

**THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF HEALTH, COMMUNITY DEVELOPMENT, GENDER,
ELDERLY AND CHILDREN**

National Strategy for Vector Control 2019 - 2024

July, 2019



FOREWORD

Africa has different types of vectors of Public Health importance. Majority are bloodsucking insects and responsible for transmitting diseases between humans or from animals to humans. Mosquitoes remain to be the most notorious disease vector in Africa. Others include ticks, flies, fleas, tsetse flies, bugs and some freshwater snails.



Vectors are determined by complex demographic, environmental and social factors, such as travel and trade, unplanned urbanization, lacking reliable safe water supply, inappropriate waste management and climatic change. These factors have impact on pathogen transmission and creation of potential breeding sites for vectors hence causing emerging and re-emerging diseases, of which among them include Malaria, Dengue, Chikungunya, Lymphatic filariasis, Rift valley fever, Yellow fever, Human African Trypanosomiasis, Tick-borne Relapsing fever, Plague, Onchocerciasis, Schistosomiasis, Typhus and Louse-borne relapsing fever.

In Tanzania, a mosquito particularly *Anopheles*, *Culex* and *Aedes* species remains to be vectors of public health importance causing morbidity, mortality and nuisance in the communities. Other vectors of public health importance such as tsetse flies, fleas, snails and lice also play a key role in diseases transmission and hence causing burden among the communities. To reduce the burden of disease caused by the mentioned vectors, a comprehensive strategy containing interventions targeted in diminishing the vectors needs to be developed. This strategy is an important tool for implementers and stakeholders in control of vectors which transmit diseases. The strategy will employ the community based approach, in particular promoting involvement and participation for sustainability.

Tanzania has tremendously increased its investment and efforts towards the control of mosquitoes, mainly focusing on malaria because of its relatively high morbidity and mortality. However, there has been no Integrated National Vector Control Strategy which holistically addresses all vector species prevailing in the country.

In the light of the above, the Ministry has resolved to prepare the National Strategy for Vector Control aiming at integrating vector control programs and interventions targeting elimination of prevailing emerging and re-emerging vector borne diseases including Dengue, Chikungunya and Rift valley fever.

It is the expectation of the Ministry that, this strategy will enlighten the policy and decision makers, planners, experts and implementers in the country to re-alignment of National Vector Control Programs along with increased financing, technical capacity, strengthening monitoring and surveillance systems and guide appropriate vector control interventions.

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List of abbreviations

AAT	Animal African Trypanosomiasis
CDC	Centre for Disease Control
CHMT	Council Health Management Team
CHWs	Community Health Workers
CMO	Chief Medical Officer
CUHAS	Catholic University of Health and Allied Sciences Officer
CVCF	Council Vector Control Focal Person
DHS	Director for Health Services
DPs	Donor Partners
DPS	Director for Preventive Services
EC	Emulsifiable Concentrate
FAO	Food and Agriculture Organization
GVCR	Global Vector Control Response
HAT	Human African Trypanosomiasis
IHR	International Health Regulation
IRS	Indoor Residual Spraying
KCMUCo	Kilimanjaro Christian Medical University College
LF	Lymphatic Filariasis
LGA	Local Government Authority
LLINs	Long Lasting Insecticidal Nets
LSM	Larva Source Management
MLF	Ministry of Livestock and Fisheries
MoEST	Ministry of Education, Science and Technology
MoHCDGEC	Ministry of Health, Community Development, Gender, Elderly and Children
MUHAS	Muhimbili University of Health and Allied Sciences
NHLQTC	National Health Laboratory Quality Assurance and Training Centre
NIMR	National Institute for Medical Research
NTD	Neglected Tropical Diseases
OIE	World Organization for Animal Health
PoE	Points of Entry
PO-RALG	President's Office- Regional Administration and Local Government
PS MOHCDGEC	Permanent Secretary, Ministry of Health, Community Development, Gender, Elderly and Children
PS PO RALG	Permanent Secretary President's Office Regional Administration and Local Government
PS VPO	Permanent Secretary Vice President's Office Environment
RHMT	Regional Health Management Team
RS	Regional Secretariat
RVCFP	Regional Vector Control Focal Person
SC	Suspension Concentrate
SWOC	Strengths Weaknesses Opportunities and Challenges
SOPs	Standard Operating Procedures
SUA	Sokoine University of Agriculture
SUMATRA	Surface and Marine Transport Regulatory Authority
TABOA	Tanzania Bus Owners Association
TATOA	Tanzania Track Owners Association
TBRF	Tick Borne Relapsing Fever
TWG	Technical Working Group
TMA	Tanzania Meteorological Agency
TPRI	Tropical Pesticides Research Institute
TTB	Tanzania Tourist Board
UNICEF	United Nations Children Emergency Fund
VBD	Vector Borne Diseases
VVBD	Vector and Vector Borne Disease
WHO	World Health Organization

Definition of terms

Advocacy: Is a combination of individual and social actions designed to gain political commitment, policy support, social acceptance and systems support for a particular health goal of a program. Advocacy is an activity by an individual or group that aims to influence decision within political, economic, social systems and institutions.

Community Health Worker: A frontline public health worker who is a trusted member of the community and has usually close understanding of the community served. This trusting relationship enables the worker to serve as a liaison/link/intermediary between health/social services and the community to facilitate access to services and improve the quality and cultural competence of service delivery.

Designated Points of Entry: Are International Entry and Exit routes for international passage that have been identified by the country for developing the core capacities in line with the International Health Regulations of 2005.

Fogging: Is a technic used for killing insects that involves using a fine pesticide spray (aerosol) which is directed by a blower.

Granules: A free-flowing solid formulation of a defined granule size range ready for use.

Larval Source Management: Is the management of aquatic habitats (water bodies) that are potential larva habitats for mosquitoes.

Larviciding: Is the regular application of biological or chemical insecticides to water bodies.

Indoor Residual Spraying: Is the spraying of residual insecticide on the interior walls of homes to kill mosquitoes, thereby interrupting malaria transmission.

Social behavior Change Communication: Is an interactive process of any intervention with individuals or Community to develop communication strategies to promote positive behaviors which are appropriate to their settings. This in turn provides a supportive environment which enables people to initiate, sustain and maintain positive and desirable behavior outcomes. (Source: CBHP Policy Guidelines 2015)

Social mobilization: Is the process whereby people are organized in order to enable them to collectively think and act upon their health issues/or development.

Surveillance: Is the systematic continuous, systematic collection, analysis and interpretation of health related data needed for the planning, implementation and evaluation of public health practices and allows early identification of ill health and helps identify any corrective actions needed. It serves as an early warning system for impending health emergencies.

Vectors: Are organisms that transmit pathogens from reservoir to host.

Vector Control: Involves all practices that aim to manage the population of vectors to reduce their damage to human health. It is a vital public-health practice because vector spread many diseases like Malaria, Dengue, Chikungunya, Onchocerciasis and many others.

Integrated Vector Management (IVM): Is a rational decision-making process for the optimal use of resources for vector control.

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1.1 INTRODUCTION

1.1.1 Background and vectors of public health importance

Vectors are living organisms that can transmit infectious diseases between humans or from animals to humans; most of them are bloodsucking insects. They include mosquitoes, ticks, flies, fleas, tsetse flies, bugs and some fresh water snails. However, mosquitoes are the best known notorious among the vectors.

Globally, Vector Borne Diseases account for more than 17% of all infectious diseases, causing over a million deaths annually. Malaria causes more than 400,000 deaths every year, most of them being children under 5 years of age. Estimates shows that 2.5 billion people in over 100 countries are at risk of contracting dengue fever while hundreds of millions of people are affected by Lymphatic Filariasis (LF), Human African Trypanosomiasis (HAT), Plague, Onchocerciasis, Tick Born Relapsing Fever (TBRF) and Schistosomiasis. Many of these diseases are preventable through informed protective measures and vector control under sound action plan.

Tanzania has experienced various Vector Borne Diseases, such as chikungunya, dengue fever, LF, Rift Valley Fever (RVF), malaria and HAT, TBRF, plague, Onchocerciasis, Schistosomiasis and Typhus and Louse-Borne Relapsing Fever (LBRF).

The economic burden of Vector Borne Diseases (VBDs) to society is significant. In endemic countries, the burden includes the costs of vector control activities and case management. At household level, the economic burden relates to expenditures towards personal protective measures and treatment as well as foregone income due to reduced productivity. Available evidence indicates that, malaria has been found to be associated with slower economic development. In 2015, a total of US\$ 2.9 billion was invested in malaria control activities globally. Malaria has also been shown to cost on average nearly US\$ 3 per case to households in direct treatment-seeking expenses, far exceeding the international minimum level of income of US\$ 1.90 that is the benchmark for extreme poverty met by 750 million people worldwide.

HAT in the Democratic Republic of the Congo costs affected households in a typical rural community more than 40% of their annual household income. The estimated aggregated global cost of dengue illness was US\$ 8.9 billion in 2013. The total economic benefit from productivity loss averted is estimated for the period 2011–2020 and 2021–2030 to be respectively in billion US\$, for LF 10.5 and 13.8, for Schistosomiasis, 5.5 and 11.9 and for Onchocerciasis 1.19 and 2.11.

Mosquito-borne diseases such as malaria, LF, dengue fever, RVF, chikungunya and zika, remain the major source of illness and death world-wide, particularly in tropical and sub-tropical climates. In Tanzania, climate favors different disease vectors to flourish and able to transmit diseases to human being. Mosquito vectors from two families of *Anophelines* (some *Anopheles* mosquitoes) and *Culicines* (some species of *Aedes*, *Mansonia* and *Culex* mosquitoes) are potential vectors of malaria, LF, dengue, chikungunya across the country. Tsetse flies of different species are principal vectors of African trypanosomiasis. Most foci are found around national parks and savannah areas. Soft ticks (*Ornithodoros moubata*) are important vectors of *Borrelia duttonii*, the causative agent of TBRF. The black flies such as *Simulium damnosum* complex and *S. naivae* group are the vector of *Onchocerca volvulus* that causes human

blindness (river blindness). Fleas such as *Xenopsylla chiopis* and *Xenopsylla brasiliensis*, the common vectors of bubonic plague.

1.1.1.1. Malaria vectors

Reports revealed that, there were 216 million cases and 445,000 deaths reported in 91 countries worldwide. About 70% of all patients and 71% of all deaths were reported from 10 African countries including Tanzania. Currently, the prevalence of Malaria in country is 7% but target is to reach 1% by 2020. In the African region, *An. gambiae sensu lato* and *An. funestus* group are the most common malaria vectors. These *Anopheles* mosquitoes are also important malaria vectors in Tanzania.

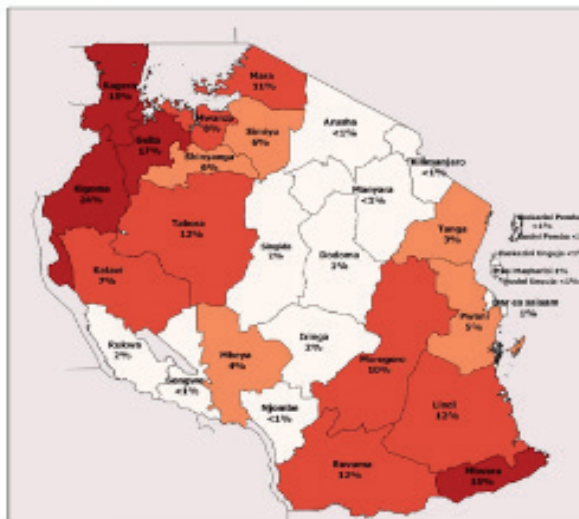


Figure 1: Tanzania malaria prevalence (Source: DHIMS 2017)

1.1.1.2. Lymphatic Filariasis vectors

Lymphatic Filariasis (LF) is a parasitic infection caused by thread-like filarial worms transmitted to humans by a number of mosquito vectors such as *Culex quinquefasciatus*, *Mansonia uniformis*, *Mn. africana*, *An. gambiae s.l.* and *An. funestus* mostly found in sub-Saharan countries. LF affects 120 million people worldwide with over 40 million of them being seriously incapacitated by the disease. One-third of the people infected with the disease live in Africa. It is widespread and a major public health problem in many developing countries with a warm and humid climate. In Tanzania, *Cx. quinquefasciatus*, *An. gambiae s.l.* and *An. funestus* are the main vectors of LF.

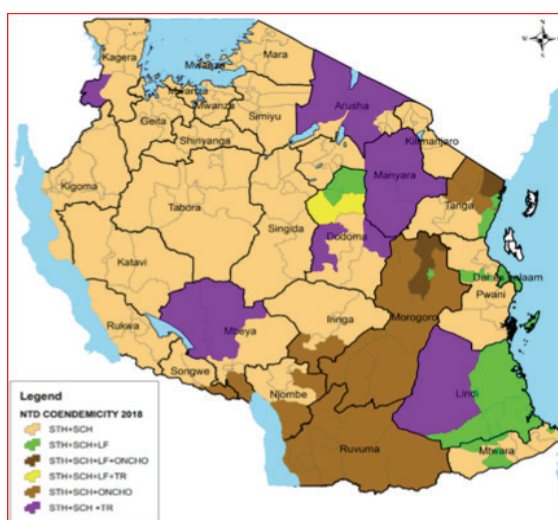


Figure 2. Map of distribution of lymphatic filariasis, Schistosomiasis and Soil transmitted helminth

1.1.1.3. Dengue, Chikungunya and Yellow fever vectors

Member of the *Aedes* genus are well-known vectors of several viral infections. In the genus *Aedes*; *Ae. aegypti* and *Ae. albopictus* are the most important species that transmit viruses causing dengue, chikungunya, yellow fever, and zika in various parts of the world. Dengue is an increasingly serious public health problem in more than 100 countries worldwide with some 2.5 billion people at risk. Approximately 50–100 million new infections are estimated to occur annually in Africa, America, the Eastern Mediterranean, South-east Asia and the Western Pacific, with about two fifths of the world's population living at risk. In recent years, Tanzania has experienced several dengue fever epidemics whereby *Ae. aegypti* was a responsible vector.

