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List of Abbreviations

AIDS    Acquired Immune Deficiency Syndrome
ANC    Antenatal Care
CBO    Community Based Organization
CHW    Community Health Worker
DACA    Drug Administration and Control Authority
DHS    Demographic and Health Survey
EIR    Entomological Inoculation Rate
EPI    Expanded Programme on Immunizations
FDRE    Federal Democratic Republic of Ethiopia
GFATM    Global Fund to Fight AIDS, TB and Malaria
IRS    Indoor Residual Spraying
KAP    Knowledge, Attitudes and Practices
IMCI    Integrated Management of Childhood Illness
ITNs    Insecticide Treated Nets
LLINs    Long Lasting Insecticide Treated Nets
MCH    Maternal and Child Health
MCST    Malaria Control Support Team
MDG    Millennium Development Goals
MICS    Multiple Indicators Cluster Survey
MIS    Malaria Indicator Survey
MOH    Ministry of Health
NGO    Non Government Organization
NMCP    National Malaria Control Programme
P.    Plasmodium
PSI    Population Services International
PRS    Poverty Reduction Strategy
RBM    Roll Back Malaria
REAPING    Roll Back Malaria Essential Actions, Products, Investments, Needs and Gaps
RHB    Regional Health Bureau
SC    Steering Committee
SNNPR    Southern Nations, Nationalities and Peoples Region
TB    Tuberculosis
UNICEF    United Nations Children’s Fund
WHO    World Health Organization
WHOPES    World Health Organization Pesticide Evaluation Scheme
Executive Summary

Malaria is one of the leading causes of health and socio-economic problems in Ethiopia. In 2002/2003, the disease has been reported as the first cause of morbidity and mortality accounting for 15.5% outpatient consultations, 20.4% admissions and 27.0% in-patient deaths. Almost 75% of the land is malarious and an estimated 48 million (68%) of the population live in malaria endemic areas. Malaria transmission is seasonal ranging in transmission from about three months to six months and above in a year.

Malaria prevention and control in Ethiopia aims to reduce the overall burden of the disease by 25% by the year 2005 and by 50% by the year 2010. The national effort to prevent and control malaria is guided by a five year strategic plan developed in line with the RBM objectives and the Health Sector Development Program (HSDP) of the country.

The malaria prevention and control strategy in Ethiopia includes early diagnosis and prompt treatment, selective vector control and epidemic prevention and control. The selective vector control strategy relies on the use of different vector control techniques applied in an integrated manner as suited to the local malaria transmission condition. Insecticide Treated Nets (ITNs) as one of the tools for personal protection and prevention of transmission have been shown to contribute to the reduction of malaria morbidity and mortality.

The Abuja declaration on malaria set a target of at least 60% of those at risk, especially pregnant women & children under five, to benefit from the most appropriate combinations of personal and communal protection including ITNs, by 2005. Ethiopia as one of the signatories of the Abuja declaration has been engaged in the implementation of activities to reach the targets set. Although there is a very good experience in malaria vector control through indoor residual spraying, historically the use of ITNs in Ethiopia has been limited (coverage of nets 1.5%, ITNs 0.5%, DHS 2000) coverage in achieving the set target in the specified period and beyond requires an accelerated implementation of the activity.

Towards this end, therefore, the need for a strategic plan has become evident and this document was prepared with the participation of RBM partners in the country. This strategic plan gives guidance on going to scale with ITNs by employing targeted free distribution, subsidized distribution and market operated systems. The Strategic Plan is organized into three main parts.

The first part describes the malaria situation and prevention and control activities including situation analysis of the ITNs distribution and the second part describes details of the National ITN Strategic plan including resource mobilization, distribution, fund management and monitoring and evaluation and the third part outlines the key policies to support on going to scale with ITNs.
1. Introduction

About three-quarters of the total area of Ethiopia is malarious and an estimated 48 million people (FMOH, 2004) (68% of the population) lives in areas at risk of malaria. Generally, areas located at altitude ranges of below 2000m are malarious, however, as a result of ecological and climatic changes, malaria transmission has also been detected at altitudes as high as 2300m.

Annually, up to 6 million clinical cases are reported. However, the estimated number of clinical malaria cases is 8 – 10 million. In 2002/2003, the disease has been reported as the first cause of morbidity and mortality accounting for 15.5% outpatient consultations, 20.4% admissions and 27.0% in-patient deaths. *P. falciparum* and *P. vivax* are the most common parasite species constituting 60% and 40% of malaria infections, respectively. *An. arabiensis* is the main malaria vector and *An. pharoensis, An. funestus* and *An. nili* are also important secondary vectors.

The disease is widespread in the country but with great local variation attributed to variations in climate, topography and settlement patterns. Generally, malaria transmission is relatively intense in the western lowlands and some river basins, where transmission extends for more than six months in a year. However, perennial transmission is not a common phenomenon in these areas. As altitude varies the malaria transmission duration also varies.

The National Malaria Prevention and Control approach in Ethiopia employs four main strategies. These include early diagnosis and prompt treatment, selective vector control including the use of ITNs, malaria epidemics early detection and control and prevention of malaria during pregnancy.

The application of vector control activities largely depends on the malaria transmission epidemiology of the area. Selective vector control methods that include indoor residual spraying of houses (IRS) of selected villages, personal protection measures including ITNs in intense malaria transmission areas, larviciding and environmental management, mainly applied in malarious urban areas, irrigation development areas and in resettlement villages, where mosquito breeding sites are limited in distribution.

