

**NATIONAL MALARIA CONTROL
PROGRAMME OF SRI LANKA**

**STRATEGIC PLAN FOR PHASED
ELIMINATION OF MALARIA**

2008 –2012

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Executive Summary

The Malaria Control Programme has achieved significant successes during the recent past. During the year 2007, the lowest number of malaria positive patients was reported after the success of the eradication campaign recorded in 1963. The number of reported malaria positive patients has continued decline since 2003. The decline in morbidity has been also accompanied by zero mortality reported from the disease over the last three years, excluding one malaria death in 2007. The unstable nature of disease seen in the country has resulted in the country experiencing many devastating epidemics from ancient times. However, the reduction in malaria reported from the country during the recent past has not been due to a sudden unstable decrease in malaria but due to a gradual reduction in both morbidity and mortality reported over several years.

In view of the positive achievements of the programme, it is felt that the programme should prepare a strategic plan for the period 2008 – 2012, which would facilitate the launching of a pre-elimination phase malaria control programme in the country resulting in the elimination of *P. falciparum* malaria from the entire country excluding the conflict affected districts, and the elimination of *P. vivax* malaria from nearly 75% of the land area of the non-conflict affected districts. Therefore, by the end of the five year period *P. vivax* malaria would be limited to 25% of the land area in non-conflict affected districts and both types of malaria would be seen in the conflict affected districts (see Annexure for districts). The success of such a pre-elimination phase programme in the country would eventually result in preparing the ground work necessary to launch a malaria elimination programme in the country after 2012.

The Strategic Plan will include the following key components;

- Introduction
- The Ministry of Healthcare & Nutrition
- Vision of the programme
- Mission of the programme
- Strategies
- Objectives
- Activities
- Plan of action & estimated budget
- Organizational structure

Introduction

Sri Lanka is an island nation in the Indian Ocean, having a land area of approximately 65,940 square kilometers, and a population of approximately 21 million (Dept. of Census & Statistics, 2007), located close to the southern end of Indian peninsula. It has a central mountainous zone surrounded by a plain, and experiences a mean temperature of 26°C –28°C in the low country, and from 14°C - 24°C in the central hill country. For purposes of administration the country is divided into 9 provinces, 25 districts and 321 Divisional Secretary areas. The smallest health administrative unit constitutes a Divisional Secretary Area. For healthcare administrative purposes a Divisional Secretary Area is known as a health area and a Medical Officer of Health is in charge of preventive healthcare in such an area.

Approximately 23% of the country's population inhabits urban areas. The country has a high population density of 298 persons per km². Life expectancy is around 75 years and the literacy rate is 96.9% of the population. Sri Lanka had an economic growth rate of 3.9% per year during the period 1981 – 1991 and a significantly higher growth rate of approximately 7 – 8% is currently experienced.

Distribution of malaria in the country

Malaria risk areas in the country are mainly located in the dry zone. The conflict that has affected civilian life in the country during the past two and a half decades has contributed to the conflict affected areas of the Northern and Eastern provinces and the bordering districts of the North Central and Uva provinces being the most malarious districts in the recent past. During the past couple of years, the most number of malaria cases have been reported from the districts of Trincomalee, Vavuniya, Anuradhapura & Trincomalee. The most affected groups of people among the populations of these districts are security forces personnel serving in the districts, construction workers working in rehabilitation projects, internally displaced people and agricultural workers. A potential for possible outbreaks still exist among persons engaged in “slash & burn” type cultivations, illegal gemming in dry zone areas and among people inhabiting conflict-affected areas in the Northern Province.

Recent data has also shown the possibility of outbreaks occurring amongst construction workers engaged in the rehabilitation of areas recently liberated in the Eastern province and engaged in tsunami reconstruction work. In addition the labour force engaged in the implementation of various development projects in the dry zone of the country could also be at

increased risk. This is especially so amongst construction workers engaged in the improvement of infrastructure facilities such as roads, houses etc.

Ministry of Healthcare & Nutrition

Vision

A healthier nation that contributes to its economic, social, mental and spiritual development.

Mission

To contribute to social and economic development of Sri Lanka by achieving the highest attainable health status through promotive, preventive, curative and rehabilitative services of high quality made available and accessible to people of Sri Lanka.

Objectives

1. To empower community for maintaining & promoting their health.
2. To improve comprehensive health services delivery & health actions
3. To strengthen stewardship & management functions
4. To improve the management of human resources for health
5. To improve health finance, mobilization, allocation and utilization

Healthcare provision is by both the public sector and private sector, nearly 60% of the population being provided for by the public sector. In the public sector the Department of Healthcare Services, represented by both the central and provincial healthcare services are responsible for the provision of the entire range of preventive, curative and rehabilitative healthcare services. Over 90% of indoor treatments according to some estimates are provided by the public sector.

The private sector is mainly responsible for the provision of curative services, and has until recently been largely concentrated in urban and suburban areas. In addition to western medicine, Ayurvedic, Unani, Siddha and Homeopathy systems of medicine are widely practiced on the island.

The broad aim of health policy of Sri Lanka is to *increase life expectancy and improve quality of life*, by control of preventable disease and by health promotion activities. Thus in the health system of Sri Lanka priority has been always given to the control and treatment of malaria. The Sri Lankan government has continued to provide food stuffs, medicines and other essentials to the population of the conflict affected areas. The country boasts of a

unique healthcare and education system where all healthcare and education including higher education is free of charge. This has resulted in some of the country's health & education indices being among the best among developing nations.

History and profile of the Anti Malaria Campaign of Sri Lanka.

The rulers of the country recognized the need for effective malaria control on the island even prior to independence. Organized malaria control activities commenced in 1911 when the first Anti Malaria Campaign was set up in Kurunegala. Subsequently, several more units of the Anti Malaria Campaign were established in other highly malarious parts of the country. A major achievement was the dramatic reduction of the countrywide malaria incidence after the introduction of house spraying with DDT (dichloro diphenyl trichloroethane) in 1946. In the year 1958, the Government launched the malaria eradication programme, which was also in keeping with the WHO recommendations at that time.

Remarkable gains were achieved during the “Attack Phase” of the eradication programme, a near eradication status being reached in 1963 (only 17 cases detected). However, during the subsequent “Consolidation Phase” a major setback was experienced which culminated in a massive malaria epidemic during the years 1967 – 1969. Several factors were thought to be contributory towards the failure. Persistence of several undetected foci of malaria transmission, extensive intra-country population movements particularly related to gem mining, and complacency on the part of many malaria control personnel rank high among these. It has also been reported that adequate financial support was not forthcoming from the authorities at the time when the incidence was extremely low, though concentrated control efforts had to be maintained by the Campaign. Undoubtedly, this factor too would have contributed towards the resurgence. It took a long time for the malaria incidence to be again reduced to a reasonably low level. Subsequently, the programme was reoriented to a control programme, but until recently included many elements of the eradication programme. During the past decade or more, the programme has been functioning as a control programme geared at achieving set objectives. Operationally, the Anti Malaria Campaign had a centralized structure till 1989 and functioned as a vertically run programme, However, in 1989 the programme was transformed into a decentralized campaign which is implemented by 9 provincial programmes under the guidance of Central Anti Malaria Campaign Directorate. The Campaign Directorate is under the purview of the Line Ministry whereas the Provincial Programmes are run by the Provincial Health Authorities.