Outbreaks of Chikungunya have occurred in countries in Africa, Asia, Europe, and the Indian and Pacific Oceans. There is limited information regarding the prevalence of chikungunya in Tanzania. However, a recent study conducted in north-eastern Tanzania has reported chikungunya viruses circulating in the population to be 11%.

Yellow fever occurs most often in Africa and South America. There has been an increase in the number of reported yellow fever cases in Africa during the last 5 to 10 years. WHO estimates 200,000 yellow fever cases to occur each year, with an estimated 30,000 deaths in 34 at-risk countries, mainly in sub-Saharan Africa. Causes for the increase are probably due to reduced coverage rates for yellow fever immunizations and inactive strategies for control of *Aedes* mosquito (*Aedes africanus* and *Ae. Aegypti*).

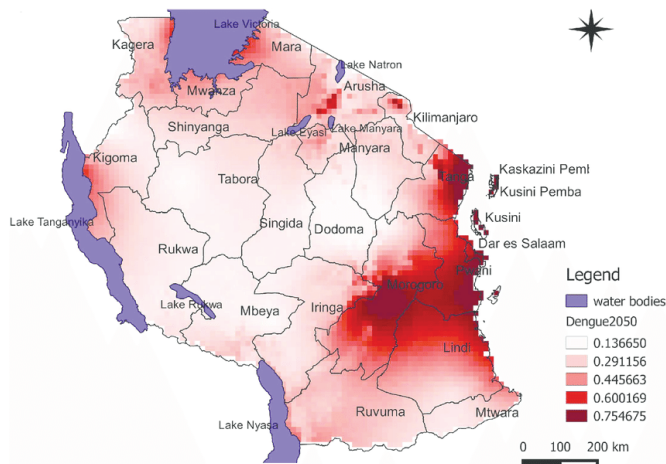


Figure 3 Map of distribution of dengue fever in Tanzania

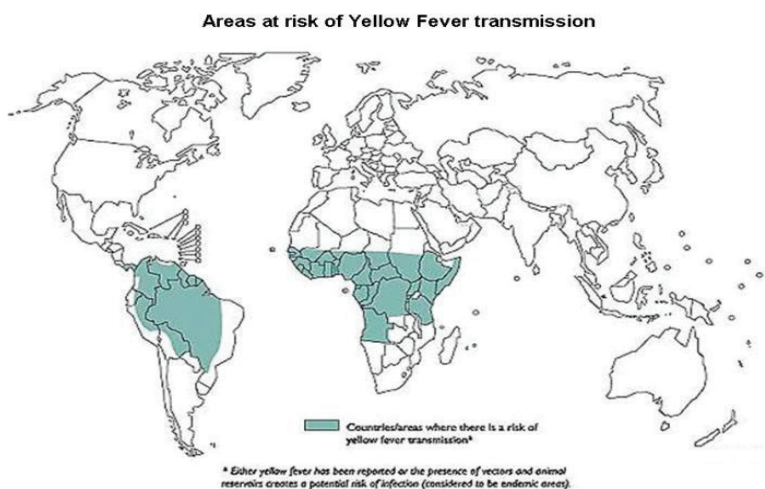


Figure 4 Map showing areas at risk of Yellow fever worldwide

Studies done have identified several important factors leading to the emergence and re-emergence of vector borne diseases which include:

1. Unplanned urbanization and increasing population growth, resulting in substandard housing, and inadequate water supply, sewage systems, and sanitary landfills in urban areas.
2. Nonexistent or Ineffective waste collection and disposal services.

3. Lack of disposal mechanisms of old tires which turns to potential breeding sites for *Aedes* mosquitoes during rain seasons.
4. Climate change and increased travel, allowing constant exchange of viruses and other pathogens within and between countries.
5. Lack of mosquito vector control measures in transportation sector eg fumigation in conveyances.
6. Limited financial and human resources in Ministries responsible for health, leading to programs based on crisis management with emphasis on emergency control in response to epidemics rather than on integrated vector management to prevent disease transmission.
7. Development of resistance to insecticides among vectors of diseases

1.1.1.4. Trypanosomiasis vectors

Trypanosomiasis caused by haemoparasites of the genus *Trypanosoma* transmitted by tsetse flies (vectors) of the genus *Glossina* endemic to the African continent, is a debilitating and often fatal disease unique to Sub-Saharan Africa. It affects both man HAT and livestock, Animal African Trypanosomiasis (AAT). HAT mostly affects poor rural communities living in the tsetse fly infested areas. The disease is a significant public health problem with 100% fatality in untreated cases. Tsetse flies occurs in 38 African countries, infesting a total area of 10 million Km² in sub-Sahara Africa, including Tanzania.

1.1.1.5. Plague vectors

Plague is a zoonotic disease caused by bacterium known as *Yersinia pestis*. The disease occurs in many parts of the world. Several hundred cases are reported by the WHO each year, mostly from Africa specifically in Comoros, Ethiopia, Kenya, Mauritius, Mozambique, Réunion, Seychelles, South Africa, and Tanzania. Human plague focus in Tanzania was discovered in 1980 in Lushoto District, since then, 7,603 cases have been reported. In 2007, a recent plague outbreak occurred in Mbulu district after nearly 30 years of quiescence. The district is considered as a potential active foci area. Surveillance is needed to be established/revived.

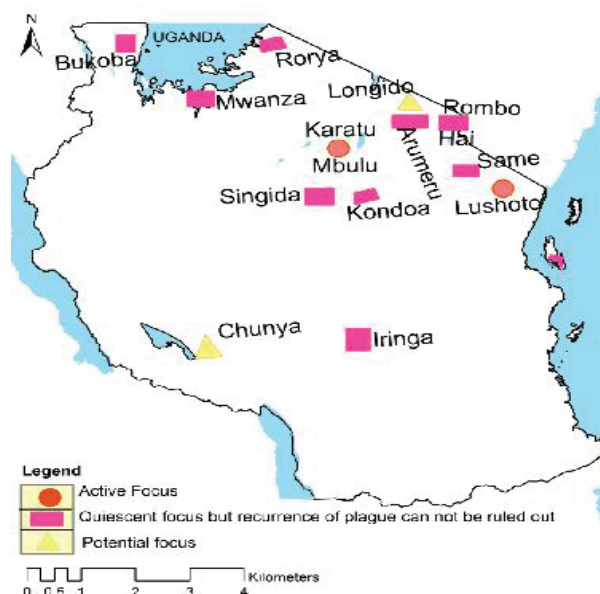


Figure 5: Map of Tanzania showing plague foci

1.1.1.6. Onchocerciasis or river blindness vector

Onchocerciasis (river blindness) is a parasitic disease caused by the filarial worm known as *Onchocerca volvulus* which is transmitted by infected blackflies (*Simulium* spp.). Onchocerciasis was first described in Tanzania in patients from Tukuyu and Njombe areas in 1932. The disease epidemiology in specific foci has been documented in various studies. In 1991 an account of the epidemiological status was given where by 11–13 foci of human Onchocerciasis were recognized in Tanzania Onchocerciasis prevalence by skin snip for the main foci identified ranged from 5.2-62.8% (Tukuyu), 2.4-40% (Ruvuma), 6-45% (Usambara/Tanga), 17-66% (Morogoro/Uluguru); 5-46% (Kilosa) and 43-80% (Mahenge). In Tanzania, the disease is endemic in 28 districts in seven regions.

1.1.1.7. Tick Borne Relapsing Fever vector

TBRF is a disease caused by bacteria (spirochetes) transmitted to humans through the bite of infected soft ticks. TBRF remains a common disease in central part of Tanzania, however no data indicating the burden and trends for the past 10 years. However, in 1985/86, a total of 572 cases of TBRF were reported in Dodoma. TBRF vectors *Ornithodoros moubata* live in cracks and crevices in the walls and floors of houses. Plastered walls and floors can control this disease. House infestations by *O. moubata* in Tanzania reported to be 88% and infection rates among soft ticks was 60%.

1.1.2 Integrated vector management

Currently, management of the existing vector control programmes are vertically implemented. In view of the emerging and re-emerging of vector borne diseases, the Integrated Vector

Management (IVM) approach is advocated. This approach ensures optimal use of resources in vector control. IVM seeks to improve the efficacy, cost-effectiveness, ecological soundness and sustainability of disease-vector control with ultimate goal of preventing the transmission of vector-borne diseases. The approach aims to overcome challenges experienced with conventional vertical approaches to vector control and promoting multi-sectoral approaches to human health. For the successful implementation of IVM, the following five key elements are important:

1. Advocacy, social mobilization, regulatory control for public health and empowerment of communities.
2. Collaboration within the health sector and with other sectors through the optimal use of resources, planning, monitoring and decision-making.
3. Integration of non-chemical and chemical vector control methods, and integration with other disease control measures.
4. Evidence-based decision making guided by operational research and entomological and epidemiological surveillance and evaluation.
5. Development of adequate human resources, training and career structures at national and local level to promote capacity building and manage IVM programmes

1.1.3 Situational Analysis and Rationale

Tanzania has tremendously increased its investment and efforts towards the control of malaria vectors. Development partners and many other stakeholders have been an integral part of these efforts and remarkable malaria control gains have been achieved so far. Control efforts over the last decade, mostly targeted at mosquito vectors, have among others decreased malaria prevalence to pre-elimination phase in Zanzibar and 7% in mainland.

Factors/efforts (organizational, infrastructural, system and legal frameworks) attributed to malaria control health gains achieved so far include regular health promotions which have exponentially improved coverage of Long Lasting Insecticide treated Nets (LLINs), In door Residual Spraying (IRS), larviciding, malaria diagnostics and treatment; operationalization of malaria vector surveillance system in 62 out of 184 councils in Tanzania mainland, enrichment of social behavioral change communication and social mobilization approaches, increased donor funds for training and research as well as decentralization of malaria control operations to sub-national levels. Also, all necessary documents for governing mosquito control operations are in place and have been cascaded to all levels for example National Malaria Strategic Plan 2015-2020, National Guidelines for Integrated Malaria Vector Control 2016 and Supplementary Malaria Midterm Strategic Plan 2018-2020.

To the contrary, efforts against other mosquitoes transmitting disease like dengue, chikungunya, rift valley fever, yellow fever, zika and LF comprise emergency and discrete responses to epidemics. Additionally, other vectors of public health importance have not received the considerable attention and investments. The risk of these equally devastating diseases is increasing over years.

In view of the aforesaid, the Government made a decision to develop a National Strategy for Vector Control. This strategy emphasizes the integration of non-malaria mosquitoes and other vectors into the existing systems. Furthermore, the strategic objectives and/or activities have been crafted and galvanized in view of addressing challenges and/or deficiencies undermining the control of malaria and non-malaria mosquitoes as well as other vectors of public health importance.

Following successful implementation of this strategy, we envision sustainable community based implementation of control measures and surveillance. Strengthening advocacy, public awareness and involvement, training and research capacity. Also it aims at strengthening mechanisms for resource mobilization, improved control operations in designated points of entry as well as established and operationalized monitoring and evaluation systems in favor of all vectors species. The efforts will be cascaded to sub-national and community levels to ensure sustainability of vector control aiming at elimination of vectors of public health importance.

1.1.4 Scope

This strategy will put in place measures against all species of vectors at all levels with greater emphasis to community participation and ownership. The strategy will be used by different stakeholders to support implementation of the vector control interventions.

CHAPTER TWO

2.1 VISION, MISSION, GOAL, OBJECTIVES AND STRATEGIES

2.1.1 Vision

A healthy community that contribute effectively to social economic development

2.1.2 Mission

Provision of cost effective community based vector control services that are effective, sustainable and gender sensitive.

