



**PROJECT IDENTIFICATION FORM (PIF) <sup>1</sup>**

**PROJECT TYPE: FSP**

**TYPE OF TRUST FUND: GEF TRUST FUND**

**PART I: PROJECT IDENTIFICATION**

Project Title:	Demonstration of effectiveness of diversified, environmentally sound and sustainable interventions, and strengthening national capacity for innovative implementation of integrated vector management (IVM) for disease prevention and control in the WHO AFRO Region.		
Country(ies):	<b>Botswana, Ethiopia, Gambia, Kenya, Liberia, Madagascar, Mozambique, Namibia, Senegal, South Africa, Tanzania, Uganda, Zambia, Zimbabwe.</b>	GEF Project ID: <sup>2</sup>	4668
GEF Agency(ies):	UNEP	GEF Agency Project ID:	ADDIS: 00746
Other Executing Partner(s):	the World Health Organization – WHO Regional Office for Africa as GEF Executing Agency, in collaboration with the following executing partners: - Relevant National sectoral Ministries in the 14 project countries, - Relevant International and National NGOs in 14 project countries, - University of Pretoria, South Africa, - London School of Hygiene and Tropical Medicine, United Kingdom, - Wits University NICD, South Africa.	Submission Date: First GEFSec Review:  Re-submission:  :	16 June 2011 28 September 2011 23-03-2012
Other involved project partners:	- the Global Fund to fight Aids, Tuberculosis and Malaria; - United States Agency for International Development (USAID); - the Secretariat of the Stockholm Convention.		
GEF Focal Area (s):	Chemicals	Project Duration(Months)	60
Name of parent program (if applicable): • For SFM/REDD+ <input type="checkbox"/>	Global joint WHO/UNEP DSSA Program	Agency Fee (9%):	1,394,253 US \$

**A. FOCAL AREA STRATEGY FRAMEWORK<sup>3</sup>:**

<sup>1</sup> It is very important to consult the PIF preparation guidelines when completing this template.

<sup>2</sup> Project ID number will be assigned by GEFSEC.

<sup>3</sup> Refer to the reference attached on the Focal Area Results Framework when filling up the table in item A.

<b>Focal Area Objectives</b>	<b>Expected FA Outcomes</b>	<b>Expected FA Outputs</b>		<b>Trustfund</b>	<b>Indicative Financing from relevant TF (GEF/LDCF/SCCF) (\$)</b>	<b>Indicative Cofinancing (\$)</b>
Chemicals; objective 1 (Phase out POPs and reduce POPs releases),	Outcome 1.1 Production and use of controlled POPs chemicals phased out. Indicator 1.1 Amount of POPs not produced or used following demonstration of alternative; measured in tons per year against baseline as recorded through the POPs tracking tool.	Output 1.1.1 Countries receiving GEF support to phase out the production or use of controlled POPs (other than new POPs).		GEF	14,754,000	113,066,000
Project management cost <sup>4</sup> (see remark under table Project Framework below)				GEF	737,700	5,654,000
<b>Total project costs</b>					15,491,700	118,720,000

<sup>4</sup> GEF will finance management cost that is solely linked to GEF financing of the project.

## B. PROJECT FRAMEWORK

### General Project Objective:

To strengthen national capabilities for implementation and scaling up of evidence-based, innovative, diversified and environmentally sound disease vector control interventions (with special emphasis on malaria) with multi-stakeholder participation within context of IVM.

### Specific project objectives:

- Support countries to demonstrate effectiveness of diversified, environmentally safe innovative vector control methods including use of chemicals within the context of IVM;
- Promote evidence-based multi-sectoral policy-making for IVM and strengthen multi-sectoral alliance in the promotion & implementation of environmentally sound & effective innovative interventions for diseases vector control;
- Strengthen national capabilities for implementation and scaling up of evidence-based, environmentally sound & innovative interventions for disease vector control with special emphasis on malaria;
- (sub) Regional collaboration and coordination, dissemination and sharing of country experiences;
- Strengthen knowledge and capacity of national & international NGOs & CSOs for promotion and implementation of environmentally sound, effective and innovative interventions for disease vector control with special focus on malaria;
- Increase awareness and involvement of communities in the implementation of environmentally sound & effective innovative interventions for diseases vector control.

Project Component	Grant Type (TA/IN V)	Expected Outcomes	Expected Outputs	Indicative Financing from relevant TF (GEF/LDCF/SCCF) (\$)	Indicative Cofinancing (\$)
1. Promote evidence-based multi-sectoral policy-making for IVM and strengthen multi-sectoral alliance in the promotion & implementation of environmentally sound & effective innovative interventions for diseases vector control	TA	Embedding achieved of IVM principles in policies of relevant sectors with impact on disease vectors  All relevant sectors are engaged in and long term committed to IVM implementation according to the national policy	1) Gap analysis conducted concerning current policy & status of multi-sectoral collaboration in IVM in 14 project countries (end of Y1)  2) Country focussed IVM decision analysis support tools developed and promoted (one for each country; end of Y2)  3) Platform for cross sectoral collaboration established (with a 6 monthly activity cycle) and agreeing on the national policy to ensure long-term commitment (2 times per year, starting during Y1, continuous	800,000	4,728,800

			<p>throughout during project life time)</p> <p>4) Multi-sectoral Plans developed in each of the 14 project countries for mitigation of negative impact of development projects within the context of IVM (end Y2)</p> <p>5) Binding inter-sectoral IVM national policy guidelines developed, endorsed and implemented by various sectors in each of the 14 project countries (end of Y2)</p> <p>6) Annual Output to Outcome review for Component 1(continuously throughout the project life time)</p>		
2. Strengthen national capabilities for implementation and scaling up of evidence-based, environmentally sound & innovative interventions for disease vector control with special emphasis on malaria	TA	Planning and implementation of malaria control measures which are socially acceptable, economically feasible and environment-tally sound, through strengthened national capacity	<p>1) Situation analysis and needs assessment concerning national capabilities conducted for each of the 14 project countries (end Y1)</p> <p>2) Relevant training modules developed and promoted and training conducted concerning all relevant malaria control measures in 14 project countries (continuously during project life time)</p>	1,200,000	16,550,800

			<p>3) Basic equipment &amp; supplies made available to strengthen national capacities for delivery of innovative and effective vector control methods and surveillance of malaria control measures in each of the 14 project countries (after 18 months)</p> <p>4) Overview of various interventions which strengthen national capacities for planning and implementation of pesticide management is available for each country (end Y2)</p> <p>5) National Management Plans of pesticides for public health available in each of the 14 project countries (end Y3)</p> <p>6) Annual Output to Outcome review for Component 2 (continuously throughout the project life time)</p>		
3. Support countries to demonstrate effectiveness of diversified, environmentally safe innovative vector control methods including use of alternative chemicals to DDT within the context of IVM	TA	Countries adopt the implementation of effective, sustainable and/ or innovative interventions in demo project sites	<p>1) Extensive documentation completed of existing VC interventions and impact on malaria for each of the 14 project countries.(end of Y1)</p> <p>2) Vector control need</p>	11,200,000	79,782,200

			<p>assessments in 15 countries documented (end Y1)</p> <p>3) At least 20 target interventions and demo sites (of which at least one is cross bordering) in at least 8 project countries identified/ selected, implemented and completed (end Y5)</p> <p>4) Economic evaluation of the technical- and cost- effectiveness of at least 20 demonstration interventions completed (end of Y5)</p> <p>5)- Lessons from participatory process (incl. lessons learnt) captured through House Hold, malariological &amp; entomological Surveys for each of the demo sites (end of Y5)</p> <p>6) Vector resistance assessed and monitored for each of the 20 proposed demo sites (continuously throughout the project lifetime and at least once a year)</p> <p>7) Annual Output to Outcome review for Component 3 (continuously throughout the project life time)</p>		
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<p>4. (sub) Regional collaboration and coordination, dissemination and sharing of country experiences</p>	<p>TA/INV</p>	<p>(sub) Regional collaboration and coordination, dissemination and sharing of country experiences and lessons learned between the project countries as well as with other countries in the (sub) region is enhanced</p>	<p>1) At least 4 publications on mechanisms for (sub-) regional collaboration / information dissemination and coordination to share country experiences on malaria control (for example operational research, joint entomological surveillance, community involvement, etc.) described and published in relevant scientific journals (by end Y5)</p> <p>2) 'Regional Strategies' for malaria control interventions updated (by end Y5)</p> <p>3) Annual Output to Outcome review for Component 4 (continuously throughout the project life time)</p>	<p>650,000</p>	<p>5,911,000</p>
<p>5. Strengthen knowledge and capacity of national &amp; international NGOs &amp; CSOs for promotion and implementation of environmentally sound, effective innovative interventions for disease vector control</p>	<p>TA</p>	<p>Governments, NGOs and CSOs share as a matter of routine experiences, case documentation of success stories of malaria prevention and control with alternatives to DDT</p>	<p>1) National guidelines for future engagement of NGOs &amp; CSOs on policies and technical issues in the 14 project countries developed and institutionalized between NGO's and CSO's (end Y2)</p> <p>2) A regional network of national Information Exchange hubs (including dedicated national websites)</p>	<p>264,000</p>	<p>1,864,400</p>

			<p>established/developed/extended and/or strengthened (end Y1), that enables the sharing of experiences between all stakeholders (end Y2)</p> <p>3) Case studies and other relevant documents fed into the regional information exchange network on a (at least) monthly basis between stakeholders on national and international levels in each project country (end year 3)</p> <p>4) Annual Output to Outcome review for Component 5 (continuously throughout the project life time)</p>		
6. Increase awareness and involvement of communities in the implementation of environmentally sound & effective innovative interventions for diseases vector control	TA	IEC materials appropriate for the needs of target communities and encourage uptake of environmental sound, effective, and innovative interventions	<p>1) 2 general and at least 2 specific IEC (Information, Education, Communication) materials developed, tested and disseminated in 44 targeted districts of the 1 participating countries (end Y1)</p> <p>2) Full community involvement documented per project country concerning the effective involvement and practicing of IVM for disease vector control of</p>	440,000	4,108,800



			communities of the 44 targeted districts (end Y2)  3) Annual Output to Outcome review for Component 6 (continuously throughout the project life time)		
7. Evaluation & monitoring		Evaluation and monitoring of project implementation effectively carried out	1) 1 Mid-Term Review conducted and Mid Term Review Report available (after 30 months)  2) Independent Terminal Evaluation carried out and Terminal Evaluation Report available (end of project)	100,000  100,000	100,000  20,000
Project management Cost <sup>5</sup> (see remark below this table)				737,700	5,654,000
<b>Total project costs</b>				<b>15,491,700</b>	<b>118,720,000</b>

Remark concerning Project Management Costs (PMC): Based on instructions from GEFSec, project proponents are willing to list 5% of the sub-total for PMC in the PIF, because after all, the PIF is only indicative. Once the preparatory stage is finished, project proponents will have done a full appraisal and based on more exact estimates, project proponents will clarify whether 5% is sufficient or not.

### C. INDICATIVE CO-FINANCING FOR THE PROJECT BY SOURCE AND BY NAME IF AVAILABLE, (\$)

Sources of Cofinancing for project	Name of Cofinancier	Type of Cofinancing	Amount (\$)
14 National Budgets	Project Government Contribution / Ministries of Health	In-kind	3,750,000
Multilateral Agency	WHO	In-kind and cash	560 000
Others	Global Fund to fight Aids, Tuberculosis and Malaria (through project countries)	In-kind (but in cash to recipient countries)	112,800,000
Others	Secretariat of the Stockholm Convention	In-kind and cash	150 000
Others	Wits University NICD	In-kind	150 000
Others	University of Pretoria	In-kind	150 000
Others	London School of Hygiene and Tropical Medicine	In-kind	150 000

<sup>5</sup> Same as footnote #3.

Others	NGO's, CSO's	In-kind & cash	500 000
Implementing Agency (UNEP)	UNEP / DTIE / Chemicals Branch	In-kind	10 000
	UNEP base line funding		500 000
<b>Total Cofinancing</b>			<b>118,720,000</b>

**D. GEF/LDCF/SCCF RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY<sup>1</sup>**

<b>GEF Agency</b>	<b>Type of Trust Fund</b>	<b>Focal area</b>	<b>Country name/Global</b>	<b>Project amount (a)</b>	<b>9 % UNEP Agency Fee (b)<sup>2</sup></b>	<b>Total c=a+b</b>
UNEP	GEF Trust Fund	Chemicals/POPs	Regional	15,491,700	1,394,253	16,885,953
(select)	(select)	(select)				0
(select)	(select)	(select)				0
<b>Total Grant Resources</b>				15,491,700	1,394,253	16,885,953

<sup>1</sup> In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table

<sup>2</sup> Please indicate fees related to this project.

## **PART II: PROJECT JUSTIFICATION**

### **A. DESCRIPTION OF THE CONSISTENCY OF THE PROJECT WITH:**

#### **A.1.1. THE GEF FOCAL AREA**

The project fits within Chemicals Results Framework overall goal of the ‘POPs & Chemicals Management Focal Area’ of the GEF: The project contributes to promoting the sound management of chemicals throughout their life-cycle in ways that lead to the minimization of significant adverse effects on human health and the global environment.

The project specifically contributes to objective 1 (Phase out POPs and reduce POPs releases), outcome 1.5 (Country capacity built to effectively phase out and reduce releases of POPs).

#### **A.2. NATIONAL STRATEGIES AND PLANS OR REPORTS AND ASSESSMENTS UNDER RELEVANT CONVENTIONS, IF APPLICABLE, I.E. NAPAS, NAPS, NBSAPS, NATIONAL COMMUNICATIONS, TNAS, NIPS, PRSPS, NPFE, ETC.:**

In line with global movement towards universal access and coverage of all effective malaria control interventions, all the participating countries are making efforts to scale up their vector control interventions, mainly insecticide-based.

