes and Projects on Vector Control
  The Ifakara Health and Research Development Centre (IHRDC) focus upon mosquitoes and Anopheles vectors of malaria in particular through its Entomology unit. The long term goal of the unit is to develop, evaluate and promote the delivery of malaria vector control interventions and complementary methodological tools that are affordable and effective in African settings.

1. Programme on Malaria vector and parasite ecology;
   - Behavioural and ecological determinants of gene flow in African malaria mosquitoes
   - Male mating competitiveness in *Anopheles Arabiensis*
2. Tools for malaria epidemiology, surveillance and control;
   - Spatial analysis of impact of insecticide-treated nets for malaria control in Tanzania;
   - Malaria transmission intensity and mortality burden across Africa (MTIMBA);
   - Entomopathogenic fungi as biocontrol agents for malaria vector mosquitoes;
   - Human-biting patterns of malaria vectors and optimization of operational sampling methods for measuring malaria transmission intensity in Dar es Salaam;
   - Integration of earth observation-derived water resources products into malaria control initiatives in Tanzania; and
   - Disruption of malaria transmission by chemical manipulation of Anopheline olfactory responses community empowerment for malaria control in Africa

3. Public health systems development;
    - The Dar es Salaam Urban Malaria Control Project
    - Community empowerment for malaria control in Africa

Lesson Learnt in Tanzania

The Zanzibar Government reported that the incidence of malaria in Zanzibar had fallen significantly from 54% in 2003 to 31% at the end of 2005. This was the result of proper diagnosis and treatment, and the use of treated insecticides nets in which the US government has given more than 200,000 ITNs to pregnant mothers and children younger than five years.

In July to September 2006, Zanzibar effectively implemented IRS using a Synthetic Pyrethroid Lambdathyhalothrin (ICON 10% WP). The first IRS round reduced vector density and malaria incidence successfully, morbidity decreased from 39% to less than 10%. Second IRS round was done between January and March 2007, judging from the results of the first IRS round, more dramatic results are expected. The spraying campaign is focusing only on those mosquitoes on walls inside people's home.

This anti-malaria initiative in Zanzibar was reported to cost at least US$ 2 million and reached 240,000 homes, or 90 percent of all homes on the island according to the government. During the African Malaria Day on 25th April 2007, the Zanzibar government reported that there are few or no cases of malaria in many hospitals in the island.

Moreover, the minister reported that the island's success in the battle against malaria has been contributed to increased awareness in seeking early treatment, accurate diagnosis and combination therapy. It is currently estimated that 82% of Zanzibar children below the age of five, and 62% of pregnant mothers sleeps under ITNs.

Recommendations

There is an urgent need to have a demonstration project in malaria prone areas that will include multiple safe environment strategies and involve community participation to manage mosquito densities and enhance control of malaria. The demonstration project will help the government to integrate and prioritise the strategies into the nation policy and also help other stakeholders to incorporate in their malaria control activities.

Alternatives to DDT - Experiences with alternatives to DDT

Pyrethrum Board of Kenya

A Presentation by the Pyrethrum Board of Kenya to the African CSOs and Experts Meeting on DDT.

Mbezi Garden Hotel, Dar es Salaam, Tanzania, 6-8 April 2009.

By Kefa S. Sum
Pyrethrum Board of Kenya
P.O. Box 420
Nakuru
KENYA

Pyrethrum Products for Mosquito Control

PYRETHRUM AS AN ALTERNATIVE TO DDT IN PUBLIC HEALTH:

A CASE FOR USE OF PYRETHRUM PRODUCTS IN IRS AND AS LARVICIDE AGAINST MALARIA VECTORS

Pyrethrum Products for Mosquito Control

INTRODUCTION

The Malaria Problem

Global
- 110 million cases estimated annually
- 80% of these occur in Africa
- 90-95% of related deaths occur in Africa
- Results in large macro-economic losses by affecting labour productivity, land use, school attendance, household expenditure etc (WHO 1991)

Kenya
- 20 million Kenyans exposed to stable malaria
- 8.5 million Kenyans at risk of epidemic malaria
- 3.5 million children under 5 years
- 30% out patient attendance
- Kills 26,000 children <5 years

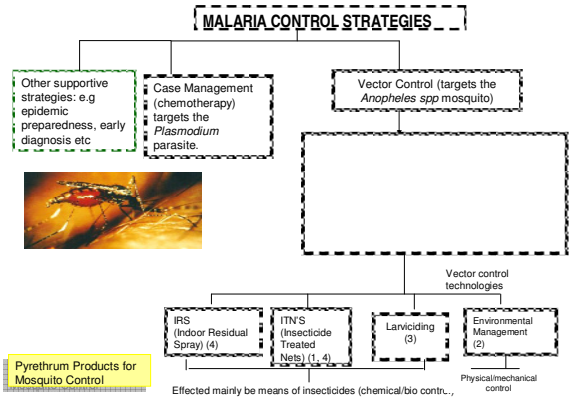
Pyrethrum Products for Mosquito Control

(*DOMC 2001*)

DDT-Dichlorodiphenyltrichloroethane

- An organochlorine insecticide successfully used in IRS the 50's and 60's
- Discovered by Paul Muller - awarded Nobel Peace Prize in 1948
- Has many documented side-effects on human and the environment
- It is classified among the POPs, but given exemption for use in vector control where viable alternatives do not exist
- The search for DDT alternatives is therefore a priority

Pyrethrum Products for Mosquito Control



Pyrethrum Products for Mosquito Control

THE PYRETHRUM PRODUCTS FOR USE AS DDT ALTERNATIVES IN IRS AND LARVICIDING

PBK: Pyrethrum Board of Kenya

- A Government of Kenya state Corp. with responsibility to regulate production, processing and marketing of pyrethrum products on behalf of pyrethrum farmers.
- PBK is a member of the Kenya Government Committee on the National implementation Plan on POPs (DDT alternatives search)

Pyrethrum:

The pyrethrum crop, *Chrysanthemum cinerariaefolium* is a daisy compositae plant, whose insecticidal properties have been recognized and exploited for over 100 years.

Pyrethrum is grown mainly in Kenya, Tanzania, Rwanda, Tasmania and China.

Pyrethrum Products for Mosquito Control

A TYPICAL PYRETHRUM CROP

Pyrethrum Products for Mosquito Control

THE a.i. PYRETHRINS

- They are organic esters formed by the combination of two carboxylic acids and three keto alcohols.

PROPERTIES

- Rapid knockdown against mosquitoes
- Low mammalian toxicity
- Biodegradable in environment
- Less problems with resistance development
- Repellent and flushing effect

Pyrethrum Products for Mosquito Control

THE PRODUCTS

PYMOS® 0.6EC

Pyrethrum Products for Mosquito Control

PROPERTIES

- A pyrethrum mosquito adulticide product for Indoor Residual Spraying (IRS) and space spray against vectors .

Mode of Action

- Pymos as an IRS - ing sites(wall and ceiling).
- Mosquitoes contact PYMOS during or after spraying - resulting in rapid KD and deaths
- Some mosquitoes are deterred or repelled.

Pyrethrum Products for Mosquito Control

Biological efficay (laboratory conditions)

PYMOS gave rapid knockdown at the rate of 60mg a.i/m² or 1 litre to cover 100m²

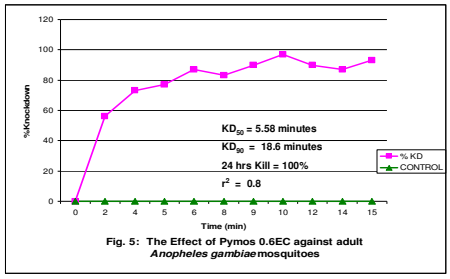
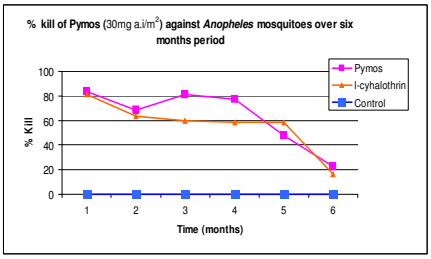


Fig. 5: The Effect of Pymos 0.6EC against adult *Anopheles gambiae* mosquitoes

Pyrethrum Products for Mosquito Control

PYMOS residual protection

In WHO huts.