2.1.3 Goal

To reduce morbidity and mortality of diseases transmitted by vectors

2.1.4 Objectives

To provide effective strategies for control of vectors using technically sound and cost-effective measures through community based approach

2.1.5 Strategic Objectives

Strategic Objective 1	<i>Implement effective control measures against mosquito vectors to reduce transmission of vector borne diseases</i>
Strategic Objective 2	<i>Strengthen advocacy, social behavioral change communication and social mobilization on the control of vectors to reduce transmission of vector borne diseases</i>
Strategic Objective 3	<i>Enhance mobilization of resources for control of vectors to reduce transmission of vector borne diseases.</i>
Strategic Objective 4	<i>Strengthen capacity in controlling vectors to reduce transmission of vector-borne diseases</i>
Strategic Objective 5	<i>Operationalize vector control program at Points of Entry in line with National and International guidance</i>
Strategic Objective 6	<i>Strengthen vector surveillance and monitoring systems at all levels</i>
Strategic Objective 7	<i>Strengthen the existing national insecticide resistance monitoring and surveillance of malaria vectors with that of other vectors.</i>
Strategic Objective 8	<i>Strengthen systems for Monitoring and Evaluation for effective implementation of the strategy</i>
Strategic Objective 9	<i>Promote research on vector and translation of research findings into action</i>

2.1.6 Strengths, Weakness, Opportunities and Challenges

Analysis of strength, weakness, opportunities and challenges for Vector control

Strengths	Weakness	Opportunities	Challenges
<ol style="list-style-type: none"> 1. Conducive political environment 2. Availability of well-functioning National programs that address certain vector control. 3. Availability of good policies, legislations and some guidelines for vector control. 4. Presence of diligent Health Promotion and Communication programs to foster advocacy and awareness 5. Presence of strong leadership and coordination structures at National and Sub national levels 6. Presence of Monitoring and Evaluation systems at all levels 7. The existing national malaria entomological surveillance has been focusing on malaria vectors 8. Presence of dedicated regulatory agencies 9. Availability of bio-larvicides industry 	<ol style="list-style-type: none"> 1. Inadequate baseline information for non-malaria vectors and other vectors of public health importance. 2. Non malaria vectors given less priority in mosquito control 3. Inadequate resources for mosquito and others vectors at sub national levels. 4. Inadequate capacity to conduct vector surveillance at Regional and District Levels 5. Existing entomological surveillance system focuses on malaria vectors in 62 out of 188 councils. 6. Available communication strategy is not for vector borne diseases. 7. Low awareness of the community on the practices of protection against vectors 8. Low awareness on the control measures of vector borne diseases 9. Regulations and by Laws are not comprehensive to cover all vectors control 10. Monitoring and evaluation systems inadequately address vector borne diseases 11. No allocation of internal funds for research on vectors 12. Inadequate dissemination of research findings and use on mosquitoes and other vectors and associated diseases. 13. In active training centres for vector control 	<ol style="list-style-type: none"> 1. Availability of political will 2. Presence of development partners and stakeholders to support malaria control interventions 3. Availability of training/Research institutions for vector control 4. Existence of trained human resource on vectors at some Regions and Districts 5. Presence of health campaigns friendly media channels 6. Presence of cooperative influential people like religious leaders, traditional healers 7. Presence of research institutions and findings on vectors 	<ol style="list-style-type: none"> 1. Uncoordinated Vector control programmes 2. Inadequate resources for the vector control interventions at all levels. 3. Less priority in allocation of funds on vector control at all levels 4. Donor driven/dependency 5. Wide range of geographical and topographical factors 6. Myths and misconceptual influence that affects the acceptances of intervention 7. Low morality of the community on vector control 8. Some vectors develop resistance to insecticides 9. Inadequate outdoor vector control measures

3.1 INSTITUTIONAL AND REGULATORY FRAMEWORK

3.1.1 Regulatory Framework

The National vector control strategy in Tanzania is based on existing policies, guidelines and legislations available at national, sub national and international levels.

3.1.2 National Policy, Legislations and Guidelines

The MOHCDGEC has a national health policy which states on prevention and control of vector borne diseases. There are several Legislations, guidelines and Strategies which have intervened on the prevention and control of vector. Among the key are; National Strategy for Growth and Reduction of Poverty (NSGRP II or MKUKUTA II); Health Sector Strategic and cure diseases as documented in the NSGRP II (2010). The vector control strategy supports strategic plan for national control of malaria mosquito which has a core intervention component of integrating malaria vector control (IMVC) tools comprising LLINs, IRS, Larviciding, environmental management and incorporation of evidence based innovations to address technical and operational challenges to the available control tools in targeted communities. The overall objective of HSSP IV (2015) advocates in reaching out all households with essential health and quality standards, applying evidence-based, efficient channels of service delivery social welfare services, meeting as much as possible expectations of the population and objective.

3.1.3 International Policies and Guidelines

Preparation of this strategy has been guided by international strategies such as; Sustainable Development Goals (SDGs) no 3 which aims to “End the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases”, as well as World Health Organization (WHO) International Health Regulations of 2005 and Global Technical Strategy for Malaria, WHO 2016-2030.

3.1.4 Implementation framework

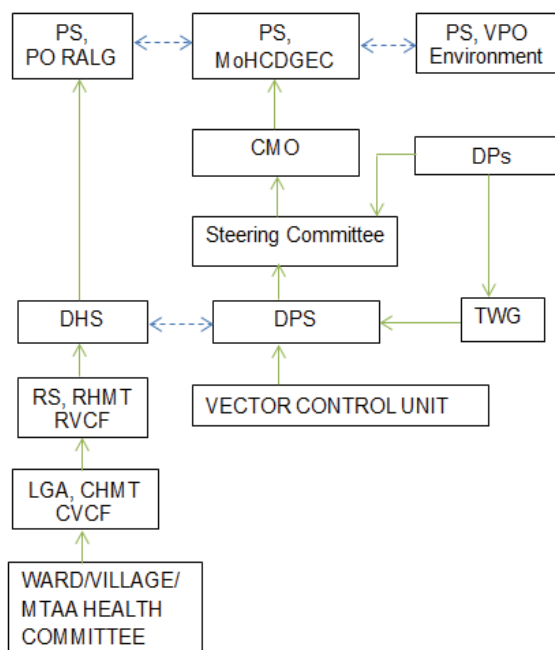


Figure 6 Flowchart showing coordination and communication among the actors of vector control

3.1.5 Roles and responsibilities

LEVEL	ROLES AND RESPONSIBILITIES
MOHCDGEC	<ul style="list-style-type: none"> a) Mobilize resources for the implementation of the strategy b) Provide technical assistance during dissemination of strategy for vector control c) Collaborate with PORALG to strengthen capacity of Local Government Authorities and Community Based Organization d) Strengthen Vector Control Unit e) Establish the Vector Control Technical Working Group (TWG) f) Establish and integrate vectors surveillance within the existing entomological surveillance systems g) Resource Mobilizations for mosquito reduction h) Establish vector control program in line with IHR 2005 at designated ports of entry i) Conduct assessments on strategy implementation for vector control

	j) Evaluate implementation strategy in relation to its objectives
PORALG	<ul style="list-style-type: none"> a) Translation of strategic objectives into implementable action plans and dissemination to LGAs b) Integrate Strategy Interventions and activities in LGAs Comprehensive Plans c) Strengthen coordination mechanism for vector control actors in RS and LGAs d) Monitor implementation of mosquitoes and control strategies e) Coordinate mapping on distribution and density of mosquitoes in Local Government Authorities f) Establish and Strengthen public private partnership coordination Mechanisms g) Resource mobilization and budgetary allocation for implementation of the mosquito control strategies h) Consolidate quarterly reports from regions and share with MoHCDGEC
VPO	<ul style="list-style-type: none"> a) Provide technical guidance on application of vector control interventions which involve insecticides use in the environment b) Participate in the Mosquito Technical Working Group Meetings
Steering Committee	<ul style="list-style-type: none"> a) Provide recommendations on the policy direction regarding mosquito control in Tanzania b) Liaise with National and International donors for mobilization of resources to implement the strategy
TWG	<ul style="list-style-type: none"> a) Provide technical advice to the directorate of Preventive Health Services on the effective strategies to control mosquitoes
RS	<ul style="list-style-type: none"> a) To oversee implementation of LGAs on Strategy implementation b) To Conduct regular supervision and backstop LGAs on Activity implementation c) To conduct Advocacy on Mosquito Control strategy to LGAs d) To organize coordination meeting with LGAs and Partners to track progress on strategy implementation e) Compile quarterly reports from LGAs and share to PORALG
LGA	<ul style="list-style-type: none"> a) To prepare Action Plan for implanting the strategy in Wards and Villages b) Implementation of the Action plan for control of vectors <i>species</i> c) Report on activities implemented with the Council in every quarter d) Provide Health promotion and Public education on control of vectors e) Implement individual behavior change communication f) Enhance community engagement for vector control measures g) Advocate community leaders at all levels on issues of vector control h) Implement Private Public Partnership strategy on vector control interventions
Research/Training institutions	<ul style="list-style-type: none"> a) Conduct evaluation of the vector control intervention being used and provide advice on particular interventions

	<ul style="list-style-type: none"> b) Conduct studies on distribution of different species of vectors, abundance and infection rate c) Conduct operational research to establish appropriate novel vector surveillance and control approaches d) Conduct research to identify challenges facing vector control. e) Provide scientific evidence from research findings in different forms for policy makers decision
Community Health Worker	<ul style="list-style-type: none"> a) Implement community vector control interventions/activities (including home visits, identification of breeding sites, taking samples, convene awareness meetings) b) Forecast, make request of health commodities for vector control. c) Collaborate with village and ward government to organize and participate in the local, national health events on vector control including organizing village vector control days. d) Collect, analyze and use of vector control data, and prepare report and submit to the health facility in charge for use. e) Participate in planning, implementation, monitoring and evaluation of community vector control health initiatives/activities. f) Interpret collected data on vector control into action.
Community committees (Ward, Village/Mtaa)	<ul style="list-style-type: none"> a) Implement Community Action Plans for vector control b) Conduct inspections on implementation of agreed community actions c) To cooperate with private vector control providers to eliminate mosquitoes
Communities	<ul style="list-style-type: none"> a) To own the vector control intervention b) To participate fully in vector control interventions

CHAPTER FOUR

4.1 STRATEGIC OBJECTIVE, ACTIVITIES AND IMPLEMENTATION APPROACH

4.1.1 Strategic objective 1: Implement effective control measures against vectors to reduce transmission of vector borne diseases

Control measures aim to reduce vector density, human-mosquito contact and prevent transportation from one region to another. In order to sustainably achieve these and reduce transmission of vector-borne diseases (thereof), the following measures will be integrated depending on prevailing situations and resources: environmental manipulation and modification of mosquito breeding sites, larviciding, space spraying (ULV, fogging) with insecticides, LLINs, IRS, house screening, proper waste management, use of repellents and spraying outdoor premises and transportation vessels.

Sn	Strategies	Activities
1	Capacitate the councils to implement effective vector control measures	<ul style="list-style-type: none"> a) Conduct cascade training (National trainers to train TOT in regions, councils & community) on fogging operations. b) Develop and disseminate relevant legislations c) Capacitate Councils on environment/ public health law enforcement d) Develop and disseminate relevant guidelines and SoPs on vector control e) Adopt (from NMCP), Print and disseminate SOPs (space spraying, larviciding and larval source management)
2	Implement effective larviciding against mosquito larval	<ul style="list-style-type: none"> a) Conduct Mapping of mosquito breeding sites (open and closed habitats through surveys) b) Procure mapping equipment such as GPS, Android phones with open camera software, etc. c) Procure bio-larvicides and polystyrene beads, d) Procure appropriate PPEs e) Procure Hudson Sprayers f) Conduct larviciding
3	Implement effective control measures against adult mosquito vectors	<ul style="list-style-type: none"> a) Procure fogging machines and Hudson sprayers b) Procure insecticides (Actellic 500 EC, Actellic 300CS, Malathion (Organophosphates) c) Procure appropriate PPEs d) Conduct IRS, fogging and spraying e) Procure and distribute LLINs f) Promote house and personal protection against mosquito vectors
4	Implement effective environmental sanitation and manipulation for control of vector	<ul style="list-style-type: none"> g) Encourage community to participate fully in environmental cleanliness days h) Conduct cleanliness competition at all levels i) Promote other sectors to participate in environmental

		<p>cleanliness (Sewage safe disposal, cleaning of drains etc)</p> <p>j) Capacitate routine inspections to enforce public health laws</p> <p>k) Promote Environmental Sanitation Campaign</p>
5	Promote Public Private Partnership for control of vectors	<p>a) Prepare a database of key players in vector-borne disease control at all levels.</p> <p>b) Promote collaboration within the Ministry responsible for health; line Ministries (i.e PORALG, MOFP, MOEVT, VPO Environment, etc) at National, Regional and District level through meetings.</p> <p>c) Promote collaboration through meetings and other forums between public, private and Informal sector in planning, decision-making and communication among policy-makers, managers of programs for the control of vector-borne diseases, and other key partners at National, Regional and District level.</p> <p>d) Promote and/or strengthen collaboration with regional and international Development partners</p> <p>e) Advocate private sector to invest in developing complementary vector control interventions.</p>

Implementation approach

1. Strengthen village/Mtaa health committees in vector control.
2. Make use of the existing human resource especially health officers who have already been trained in vector control
3. Promote community participation on effective use of mandatory cleanliness days for environmental manipulation
4. Use social marketing approach to promote availability and use of the vector control related supplies.
5. Use of primary and secondary school students on implementing the simplified vector control measures and as changing agents to the community.
6. Employ cost sharing charges for larviciding, insecticidal spraying, and fogging services at any premise and households to ensure sustainability of the approach
7. Use of label/sticker to mark households and other premises which have complied with community meeting agreements on vector control
8. In collaboration with institution responsible for regulating new technologies call forums or exhibitions for selling out upcoming novel technologies for vector control
9. Identify partners, donors and private entities at all levels and encourage them to invest in vector control activities.

4.1.2 Strategic objectives 2: Strengthen advocacy, social behaviour change communication and social mobilization on the control of mosquito and other vectors to reduce transmission of vector borne diseases

This strategic plan is destined at promoting people’s knowledge, engagement and sensitization in order to enhance control of mosquito and other vector-borne diseases such as dengue chikungunya, rift valley fever, yellow fever, zika and lymphatic filariasis.