However, expanding and scaling up of insecticide-based vector control interventions is not without challenges. Vector resistance is real threat to all insecticide-based control strategies. Also, as countries scale up the use of insecticides particularly DDT, scarcity of capacity for the required safe use and management is posing a serious challenge in many countries. The situation casts doubt on how much DDT use in these countries is in line with the Stockholm Convention with out the required capacity building and establishment of inter-sectoral coordination. The selected countries in this project are using or intend to introduce or re-introduce the use DDT for malaria control (see table below). One of the major factors for many of the countries that are currently using and intend to introduce DDT is the problem and potential problem of vector resistance, which is decreasing the already dwindling number of insecticides suitable for malaria control. Capacity development for continuous monitoring and management of vector resistance is therefore one of the critical issues to reduce reliance on DDT. On the other hand parties to the Stockholm Convention, including the project countries have shown their commitment to introduce innovative alternative strategies and approaches of vector control and ultimately reduce their reliance on DDT. Demonstrating effectiveness of alternative strategies and approaches under the local circumstances is therefore timely and absolutely important. All available National Implementation Plans (NIP) of the project countries indicate the use of DDT in vector control as an important issue. The project will also provide information and evidence of importance for further development (or up-date) and implementation of the National Implementation Plans. The Stockholm Convention has been ratified by all but one project countries (Zimbabwe, which has signed the Convention and is currently preparing its NIP). An overview and status of NIP in the project countries is presented in the following table 1:

**Table 1: NIP Status Project Countries<sup>6</sup>**

	Country	Officially reported DDT use in IRS to WHO	Intending to use DDT for IRS	Country that has notified SSC of their intension to use and/or produce and/or import DDT	Ratification of Stockholm Convention (as per 29 September 2009)	Status National Implementation Plan (NIP)
1	Botswana	X			28/10/2002	NIP completed & submitted 07/06/2011
2	Ethiopia	X		X	09/01/2003	available
3	Gambia	X			28/04/2006	available
4	Liberia		X		23/05/2002	available
5	Madagascar				18/11/2005	available
6	Kenya	X			24/09/2004	available
7	Mozambique	X			31/10/2005	available
8	Namibia	X			24/06/2005	transmission pending
9	Senegal	X		X	08/10/2003	available
10	South Africa	X		X	04/09/2002	transmission pending, advanced draft NIP available
11	Swaziland	X		X	13/01/2006	NIP completed and submitted on 06/01/2011
12	Tanzania		X		30/04/2004	available
13	Uganda		X	X	20/07/2004	available
14	Zambia	X			07/07/2006	available
15	Zimbabwe	X			signatory	NIP under preparation

Some countries such as Ethiopia and Madagascar are already part of DSSA projects. As such, these countries have already committed themselves to provide increased attention to the promotion and introduction of alternatives to DDT in vector management. Through this project, these countries will only receive support for multi-stakeholder implementation of the Stockholm Convention and for activities that were not planned in the previous DSSA projects but would be very much relevant to the over all effort in evidence-based diversifying of vector control interventions. As such, no duplication will take place.

The other project countries are not included in any of the DSSA projects. They will be assisted in strengthening of multi stakeholder implementation of the Stockholm Convention, demonstrating the effectiveness and safety of diverse and innovative malaria control interventions and approaches and in strengthening of national malaria control capabilities for evidence-based management of vector control programs. The situation with regards to DDT use in the various project countries is indicated below.

**Table 2: National Situation and Quantity of DDT used in project countries in the last few years**

<sup>6</sup> Swaziland has been included in this list (and in the text of this PIF) as Swaziland has expressed interest in joining the initiative. However, at PIF stage no Country Endorsment Letter from Swaziland has been received. It is however expected that the country will join the initiative during the execution of the PPG. As such, the information about Swaziland is 'for information purposes' only.

Country	DDT is actually used in Disease Vector Control (i.e. IRS)	Comments
<b>Botswana</b>	Yes	In 1998 Botswana changed policy from DDT to pyrethroids for residual house spraying and treatment of mosquito nets. The change was as a result of non availability of good quality DDT. The complaints from the community about DDT stains on the sprayed walls also contributed to the change. However, the Ministry of Health has not banned the use of DDT for public health purposes. The country re-introduced DDT in 2009 and used it to spray in some parts of the country.
<b>Ethiopia</b>	Yes (DDT temporarily-?-replaced by pyrethroid in 2009-2010 )	DDT is being formulated locally and used for IRS for Malaria vector control.  In Ethiopia, the IRS involves the use of approximately 800 000 kg of DDT annually.  For the period 2000-2005 annual DDT use for malaria control was between 255.000 kg and 298.000 kg per year. As IRS expands in more geographical areas, the amount in 2006-2008 increased to about 800 000 kg per year
<b>Gambia</b>	Yes	IRS with the application of DDT was introduced in 2008 in a few districts  No information on the amount used
<b>Liberia</b>	Yes	IRS with DDT has been introduced by in 2008-2009  No information on the amount used
<b>Madagascar</b>	Yes (DDT use stopped in 2005 and only alternatives are applied. DDT is preserved as an alternative if vector resistance against the pyrethroids appears)	Reported DDT use in: 1999-2000: 18,971 kg a.i 2000-2001: 45, 113 kg a.i 2001-2002: 60.000 kg a.i 2002 -2003 - 40.000 kg) a.i 2003-2004: 60.000 kg, a.i 2004 – 2005: 40.000 kg a.i
<b>Kenya</b>	No	no use of DDT, however recently politicians have mentioned in the press that DDT should be re-introduced.
<b>Mozambique</b>	Yes	Registered for use from 2005-2008  Reported DDT use in 2005: 307.688 kg a.i.
<b>Namibia</b>	Yes	Namibia is carrying out selective spraying with DDT and annual consumption is about 41.000 kg.  Reported DDT use in: 2003: 52.143 kg a.i.; 2004: 25.837 kg a.i.; 2005: 39.611 kg a.i.
<b>Senegal</b>	Yes	No data on quantity used.  DDT is used for Malaria vector control when necessary.

<b>South Africa</b>	Yes	<p>.DDT is used in accordance with WHO Recommendations and requirements of the Stockholm Convention.</p> <p>In 1997, DDT was replaced with deltamethrin and cyfluthrin but vector resistance to these prompted limited reintroduction of DDT in 2000.</p> <p>To date the major malaria vector control strategy in South Africa is IRS using DDT (50%) and pyrethroids (50%). This consumes approximately 100 tones of DDT annually.</p> <p>Reported DDT use in:  2001:71.480 kg a.i  2003: 53.610 kg a.i.;  2004: 62.112 kg a.i.;  2005: 65.575 kg a.i.</p>
<b>Swaziland</b>	Yes	<p>DDT is used in accordance with WHO Recommendations and requirements of the Stockholm Convention.</p> <p>2005 GEF report indicates 6.000-7.000 kg/yr of DDT used for selective spraying.</p> <p>Reported DDT use in 2005: 7.538 kg a.i.</p>
<b>Tanzania</b>	Yes	<p>Small amount was sprayed in 2008-2009 in selected areas to initiate IRS in the Main Land. IRS in Zanzibar island uses only pyrthoids</p> <p>No data available on the quantity used</p>
<b>Uganda</b>	Yes	<p>DDT use re-introduced in 2008 in a few districts</p> <p>No data on the quantity used.</p>
<b>Zambia</b>	Yes	<p>Reported DDT use in:  2004: 8.648 kg a.i.;  2005: 13.308 kg a.i.</p>
<b>Zimbabwe</b>	Yes	<p>DDT use was stopped from 1993 – 2006. In 2007 DDT was re-introduced</p> <p>No data available on the quantity used</p>

(Source: extracted from data on Stockholm Convention website)

The project will support government efforts to introduce and use diversified and sustainable vector control interventions and approaches while at the same time support public awareness campaigns and dissemination to ensure communities engagement. The project will support civil society organizations and communities to promote the use of safe and innovative chemical and non-chemical vector control interventions for the control of malaria and other vector borne diseases as recommended by the WHO.

This project is a **direct reply** to the issue raised during the Conference of Parties of the Stockholm Convention (COP V, May 2011, Geneva) by the ‘African Group’ emphasizing that work on alternatives is essential and that ‘African Group’ countries are seriously requesting support for introduction and demonstration of alternatives to DDT before even the phase-out date of DDT can be discussed.

It should be noted that among the participating countries Botswana, Namibia, South Africa and Swaziland are currently focusing on pre-elimination and elimination of malaria and as such all efforts should be made to make this happening, without excluding any effective safe strategy and approach with the participation of local and

global stakeholders.

**Table 3: National Implementation Plan (NIP) data on DDT in the project countries and Swaziland by January 2011**

Country	National Implementation Plan available ?	relevant 'quotes' on DDT supporting this project (quotes extracted from the country NIPs)
<b>Botswana</b>	Yes	<p>In accordance with the provisions of the Stockholm Convention, the country therefore must notify the secretariat on the intended use of DDT. The action plan (of re-introducing DDT in IRS) necessitates collaboration between the different and relevant stakeholders and will become more critical in the advent of DDT use. Operational issues with regard to public acceptance of IRS will become more relevant with DDT use.</p> <p>Continue looking for safer/effective alternatives to DDT for malaria vector control.</p> <p>Acquisition of insecticide susceptibility and bioassay test kits, conducting the tests and assess the malaria vector dynamics</p>
<b>Ethiopia</b>	Yes	<p>The indoor spraying of DDT for malaria control constitutes one of the highest releases of POPs in the country. The high concentration of DDT compounds residues detected in milk from mothers indicate that apart from DDT sprayers and storekeepers, the general public, in particular women are significantly affected by POPs releases from DDT.</p> <p>The goal of this action plan is the reduction, proper regulation and ultimate elimination of the use, production, import, stockpiles and wastes of DDT. The specific objectives are:</p> <ul style="list-style-type: none"> <li>o Make available comprehensive and accurate data and information on past and existing, use, import, stockpiles and wastes of DDT.</li> <li>o Ensure the proper management and handling of the use of DDT as well as current stockpiles and wastes.</li> <li>o Establish interim storage to properly manage stockpiles and wastes of DDT until disposal.</li> <li>o Dispose obsolete stockpiles and wastes of DDT in an environmentally sound manner.</li> <li>o Establish mechanism to regularly monitor the health and environmental effects of DDT use, stockpiles and wastes.</li> <li>o Identify and implement appropriate alternatives to DDT use.</li> </ul>
<b>Gambia</b>	Yes	<p>Action Plan on DDT Management options</p> <p>Based on the analysis of the country baseline situation, considering the provisions of the Stockholm Convention as well as other relevant international treaties and national policies, pursuant to the national priorities and objectives for POPs management, the following management options were identified:</p> <ol style="list-style-type: none"> <li>1. Strengthen the capacity of NMCP in support of alternatives to reintroduction of DDT;</li> <li>2. Widen and strengthen the present NIBP programme (including sensitization of the public);</li> <li>3. Develop and implement guidance for appropriate use of available insecticides at community level;</li> </ol>

		4. Promote research on non-pyrethroid alternatives to existing insecticides.
<b>Liberia</b>	Yes	All of the POPs pesticides are banned in Liberia but some are still being used illegally, such as DDT, dieldrin, and chlordane. ..... the research cannot conclude whether or not DDT is being legally imported or used in Liberia..... The forecast for legal use and production of DDT is also zero, since Liberia has never produced DDT and has banned the use of it, even for vector control. It was discovered that a local NGO is using dieldrin as agro-chemical in its agriculture projects in Nimba County, Liberia. Other institutions are using DDT illegally.
<b>Madagascar</b>	Yes	La réglementation est pratiquement inexistante pour le DDT utilisé en intra-domiciliaire. L'utilisation du DDT en traitement intra-domiciliaire ne fait l'objet d'aucune réglementation. Les conditions de stockage du DDT ne répondent pas aux directives de stockage de pesticides et une utilisation inadéquate à d'autres fins a été observée. Quelques études ont mis en évidence la contamination du milieu naturel par le DDT : • présence de résidus de DDT dans les oeufs de poule (G. Reynolds, en 1996) • présence de résidus de DDT dans les laitues, dans les poissons à des teneurs parfois supérieures à la valeur limite de la norme Suisse (1mg/kg), dans des oeufs de canne à des concentrations supérieures à la LMR (0,5mg/kg). (Harizo Rasolomanana et Cyril Nogier, en 1996. Projet Voarisoa : l'Environnement et les Produits Toxiques) • présence de DDT dans des échantillons de lait maternel à une concentration en DDT supérieure à la LMR de 0,05mg/kg (Randrianarivo, en 1998)  Aussi, il est nécessaire de : ..... Rechercher des alternatives à l'utilisation des POP, surtout pour le DDT
<b>Kenya</b>	Yes	Short term activities: = Encouraging more investment in research for development of effective and affordable alternatives to DDT; = Undertaking a comprehensive review and assessment of current alternatives to DDT followed by epidemiological surveillance; = Identifying the social aspects of banning DDT; = Strengthening the national and local institutional capacity to control malaria without the use of DDT, e.g., National Malaria Program, African Academy of Sciences; and = Promoting IVM / IPM programmes in Kenya.
<b>Mozambique</b>	Yes	The prevention includes ..... the introduction of integrated pest control systems. Some of NIP actions will be very costly. Adequate support from national and international sources is therefore a crucial pre-condition for successful NIP implementation..... .....designing and implementing public training and awareness programs, based on the "community- right-to-know and participate". .....identification, evaluation and dissemination and Introduction of new environmental friendly technologies in replace of the actual posing POPs related problems... Some of these sites are heavily contaminated to the extent that less plants (flora), insects and other microorganisms (fauna) can be observed. One of these sites is in Zambezia, whose source of contamination is obsolete stockpiles of pesticides mainly DDT. Initial studies conducted at the site suggest significant pollution levels in soil and groundwater. This situation



		accentuates significant health and environmental risks.
<b>Namibia</b>	No	
<b>Senegal</b>	Yes	Il faut noter que le DDT n'est plus utilisé par les structures sanitaires dans la lutte contre le paludisme, maladie qui tue 8 000 personnes par an au Sénégal. En effet, ces dernières utilisent une alternative au DDT, qui est la <i>Deltaméthrine</i> , dans le cadre du Programme National de Lutte contre le Paludisme (PNLP). Cependant, une analyse multicritère de comparaison de l'efficacité de ces deux produits n'est pas faite. Selon les experts de la santé contactés, une utilisation du DDT en lutte antivectorielle n'est pas exclue au Sénégal.....enregistrer le but acceptable sur l'utilisation restrictive du DDT en lutte antivectorielle.
<b>South Africa</b>	Yes, far advanced draft NIP available.	..... there will be a need for the continued use of DDT, however quantities used over the past five seasons should remain the same during the pre-elimination phase, where after quantities might decrease gradually. There is currently no government program to find alternatives to DDT. South Africa is however represented through the DOH on the Global Alliance for the Development and Deployment of Alternative Products, Methods and Strategies for DDT Use'. This is a long term program which will research alternatives to DDT for use in malaria vector control to assist developing countries and countries with economies in transition that currently utilize DDT. The alliance has been set up through the Stockholm Convention and is funded through the GEF. Although there is no national program to identify alternatives to DDT, information provided ..... indicates that research into alternatives to DDT use has been undertaken. Furthermore, South Africa is keen to participate in the proposed Regional initiative called "Demonstration of effectiveness of diversified, environmentally sound and sustainable interventions, and strengthening national capacity for innovative implementation of integrated vector management (IVM) for disease prevention and control in the WHO AFRO Region" (submission in 2011 to the Global Environment Facility (GEF).
<b>Swaziland</b>	Yes	In Swaziland, DDT is officially imported from South Africa and is used for vector control at the malaria endemic areas in the Lubombo Range, Lowveld and some parts of the Middleveld. All DDT stocks in Swaziland are held by the NMCP for malaria vector control at an approximate annual quantity 6 tons.
<b>Tanzania</b>	Yes	DDT was registered and used in the past for the control of insect pests in agriculture and against malaria causing vectors. At present DDT is not registered and does not appear in the list of registered pesticides in Tanzania. Alternatives of DDT for agriculture and malaria control are available. These include IPM and IVM techniques, carbamates (carbaryl), pyrethroids (Permethrin, Cypermethrin), natural pyrethrums and some organophosphates like fenitrothions. Detailed assessment on their efficacy, toxicity, affordability and acceptability is needed. The Ministry of Health plans to use DDT for indoor application under restricted use for control of malaria and plague vectors in areas prone to epidemics. Currently there are 25 districts prone to malaria epidemics in Tanzania. There are ongoing researches on alternatives to DDT for control of disease vectors, which among others focus on application of IPM and IVM methods. No detailed studies have been conducted to ascertain the extent and magnitude of contamination in areas heavily contaminated with DDT. The risk assessment to determine health and environmental impacts has not been done. These studies are critical. The development and subsequent use of substitutes to DDT is an entry point to safeguard human health and the environment.