During the long history of malaria in Sri Lanka several major epidemics were experienced. The most devastating of these was the epidemic during 1934 – 1935 during which the districts in the wet zone and the intermediate zone suffered resulting in nearly 1.5

million patients and 80,000 deaths. In the last two decades major epidemics were encountered during the years 1987 and 1990/92. Major determinants of malaria epidemics in Sri Lanka have been the monsoon rains especially the North East monsoon and also unusually dry weather leading to pool formation in rivers and streams.

The conflict situation that has continued in the Northern and Eastern provinces during the last two and a half decades, and is presently limited to certain areas of the Northern Province has resulted in an important change in the epidemiological pattern of malaria in Sri Lanka. These districts previously had a very low incidence of malaria and showed a sharp rise in incidence reaching a climax during the late nineties. In fact as much as two-thirds of the total malaria cases detected in the country continue to be reported from these Northern and Eastern districts and their neighboring districts.

Several technical and operational issues have contributed to delaying effective malaria control in the island over the years. Some of these issues which have been overcome today are the prolongation of the effective lifespan of insecticides used for malaria vector control through the use of a resistance management strategy, the limitation of the spread of chloroquine-resistant *P. falciparum* malaria in the country and preventing the introduction of multi-drug resistant falciparum malaria into the country. Among operational issues of concern to the programme at present are the sustaining of political commitment for malaria control at national, provincial and district levels, maintaining adequate cadres in essential sectors to implement an effective nation wide malaria control programme, rehabilitation of primary care institutions in conflict affected areas of the Northern province, ensuring adequate infrastructure and logistical facilities for the implementation of an effective malaria elimination programme and effective reorientation of the programme from a successful control programme to a pre-elimination phase programme. Other problems facing the programme are

1. Operational problems of the Indoor Residual Spraying Programme and Insecticide Treated Mosquito Nets Programme
 - a. Poor quality of spraying due to inadequate supervision, inadequacy of spraying equipments and spare parts and the need for motivation of spray teams
 - b. Inadequate vector surveillance due to shortage of skilled personnel, entomological supplies and inadequate number of field work days carried out.
2. Problems related to reducing man vector contact through the use of mosquito nets due to poor motivation and inadequate awareness of communities, inadequacy of

resources for provision of nets to at risk populations and poor monitoring and evaluation of use of mosquito nets.

3. Problems related to elimination of the parasite reservoir due to inadequate surveillance of clinical malaria especially from the private healthcare sector, need for continued surveillance of risk populations in a low transmission situation and motivation of Microscopists, need to strengthen existing surveillance systems

Special projects to strengthen malaria control

The National Malaria Control Programme has been funded over the years by the USAID, IDA/ World Bank and the Roll Back Malaria Initiative at various times during the past two and a half decades. Presently the programme is funded by the WHO and the GFATM.

WHO

WHO assists the malaria control programme through the provision of technical assistance for capacity building, strengthening of the surveillance system and the provision of critical entomological supplies through the Country Budget. Annual funding to the programme amounts to approximately US \$ 25000.

Global Fund to fight AIDS, Tuberculosis and Malaria (GFATM)

The National Malaria Control Programme is presently supported by two GFATM Malaria Control Project Grants under the Round 1 & Round 4. The GFATM is committed to provide up to a maximum of US \$ 10.9 Million for the period 2003 to 2012. The Projects are jointly implemented through a partnership between the Ministry of Healthcare & Nutrition and Sarvodaya Shramadana Sangamaya, an established non-governmental organization in Sri Lanka with the participation of the Lions Clubs International and the Independent Medical Practitioners Association of Sri Lanka. The GFATM Round 1 Malaria Control Project was started in year 2003 & the Round 4 project was started in 2005.

The Round 1 grant provides assistance for malaria control in twelve districts of the Northern & Eastern Provinces of the country and three neighboring districts from the North Central & Uva Provinces. Grant funds are utilized to strengthen active case surveillance through the conducting of mobile clinics in remote localities, to strengthen entomological surveillance in the districts, to provide training to cadres engaged in malaria control activities and medical practitioners on management of malaria patients, to purchase essential equipment and supplies necessary for effective malaria control including vehicles, to

strengthen monitoring and evaluation of the programme and to conduct community awareness programmes.

The Round 4 grant focuses on six districts whose mainly agricultural populations are at risk of epidemics. Grant funds are utilized to strengthen active case surveillance through the conducting of mobile clinics among vulnerable population groups, to strengthen entomological surveillance in the districts, to provide training to cadres engaged in malaria control activities and medical practitioners on management of malaria patients, to purchase essential equipment and supplies necessary for effective malaria control including vehicles, to strengthen monitoring and evaluation of the programme and to conduct community awareness programmes.

Malaria Control in Sri Lanka 2008 - 2012

Understanding the adverse impact malaria could have on the population of the country, both from a health point of view and a socio-economic point of view, an organized campaign for the control of malaria was inaugurated as early as year 1911 in the island. Since then the Campaign has been responsible for control of the disease on the island.

Presently the Anti Malaria Campaign, the equivalent of the National Malaria Programme is a specialized Campaign of the Ministry of Healthcare & Nutrition and comprises the Directorate and twenty district-level Regional Offices. It functions as a decentralized campaign, the Directorate belonging to the Line Ministry (Central Ministry) and the Regional Offices belonging to the 9 Provincial Health Administrations.

The Directorate of the Anti Malaria Campaign of the Ministry of Healthcare & Nutrition is responsible for prevention and control of malaria in Sri Lanka. Strategic planning for the National Programme is a function of the Campaign while the twenty two decentralized regional programs are expected to prepare plans of action based on the national Strategic Plan, for the respective districts. Since malaria transmission intensity and malariogenicity show variations within the country and even within the districts, preparation of annual action plans is a local responsibility.

The objectives of the previous Strategic Plan for the period 2005-2009 have been already achieved before the completion of the said period. In many of the 25 districts of the country malaria transmission rates are lower than those stipulated by the WHO as necessary for the launching of an elimination programme. In addition ad hoc surveys carried out by the programme have shown that private pharmacies in the country no longer stock anti malarial treatments as these treatments cannot be sold due to there being no demand for such medicines. A similar picture is reported by private practitioners working in many parts of the country. Hence, the present revised Strategic Plan is for the period of 2008-2012 and is a plan designed to restructure the National Malaria Programme from a successful control programme to a pre-elimination phase programme which will prepare the country for the launching of an elimination programme.