Sn	Strategies	Activities
1.	To strengthen Social Behavior Change Communication mechanisms	<ul style="list-style-type: none"> a) Conduct sensitization meetings and dialogue among the community level stakeholders for vector control interventions. b) Develop and implement outreach programs targeting social economic vulnerable groups and hard to reach mobile population for vector control interventions. c) Provide forum and strategic framework for different partners working in behavior change and communication to ensure coordinated and harmonized implementation of vector control interventions. d) Develop education and communication materials targeting different groups such as schools, workplaces, associations (<i>audio – visual messages, fact-sheets, brochures, fliers, push mobile SMS social media</i>) vector control interventions. e) Conduct house to house dissemination and placement of messages and material for vector control through CHWs and other similar groups. f) Promote use of toll free number for vector control matters to all Media.
2	To enhance community engagement, sensitization and participation in control of mosquitoes and other vectors.	<ul style="list-style-type: none"> a) Conduct exhibition, health events and community theater (road shows and edutainment) to demonstrate best practice on the control of vectors b) Conduct sensitization and awareness raising meetings to local leaders, Religious leaders, influential people, community change agents (Schools) investors and stakeholders on control of mosquitoes and other vectors. c) Conduct regular media briefing and engagement at national, sub-national and community media.
3	To reinforce and update knowledge, skills and practices among stakeholders on control of mosquitoes and other vectors.	<ul style="list-style-type: none"> a) Mapping of all available vector control stakeholders at all levels b) Identify hard to reach outreach posts in Councils to be integrated with vector control intervention c) Identify and train community health workers for mosquitoes and other vector control at all levels d) Conduct Advocacy session for leaders, decision makers and partners at all levels to integrate mosquito and other vectors control activities on existing

		<p>platforms</p> <p>e) Sensitize village/Mtaa community leaders to develop local by laws</p> <p>f) Conduct advocacy to policy makers and planners at national, regional and district levels on the public health importance of mosquitoes and other vectors in order to make rational decisions on the resource allocation.</p> <p>g) Conduct awareness creation and sensitization meetings on enforcement of vector control legislations at all levels</p>
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Implementation Approach

1. Use political leaders and high profile management to facilitate mosquito and other vectors control activities at all levels.
2. Harmonize and integrate vector control activities into the existing outreach services at community level.
3. Use available community level opportunities such as community Radios airtimes, Community Health Workers (CHWs).
4. Use push mobile and Toll free numbers to inform and remind public on vector control
5. Use of social media to inform, educate and communicate vector control measures

4.1.3 Strategic Objectives 3: Enhance mobilization of resources for control of mosquitoes and other vectors to reduce transmission of vector-borne diseases.

The main objective is to mobilize resources and provide a framework for sharing existing resources to achieve objectives of the strategy.

Sn	Strategies	Activities
1	Sustain predictable financial resources	<p>a) Establish a Vector Control Unit code and budget at National and Sub-national levels</p> <p>b) Integrate the existing specific Program's budgets into Vector Control Unit budget</p> <p>c) Integrate private sector and other consortia in the implementation of mosquito and other vectors control activities</p> <p>d) Develop cost sharing guidelines for vector control interventions</p> <p>e) Establish mechanisms of soliciting resources through grant application</p>
2	Promote sharing of expertise and resources among stakeholders	<p>a) Establish mechanism for sharing of expertise and resources among stakeholders dealing with mosquitoes and other vector control interventions</p>

Implementation approach

- a) Identify potential donors (local and international) and conduct resource mobilization meetings and round table discussion
- b) Grab opportunities and write grant proposals to apply for support for vector control activities from local and International donors
- c) Persuade the Ministry of Finance and Planning to establish a budget line for Vector control
- d) Sensitize the community to implement vector control activities using their own resources/cost sharing
- e) Identify and utilize vector control units existing in National programs for resource mobilization

4.1.4 Strategic objective 4: Strengthen capacity in controlling mosquitoes and other vectors to reduce transmission of vector borne diseases

In order to professionally and adequately address health challenges/demands related to mosquito and other vector-borne diseases, there is a need to invest in developing and strengthening country's capacity in terms of adequacy and competence of the individual/workforce, infrastructures and systems in the health sector and support training/research institutions. The strategy will target government, local training/research and development institutions, non-governmental organizations, networks, communities, and the private sector. The goal is to enhance local and central governments to lead, manage and monitor efforts to address mosquitoes and mosquito-borne diseases in the country.

Sn	Strategies	Activities
1	Enhance demand driven capacity building and rational use of available resources	<ol style="list-style-type: none"> a) Assess the current baseline of public and private training and research institutions involved in capacity building for vectors and vector borne diseases control professionals. b) Map out research/training infrastructures and facilities across public and private institutions which could be used for training and research on mosquitoes and mosquito-borne diseases. c) Collate information on human resource; skills set as well as vector and vector-borne disease control programmes present in public and private training and research institutions. d) Conduct regular needs assessment in the country to identify training priorities on mosquito and mosquito-borne disease control. e) Advocate public and private training/research to develop short and/or full time programmes for training low-cadre vector and vector-borne disease control professionals. f) Revive and/or strengthen government institutions aimed at training low-cadre vector and vector-borne diseases control professionals. g) Encourage public and private training/research institutions to conduct tailor-made courses for Community Health

		<p>Workers (CHW) on control of mosquitoes and mosquito-borne diseases.</p> <p>h) Conduct regular meetings with training and research institutions.</p> <p>i) Encourage setting aside of budgets at by the Central and Local Government Authorities to support regular tailor-made training courses on the control of mosquitoes and mosquito-borne.</p> <p>j) Advocate for incentives and recognition of mosquito-borne disease control professionals at all levels</p>
2	Establish and strengthen partnerships and linkages on capacity building	<p>a) Prepare a database of all relevant public and private stakeholders beyond training/research institutions at all levels.</p> <p>b) Establish mechanisms for supporting internship of trainees in public/private operational entities at all levels.</p> <p>c) Conduct regular meetings with relevant stakeholders to discuss priorities for capacity building based on prevailing health demands and challenges.</p> <p>d) Establish mechanisms to involve experts outside the formal training institutions preferentially during laboratory and/or field schools.</p> <p>e) Establish mechanisms for field attachment of staff from training and research institutions so as they can be acquainted with prevailing challenges in real life.</p> <p>f) Advocate joint review of curricula between private and public training institutions such that they are made responsive to mosquito control demands and challenges on the ground.</p> <p>g) Establish mechanisms for harmonizing in-class- and field-training across public and private training institutions.</p> <p>h) Collaborate and encourage deployment of vector-borne disease control students and staff from public and private training and research institutions in cases of epidemics and strategic large-scale operations.</p> <p>i) Encourage exchange visits for staff between public and private institutions for sharing knowledge, skills and experiences.</p> <p>j) Develop a comprehensive framework for monitoring and evaluation of capacity building efforts and impact at all levels</p> <p>k) Develop training plan and training program for both in-service and pre-service</p>

Implementation Approach

1. Develop training plan and training program for both in-service and pre-service
2. Revive and capacitate vector control institutions (human resource, infrastructure and equipment)
3. Integrate training program within the National Plan and budget
4. Develop carrier path for vector control specialist

4.1.5 Strategic Objectives 5: Operationalize mosquito control program at Points of Entry in line with National and International guidance

This strategic plan is destined at establishing and sustaining core capacities for managing surveillance and control programs of mosquitoes and mosquito-borne diseases at points of entry (PoE) and conveyances in line with International Health Regulations (IHR) 2005 and Public Health Act, 2009.

Sn	Strategies	Activities
1	Implement surveillance and control at points of entry as per the International Health Regulations (2005) and PHA (2009)	<ul style="list-style-type: none"> a) Identify key stakeholders and partners for mosquito control at Points of Entry b) Conduct Mosquitoes mapping to characterize high risk PoE and conveyances c) Identify and train Port Health Officers and other stakeholders engaged in mosquito control activities d) Procure and avail to PoEs necessary supplies and related equipment for mosquito control e) Establish Mosquito species-specific threshold levels for points of entry f) Instituting mosquito surveillance at PoE including surveillance of conveyances, cargo, containers, postal parcels and baggage g) Conduct surveys to document evidences related to new mosquito species, ecology, density and distribution h) Conduct periodic monitoring and evaluation of vector control program implemented i) Integrate mosquito control activities in the plans of operations at PoEs. j) Strengthen inspection of imported goods (e.g. used tires, plants) and conveyances from countries endemic to mosquito borne diseases.

Implementation Approach

1. Capacitate Mosquito control as part of the daily activities implemented by port health officers at points of entry.
2. Establish mosquito control team at each points of entry comprised of the Port Health Staff, nearby district mosquito control focal person, in charge of the points of entry.
3. Utilize the dedicated fund for spraying at Airports, Ports and ground crossing to implement Integrated Vector Control at PoEs.
4. In case of conveyances disinsection, apply cost sharing between the government and conveyance operators/owners

4.1.6 Strategic objective 6: Strengthen malaria vector surveillance and monitoring systems and establish systems for other vectors at all levels

Current vertical surveillance systems in Tanzania focus on monitoring *Anopheles* and other vectors. This strategy aims at integrating existing systems and establishing surveillance and monitoring systems for other priority vectors.

Sn	Strategies	Activities
1.	Establish Integrated Vector Surveillance System	<ol style="list-style-type: none"> 1. Conduct Vector Mapping through literature review to prioritize high-risk areas for surveillance consideration. 2. Identify and train health workers to be involved in the mosquito surveillance and control activities 3. Conduct need assessment and procure necessary supplies to support mosquito surveillance and control activities including mosquito traps, primers, chemicals, reagents and other supplies 4. Develop/update guidelines and protocols to support surveillance and control of mosquitoes at all levels 5. Conduct periodic evaluation of the mosquito control measures
2	Strengthen coordination for mosquito control actors at all level	<ol style="list-style-type: none"> 1. Establish mosquito surveillance Technical Working Group with terms of reference 2. Appoint vector control and surveillance focal person at all levels

Implementation approach

1. Integrate Vector Surveillance System within the existing National Malaria Entomological Sentinel Surveillance System Framework.
2. Publish the mosquito surveillance information into Monthly Epidemiological Bulletin and Entomological Bulletins.

4.1.7 Strategic Objectives 7: Strengthen the existing national insecticide resistance surveillance of malaria vectors to include other vectors.

For the purpose of attaining and maintaining intended effectiveness, monitoring of insecticide susceptibility to mosquitoes in all insecticide classes (chemical and biological) is of paramount importance before and during operationalization of mosquito control activities. The information will be used to guide the choice of effective insecticide/ biolarvicides on mosquito control and/or developing insecticide resistance management strategies.

Sn	Strategies	Activities
1	Monitoring, detection and surveillance of insecticide resistance in mosquito control activities across all implementation levels.	<ul style="list-style-type: none"> a) Carry out inventory of stakeholders (national programs, research institutions, universities etc) conducting insecticide resistance surveillance. b) Review existing data from stakeholders. c) Support surveillance of insecticide resistance in mosquito control interventions. d) Provide guidance (policy) on judicious use of insecticides/ biolarvicides in mosquito control programs based on the most current data
2	Establish and operationalize a joint committee of experts to provide technical support in the analysis of resistance status and formulation of mitigation policies.	<ul style="list-style-type: none"> a) Identify and nominate experts to be included in the joint committee of experts for analysis and interpretation of mosquito resistance status b) Support periodic joint committee meetings

Implementation approach

1. Integrate Mosquito Resistance Surveillance within the National Malaria Insecticide Resistance Monitoring Framework
2. Carry out bioassays of field collected larvae and the standard susceptible laboratory colony using standard WHO test procedures (WHO).
3. Compares results to establish susceptibility levels between the two mosquito strains.

4.1.8 Strategic objective 8: Strengthen systems for Monitoring and Evaluation for effective implementation of the strategy

Effective monitoring and evaluation is key for tracking the progress of implementation of planned activities. This strategy is aimed at integrating vector monitoring and evaluation within the existing systems

Sn	Strategies	Activities
1	Develop Monitoring and Evaluation framework for the implementation of the strategy	<ul style="list-style-type: none"> a) Develop supportive supervision and monitoring checklist, registers, forms for data collection on mosquito interventions b) Conduct quarterly supportive supervisions c) Receive quarterly, semiannual and annual reports for implementation of mosquito control d) Integrate mosquito information systems into existing Monitoring and Evaluation systems e) Build capacity to users of Monitoring and Evaluation tools (registers, forms) f) Conduct mid-term evaluation of the strategy

Implementation approach

1. Harmonize National Sanitation Management Information Systems (NSMIS) to accommodate mosquito control interventions.
2. Conduct sharing experience meetings

4.1.9 Strategic Objective 9: Promote research on vectors and translation of research findings into action

Research is a pursuit for knowledge through diligent search, investigation and experimentation. It aims at the generation and interpretation of new knowledge. The creation of new knowledge leads to development of proper tools for the use of existing knowledge. Over the years, provision of research outputs has enabled health professionals to: prevent, diagnose and manage diseases, and provides evidence for policies and decision making. Therefore, collaborative and well co-ordinated research efforts emphasized in this strategy will improve the country's capacity addressing health demands and/or challenges associated with mosquitoes and mosquito-borne diseases.