Pyrethrum Products for Mosquito Control

PYMOS™ TRIAL UNDER FIELD CONDITIONS

STUDY AREA	AREA	POP.	STRUCTURES
Kosirai Division, Nandi North District	270km²	43,148	21,804

Specific Objectives

- To determine the effect of PMOS IRS on the prevalence of malaria prevalence vectors
- To determine in-house residual efficacy of PYMOS in the sprayed houses.
- To determine the relative acceptability and perception of PYMOS by the user community.

Pyrethrum Products for Mosquito Control

SPRAYING EXERCISE

- Conducted between Apri-may 07
- 24 spray teams using Gloria pumps

Pyrethrum Pr
Mosquito Cor

- PYMOS sprayed at 2 litres/200m² (60mg a.i/m²)
- Total of 17,482 house units/structures

Pyreth
Mosqu

- About 11,000 litres of PYMOS used

Pyrethrum Pro
Mosquito Control

TECHNICAL EFFICACY MONITORING AND EVALUATION

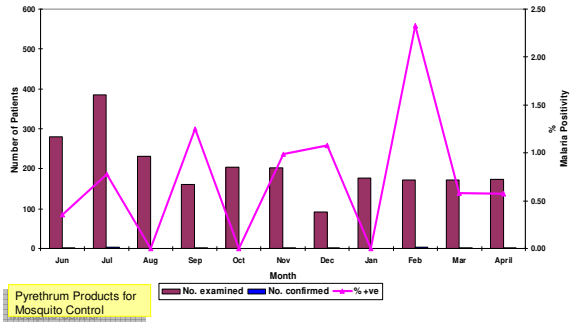
Malaria prevalence

- Monitored in two designated health units i.e. Mosoriot (PYMOS sprayed area) and Kilibuoni (Control-sprayed with ICON).
- Vectors- pyrethrum spray catches, exit window traps, contact wall bioassays.

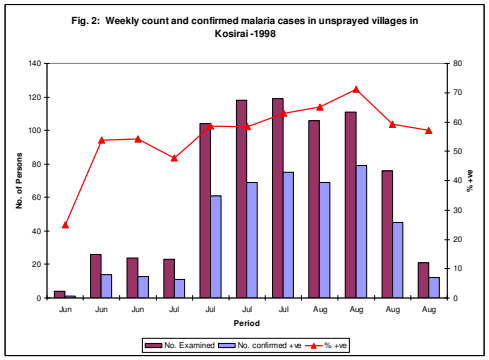
Pyrethrum Products for Mosquito Control

Result

Fig 1: Number of Patients Examined and Malaria Positivity Rate in Kosirai Division (PYMOS IRS)



Pyrethrum Products for Mosquito Control



Pyrethrum Products for Mosquito Control

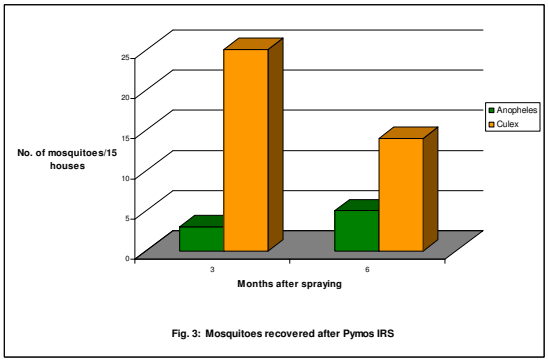


Fig. 3: Mosquitoes recovered after Pymos IRS

Pyrethrum Products for Mosquito Control

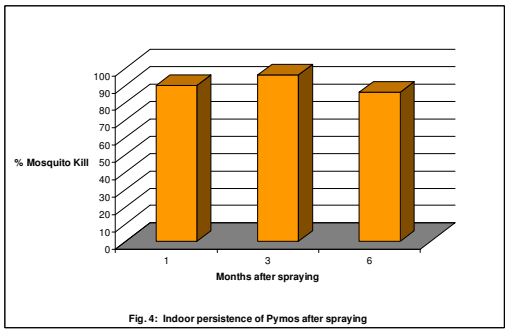


Fig. 4: Indoor persistence of Pymos after spraying

Pyrethrum Products for Mosquito Control

PYLARVEX ® 0.5EC

A Pyrethrum Product containing 0.5% pyrethrins (w/v) for control of mosquito larvae

Mode of Action:

Spread rapidly to form an invisible layer over the sprayed water mass killing the larvae on contact and interfering with the spiricular breathing mechanism

Pyrethrum Products for Mosquito Control

PYLARVEX 0.5 EC

Pylarvex effected rapid knockdown and kill of mosquitoes.

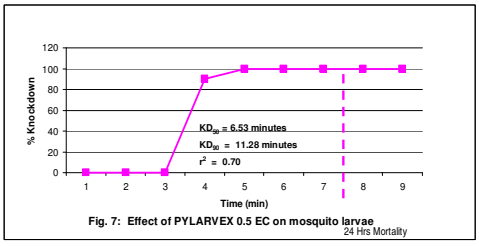
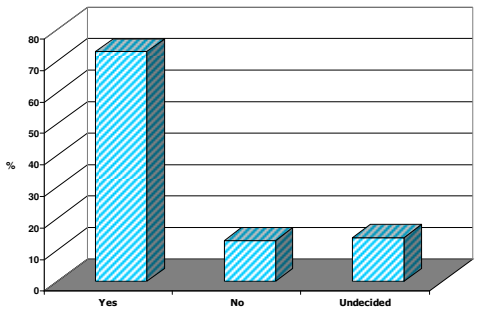
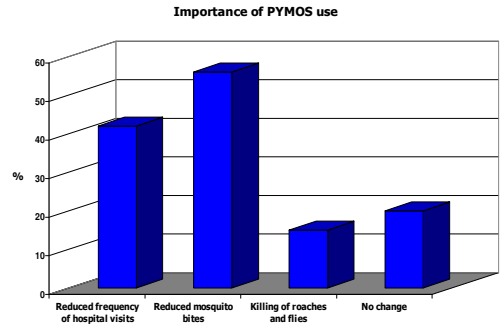


Fig. 7: Effect of PYLARVEX 0.5 EC on mosquito larvae 24 Hrs Mortality



Pyrethrum Products for Mosquito Control



Pyrethrum Products for Mosquito Control

CHALLENGES TO ADOPTION OF LOCALLY DEVELOPED DDT ALTERNATIVES

- Lack of funds to undertake large scale demonstrations and promotions.
- Stringent regulatory requirements e.g. WHOPES which are expensive
- Donor preference of other products over the local products

Pyrethrum Products for Mosquito Control

CONCLUSION

- Pyrethrum products have good bio-efficacy against mosquitoes, are safe and available for use.
- They are suitable for integrated vector management through IRS and source reduction.
- The products should be given serious consideration as local solution to DDT in the fight against malaria.

Pyrethrum Products for Mosquito Control

Pyrethrum Products for Mosquito Control

UNEP/GEF/WHO Global DDT Alternatives Project

Demonstrating and Scaling-up of Sustainable Alternatives to DDT in Vector Management (DSSA - Global Programme)

A program implemented by
United Nations Environment Program- UNEP
and executed by
World Health Organization – WHO (HQ & Regional Offices)
and the governments of participating countries
Approved by GEF Council on 23 April 2008

Objective of the program

- Objective: The DSSA-Global Programme aims at the protection of human health and the environment through the reduction of emission of DDT into the global environment.
- How: Decreasing the use of DDT through introduction, demonstration and scaling-up of sustainable alternatives to DDT in disease vector management.

Linkage with SSC

- The projects executed within the framework of the DSSA-Global Programme are part of the Business Plan of the Secretariat of the Stockholm Convention (SSC) to promote a global partnership for the development and deployment of alternative products, methods and strategies to DDT for disease vector control .