The malaria disease burden has come down significantly during the last few years and the country experiences mainly sporadic cases reported from many parts of the country and occasional outbreaks. The most difficult task faced by the programme is the early containment of these focal outbreaks through strengthened surveillance and implementation of a rapid response capacity. Presently outbreaks are recognized some time after their occurrence and in many instances too late for early remedial action. The present Strategic

Plan attempts to address the most important issues, which need to be addressed to convert a successful control programme into a pre-elimination phase programme within the first two years. The successful implementation of this pre-elimination programme, spelt out herein is expected to reorient and reorganize the National Malaria Programme into a programme capable of implementing a successful malaria elimination programme in the country. To achieve this objective the country will be divided into three zones (see figure 1) on district lines as follows;

a. Stable (Non-conflict) districts

This area will include the districts of Puttalam, Kurunegala, Matale, Anuradhapura, Polonnaruwa, Kandy, Nuwara Eliya, Badulla, Moneragala, Hambanthota, Matara, Galle, Kalutara, Colombo, Gampaha, Ratnapura & Kegalle.

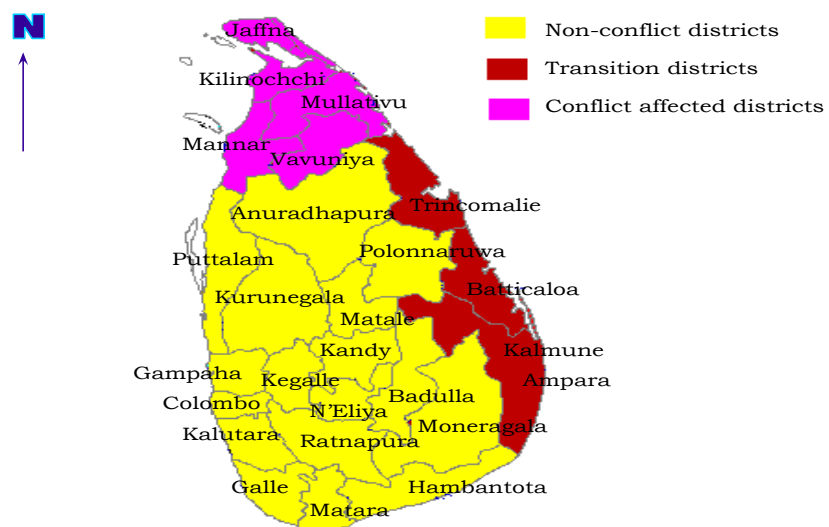
b. Transition districts (recently cleared areas)

This area will include the districts of Trincomalee, Batticaloa, Ampara & Kalmunai

c. Conflict affected districts

This area will include the districts of Jaffna, Mannar, Kilinochchi, Mullaitivu & Vavuniya.

Fig.1 Distribution of malaria districts in three zones



The districts included in the non-conflict zone of the country are areas which are least affected by the ongoing conflict in the Northern part of the country. In all of these districts it

is possible to organize and carry out any activities relating to malaria control. Organized malaria control has been implemented in these districts where many of the malaria indices today are below WHO defined thresholds necessary for the launching of an elimination phase.

The districts included in the transitional zone are those areas which have been affected for a long period by the conflict, but have recently been liberated and civil administration restored. This zone is located mainly to the east of the country and includes the eastern districts of the country. It is believed that these districts will require more strengthening of infrastructure in preparation for the elimination phase. Hence, only a phased elimination of falciparum malaria is targeted during the five year period.

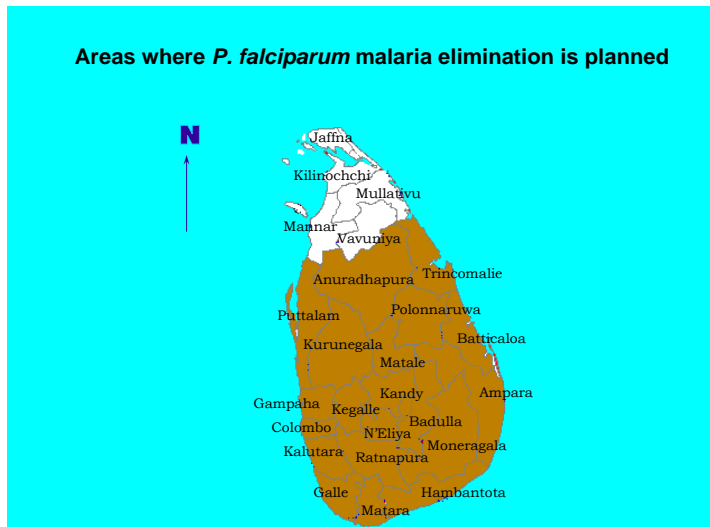
In the districts located in the conflict zone at present also reasonable success in controlling malaria has been achieved through the malaria control programmes launched among civilians, security forces personnel and rebel groups. Although, continuous supply of medicines and logistical requirements necessary for malaria control has not been possible, a relatively regular supply has been maintained. Importantly the field health services have continued to implement a malaria control programme in many parts of the conflict affected districts that has resulted in a decrease of malaria cases even in these districts.

Considering the above it is planned to carry out a phased elimination programme in these three groups of districts with the objective of reaching the following endpoints;

Period (Years)	Activities/Operations (End-points/outcomes)		
	Stable (non conflict) districts	Transitional districts	Conflict districts
Years 1 & 2 (2008 – 2009)	Pre-elimination phase operational in all the districts <i>(Pre-elimination phase completed)</i>	Pre-elimination phase operational in all the districts <i>(Pre-elimination phase completed in all districts).</i>	Intensified Malaria Control operations <i>(Malaria incidence reduced by 75% based on an enhanced reporting system)</i>
Year 3 (2010)	Commencement of Elimination Phase for <i>P.falciparum</i> & <i>P.vivax</i> <i>(Elimination phase operations underway in all stable districts)</i>		
Year 4 & 5 (2011- 2012)	Elimination phase operations for <i>P. falciparum</i> & <i>P .vivax</i> continued	Commencement of Elimination phase for <i>P.falciparum</i>	Pre-elimination phase operations commenced in at least 2 of the 5 districts

	<i>(P.falciparum eliminated in all stable districts; and P.vivax. eliminated in 75% of stable districts#)</i>	<i>(P.falciparum eliminated in all transition districts)</i>	<i>(Pre-elimination phase operations established in at least 2 districts)</i>
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For purposes of this Strategic Plan the three areas will be considered as two large areas i. e. the Non-Conflict Area (includes districts from the non-conflict districts and transition districts) and the Conflict Area (includes the conflict affected districts of the Northern Province).