Sn	Strategies	Activities
1	Improve/ update knowledge of available (old/ new) mosquito control tools based on the current research evidence.	<ol style="list-style-type: none"> a) Identify institutions conducting researches on mosquito vector control. b) Carry out inventory of information on the available innovative tools and findings for mosquitoes control from research institutions.
2	Support research institutions to identify and work on mosquito control research gaps relevant to the national needs.	<ol style="list-style-type: none"> a) Set platform of experts to identify research gaps in collaboration with national mosquito control programs in the Ministry. b) Coordinate process of setting up national research agenda on mosquito control across human, agriculture and veterinary sectors. c) Set up dissemination platform for sharing and review progress and findings of research undertakings addressing the national agenda. d) Uptake of improved/innovative mosquito control approaches relevant to the national policies.
3	Capacitate research institutions to carry out national research agenda.	<ol style="list-style-type: none"> a) Prioritize National Research agenda b) Provide financial resources for carrying out of research agenda c) Set mechanisms to solicit funding from various sources to support carrying out of national research agenda
4	Establish mechanism for uptake and sustainability of improved/innovative mosquito control approaches relevant to the national policies.	<ol style="list-style-type: none"> a) Identify and strengthen mechanisms for sustainability of adopted innovations for mosquito control. b) Provide regular training on policy processes and documentation to enhance scale-up of mosquito control innovations

Implementation Approach

1. Capacitate the existing research and training institution
2. Encourage institutions engaged in research to dissemination research findings in more simplified way such as use of bulletins, newspapers and social Medias.
3. Establish reward and recognition of research and academic institutions dedicated in vector research

5.1 MONITORING AND EVALUATION

5.1.1 Introduction

Monitoring and Evaluation of Vector Control involve the collection of a variety of indicators used at different levels. The M and E should be designed to provide sufficient data to assess the adequacy of coverage using various interventions. District teams should be able to process data timely for application of corrective measures in poorly performing areas. The MoHCDGEC should advocate for vector control interventions to be integrated as part of the existing M&E frameworks. The table below summarizes the proposed key performance indicators;

5.1.2 Target, Indicators, Verification and Source of data

Goal / Strategic Objective	Target/ Indicator	Verification	Source of Data
<p>Reduction of morbidity and mortality caused by mosquito vectors</p>	<p>The current prevalence and mortality rates reduced at the end of year 2024;</p> <ul style="list-style-type: none"> o Malaria prevalence of 7% reduced to zero o Other vectors reduce the baseline prevalence by 20% 	<p>Evaluation report</p>	<p>Survey & HMIS report, THIMIS</p>
<p>Implement effective control measures against vectors to reduce transmission of vector borne diseases</p>	<ul style="list-style-type: none"> - All districts have guidelines and SoPs for implementation of vector control activities - All districts have trained vector control officers - Regulation for vector control developed and enforced at least 80% of districts and villages at the end of year 2 - All districts integrated vector control activities - All districts established community based committees - All Community in the high-risk regions engaged in the destruction of mosquito breeding sites in their respective house holds - All councils treated identified breeding sites with larvicides in the high-risk regions - Number of nets distributed per population in the high-risk regions - Proportion of household's walls and offices residual insecticides applied in the identified risk regions - Proportional of household with Fogging machines 	<ul style="list-style-type: none"> o Guidelines and SoPs in place o Regulations in place o Enforcement reports o Activity reports o Activity report o Net distribution report o Activity report o Activity report o Activity report o Supervision report o Number of schools implemented vector control activities 	<ul style="list-style-type: none"> o Implementation reports o Supervision reports

	<ul style="list-style-type: none"> - Number of identified breeding sites where bio-larvicides have been applied - All districts have vector control focal person - All districts engage schools in the implementation of vector control activities 		
<p>Strengthen advocacy, social behavioral change communication and social mobilization on the control of vectors to reduce transmission of vector borne diseases</p>	<ul style="list-style-type: none"> - Sensitization meetings and dialogue conducted among the community for environment manipulation and individual protection quarterly - Outreach programs targeting social economic vulnerable groups and hard to reach mobile population semi-annually. - At least 2 joint planning platform meeting done with key risk communication stakeholders - Information communication materials targeting different groups produced/developed at the end of first quarter - Sensitization meeting with different stakeholders for vector prevention and control - Sensitization meeting to village/community leaders on the implementation of vector control activities 	<ul style="list-style-type: none"> o Sensitization meetings reports o Outreach reports o Meeting report o Availability of IEC materials o Meeting reports o Meeting reports 	<p>Reports</p>
<p>Enhance mobilization of resources for control of vectors to reduce transmission of vector borne diseases.</p>	<ul style="list-style-type: none"> - All councils have budget line for Vector control - All councils integrated vector control activities with the existing systems and budget - All councils have identified and working with partners and stakeholders 	<ul style="list-style-type: none"> o Activity supported through CCHP o Implementation report o Database of partners and meeting minutes 	<ul style="list-style-type: none"> o Review the CCHP o Supervision report
<p>Strengthen capacity in controlling mosquitoes and other vectors to reduce</p>	<ul style="list-style-type: none"> - Training needs assessment conducted at all levels - Training plan developed and implemented - Number of training institution providing 	<ul style="list-style-type: none"> o Assessment report and training plan implemented o Enrollment and 	<ul style="list-style-type: none"> o Record review

transmission of vector borne diseases	vector control training program (in service and pre-services)	graduate reports	
<p>Operationalize mosquito control program at Points of Entry in line with National and International guidance</p>	<ul style="list-style-type: none"> - Number of Points of entry with vector control program meeting international standards 	<p>Assessment</p>	<ul style="list-style-type: none"> o Core assessment report o Capacity assessment report
<p>Strengthen malaria vector surveillance and monitoring systems and establish systems for other vectors at all levels</p>	<ul style="list-style-type: none"> - High risk areas considered for surveillance mapped and prioritized through desk review by end of the first quarter - Needs assessment conducted and supplies procured by the end of first quarter - All Malaria Entomological Sentinel Sites integrated to accommodate Aedes and other vectors - Availability of guidelines and protocols to support the surveillance of vector at all levels by the end of the first year - Integration of vector surveillance within the existing National Malaria entomological sentinel surveillance system <ul style="list-style-type: none"> - Conduct supportive supervision - All health workers trained on vector surveillance at identified risk regions by the end of the first year 	<ul style="list-style-type: none"> o Mapping report o Need assessment and procurement report o Surveillance implementation report from sentinel sites o guidelines and protocols in place o MOU/integration agreements o Supervision report o Training report 	<ul style="list-style-type: none"> o Surveillance reports

<p>Strengthen the existing national insecticide resistance surveillance of malaria vectors to include other vectors.</p>	<ul style="list-style-type: none"> ○ Number of vector species integrated within the existing National Malaria Management of Insecticide resistance ○ Existence of functional joint committee of experts to provide technical support in the analysis of insecticide resistance status 	<ul style="list-style-type: none"> ○ Committee meeting reports ○ Monitoring reports 	<p>Record review</p>
<p>Promote research on vectors and translation of research findings into action</p>	<ul style="list-style-type: none"> - Established inventory of vector mosquito biology, ecology and control findings in relevant institutions by the end first year - Periodic stakeholder's workshops for synthesis of research findings for policy brief preparation conducted - Higher authorities for policy brief decision making and utilization engaged - Conduct at least one comprehensive study on epidemiological and entomological of Aedes and related diseases in selected areas of Tanzania - Conduct two operational research to establish appropriate novel vector surveillance and control approaches - Conduct at least one study on determinants of vector control interventions 	<ul style="list-style-type: none"> ○ Vector established inventory ○ Policy briefs in place ○ Meeting reports ○ Study report ○ Research report in place 	<p>Reports</p>

ANNEX

Annex 1: Composition of Technical Working Group for Vector Control

No.	Organization	Position
1	MOHCDGEC- Director of Preventive Service	Chairperson
2	National Institute for Medical Research	Member
3	Vector Control Unit	Secretariat
4	Ministry of Education, Science and Technology	Member
5	Vice President Office-Environment	Member
6	Sokoine University of Agriculture	Member
7	Muhimbili University of Health and Allied Sciences	Member
8	Commission for Science and Technology	Member
9	Health Promotion Section	Member
10	Emergence preparedness and response	Member
11	Epidemiology and Disease Control	Member
12	Environmental Health and Sanitation	Member
13	Port Health	Member
14	Neglected Tropical Disease Program	Member
15	National Malaria Control Program	Member
16	Development Partners	Member
17	Implementing partners	Member
18	Tanzania Pesticide Research Institute	Member
19	University of Dar es Salaam	Member
20	Muhimbili University of Health and Allied Sciences	Member

Annex 2: Stakeholders Analysis

s/n	Name	Areas of support/collaboration
1.	World Health Organization	Financial and technical support
2.	World Bank	Financial and technical support
3.	Center for Disease Control (CDC)	Financial and technical support
4.	UNICEF	Financial and technical support
5.	FAO	Financial and technical support
6.	USAID/PMI	Financial and technical support
7.	OIE	Financial and technical support
8.	Research Institution (NIMR,IHI)	Research and translation of innovation
9.	Training Institutions	Capacity building, Research and innovation
10.	National Laboratories	Laboratory testing and investigation
11.	Tanzania Pesticide and Research Institute (TPRI)	Monitoring insecticide and larvicides resistance & regulation
12.	Tanzania Meteorological Agency (TMA)	Early Warning for weather and climate

		change prediction
13.	VPO – Environment	Monitoring of insecticide pollution and environmental safety
14.	Ministry of Education, Science and Technology (MoEST)	Health education and promotion
15.	Ministry of Transport and Communication	Support vector control at PoEs and conveyances
16.	Tanzania Civil Aviation Authority	Maintaining and regulating standards of airports on vector control
17.	Tanzania Airport Authority	Implement vector control at Airports
18.	Tanzania Ports Authority	Implement vector control at Ports
19.	Private Investors	Support vector control activities
20.	SUMATRA	Maintaining and regulating standards of marine and road transport on vector control
21.	Transport Associations (TABOA, TATO, Airlines Associations)	Implement vector control activities at Conveyances
22.	Tanzania Tourist Board (TTB)	Travellers' health information
23.	Implementing Partners	Implementing partner on Malaria
24.	Religious leaders	Health Promotion
25.	Political leaders	Fund raising and health promotion
26.	Banks and telecommunication companies	Health promotion
27.	Tanzania commission for science and technology (COSTEC)	Promote vector control innovations
28.	Community	Implement vector control measure at household level
29.	Media	Airtime and health promotion
30.	TCRA	Regulate Communications

Annex 3: Recommended standard operating procedures for mosquito control.

1. WHO Standard Operating Procedures (SOPs) (2106) for carrying out insecticide susceptibility testing
2. Standard Operating Procedures (SOPs) for Space Spray of Insecticides to control Malaria Vectors and other Mosquitoes
3. Standard Operating Procedures (SOPs) for Mosquito larviciding
4. Standard Operating Procedures (SOPs) for Mosquito Larval Source Management
5. Standard Operating Procedures (SOPs) for IRS

Annex 4: Proposed SoPs to be developed for other vectors of human diseases

1. Tsetse flies
2. Black flies
3. Bedbugs
4. Soft ticks and Hard ticks
5. Flies
6. Snails
7. Fleas
8. lice
9. Cockroach
10. Soil transmitted helminthes (STH)
11. Plague/ Rodents

Annex 5: List of insecticides approved by TPRI for control of all vectors of public health importance in Tanzania

List of insecticides approved by TPRI for control of all vectors of public health importance in Tanzania					
s/n	TRADE NAME	COMMON NAME	REG NO	REGISTRANT	USAGE
1	Dursban 4E	Chlorpyrifos 480g/L	IN/0042	Dow AgroScience, France	Chewing and Sucking insect, Mosquito and Subterranean termites control.
2	Hatari Brand Mosquito Coil	d-Allethrin	IN/0172	Star Import & Export, Tanzania	Control of Mosquitoes
3	BigTox Aerosol	Fenitrothion + Permethrin	IN/0195	Star Import & Export, Tanzania	Control of Mosquito
4	Mzinga	Permethrin + Tetramethrin	IN/0255	Sole Aero Ltd- UK	Control of Mosquito
5	Zapit	S-bioallethrin + Bioresmethrin	IN/0256	Sole Aero Ltd- UK	Control of Mosquito
6	Kiboko Mosq.Coil d	allethrin	IN/0267	H.B Worldwide, Tanzania	Control of Mosquito

