

**BASIC DESIGN STUDY REPORT**  
**ON**  
**THE PROJECT FOR MALARIA CONTROL PROGRAM**  
**IN**  
**THE REPUBLIC OF MOZAMBIQUE**

**OCTOBER 2006**

**JAPAN INTERNATIONAL COOPERATION AGENCY**

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JR
06-249

# The Project for the Malaria Control Program

## In the Republic of Mozambique

### Preface

In response to a request from the Government of the Republic of Mozambique, the Government of Japan decided to conduct the Basic Design Study on the Project for Improvement of Malaria Control Programme in the Republic of Mozambique and entrusted the study to the Japan International Cooperation Agency (JICA).

JICA sent to the Republic of Mozambique the Study Team from September 3 to October 1, 2006.

The Team held discussions with the officials concerned of the Government of the Republic of Mozambique, and conducted a field study at the study area. After the team returned to Japan, further studies were made and the present report has been finalized.

I hope that this report will contribute to the promotion of the Project and to the enhancement of friendly relations between our two countries.

I wish to express my sincere appreciation to the officials concerned of the Government of the Republic of Mozambique for their close cooperation extended to the team.

October 2006

KUROKI Masafumi  
Vice-President  
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Location Map/ Perspective

## Abbreviations

Abbreviation	Original Name
ANC	Antenatal Care
A/P	Authorization to pay
CIDA	Canadian International Development Agency
CVM	Cruss Vermelha Mozambique
DDT	Dichlorodiphenyltrichloroethane
DFID	Department for International Development
IRS	Indoor Residual Spraying
ITN	Insecticide Treated Net
JICA	Japan International Cooperation Agency
LLIN	Long Lasting Insecticidal Net
MC	Malaria Consortium
NGO	Non-Governmental Organization
NPO	Non Profit Organization
NMCP	National Malaria Control Program
SPMC	Strategic Plan for Malaria Control
RBM	Roll Back Malaria
UNICEF	United Nation Children's Fund
USAID	United States Agencies for International Development
WHO	World Health Organization



## Chapter 1 Background of the Project

### 1-1 Background

Malaria is the primary cause of mortality in Mozambique, accounting for 40% of outpatient consultations, 60% of inpatients, and 30% of inpatient deaths in medical institutions. Of the total number of infant deaths, 35%, approximately 45,000 annual deaths, is caused by Malaria. Furthermore, malaria may cause severe anemia, fetal loss or disorders (e.g. kidney disorder) in pregnant women, which not only account for more than 30% of maternal deaths, but also result in the delivery of low birth-weight infants.

In Mozambique, the distribution of Insecticide Treated Nets (ITN) had started in year 2000 with the support of UNICEF, and a cumulative total of approximately 1.7 million mosquito nets have been distributed as of today, year 2005, out of which the quantity distributed to children under five years old and to pregnant women remains at approximately 1 million. The distribution of mosquito nets in Mozambique has been supported by UNICEF, international NGOs and other donors. In 2005, large-scale distribution was effectuated by the Canadian Red Cross, and further distribution of mosquito nets is planned at the end of 2006 with the support of the Spanish government. (UNICEF will be responsible for the logistics and the trainings, and exclusive warehouses for mosquito nets are already secured). USAID also plans to support malaria control measures including mosquito net distribution, from the end of 2006 (details unknown). Meanwhile, according to the statistical data of the Ministry of Health of Mozambique, the total number of malaria patients in the country has increased from 2,330,000 cases in 1999 to 4,470,000 cases in 2003, and the achievement of RBM targets and the prevention of malaria epidemic are considered to be difficult. Under such circumstances, the Ministry of Health of Mozambique has formulated the Strategic Plan for Malaria Control (SPMC 2006-2009) in the "National Malaria Control", indicating substantial guidelines for actions to be implemented by 2010, the target year of international goals.

One of the targets of the National Malaria Control program is to improve the coverage of pregnant women and children under five, i.e. achieving and sustaining 41% coverage in 2006 and 95% coverage during the period of 2007 to 2009.

Based on the above situation, the government of Mozambique has formulated a plan to distribute 730,000 units of Long Lasting Insecticidal Nets (LLIN), targeting pregnant women in eight provinces, excluding Maputo and Gaza, the two provinces which are implementing IRS (Indoor Residual Spraying) under the Lebombo Spatial Development Initiative. The Japanese government has been requested to support the purchase of those LLIN, through the provision of Grant Aid Assistance.