Sri Lanka with no indigenous malaria

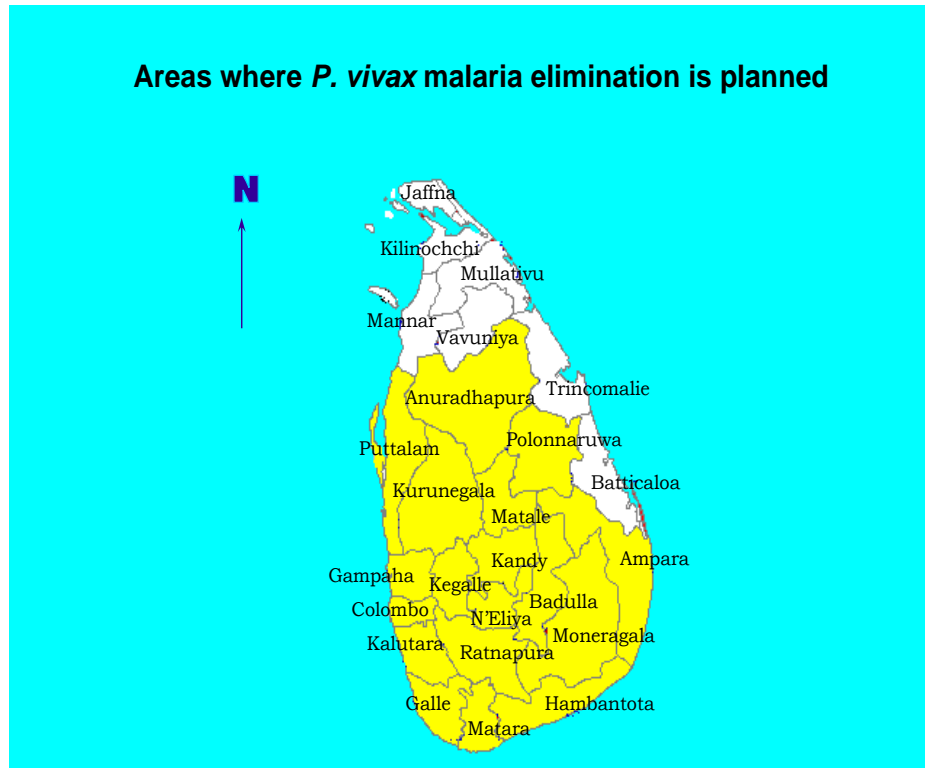
MISSION OF THE PROGRAMME

Plan and implement a comprehensive malaria control programme to prevent the indigenous transmission of malaria in Sri Lanka

Objectives of the Anti Malaria Campaign

1. To eliminate indigenous *P. falciparum* malaria by the year 2012 in non-conflict & transitional areas of the country.
2. To eliminate indigenous *P. vivax* malaria by the year 2012 in 75% of non-conflict & transitional areas of the country

3. To reduce API in conflict affected areas to 75% of the API reported in 2007, by the year 2012.
4. To maintain zero mortality from malaria in Sri Lanka



Strategies for malaria elimination in non-conflict & transitional areas in Sri Lanka

- Ensure 100% case detection and confirmation by microscopy or RDT, notification and radical cure.
- Strengthening malaria surveillance system
- Implement radical treatment policy for all *P. vivax* infections
- Continue ACT & gametocyte treatment policy for *P. falciparum* malaria.
- Implementing a quality control & quality assurance for diagnostic & treatment services including anti malarial drugs.

- Ensure total IRS coverage in foci and the distribution of LLINs/ITNs and other vector control measures as complimentary measures in specific situations
- Implementation of an outbreak preparedness and rapid response strategy for early containment of outbreaks
- Prevention of malaria in travelers
- Re-orienting public & private health sector staff towards the new goals of malaria elimination.
- Advocacy for political commitment, partnerships and enhancing community participation
- Human resource development & capacity building

Strategies for malaria control in conflict affected areas in Sri Lanka

- Strengthening case detection and confirmation by microscopy or RDT, notification and radical cure.
- Strengthening the malaria surveillance system
- Implement radical treatment policy for all *P. vivax* infections
- Continue ACT & gametocyte treatment policy for *P. falciparum* malaria.
- Increase IRS coverage and the distribution of LLINs/ITNs and other vector control measures as complimentary measures in conflict affected areas where feasible
- Advocacy for political commitment, partnerships and enhancing community participation
- Human resource development & capacity building
- Operational research

ACTIVITIES

Since this plan envisages the elimination of *P. falciparum* malaria from the non-conflict affected areas and *P. vivax* malaria from 75% of the non-conflict affected areas by the end of the five year period and thereafter the possible elimination of both types of malaria from the country as a whole two groups of activities will be carried out. In the non-conflict areas and transitional areas where a phased elimination of malaria is planned one set of activities will be implemented. In the conflict affected areas where an elimination programme is not feasible at present an intensified malaria control programme will be implemented. During the first two years under review (2008 – 2009) a pre-elimination phase will be carried out in the non-conflict districts (including the transitional districts) followed by an elimination phase at the end of which falciparum malaria will be eliminated from these districts and vivax malaria will be eliminated from 75% of the areas in these districts.

In the conflict affected districts, an intensified malaria control programme with elements of a pre-elimination phase will be implemented during the five year period.

Activities for malaria elimination in non-conflict & transitional areas in Sri Lanka

Ensure 100% case detection and confirmation by microscopy or RDT, notification and radical cure.

- Strengthening diagnostic facilities to achieve 100% case confirmation by microscopy &/or RDT and ensuring the availability of such facilities.
- Follow up of all malaria positive cases for four weeks to ensure complete clearance of parasitaemia
- Implement radical treatment policy for all *P. vivax* infections
- Continue ACT & gametocyte treatment policy for *P. falciparum* malaria
- The banning of artemisinin mono therapy through appropriate legislative measures
- Strengthening of active case surveillance.
- Conducting ACD in selected localities during transmission season
- Ensure availability of all anti malarial drugs including ACTs.
- Introduction of a DOTS strategy for treatment of all *P.falciparum* infections through hospitalization for a minimum of three days. Introduction of a suitable DOTS strategy for management of *P. vivax* infections.