Indoor Residual Spraying is generally limited to malaria epidemic prone villages while ITNs are more effective in areas with relatively intense malaria transmission. The use of ITNs in low transmission area is likely to be lower due to the low mosquito biting pressure. Therefore, application of vector control techniques should be very well suited to the local malaria transmission pattern.
2. The National Strategic Plan for Going to Scale with Coverage and Utilization on ITNs

2.1 Situation Analysis

2.1.1 Background

In Ethiopia, traditionally the use of ITNs has been limited and implementation of ITNs for malaria prevention is still at an early stage. ITN use at scale would have a significant impact on malaria transmission. Whilst malaria is a leading cause of morbidity and mortality in Ethiopia, malaria transmission is unstable, reducing immunity in the general population so that malaria affects people across all age groups. However, the low Entomological Inoculation Rate (EIRs) and strongly seasonal transmission render malaria much more sensitive to anti-vector measures such as the use of ITNs than in hyper- and holoendemic situations where large reductions in EIR might have little impact on infection. It is for this reason, therefore, that vector control through the use of indoor insecticide spraying, source reduction and chemical larviciding have been the major components of the malaria prevention strategy in Ethiopia for over four decades. The implementation of an ITN programme in Ethiopia would have a significant impact in reducing malaria risk among the general population residing in high-risk areas. However, due to the limited use, the seasonal pattern of malaria transmission that may lessen use of ITNs in some seasons, a supportive demand creation programme to raise awareness through community oriented health education is required.

Current Status of ITN Distribution and Coverage

In Ethiopia, distribution of ITNs through the health care delivery system was first introduced in returnee and resettlement sites in the Western part of the Tigray Region, in 1997. The programme, supported with assistance from WHO and the Italian Co-operation, distributed ITNs to beneficiaries through a cost recovery scheme where ITNs were sold at a subsidized price of Birr 40 paid in four installments. In 1997-1998, ITNs were also distributed in Oromia, Amhara and SNNPR regional states with the support of WHO and Italian Co-operation. A total of around 45,000 nets were distributed in this early phase. It can be assumed that most of these nets have completed their useful life and no longer form part of the “standing crop” of ITNs in Ethiopia.
Following these small scale ITNs distributions, in 2000-2003 UNICEF donated a total of 1.42 million ITNs. As of January 2004, approximately 950,000 nets have been delivered to the regions and of these, just over 700,000 (75%) are distributed to households, however data on distribution and utilization of ITNs needs to be verified from regions. Significant experience has been gained through this program. Regions faced bureaucratic obstacles in establishing a revolving-fund mechanism but intense lobbying of regional councils and finance bureaus has led to the establishment of financial systems for the revolving fund at all levels in the majority of the regions. ITNs are currently being sold at subsidized prices in all regions in highly endemic malaria areas. The rate at which ITNs are sold, however, has been highly variable, with 95% of nets received having been sold in Tigray and less than 5% in Dire Dawa as of February 2004. The rates in other regions range from around 45% to 85%.

An estimated 220 districts are classified as being malarious with transmission period of six and above months per year and an estimated 33 million or 6.6 million household reside in these districts. A total of 4 million ITNs are required to achieve the Abuja target of 60% ITN coverage among vulnerable groups in target areas.

As a result of concerns about affordability of ITNs in rural communities, in 2004, funds from GFATM will be used to distribute 1.2 million nets free of charge to pregnant women and children. It has been agreed that free/highly subsidized ITNs will be targeted at pregnant women and children under five in prioritized economically and geographically vulnerable malarious areas and during emergency situations. Although private sector retailing of ITNs has been limited to date, there is a potential for urban sales, and PSI has recently launched a social marketing campaign in Southern Region. Although the current level of knowledge concerning ITNs is relatively low, experience has shown that it is relatively easy to create awareness through an effective communication program. In accordance to the Abuja declarations, the country has waived tax on ITNs and further efforts will be done to ensure removal of taxes.

This National Strategic Plan for Scaling-up coverage and use of ITNs in Ethiopia is designed to guide national malaria prevention and control efforts by scaling-up coverage and use of ITNs to achieve coverage of 60% (not only ITNs, includes appropriate combinations of personal and communal protection, including ITNs and IRS) of target districts by the end of the year 2007 through concerted effort aimed at improving access to ITNs through partnership and inter-sectoral collaboration among the community and other stakeholders. The Abuja target of achieving access to 60% of pregnant women and children under five years of age is also expected to be achieved with in this framework.
This ITN Strategic Plan was developed and reviewed jointly by the MOH, WHO and UNICEF and contains the outcomes of a three-day stakeholder meeting (19-21 May 2003) to review the document and reach a consensus.

**Challenges and Constraints**

Although the current level of knowledge concerning ITNs is relatively low, experience has shown that it is relatively easy to create awareness through a demand creation program. However, the low health service coverage and utilization, especially in the vast majority of rural communities, low staffing levels, poor infrastructure and limited demand creation efforts have hampered progress, as well as the high levels of poverty in the communities.

The ability of communities to pay for ITNs is dependent upon the income of the population. A full cost ITN delivered through the commercial sector will be unaffordable to the vast majority of the Ethiopian population at current prices. Unfortunately given that it would cost over USD 33 million to supply at least one ITN per household in targeted populations, it is essential to employ a market segmentation approach targeting the most vulnerable group for free ITNs, whilst subsidizing sales to the general population through market priming and encouraging private sector delivery to those who can afford full cost ITNs.

A major constraint is the capacity of both the public and private sectors to deliver ITNs to remote rural populations. The coverage of the formal health service is about 61% and involvement the private sector in ITNs sales has been very limited in rural areas. The infrastructure, including roads and communications, is also inadequate.

The seasonality of malaria and the absence in some areas of nuisance biting mosquitoes may reduce demand for ITNs and consistent year round use in some areas. However, the high protective effect and the high demand for ITNs observed in some regions shows that there is good potential to promote large scale ITN use in high malaria risk communities.

**Opportunities and Prospects**

The government is highly committed to strengthen malaria prevention and control activities in the country. The continued commitment and interest of the RBM partners, the community and other stakeholders is expected to bring in more resources and concerted efforts for the large scale distribution of ITNs. New partners, including NetMark and PSI have initiated ITN promotion and distribution programs in Ethiopia.