## **1-2 Natural Environment**

Mozambique, situated in southern Africa, faces the Indian Ocean on the eastern side, and the southern, western and the northern sides have borders with Swaziland, South Africa, Tanzania, Zambia, Zimbabwe and Malawi. The country's total land area is twice that of Japan with 799,380km<sup>2</sup>, and its total population of 19 million (World Bank, 2004) is widely dispersed across the nation, giving the population density of 23 inhabitants/km<sup>2</sup>. The national land, stretching longitudinally from north to south, can be divided into three parts: the northern area consisting mainly of plateaus; the central area with plateaus, hillsides leading to the Great Rift Valley, and the lowland; and the southern area with vast plain. Many rivers, including Zambeze river and Limpopo river, cuts across the land flowing from the border area and into the Indian Ocean. The altitude is high upstream in the west, and low downstream in the eastern coastal area. In 2000, the upstream area of Gaza province in the south was ravaged with torrential rain, which was followed by another heavy rain in the upstream area of Tete Province in 2001. Mozambique was therefore hit by serious floods two years consecutively.

The country belongs to the climatic zones of tropical savanna climate and steppe climate, and the rainy season is between October and April, with more precipitation in the north. The annual rainfall in Maputo, the southern Capital, is approximately 800mm.

## **1-3 Others**

The government of Mozambique has planned a national project to strengthen the efforts in the education sector aiming to break away from poverty, however, the national average of the

country's illiteracy rate is 53.6% (UNESCO data, 2005), making Mozambique the country with the highest illiteracy rate among Sub-Saharan countries. Comparisons between different regions show that illiteracy rates of urban and rural areas are 30.3% and 65.7% respectively, with higher illiteracy rate in the rural areas. A comparison between male and female indicates higher illiteracy rate among female, generally in rural areas, with 37.7% illiteracy rate among male and 68% among female. Taking these facts into consideration, the use of written brochures is avoided when targeting pregnant women in malaria awareness-raising and educational activities. Illustrative educational materials are used instead, with verbal explanations provided by nurses. Table 1 below shows the illiteracy rates in Mozambique in recent years.

Table 1 Illiteracy rates in Mozambique in recent years

Year	Educational level							
	Primary school admission(%)		Primary school graduation(%)		Secondary school admission(%)		Illiteracy rate(%)	
	Male	Female	Male	Female	Male	Female	Male	Female
1996	69	52	-	-	9	6	55	79
1998	69	52	-	-	9	6	42	77
2000	70	50	52	39	9	5	41	73
2002	83	60	43	29	11	7	38	69
2004	110	87	56	47	16	10	38	69

(Source:2005, UNESCO data)

## Chapter 2 Contents of the Project

### 2-1 Basic Concept of the Project

The initial request was to support the distribution of LLIN to pregnant women in eight provinces of Mozambique (Niassa, Cabo Delgado, Nampula, Zambezia, Tete, Manica, Sofala, Inhambane). However, in order to effectively implement the distribution of mosquito nets in Mozambique, the establishment of warehouses for exclusive use with mosquito nets and the training of medical staff prior to the distribution were given as prerequisite conditions. Furthermore, it was necessary to exclude the region where other donors are providing mosquito



nets or implementing IRS.

Maputo province and Gaza province, implementing IRS under the Lebombo Spatial Development Initiative, had been excluded from the target areas of the project, and it was also decided to exclude Zambezia province as it was confirmed that the Mozambique Ministry of Health had started IRS in the province. In Niassa province, UNICEF will distribute mosquito nets (150,000 units) with the financial assistance of the Spanish government from October 2006, and exclusive warehouses have already been secured. In Tete province, since 2004, UNICEF has been distributing free mosquito nets provided by JICA's of scheme of Medical Equipment Supply Program, and charged mosquito nets have been being distributed (social marketing, distribution by the community) in collaboration with World Vision (NPO). Although UNICEF considers mosquito net distribution in partnership with this project to be feasible, their activity and budget plans from 2008 onward have not yet been determined and they were unable to make commitments at this stage. Tete province was therefore omitted from the target area. Meanwhile, in Cabo Delgado, Nampula and Inhambane, the three provinces where MC(Malaria Consortium; International NGO) has been distributing free mosquito nets to pregnant women since 2005 (phase I: 2005-2007), exclusive warehouses have been secured, mosquito nets have been delivered regularly to each District Health Authority, and the delivery system to the Health Centers and Health Posts has been functioning successfully. The distribution in Manica and Sofola is planned to start in 2008, as Phase II (2008-2009).

The Ministry of Health of Mozambique desires the continuation of mosquito net distribution in the above-mentioned three provinces as well as in the two provinces, Manica and Sofola, where no mosquito net distribution project has been implemented targeting pregnant women. Therefore, discussions with the Ministry of Health of Mozambique were held with these situations in mind, and a total of five provinces were selected as the target areas of this project, including Cabo Delgado, Nampula, and Inhambane, where DFID is funding MC for the mosquito net distribution for pregnant women, together with Manica and Sofola, where future implementation is planned. In this project, LLIN will be distributed by the medical institutions free of charge, to pregnant women visiting antenatal care.