- Quality control & quality assurance of diagnostic services and anti malarial drugs
- Monitoring anti malarial drug resistance
- Ensuring availability of preventive therapy for people at risk traveling to malarious areas both in and outside the country.
- Elimination of parasite reservoir through active detection and treatment of carriers
- Establishment and maintenance of a Malaria Elimination Database
- Introduction of PCR for screening of Blood Bank samples
- COMBI for improving effective diagnosis, treatment and chemoprophylaxis
- Introduction of blister packaging of anti malarial drugs and treatment cards

Strengthening the malaria surveillance system

- APCD and selective ACD including MBS in transmission season
- Introduction of the internet based data management system and a website
- Enhance case investigation and follow up of malaria positives and clinical cases
- Screening, treatment and follow up of travelers and risk groups at ports of entry
- Enhance case notification in both public and private sectors
- Improve the epidemic forecasting capacity
- Enhance use of selective “indicator localities” for monitoring trends in vector dynamics
- Maintain a database on drug resistance to anti malarial drugs to guide national treatment policy
- Maintain a database on insecticide susceptibility status and insecticide usage for decision making

Implementation of an epidemic preparedness and rapid response strategy

- Introduction of real time monitoring of malaria cases through the strengthening of surveillance systems
- Establishment of a National Level and district level rapid response teams for rapid containment of outbreaks
- Ensure availability of buffer stocks of antimalarials including ACTs and insecticides for IRS
- Establishment and maintenance of a malaria elimination database

Ensure total IRS coverage in foci and the distribution of LLINs/ITNs and other vector control measures as complimentary measures in specific situations

- Total IRS coverage of foci and application of IRS in at-risk situations/localities
- Expanding LLIN coverage and usage to protect risk populations
- Implementation of an IVM strategy where feasible
- COMBI for improving acceptance and usage of mosquito nets and other vector control interventions
- Selective application of eco friendly larval control measures and chemical larvicides
- Promotion of other personal protection methods (housing)
- Monitoring the impact of vector control interventions through entomological surveillance
- Monitoring bio-efficacy of insecticides on malaria vectors and its operational impact
- Monitoring the persistence of insecticides on applied surfaces
- Ensure availability and quality assurances of entomological equipments & supplies, spray equipments including protective gear, insecticides, biocides, LLINs
- Quality control of entomological surveillance and vector control activities
- Use of GIS for monitoring vector densities and implementation of selective vector control
- Ensuring safe storage, transport and handling of insecticides
- Advocacy measures to minimize mosquito-genic potential and human-vector contact in developmental activities
- Appropriate vector control measures in ports of entry to the country

Re-orienting public & private health sector staff towards the new goals of malaria elimination.

- Conducting awareness programmes for both public & private sector health staff on the new goals of malaria elimination
- Introduction of CME packages for health staff on radical treatment of malaria infections

- Introduction of in-service training for laboratory personnel engaged in malaria microscopy

Advocacy for political commitment, partnerships and enhancing community participation

- Establishment and sustaining high level National, Provincial and District working groups for malaria control with clear Plan of Action
- Establishment and strengthening of inter-sectoral partnerships including community based organizations
- Enhance use of target oriented advocacy instruments
- Increasing public awareness of malaria elimination intentions through “Malaria Day”
- Resource mobilization for the implementation of the programme

Human resource development & capacity building

- Ensuring adequate availability of essential cadres both at central level and in the regions
- Development and revision of duty lists for all cadres in keeping with re-orientation of programme objectives
- Provision of adequate job oriented training in keeping with the requirements of the programme, including basic and regular in-service training
- Providing identified cadres with needed foreign experience & training necessary to implement a successful programme
- Development of capacity of cadres to perform their scope of work through the provision of essential infrastructure facilities
- Seek necessary technical assistance
- Reorientation of programme structure, activities and staff according to the objectives and tasks
- Strengthening logistical management through procurements and improved management

Operational research

- Identification of evolving research needs in consultation with the TSG
- Utilization of locally and internationally available expertise to carry out operational research

Activities for intensified malaria control in conflict affected areas in Sri Lanka

Increasing case detection and confirmation by microscopy or RDT, notification and radical cure.

- Strengthening diagnostic facilities to maximize case confirmation by microscopy &/or RDT and ensuring the availability of such facilities.
- Follow up of all malaria positive cases where possible for four weeks to ensure complete clearance of parasitaemia
- Implement radical treatment policy for all *P. vivax* infections
- Continue ACT & gametocyte treatment policy for *P. falciparum* malaria
- The banning of artemisinin mono therapy through appropriate legislative measures
- Strengthening of active case surveillance through mobile malaria clinics.
- Ensure availability of all anti malarial drugs including ACTs.
- Introduction of a DOTS strategy for treatment of all *P.falciparum* infections through hospitalization for a minimum of three days.
- Elimination of parasite reservoir through active detection and treatment of carriers
- COMBI for improving effective diagnosis, treatment and chemoprophylaxis
- Introduction of blister packaging of anti malarial drugs and treatment cards

Strengthening the malaria surveillance system

- Strengthening APCD and mobile malaria clinics in the area
- Enhance case investigation and follow up of malaria positives and clinical cases
- Enhance case notification in both public and private sectors
- Improve the epidemic forecasting capacity
- Enhance use of selective “indicator localities” for monitoring trends in vector dynamics

- Maintain a database on drug resistance to anti malarial drugs to guide national treatment policy
- Maintain a database on insecticide susceptibility status and insecticide usage for decision making

Ensure high IRS coverage in transmission localities and the distribution of LLINs/ITNs and other vector control measures as complimentary measures in specific situations

- High IRS coverage in vulnerable localities and application of IRS in at-risk situations/localities
- Expanding LLIN coverage and usage to protect risk populations
- Implementation of an IVM strategy where feasible
- COMBI for improving acceptance and usage of mosquito nets and other vector control interventions
- Selective application of eco friendly larval control measures and chemical larvicides
- Monitoring the impact of vector control interventions through entomological surveillance where feasible
- Monitoring bio-efficacy of insecticides on malaria vectors and its operational impact where feasible
- Monitoring the persistence of insecticides on applied surfaces where feasible
- Ensure availability and quality assurances of entomological equipments & supplies, spray equipments including protective gear, insecticides, biocides, LLINs where feasible
- Ensuring safe storage, transport and handling of insecticides
- Advocacy measures to minimize human-vector contact

Implementation of an epidemic preparedness and rapid response strategy

- Introduction of monitoring of malaria cases through the strengthening of surveillance systems where feasible
- Establishment of district level rapid response teams to contain outbreaks
- Ensure availability of buffer stocks of antimalarials including ACTs and insecticides for IRS

Training of public & private health sector staff on intensified malaria control.

- Conducting awareness programmes for both public & private sector health staff on intensified malaria control
- Introduction of CME packages for health staff on radical treatment of malaria infections
- Introduction of in-service training for laboratory personnel engaged in malaria microscopy

Advocacy for political commitment, partnerships and enhancing community participation

- Establishment and sustaining Provincial and District working groups for malaria control
- Establishment and strengthening of inter-sectoral partnerships including community based organizations
- Enhance use of target oriented advocacy instruments
- Increasing public awareness of malaria elimination intentions through “Malaria Day”
- Resource mobilization for the implementation of the programme

Human resource development & capacity building

- Ensuring adequate availability of essential cadres in the areas
- Provision of adequate job oriented training in keeping with the requirements of the programme, including basic and regular in-service training
- Providing identified cadres with needed foreign experience & training necessary to implement a successful programme
- Recruitment and training of cadres to fill vacancies in the public sector
- Provision of essential infrastructure facilities
- Strengthening logistical management through procurements and improved management

Operational research

- Project to increase malaria notification by public & private sector medical practitioners and non-governmental organizations carrying out medical clinics in conflict affected areas