The Ministry of Health of the FDRE submitted a proposal to the Global Fund for AIDS, TB and Malaria (GFATM, round two) for the prevention and control of malaria in Ethiopia through expansion of diagnosis and treatment services, expansion of use of ITNs and malaria epidemics early detection and control. The GFATM has approved a total of US$ 37 million for the first two project
years. A significant portion of this fund will be used for the purchase of 2.4 million ITNs which will be specifically targeted to vulnerable groups, particularly pregnant women and children under five years, in line with this national strategic ITN plan.

An expert in net production conducted an assessment of Ethiopian textile factories, interested companies and the Ministry of Trade and Industry in October-November 2003 and found strong interest in the manufacture of nets among several of them.

2.2 Purpose of the ITNs Strategic Plan

Cognizant of the health and socio-economic problems caused by malaria, the Ministry of Health of the FDRE, in collaboration with key RBM partners, has developed a national strategic plan for the prevention and control of malaria with the aim of reducing the overall burden of malaria by 25% by the end of 2005. This ITN strategic plan focuses on going to scale with ITNs to achieve 60% coverage of households in all highly malaria endemic areas by the end of 2007 primarily targeting the most vulnerable groups, pregnant women and children under five. The main purpose of this strategic plan is to outline the approaches and framework for going to scale with ITNs at Federal, Regional, Zonal and District level in a co-ordinated and standardised manner. The document is developed in line with the RBM objectives and targets and intended to be implemented as part of the HSDP III (2004 – 2007).

The Strategic Plan will serve as a policy framework and guide for use in all ITN-related interventions in Ethiopia for the next five years. Joint reviews will be conducted to track the progress in achieving the objectives on an annual basis.

2.3 Approaches Used to Develop the Strategic Plan

The development of this strategic plan was first initiated by the Federal Ministry Health. Appreciating the need for additional technical and resource support, UNICEF and WHO intensified the effort that led to the development of this strategic plan. In the preparation of this document, Regional Health Bureaus, Malaria Control Support Team (MCST), donors, private sector and civil societies were involved. In addition to the direct participation of different stakeholders, evidences gathered from various surveys and recommendations obtained from national workshops and RBM evaluation mission were also used. The resource documents include:

- Reports from RHBs on ITNs distribution and coverage
- ITNs strategic plans developed by Regional Health Bureaus,
- Consensus and recommendations of the workshop on ITNs use and scale-up in Ethiopia,
• RBM baseline survey findings
• DHS 2000 report
• REAPING mission report.

2.4 Scope

This document as part of the overall malaria control strategic plan includes the vision, mission, mandate, values, situation analysis, goals and strategic objectives of the FMOH in relation to the expansion of coverage and use of the Insecticide Treated Nets in the country. The document also indicates the monitoring and evaluation indicators and specific recommendation on ITNs specifications. Specific activity plans and budgetary issues are not dealt in this document. Such details are expected to be prepared at the regional and district level where the actual implementation of the activity takes place.

2.5 FMOH Vision, mission, mandate & values on the ITNs program

2.5.1 Vision: to roll back malaria to a level where it ceases to be a major public health problem.

2.5.2 Mission Statement

To provide malaria control interventions services to the population at risk with excellence in community based household anti-malaria interventions with special emphasis to ITNs use promotion & expansion thereby decreasing morbidity, disability, mortality, poverty and sustain a cycle of health and wealth.

2.5.3 Mandate

• National Malaria Prevention & Control Policy formulation, implementation and monitoring and evaluation;
• Design and standardize malaria prevention and control strategies;
• Build capacity for malaria prevention and control including capabilities in operational research and training
• Standardizing & regulating quality of anti-malaria intervention services
• Formulate anti-malaria intervention directives and guidelines;

2.6 Goal

The goal of the ITN strategy is to contribute to reduction in morbidity and mortality due to malaria.
2.7 Objectives

a) General Objective

The main objective of the ITN strategy is to increase household coverage and correct utilisation of ITNs by 10% per year in all highly malaria endemic areas to reach a target of 60% by the end of the year 2007, with a special emphasis on pregnant women and children under five.

b) Specific Objectives

• To create awareness and stimulate demand for nets and net treatment to reach at least 60% of the vulnerable population in targeted malarious areas by 2007,

• To ensure that ITNs are available through the private sector at affordable prices in all malarious urban areas by 2007,

• To provide free and sufficiently subsidized ITNs to cover at least 60% of households in targeted areas with two ITNs by 2007,

• To ensure use of ITNs and chemicals for impregnation that satisfy the minimum WHO standards and specification,

• To encourage enterprises for local production of ITNs,

• To create effective partnerships with the public sector, NGOs and private sector.

2.8 Program Implementation Strategies

2.8.1 Target group identification

Target groups are selected based on the epidemiology of malaria transmission in the country, biological and geographical vulnerability. Target groups, in order of priority, include:

• Pregnant women and children under five years living in targeted malarious areas,

• Communities affected by emergencies and newly resettled population in targeted districts,

• Mobile pastoralist communities,

• All others living in targeted malarious areas,

2.8.2 Enabling environment

• Waive/exempt taxes and tariffs on the import and sale of ITNs, raw materials for their manufacture and insecticides for net treatment. Ministry of Health should take the lead by categorizing ITNs and
insecticides for net treatment as essential pharmaceutical products and lobby for tax removal.

- Ensure that all WHOPES-approved insecticides for ITN treatment and WHOPES-approved long-lasting nets (LLINs) are fully registered for use in Ethiopia according to Ethiopian law, to encourage competition and wider use,

- Facilitate the involvement of all relevant stakeholders e.g. NGOs, bilateral organizations and private sector and ensure good co-ordination for ITNs import and distribution.

### 2.8.3 Demand Creation

Demand creation is the responsibility of all partners: public and private sectors, NGOs and communities. Demand creation activities should be directed at the potential consumers most in need of mosquito nets and insecticides, particularly pregnant women and children under five living in malarious areas.