<b>Uganda</b>	Yes	<p>The Government of Uganda has reintroduced DDT for IRS for malaria vector control. As a POP, DDT is persistent, bio-accumulates in the environment and it poses several health risks. Whereas the decision to reintroduce DDT has been made, there is limited technical know how of safe handling during IRS. There is also inadequate capacity for safe use and effective monitoring of IRS operations. The burden of malaria however still persists and yet cost effective alternatives are not readily available. The re-introduction of DDT will therefore require a number of strategies to be put in place involving:</p> <p>(i) demonstrating the applicability and cost-effectiveness of alternatives to DDT in specific eco-epidemiological settings and within the context of WHO's Global Strategic Framework for Integrated Vector Management (IVM);</p> <p>(ii) strengthening national capacity to plan, implement and evaluate integrated vector management;</p> <p>(iii) strengthening country capacity for pesticides management and to promote judicious use; and</p> <p>(iv) establishing mechanisms for dissemination and sharing of country experience.</p> <p>Aims: . . . . To develop and implement a programme to demonstrate the applicability, cost effectiveness and sustainability of alternatives to DDT in specific eco-epidemiological settings and within the context of WHO's Global Strategic Framework for IVM by 2012, and</p> <p>. . . . . To strengthen national capacity to plan, implement and evaluate integrated vector management, and monitor and evaluate environmental and health impacts of the alternatives to DDT by 2013</p>
<b>Zambia</b>	Yes	<p>ECZ, MoH, NMCC and TDRC in collaboration with UNEP will identify alternatives to DDT and determine their efficacy and cost effectiveness. This will be achieved through desk analysis of potential alternatives to DDT and carrying out of vector susceptibility and bioassay studies of the alternatives.</p>
<b>Zimbabwe</b>	No	<p>NIP in preparation</p>

**B. PROJECT OVERVIEW:**

**B.1. DESCRIBE THE BASELINE PROJECT AND THE PROBLEM THAT IT SEEKS TO ADDRESS:**

Malaria is one of the leading causes of morbidity and mortality in Africa. In 2006 it was estimated to be responsible for nearly 1 million deaths in sub-Saharan Africa. Beyond its direct impact due to disease burden, malaria causes significant loss of local household economy and hampers the national development due to direct costs of treatment and prevention and indirect costs of lost productivity. Global warming and the resultant climate change which disrupt the eco-system and population movement and displacement contribute to increased malaria burden and threatens emergence of the disease in currently non-endemic areas. The use of long lasting insecticidal nets (LLINs) and application of insecticides, including mainly DDT and pyrethroids are the two major vector control interventions, targeting the adult vector population on which countries depend on to fight this scourge of malaria in the region. Both interventions have significantly scaled up during the last 5-6 years in the bid to reach universal coverage and to reduce malaria burden, in some countries to eliminate the disease. The effort however is facing a serious challenge due to vector resistance insecticides.

Being one of the POPs, the use of DDT for malaria control is supposed to be strictly in line with the Stockholm Convention. In addition to the environmental and human health risk, the substandard use and less safe management of DDT can contribute to appearance of vector resistance and also cross-resistance to pyrethroids, the insecticide both IRS and LLINs depend heavily. However, recent Situation Analysis and Needs Assessment (SANA) on environment and health linkages in a number of countries have indicated some difficulties at country level to fully comply with the convention due to limited capacity and scarcity of resources. The Stockholm Convention states that the use of DDT and reliance of programs on it will gradually be reduced as effective alternative interventions and approaches are established and as countries develop the capacity to deliver diversified alternative interventions for malaria vector control.

Projects covered under the global UNEP/WHO program 'Demonstrating and Scaling up of alternatives to DDT' (DSSA) have indicated that implementation of diversified insecticide-based and non-insecticide interventions through a complementary approaches can effectively control malaria transmission and augment treatment. The Integrated Vector Management (IVM) approach as promoted by WHO and other partners in vector control brings great potential for the control of vector borne diseases, including malaria. IVM is a strategy of using multi-faceted interventions in a sensible, comprehensive and cost-effective manner to control one or more vector borne diseases while it puts a lot of emphasis on environmental safety and the human health, evidence-based implementation and partnership at all levels. Availability of long lasting insecticidal nets (LLINs) that are using insecticides posing less risk of hazard, the development of similar insecticide formulations for in-door residual spraying and the delivery of these interventions and other non-chemical methods in the context of IVM would help malaria control programs to reduce their reliance on DDT and ultimately phase out its use. Nevertheless, existing evidence base for effectiveness of non-chemical methods is scarce and fragmented. Vector resistance to insecticides is a threat to all insecticide based interventions. Better monitoring and management of resistance is of a paramount importance to maintain effectiveness of vector control programs. However, many countries have limited capacity to put in place a good resistance monitoring and management system.

One of the projects of the DSSA Programme is the 'AFRO I' project. Started in 2010, the project is being executed in Madagascar, Ethiopia and Eritrea.

As Eritrea is not actively participating, only two countries are moving actively.

The AFRO I project aims at diversifying interventions related to Vector Control through promoting Integrated Vector Management (IVM). Ultimately, this will reduce the dependency on DDT in IRS. As the preparation of AFRO I took several years, in the meanwhile the playing field in Africa has changed dramatically.

In 2010 Ethiopia replaced DDT by pyrethroids for the use of Indoor Residual spraying (IRS) for malaria control because of wide spread vector resistance; Madagascar is not using DDT in IRS anymore through they do not have a problem of resistance. The decision is based on the fact that the government is convinced by the need for diversification of the vector control strategy and tool. So, DDT is considered as potential alternative in case resistance against pyrethroids appears and will become a problem.

The AFRO I project has delivered already important 'lessons learnt' which are included in this proposal:

=> Countries are very much interested and need support in searching for alternative vector control intervention in the context of IVM rather than in the reduction of DDT, which can jeopardize malaria control efforts if it is not coupled with effective diversification of the intervention;

=> Each of the countries in the region might apply a different approach of vector control which should be accepted from the beginning, however for a sustainable achievement on the longer term it should be understood that vector borne diseases like malaria can only be successfully controlled through regional collaboration and adaptation of the same principles and approaches;

=> Countries in the region are at different stages of vector control; some countries are far ahead but are confronted with border crossing issues from neighbouring countries which are not yet at the required level of vector control;

=> As countries are at different stages, support projects will support certain countries with relatively larger amounts of funding compared to others to fill the existing gaps in strategy;

=> To really make a difference, relative larger amounts of funding are needed to support interventions. Demonstration interventions repeated over a certain number of years which have a scientific basis for future analysis are costly as it includes the involvement of highly specialized scientists from related institutions. The funding in the AFRO I project was insufficient and could not cover entirely the involvement of related institutions.

Based on the extensive experiences with some other projects from the DSSA Program (the MENA and the AFRO I projects), project proponents have learnt that in a regional project, the stage of development from individual countries concerning vector management is not the same. Some countries are more advanced compared to others; some countries are more receptive to demo projects compared to others, some countries do not want to be involved in 'demo' experiments but would like to copy the good results from other project countries once available, etc.

Basic criteria for the selection of demo-countries and for demo-sites are (amongst others):

1. Availability of technical capacity in terms of expertise, preferably, within the National Malaria Control Programs;
2. Existence of laboratory facilities with the minimum capacity to monitor vector resistance etc. which is needed for executing sound demonstration activities;
3. Existence of a relatively well working vector control program;
4. Existence of a significant level of malaria burden, at least in some parts of the country;
5. Political and technical interest from the country to be included in demo activities rather than waiting for 'lessons learned' from other countries in the region;
6. Accessibility of suitable demo areas relevant for the specific eco-epidemiological circumstances.

Taken into account the lessons learnt from AFRO I and the prevailing situation as well, this Project therefore aims to demonstrate the evidences and experiences of application of diversified and

innovative vector control methods for effective diseases control and to strengthening countries' capacity to effectively comply with the Stockholm Convention according to the needs of the participating countries. It also attempts to create awareness and strengthen partnership with NGOs and CSOs for increased involvement in the malaria control business in the project countries. This builds on efforts that already are being made by the Governments and WHO through related projects and activities (some of which are part of the joint UNEP/WHO Global DSSA Program) to improve protection of human health and the environment through the reduction of emission of POPs into the global environment.

This project aims also at strengthening relevant National Malaria Control Programs, Civil society - and Non-Governmental Organizations to support multi stakeholder implementation of the Stockholm Convention as the project demonstrate the effectiveness and safety of diverse and innovative malaria control interventions and approaches in a complementary manner.

Furthermore, the project will involve a number of related institutions from within and outside the region to guarantee the scientific correctness of the proposed demonstration interventions.

Currently, the Global Fund to fight Aids, Tuberculosis and Malaria ('Global Fund') is one of the major 'financial source' through which countries can request support for a range of activities to fight Aids, Tuberculosis and Malaria. With regards to malaria, the Global Fund has over the last years funded the purchase of various control tools, including LLINs and insecticides for indoor residual spraying including DDT. All project countries are having access to the Global Fund through so called national Country Coordinating Mechanisms (CCMs) which decides, at the beginning of the annual funding cycle, what programs and interventions to request funding for. CCM mainly consist of representatives of institutions mostly from Government, NGO, private sector, UN organizations which are mostly not directly involved in malaria control. Organizations directly involved in malaria vector control like NMCPs and WHO are represented almost in CCMs of all countries but are minority (See table 4 below).

Below is summary of base-line projects/activities and the challenge each country intends to address by this project.

## **Botswana**

Of the total population of about 2 million, 37% is at risk of malaria infection. Malaria transmission in most parts is seasonal and prone to epidemics. There are a few places of perennial transmission particularly in the Okavango Delta and Chobe districts. *Anopheles arabiensis* is the single major vector in all malarious districts. Botswana is one of the countries where IRS is a major vector control program. Indoor residual spraying using DDT for malaria control in Botswana goes back to the mid 1940s as a small scale intervention. The use of DD continued until 1998 when it was replaced by pyrethroids. However, vector susceptibility tests (in 2006 & 7007) revealed a reduced vector susceptibility level to pyrethroids. In response to this Botswana re-introduced DDT to facilitate vector resistance management. Botswana is one of the eight countries that have opted to eliminate malaria either sub-nationally or nationally. The country has planned to eliminate malaria nationally from its territory by 2015. In order to achieve this the NMCP has scaled up all malaria control interventions. To date, the country sprays most parts of at risk areas using both DDT and pyrethroids protection about 500,000 people. LLINs are also used at a significant level. Nevertheless, in areas such as the Okavango Delta access for IRS targeting the peak transmission season is a challenge. The use of LLINs is also limited due to environmental conditions. In order to tackle this problem the NMCP has<sub>21</sub>

recently launched a pilot trial on the use of durable lining. This is a long lasting pyrethroid plastic sheet with which walls of houses can be plastered instead of IRS. Malaria control in Botswana is funded by GFATM and Clinton Foundation on top of government allocations

#### *Baseline vector control in Botswana*

- IRS is implemented in all malaria prone districts protecting more about 600,000 people in 2010
- More about 150,000 LLINs distributed in the last 3 years
- Pilot trial on effectiveness of durable lining in one district where the application of both IRS and LLINs poses challenge is going on
- Have strategy and plan for malaria elimination including cross border malaria control
- Number of partners such as the Clinton Foundation, RBM and AMP are closely working with the NMCP
- There is cross border vector control in collaboration with Namibia, Zimbabwe and South Africa

With all these in place, however, vector resistance, limited capacity for resistance monitoring and management and lack of evidence on effectiveness of supplementary/alternative methods are challenges the NMCP has faced. Botswana expects this project to support the capacity building for vector resistance monitoring and management to save and prolong effectiveness of pyrethroids; and also assists the ongoing effort to diversify the vector control interventions through supporting more pilot trials on potential alternative vector control intervention n like the one the NMCP is conducting in the Okavangi Delta. Both actions significantly reduce the reliance of the program on DDT for malaria control.

#### **Ethiopia**

Ethiopia has a population of about 86 000 000 of which about 50 000 000 are at risk of malaria. Malaria in many parts of Ethiopia is seasonal with typical characteristics of highland transmission, i.e., very short transmission season with high risk of epidemics. Only in a few places, particularly in major river basins, transmission is perennial with seasonal peaks. About 42 000 000 people are at risk of seasonal epidemics whereas about 8 million reside in perennial transmission areas. *Anopheles arabiensis* is the major vector. It is distributed in all malaria areas of the country. *Anopheles nili* plays a secondary role in some places. *Anopheles funestus*, which used to be an important vector has been eliminated from most, if not all, areas through many years of IRS application with DDT.

IRS in Ethiopia was initiated in 1959 with the global malaria eradication campaign. Blanket spraying with DDT continued until the late 1970s in almost all affected areas. In the early 1980s, the eradication program was transformed into a control program with IRS as the major intervention. Blanket spraying was replaced by selective application. To date both IRS and use of LLINs are major vector control interventions in the country. About 2 million houses are sprayed protecting about 6 million people every year. The Government of Ethiopia and its partners distributed about 22 million LLINs in the last 5 years. The country has scaled up its malaria control program and intends to reduce disease burden to achieve the targets of the MDGs. The country indeed has succeeded in the reduction of the diseases burden in the last 3 years. Ethiopia is one of the countries where the project on “demonstrating cost effectiveness and sustainability of environmentally sound and locally appropriate alternatives to DDT for malaria vector control in Africa” funded by GEF.