Long-term goal of the DSSA – Global Program

- To contribute to a re-formulation of the WHO Global Malaria Program in order to promote integrated vector borne disease control interventions while at the same time eliminating the application of DDT and reducing the use of other chemicals.

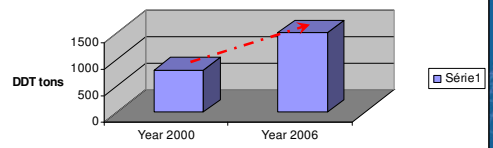
1997: WHA Resolution 50.13

Members States "*to take steps to reduce reliance on insecticides for control of vector borne diseases through promotion of integrated pest management approaches in accordance with WHO guidelines…*"

WHA - World Health Assembly: WHO's decision-making body

Use of DDT for malaria vector control

The use of DDT for malaria control in the WHO Africa Region the year before signing of the Convention (2000) and 2 years after the Convention entered into force (2006)



Why is DDT use still increasing in the world ?

- **Vector control programs with Indoor Residual Spraying (IRS) are fast expanding both at country and at regional levels**
- **This expansion is not followed by an appropriate IVM capacity building :**
  - **Technical expertise for policy making and planning**
  - **Sound entomological surveillance systems to predict when and where DDT should be used and when and where not**
- **Several countries are still spraying DDT indiscriminate in the open air rather than targeted through IRS**
- **Countries and aid donors seeking to return to DDT spraying as Indoor Residual Spraying (IRS) as a cheap and quick way of cutting malaria incidence**

7

What needs to be done ?

Ensure

- global strategy (Business Plan) in place to trigger significant action and to develop/deploy alternative approaches to DDT;
- countries receive funding and technical support to develop their capacities to implement IVM;
- regional 'alternatives to DDT Projects' demonstrating cost-effectiveness of alternatives to DDT are implemented quickly.

8

Conference of the Parties Stockholm Convention (Dakar, 30 April- 4 May 2007)

Parties called for:

- increased research into alternatives to DDT;
- increased promotion of success stories;
- improved sharing of experiences.

Many delegates pointed out that, seen the urgency of the situation, there is need for adequate funding, clear plans that include participation of the civil society.

9

Demo Project: Malaria control in Mexico and Central America in the context of elimination of DDT use

- Areas involved – highly malarial areas in 8 countries including Belize, Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama
- Time Period – 2003 to 2008
- Executing agency – PAHO, national and local governments
- Implementing agency – UNEP
- Co-funding - GEF, Roll Back Malaria Initiative, Global Fund against HIV/AIDS, Malaria and Tuberculosis, PAHO and Countries
- Total Budget – about 13,8 million US $ (GEF: 7,4 million)

10

Objectives Demo Project

- Demonstrate feasibility of integrated and environment-friendly methods for malaria vector control without the use of DDT;
- Assess the effects of these methods on malaria occurrence;
- Dispose stockpiles of DDT/POPs pesticides (137t)

11

Demo Project activities

Institutional changes at country and local level :
no top-down 'spray-approach' but *decentralized participatory* approach

Prevention at community level:

- **Environmental management at community level;**
- **Planting of trees with mosquito repellant properties;**
- **Focal treatment in "malaria house" and neighboring contacts;**
- **Biological control with larvivorous fish;**

At household/personal level:

- **Environmental management at house level;**
- **Personal application of natural locally available repellents;**
- **Personal hygiene;**
- **Use of Bednets;**
- **Awareness Raising & Education ;**

Control : traditional methods, including other chemical pesticides, but no DDT, focused treatment of malaria cases

Disposal of 137 tons of POPs pesticides

12

Demo Project: Summary of results

- At the country level
  - malaria incidence decreased: proportion of cases in demonstration areas as a fraction for the whole countries changing from 3.1 to 1.5%
  - There were statistically significant differences between incidence decreases in demonstration and control groups (40% vs. 5%)
  - There were important differences among countries

13

Demo Project: Summary of results (2)

- At the country level
  - The level of reduction by country demonstration area varies from 26.6% in Guatemala to 80.4% in Belize.
  - There were marked differences of case reduction fractions between to villages (some numbers are very small), but the overall pattern suggests an strong and evident improvement in malaria control.
  - There were important differences among countries

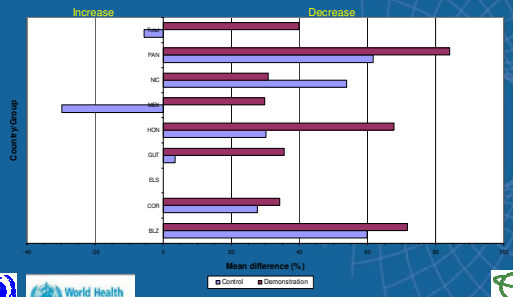
14

Demo Project: Summary of results (3)

- At the village level
  - **Malaria incidence reduction: demonstration villages >> control villages**
  - **~ 30% of annual cases (> 600) avoided in demonstration villages (vs. 17% in the total malarial areas) = high cost-effectiveness**
  - **reduction of malaria cases = avoiding loss of 10 person-years of work/yr.**

15

Demo Project: Changes in malaria parasite incidence in demonstration and control villages