Create awareness of ITNs and their use through effective communication strategies that include the following:

- mass media, including national, local and community radio, newspapers, leaflets, posters and television

- interpersonal communication, social mobilization, participatory communication at community level, focus group discussions, etc

- Faith Based Organizations (FBOs) and other traditional channels of communication, including schools, women’s groups, community gatherings and theatre, etc.

- Commercial advertising and marketing techniques

- All other appropriate media and communication channels

### 2.8.4 Sustainable Supply and Procurement Systems

All nets and insecticides must meet minimum standards, as determined by WHO (see annex A). In addition, all insecticides for net re-treatment must be WHOPES-approved and registered by the relevant Ethiopian authorities. Private sector wholesalers and retailers are will be encouraged to distribute insecticide treated mosquito net or insecticides that meet the WHO minimum standards and are registered in Ethiopia. Nets must be sold either co-bundled with insecticide for re-treatment or alternatively be WHOPES approved LLINs.

Given that ITN programs in many countries have experienced difficulties in obtaining high levels of net re-treatment, LLINs may be the most appropriate for Ethiopia.

In terms of off-shore procurement, arrangements for the procurement and shipping of nets and insecticide for public sector distribution will be made with recognized manufacturers, suppliers and distributors. This can be implemented in consultation between FMOH, RHBs and other partners. The
local manufacture of nets and insecticides is to be encouraged in the long-term, provided that minimum specifications are met.

2.8.5 Distribution mechanisms

2.8.5.1 Public Distribution

Targeted subsidies will be used to make ITNs and insecticides more accessible to consumers, whilst minimizing the negative effects on the development and establishment of a commercial market. As commercial sector involvement increases, subsidy mechanisms in different contexts will be introduced.

The public sector will target ITNs to pregnant women and children under five living in prioritized economically and geographically vulnerable highly malarious areas with poor access to services. Provision of ITNs to pregnant women is advantageous as it reaches two vulnerable groups simultaneously. A net given to a pregnant woman will protect her during pregnancy and will protect her and her infant after birth. Insecticide for re-treatment of nets for beneficiaries in targeted villages will be provided free of charge.

Delivery of ITNs targeted to pregnant women will be through public health facilities and community based distribution (including attendance of ANC clinics, CHWs, enhanced outreach activities, neonatal tetanus and measles immunization campaigns, etc). Re-treatment of nets to the vulnerable groups in targeted areas will be free of charge. The public sector is an effective delivery method, especially for reaching isolated rural populations and other vulnerable groups. The public sector can also utilise other Community Resource Persons, CBOs, NGOs, and faith-based organisations. A capacity building component is required to improve the capacity of health staff at all levels, including community health workers, NGOs, CBOs and civil associations in planning and implementation of the ITN strategy.
2.8.5.2 Distribution through the Private Sector

A well-targeted distribution of free to subsidized ITNs will inevitably include a larger segment of the population for free and subsidized ITNs. The segment of the population that is excluded from subsidies will need to access their ITNs through the commercial sector.

Through the national ITNs partnership, the ITNs situation in the country will be segmented to clearly delineate the population segment that will benefit from each distribution mechanism. The segmentation process is important to assure that the private sector has adequate information about the nature and size of the market to enable them make rational investment decisions.

It is hoped in the course of time, the quantity of ITNs delivered through the private sector will increase to cover most of the population while address only
those population segments which will still qualify under the various targeting criteria.

The Government’s role in private sector distribution will be to create an enabling environment necessary for long term sustenance of the commercial sector in ITNs business.

2.8.5.3 Social Marketing

Social marketing is the process of increasing use of quality health products by low income and vulnerable groups to achieve health impact. Access to products is increased through creative distribution mechanisms including the use of private, public and non-traditional distribution channels according to the context. Products are made affordable through pricing strategies including market segmentation and targeted subsidies. To encourage sustained and appropriate use of products, demand creation activities and research based communication strategies are employed. The social marketing approach can thus achieve high coverage of target groups in a relatively short period of time and serve as a catalyst for private sector ITNs distribution by overcoming the barriers to private sector participation.

2.9 Market priming

Market priming refers to public intervention on the supply side and usually involves the procurement and distribution of ITN goods in order to promote demand and stimulate commercial markets. Market priming aims to stimulate the growth of the unsubsidized commercial market by:

- Demonstrating the commercial viability of trading in ITNs and/or insecticides
- Establishing and strengthening infrastructures and trading networks

Market-priming is most valuable where there is currently no commercial activity, as is the case in most areas in Ethiopia. It should be a temporary, transitional intervention. In the case of ITNs, social marketing can play the joint roles of sustained demand creation, time-limited market priming and stimulation of the private sector ITN market.

2.10 Potential Partners and their Roles

Effective implementation of the proposed strategy will require strong partnership and commitment from all partners to ensure ITNs are available, affordable and demanded at consumer level. For the partnership to be sustained, the roles and responsibilities of each partner must be clearly defined (See Annex B). In addition to the ITN users themselves, other partners with a role to play in implementing ITNs in Ethiopia are:
• Government health services/malaria control programs;
• National level macro-economic policy and decision makers;
• Non government sectors/agencies;
• Academic and research institutes;
• NGOs within (national, district, and community levels) and outside the country;
• Local community groups
• Private/commercial sector
• Social marketing agencies
• Support agencies, both domestic and external and the proposed networking programs

2.11 **ITN Co-ordination Committee**

ITN Committees may be established from village to regional level so as to ensure coordinated, sustainable and equitable net distribution. They will also monitor proper implementation of the programmes. These committees will vary from district to district and thus each district will decide on the committees in accordance to their local situations. They may be formed as part of an existing health or RBM committee. At national level an ITN Steering Committee will be established as a sub-committee of the Malaria Control Support Team (MCST).
2.11.1  Proposed Composition of ITN Steering Committee

Depending on the level, the ITNs committee should have members from the health unit, civil societies, RBM partners, academic & research institutions, and other NGOs. Close collaboration and discussion with manufacturers, retailers and transport companies is also important.