This success, however, is in danger due to wide spread vector resistance to many insecticides including DDT and parytheroids. Consequently, the country at the moment is putting a lot of effort to design a strategy that can change the trend of resistance and limit its spread before it causes a program failure. Currently, GEF supported pilot project is on-going evaluating effectiveness of various chemicals to<sub>22</sub>

replace DDT and also to develop vector resistance management strategy that will revert the trend of resistance against pyrethroids at local level. Some non-chemical interventions such as larval source reduction are also carried out in selected places. However, these interventions are not based on scientific evidences and remain to be systematically assessed to facilitate evidence-based decision implementation. The malaria control of Ethiopia is funded significantly by GFATM and PIM in addition to government budget.

#### *Baseline vector control in Ethiopia*

- The country has scaled up vector control interventions and currently about 33 million people are protected with IRS in 2010
- About 22 million LLINs have been distributed in the last 3 years of which about 18 million are estimated to be still in use
- Number of partners including WHO, PMI, RBM, UNICEF, MACEPA, Malaria Consortium etc work closely with the NMCP
- Limited database on vector resistance level available
- A trail on application of insecticides and methods that can be alternatives to DDT is on-going. This is 3-year project funded by GEF
- Broad strategy for vector resistance monitoring and management has been drafted and is under discussion by the various partners including WHO

In order to achieve its plan of sustaining effective vector control program and continue the positive trend in terms of reduction of malaria burden, the country needs to build the capacity for vector resistance monitoring and management. It needs to locally generated evidences on effectiveness of alternative insecticides and non-chemical methods. Information on vector resistance status is required from all over the country to design management mechanism appropriate at local level as the situation significantly varies from place to place. The project will fill the gap in building the capacity for such intensified vector resistance monitoring and management to sustain effectiveness of pyrethroids and identification of other safer insecticides than DDT. It also will augment the on-going project to find alternative chemical and non-chemical methods for malaria vector control.

#### **The Gambia**

The Gambia has a population of about 2 million and all are at risk of malaria. This disease is endemic in all parts of the country and transmission is mainly perennial but with seasonal fluctuation of intensity. The Gambia is one of the pioneers in the promotion of insecticide treated nets alter on LLINs. Already by 2006 use of LLINs had reached significant proportion of the population. Later on, in 2009 the NMCP with the support of partners introduced IRS using DDT in selected areas. The Gambia has been reporting decline in malaria burden for the last 3-4 years following mass distribution of LLINs to replace old nets and introduction of IRS. The country is also implementing limited larval control using larviciding in an effort to diversify the vector control strategy. However, the use of biolarviciding has not been used at large scale for malaria control in Africa and there is no documented evidence on its effectiveness. There is no much information on susceptibility level of the malaria vectors to the insecticides in use. The information is critically important to as the country has well established LLINs program which uses pyrethroids. The Gambia like most countries in the region receive significant amount of funding from GFATM for malaria control. It is also one of the countries implementing the pesticide management project funded by Gates' Foundation.

#### *Baseline vector control in the Gambia*

- Distributed about 1.3 million LLINs in 2009-2010 to replace old LLINs in use by the communities.
- IRS using DDT has been introduced recently in a few districts with a view to expand into more areas.
- Larval source reduction pilot implemented using biolarviciding is going on.
- The Gambia is one of the countries in region reporting significant reduction in malaria burden as a result of increased malaria control intervention to wards universal coverage.
- The Gambia is implementing public health pesticide management project funded by Gates' Foundation
- There are number of vector control partners such as AMP and UNICEF are contributing

The project will play an important role in filling gap in technical capacity and system strengthening for vector resistance monitoring and management. It also will support a more systematic implementation and documentation of outcomes of the use of biolarviciding.

## **Kenya**

About 22,000,000 of the total 32 000 000 population of Kenya is at risk of malaria. Out of these, about 9 200 000 people are living in 16 districts where is a risk of epidemics while the remaining 12 800 000 live in perennial transmission areas.. *Anopheles gambiae* s.s, *An. arabiensis* and *An. funestus* are the main vectors in Kenya. There is no up to date information on vector resistance status. Kenya was one of the countries where pilot IRS projects were initiated in the 1950s and 1960s as part of the global malaria eradication campaign. However, the intervention has been taken to scale. In in early 2000, the country decided to reintroduce IRS in epidemic prone districts. Kenya is also one of pioneers in the use of ITNs. To date, both LLINs and IRS are major malaria vector control methods in the country. IRS is protecting about 1.7 million people every year. The NMCP and its partners distributed about 20,100,000 LLINs in the last 3 years. Of these about 17 million are believed to be still in use. There is also small scale application of natural pyrethrum for IRS. This however is a pilot as not program implementation. Systematic application and assessment of this natural product might be useful. Kenya is one of the countries where the MDAST project is implemented and it also implements the vector control capacity building project funded by Gates' Foundation. There are a few other studies undertaking in the countries on different aspects vector control. These in most cases are conducted by local research institutes.

### *Baseline vector control in Kenya*

- The country distributed more than 20 million LLINs in the last 3 years
- About 9 million people are protected by IRS every year
- There are a number of projects and pilots currently implemented in the country
- There are number of partners such as DFID, PMI, AMP etc. participating in the control program

In spite of all what is happening, the country is not reporting significant impact on disease burden. There is a problem of weak capacity to implement good quality IRS, monitor and evaluate the impact to provide the evidence for informed decision. In spite of the fact that resistance is a problem in East Africa, this is not regularly monitored and no management strategy is in place. The vector control capacity project is now trying to address some of the problems related to capacity. The project will support all the ongoing efforts in the area of capacity building for vector surveillance and resistance and monitoring, and search for innovative vector control tools and interventions.



## **Liberia**

The main vector control intervention in Liberia is the use of LLINs. To date, LLINs coverage in Liberia is one of the highest in the region. 1.7 million LLINs have been distributed in 2010 funded by UNICEF, PMI and the German government to cover every sleeping place by one LLINs for universal coverage. The country with the support of partners such as PMI, has recently introduced IRS with DDT in selected districts in a bid to diversify the vector strategy. The use of biolarviciding is being discussed. In spite of such effort there is only limited data on the status of vector susceptibility to insecticides. Deployment of the intervention is not supported with scientific evidence to ensure effective complementarity and delay appearance of vector resistance. Liberia gets significant amount of funds from GFATM for its malaria control program implementation.

### *Baseline vector control in Liberia*

- Distributed 1.7 million LLINs in 2010 with the support of UNICEF.
- IRS program is ongoing in limited number of districts with the support of PMI
- The NMCP is planning to introduce biolarviciding.
- A number of partners, such as PMI and AMP are involved

The project will support the efforts in diversifying vector control strategy and fill the gap in the evidence base for selection and combining of strategies in a supplementary manner. The project also will contribute in building national capacity for vector resistance monitoring and management. It also will support the NMCP to soundly implement the biolarviciding and systematically document the outcome for evidence-based promotion of the intervention.

## **Madagascar**

The total population about 19 million of Madagascar is exposed to malaria. Both perennial and seasonal transmissions occur. All the three main malaria vectors in the region, *An. gambiae*, *An. Funestus* and *An. rabiensis* are important. IRS with pyrethroids is applied in the central highland to control epidemics and LLINs are used in the west and east lowlands for the control of perennial malaria. According to the strategy of the NMCP, DDT is reserved for resistance management purposes. Madagascar is one of the E8 countries that have planned to eliminate malaria in Southern Africa. To achieve this, Madagascar has been scaling up all malaria control interventions particularly IRS and LLINs. The NMCP distributed a total 7.4 million LLINs targeting 1 LLIN per 1.3 persons in perennial transmission areas. IRS is intensified in the central highland area protecting about 1.5 million people there. Recent tests indicated decreased level of vector susceptibility to pyrethroids, the insecticides used for both IRS and LLINs. The country however, needs to establish regular vector resistance monitoring and management system to reduce expansion of the resistance. Limitation in technical capacity has been a challenge to achieve this. Madagascar is one of the countries where the project on “demonstrating cost effectiveness and sustainability of environmentally sound and locally appropriate alternatives to DDT for malaria vector control in Africa” funded by GEF. The project tries to see the best approach to complement the two major interventions in such a way to reduce pressure for resistance appearance and also test effectiveness of a new tool, the durable lining. The country gets significant support from the GFATM.

### *Baseline vector control in Madagascar*

- Madagascar has been and is implementing a successful IRS in central highland protection about 12 million people
- The NMCP and its partners distributed 4,4 million LLINs since 2010
- The country has scaled all malaria control interventions for universal coverage to eliminate malaria
- Has achieved reduction in malaria burden
- Is implementing a project on DDT alternatives funded by the GEF
- There are many partners of vector control (UNICEF, WHO, RC, AMP, PMI, Rotary Club etc) working with the NMCP

The progress that has been documented during the last few years however is not without a challenge. Similar to other countries the capacity to systematically monitor and manage vector resistance management is limited. As the country moves towards elimination, it is extremely important to have a vector surveillance system to continuously monitor the change in vector population dynamics, this is necessary to identify and target transmission foci as malaria transmission reduces across the country. Without the appropriate management intervention in place, vector resistance is a serious threat to the country's effort to eliminate malaria. The project can create opportunity to fill the gaps in capacity for vector resistance monitoring and management and to create a strong vector surveillance system. It also will augment the ongoing quest for alternative vector control interventions.

## **Mozambique**

Estimated population of Mozambique is about 19 000 000 all of whom are at risk of endemic malaria with perennial transmission. *Anopheles funestus* and *An. gambiae* s.s are the major vectors. *An. arabiensis* is an important vector in some parts of the country. Application of IRS using DDT was initiated in 1946 in peri-urban areas of Maputo city and the Limpopo Valley in southern Mozambique. Mozambique was one of the countries to some extent participated the malaria eradication effort, in IRS was a major intervention. The IRS program was disrupted from 1970 to the early 1990s due to the unstable political situation. In the last decade the malaria control program has evolved to a point of implementing large scale IRS programs using DDT and lambda-cyhalothrin in several areas in 42 districts protecting 5-6 million people every year. In addition to this national effort, the Lubombo Spatial Development Initiative (LSDI) an inter-country cross-border malaria control program was jointly implemented by Mozambique, South Africa and Swaziland for last about 10 years before it down sized its implementation in 2010. The LSDI has been spraying bendiocarb (carbamate) in the project area due to resistance both to pyrethroids and DDT. Distribution of LLINs was initiated in the early 2000s but has not been scaled up. The country highly depends on IRS. Studies have indicated that *An. funestus* is resistant to pyrethroids and carbamates. The vector however is by in large susceptible to DDT, though there are reports from some places showing reduced susceptibility or even resistance of the vector to this insecticides. Resistance of *An. gambiae* s.s. and *An. arabiensis* to pyrethroids and DDT has also been reported in some places.

### *Baseline vector control in Mozambique*

- There is a big IRS program protecting more than 10 million people every year
- The country has distributed about 3.4 million LLINs in the last 3 years
- There is information on status of vector resistance, though limited
- There are number of partners involved in the implementation of vector control interventions
- There is a strong cross border collaboration with Swaziland, South Africa and Zimbabwe

- A number of partners including RBM, AMP, UNICEF etc are actively participating in the vector control program

Nevertheless, NMCP needs to further build its technical and system capacity for effective implementation and management of IRS in order to increase quality and efficacy of the program outside the LDSI operational areas. In view the number of vectors species and the different status of their susceptibility to the various insecticides on different parts of the country, it is extremely critical to have clear situation and distribution of resistance of each vector, to each insecticide and in each part of the country where IRS is implemented. Also, Mozambique should reduce its reliance on vector control intervention if it should make a significant impact on its malaria burden. The project will contribute significantly to strengthening the capacity for vector surveillance including resistance monitoring for evidence-based decision and implementation. It also will give opportunity to the NMCP to assess alternative methods take decision based on scientific evidences.

## **Namibia**

Of the total population of about 2 000 000 in the country, approximately 700 000 are at risk of malaria. Malaria transmission is unstable and seasonal in almost all malarious areas of Namibia. *An. arabiensis* is the most important malaria vector following elimination of *An. funestus* and probably *An gambiae* s.s. through years of IRS application using DDT. IRS with has been applied in all malaria areas of the country since 1999. DDT is applied in traditional structures while pyrethriod is used to spray modern houses in 20 districts in 8 provinces protection about 420,000 people. WHO has worked closely with the NMCP to address the persistent problems associated with quality and timeliness in relation to transmission season observed in the late 1990s and early 2000s. The program has shown progressive changes and improved operational coverage and quality of spraying during the following years. Namibia is one of the E8 countries planning to eliminate malaria. Namibia has also distributed about 400,000 LLINs to selected communities during the last three years. Following this regional decision the NMCP has been trying to strengthen the technical capacity for vector surveillance and for program monitoring and evaluation in order to facilitate informed decision and program planning. *An. arabiensis* is reportedly susceptible to the insecticides in use, DDT and pyrethroids. However Namibia still lacks the required adequate entomological capacity to facilitate informed decision making for its vector control program. Namibia is part of the cross birder malaria control intuitive with Angola, Botswana, South Africa and Zimbabwe.

### *Baseline vector control in Namibia*

- The country protects about 400,000 thousand people with IRS every year
- It has distributed about 400,000 LLINs in the last three years and efforts are underway to replace old LLINs
- The country has scaled up its malaria control interventions to eliminate malaria
- Partners such as Clinton Foundation, RBM, UNICEF and Clinton Foundation are working closely with NMCP

In spite of its many years of running vector control particularly IRS program, the country still has challenge to ensure high standard IRS. There is no up to date information on vector susceptibility to insecticides. Vector surveillance is also lacking. The country depends on limited choices of vector control and insecticides for IRS (DDT and pyrethroids). The project is expected to contribute to the effort being made to strengthen the IRS program through building technical capacity and establishing vector surveillance system as focal IRS targeting hot spots becomes more important in malaria

elimination. It also will assist establishment of routine and effective vector resistance monitoring system and management strategy.

## Senegal

The total about 12 million people of Senegal are at risk of perennial malaria transmission. All the three major vectors, *An. funestus*, *An. gambiae* and *An. arabiensis* are vectors. Senegal is one of the pioneers in promoting the ITNs and later on LLINs. Consequently, LLINs are the major vector control intervention for malaria control. During the last three years, the NMCP distributed about 1.2 million nets targeting children under the age of five years and pregnant women. Most urban dwellers buy LLINs either at subsidized price from different NGOs or at full price from retailers. IRS was not part of the malaria control strategy until recently. Since 2009, PMI has been spraying DDT in a number of selected districts. In 2010, vector resistance was reported to both DDT and pyrethroids in some places. PMI is collecting the information in areas where they are implementing IRS. Nevertheless, the situation calls for a wider and intensive survey to have information on status of susceptibility of all the vectors all over the country to guide the program.