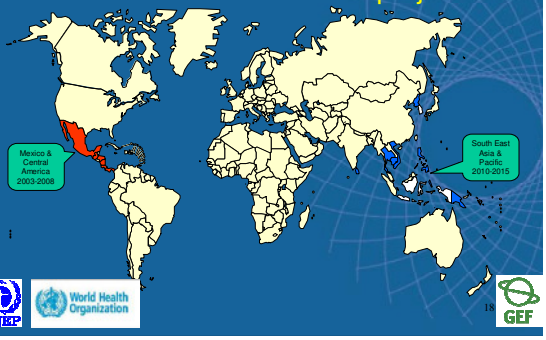


16

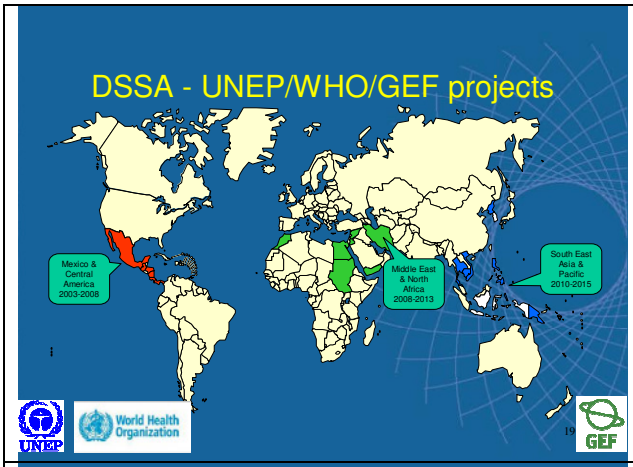
DSSA - UNEP/WHO/GEF projects

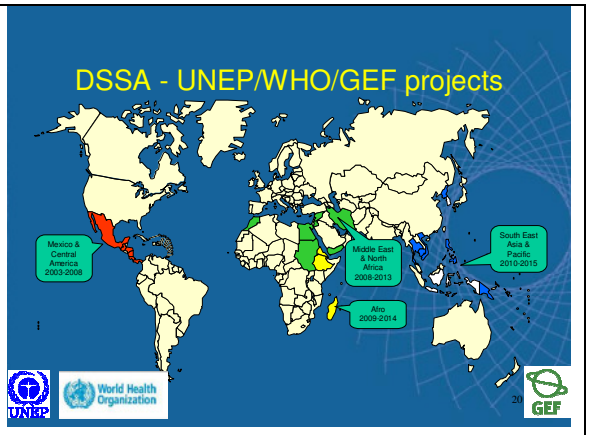
17

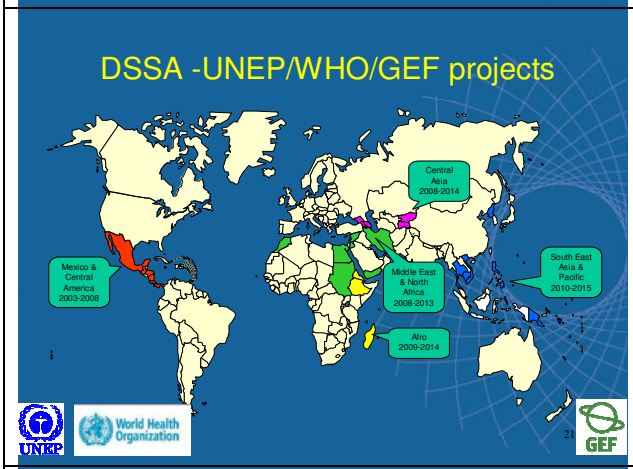
DSSA - UNEP/WHO/GEF projects

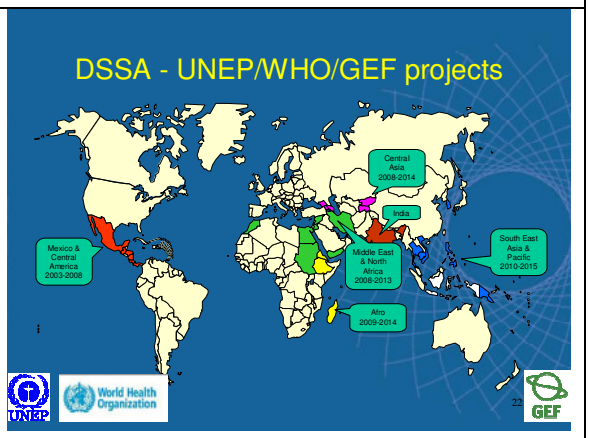


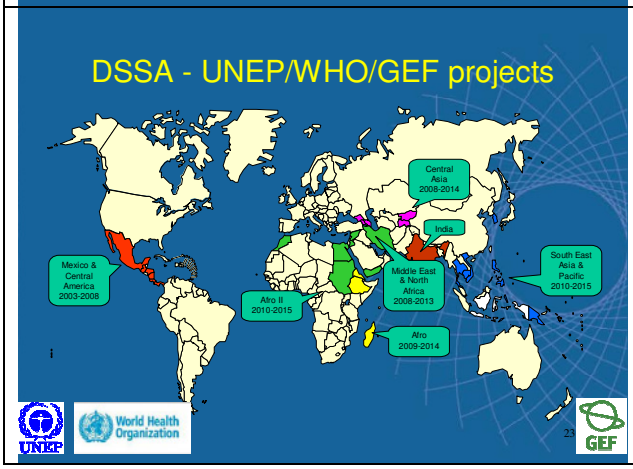
18

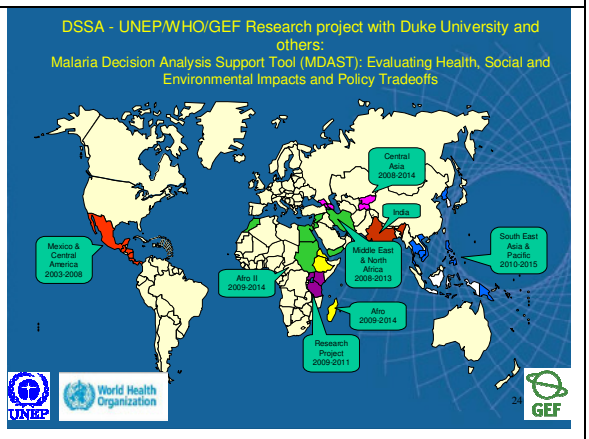

DSSA - UNEP/WHO/GEF projects
Mexico & Central America 2003-2008
Middle East & North Africa 2008-2013
South East Asia & Pacific 2010-2015
World Health Organization
UNEP
GEF


DSSA - UNEP/WHO/GEF projects
Mexico & Central America 2003-2008
Middle East & North Africa 2008-2013
South East Asia & Pacific 2010-2015
Afro 2009-2014
World Health Organization
UNEP
GEF


DSSA -UNEP/WHO/GEF projects
Central Asia 2008-2014
Mexico & Central America 2003-2008
Middle East & North Africa 2008-2013
South East Asia & Pacific 2010-2015
Afro 2009-2014
World Health Organization
UNEP
GEF


DSSA - UNEP/WHO/GEF projects
Central Asia 2008-2014
India
Mexico & Central America 2003-2008
Middle East & North Africa 2008-2013
South East Asia & Pacific 2010-2015
Afro 2009-2014
World Health Organization
UNEP
GEF

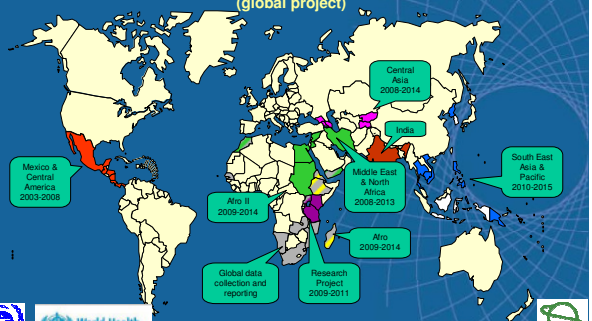

DSSA - UNEP/WHO/GEF projects
Central Asia 2008-2014
India
Mexico & Central America 2003-2008
Middle East & North Africa 2008-2013
South East Asia & Pacific 2010-2015
Afro II 2010-2015
Afro 2009-2014
World Health Organization
UNEP
GEF


DSSA - UNEP/WHO/GEF Research project with Duke University and others:
Malaria Decision Analysis Support Tool (MDAST): Evaluating Health, Social and Environmental Impacts and Policy Tradeoffs
Central Asia 2008-2014
India
Mexico & Central America 2003-2008
Middle East & North Africa 2008-2013
South East Asia & Pacific 2010-2015
Afro II 2009-2014
Afro 2009-2014
Research Project 2009-2011
World Health Organization
UNEP
GEF

DSSA - UNEP/WHO/GEF to support Secretariat of the Stockholm Convention:

Establishment of efficient and effective data collection and reporting procedures for evaluating the continued need of DDT for disease vector control

(global project)



25

DSSA – budget (US $)

- Anticipated GEF funding: 32.4 million
- Approximate Co-funding: 45.9 million

Total: 78.3 million

26

FOR LIFE ON EARTH

Thanks for your attention !

UNEP: Jan Betlem Jan.Betlem@unep.org
WHO: Stephanie Guillaneux Guillaneuxs@who.int
SSC: Paul Whyllie PWhylie@pops.int

Secretariat of the STOCKHOLM CONVENTION ON PERSISTENT ORGANIC POLLUTANTS (POPs)

27

KEMRI/ICIPE-KENYA

HUMAN HEALTH

Integrated Vector Management for Malaria control in Malindi, Kenya

KEMRI/ICIPE MALARIA PROGRAM, MINISTRY OF HEALTH AND MUNICIPAL COUNCIL OF MALINDI

HUMAN HEALTH

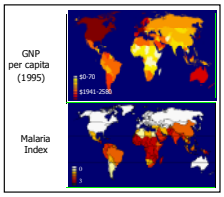
Project Background

Malaria: A Global Challenge

- affecting poor countries the most.
- a preventable and treatable disease
- a need for effective control programs
- the WHO has acknowledged this need and is investing in effective surveillance and control initiatives.