- Project to strengthen entomological surveillance through the training and employment of volunteers in conflict affected areas
- Identification of evolving research needs in consultation with the TSG
- Utilization of locally and internationally available expertise to carry out operational research

Plan of Action and Budget

a. Plan of action & budget for malaria elimination in non-conflict and transitional areas in Sri Lanka

No.	ACTIVITY	PERIOD	RESPONSIBLE OFFICER	COST (AND FUNDING SOURCE)
1. Ensure 100% case detection & confirmation by microscopy or RDT, notification and radical cure				
1.1	Strengthening diagnostic facilities to achieve 100% case confirmation	2008 - 2012	D/AMC	600,000
1.2	Follow up of all malaria positive cases to ensure complete clearance of parasitaemia	2008 - 2012	Regional Officers	150,000
1.3.1	Continuation of the implemented treatment policy change for uncomplicated <i>P. falciparum</i> malaria with ACT (artemisinin based combination therapy) & Primaquine	2008 - 2012	D/AMC	150,000
1.3.2	The banning of artemisinin mono therapy through appropriate legislative measures	2008 - 2012		
1.4.1	Strengthening active case surveillance	2008 - 2012	D/AMC	225,000
1.4.2	Conducting ACD in selected localities during transmission season	2008 - 2012		
1.5.1	Ensure availability of diagnostic facilities	2008 - 2012	D/AMC	1.1 above
1.5.2	Ensure availability of anti malarial drugs	2008 - 2012	D/AMC	250,000
1.6.1	Quality control & quality assurance of diagnostic services	2008 - 2012	Parasitologist	15,000
1.6.2	Quality control & quality assurance of anti malarial drugs	2008 - 2012	CCP	22,500
1.7	Monitoring anti malarial drug resistance	2008 - 2012		
1.8	Ensuring availability of preventive therapy for people at risk traveling to malarious areas both in and outside the country.	2008 - 2012	D/AMC	22,500
1.9	Elimination of parasite reservoir through active detection and treatment of carriers	2008 - 2012	Regional Officers	175,000
1.10	COMBI for improving effective diagnosis, treatment and chemoprophylaxis	2008 - 2012	D/AMC	600,000
1.10.1	Introduction of blister packaging of anti malarial drugs	2008 - 2009	D/AMC	25,000
1.10.2	Introduction of treatment cards	2008	Regional Officers	7,500

2. Total IRS coverage in foci and the distribution of LLIN/ITNs and other vector control measures				
2.1	Total IRS coverage in at-risk situations/localities	2008 - 2012	D/AMC & Regional Officers	9,500,000
2.2	Adherence to National Insecticide Policy for Public Health aimed at vector resistance management	2008 - 2012		
2.3	Expanding LLIN coverage and usage to protect risk populations	2008 - 2012	D/AMC	4,500,000
2.4	Implementation of an IVM strategy	2008 - 2012	D/AMC & Regional Officers	500,000
2.5	COMBI for improving acceptance and usage of mosquito nets and other vector control interventions	2008 - 2012	D/AMC & Regional Officers	700,000
2.6	Selective application of eco friendly larval control measures and chemical larvicides	2008 - 2012	D/AMC & Regional Officers	750,000
2.7	Promotion of other personal protection methods (housing)	2008 - 2012	Regional Officers	100,000
2.8	Monitoring the impact of vector control interventions through entomological surveillance	2008 - 2012	Entomologists & Regional Officers	450,000
2.9	Monitoring bio-efficacy of insecticides on malaria vectors and its operational impact	2008 - 2012		
2.10	Monitoring the persistence of insecticides on applied surfaces	2008 - 2012	Entomologists	225,000
2.11.1	Ensure availability and quality assurances of entomological equipments & supplies	2008 - 2012		
2.11.2	Ensure availability and quality assurances of spray equipments including protective gear, insecticides & biocides	2008 - 2012		
2.11.3	Ensure availability and quality assurances of LLINs	2008 - 2012	D/AMC	See 2.3 above
2.12.1	Quality control of entomological surveillance	2008 - 2012	Entomologists	50,000
2.12.2	Quality control of vector control activities	2008 - 2012	D/AMC & Regional Officers	50,000
2.13	Use of GIS for monitoring vector densities and implementation of selective vector control	2008 - 2012	D/AMC	225,000
2.14	Ensuring safe storage, transport and handling of insecticides	2008 - 2012	D/AMC	100,000
2.15	Advocacy measures to minimize mosquito-genic potential and human-vector contact in developmental activities	2008 - 2012	D/AMC	30,000
2.16	Appropriate vector control measures in ports of entry to the country	2008 - 2012	D/AMC	60,000
3. Implementation of an epidemic preparedness and rapid response strategy				
3.1	Real time monitoring of cases through the implementation of a strengthened surveillance system	2008 - 2012	D/AMC	400,000
3.2	Establishment of a National Level & district level rapid response teams	2008 - 2012	D/AMC	700,000
3.3	Ensuring availability of buffer stocks of insecticide and anti malaria	2008 - 2012	D/AMC	See 1.5.2 and 2.1 above
3.4	Establishment & maintenance of a malaria elimination database	2008 - 2012	D/AMC	125,000
4. Strengthening the malaria surveillance system				
4.1	Development and maintenance of databases including GIS of malaria	2008 - 2012	D/AMC	See 3.4 above

	cases, entomological surveillance data and vector control			
4.2	APCD and selective ACD including MBS where appropriate	2008 - 2012	D/AMC	See 1.4.1 & 1.4.2 above
4.3	Introduction of the internet based data management system and a website	2009	D/AMC	See 3.4 above
4.4	Enhance case investigation and follow up of malaria positives and clinical cases	2008 - 2012	D/AMC	175,000
4.5	Screening, treatment and follow up of travelers and risk groups at ports of entry	2008 - 2012	D/AMC	150,000
4.6	Enhance case notification in both public and private sectors	2008 - 2012	D/AMC	75,000
4.7	Improve the epidemic forecasting capacity	2008 - 2012	D/AMC	150,000
4.8	Enhance use of selective "indicator localities" for monitoring trends in vector dynamics	2008 - 2012	Entomologists	18,000
4.9	Maintain a database on drug resistance to anti malarial drugs to guide national treatment policy	2008 - 2012	CCP	See 3.4 above
4.10.1	Maintain a database on insecticide susceptibility status	2008 - 2012	Entomologists	See 3.4 above
4.10.2	Maintain a database on and insecticide usage for decision making	2008 - 2012	D/AMC	See 3.4 above
5. Re-orienting of public & private health sector staff towards the new goals of malaria elimination				
5.1	Conducting awareness programmes for public & private sector staff	2008 - 2012	D/AMC	175,000
5.2	Development of CME packages on radical treatment of malaria	2008 - 2012		
5.3	In-service training of laboratory staff	2008 - 2012		
6. Advocacy for political commitment, partnerships and enhancing community participation				
6.1	Establishment and sustaining high level National, Provincial and District working groups for malaria control with clear Plan of Action	2009 - 2010	D/AMC	150,000
6.2	Establishment and strengthening of inter-sectoral partnerships including community based organizations	2008 - 2012		
6.3	Enhance use of target oriented advocacy instruments	2008 - 2012		
6.4	Increasing public awareness of malaria elimination intentions through "Malaria Day"	2008 - 2012		
6.5	Resource mobilization for the implementation of the programme	2008 - 2012		
7. Human resource development & capacity building				
7.1	Ensuring adequate availability of essential cadres both at central level and in the regions	2008 - 2012	D/AMC	250,000
7.2	Development and revision of duty lists for all cadres in keeping with re-orientation of programme objectives	2008 - 2009	D/AMC	7,500
7.3	Provision of adequate job oriented training in keeping with the requirements of the programme, including basic and regular in-service training	2008 - 2012	D/AMC	125,000
7.4	Providing identified cadres with	2008 - 2012	D/AMC	250,000