### *Baseline vector control in Senegal*

- IRS is implemented in selected areas protecting about a million people
- Use of LLINs is a well-established tradition in Senegal and many people use LLINs either distributed free/subsidized or purchased from the market
- There is some information on vector susceptibility level
- The NMCP works closely with research centers
- There are partners involved in malaria control activities at different levels

The major constraints of malaria vector control strategy include the following: i. The method is highly dependent on one single intervention (LLIN) using one group of insecticide (pyrethroids); ii. Similar to the situation in many countries, there is no comprehensive up-to-date vector information including insecticide susceptibility level; iii. Entomological capacity for entomology is limited in the NMCP; and iv. The collaboration with research institutes is hampered by scarcity of financial resources. The project can contribute to resolving some of these weaknesses through providing the opportunity to try effectiveness of alternative methods and insecticides and building the technical capacity and strengthening the system for entomological surveillance including vector resistance monitoring and management.

## Republic of South Africa

Out of about 46 000 000 South Africans about 5 million are at risk of malaria infection. Malaria is endemic in three provinces in the north east of the country. Transmission is unstable and seasonal in almost all malarious areas of South Africa. *An. arabiensis* is the only important vector. *An. funestus* used to be a very important vector before it was eliminated through years of IRS with DDT. Recently, the vector re-appeared following the replacement of DDT by pyrethroids in 1996, to which *An. funestus* was resistant. This necessitated the reintroduction of DDT in 2000 which eliminated the vector. No record of its presence was made since the re-introduction of DDT. Later on, DDT resistance was identified in a population of *An. arabiensis* in two localities in KwaZulu Natal. However, subsequent follow-ups were not able to confirm the reported resistance in the same populations. Application of IRS for malaria control in South Africa goes back to 1932 following a trial test that was carried out in 1931 in KwaZulu-Natal using pyrethrum. Application of pyrethrum was replaced by DDT in 1946. To date, DDT is used to spray traditional houses and pyrethroids in modern houses in eight districts in three<sub>28</sub>

malarious provinces (Limpopo, Mpumalanga & KwaZulu-Natal). IRS is the only major malaria vector control intervention in the country. The geographical area of spraying in South Africa is decreasing as distribution of malaria decreases. However, it reported that size of population protected is increasing due to increased cross-border movement of people from the malaria areas of southern Mozambique into settlements on the South African side of the border. South African has planned to eliminate malaria from its border in the coming few years. IRS has been scaled up to reach all communities at risk. Efforts are put in place to strengthen vector surveillance. South Africa is the leading in the cross border malaria control working closely with Namibia, Botswana, Zimbabwe, Mozambique, Swaziland

#### *Baseline vector control in South Africa*

- Effort is in place to protect all the 5 million people with IRS
- Each for the three malarious provinces are responsible for their provincial malaria control which make local decision making effective
- Research institutes in the country collaborate with provinces on research issues
- The country is working and supporting cross border malaria control to reduce the chance of re-introduction of the disease into areas that will be freed
- Malaria distribution and burden has significantly reduced in last several years

Indoor residual spraying in South Africa remains the cornerstone of the malaria control program and has significantly impacted on malaria transmission as the country moves to elimination. With this comes the need to diversify the vector control strategy to allow reduction geographical area of IRS and abd target it to transmission hot spots while other intervention would be implemented in othere areas as appropriated to avoid re-establishment of local transmission. The program also needs to establish effective vector surveillance system including resistance monitoring and management to ensure effective IRS and closely monitor vector dynamics for elimination. This requires major capacity development and system strengthening particularly at the provincial level. The project will contribute to the strengthening the capacity for vector surveillance. It also supports the search for locally effective and cost effective alternatives to reduce the program reliance on IRS and DDT.

#### **Swaziland<sup>8</sup>**

Swaziland is one of the countries in Southern Africa planning for malaria elimination. Malaria transmission in Swaziland is seasonal and unstable to which about 400,000 of its 1.3 million people are at risk. The country has a well-managed and successful malaria control program with IRS at the center of the strategy. *Anopheles arabiensis* is the principal vector. *Anopheles funestus* used to play a role before its elimination due to the intensive application of IRS. It has not been detected in the country for many years even in areas bordering with Mozambique where the species is still a very important vector. *Anopheles arabiensis* is susceptible to DDT and pyrethroids. Spraying of almost all malarious areas by IRS using DDT was already achieved by 1950. Since early 2000s, however, spraying in rural areas is done with DDT while urban centers are sprayed with pyrethroids. Due to many years of IRS and all other malaria control interventions, malaria burden has decreased to a very low level. However, the country continued IRS due to inadequate capacity for effective surveillance to guide decision and implementation at focal level targeting transmission.

#### *Baseline vector control in Swaziland*

- Swaziland manages one of the very good vector control programs in Africa

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<sup>8</sup> See footnote on page 12.

- It is one of the countries planning to eliminate malaria
- IRS is a well-established vector control program protecting almost 280,000 thousand people every year
- Recently, the country has introduced LLIN as part of the effort to diversify the vector control strategy and has distributed 220,000 LLINs in the last 3 years
- The country has good capacity for implementation of vector control

In spite of its quality vector control program, Swaziland lacks the required evidence-base to make it more focused and targeted because of limited technical capacity. The country also continues to heavily depend on DDT for its IRS program. The project will assist the country to build its technical capacity for vector surveillance. It also provides opportunity to conduct effectiveness and feasibility under the local circumstances of other vector control interventions that can contribute to the effort of malaria elimination and keep the status in the post elimination period.

Seen the above, both the project and Swaziland could benefit significantly from this project and it is expected and hoped for that the country will join the initiative during the PPG phase.

## **Tanzania**

Tanzania has a total of about 36 million people and almost all are at risk of malaria which in most cases is perennial and intense transmission. In Mainland Tanzania, *An. gambiae* s.s., *An. arabiensis* and *An. funestus* are all important malaria vectors and *Anopheles merus* is known to be a secondary vector in the coastal areas. In Zanzibar, *An. gambiae* s.s. and *An. funestus* are the main vectors with *An. merus* playing a secondary role. There is no much information on the status of susceptibility of the vectors to insecticides in the Mainland particularly at the program at program level. However, research institutions do carry out tests mainly for research purpose. The vectors in the Zanzibar are susceptible to pyrethroids. There is no information on the status of DDT. With regards to vector control the use of LLINs is a major intervention. A total of about 15,000,000 LLINs have been distributed in the last 3 years. In recent years, an effort has been initiated to scale up IRS particularly in epidemic prone areas but the intervention remains limited. Some pilot trials on the application of larviciding and biolarviciding are underway. In the island of Zanzibar, both the use of LLINs and IRS have major interventions. About 550 thousand LLINs have been distributed during the last 3 years. IRS was re-introduced in a large scale campaign with financial support from PMI in 2006 after a long time interruption. Zanzibar is aiming to eliminate malaria. IRS using pyrethroid have been implemented in all 10 districts of the island. About 1.1 million (86%) of the total population was protected The PMI funded spraying campaign continued for 5 years and achieved a reportedly dramatic impact on malaria transmission and burden. The malaria control program in Zanzibar has been working with WHO and other partners to design a strategy how to reduce IRS from blanket coverage to focally targeted intervention while making sure the gains in reduction of malaria transmission will be sustained and ultimately eliminated .

### *Baseline vector control in Tanzania*

- Tanzania has a relatively high coverage use rate of LLINs in the region. The country distributed a total of about 15.5 million LLINs in the last 3 years
- Pilot trials on larval control interventions are underway particularly in urban center such as Dar Es Salam
- IRS using pyrethroid is being introduced in to 18 districts in the mainland targeting epidemic prone areas
- Small scale larval control is going in urban center particularly in Dar Es Salam, though its impact is not monitored and documented to facilitate evidence based decision

- Malaria burden reduction in Zanzibar has been significant as a result of the past 5-years IRS with universal coverage.
- One type of LLINs (OlysetNet) is produced locally in Tanzania
- Number of partners, PMI, AMP, UNICEF, Swiss Tropical medicine etc support the vector control program in Tanzania.

Tanzania needs two different approaches to strengthen its vector control program. In the Mainland, vector control other than LLIN should be based on evidence on feasibility and effectiveness. The implementation of IRS needs to be using non-pyrtheriod insecticide to reduce the pressure on the vector and delay appearance of resistance. Larval control trail should be systematically monitored and evaluated to determine is role. In Zanzibar, vector control surveillence should be strengthened and clear vector control strategy should be set in the context of the current status of malaria and the envisaged elimination. Nevertheless, capacity in malaria programs both in the mainland and Zanzibar is limited. The project will contribute to the effort that is being done to establish mechanism for vector resistance monitoring and management and the effort to diversify the vector control strategy based on evidence. The project also will support the effort towards establishing targeted IRS in relation to and complementary manner with other interventions particularly in Zanzibar.

## Uganda

About 95% Uganda's 28,000,000 population is at risk of malaria infection. Malaria transmission in Uganda varies from intense in most parts of the country, through medium in the south and north east, to low and very low mainly in the south. There are 15 epidemic prone districts. *Anopheles gambiae* s.l. and *An. funestus* are important vectors. Recently, there has been some reports indicating resistance of *An. gambiae* s.l to pyrethroids. The main malaria vector control strategy is the use of LLINs. The NMCP with the support of partners has distributed about 16,200,000 LLINs in the last three years. IRS pilot projects were conducted in the 1940-1960s in urban areas particularly in Kampala where a dramatic reduction of disease transmission was documented. The pilot project did not expand or continue for a long time except for sporadic spraying activities in some epidemic prone areas, particularly from 1997 onwards. Recently, application of IRS with the support of PMI has been scaled up particularly in 10 epidemic prone districts protecting more about 1,000,000. Pyrethroid insecticide is used for the IRS. There has been a lot of discussing on whether to use DDT or not. The issue raised a lot of debate among the business population and the public health sector. The detection of resistance in the vector population for pyrethroids has added to the pressure to considering the use of DDT. Uganda is one of the countries implementing the MDAST project funded by GEF.

### *Baseline vector control in Uganda*

- Significant proportion of the at risk population is protected by LLINs. Uganda has distributed about 16.1 million LLINs in the last 3 years
- About 2.4 million people are protected by IRS in 10 epidemic prone districts
- Partners such as PMI, Malaria Consortium, etc are playing important role in the delivery of both vector control interventions

In spite of such a significant level of vector control implementation malaria burden remains high in Uganda. The situation indicates problem in monitoring and evaluation of the effectiveness of the vector control program to ensure quality and evidence based interventions. Vector susceptibility status is known in only limited places and pyrethroids are now less effective. The project will assist Uganda to strengthen monitoring and evaluation mechanism and collect the evidence base to implement effective vector control. It also will support establishment of vector resistance monitoring and management<sup>31</sup>

system and capacity to revert the trend of pyrethroid resistance. The country can pilot the use of application of supplementary vector control methods to diversify the control strategy.

## **Zambia**

Basically, Zambia's total population of 11 000 000 is at risk of malaria infection. Transmission is perennial in hot riverine valleys where malaria is highly endemic while intensity of transmission is moderate to high on the plateaus. The most important malaria vectors in Zambia are *An. gambiae* s.s., *An. arabiensis* and *An. funestus*. Recently, there has been report on reduced susceptibility of the *An. gambiae* s.l. vector to pyrethroids. Malaria control in Zambia particularly the copper mining area has a long history of vector control based IRS and larval control. This however, has been interrupted for a long time until the use of LLINs was initiated in early 2000s. Today both IRS and LLINs are major vector control interventions in the countries. IRS using both DDT and pyrethroids is applied on all malarious urban areas in 56 districts protecting about 2.5 million people. IRS is done both by the public and the private sectors. The private sector focuses in areas of economic interest such as the copper belt. Most LLINs are distributed to rural communities. A total of 5.6 million LLINs have been distributed in the last three years targeting mainly the rural population. Number of partners support the LLINs distribution program. Zambia is one of the countries that has been documenting reduction in malaria burden in the last few years.

Larval control through larviciding and some environmental management approaches has been piloted in Lusaka with the support of a research institute in the UK. These are considered as supplementary interventions in urban areas during the dry season when the breeding sites for *Anopheles* vectors are discreet and accessible.

### *Baseline vector control in Zambia*

- There is a well-established IRS program protecting about 5 million people.
- Zambia distributed 5.6 million LLINs in 2009-2010. An estimated 5 million are still in use by the communities.
- There is pilot on the application, effectiveness and feasibility of larval control of different methods
- There is some knowledge on the susceptibility level of vectors to insecticides.
- There are partners closely working with the government

Zambia is running big vector control program based mainly on IRS and LLINs. This has impacted on malaria burden. However, for the control program to remain effective, the current trend in vector resistance has to be reverted. Susceptibility of pyrethroids should be restored. The use of larval control, which is now at pilot level should be scaled up where it is effective to diversify the vector control strategy. The project will have important role in filling the gap in financial and technical capacity to achieve these which are critical if the malaria control program of Zambia is to sustain its achievements and further reduce malaria for elimination.

## **Zimbabwe**

Almost half of the 12 000 000 population of Zimbabwe lives in malarious areas. Most malarious areas of Zimbabwe experience seasonal transmission with a risk of epidemics. Perennial malaria transmission exists in lowland areas particularly in major river basins. *Anopheles arabiensis* is the main vector of malaria in Zimbabwe after *An. funestus* was eliminated through years of IRS application. *Anopheles merus* is commonly found in some parts of the country but no information is yet available<sub>32</sub>



on its role in malaria transmission. *Anopheles arabiensis* is resistant to DDT but susceptible to pyrethroids and DDT. The practice of IRS for malaria control in Zimbabwe was initiated in 1947. Since then, the intervention has been going on but at different levels of geographical and population coverage in different times due to several factors. To date, the IRS with both DDT and pyrethroids remains the major intervention of the malaria control program implemented in malaria localities in 44 districts protecting more about 4 million people. After patchy distributions for many years the use of LLINs also has become a major intervention in recent years. A total of about 3.5 million LLINs has been distributed in the last 3 years with the support AMP. Small winter larval control with application of larviciding is conducted particularly in the Kariba area. Zimbabwe as some other countries in the sub-region has seen reduction in the malaria burden in the last few years.

#### *Baseline vector control in Zimbabwe*

- IRS protecting significant proportion of the at risk population (about 4 million) is in place
- Estimated 3 million LLINs are still in use by the population in different parts of the country
- Larval control is implemented at small scale
- Vector resistance is monitored though not regular as it should be

The malaria vector control program of Zimbabwe is moving in the right direction. IRS and LLINs are implemented to control transmission, the vector is reported to be susceptible to the insecticides on use though regular monitoring is not conducted and efforts to diversify the strategy is going on. However, similar to the situation in other countries of the region, vector control interventions are not systematically monitored and evaluated, insecticide resistance is not regularly monitored and delivery of interventions is considering resistance management. The small scale larval control intervention is not properly evaluated so as to document the impact to facilitate evidence based decision making to scale up the intervention as supplementary method. The project will fill in the gap of the financial and technical capacity address these issues and strengthen the vector control program in the country.