2.11.2  ITN Steering Committee Suggested Terms of Reference

The role of the SC will be to provide overall policy direction and technical support to ITN activities in Ethiopia. The SC functions are described below:

a) To raise donor support for the ITN strategy
b) To co-ordinate, negotiate and communicate the activities of agencies involved in ITN provision in Ethiopia.

c) To keep an updated register of the ITN activities in Ethiopia by district and agency

d) To provide support for and foster the broad public-private partnership of the ITN strategy

e) Co-ordinate overall promotion strategies:
   ♦ Educational messages
   ♦ Media
   ♦ Branding vs generic

f) To co-ordinate on targeting of vulnerable groups

g) To evaluate means of targeting

h) To co-ordinate continued monitoring and evaluation of the policy and the overall impact of the ITN strategy
   ♦ Market analysis
   ♦ Growth (brand vs generic)
   ♦ Urban/rural penetration
   ♦ Demand and supply side
   ♦ Monitor and evaluate tax revisions

i) Post-marketing surveillance of nets and insecticides

j) Provide written reports to concerned bodies

k) Establish baseline demographic data for appropriate targeting.

2.12  Monitoring and Evaluation

The Ministry of Health will co-ordinate the monitoring and evaluation of the National ITN Strategic Plan, making sure that all possible sources of malaria relevant information are being used such as Demographic and Health Surveys, RHB data complied from districts and facilities, Home Based Treatment and IMCI monitoring, data from malaria surveillance activities and other surveys by various partners. Implementation progress will be reviewed on a quarterly basis using the Malaria Control Support Team as the forum. Through this mechanism the sharing of information between partners will be fostered.
2.12.1 *Indicators*

**a) The core indicators used to assess progress towards the achievement of the targets of this strategy are as follows:**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Operational Definition</th>
<th>Verification Tool</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Proportion of children under five appropriately using ITNs</td>
<td>• Proportion of children under 5 years who have slept under an ITN the previous night out of the target population</td>
<td>• National estimate from DHS, MICS, MIS; • Surveys by RHBs &amp; other partners</td>
</tr>
<tr>
<td>2. Proportion of pregnant women appropriately using ITNs</td>
<td>• Proportion of pregnant women who have slept under an ITN the previous night out of the target population</td>
<td>• National estimate from DHS, MICS, MIS; • Surveys by RHBs &amp; other partners</td>
</tr>
<tr>
<td>3. Proportion of households with ITNs</td>
<td>• Proportion of households with one or more ITNs out of the target population (LLN, Treated within the last 6 months),</td>
<td>• National estimate from DHS, MICS, MIS; • Surveys by RHBs &amp; other partners</td>
</tr>
</tbody>
</table>

**b) The following key indicators will be used for the monitoring of the achievement of outputs:**

<table>
<thead>
<tr>
<th>Output</th>
<th>Indicator</th>
<th>Measuring tool and frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Demand created for ITNs and retreatment</td>
<td>• Proportion of population who is aware of insecticide treated nets and their need for retreatment increases to 75%</td>
<td>Annual data from various household surveys. Annual sales reports from partners</td>
</tr>
<tr>
<td>2. Affordable net retreatment is available to rural and urban net owners</td>
<td>• Number of outlets for insecticide for nets disaggregated by distributor and district increases from previous year</td>
<td>Bi-annual reports from partners</td>
</tr>
<tr>
<td>3. The very poor have access to affordable ITNs</td>
<td>• Number of nets distributed to the very poor disaggregated by district</td>
<td>Annual RHB/NGO reports</td>
</tr>
<tr>
<td>4. Pregnant women and under-fives have access to subsidized ITNs</td>
<td>• Number of outlets (ANC and other health facilities) participating in the distribution of targeted subsidies</td>
<td>Bi-annual reports from partners/RHBs</td>
</tr>
<tr>
<td>5. ITNs used for emergency situations</td>
<td>• Number of ITNs distributed to highly vulnerable, displaced and refugee population by district</td>
<td>Annual RHB &amp; NGO reports</td>
</tr>
</tbody>
</table>
2.13 Long-term Strategy

The long-term strategy is to ensure that all people exposed to malaria in Ethiopia should own and use a net that is either pre-treated with a long-lasting insecticide or is regularly re-treated. Those most vulnerable to malaria will not be excluded from owning a net due to cost. Vulnerable groups will be able to obtain nets at little or no cost to them as consumers through public channels (e.g. MCH/ANC clinics, outreach services).

The public sector in Ethiopia is working to its level best to be able to supply ITNs to all who need one; however, there is strong need to encourage distribution of ITNs through the public-private partnership. Ethiopia’s ITN strategy will aim for a future where the nets are accessible as a public health commodity at different levels.

The government’s role is to support the creation of a favourable economic, fiscal and regulatory environment to encourage the expansion of ITN distribution and use. The government, in collaboration with partners including the private sector, will support generic promotion of ITNs. It will also ensure that vulnerable groups in society (pregnant women and children under five) are appropriately targeted.
3 Policies on ITN Use in Ethiopia

To support the rapid scaling up of ITNs coverage and use formulating policies that create favorable ground is an essential component for the overall success of the program. Accordingly, the Federal Ministry of Health has been organizing workshops and meetings in collaboration with regional health bureaus and RBM partners, to discuss on issues related to targeting, distribution and sustainability of the program. After series of discussions and consultations, the ITNs strategic plan was prepared and distributed to the RHBs and RBM partners for comments. The following policy issues therefore, has been fully agreed and endorsed.

Policy 1 Target groups for ITNs in Ethiopia are selected based on the epidemiology of malaria transmission and biological and geographical vulnerability.