Facts about Malaria

- 300-500 million clinical cases per year
- 80% of cases in Africa
- 1 million deaths per year
- 90% of deaths in Africa mostly young children and pregnant mothers
- Every 30 seconds a child somewhere dies of malaria



Source: WHO, Roll Back Malaria Initiative, 2000

Effectiveness of current Vector Control Methods in Africa

- Vector control strategies involving insecticide-spraying and insecticide-treated bednets are very effective for killing *Anopheles* mosquitoes.
- Evaluations during the 1980's demonstrated that treated bednets reduce biting densities of mosquitoes but it was frequently observed that there was no overall reduction in malaria prevalence. Thus, questions remained about the efficacy in terms impact on disease.
- WHO/TDR sponsored large-scale trials of bednets at four sites in Africa convincingly demonstrated that treated bednets can reduce overall childhood mortality by up to 30% thus providing a foundation for developing policy to promote bednet use in Africa.
- Bednets will not eliminate transmission or substantially reduce the prevalence of infection in endemic areas

Project Background

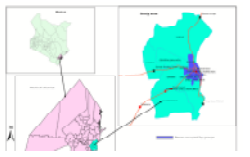
- Every year about 34,000 people die in Kenya from the effects of the malaria.
- The female *Anopheles* mosquito transmits the malaria pathogen, *Plasmodium falciparum*.
- Integrated Vector Management is one of the best alternative methods to convectional approaches to prevent diseases transmitted by insects.
- Adaptive management principles stipulate active participation of the communities

The Malaria Project objectives

Goal: To improve human health through integrated Vector Management in Malindi

- Enhance community empowerment in malaria and mosquito through participative and applicable training in respective techniques and decision making.
- Establishment and implementation of a distribution plan for bed nets to increase the bed net coverage to more than 80%.
- To enhance sustainability of the intervention.

Geographic sampling strategy

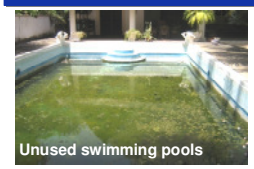


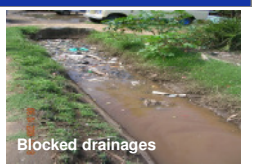
A total of 16 grid cells each measuring 1x1Km constituted the sampling frame (within urban and peri-urban)

Larval sites and households were selected from within grid cells.

Vector surveillance conducted weekly for both larvae and adults by Scouts

Main mosquito breeding areas in Malindi





HUMAN HEALTH

Swamps/ ponds

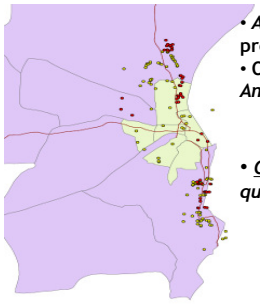
Open wells

Discarded tyres/ containers

Drainage overgrown with grass

HUMAN HEALTH

Location of larval habitats and the distribution of *Anopheles and Culex* species

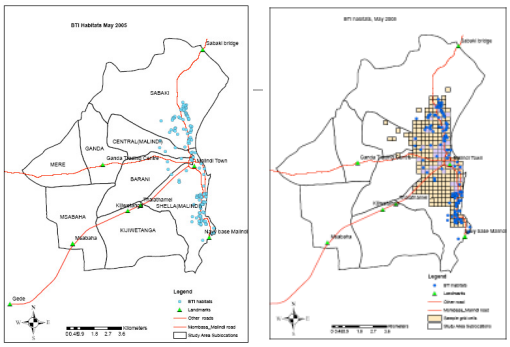


- *An. gambiae s.s.* is the predominant species found
- Other *Anopheles* species are *An. arabiensis* & *An. merus*

- *Culicines*: *Ae. Aegypti*, *Cx. quinquefasciatus*

HUMAN HEALTH

Location of larval habitats and grid cells where Bti was applied



HUMAN HEALTH

Mosquito control activities

Personal protection; ITNS

Mosquito scouts covering a septic tank

Water management; clearing blocked drainages

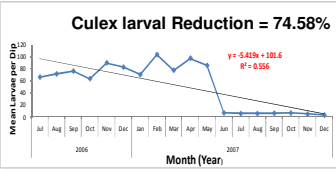
Larviciding of mosquito breeding areas

HUMAN HEALTH

Larval Control using environmentally compatible biolarvicide (Bti)

Anopheles larval Reduction = 55.11%

Culex larval Reduction = 74.58%

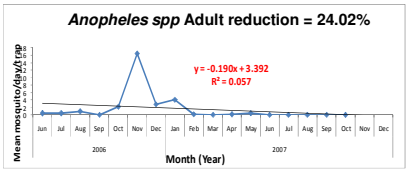


- **Bti application was applied intermittedly from June –Dec 2006 and monthly thereafter**

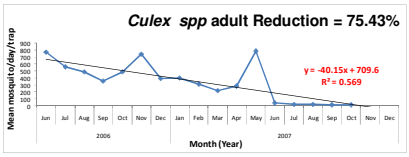
HUMAN HEALTH

Indirect effect of Bti on Adult mosquitoes

***Anopheles spp* Adult reduction = 24.02%**

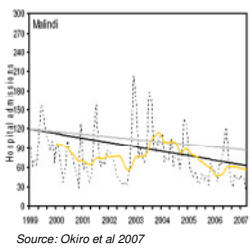


***Culex spp* adult Reduction = 75.43%**

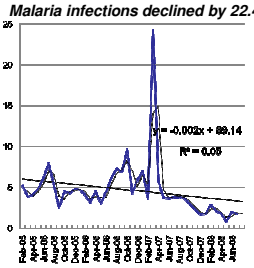


Paediatric admissions at Malindi District Hospital

Malaria cases declined by 28%.



Malaria infections declined by 22.4%



Source: Okiro et al 2007

Time-series models strongly suggest that the observed decline in malaria admissions was a result of malaria specific control efforts in the hospital catchment areas

Impact of existing malaria interventions

- Scaling up interventions (ITNs, EM, Larval control) reduced malaria morbidity in under 5 children and adults (88 deaths prevented per year in the next 3 years).
- Bed net coverage increased from 15% in 2005 to over 60% in 2008.
- Enhanced community participation and built capacity at both community and at the household levels with the ability to generate and analyse entomological information for vector control interventions
- There was significant reduction in anopheline abundance as well as the control of nuisance-biting species. This fostered community support and satisfaction.

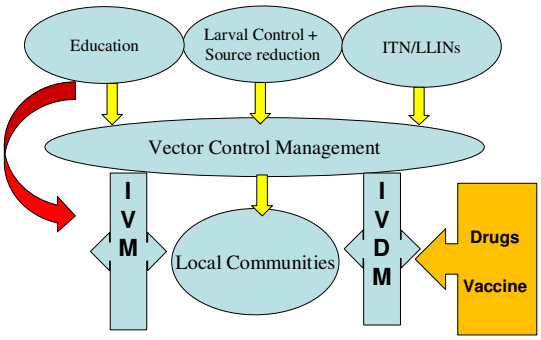
Challenges

- The challenge for the future is to develop additional effective tools for vector control and combine them logically, so that operational vector control can go beyond bed-nets and beyond DDT.
- Strengthening of basic vector surveillance capacities at the level of the District and national malaria control programs.
- The involvement of District networks for harmonization and coordination of malaria control with other stakeholders.
- Maintaining and sustaining the gains over time will be challenging, if the required technical skills and capacities are not quickly established at all levels.

Challenges

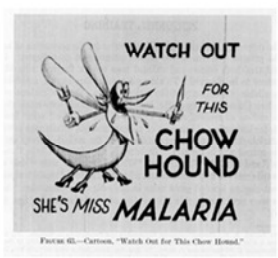
- Limited infrastructures, human resources, and lack of the technical skills to generate and analyse entomological information for selecting, planning, monitoring and evaluating vector control interventions

Integrated Vector Management
"Adaptive Management"



Mosquito Scouts

HUMAN HEALTH



Thank you

International Influences to National Programmes: Policies and Funding

Global Policy and Funding for DDT

Dr. Paul Saoke
Executive Director
PSR-Kenya
Vice President
ISDE

How are international Policies and major malaria program funding affecting effective malaria control in Africa?