7	Risasi mosquito (Pyrethrin) Coil	Pyrethrin	IN/0285	Meghji's Sundries-Tanzania	Control of Mosquito
8	Mosquiron 100EC	Novaluron 100g/L	IN/0293	Adama Makhteshim Ltd, Israel	Control of Mosquito larvae
9	Fendona 6 SC	Alphacypermethrin 60g/l	IN/0143	BASF Agro BV German	Control of Tsetsefly, bed net impregnation for mosquitoes control, cockroach, bedbugs, other biting and nuisance
	Dimilin 25WP	Diflubenzuron 250g/Kg	IN/0310	Arysta Lifescience Tanzania	Control of Mosquito and housefly larva
	Kombora Aerosol	Tetramethrin + Cypermethrin	IN/0325	21st Century Holdings Ltd	Control of Mosquito
	Kombora Mosquito	D-allethrin coil	IN/0326	21st Century Holdings Ltd	
	Mortein Doom Ultra Fast AIK	Imiprothrin 0.025% + Permethrin 0.125% + Esbiothrin 0.04%	IN/0329	Reckitt Benkiser E.A	
	Risasi Mosquito	Coil (0.2%w/w dallethrin)	IN/0331	Meghji's Sundries-	
	Summit Mosquito Dunks	Bacillus Thuringiensis	IN/0332	Ilaclama Insaat Turkey	Control of Mosquito Larvae
	Icon Life IN/0333	Deltamethrin	IN/0333	Syngenta Crop Protection Ag, Switzerland	Control of Mosquitoes by treated net
	Icon Maxx 10CS	Lambdacyhalothrin	IN/0334	Syngenta Crop Protection Ag, Switzerland	Control of mosquito by Bednet impregnation
	Netto Mosquito Net	Deltamethrin	IN/0344	Mukpar Tanzania Ltd, Tanzania	Control of Mosquitoes
	Pali 2.5%WP	Deltamethrin25g/K	IN/0345	Twiga Chemicals Ind (T) Ltd, Tanzania	Control of Mosquitoes
	Pali 25WT	Deltamethrin 25g/K	IN/0346	Twiga Chemicals Ind (T) Ltd, Tanzania	Control of Mosquitoes
	Mortein Doom with Control of	Dettol Germstop Imiprothrin + D'transallethrin + D'phenothrin	IN/0366	Reckitt Benkiser E.A Ltd, Kenya	Mosquito and cockroaches
	Mosfly Aerosol	Tetramethrin + Permethrin + Deltamethrin	IN/0367	African Mosfly Industries Ltd	Mosquito control
	Risasi@	Mosquito Coil (0.1% w/w dallethrin) D' allethrin	IN/0371	Meghji's Sundries-Tanzania	Control of mosquitoes
	Summit Mosquito Dunks	Bacillus Thuringiensis	IN/0332	Ilaclama Insaat – Turkey	Control of Mosquito Larvae
	Icon Life	Deltamethrin	IN/0333	Syngenta Crop Protection Ag, Switzerland	Control of Mosquitoes by treated net
	Icon Maxx 10CS	Lambdacyhalothrin	IN/0334	Syngenta Crop Protection Ag,	Control of mosquito by Bednet

				Switzerland	impregnation
	Kiboko Yao Aerosol	Tetramethrin + Permethrin + Fenitrothion	IN/0364	Zenji General Merchandise, Tanzania	Control of Mosquitoes
	Mortein Doom with Dettol Germstop	Imiprothrin + D'transallethrin + D'phenothrin	IN/0366	Reckitt Benkiser E.A Ltd, Kenya	Control of Mosquito and cockroaches
	Mosfly Aerosol	Tetramethrin + Permethrin + Deltamethrin	IN/0367	African Mosfly Industries Ltd	Mosquito control
	Interceptor	Alphacypermethrin with Fendozin	IN/0381	BASF Agro BV German German	Control of Mosquitoes
	Godrej Hit Aerosol	Imiprothrin, Cypermethrin, Prollethrin	IN/0390	Godrej – Kenya	Control of Mosquito And Cockroaches
	Famipro	Cypermethrin + Propoxur	IN/0518	Khorasan Trading, UAE	Control of Mosquito
	Tammer 25WG	Deltamethrin	IN/0523	Arysta LifeScience, Tanzania	Control of Mosquitoes
	VectoBac ®CG	Bacillus Thuringiensis israelinsis, strain AM65- 52,Granules	IN/0534	Valent Bioscience Corporation-USA	Control of Mosquitoes
	Vectolex CG	Bacillus sphaericus Strain 2362 . . . 50 BsITU/mg	IN/0535	Valent Bioscience Corporation-USA	Control of Mosquitoes
	K-othrine WG250	Deltamethrin	IN/0537	Bayer Environmental Science, Kenya	Mosquito control
	Ficam VC® 80WP	Bendiocarb 800g/Kg	IN/0538	Bayer Environmental Science, Kenya	Control of Mosquitoes
	Miranet®",	Alphacypermethrin 0.45%	IN/0575	A TO Z Textile Mills, Tanzania	Control of Mosquito by Long Lasting Treated Net
	Miratex®	Permethrin	IN/0576	A TO Z Textile Mills, Tanzania	Control of Mosquito by treated clothes
	Netprotect Bednets®	Deltamethrin	IN/0577	Real Relief /Achelis (Tanganyika) Limited	Control of Mosquitoes
	Talstar 10 WP	Bifenthrin 10g/L	IN/0586	Juanco Sps Limited, Kenya	Control of Mosquitoes
	Mortein Doom Ultra fast AIK Odourless	imiprothrin 0.025%,permethrin 0.04%, and Esbiothrin 0.125%)	IN/0590	Reckitt Benkiser E.A Ltd, Kenya	Control of Mosquito control
	Actellic 300CS	Pirimiphosmethyl	IN/0593	Syngenta Crop Protection – Switzerland	Control of Mosquitoes
	Mortein Doom Activ air mosquito repellant	Metofluthrin. D allethrin	IN/0597	Reckitt Benkiser E.A Ltd, Kenya	Control of Mosquitoes
	Parakito	Essential oil	IN/0598	Pashkul Y.A Ltd – Israel	Control of Mosquito
	Power Gard (Aik)	Esbiothrin 0.1%+d- phenothrin 0.03%	IN/0599	Reckitt Benkiser E.A	Control of Mosquitoes and

		+Imiprothrin 0.02%		Ltd, Kenya	Cockroaches
	Power Gard Pifpaf (Aik)	Esbiothrin 0.1%+D-fenothrin 0.03% + Talmipothrin 0.02	IN/0600	Reckitt Benkiser E.A Ltd, Kenya	Control of Mosquitoes and Cockroaches
	Hit Aerosol	Cypermethrin + Prallethrin + Piperonyl Butoxide	IN/0616	HB Worldwide-Tanzania	Control of Mosquitoes
	Motox Mosquito Coil	D-Allethrin 1%	IN/0620	Mawe Enterprises-Tanzania	Control of Mosquitoes.
	Fendona 5 WP	Alphacypermethrin 50g/kg	IN/0629	Basf Agro GmbH-German	Control of Mosquitoes.
	Lifenet (LLIn)	Deltamethrin 60mg/m2	IN/0641	Bayer Enviromental - Kenya	Control of Mosquitoes by treated net
	Duranet (LLIn)	Alphacypermethrin 0.55% W/W	IN/0642	Best net Europe/Achelis – Tanzania	Control of Mosquitoes
	Akheri Spray,	Fipronil 0.025%	IN/0655	FarmBase Limited – Tanzania	Control of Mosquitoes.
	Akheri Super Dust,	Fipronil 0.025%	IN/0656	FarmBase Limited – Tanzania	Control of Mosquitoes.
	Godrej Hit Aerosol	Imiprothrin, Cypermethrin, Prollethrin	IN/0660	Godrej – Kenya	Control of Mosquito And Cockroaches
	Bactivec	Bacillus Thuringiensis	IN/0664	Jose Fraga-Cuba	Control of Mosquitoes larvae
	Griselesf 0,5%	Bacillus sphaericus 2362 5g/L	IN/0665	Jose Fraga-Cuba	Control of Mosquitoes larvae
	Noirhit Aerosol	Deltamethrin 0.015% tetramethrin 0.2% + Permethrin 0.3%	IN/0666	K&K Distributors Ltd- Tanzania	Control of Mosquitoes
	Risasi Fenitrothion 1.2 %	Cypermethrin 0.2% + Tetramethrin 0.4% + Fenitrothion 1.2%)	IN/0668	Meghji's Sundries-Tanzania	Control of Mosquitoes
	Risasi Propoxur 0.2%	Fenitrothion 1 % + Cypermethrin 0.2% + Tetramethrin 0.4% + Propoxur 0.2%	IN/0669	Meghji's Sundries-Tanzania	Control of Mosquitoes
	PARA KITO™	Lavandula Hybrida	IN/0676	Pashkul Y.A Ltd – Israel	Control of Mosquitoes
	Trankil Anti mosquito Band	N, N- Dimethyl - Metatoluamide (DEET)	IN/0677	AZH Photography, Tanzania	Control of Mosquitoes
	Piretro Spray,	Pyrethrum Extract,	IN/0678	Pest Guard Limited – Tanzania	Control of Mosquitoes
	Snowcon ®100CS	Lambdacyhalothrin 100 g/l	IN/0684	Positive International Limited-Tanzania	IRS for Control of Mosquitoes
	Konk I Aerosol	D-Tetramethrin 0.15% W/W + - Permethrin 0.20% W/W +	IN/0694	Rentokil Tanzania Ltd-Tanzania	Control of Mosquitoes
	Insectcarb 80WP	Bendiocarb 800g/Kg	IN/0695	Riyue chemicals – China	Control of Mosquitoes

	Permanet LLITN	Deltamethrin 6.8g/kg	IN/0717	Vestergaard Frandsen S.A	Control of Mosquitoes
	Vectron ® 20WP	Etofenprox 200 g/l	IN/0740	Sumitomo Corporation- Japan	Mosquito control
	Lanju Aerosol	Tetramethrin 0.17% + D-transalethrin 0.09% + Betacypermethrin 0.06%	IN/0753	Godrej Consumer Products - Dar es Salaam	For Mosquitoes and cockroaches control
	Olyset®Plus,	Permethrin 2%w/w	IN/0761	A to Z, Textiles Arusha	Long lasting treated net for Mosquitoes Control
	Hit Aerosol	Tetramethrin 0.325% + Propoxur 1 % + Cypermethrin 0.11%	IN/0762	Godrej Consumer Products, Dar es Salaam	For Mosquitoes and cockroaches control
	Risasi Mosquito Mat	Prallethrin 1.5mg/mat	IN/0765	Meghji's Sundries-Tanzania	For Mosquitoes control
	Sumilarv 0.5 % EC	Pyriproxyfen 5g/l	IN/0769	Sumitomo Chemical Company Limited, Arusha	For Mosquitoes larvae control
	Dawa Plus 2.0 Nets	Deltamethrin 250g/L	IN/0810	Tana Netting UAE	For Mosquitoes control
	Sumishield 50% WDG	Clothianidin 50.0% w/w	IN/0818	Sumitomo East Africa – Arusha	For Mosquitoes control
	Trig MOSQUITO REPELLENT PETROLEUM JELLY”	N-N Diethyl Benzamide	IN/0825	Chemi & Cotex Industries Ltd-DAR ES SALAAM	For Mosquitoes control
	Culexon® 100 WP	Lambdacyhalothrin 100g/l	IN/0826	Ultravetis E A Ltd – Kenya	For Mosquitoes control
	Profix® 20 E	Propoxur 200g/l	IN/0827	Ultravetis E A Ltd – Kenya	For Mosquitoes control
	Flower Combat Mosquito Coil	D Allethrin 0.2%	IN/0833	Kapi Limited Kenya	Public health for mosquitoes control
	Dudu-Krin <i>Gentle</i> 0.5	Pyrethrins 0.5% w/w	IN/0834	Kapi Limited Kenya	Control of Cattle ticks and fleas
	Flower Liquid Mosquito Repellent	Transfluthrin 1.6%	IN/0835	Kapi Limited Kenya	For Mosquitoes control
	Fludora		IN/0836	Bayer East Africa – Kenya	For Mosquitoes control
	MOFIX, 250 WG	Deltamethrin 250g/Kg	IN/0839	Rotam Agrochemical Co. Ltd.Chai Wan, Hong Kong.	For Mosquitoes control
	Maxi Aerosal	Tetramethrin 0.325% + Propoxur 1 % + Cypermethrin 0.11%	IN/0846	Kenyezi Enterprises, Limited, Tanzania	For Mosquitoes control
	Rungu Aerosol	Tetramethrin 0.325% + Propoxur 1 % + Cypermethrin 0.11%	IN/0847	HB Worldwide, Dar es Salaam	For Mosquitoes and cockroaches control
	Fast Card 1,6%	Transfluthrin 1.6%	IN/0849	Godrej Consumer Products, India	Control of Mosquitoes
	Purar Mosquitoes Repellant	Citronela oil 100%	IN/0855	Aspironx Ltd- Dar es Salaam	For Mosquitoes control