The analysis of the business-as-usual scenario provides quantitative estimates of the baseline project which includes the set of baseline activities that should – in an ideal situation- been fully-funded and implemented by the relevant governments. Examples of baseline activities for this project include:

- (a) Government-endorsed strategies and policies;
- (b) Government announced investments in programs and infrastructure;
- (c) Legislative frameworks;
- (d) Malaria and other vector borne diseases eradication projects;
- (e) Transboundary accords, treaties and agreements; and
- (f) International funding lines from bilateral and multilateral agencies related to the above mentioned base line.

Following the above, for the 14 project countries, a base-line estimate of -on average- approximately US \$ 321,000 per country per year has been maintained. This results in an estimated US \$ 22.5 million for all project countries for the whole project duration.

**Table 4: composition of ‘Global Fund’ Country Coordination Mechanisms (CCM) per project country**

Composition of 'Global Fund' Country Coordination Mechanisms (CCM) per project country													
	Chair		Vice Chair		Members: Government		Members: NGO		Private Sector		WHO	Other	
Country	direct malaria related	non direct malaria related	direct malaria related	non direct malaria related	direct malaria related	non direct malaria related	direct malaria related	non direct malaria related	direct malaria related	non direct malaria related			Total:
Botswana	0	1	0	1	2	2	0	8	0	1	1	1	17
Gambia	0	1	0	3	0	6	0	14	0	2	1	3	30
Kenya	1	0	0	0	1	7	0	9	0	2	1	3	24
Liberia	0	1	0	1	0	5	0	8	0	2	1	5	23
Mozambique	0	1	0	1	0	6	1	4	0	1	1	3	18
Namibia	0	1	0	1	0	10	0	12	0	1	0	3	28
Senegal	0	1	0	1	1	13	2	20	0	1	1	11	51
South Africa		1	data not available										1
Swaziland	0	1	0	1	2	9	0	9	0	3	1	5	31
Tanzania	0	1	0	1	0	3	0	1	0	0	0	0	6
Uganda	0	1	0	1	0	1	data not available						3
Zambia	0	1	0	1	0	8	0	8	0	1	1	4	24
Ethiopia	0	1	0	1 (WHO)	0	2	0	1	0	0	0	0	4
Madagascar	0	0.5	0	0.5	1	2	0	7	0	1	1	3	16
Zimbabwe	0	1	0	1 (WHO)	0	5	0	8	0	2	0	3	19
<b>Total:</b>	<b>1</b>	<b>14.5</b>	<b>0</b>	<b>11.5</b>	<b>7</b>	<b>83</b>	<b>3</b>	<b>114</b>	<b>0</b>	<b>17</b>	<b>10</b>	<b>47</b>	<b>309</b>

Source: Global Fund website

The Global Fund during the last few years has funded the purchase of more than 3000 tons of insecticides including DDT for the 14 project countries. WHO's Position Statement<sup>9</sup> for Indoor Residual Spraying (IRS) mentions that there are currently 12 insecticides (including DDT) recommended by WHO. The choice of insecticides must be informed by the following considerations:

- insecticide susceptibility and behavior of the vector;
- safety for humans and the environment; and
- efficacy and cost-effectiveness.

Based on recent discussions with the Strategy and Policy Department of the Global Fund, scientific decision criteria for the Global Fund's Technical Review Panel (TRP) to support requests from countries to supply insecticides for malaria vector control are currently not available. With incorporation of the 'Global Fund' as partner in this project, the awareness and decision taking capacity within the Fund's Technical Review Panel and Strategy and Policy Department will be increased through information exchange and continued dialogues between the various project partners. This is expected to result in the development and application of clear criteria to evaluate and approve country proposals with regards to the purchase of insecticides for malaria vector control in general and for support to DDT purchases in particular. As such, the Global Fund will assist Parties to make evidence base decisions in the choice and application of insecticides and to fulfill their obligations in the implementation of the Stockholm Convention.

Furthermore, NGOs as well as Government institutions directly involved in malaria control issues in project countries will be strengthened and supported to actively and conscientiously participate in the Country Coordinating Mechanisms debate in order to allow the CCM to formulate the annual need for funds for the purchase of pesticides which are selected "based on evidence" and for malaria vector control in general in a well balanced manner and in line with the spirit of the Stockholm Convention.

Civil society organizations have a unique advantage of being able to reach communities directly and make a strong impact in community actions and behavior. The project will look in to working mechanisms and enable CSOs to reach communities and mobilize them in promoting the use of diversified vector control interventions and approaches, thereby reduce their reliance on DDT and contributing to the implementation of the Stockholm Convention in the participating countries.

Implementation of the project will take a multidisciplinary approach. Apart from the Ministry of Health, various sectors such as Ministries of Environment, Agriculture and Rural development; NGOs, CSOs from the various sectors, major funding institutions and mechanisms such as the Global Fund, Gates Foundation as well as the relevant private sector including the pesticide producers and suppliers in the participating countries are (potential) partners in the implementation of the project. This is a unique approach within the DSSA Program. Potential partners not directly involved in the execution of the project, will be approached for in-depth collaboration and coordination during the first year of the project execution.

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<sup>9</sup> Global Malaria Program, Indoor Residual Spraying: Use of indoor residual spraying for scaling up global malaria control and elimination; WHO 2006.

**B. 2.: DESCRIBE THE INCREMENTAL (GEF TRUST FUND) OR ADDITIONAL (LDCF/SCCF) ACTIVITIES REQUESTED FOR GEF/LDCF/SCCF FINANCING AND THE ASSOCIATED GLOBAL ENVIRONMENTAL BENEFITS (GEF TRUST FUND) OR ASSOCIATED ADAPTATION BENEFITS (LDCF/SCCF) TO BE DELIVERED BY THE PROJECT:**

In the long run the activities contained in the present GEF project PIF for the 14 mentioned countries in Africa will benefit the global community by generating knowledge, skills and experiences on effective application of diversified, safe, innovative and sustainable vector control interventions and approaches for malaria control in various representative ecological, epidemiological and socio-economic settings. A multi stakeholder approach is envisaged. Results from this project will provide sufficient evidence for suitability, replicability and applicability of multiple interventions for a wider audience in the region, especially in combination with the expected outputs from the other DDT related projects in the region. Seen the fact that the African continent (besides India) is currently the main global users of DDT in malaria vector control, in combination with other DDT projects in this region and elsewhere, the project will therefore give solid documented evidence to regional and global community on cost-effectiveness and sustainability of more environmentally friendly alternative interventions to DDT, including chemicals. It will also provide blue print for real multi-stakeholder interventions. It is expected that this will lead to both a significant reduction in the amount of DDT release to the global environment, as well as the provision of a substantial amount of evidence valid for the region's eco-epidemiological and social settings for policy makers to scale up diverse insecticide-based and non-insecticide interventions.

Clearly, evidence and capacity building for the prevention of vector-borne diseases while ensuring availability of more options of interventions that are environmentally sound and safe for public health has features of incrementality in providing global benefits while at the same time giving rise to significant domestic benefits. It is therefore appropriate for government co-financing to be targeted on these aspects of capacity building as proposed under this project.

Significant enabling factors are also available from international and bilateral donors and funding mechanisms at country level. For instance, African countries are receiving additional funding through the Global Fund and the Roll Back Malaria partnership, to accelerate disease control. The optimal use of such resources will result in strengthened vector control systems thus expanding the project proven interventions at a wider scale, resulting in the decrease on the use of DDT in major DDT using/producing countries in the world.

Currently, several project countries are envisaging the elimination of Malaria. As mentioned earlier, all tools and methodologies should be made available to achieve this objective within the shortest time possible and this project will in no way obstruct the intended achievement of these countries. Instead, the project will support project countries to allow for evidence-based selection and delivery of intervention to ensure sustained interruption of transmission.

Moreover, the national partnerships in and outside the national Country Coordinating Mechanisms, which will be further strengthened during the PPG activities at country level will provide ideal and perhaps unique platform for coordination, advocacy and mobilization of more resources. It is expected that through evidence-based strategic advice the WHO will provide the necessary guidance to better articulate and implement vector control priorities for implementation of project activities. This will include technical guidance for project implementation, monitoring and evaluation; and provision of evidences for pesticides selection, monitoring and evaluation their effectiveness.

The incremental activities proposed in this project involve a broader focus on the contemporary use of limited vector control methods and the evidence/knowledge on efficiency of diverse strategies for ultimate reduction of reliance on DDT in malaria vector control while maintaining current and even enhanced levels of human health protection, through a multi stakeholder participation. The strategies essentially take an IVM approach aimed to plan, deliver, monitor and evaluate safe, targeted, cost-effective and sustainable combinations of vector control measures, with a measurable impact on vector-borne disease transmission risks, adhering to the principles of subsidiarity, inter-sectoral collaboration and partnership. The budget necessary for the 14 mentioned project countries to develop the methodology and approach of the project was established based on earlier discussions with the project countries to implement malaria control interventions . Significant co-financing is available from the malaria control programmes and their partners in each country.

The financing support from GEF will be in the form of a grant; topping up already existing and on-going activities in the field of awareness raising and exchange of information within the NGO and CSO communities in the mentioned project countries. The additional GEF funding is required because of the increasing importance of the DDT issue in Africa due to increased resistance of the vectors that warrants the need for acquiring increased scientific evidence to introduce wide variety of vector control interventions and approaches, and also the lack of adequate and widespread capacity among the NGO & CSO to adequately respond to the current need for information and guidance with regards to the safe management of insecticides including in vector control. Most NGOs and CSOs also do not have the resources to broadening their scope of operations to allow them reach widely the grass root level for a better community awareness and compliance with regards to safe and effective use of vector control interventions. NGOs and CSO will provide in kind and cash co-financing for the project as indicated in table B above.

Basically, seventeen African countries have notified the Stockholm Convention of their intention to use DDT for disease vector control. Some of these (like South Africa) have not completed their National Implementation Plans (NIPs) which would provide guidance on how to reduce reliance on DDT. The United States of America (USA) funded Presidential Malaria Initiative (PMI) is currently supporting 15 African countries to combat malaria. Most of the target countries of this project are beneficiaries of the PMI support. Reportedly, the PMI had injected \$1.265 billion by the end of 2010 for the prevention and control of malaria in these countries. Extension of the program in Africa is expected till at least 2017. The initiative has four pillars: Provision and use of insecticide treated bed nets (ITNs), indoor residual spraying (IRS) of insecticides including DDT, malaria in pregnancy and diagnosis and case management with artemisinin based combination therapy (ACTs). Several countries that are funded through the PMI have decided to reintroduce the use of DDT for IRS to control malaria (e.g.Uganda). Other countries prefer to continue with alternative chemicals for IRS (e.g. Madagascar). NGOs and

civil society organizations continue to focus their limited resources to address other POPs (other than DDT) due to the emotive nature of the heavy malaria burden in African.

In many developing countries and countries with economies in transition, there has often been very limited and incomplete public awareness and understanding about protecting the human health and the environment from POPs and other chemical pollutants. NGOs could play a significant role in filling this gap, but without support and assistance, they lack the capacity needed to play their desired roles. These include helping to raise public awareness about POPs, increasing civil society participation in Stockholm Convention-related activities, and in providing direct contributions to up-dates of already existing Stockholm Convention National Implementation Plans and other activities aimed at helping their countries prepare for effective implementation of the Convention. It is expected that through the efforts of the proposed project there will be, on the longer term, more and more countries that will reduce reliance on DDT for disease vector control. This will result in a reduction in the amount of DDT in the global environment. It should be noted that there has been a three-fold use of DDT since the Convention came into force. It is estimated that 6,000 tons of DDT is used annually for IRS and this may increase if safe, more (or at least equally) effective and cost effective alternatives are not identified, promoted and deployed. The global environmental benefits of the proposed project would be the reduction of the environmental and public health risks posed by DDT and reduction in the burden of mortality and morbidity caused by malaria. GEF financing will be incremental to the investments in the business as usual scenario and help achieve these benefits. Besides promoting use of safe and innovative interventions and approaches, one of the objectives of the proposed project is enhancing the capacity of NGOs and CSOs to protect human health and the environment through promoting and supporting the reduction of emission of POPs into the global environment.

The envisaged Global Environmental Benefit for this project has been derived from the data provided in table 2 and is defined as a sustainable reduction in reliance on DDT for vector management ultimately resulting in a reduction of application of an estimated 2,500 tons of a.i. of DDT for vector management for all project countries per year (see table below).

**Table 5: Recent DDT use in project countries and Swaziland in kg. a.i. / year (source: tables 2 & 3)**

Botswana	No data
Ethiopia	800,000
Gambia	No data
Liberia	No data
Madagaskar	40,000
Kenya	No data (most likely: 0)
Mozambique	300,000
Namibia	40,000
Senegal	No data
South Africa	60,000
Swaziland	7,000
Tanzania	No data
Uganda	No data

Zambia	13,000
Zimbabwe	No data
Total:	1,260,000 kg a.i. for 7 countries After extrapolation: <b>2,500,000 kg a.i.</b> for 15 countries

By demonstrating feasible alternatives (both chemical and non-chemicals and approaches) to DDT in vector management, the project countries will ultimately reduce their reliance on DDT for vector management. As is shown in the table 5 this will result in a reduction of DDT application in project countries and Swaziland of about 2,500 tons a.i. of DDT per year (which is the global environmental benefit of the project achieved through the GEF funding).

Without GEF funding, the project countries will continue with their 'usual' malaria vector control approaches, partly depending on continuous application of DDT.

The estimated total co-financing and base-line funding is about US\$ 118,720,000.

The GEF funding : Co-funding ratio = 1 : 7,7 , subject to confirmation during the execution of the PPG (amount of expected co-funding might become even higher).

Concerning the co-funding, US\$ 3,750,000 is allocated from national budgets (not including GFATM) for malaria control programmes specifically directed at the populations of the project areas.

The major co-funding is expected from the Global Funds to fight Aids, Tuberculosis and Malaria.