Introduction

- Malaria has been one of the ignored diseases in the world for a long time.
- Attention was re-focussed at the Abuja meeting which bore the Roll Back Malaria program
- RBM has also been beset by limitations and had to change its goal to malaria control and prevention

Main sources of Malaria funding

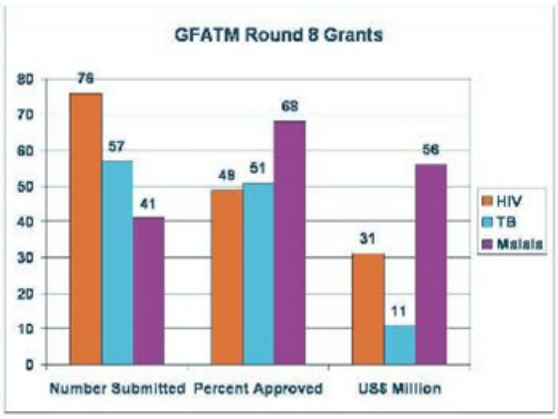
- The Global Fund to Fight AIDS, Tuberculosis and Malaria
- Multilateral Funding agencies
- Bilateral aid
- Private Foundations and corporates
- The United States of America Presidential Malaria Initiative

GFTAM

- The Global Fund to Fight AIDS, Tuberculosis and Malaria Round 8 funding Board has approved 94 new grants worth US$2.75 billion over two years." the overall portfolio now totals US$ 14.4 billion and reaches 140 countries.
- The EU and UN are among those bodies which contribute to the global fund, along with national governments, the private sector and civil society

Round 8 Malaria Funding

Country	Component	RND	Total Approved Funding	Total 5-Year Maximum
Burkina Faso	Malaria	8	$68,721,736	$81,766,288
Central African Republic	Malaria	8	$14,064,890	$40,068,470
Comoros	Malaria	8	$6,831,942	$15,251,370
Congo (Democratic Republic of the)	Malaria	8	$153,997,553	$393,102,357
Côte D'Ivoire	Malaria	8	$180,297,625	$233,251,931
Ethiopia	Malaria	8	$148,412,502	$291,064,713
Ghana	Malaria	8	$39,639,118	$158,030,372
Korea (DPRK)	Malaria	8	$12,345,146	$23,737,520
Kyrgyzstan	Malaria	8	$4,530,888	$8,788,180
Papua New Guinea	Malaria	8	$70,139,822	$152,252,244
Rwanda	Malaria	8	$58,567,001	$138,469,243
Swaziland	Malaria	8	$5,637,713	$13,880,938
Tajikistan	Malaria	8	$6,759,319	$12,439,244
Tanzania	Malaria	8	$111,586,404	$113,335,025
Zanzibar (Tanzania)	Malaria	8	$7,307,257	$15,984,834
Zimbabwe	Malaria	8	$70,994,472	$141,316,927
TOTAL			$959,833,388.00	$1,832,739,656.00



Comparisons in R&D funding for selected diseases in 2007

HIV/AIDS	1,083,018,193
Malaria	468,449,438
Tuberculosis	410,428,698
Diarrhoreal diseases	113,889,118
Leprosy	5,619,475
Rheumatic fever	1,670,089

Multilateral Funding agencies

Most notably the World Bank

In 2007, Nigeria received a credit worth $180 million for the WB even though the malaria program needed $780 million

The WHO also provides technical and financial assistance to the national malaria control programs.

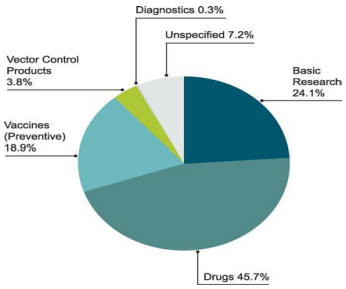
Bilateral source

- Negotiated as agreements between countries
- DFID has committed over £ 6 billion over 7 years to the fight against malaria.

Foundations

- Clinton HIV/AIDS Initiative (CHAI), malaria price negotiations reduced the price of one ACT, an effective malaria drug, by 30% and reduced price volatility of artmesinin, the plant extract in ACTs, by 70%.
- a pilot subsidy on ACTs in Tanzania which reduced the price in targeted areas by 95% and increased uptake by approximately 45% for people of all ages - 62% for children under 5

Funding for malaria



Funding of DDT for IRS

- The PMI is the main funder of DDT for IRS in Sub-Sahara Africa.
- Nearly $10 million allocated for "indoor residual spraying," including DDT, in Mozambique, Ethiopia and Zambia
- Some $20 million will be used to finance indoor spraying with DDT and the other 11 insecticides authorized by the World Health Organization (WHO).

Challenges in funding alternatives to DDT

- Funding of DDT alternatives is a major challenge today.
- The DDT business plan did not have major funding agencies involved
- The GFTAM has not incorporated the principles of the SC in its funding policies
- The Global economic crunch has resulted in a short fall of $3 billion for the GFTAM.

Challenges cont.

- The GFTAM funding process is equally too complicated and exhibits bureaucratic processes making it too long.
- The GFTAM peer review process may be prejudiced by conservatives views and approaches.
- Only one project involving Madagascar, Ethiopia and Eritrea has been funded by GEF to particularly address alternatives

Conclusion

- The current funding levels for malaria control indicates good progress in declining malaria morbidity and mortality in some countries like Kenya, Malawi, Rwanda and Zanzibar.
- In Tanzania, beginning in mid-December 2005, the PMI distributed 130,000 long-lasting bed-nets, more than doubling the coverage rates of pregnant women and children on Zanzibar and Pemba Island.

Conclusions cont.

- The number of confirmed malaria cases on Pemba Island dropped 87 percent from January to September 2006 to 1,570--down from 12,531 in 2005.
- There is an urgent need to find ways of stimulating GEF funding for DDT alternatives projects.
- NGO involvement in the UNEP/GEF/WHO global DDT alternatives project.

Paul Herman Muller

DDT and the Stockholm Convention-PAN Germany

www.pan-germany.org


Photo: Bonnie Gillespie


Photo: James Gathany

African CSO and Experts Meeting on DDT
Dar es Salaam, Tanzania, 6-8 April 2008

DDT and the Stockholm Convention
States on the edge of non-compliance

Findings of a PAN Germany study
published jointly with PAN Africa and PAN North America


Photo: Pierre Holtz


Photo: Matthias Trischler

PAN Germany
Pestizid Aktions-Netzwerk e.V.

Carina Weber, Executive Director

www.pan-germany.org

Goal of the Stockholm Convention (SC) with regard to DDT: Elimination

"With the goal of reducing and ultimately eliminating the use of DDT …"

Almost half a decade
since the SC became effective in 2004
a gradual elimination of DDT should be perceptible !

However,
2003 - 2007 DDT use increased by 6 % annually!

www.pan-germany.org

Therefore the study raised two questions

1. Do all countries and/or players and financiers of malaria control programs comply with the requirements of the SC?
2. How should the process towards the global elimination of DDT be evaluated?

www.pan-germany.org

Sources of information to answer the questions

1. Publicly accessible data from the SC secretariat and WHO
2. Oral and email communication (governmental experts, industry, science, civil society; August 2008 - January 2009
3. Presentations and talks at the stakeholder meeting on the "Global Partnership for Developing Alternatives to DDT for Disease Vector Control" (Geneva, 3-5 Nov. 2008
4. Speeches and talks at a symposium of the German Federal Ministry for Economic Cooperation (BMZ) on chemical management on 16 Dec. 2008 in Bonn

www.pan-germany.org

Results
at a glance

www.pan-germany.org

10 countries implemented the elimination of DDT use in malaria programs or, as the case may be, contributed to it noticeably			Stockholm Convention	
			signed	ratified
☺	China	according to its own information no longer uses DDT domestically; does not want to use the insecticide in future	08/04	05/01
☺	Yemen	has not used DDT in recent years does not want to use the insecticide in future	12/01	01/04
☺	Kenya	foregoes the use of DDT in its malaria control programmes	05/01	09/04
☺	Mexico	thanks to consistent and successful malaria control programmes no longer uses DDT	05/01	02/03
☺	Myanmar	is moving towards doing without DDT	---	04/04
☺	Rwanda	was able to reduce the number of malaria-infections and deaths without DDT	---	06/02
☺	Sao Tome and Principe	was able to reduce the number of malaria-infections and deaths without DDT	04/02	04/06
☺	Sudan	no DDT used since 2005/2007	05/01	08/06
☺	Tanzania	was able to reduce in Zanzibar the number of malaria-infections and deaths without DDT	05/01	04/04
☺	Vietnam	thanks to consistent and successful malaria control programmes no longer uses DDT	05/01	07/07