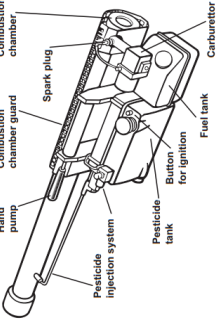


	Flower Combat Mosquito Coil	D Allethrin 0.2%	IN/0856	Kapi Limited Kenya	For Mosquitoes control
	Flower Mosquito Coils	D Allethrin 0.2%	IN/0857	Kapi Limited Kenya	For Mosquitoes control
	Flower Mossi Chips	D Allethrin 46mg/chip	IN/0858	Kapi Limited Kenya	For Mosquitoes control
	Arrow Aerosol	D, allethrin 0.01+ Permethrin 0.1 Tetramethrin 0.1	IN/0859	Dar es salaam Regional Trading Corporation – Dar es Salaam	Control of Mosquitoes and Cockroaches
	Tabard Lotion	DEET 15%	IN/0860	Kapi Limited Kenya	For Mosquitoes control
	Tabard Spray	DEET 15%	IN/0861	Kapi Limited Kenya	For Mosquitoes control
	Flower Dudu Spray	Pyrethrins 0.1%	IN/0878	Kapi Limited Kenya	For Mosquitoes control
	Mosquito Killer Sticks	Pyrethrins 0.5% w/w	IN/0879	Kapi Limited Kenya	For Mosquitoes control
	Goodnight Aerosol	Tetramethrin 0.17% + D-transallethrin 0.09% + Betacypermethrin 0.06%	IN/0880	Godrej Consumer Products - Dar es Salaam	For Mosquitoes and cockroaches control
	Flower Liquid Mosquito Repellent	Transfluthrin 1.6%	IN/0887	Kapi Limited Kenya	For Mosquitoes control
	Acetastar 46 EC	Acetamidiprid 16g/l + Bifenthrin 30g/l	IN/0888	Balton (T) Ltd , Arusha	Control of Aphids on Cotton
	Sapa Carbaryl 5% D	Carbaryl 5g/kg	IN/0090	Sapa Chem Ind Ltd	Control of Cutworms and beetles, animal ectoparasites, mosquitoes and cockroaches.
	Sevin 85 WP	Carbaryl 85g/kg	IN/0113	Bayer Enviro Science	Control of Cutworms and beetles, animal ectoparasites, mosquitoes and cockroaches.
	Dursban 24ULV	Chlorpyrifos 240g/l	IN/0141	Dow AgroScience, France	Control of Chewing and Sucking pests on and Public health for mosquito control...
	Fenom C 170 ULV	Profenofos +Cypermethrin	IN/0145	Syngenta Crop Protection Ag – Switzerland	Control of Jassids calidea and judgus on cotton
	Icon 10 WP	LambdaCyhalothrin	IN/0147	Syngenta Crop Protection Ag - Switzerland	Control of Mosquitoes
	Kiboko Aerosol	Fenitrothion	IN/0159	H.B Worldwide – Tanzania	Control of Mosquitoes, cockroaches and other household insect pests
	Motox Aerosol	Tetramethrin + Permethrin +	IN/0160	Mawe Enterprises-Tanzania	Control of Mosquitoes

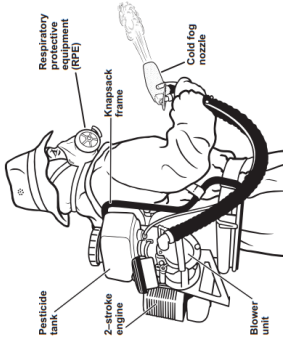
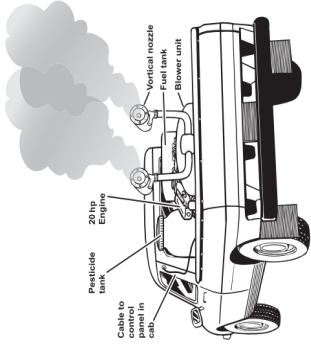
		Fenitrothion			
	Rungu Aerosol	Tetramethrin + Cypermethrin+ Prallethrin + Piperonyl Butoxide	IN/0162	H.B Worldwide-Tanzania	Control of Mosquitoes, cockroaches and other household insect pests
	Fendona 10SC	Alphacypermethrin 100g/l	IN/0169	BASF Agro BV German	Control of Mosquitoes, Cockroaches and
	Goodnight Mosquito Mat	d-allethrin	IN/0173	Godrej Hi Care Ltd – Kenya	Control of Mosquitoes
	Solfac EW 050	Cyfluthrin	IN/0176	Bayer Enviromental Science – RSA	Control of Household pests and Mosquitoes
	Ngao (K-OTab)	Deltamethrin	IN/0215	Bayer Crop Science AG –German	Control of Mosquitoes
	K-Othrine WP	Deltamethrin	IN/0216	Bayer Crop Science AG –German	Control of mosquito by Bednet impregnation
	K-Othrine Mostiquarine 1% SC	Deltamethrin	IN/0217	Bayer Crop Science AG –German	Control of Mosquitoes
	Vectron 10EW	Etofenprox 100 g/l	IN/0218	Mitsui Chemicals,Inc -Japan	Control of Mosquito
	Vectron 20EW	Etofenprox 200 g/l	IN/0219	Mitsui Chemicals,Inc -Japan	Control of Mosquito
	Goodnight Mosquito Coil	d-allethrin	IN/0221	Godrej Hi Care Ltd – India	Control of Mosquitoes
	Risasi Aerosol	Tetramethrin + Cypermethrin	IN/0225	Meghji's Sundries-Tanzania	Control of Mosquitoes
	Raid IT	Tetramethrin + Cypermethrin +Propoxur	IN/0234	Johnson Wax E. A Ltd –Kenya	Control of Mosquitoes
	Supakill	Pyrethrin+ Cypermethrin + Tetramethrin	IN/0269	Twiga Chemicals (T) Ltd – Tanzania	Control of Mosquitoes
	Zap aerosol	tetramethrin+ Cypermethrin	IN/0272	Autoworld Trading Co –Tanzania	Control of Mosquitoes
	Taktic 12.5EC	Amitraz 125g/l	AC/0018	Intervet South Africa (Pty)	Control of Mange, mites, ticks and lice on cattle.
	Neocidal 600EW	Diazinon 600g/L	IN/0231	Zagro – Singapore	Control of Control of bedbugs and body lice
	Taktic 12.5EC	Amitraz 125g/l	AC/0018	Intervet South Africa (Pty)	Control of Mange, mites, ticks and lice on cattle.
	Tixfix 12.5%EC	Amitraz 125g/l	AC/0019	Rotam Limited-Kenya	Control of Ticks on cattle.
	Toptix 12.5%EC	Amitraz 125g/l	AC/0020	Alfasan International Holland	Control of ticks & Ectoparasites on cattle
	Norotraz 12.5%	Amitraz 125g/l	AC/0022	Norbrook Laboratories-Kenya	Control of Ticks on cattle.
	Vectocide EC	Deltamethrin 50g/l	AC/0023	Ceva Sante - France	Control of Ticks and tsetse flies on cattle


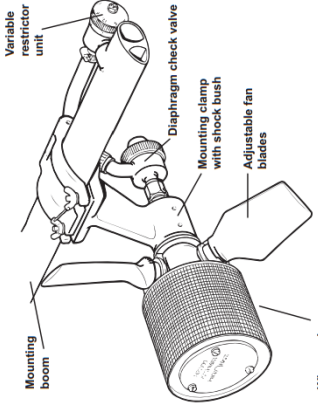
	Paratryn 15%	Amitraz 125g/l	AC/0024	Merial –RSA	Control of Ticks on cattle.
	Ecotix 100EC	cypermethrin high cis 100g/l	AC/0025	FarmBase Limited – Tanzania	Control of Ticks and tsetse flies on cattle
	Tiktik 12.5EC	Amitraz 125g/l	AC/0026	FarmBase Limited – Tanzania	Control of Ticks on cattle.
	Paratraz 12.5%	Cypermethrin 125g/l	AC/0027	Merial – RSA	Control of Ticks on cattle
	Alphatix 12.5%EC	Amitraz 125g/l	AC/0028	Ultravetis Tanzania Ltd- Tanzania	Control of Ticks on cattle.
	Cybadip 15EC	Cypermethrin 15%	AC/0029	Bajuta International (T) Limited- Tanzania	Control of Ticks and tsetse flies on cattle
	Bamitraz 12.5EC	Amitraz 125g/l	AC/0030	Bajuta International (T) Limited- Tanzania	Control of Ticks on cattle.
	Tickbuster 12.5EC	Amitraz 125g/l	AC/0031	Chemplex Animal and Public health- Zimbabwe	Control of Ticks on cattle.
	Notix	Deltamethrin 500g/l	AC/0032	Rotam Agrochemical – Kenya	Control of Ticks and tsetse flies on cattle
	Kupatix 12.5%EC	Amitraz 125g/l	AC/0033	Cooper K Brands Limited –Kenya	Control of Ticks on cattle.
	Amitan 12.5EC	Amitraz 125g/l	AC/0034	Biotec Laboratories Ltd – Kenya	Control of Ticks on cattle.
	Kupedip 6%EC	Flumethrin 60g/l	AC/0035	Mega Generic Limited – Tanzania	Control of Ticks and tsetse flies on cattle
	Paratik 7%	Alphamethrin 70g/l	AC/0036	Zoetis South Africa (Pty) Ltd- South Africa	Control of ticks and tsetseflies on cattle
	Dominator ® 10EC	Alphacypermethrin 100g/l	AC/0037	Osho Chemical Industries –Kenya	Control of Ticks and tsetse flies on cattle
	Cypervet ® 10%EC	Cypermethrin 100g/L	AC/0038	DVA Agro GmbH – German	Control of Ticks and tsetse flies on cattle
	Supona Aerosol	Chlorfenvinphos + Dichlorvos + Gentian violet	AC/0039	Zoetis South Africa (Pty) Ltd- South Africa	Control of Ticks, maggots and wounds on cattle
	Amivet ® 12.5%EC	Amitraz 125g/l	AC/0040	DVA Agro GmbH – German	Control of Ticks on cattle.
	Alfanex ® 10%EC	Alphacypermethrin 100g/l	AC/0041	Ronheam International Co. Ltd - Tanzania	Control of Ticks and tsetse flies on cattle
	Flubadip Super 6%EC	Flumethrin 60g/l	AC/0042	Bajuta International (T) Limited- Tanzania	Control of Ticks and tsetse flies on cattle
	Sypertix 10EC	Alphacypermethrin 100g/l	AC/0043	Norbrook Kenya Limited- Kenya	Control of Ticks and tsetse flies on cattle
	Twigatraz 12.5EC	Amitraz 125g/l	AC/0044	Twiga Chemical Industries (T) Ltd - Tanzania	Control of Ticks on cattle.
	Mo-traz 12.5EC	Amitraz 125g/l	AC/0045	Mocrops Tanzania Ltd – Tanzania	Control of Ticks on cattle.
	Albadip Super® 10% EC	Alphacypermethrin 100g/l	AC/0046	Bajuta International (T) Limited- Tanzania	Control of Ticks on cattle

	Tantix 10EC	Cypermethrin 100g/L	AC/0047	Tagros Chemical India Limited- India	Control of Ticks and tsetse flies on cattle
	Ecotix Pour On	High-Cis Cypermethrin	AC/0048	FarmBase Limited – Tanzania	Control of Ticks and tsetse flies on cattle
	SuperDog Shampoo	Pyrethrins	AC/0049	FarmBase Limited – Tanzania	Control of ectoparasites in Dogs
	Alfapor 100 EC	Alpha Cypermethrin 100 g/l	AC/0050	Agriphar – Belgium	Control of Ticks on cattle
	Cypertop 400EC	Cypermethrin 150g/L+ Chlorpyrifos 250g/L	AC/0051	Laprovect – France	Control of Ticks on cattle
	Supatix 330 EC	Alpha Cypermethrin 30 + Chlorpyrifos 300g g/l	AC/0052	Agriphar – Belgium	Control of Ticks on cattle
	Vapco Cypermethrin 10 EC	Cypermethrin 100 g/l	AC/0053	Vet & Agriproducts Manufacture Co Ltd Jordan	Control of Ticks on cattle
	Deltix 2.5 EC	Deltamethrin 250g/L	AC/0054	FarmBase Limited – Tanzania	Control of Tsetse Flies And Ticks on cattle
	Smash 1% Pour on	Deltamethrin 1%	AC/0055	Tagros Limited-India	Control of Ticks on cattle
	Vectoplus EC	Cypermethrin 15g/l + Chlorpyrifos 25g/l	AC/0056	Ceva sante Animale- France	Ticks
	Duodip® EC	Chlorpyrifos 500g/l and Cypermethrin 5g/l	AC/0057	Norbrook Laboratories- Kenya	Against cattle ticks
	Topline 1% EC	Fipronil 1g/100mls	AC/0057	Ronheam International - South Africa	Control of Cattle ticks
	Super Dip® 55EC	Chlorpyrifos 500g/l+ Cypermethrin 50g/l	AC/0058	Biddi Enterprises Ltd- Arusha	Control of Cattle ticks
	Ashitraz 12.5%EC	Amitraz 12.5%EC	AC/0059	Ashish Life Science Pvt Limited, 213, Laxmi Plaza, New Link Rd, Andhari (W), Mumbai - 53. India	Control of Cattle ticks
	Merutix 10 EC®	Alphacypermethrin 100g/l	AC/0060	Meru Agro Tours & Consultant- Tanzania	Control of Cattle ticks
	Merutix Super 400EC®	Chlorpyrifos 250g/l + Cypermethrin 150g/l)	AC/0061	Meru Agro Tours & Consultant- Tanzania	Ticks control in cattles
	Dudu-Krin Super 0.4%	Sumithrin 0.4% With Aloe Vera).	AC/0062	Kapi Limited Kenya	Control of Cattle ticks and fleas

Annex 6: Equipment for vector control

Treatment method	Equipment	Description and Specification
Thermal spraying	<p>A Portable (hand-carried) thermal foggers</p>  	<p>A portable thermal fogger shall have a thermal energy nozzle into which the insecticide liquid (both oil and water-miscible formulation) is metered.</p>
	<p>Vehicle-mounted thermal foggers</p> 	<p>Consist of aerosol-generating machine, mountable on a flat-bed truck or a trailer, a boat, an amphibious vehicle or a drone.</p> <p>Used for outdoor space treatments leaving no residual spray deposit.</p>
	<p>Aircraft application of thermal fogs</p>	<p>Aircraft application of thermal fogs the diluted insecticide formulation is fed into the aircraft exhaust. The exhaust is</p>