Priority groups in ITNs targeted districts, in order of priority, include:

a) Pregnant women and children under five
b) Communities affected by emergencies or newly resettled communities (priority for pregnant women and children under five), and
c) All others living in malarious areas

Policy 2: Ethiopia will adopt a variety of distribution mechanisms to ensure both equitable and sustained ITN provision with high coverage and significant public health impact.

The different distribution mechanisms include:

a) Free distribution and re-treatment of ITNs to children under five years of age and pregnant women living in targeted areas,
b) Free distribution of ITNs during emergencies and to communities in newly established resettlements areas,
c) Subsidized nets and free insecticide for re-treatment for all other targeted households,
d) Market priming through social marketing and revolving fund mechanisms
e) Unassisted commercial marketing

Regions need to develop detailed maps for their stratified ITNs distribution to ensure good coordination and avoid overlap and inappropriate targeting and ITNs from all sources should be included in a single plan and map in each region.
**Policy 3: Creation of awareness and demand on ITNs through comprehensive approach to communication**

Demand creation is a fundamental component for going to scale with ITNs. The government, in collaboration with partners including the private sector, will support generic promotion of ITNs. A variety of approaches can be used, including:

- Mass media, including national, local and community radio, newspapers, leaflets, posters and television
- Interpersonal communication, social mobilisation and drama
- Participatory communication at community level, making use of strategies such as the Health Extension Package, Community IMCI, Enhanced Outreach Strategy etc.
- Faith Based Organisations and other traditional channels of communication, including schools, women’s groups, community gatherings, etc.
- Commercial advertising and marketing techniques

**Policy 4: the Government will support the creation of a favorable economic, fiscal and regulatory environment to encourage the expansion of ITNs**

- The government will support the development of a favorable ITNs distribution system through effective public-private partnership including local production of ITNs and insecticides,
- Waiver/exemption of tax and tariff on ITNs and insecticides,
- Registration of a number of products that meet WHO standards will also be pursued to encourage competition and wider consumer choice,
- Encourage provision and use of ITNs in collective residential/recreational sites (resort areas, hotels, schools, farming & other development projects).

**Policy 56: All nets and insecticides supplied in Ethiopia must meet minimum standards, as determined by WHO.**

- All nets and insecticides must meet minimum standards, as determined by WHO (see Annex A). In addition, all insecticides for net re-treatment must be WHOPES-approved and registered by the relevant Ethiopian authorities.

- Given that ITN programmes in many countries have experienced difficulties in obtaining high levels of net re-treatment, WHOPES-approved LLINs are likely to be the most appropriate for Ethiopia, once they are available in sufficient quantities and at acceptable cost. LLINs have been shown to be the most cost-effective per year of effective lifespan, compared to untreated nets re-treated every six months.
Annex A: Minimum Standards for Nets and Insecticide

Characteristics of nets can be divided into (1) minimal technical norms (which could be the subject of some national quality assessment) and (2) other characteristics that are purely the result of people’s preferences.

Technical norms for net products have been developed by the WHO and are therefore internationally recommended as minimum standards for production:

- Minimum 75 denier strength
- Warp knitted polyester (multi filament)
- Mesh size at least 156
- Less than 5% shrinkage
- Breaking strength: at least 220 Kpa for 75 denier netting
- Fire safety according to CFR 1610-CS 191-53
- Standard labeling with type of netting, size, washing instructions (do not wash above 30°C) and water absorbency

It is recommended that the consumer has as much choice as possible:

- Rectangular / circular
- Width / length / height (a standard name for certain sizes would be useful)
- Range of colors including white, blue, green (rural areas prefer dark green and blue)
- Brand choice

Untreated, pre-treated or long-lasting treated nets

Untreated nets need to be treated with insecticide before use. All untreated nets will be co-bundled with a single insecticide treatment with each net. The seller may demonstrate the treatment process at point of sale, thereby introducing the concept of net treatment to the purchaser. Alternatively, the net buyer can treat their net at home.

Pre-treated nets are treated with one of the pyrethroid insecticides at the factory. The insecticide on the net lasts as long as it would if the net were dipped by the buyer: e.g. six months or one wash for permethrin and nine to twelve months or three washes for the alphacyano pyrethroids (e.g. deltamethrin). The insecticide on a pre-treated net should not degrade if the net is kept in a plastic bag in a dark, dry place. Pre-treated nets are appropriate for emergency distribution.

Long-lasting Nets (LLINs) are a very attractive alternative as they eliminate the need for net re-treatment, a major limitation to current ITN programmes. To date, two LLIN products (Olyset™ Net and PermaNet™) have been
evaluated through WHOPES and their use recommended by WHO. Olyset™ is made of polyethylene with permethrin incorporated into the yarn is manufactured by the Sumitomo Corporation of Japan. Technology transfer of this net to A to Z Textiles in Tanzania took place in 2003. Manufacturing capacity for this net is still low. The Olyset net fabric is stiffer and looks very different from the standard polyester nets. Its useful life is estimated to be five years, significantly longer than any other net, making it the most cost-effective option per year of effective life of the net despite its currently higher initial cost price. (100 denier PermaNets have a three-year average lifespan, 75 denier PermaNets a two year lifespan as does an ordinary treated net). However, since polyethylene nets are not yet widely used in Africa, it is recommended that their acceptability to individuals is tested before large scale introduction in Ethiopia. A protocol has been developed by WHO for this testing.

The second option is PermaNet™, manufactured by Vestergaard Frandsen of Denmark. This net is currently available on the market and has recently been approved as an LLIN by WHOPES. PermaNets are treated with a higher dose of wash-resistant deltamethrin, which is said to remain effective for up to 20 washes, or a period of several years under normal use.

More LLIN options are currently under study.

It is recommended for Ethiopia that WHOPES-approved LLINs are introduced as the net of choice for use in this country. It is also recommended that LLINs should initially be procured in a different colour to the existing standing crop of ordinary nets, which are green. Blue is suggested as the colour of choice for LLINs.