14 countries are on the edge of non-compliance (willing to use DDT in future)				
☹	Ethiopia	has continued to use DDT since 2000	05/02	01/03
☹	Botswana	is willing to use DDT (in exceptional circumstances)	---	10/02
☹	Dominican Republic	does not provide information on whether it continues to use DDT or not	05/07	05/01
☹	India	uses DDT in large quantities	05/02	01/06
☹	Madagascar	will recommence DDT usage in 2009	09/01	11/05
☹	Malawi	wants to recommence DDT usage in 2009	05/02	02/09
☹	Morocco	uses DDT (but only in exceptional circumstances)	05/01	06/04
☹	Marshall Islands	willing to use DDT in exceptional circumstances	---	01/03
☹	Mauritius	uses DDT (only in exceptional circumstances)	05/01	07/04
☹	Mozambique	recommenced DDT usage in 2005	05/01	10/05
☹	Papua New Guinea	does not provide information on whether it still uses DDT	05/01	10/03
☹	South Africa	uses DDT (under strict conditions)	05/01	09/02
☹	Swaziland	has continued to use DDT since 2000	---	01/06
☹	Uganda	DDT was used in a few projects, the Supreme Court stopped it	---	07/04

11 countries used DDT illegally

6 countries used DDT illegally because the registration happened too late				
☹	Ethiopia	only registered DDT use in September 2007	05/20	01/03
☹	India	only registered DDT use in October 2006	05/02	01/06
☹	Mozambique	only registered DDT use in September 2007	05/01	10/05
☹	South Africa	only registered DDT use in November 2004	05/01	09/02
☹	Swaziland	only registered DDT use in June 2006	---	01/06
☹	Uganda	only registered DDT use in July 2008	---	07/04

5 countries used DDT illegally because they did not inform the Secretariat				
☹☹	Eritrea	has continued to use DDT since 2000	---	03/03
☹☹	Gambia	recommenced DDT usage in 2008	05/01	04/06
☹☹	Namibia	has continued to use DDT since 2000	---	06/05
☹☹	North Korea	also uses DDT in agriculture	---	08/02
☹☹	Zambia	recommenced DDT usage in 2000	05/01	07/06

Evaluation of Parties producing DDT *			Convention	
			signed	ratified
☹	China	produces DDT for malaria control (export) and for use in the production of dicofol; China wants to stop production in 2009	05/01	08/04
☹	India	produces DDT for vector control (domestic use, export) and for use in the production of dicofol	05/02	01/06
☹	North Korea	produces DDT for domestic use against mosquitoes and against pests in agriculture	---	08/02

* Countries such as Ethiopia and South Africa produce own formulations with imported DDT. In the case of South Africa it is known that it also exports these formulations.

Evaluation of Supporters of Malaria Control Programmes		
Contributed to the elimination of DDT noticeably		
☺	GEF	supports projects with the goal to make it easier for countries to abandon DDT
Only half-hearted in its pursuit of the global elimination of DDT		
😐	Germany	does not finance DDT applications bilaterally but pays into multilateral funds which orientate themselves according to the WHO recommendations. So the promotion of DDT programmes with German tax money is indirectly approved of.
On the edge of non-compliance		
☹	GFATM	commitment to implement the phase out of DDT is lacking
☹	Bill and Melinda Gates ´ Foundation	do not promote DDT, but there is no emphasis on DDT reduction strategies
☹	USA	has played an important role in increasing the prominence of DDT in malaria control efforts in Africa, finances DDT use
☹	WHO	recommends the use of DDT under certain conditions. The newest position (from 2007) illustrates a growing readiness to support alternatives to DDT and the SC processes for ultimate elimination of DDT. However, the actual commitment to implement this position is lacking.

Summary of the results

- Only 10 countries implemented the elimination of DDT or contributed to it noticeably
- 14 countries are on the edge of non-compliance
- 6 countries used DDT illegally as the registration happened too late
- 5 countries used DDT illegally as they used it without informing the Secretariat

Process is not sufficiently purposeful !

There is need for

⇨ more emphasis on compliance
⇨ improved transparency about programs/projects promoted bilaterally and multilaterally
⇨ concrete, binding and effective plans to reduce the use and production of DDT

The German policy

www.pan-germany.org

The German governmental policy on DDT

Two ministries actively involved:

- BMU (Ministry of Environment / lead)

- BMZ (Ministry for Economic Cooperation and Development)

Germany 3rd largest GEF funder

Since 2008 the only European representative in DDT expert panel

Both ministries aim at eliminating DDT asap.

German Minister for Economic Cooperation and Development Wieczorek-Zeul in a letter to PAN Germany December 2008: Germany, jointly with other European partners, especially from Scandinavia, supports the full ban of the production and use of DDT at the earliest possible time.

www.pan-germany.org

German governmental contributions

- elimination of obsolete DDT stockpiles
- generation of information and knowledge on alternatives
- capacity building to increase knowledge on alternatives
- new insecticide
- development and implementation of IVM approaches without DDT
- programs with DDT are only be taken into account
  - as a ultima ratio and
  - if there is a time schedule for phase out
  However: Is this fully implemented – also through GFATM?
  ('Germany has not rejected a project yet.

PAN Germany calls for a strong focus on non-chemical approaches in the German policy.

www.pan-germany.org

The US policy

www.pan-germany.org

US government malaria aid
President's Malaria Initiative (PMI)

Launched by former President George Bush in 2005 (under USAID)

5 billion dollars funding over 5 years- committed in 2008

Goal: reducing malaria-related deaths by 50 % in 15 focus countries (Angola, Benin, Ethiopia, Ghana, Kenya, Liberia, Madagascar, Malawi, Mali, Mozambique, Rwanda, Senegal, Tanzania, Uganda, Zambia)

www.pan-germany.org

PMI's approach

- Integrated package of prevention and treatment interventions;
- Strengthening health systems and maternal and child health services;
- Strengthening national malaria control programs and build capacity for country ownership of malaria control efforts;
- Close coordination with international and in-country partners.

www.pan-germany.org

PMI's malaria control interventions

- insecticide-treated mosquito nets (ITNs),
- indoor residual spraying (IRS) with WHO-
- approved insecticides, **including DDT**
- intermittent preventive treatment for pregnant women (IPTp), and artemisinin-based combination therapy (ACT).

www.pan-germany.org

IRS in PMI's programs

IRS:
26% of malaria funding in FY 06;
21% in FY 07,
23% in FY 08

Supporting IRS with DDT in Mozambique, Ethiopia, Zambia, Uganda

About 1 million dollars spent on DDT procurement in FY 08

www.pan-germany.org

Pesticide Management - IVM

- Overall 'guidance' document on ITNs and IRS,
- NetMark Project, which focuses on ITNs.
- IRS contract with RTI International (private contractor), with component on entomological monitoring,
- IVM project through another contract with RTI International project for pesticide management, 'Environmental Monitoring and Capacity Building'

www.pan-germany.org

US Congress and malaria aid

- US Congress- passed Lantos- Hyde Act in 2008 formalizing the PMI's role and committing funding
- Newly formed Congressional Malaria Caucus
- Input in malaria funding from several prominent committees in the Congress
- President Obama's campaign speech promise: to "make the U.S. a global leader in ending deaths from malaria by 2015."

www.pan-germany.org

PAN Germany

Thank you!