Grant donations from the Global Fund for Malaria control and prevention during the last years have been as follows (amounts in US \$ or US \$ equivalent):

Country	2008	2009	2010	2011	2012	average / year:
Botswana						
Ethiopia	126,608,646	250,090,407	278,344,592	330,255,130		246,324,694
Gambia	20,237,425	26,158,971	35,119,072	42,239,053		30,938,630
Kenya	80,744,064	107,175,604	146,259,809	156,491,686	159,233,717	129,980,976
Liberia	21,269,464	21,615,039	29,851,714	35,050,248		26,946,616
Madagascar	53,393,337	65,650,988	120,124,961	138,574,895	147,878,082	105,124,453
Mozambique	36,092,031	36,612,896	59,640,690	61,566,510	61,566,510	48,478,032
Namibia	10,852,127	14,649,837	15,815,124	17,113,517		14,607,651
Senegal	27,999,617	42,176,911	44,693,306	45,811,834		40,170,417
South Africa						-
Swaziland	1,431,733	3,993,433	5,370,577	5,370,577	6,189,145	4,471,093
Tanzania	128,387,291	186,945,897	237,353,271	279,807,726		208,123,546
Uganda	80,126,155	121,111,631	152,190,001	161,655,370		128,770,789
Zambia	57,219,562	65,729,858	68,175,268	76,211,880		66,834,142
Zimbabwe		49,469,086	69,266,037	95,019,997	95,144,522	77,224,911
total						<b>1,127,995,950</b>
assumption: 2 % of average Global Fund grant amount contributes to project goal:						<b>22,559,919</b> per year
						<b>112,799,595</b> for project life time

It has been assumed that at least 2 % of the average Global Fund grant amount for malaria prevention and control contributes to the project goal (but most likely this will be much more).

As such, for the project life time, an amount of US \$ 112,800,000 has been calculated as co-funding contributing to the objectives of this project.

Global Fund allocations will contribute to the project as recipient project country contribution.

The co-financing includes also in-kind/cash contribution of US\$ 560,000 from WHO; US\$150,000 from SSC; US\$150,000 from Wits University in South Africa; US\$150,000 from London School of Hygiene and Tropical Medicine; US\$150,000 from University of Pretoria; US \$ 500,000 NGO's and CSO's.

UNEP's base-line funding is estimated as US \$ 500,000. UNEP/DTIE/Chemicals provides US \$ 10,000 as co-funding to the project. Incremental Costs (for FSP) are estimated as about US\$ 15,491,700 which are requested from the GEF.

**B.3. DESCRIBE THE SOCIOECONOMIC BENEFITS TO BE DELIVERED BY THE PROJECT AT THE NATIONAL AND LOCAL LEVELS, INCLUDING CONSIDERATION OF GENDER DIMENSIONS, AND HOW THESE WILL SUPPORT THE ACHIEVEMENT OF GLOBAL ENVIRONMENT BENEFITS(GEF TRUST FUND) OR ADAPTATION BENEFITS (LDCF/SCCF). AS A BACKGROUND INFORMATION, READ [MAINSTREAMING GENDER AT THE GEF.](#)":**

Efforts to ensure sound management of chemicals, including Persistent Organic Pollutants (POPs), might have important gender dimensions. In daily life, men, women, and children are exposed to different kinds of chemicals in varying concentrations. Biological factors — notably size and physiological differences between women and men and between adults and children — influence susceptibility to health damage from exposure to toxic chemicals. Social factors, primarily gender-determined occupational roles, also have an impact on the level and frequency of exposure to toxic chemicals, the kinds of chemicals encountered, and the resulting impacts on human health. These gender dimensions need to be reflected at both site- and policy-level interventions for sound chemical management.<sup>10</sup>

For example, recent report from South Africa disclosed that especially women (as they are mainly working in and around the house) are vulnerable to pesticides applied through Indoor Residual Spraying (IRS). Furthermore, first-borne baby boys of these women tend to have a significant greater risk of being born with disabilities compared to 'control groups'. This example shows the different susceptibility to health damage from exposure to toxic chemicals due to gender-determined occupational roles and different social roles and positions.

This project will, during the needs assessment (PPG) and the subsequent FSP, pay attention to the gender dimensions as well through the promotion of alternatives to DDT in IRS and to avoid negative impacts due to the proposed alternatives for the different social and gender groups in society.

**B.4 INDICATE RISKS, INCLUDING CLIMATE CHANGE RISKS THAT MIGHT PREVENT THE PROJECT OBJECTIVES FROM BEING ACHIEVED, AND IF POSSIBLE, PROPOSE MEASURES THAT ADDRESS THESE RISKS TO BE FURTHER DEVELOPED DURING THE PROJECT DESIGN:**

There is potential risk of increased malaria transmission posed by reduced reliance on DDT or its withdrawal for IRS applications. Community acceptance of the alternative interventions may not

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<sup>10</sup> UNDP, 2007, Gender Mainstreaming – Key Driver of Development in Environment & Energy: Chemical Management.



be at the desired level at the beginning of the project as is the case in a number of situations currently with the use of DDT as well. The comparative high prices of alternative insecticides to DDT, as well as some times the high tariffs on imported nets, could undermine the implementation of alternative interventions. Insecticide resistance to alternative that will be used and the reluctance of some policy makers to move to the use of alternatives are important anticipated risks to project success. In addition, the sustainable application of alternative vector control interventions, which are proven to be cost-effective and acceptable to communities, could be jeopardized by inadequate financial allocation by national authorities for the implementation of these options.

These risks can be averted through the establishment of an effective disease surveillance system coupled with prompt diagnosis and treatment. The project is designed to ensure the intimate involvement of communities in the project. This will include increasing public awareness of the nature, availability and effectiveness of alternative interventions. Clear insecticide resistance management guidelines and well-designed projects with clear objectives and the imposition of precautionary measures will help to convince policy makers. A critical assumption of the project is that governments will maintain their political will towards scaling up the implementation of interventions that are proven to be effective. Relevant government ministries as stakeholders in the project will promote dialogue and facilitate appropriate changes in relevant policies. Additional resources channeled to the countries by the Global Fund, the RBM and projects funded by other donors aimed at lowering the costs of health interventions will also contribute to resource mobilization and to the reduce costs of alternative methodologies.

The experience gained through implementation of the project will result in operational experience for each of the various alternative interventions. This experience will not only include logistical issues, but also the problems, constraints and potentially weak links associated with each type of alternative intervention. Documentation of these potentially weak links as well as the constraints and problems experienced, will allow an assessment of the risks associated with sustainability. DDT spraying is well understood in these terms, but the newer methods are not. Except for the chemical methods, as yet, there is not a comparable body of knowledge to characterise such risks, and therefore comprehensive anticipation of options for reducing them. The assessments of suitability of alternative interventions may reveal problems associated with adverse climatic conditions, resistance or difficulties of funding and retraining. These are all subjects that will be considered in respect to scaling up to wider areas and ensuring wider community acceptability.

Although Parties to the Stockholm Convention are obliged to explore alternatives to DDT in vector management, in many if not all project countries these considerations are not or not fully taken into account by the respective relevant government organizations. This is not a matter of unwillingness, but rather a matter of urgency (malaria outbreaks have to be responded to in a short period of time) and/or a matter of not fully overseeing the possibility of alternatives to DDT. Even when alternatives are considered, many times a proper cost-benefit analysis taking into account all pro's and con's is not possible to do due to time, financial and technical capacity constraint within the relevant organizations. This project aims at providing the relevant organizations with such information. It also aims at increasing the public awareness of malaria and DDT issues. A potential risk is that the governments in the respective project countries assume that NGOs and CSOs will go against their respective policy with regards to malaria and DDT use and as such they might not support the project. Potential delays in collaboration and understanding by governments of participating countries might be an issue. However, the risk

will be mitigated by liaising with the WHO and national Ministry of Health officials responsible for the execution of 'promotion of alternatives to DDT-activities' to work together to facilitate the crucial process of obtaining full community response and collaboration.

The enthusiasm and commitment of the NGOs to participate in this project is underlined in their Dar-Es-Salaam Declaration of April 8, 2009 which stated inter alia; "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". Some institutional capacity exists within the participating NGO's on POPs issues that can be used during project preparation and implementation. Most of them have been involved in the preparation of the POPs inventory, NIP development and were also members of their National Steering Committees on the Implementation of the Stockholm Convention. Further more in 2006 the International POPs Elimination Network (IPEN) embarked on a GEF project which enabled NGOs in 40 developing and transitional countries (including in some project countries) to engage in activities that provided concrete and immediate contributions to country efforts in preparing for the implementation of the Stockholm Convention. The project also enhanced the skills and knowledge of NGOs to help build their capacity as effective stakeholders in the Convention implementation process; and helped establish regional and national NGO coordination and capacity in all regions of the world in support of longer term efforts to achieve chemical safety. However, another potential problem is that in some countries NGOs and CSOs lack the capacity to embark on proposed activities. For that purpose, extensive strengthening of these collaborating organizations is foreseen and budgeted for.

Scientific evidence in recent years has demonstrated that increased temperatures due to climate change have resulted in expansion of insect zones. This has also been witnessed in the case of the malaria vector with areas formerly too high or cold to be malaria prone becoming endemic malaria areas. Climate change triggers that increase the number of vector borne disease outbreaks may be followed by intensified malaria vector eradication campaigns that rely heavily on IRS using DDT. Such an eventuality will be mitigated by intensification of discussions between all stakeholders in the project. Communities will be educated about the potential changes of disease patterns due to climate change and the need to adopt various safe, innovative and sustainable measures.

Summarizing, the following table applies:

**Table 6: Project risks and proposed mitigation measures (see text for explanation)**

<b>RISKS</b>	<b>LEVEL</b>	<b>RISK MITIGATION MEASURES</b>
1. potential risk of increased malaria transmission posed by reduced reliance on DDT or its withdrawal for IRS applications	Moderate	This risk can be averted through the establishment of an effective disease surveillance system coupled with prompt diagnosis and treatment.
2. Community acceptance of the alternative interventions may not be at the desired level at the beginning of the project as is the case in a	Low	The project is designed to ensure the intimate involvement of communities in the project. This will include increasing public awareness of the nature, availability and effectiveness of alternative interventions

number of situations currently with the use of DDT as well		
3. The comparative high prices of alternative insecticides to DDT, as well as some times the high tariffs on imported nets, could undermine the implementation of alternative interventions	Low	Additional resources channeled to the countries by the Global Fund, the RBM and projects funded by other donors aimed at lowering the costs of health interventions will also contribute to resource mobilization and to the reduce costs of alternative methodologies.
4. Insecticide resistance to alternative that will be used and the reluctance of some policy makers to move to the use of alternatives are important anticipated risks to project success.	Low	The assessments of suitability of alternative interventions may reveal problems associated with resistance, adverse climatic conditions or difficulties of funding and retraining. These are all subjects that will be considered in respect to scaling up to wider areas and ensuring wider community acceptability. Even when alternatives are considered, many times a proper cost-benefit analysis taking into account all pro's and con's is not possible to do due to time, financial and technical capacity constraint within the relevant organizations. This project aims at providing the relevant organizations with such information.
5. A potential risk is that the governments in the respective project countries assume that NGOs and CSOs will go against their respective policy with regards to malaria and DDT use and as such they might not support the project.	Low	The risk will be mitigated by liaising with the WHO and national Ministry of Health officials responsible for the execution of 'promotion of alternatives to DDT-activities' to work together to facilitate the crucial process of obtaining full community response and collaboration. The enthusiasm and commitment of the NGOs to participate in this project is underlined in their Dar-Es-Salaam Declaration of April 8, 2009 which stated inter alia; "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".
6. Scientific evidence in recent years has demonstrated that increased temperatures due to climate change have resulted in expansion of insect zones. This has also been witnessed in the case of the malaria vector with areas formerly too high or cold to	Low	Such an eventuality will be mitigated by intensification of discussions between all stakeholders in the project. Communities will be educated about the potential changes of disease patterns due to climate change and the need to adopt various safe, innovative and sustainable measures.

be malaria prone becoming endemic malaria areas. Climate change triggers that increase the number of vector borne disease outbreaks may be followed by intensified malaria vector eradication campaigns that rely heavily on IRS using DDT.		
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**B.5. IDENTIFY KEY STAKEHOLDERS INVOLVED IN THE PROJECT INCLUDING THE PRIVATE SECTOR, CIVIL SOCIETY ORGANIZATIONS, LOCAL AND INDIGENOUS COMMUNITIES, AND THEIR RESPECTIVE ROLES, AS APPLICABLE:**

**Table 7: Key stakeholders and their respective roles**

National Governments (Ministries of Health, and other relevant Government bodies)	Execute project at national level
WHO	Executing Agency, provision of strategic guidance, coordinate project execution
Roll Back Malaria Partnership	Support execution
Bill & Melinda Gates Foundation	Support through on going related initiatives in project countries
Secretariat of the Stockholm Convention	Provision of strategic support and guidance
Wits University, NICD	Technical and Scientific support & advise
University of Pretoria	Technical and Scientific support & advise
London School of Hygiene and Tropical Medicine	Technical and Scientific support & advise
Global Fund to fight Aids, Tuberculosis and Malaria (Strategy and Policy Department)	Provision of strategic support and guidance. Activities and staff supported by GF form the basis for the project execution at national and regional level
NGOs and CSOs	Contribute in advocacy, creation of awareness of communities and delivery of services at the grass root level
USAID	Complementary support through selected on going related activities in project countries; provision of strategic support and guidance

**B.6. OUTLINE THE COORDINATION WITH OTHER RELATED INITIATIVES:**

The core commitment of the participating countries is expressed not only in the form of ratification of the Stockholm Convention, but also in the active implementation of the World Health Assembly Resolution 50.13, which urges judicious use of pesticides. All participating countries are actively committed to scaling up alternatives and most have secured funding

through the GFATM to support the scaling up of application of alternative approaches (like coverage by Insecticide Treated Nets (ITNs)) and other vector control interventions. The project will be strongly linked with ongoing IVM related activities in the region, as IVM principles are incorporated into project activities and the assessment methodology developed are utilized.

WHO is committed to the objectives of the current project, as per the mandate provided by the numerous World Health Assembly resolutions (e.g. WHO 50.13) urging environmentally sound vector control through the reduction of reliance on, and improve management of pesticides. Furthermore, WHO is currently collaborating with partners (Governments, pesticide industries and donor agencies etc.) to accelerate the development environmental friendly (low risk) insecticides to reduce the reliance on DDT.

WHO, UNEP, GEF and GFATM are jointly developing a global strategy on achieving the objectives of the Stockholm Convention relating to the provisions on DDT and more precisely the Decision SC-1/25 on DDT of the COP 1. The joint global strategy will address issues relating to complementarity of GEF funding with other funding sources such as that of the GFATM, Regional Development Banks and other bilaterals and multilaterals. It will also provide a framework for enhancing synergies between the regional DDT projects to facilitate sustainable reduction of global reliance on DDT.