**Options for insecticides**

The toxicological and environmental impact of synthetic pyrethroids is very limited and these insecticides are safe for widespread use.

Insecticide choice may be restricted to the insecticide types licensed and registered for use in the country. Options for *types of insecticide* are: Permethrine and deltamethrine.

Options for *insecticide formulations* are:

- Liquid concentrates including capsule suspensions, emulsion in water and suspension concentrates
- Tablets
- Granules
- Emulsifiable concentrates

Important *issues to consider* when choosing an insecticide are:

- Source and availability
- Cost
• Registration  
• Packaging and labeling  
• Resistance (vector susceptibility)

The insecticides selected must have been evaluated and approved by WHOPE's (WHO's Pesticide Evaluation Scheme at the Division of Control of Tropical Diseases) where the specifications and conditions for use, etc. are also stipulated. The insecticides should also be registered for ITN treatment in Ethiopia; at present only deltamethrin and permethrin is registered in Ethiopia.

**Types of Insecticide**

So far only the synthetic pyrethroids, and the "near pyrethroid" etofenprox are suitable for bednet treatments. They are repellent to mosquitoes, quick acting, and effective in the small quantities that can be made to adhere to fabrics. Non-pyrethroid insecticides are not recommended for net treatment.

Natural pyrethrum is derived from flowers belonging to the chrysanthemum family. Synthetic pyrethroids mimic the insecticidal activity of natural pyrethrum.

<table>
<thead>
<tr>
<th>Pyrethroid Insecticides for Net Treatment:</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Insecticide</strong></td>
</tr>
<tr>
<td>-----------------</td>
</tr>
<tr>
<td>a) Permethrin</td>
</tr>
<tr>
<td>b) Deltamethrin</td>
</tr>
<tr>
<td></td>
</tr>
</tbody>
</table>

*SC = suspension concentrate; EW = oil-in-water emulsion; a.i = active ingredient  
CS = capsule suspension, EC = emulsifiable concentrate  
*oral LD50 of a.i. for rats (mg/kg of body weight)
Annex B: Roles and responsibilities of Partners

Federal Ministry of Health

The primary role of the government authorities at central level, is to create an enabling environment for the uptake and use of ITNs and their regular re-treatment. This includes:

- Demonstrate Political Commitment
- Remove taxes and tariffs on nets, netting materials and insecticides, in order to stimulate the private sector
- Encourage enterprise initiatives for local production of nets
- Promote generic demand through a national communication programme
- Establish policy frameworks
- Ensure that vulnerable groups are provided with ITNs in emergencies.
- Co-ordination of activities and partners through:
  - Establishment of institutional and collaborative frameworks
  - Provision of technical support, development of guidelines, and training and educational materials
  - Establish technical specifications for nets and insecticides
  - Insecticide registration and insecticide resistance monitoring and bioassay of insecticide deposit on nets
  - Training
  - Monitoring and supervision.

Regional Health Bureau

At regional level, the government’s role is to support national level activities and in addition:

- Regional level planning, identification of target groups
- Mobilization of resources
- Monitoring and evaluation and supervision

Peripheral/Community Level

- Planning of community activities
- Information, training, education, sensitisation:
- Collaborate with local level NGOs, community associations, schools, churches/religious centers, commercial outlets, health and non-health networks.
• Monitoring and supervision

Non-Governmental Organizations (NGOs)

The responsibilities or contributions will vary depending on the type of NGO, their mission statement, geographical location, financial resources, etc., but they are likely to include some or all of the following:

• Assist in ensuring that equity is achieved through targeting of vulnerable groups through the innovative use of subsidies, etc.
• Provide ITNs to vulnerable groups during emergencies.
• Provide financial, logistic and management support to community-based activities.
• Participate in community capacity development activities.

Private Sector/Industry

• Make ITNs widely available to the public at commercial prices, ensuring sustainability.
• Contribute to service delivery through use of already established distribution networks.
• Undertake local manufacture of nets at competitive price and quality, compared with imported nets.
• Contribute to ITN promotion/demand creation

Social marketing agencies

• Contribute to demand creation through promotion of nets and insecticide.
• Make affordable, quality nets and insecticide widely available.
• Serve as an entry point and catalyst for unassisted private sector distribution of ITNs.
• Work closely with public health system, community based and NGO distribution of ITNs.

Research and Academic Institutes and Scientists

• Conduct operational research, insecticide resistance monitoring, KAP surveys, etc.
• Dissemination of research results.

Individuals/Households at Risk of Malaria (The Net-Users)

• Purchase nets
• Use nets correctly
• Re-treat nets regularly
• Ensure that household members most vulnerable to malaria are given priority to sleep under ITNs.

**Other Support Agencies (such as UN organizations and bilateral agencies)**

• Provide technical support.
• Provide financial and logistic support.
• Provide "seed" nets.
• Participate in relevant activities, e.g. training, development of training and educational materials, guidelines and systems for ITN strategies.
• Contribute to development of information systems.
Annex C: Guidelines for quality control of mosquito nets (WHO, 19/02/2003)

In the absence of routine QC data on netting materials, pre-treated or long lasting insecticidal nets (LLIN), a provisional full QC procedure is proposed. It will be further adjusted once information’s becomes available. Adjustment will depend on observed variability as well as confidence in producers gained from previous orders.

Currently, specifications have been developed only for polyester netting’s and for Olyset, a long lasting insecticidal net. There is not yet a clear definition on what is a batch of nets or insecticide treated nets. Industry will have to define a batch, for non treated as well as treated nets. The batch number will be labelled on each individual LLIN. It will be labelled of the bag of non treated or conventionally treated nets. For the time being, every consignment is regarded as a batch, unless other specified by the producer.