	needed foreign exposure & training necessary to implement a successful elimination programme			
7.5	Development of capacity of cadres to perform their scope of work through the provision of essential infrastructure facilities	2008 - 2012	D/AMC	250,000
7.6	Seek necessary technical assistance	2008 - 2012	D/AMC	200,000
7.7	Reorientation of programme structure, activities and staff according to the objectives and tasks	2008 - 2012	D/AMC	50,000
7.8	Strengthening logistical management through procurements and improved management	2008 - 2012	D/AMC	25,000
8. Operational research				
8.1	Identification of evolving research needs in consultation with the TSG	2008 - 2012	D/AMC	50,000
8.2	Utilization of locally and internationally available expertise to carry out operational research	2008 - 2012	D/AMC	50,000
9. Cross cutting requirements				
9.1	Quality assurance & quality control of interventions & products	2008 - 2012	D/AMC	250,000
9.2	Provision of transport requirements including vehicles & fuel	2008 - 2012	D/AMC	To be estimated
9.3	Provision of salary support to cadres	2008 - 2012	D/AMC	To be estimated
Total				23,508,000

b. Plan of action & budget for intensified malaria control in conflict affected areas of Sri Lanka

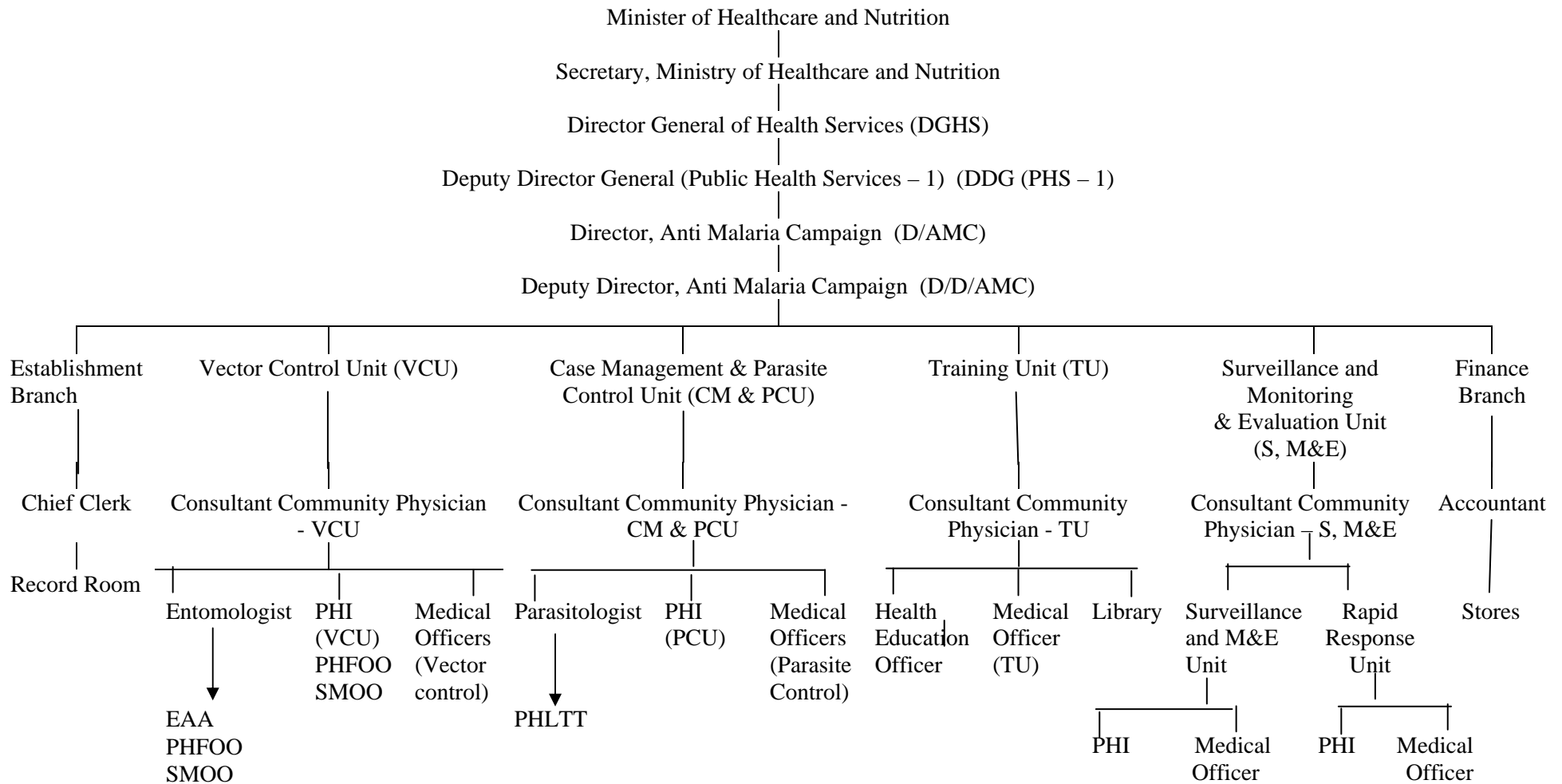
No.	ACTIVITY	PERIOD	RESPONSIBLE OFFICER	COST (AND FUNDING SOURCE)
1. Increasing case detection & confirmation by microscopy or RDT, notification and radical cure				
1.1	Strengthening diagnostic facilities to achieve 100% case confirmation	2008 - 2012	D/AMC	200,000
1.2	Follow up of malaria positive cases to ensure complete clearance of parasitaemia where feasible	2008 - 2012	Regional Officers	25,000
1.3.1	Continuation of the implemented treatment policy change for uncomplicated <i>P. falciparum</i> malaria with ACT (artemisinin based combination therapy) & Primaquine	2008 - 2012	D/AMC	See 1.3.1 in section a above
1.3.2	The banning of artemisinin mono therapy through appropriate legislative measures	2008 - 2012	D/AMC	See 1.3.2 in section a above
1.4	Strengthening active case surveillance	2008 - 2012	D/AMC	250,000
1.5.1	Ensure availability of diagnostic facilities	2008 - 2012		
1.5.2	Ensure availability of anti malarial drugs	2008 - 2012		
1.6	Quality control & quality assurance of anti malarial drugs	2008 - 2012	CCP	See 1.6.2 in section a above
1.7	Elimination of parasite reservoir through active detection and treatment of carriers	2008 - 2012	Regional Officers	65,000
1.8	COMBI for improving effective	2008 - 2012	D/AMC	See 1.10 in section a