Cold spray	<p>Hand-carried cold foggers or A knapsack cold fogger</p> 	<p>adapted with vanes to swirl the fog droplets as they are formed. The application of thermal fogs by aircraft has been very limited.</p> <p>It is a hand-carried or a knapsack-mounted aerosol generator with a system for producing an aerosol for space treatment. It has an engine that is provided with an easy starting mechanism.</p>
<p>Vehicle-mounted cold foggers</p> 	<p>An aerosol-generating machine, mountable on a flatbed truck or a trailer, a boat, an amphibious vehicle or a drone. They are used for outdoor space treatments requiring no residual spray deposit.</p>	

		<p>Aerosolized aircraft disinsection products are used for the control of flying and crawling insects in aircrafts that can be harmful for humans, plants or animals.</p>
<p>Aircraft application of cold fogs</p>		<p>A rotary atomizer for aircraft application of cold fogs</p>

Annex 7: List of Vectors of Public Health Importance in Tanzania

SN	Name of vectors	Species	Diseases	Geographical distribution of vectors	Interventions			Other possible Intervention
					Chemical	Biological	Environmental	
1	Mosquitoes	<i>Anopheles gambiae complex</i>	Malaria + LF	All over the country	Larviciding, LLINs, IRS, repellants, aerosol spraying	Bio-larviciding	Larval source mgt	Fogging Improved housing/screening
		<i>Anopheles funestus</i>	Malaria+LF	All over the country	Larviciding, LLINs, IRS, repellants, aerosol spraying	Bio-larviciding	Larval source mgt	Fogging? Improved housing/screening
		Other <i>Anopheles</i> (secondary malaria vectors)	Malaria	All over the country	Larviciding, LLINs, IRS, repellants, aerosol spraying	Bio-larviciding	Larval source mgt	Fogging? Improved housing/screening
		<i>Aedes (Ae. aegypti & albopictus)</i>	Dengue, chikungunya, zika, yellow fever,	All over the country	Larviciding, LLINs, IRS, repellants, aerosol spraying	Bio-larviciding	Larval source mgt	Fogging/space spraying Improved housing/screening
		<i>Culex quinquefasciatus</i>	RVF+LF	All over the country	Larviciding, LLINs, IRS, repellants, aerosol spraying	Bio-larviciding	Larval source mgt	Fogging? Improved housing/screening
		<i>Mansonia (Mn. africana, uniformis)</i>	LF?	All over the country	Larviciding, LLINs, IRS, repellants,	Bio-larviciding	Larval source mgt	Fogging?

2	Tsetse flies	1. <i>Glossina morsitans</i> (Savannah) 2. <i>Glossina fusca</i> (Forest) 3. <i>Glossina palpals</i> (Riverine)	African Human Trypanosomiasis (AHT) , African Animal Trypanosomiasis (AAT_Nagana) African Human Trypanosomiasis (AHT) ,African Animal Trypanosomiasis (AAT_Nagana) African Human Trypanosomiasis (AHT) ,African Animal Trypanosomiasis (AAT_Nagana)	Mara, Mwanza Manyara, Arusha, Shinyanga, Lindi, Mtwara Kigoma, Geita, Kigoma, Kagera	aerosol spraying Space Spraying Space Spraying Space Spraying	Male Sterilization Male Sterilization Male Sterilization	Traps and Bush cleaning (<i>Euphorbia</i> trees) Traps and Bush cleaning (<i>Euphorbia</i> trees) Traps Bush cleaning (<i>Euphorbia</i> trees)	
3.	Black flies	<i>Simulium spp</i>	Onchocerciasis	Mbeya (Rungwe, Busokelo, Kyela), Morogoro (Kilosa, Ulanga, Morogoro dc, Kilombero, Malinyi), Tanga (Muheza, Lushoto, Korogwe,	Space/ river spraying	Yes (Bti)	Environmental sanitation,	
4.	Bedbugs	<i>Cimicidae</i>	Itching, Insomnia, Anemia	All over the country especially in rural areas, boarding schools, HCFs etc, is associated with	Yes	No	Yes	

4	Soft ticks	Argasidae	<i>Borrelia duttoni</i> Q. fever, Tick Bite Allergies TBRF	poor sanitation and hygiene	Yes	No	Yes		
	Hard ticks	<i>Ixodidae</i> (<i>Rhipicephalus</i> <i>Amblyomma</i>)	Lyme Disease Crimean Congo Hemorrhagic Fever	All over the country	Yes	No	Yes		
5	House Flies	Houseflies (<i>Musca</i> <i>domestica</i>) Eye seeking flies (<i>Musca sorbens</i>)	Cholera, typhoid, dysentery trachoma	All over the country	Yes	No	Yes		
6	Snails	<i>Bulinus</i> , <i>Biomphalaria</i> ,	<i>Schistosoma</i> <i>haematobium</i> <i>Schistosoma</i> <i>mansoni</i>	Dodoma (Chemba, Mpwapwa, Kongwa), Manyara (Kiteto, Simanjiro), Arusha (Longido, Monduli, Ngorongoro), Morogoro (Kilosa, Gairo), Tanga (Kilindi), Ruvuma (Tunduru) Lake zone, Killimanjaro, Lake Tanganyika, Coastal zone Pemba and Zanzibar	Yes	Yes	Yes		

7	Fleas	<i>Xenopsylla cheopis</i>	Plague	Tanga (Lushoto, Bumbuli and Korogwe Manyara (Mbulu) Arusha (Karatu) Singida (Iramba) Dodoma (Kondoa) Iringa (Iringa) Kigoma, Kagera	Yes	No	Yes	
	Jigger Fleas	<i>Tunga Penetrans</i>	Tungiasis Tetanus		Yes	No	Yes	
8	Lice		Louse Borne Relapsing Fever (LBRF), Typhus Fever	All over the country especially where cleanliness is seldom	Yes	No	Yes	
9	Soil transmitted helminth	<i>Ascaris lumbricoils</i> <i>Trichuris trichra</i> Hookworm	Ascariasis Trichuriasis Hookworm anaemia	All over the country especially where WASH seldom practiced	Yes	No	Yes	
10	Rodents	<i>Mastomys natalensis</i> <i>Avicannthis ailloticus/niloticus</i> <i>Rattus tenus</i> <i>Mus musculus</i>	Plague	All over the country	Yes	Yes	Yes	
11	Cockroach	<i>Blattella germanica</i> <i>Blatta orientalis</i> <i>Periplaneta americana</i>	Mechanical transmitter of faecal orally borne Diseases	All over the country especially in warm and humid environment	Yes	Yes	Yes	

	Identify and train community health workers for vector control at all levels	Trained community workers engaged in community control activities in place	Personnel, Transport, Venue, Stationery, Refreshment	Ministry, CHMT, RHMT, Research Institute, community development partners	0	50,000,000	50,000,000	50,000,000	50,000,000	200,000,000
	Conduct Advocacy session for leaders, decision makers and partners at all levels to integrate vector control activities on existing platforms	Reports of advocacy meetings conducted available	Personnel, Transport, Venue, Stationery, Refreshment	MOHCDGEC, LGA	0	50,000,000	50,000,000	50,000,000	50,000,000	200,000,000
	Capacitate village/mtaa community leaders on implementation of vector control by laws	Report of community sensitization meetings and by laws developed in place	Personnel, Transport, Venue, Stationery, Refreshment	MOHCDGEC, LGA, RHMT, CHMT, WDCs, Religious leaders, Community leaders	0	50,000,000	50,000,000	50,000,000	50,000,000	200,000,000
	Sub Total				105,000,000	345,000,000	345,000,000	345,000,000	345,000,000	1,485,000,000
Strategic Objectives 3: Enhance mobilization of resources for control of vector to reduce transmission of mosquito borne and other vector borne diseases.										
1	Sustain predictable financial resources	Establish a Vector Control Unit code and budget at National and Sub-national levels	Vector Control Unit and budget at National and Sub-national level in place	Personnel, Transport, Venue, Stationery, Refreshment	MOHCDGEC	0	0	0	0	0
	Integrate the existing specific Program's budgets into Vector Control Unit budget	Report and MOU	personnel	MOHCDGEC, LGA, RHMT, CHMT, Religious leaders, Community leaders	0	0	0	0	0	0
	Establish mechanisms of soliciting resources through grant application	Presence of mechanisms of soliciting resources through grant application.	Human resources	MOHCDGEC, LGA, RHMT, CHMT	0	0	0	0	0	0
2	Sharing of expertise and resources	Establish mechanism for sharing of expertise and resources among collaborating vector control actors	Human resources	MOHCDGEC	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	100,000,000
	Sub Total				20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	100,000,000
Strategic objective 4: Strengthen capacity in controlling vectors and vector borne diseases control demands and challenges										

1	Enhance demand driven capacity building and rational use of available resources	Assess the current baseline of public and private training and capacity building for mosquitoes and mosquito and other vector-borne diseases control professionals.	Presence of baseline report on public and private training and research institutions involved in capacity building for mosquitoes and other vector-borne diseases control professionals.	Funds/Time/people	MoHCDGEC/institutions/Coste ch/PORALG	80,000,000	0	0	0	0	80,000,000	80,000,000	
		Map out research/training infrastructures and facilities across public and private institutions which could be used for training and research on vector and vector-borne diseases.	Presence of mapping report on research/training infrastructures and facilities across public and private institutions which could be used for training and research on vector and vector-borne diseases.	Funds/Time/people	MoHCDGEC/institutions/Coste ch/PORALG	30,000,000	30,000,000	30,000,000	30,000,000	30,000,000	150,000,000		
		Conduct regular needs assessment in the country to identify training priorities on vector and vector-borne disease control.	Number of assessments done	Funds/Time/people	MoHCDGEC/institutions/Coste ch/PORALG	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	50,000,000		
		Advocate public and private training/research institutions to develop short and/or full time programmes for training low-cadre vector-borne disease control professionals.	Number of short and full time training programmes established	Funds/Time/people	MoHCDGEC/institutions/Coste ch/PORALG	10,000,000	10,000,000	10,000,000	10,000,000	10,000,000	50,000,000		
		Recruit and/or strengthen government institutions aimed at training low-cadre vector and vector-borne diseases control professionals.	Presence of government institutions revised and strengthened	Funds/Time/people	MoHCDGEC/institutions/Coste ch/PORALG	15,000,000	15,000,000	15,000,000	15,000,000	15,000,000	75,000,000		
		Advocate public and private training/research institutions to conduct tailor-made courses for Community Health Workers (CHW) on control of vector and vector-borne diseases.	Number of courses conducted	Funds/Time/people	MoHCDGEC/institutions/Coste ch/PORALG	30,000,000	0	0	0	0	30,000,000		
		Advocate for incentive and recognition of vector-borne disease control professionals at all levels.	Number of professionals recognised/incentivised	Number of professional incentivised	Number of professional incentivised	MoHCDGEC/PORALG	5,000,000	5,000,000	5,000,000	5,000,000	25,000,000		
1		Establish and strengthen partnerships and linkages on capacity building	Prepare a database of all relevant public and private stakeholders beyond training/research institutions at all levels.	Presence of database of stakeholders	Funds/Time/people	MoHCDGEC/institutions/Coste ch/PORALG	7,500,000	7,500,000	7,500,000	7,500,000	7,500,000	37,500,000	
			Establish mechanisms for supporting internship of trainees in public/private operational entities at all levels.	Number of interns supported	Time/people	MoHCDGEC/institutions/Coste ch/PORALG	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	100,000,000	

Sub Total		130,000,000	205,000,000	45,000,000	65,000,000	55,000,000	500,000,000
Strategic Objectives 7: Strengthen the existing national insecticide resistance surveillance on mosquito vectors and other vector borne diseases.							
Monitoring, detection and surveillance of insecticide resistance in vector control activities across all implementation levels	Carry out inventory of stakeholders (national programs, research institutions, universities etc) conducting insecticide resistance surveillance on disease vectors	Presence of stakeholders (national programs, research institutions, universities etc) conducting insecticide resistance surveillance	Human, funds, time and equipments	MOHCDGEC,	10,000,000	0	10,000,000
	Review existing data from stakeholders on insecticide resistance.	Report of the review of existing data from stakeholders on insecticide resistance	Human, funds and equipments	MOHCDGEC /Research and training institutions, TPRI,	10,000,000	10,000,000	50,000,000
	Support surveillance of insecticide resistance in vector control interventions.	Presence of surveillance report of insecticide resistance in vector control interventions	Human, finance	MOHCDGEC	20,000,000	20,000,000	100,000,000
	Develop guideline on judicious use of insecticides/ bioinsecticides in vector control programs based on the most current data	Presence of guidance on use of insecticides/ bioinsecticides in vector control programs based on the most current data	Human, finance	MOHCDGEC, TPRI	50,000,000	0	50,000,000
Establish and operationalize a joint committee of experts to provide technical support in the analysis of resistance status and formulation of mitigation policies	Identify and nominate experts to be included in the joint committee of experts for analysis and interpretation of vector resistance status	Presence of experts included in the joint committee of experts for analysis and interpretation of vector resistance status	Human, finance	MOHCDGEC	0	0	0
	Support periodic joint committee meetings	Reports of joint committee meetings supported	Human, finance	MOHCDGEC	30,000,000	30,000,000	150,000,000
Sub Total					120,000,000	60,000,000	360,000,000
Strategic objective 8: Strengthen systems for Monitoring and Evaluation for effective Implementation of the strategy							