This QC would relate either to netting material and/or to insecticide treatment. An acceptance number is proposed (see table bellow), which is the number of samples which may not comply with specifications. The sample size for QC is based on the number of nets in a consignment.

1. Results of internal quality control (QC). The company should provide its internal QC results for all orders, if available.

2. Sampling. SGS or equivalent will collect at random a number of nets depending on the size of the order. It should be noted that, contrary to insecticide formulations, the product removed for QC is lost and the corresponding number has to be added when ordering the nets. The proposed figure has been adapted from standard QC procedures for household pesticides.
<table>
<thead>
<tr>
<th>Total number of nets per consignment</th>
<th>No of collected nets for chemical analysis</th>
<th>Maximum number rejected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 5,000 nets</td>
<td>15 (1 for up to 333 nets)</td>
<td>2</td>
</tr>
<tr>
<td>5,000 to 10,000</td>
<td>20 (1 for 250 – 500 nets)</td>
<td>3</td>
</tr>
<tr>
<td>10,001 to 20,000</td>
<td>40 (1 for 250 – 500 nets)</td>
<td>4</td>
</tr>
<tr>
<td>20,001 to 30,000</td>
<td>60 (1 for 333 – 500 nets)</td>
<td>6</td>
</tr>
<tr>
<td>30,001 to 40,000</td>
<td>80 (1 for 375 – 500 nets)</td>
<td>8</td>
</tr>
<tr>
<td>40,001 to 50,000</td>
<td>100 (1 for 400 – 500 nets)</td>
<td>10</td>
</tr>
<tr>
<td>Over 50,000 and every 50,000</td>
<td>120 (1 for &gt; 416 nets)</td>
<td>12</td>
</tr>
</tbody>
</table>

3. Testing of insecticide content (conventional dipping and long lasting): from every net sampled, five 10 x 10 cm pieces will be cut at a defined location on the long side (3 pieces) and on the roof (2 pieces). On long side, at the middle of the length, 1 piece will be collected 10 cm above the bottom, 1 piece at the middle of the eight and one 10 cm below the top. From the roof, at the middle of the length, one piece will be collected at 1/3 of the width and another one at 2/3 of the width (see picture in annex 2). These 5 pieces will be sealed in aluminium foil all together with the net reference either including the label sewed on the net or reporting the reference printed on the bag.

Total insecticide content will be determined and expressed both in mg A.I./m² of netting and mg A.I./g of netting. In a reference laboratory such as Gembloux in Belgium (WHO Collaborating Centre for Quality Control of pesticide products), a delay of 10 to 12 working days between reception of samples and reporting can be met if the Centre is informed two weeks prior shipment of samples.

The current FAO/WHO procedure recommends an acceptance of 25 % variation of active ingredient content on heterogeneous formulated products with a concentration < 2.5 % A.I. For the time being, this margin will be used for pre-treated nets, either conventional or LLINs. If needed, it may later be reviewed based on QC results.

4. Additional testing for long lasting insecticidal nets

From the composite sample of all the sampled nets, the following parameters will be measured:
- total permethrin content including the Cis/Trans isomer ratio
- permethrin release index, including determination of the initial surface concentration.

4.2. **LLINs other than Olyset**

QC will be carried out according to interim specifications once the product will have been recommended by WHOPES. For LLINs with insecticide incorporated into the fibre, parameters checked for QC are likely to be similar to that of Olyset. For LLINs with insecticide bound or coated around the fibres, total insecticide content will be measured as well as initial surface concentration and wash resistance under a standard washing regimen. As long as a product has not yet been recommended by WHOPES, QC can be implemented only the basis of provisional specifications that has to be provided by the manufacturer. Total insecticide content would be the minimum to test in this case.

6. **QC for netting material according to WHO specifications**

For any consignment less than 5,000 nets, 15 nets will be collected and a 1.5 m x 1.5 m sample will be cut from each of the net in the middle of the second long side, the first one having been used for chemical analysis. From consignments of 5,000 to 40,000, 20 nets will be selected at random. Above 40,000 nets, 40 sample will be collected. These nets will be selected at random within those already collected for chemical analysis. Samples with their individual reference from the label or printed on the bag will be sent for testing to a reference textile institute such as CITEVE in Portugal (a WHO collaborating institution).

6.1 **QC for netting material**: the following parameters will be tested: filaments, mesh size, weight, dimensional stability and bursting strength.

Linear density (denier) has to be systematically specified when ordering the nets. It cannot be measured from finished products but only during production, but weight is a reliable indicator of the denier. Test of fibre composition and flammability may be optional. The delivery time in a textile Institute such as CITEVE in Portugal would be around 10 to 15 working days depending on sample size.

6.2 **QC for nets and packaging**

**Labelling of the net**: the size in cm (L,l,H) and water absorption in ml for the whole net has to be labelled on the net. It will also have 5 ISO 3758 pictograms (washing 40°C, no bleaching, no drying machine, no ironing, no dry cleaning) and below the corresponding pictograms, written in full: “Gentle wash, no bleach, no ironing, no dry cleaning, no tumble”.

Labelling on the bag for non treated nets (or a label within the bag, readable from outside):
- size in cm and surface area in m²,
- water absorption in ml for the whole net,
- information on insecticide and treatment instructions if single dose insecticide and treatment kit is bundled with the net (optional),
- expected life of the treatment and the need for regular retreatment,
- Five ISO 3758 pictograms with following instructions written in full: “Gentle wash, no bleach, no ironing, no dry cleaning, no tumble”.

Labelling on the bag for conventionally pre-treated nets (or a label within the bag, readable from outside):
- name of insecticide manufacturer
- name of insecticide used
- name of insecticide formulation
- dose in mg of active ingredient per m²
- date of treatment
- expected effective life of treatment after opening of the bag and the maximum
  number of washing before retreatment.
- Five ISO 3758 pictograms with following instructions written in full: “Gentle wash,
  no bleach, no ironing, no dry cleaning, no tumble”.

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