The UNEP/PAHO/GEF project to phase-out DDT in Mexico and Central America, as well as the more recently approved UNEP/EMRO/GEF and UNEP/AFRO/GEF projects (as well as the soon expected Central Asia UNEP/WHO project) on demonstrating alternatives to DDT and strengthening of national vector control capacities in Europe, Africa and the Eastern Mediterranean, provide good opportunities for exchanging information and experiences on alternative malaria control approaches. The experience in Mexico and Central America in utilizing sophisticated surveillance techniques and in designing innovative strategies for managing DDT stocks might be useful in the region and will complement lessons from GIS related vector control activities in countries in the Western Pacific Region. Similarly, the DDT project in Africa will provide valuable lessons and opportunities for the exchange of experiences with the proposed project.

The integration of the project, as well as the outcomes and lessons from the other programmes in the region in the development of NIPs, will be ensured. Other IAs and ExAs will be invited to the project Steering Committee meetings, and included in project related communications as appropriate, to maximize consultation and coordination.

### **C. DESCRIBE THE GEF AGENCY'S COMPARATIVE ADVANTAGE TO IMPLEMENT THIS PROJECT:**

The project fits within the global program of GEF co-funded initiatives involving UNEP and WHO related to the reduction of DDT emissions into the global environment and the demonstration of sustainable alternatives for DDT use (the DSSA Program). Seen the specific situation for African countries with regards to DDT use, and seen the fact that currently UNEP/WHO are jointly actively involved in the global program on demonstration of diversified, safe, innovative and sustainable interventions for malaria vector control, it was decided to build further on this already existing expertise for this 15-country project as well in order to obtain sufficient scientific and technical assessment data, tools, standards and norms in order to achieve the anticipated output.

UNEPs work in the POPs focal area has been built on its leading role in the UN chemicals management where its expertise lies in identifying best practice and approaches, tools and

methods, where it works with UN organizations and others to introduce phase-out plans and environmentally sound management of chemicals. As such, UNEP is best placed to partner with the other mentioned organizations to phase out current and avoid future practices of DDT use in this urgently needed multi stakeholder project in the region. UNEP is mentioned in the comparative advantage matrix of the GEF Agencies (version June 18, 2007) as the only Implementing Agency to provide Scientific and Technical Analysis, Assessments, Monitoring and Tools, Standards and Norms for initiatives under the POPs Focal Area. However, more important might be the fact that the project is complementary to UNEP's Programme of Work (PoW), Subprogramme 5 (Hazardous Substances and Hazardous Waste), see chapter C-2.

Although UNEP in close partnership with WHO and other partners is systematically further developing the global UNEP/WHO program on demonstration of feasible alternatives to DDT in vector control through the development and implementation of various new initiatives in this program. UNEP will, during project implementation, continue the dialogue with other suitable GEF Agencies where-ever relevant and suitable.

The project will seek to gain benefit from the various thematic professionals already involved in the other DSSA DDT-projects all over the world by involving them through information exchange and –if possible- visits to the concerned project areas. In this context, it should be noted that (for example) the representative of Mexico present during the recent COP in Geneva (May 2011) has offered his country's experience to African countries to phase out DDT through the application of suitable (chemical and non-chemical) alternatives to DDT. Mexico was one of the 8 countries involved in the GEF supported UNEP implemented and PAHO executed project "Regional Program of Action and Demonstration of Sustainable Alternatives to DDT for malaria Vector control in Mexico and Central America".

#### **C.1 INDICATE THE CO-FINANCING AMOUNT THE GEF AGENCY IS BRINGING TO THE PROJECT:**

GEF Implementing Agency UNEP –in close collaboration with WHO/IVM Section- has over the recent years invested in the development and operationalising of the DSSA Programme (Demonstration and Scaling up of Sustainable Alternatives to DDT). This has resulted in a robust programme as part of and complementary to the Programme of Work of UNEP/DTIE/Chemicals Branch.

UNEP makes continuously support available for the further development of the DSSA Program with related activities (scientific support from Senior Scientific Officers UNEP/DTIE, administrative support from DTIE, strategic support through the Secretariat of the Stockholm Convention, etc.) but this has not been counted as co-funding to this proposal. UNEP / DTIE / Chemicals Branch will make available 10,000 US \$ as in-kind co-funding to the project.

UNEP partners with relevant stakeholders and promotes mainstreaming of the relevant issues in the Work Programmes of these relevant stakeholders. This partnering has resulted in a total of 118,720,000 US \$ as co-funding and base-line funding from various sources which could be generated for the purpose of this project. It is expected that during the execution of the PPG as well a during the implementation of the project, even more co-funding will be identified as contributing to the objectives of the project.

UNEP further records 500,000 US \$ as base-line co-funding to this initiative, as explained in

Chapter C2 below.

**C.2 HOW DOES THE PROJECT FIT INTO THE GEF AGENCY'S PROGRAM (REFLECTED IN DOCUMENTS SUCH AS UNDAF, CAS, ETC.) AND STAFF CAPACITY IN THE COUNTRY TO FOLLOW UP PROJECT IMPLEMENTATION:**

UNEP's mission is to provide leadership and encourage partnership in caring for the environment by inspiring, informing, and enabling nations and peoples to improve their quality of life without compromising that of future generations.

UNEP is the voice for the environment in the United Nations system. UNEP is an advocate, educator, catalyst,..... UNEP is the primary driving force in the UN system for international activities related to the sound management of chemicals. The aim is to promote chemical safety and provide countries with access to information on toxic chemicals. UNEP promotes chemical safety by providing policy advice, technical guidance and capacity building to developing countries and those with economies in transition, including activities on chemicals related to the implementation of the Strategic Approach to International Chemicals Management (SAICM).

UNEP has facilitated the negotiations of a number of international treaties on chemicals and waste, and hosts the secretariats of (amongst others):

- Basel Convention
- Rotterdam Convention
- Stockholm Convention.

The Stockholm Convention on Persistent Organic Pollutants is a global treaty to protect human health and the environment from chemicals that remain intact for long periods, become widely distributed geographically and accumulate in the tissue of humans and wildlife. Exposure to POPs can lead to serious health effects. The Stockholm Convention, which entered into force in 2004, requires Parties to take measures to eliminate or reduce the release of POPs into the environment.

Prior to the Stockholm Convention, UNEP's Chemicals Branch undertook extensive activities on POPs. These activities continue, both in support of the Convention and as a part of UNEP's mandated work programme. Major areas of programmatic work include polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF), polychlorinated biphenyls (PCBs), POPs analysis capacity and the database on operational POPs laboratories, and information on POPs and their alternatives.

The "Harmful Substances and Hazardous Wastes" sub-programme of the division of Technology, Industry and Economics (DTIE/Chemicals Branch) assists countries and regions in managing, within a life-cycle approach, chemical substances and waste that have potential to cause adverse impact on environment and human health.

These include:

- Persistent, bioaccumulative and toxic substances (PBTs);
- Chemicals that are carcinogens or mutagens or that adversely affect the reproductive, endocrine, immune, or nervous systems;
- Chemicals that have immediate hazards (acutely toxic, explosives, corrosives);
- Chemicals of global concern such as persistent organic pollutants (POPs) like DDT, greenhouse gases and ozone-depleting substances (ODS)
- Healthcare wastes
- E-wastes.

Furthermore, UNEP was one of the creating partners to the GEF, the Global Environment Facility, which for many years enables Parties to the Stockholm Convention to embark on initiatives which result as well in global environmental benefits.

UNEP's budget over the last 10 years for the above mentioned topics was above US \$ 100 million part of which can count as base-line funding related to this initiative.

This proposal is complementary to UNEP's DTIE/Chemicals Branch Subprogramme 5 (Harmful Substances and Hazardous Waste, HSHW).

Subprogramme 5 focuses on **Minimizing the impact of harmful substances and hazardous waste on the environment and on human beings.**

Expected accomplishments of the subprogramme 5 are:

- (a) States and other stakeholders have increased capacities and financing to assess, manage and reduce risks to human health and the environment posed by chemicals and hazardous waste;
- (b) Coherent international policy and technical advice is provided to States and other stakeholders for managing harmful chemicals and hazardous waste in a more environmentally sound manner, including through better technology and best practices;
- (c) Appropriate policy and control systems for harmful substances of global concern are developed and in place in line with States' international obligations.

The current UNEP HSHW subprogramme 5 has an overall budget of about US \$ 55 million per biennial. From this amount, approximately US \$ 45 million for the biennial period of 2010 & 2011 is available for the Division of Technology, Industry and Economics (DTIE). Approximately US \$ 46 million has been budgeted for the biennial 2012 & 2013 for DTIE.

Part of this budget (and the budget of previous years for relevant HSHW initiatives) can count as base-line co-funding for this project.

Already in 2009, when the current and on-going Program of Work (PoW) for Harmful Substances and Hazardous Waste (HSHW) was developed, PoW output 533 'Tools and methodologies for monitoring and controlling chemicals and waste covered by MEAs are tested and transferred' was originally established as the 'home' for activities supporting the implementation of the Stockholm, Rotterdam and, potentially, Basel Conventions. By establishing output 533 it has been the intention to develop an 'umbrella' to include all the UNEP input to this GEF portfolio + any UNEP extra budgetary funds or SAICM QSP-funded efforts in support of the Multilateral Environmental Agreements (MEA). One can see the concept for this umbrella in the programme framework for HSHW Expected Accomplishment (c).

The various initiatives related to DDT, for which GEF assistance is solicited, supports the implementation of the Stockholm Convention and successfully catalyses the efforts of our partners in the regions to assist Stockholm Parties meet their obligations and so fits comfortably against output 533.

For 2012/13, the intention to support implementation of the MEAs continues with output 532 'Support provided to countries to strengthen implementation and evolution of existing chemicals and waste multilateral environmental agreements through capacity building and technical cooperation in collaboration with the MEA Secretariats' (the change in number reflects only an overall reduction in the number of outputs as requested by UNEP's Quality Assurance Section-QAS).



PoW Outputs planned for the biennium 2012/2013 in pursuit of expected accomplishment (c): Appropriate policy and control systems for harmful substances of global concern are developed and being implemented in line with international obligations of States and mandates of relevant entities.

Planned PoW expected accomplishment (c) , Output 2:

Support is provided to countries to strengthen implementation and evolution of existing chemicals and waste multilateral environmental agreements through capacity-building and technical cooperation in collaboration with the multilateral environmental agreement secretariats.

Potential UNEP GEF Work Area as defined in the PoW:

Continued key scientific input to (amongst others) actions to reduce reliance of targeted substances and specific exemptions. Delivery includes delivery through partnerships with WHO, UNIDO, Basel and Stockholm Convention regional centers.

*Source: UNEP/GC.26/13*

Seen the above, the relevant base-line co-funding from UNEP/Division of Technology, Industries and Economics/Chemicals Branch to this project been estimated as approximately US \$ 500,000 for the project life-time duration.

It should be mentioned however, that this base-line co-funding funding has developed and will further continue to develop the base-line for the proposed activities (Stockholm Convention in place, NIPs in place, basic national legislation in place, extensive awareness amongst key stakeholders created, etc.).

Note that the recent Stockholm COP (May 2011) also requested its Secretariat to divest itself of implementation activities such as the PCB Elimination Network (PEN) and the DDT Global Alliance Network, transferring them to a suitable IGO host; the meeting made clear its view that that host could well be UNEP and its Chemicals Branch.

UNEPs global GEF-related specialists and support staff (based in Nairobi HQ), as well as UNEPs Regional Office staff will be available to support and facilitate the correct and cost-effective implementation of this important DSSA project.

In general, the UNDAF processes for African countries are built on 3 pillars: 1) supporting the rural poor and most vulnerable in participating in the country's workforce without compromising the environment; 2) supporting the quality of the country's basic health system especially for vulnerable groups; 3) supporting continuous moves to democratization, including a refining of the role of the central government and that of civil society.

The project contributes to all three of these pillars.

Capacity development is central to the United Nations Development Assistance Framework (UNDAF) in creating an enabling environment to facilitate collective commitment towards results and reflecting an ongoing dynamic in establishing the ideal conditions for sustained investment in development activities. The UN considers that capacity development is at the core of its contribution to development thus this project will complement the regional UNDAFs and also be a response to growing and clearly expressed country demand during the last COP (Geneva, May 2011) for capacity development support, at both national and sub-national levels.




**PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)**

**A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT (S) ON BEHALF OF THE GOVERNMENT(S):** (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this template. For SGP, use this [OFP endorsement letter](#)).

<b>NAME</b>	<b>POSITION</b>	<b>MINISTRY</b>	<b>DATE (MM/dd/yyyy)</b>
Ingrid Otukile	GEF Operation Focal Point Botswana	Ministry of Environment, Wildlife and Tourism, Botswana	1 April 2011
Tewolde Berhan Gebre Egziabher	Director General / GEF Operational Focal Point	Environmental Protection Authority, Ethiopia	25 March 2011
Momodou B. Sar	Executive Director / GEF Operational Focal Point	National Environment Agency, Gambia	12 October 2010
Ayub Macharia	Ag. Director General – NEMA/ GEF Operational Focal Point	Ministry of Environment & Mineral Resources; National Environment Management Authority	No date mentioned
Anyaa Vohiri	Executive Director / GEF Operational Focal Point	Environmental Protection Agency, Liberia	15 March 2011
Christine Ralalaharisoa	General Director / GEF Operational Focal Point	Ministry of Environment and Forests, Madagascar	19 October 2010
Marilia Telma Manjate	GEF Operational Focal Point	Ministry of Environmental Coordination, Mozambique	21 January 2011
K.Shangula	Permanent Secretary	Ministry of Environment and Tourism, Namibia	4 October 2010
Ndiaye Cheikh Sylla	GEF Operational Focal Point	Ministry of Environment and Nature Protection,	25 February 2011

		Senegal	
Zaheer Fakir	Chief Director / International Governance & GEF Operational Focal Point	Environmental Affairs, South Africa	18 October 2010
Julius Ningu	Permanent Secretary / GEF Operational Focal Point	Vice President's Office, Tanzania	8 April 2011
Keith Muhakanizi	Deputy Secretary to the Treasury / GEF Operational Focal Point	Ministry of Finance, Planning and Economic Development, Uganda	26 October 2010
K. Nkowan	Director Environment and Natural Resources Management Department / GEF Operational Focal Point	Ministry of Tourism, Environment and Natural Resources, Zambia	9 December 2010
I.D.Kunene	Director Environment / GEF Operational Focal Point	Ministry of Environment and Natural Resources Management, Zimbabwe	17 January 2011

#### B. GEF AGENCY(IES) CERTIFICATION

<b>This request has been prepared in accordance with GEF/LDCF/SCCF policies and procedures and meets the GEF/LDCF/SCCF criteria for project identification and preparation.</b>					
<b>Agency Coordinator, Agency name</b>	<b>Signature</b>	<b>DATE (MM/dd/yyyy)</b>	<b>Project Contact Person</b>	<b>Telephone</b>	<b>Email Address</b>
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