	diagnosis, treatment and chemoprophylaxis			above
1.9	Introduction of blister packaging of anti malarial drugs	2008 - 2009	D/AMC	See 1.10.1 in section a above
1.10	Introduction of treatment cards	2008	D/AMC	See 1.10.2 in section a above
2. Ensuring high IRS coverage in transmission localities and the distribution of LLIN/ITNs and other vector control measures				
2.1	High IRS coverage in at-risk situations/localities	2008 - 2012	D/AMC	8,000,000
2.2	Adherence to National Insecticide Policy for Public Health aimed at vector resistance management	2008 - 2012	D/AMC	2.1 above
2.3	Expanding LLIN coverage and usage to protect risk populations	2008 - 2012	D/AMC & Regional Officers	9,000,000
2.4	Implementation of an IVM strategy	2008 - 2012	D/AMC & Regional Officers	75,000
2.5	COMBI for improving acceptance and usage of mosquito nets and other vector control interventions	2008 - 2012	D/AMC & Regional Officers	See section a 2.5 above
2.6	Selective application of eco friendly larval control measures and chemical larvicides	2008 - 2012	D/AMC & Regional Officers	50,000
2.7	Promotion of other personal protection methods (housing)	2008 - 2012	Regional Officers	40,000
2.8	Monitoring the impact of vector control interventions through entomological surveillance	2008 - 2012	Entomologists & Regional Officers	50,000
2.9	Monitoring bio-efficacy of insecticides on malaria vectors and its operational impact	2008 - 2012		
2.10	Monitoring the persistence of insecticides on applied surfaces	2008 - 2012	Entomologists	25,000
2.11.1	Ensure availability and quality assurances of entomological equipments & supplies	2008 - 2012		
2.11.2	Ensure availability and quality assurances of spray equipments including protective gear, insecticides & biocides	2008 – 2012	D/AMC	See section a 2.11.2 above
2.11.3	Ensure availability and quality assurances of LLINs	2008 – 2012	D/AMC	See 2.3 above
2.12	Ensuring safe storage, transport and handling of insecticides	2008 - 2012	D/AMC	See section a 2.14 above
2.13	Advocacy measures to minimize human-vector contact	2008 - 2012	D/AMC	25,000
3. Implementation of an epidemic preparedness and rapid response strategy				
3.1	Establishment of district level rapid response teams	2008 - 2012	D/AMC	150,000
3.2	Ensuring availability of buffer stocks of insecticide and anti malarials	2008 - 2012		
4. Strengthening the malaria surveillance system				
4.1	APCD and mobile malaria clinics	2008 - 2012	D/AMC	250,000
4.2	Enhance case investigation and follow up of malaria positives and clinical cases	2008 - 2012		
4.3	Enhance case notification in both public and private sectors	2008 - 2012		
4.4	Improve the epidemic forecasting capacity	2008 - 2012		
4.5	Enhance use of selective “indicator localities” for monitoring trends in vector dynamics	2008 - 2012	Entomologists	10,000

4.6	Maintain a database on drug resistance to anti malarial drugs to guide national treatment policy	2008 - 2012	CCP	Where feasible
4.7	Maintain a database on insecticide susceptibility status	2008 - 2012	Entomologists	Where feasible
4.8	Maintain a database on and insecticide usage for decision making	2008 - 2012	D/AMC	Where feasible
5. Re-orienting of public & private health sector staff towards the new goals of malaria elimination				
5.1	Conducting awareness programmes for public & private sector staff	2008 - 2012	D/AMC	75,000
5.2	Development of CME packages on radical treatment of malaria	2008 - 2012		
5.3	In-service training of laboratory staff	2008 - 2012		
6. Advocacy for political commitment, partnerships and enhancing community participation				
6.1	Establishment and sustaining high level National, Provincial and District working groups for malaria control with clear Plan of Action	2009 - 2010	D/AMC	As above in section a
6.2	Establishment and strengthening of inter-sectoral partnerships including community based organizations	2008 - 2012		
6.3	Enhance use of target oriented advocacy instruments	2008 - 2012		
6.4	Increasing public awareness of malaria elimination intentions through "Malaria Day"	2008 - 2012		
6.5	Resource mobilization for the implementation of the programme	2008 - 2012		
7. Human resource development & capacity building				
7.1	Ensuring adequate availability of essential cadres both at central level and in the regions	2008 - 2012	D/AMC	200,000
7.2	Development and revision of duty lists for all cadres in keeping with re-orientation of programme objectives	2008 - 2009	D/AMC	As above in section a
7.3	Provision of adequate job oriented training in keeping with the requirements of the programme, including basic and regular in-service training	2008 - 2012		
7.4	Providing identified cadres with needed foreign exposure & training necessary to implement a successful elimination programme	2008 - 2012	D/AMC	25,000
7.5	Development of capacity of cadres to perform their scope of work through the provision of essential infrastructure facilities	2008 - 2012	D/AMC	As above in section a
7.6	Seek necessary technical assistance	2008 - 2012		
7.7	Reorientation of programme structure, activities and staff according to the objectives and tasks	2008 - 2012	D/AMC	75,000
7.8	Strengthening logistical management through procurements and improved management	2008 - 2012		
8. Operational research				
8.1	Project to increase notification of malaria from all sectors	2008 - 2012	D/AMC	250,000

8.2	Project for the training & recruitment of volunteers for entomological surveillance	2008 - 2012		
8.3	Identification of evolving research needs in consultation with the TSG	2008 - 2012		
8.4	Utilization of locally and internationally available expertise to carry out operational research	2008 - 2012		
9. Cross cutting requirements				
9.1	Quality assurance & quality control of interventions & products	2008 - 2012	D/AMC	100,000
9.2	Provision of transport requirements including vehicles & fuel	2008 - 2012	D/AMC	To be estimated
9.3	Provision of salary support to cadres	2008 - 2012	D/AMC	To be estimated
Total				18,940,000

The total estimated budget for the phased elimination of malaria and the strengthening of malaria control in the conflict areas is estimated at US \$ 42,448,000 excluding resources necessary for the payment of salaries and transport costs.



Revised Organization Structure for Anti Malaria Campaign. QA & QC Unit will be cross cutting all units.