ANNEX 6: WORK GROUP SUMMARY: Common obstacles, needs and strategies for African NGOs

LEVEL	COMMON OBSTACLES FOR NGO ON DDT	NEEDS	STRATEGIES
NATIONAL	**Lack of information**: • Awareness and Knowledge • Inadequate facts • Data on malaria and DDT • Alternatives to DDT • Transparency between NGOs • Opportunities	• Improved access to adequate and relevant information and facts (technical and latest) on DDT and Malaria including policies and laws which can help in empowering communities • More research and dissemination on DDT and alternatives to relevant stakeholders • Regular and transparent exchange communication between various stakeholders (Government and NGOs)	• Create awareness on safe DDT use • Meetings, seminars, conferences, etc to review communication strategies on DDT issues • Train the media for information dissemination • Promote publications
	Political interference and lack of government will to support NGO activities: • Involvement of NGOs, CSOs in implementation of NIPs and lack of cooperation from government • Constraints facing NGOs in performing their duties • Negative perception/Recognition/Credibility of NGOs	• Increase involvement of grassroots community and convince government • Increased Government participation in NGO activities Advocacy and lobbying to the decision makers • Enhanced influence on government decision making process • Need for cooperation with government agencies in implementation of programs on chemicals	• Lobby the Government to recognize the role of NGOs in DDT campaigns • Lobbying governments and relevant authorities to embrace DDT alternatives
	Funding: • For project execution	• Need for enough funds to carry out trainings, institutional capacity e.g. to be	• Build a core fund raising group amongst

	• For participation in relevant activities and programmes at both national level and regional level	fully established for advocacies and lobbying	the NGos • Proposal writing and identification of donor agencies • Coordinated initiative in order to secure financial support • Capacity building in proposal development and fundraising skills
	Collaboration/coordination between/among NGOs & Research Institutions: • Competition between NGOs	• Need for harmony and coordination among NGOs in their work e.g. coming up with advocacy forums i.e DDT forum • Need for collaboration with research institute/universities for laboratory analyses • Need for developing communication strategies	• Train the media for information dissemination • Meetings, seminars, conferences, etc to review communication strategies on DDT issues
	Human resource capacity: • Inadequate expertise on DDT and malaria • Advocacy skills • Monitoring and evaluation	• Develop data base of expertise Develop capacity of NGO at all levels; advocacy and negotiation, lobbying etc. • Need for training on how to write proposals, advocacy skills	• Identification of training needs for NGOs on advocacy skills, lobbying techniques • Capacity building among NGOs on technical expertise on DDT • Put in place a department in NGO organizations for monitoring and evaluation with staff

			equipped with monitoring skills
	Institutional capacity in NGOs • Offices • Transport • Communication • Equipment		
REGIONAL	• Insufficient information on alternatives • Lack of adequate success stories on alternatives	• Participate in the demonstration of the alternatives Information about successful stories • Trans-boundary information exchange • Empowerment of NGOs on how to use Community Pesticide Action Monitoring (CPAM)	• Exchange of ideas and sharing experiences for example visiting countries which has effectively eliminated DDT use in malaria control • Harmonise CPAM activities at national level
	Absence of the full cost benefit analysis of DDT and alternatives	• Active involvement in full cost-benefit analysis of DDT and alternatives	Development of Regional strategy with international stakeholders
	Sub-standard application of DDT in some country programmes	• Involvement of NGOs in monitoring and evaluation • Training and awareness raising of health issues to spray operators and recipients	Development of monitoring and evaluation plan together with government Development of information communication materials
	Marginalized position with regard to Stockholm Convention	• Involvement of NGOs in Stockholm convention at different levels • Integration of NGO in the national and	Lobby with the national government to comply with article 7 of the

		regional implementation programme • Be allowed to have more say in regional interventions Countries to indicate NGO involvement-to be effected during agreement stage	Stockholm Convention involving relevant national stakeholders

ANNEX 7: WORK GROUP SUMMARY: REGIONAL PROGRAMME

When	What	How	Who
SHORT TERM-(TOWARDS COP4)	Allocation of the NIP funds to CSOs & updating the NIP	By the resolution of the COP	AGENDA (LEAD) PAN AFRICA ITUC(PAN-ETHIOPIA) IPEN iLIMA
	Training and involvement of local experts and CS groups in NIP preparation and update	By the resolution of COP	AGENDA (LEAD) PAN AFRICA ITUC(PAN-ETHIOPIA) IPEN iLIMA
	Pursue COP4 not to issue extension of DDT exemption	Develop a position paper on DDT	PSR-KENYA IPEN/PAN WG/ITUC
	Prove to relevant stakeholders current IRS (DDT) programs in Africa do not comply with Stockholm Convention/WHO Standards		PSR-KENYA UNEMATC
	Capacity building for the NGOs in countries using and intending to use DDT	By the resolution of COP	AGENDA (LEAD) PAN AFRICA ITUC(PAN-ETHIOPIA) IPEN iLIMA

	Attention be given to non compliant countries	By the resolution of COP	AGENDA (LEAD) PAN AFRICA ITUC (PAN-ETHIOPIA) IPEN iLIMA
	The cost benefit analysis & life cycle assessment of DDT and alternatives	By the resolution of COP	AGENDA (LEAD) PAN AFRICA ITUC (PAN-ETHIOPIA) IPEN iLIMA
	Decision to develop a project for capacity building for Civil Societies of countries using or intending to use DDT to support the correct implementation of the Stockholm Convention and alternatives to DDT in Vector Control	• Appointing lead agency • Coordinate between partners • Push for formulation of the proposal • Liaise with UNEP for submission	This meeting
	• Alignment into DDT risks and DDT alternatives • Information package for NGOs • Information for Press • Information for communities	Desktop studies	PAN IPEN
	Collaboration of NGOs, research institutions & industry	Form task force Annual conference	PAN IPEN
	Establishment of National NGOs Committee on implementation of Stockholm Convention (DDT) (to complement the existing designated Focal Points)	NGOs meet to appoint	IPEN PAN Africa NGOs present in this meeting to facilitate the process at their own countries (appoint one)
	Establishment of interim Regional Hub	NGOs meet to appoint	NGOs present at this meeting with assistance from PAN

			African (PSR-Kenya appointed)
MEDIUM TERM > 5YEARS (June 2009 – June, 2014)	Develop a project for capacity building for Civil Societies of countries using or intending to use DDT to support the correct implementation of the Stockholm Convention and alternatives to DDT in Vector Control	• Coordinate between partners • Push for formulation of the proposal • Liaise with UNEP for submission	PSR-KENYA (LEAD) PAN AFRICA UNEP GEF AGENDA
	• Lobbying governments and relevant authorities to embrace DDT alternatives • Lobbying the governments to recognize the role of NGOs in DDT campaigns	Identify all available alternatives and publicize	National, Regional and International Focal Points
	Create awareness on adverse impact of DDT use amongst all stakeholders	Reach Out through seminars, workshops, publications, electronic & print media, internet and telephone (messages), etc.	Focal Points, Other NGOs & friendly media houses
	Develop communication strategy among NGOs at all levels	• Identify the media consultants • Develop set of criteria for selecting • Set time limit • Develop terms of Reference for strategy development	JA!-MOZAMBIQUE NATIONAL COMMITTEE PAN AFRICA PSR-KENYA
	Harmonize CPAM activities at national and regional levels		PSR-KENYA, PAN AFRICA AGENDA TAPOHE-TANZANIA
	Establish time frame for final phasing out of DDT		

ANNEX 8: FORMATION OF REGIONAL NETWORK

LIST OF FOCAL POINTS

Focal Points			Responsible Person
Regional Hub		PSR-KENYA	Dr. Paul Saoke
Countries	Uganda	UNETMAC	Ellady Muyambi
	Kenya	iLIMA	Griffins Ochieng
	Tanzania	AGENDA	Silvani Mng'anya
	Ethiopia	PAN ETHIOPIA	Tadesse Amera
	Zambia	Entomological Society of Zambia	Crispin Kaposhi
	Mozambique	Justica Ambiental (JA!)	Arsenio Banze
	Ghana	EYAN	Osei Akoto
	Nigeria	SRADev	Eugene Itua
	South Africa	Indaloyethu Environmnetal Cooperative	Mark Wells

ANNEX 9: MEETING PHOTOS

Group photograph

Dr. Myres Lugemwa - Malaria Control Programme (MCP), Ministry of Health, Uganda

Mr. Tadesse Amera - PAN Ethiopia

Mr. Jan Betlem - UNEP Division of GEF Coordination (standing) (LHS - Ms. Carina Weber, PAN Germany, RHS - Mr. A. Mwakatole, ENVIROCARE, Tanzania)

Mr. Kefa Sum - Pyrethrum Board of Kenya