In each of its target province, MC has rented exclusive warehouses for mosquito nets and has been distributing the nets regularly to each District Health Authority, which in turn distributes the nets to its hospitals, Health Centers and Health Posts. Although there is an issue of lack of vehicles, the transport of nets via these routes has been functioning smoothly. At Health Centers and Health Posts, the mosquito nets are supplied to pregnant women visiting for antenatal care (ANC), after they are given malaria awareness-raising and education information by the nurses using picture cards. In these health facilities, registers are kept when providing mosquito nets to the pregnant women, and the records are reported to both the District and the Provincial Health Authorities, and later to the Ministry of Health. Moreover, the pregnant women receiving the nets will have a stamp on their Mother's card (equivalent to the Mother and Child Health Handbook in Japan) in order to prevent duplicated distribution of nets. Figure 1 describes the systems employed in the implementation of mosquito net distribution, transport, and reporting by DFID (executed by MC).

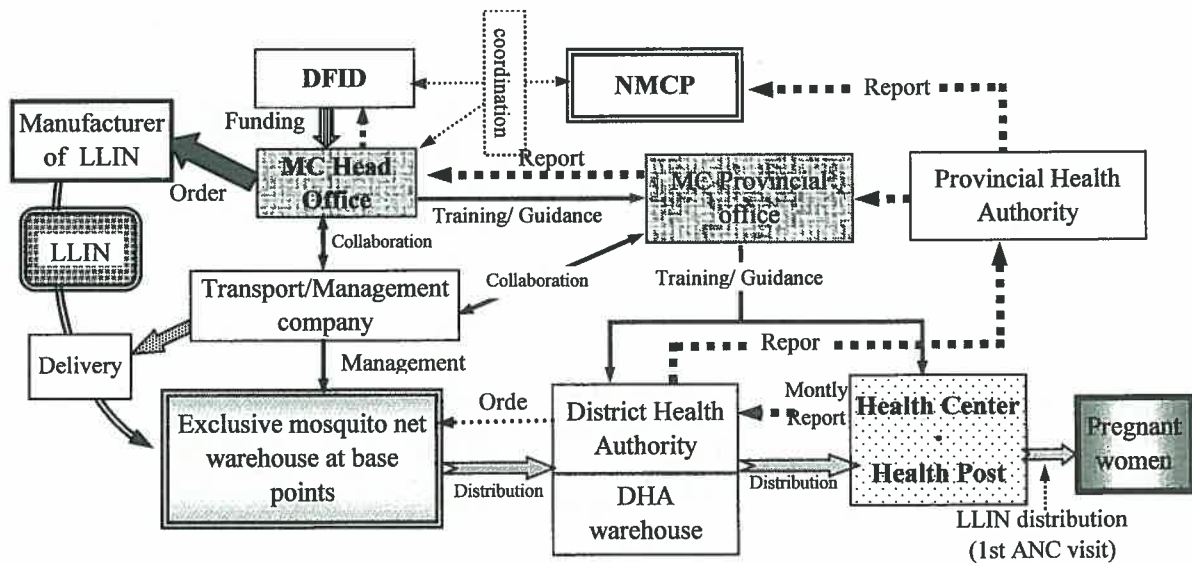


Fig. 1 Mosquito net distribution system and reporting mechanism

(1) Overall goal and Project Objective

In the Strategic Plan for Malaria Control (2006-2009), the Ministry of Health of Mozambique has set the target to achieve 41% mosquito net distribution rate in 2006 among pregnant women and

children under five, and to achieve and sustain 95% distribution rate during the three year period of 2007 to 2009. The coverage targets of the Strategic Plan for Malaria Control and the implementation year of this project are indicated in Table 2 below.

Table 2 Strategic Plan for Malaria Control and the coverage targets

Year	2006	2007	2008	2009
National Target for Mozambique: LLIN ownership rate among pregnant women/children under 5	41%	>95%	>95%	>95%
		Continue for 3 years, to achieve target		
Quantity of LLIN procurement in five target provinces of this project (for pregnant women)			605,000 units	
		(Five target provinces of the project)		

STRATEGIC PLAN FOR MALARIA CONTROL IN MOZAMBIQUE 2006-2009

The objective of this project is to supply LLIN, in order to support the achievement of “95% coverage among pregnant women in five target provinces”. Through the provision of mosquito nets to pregnant women in those five provinces, decrease in malaria incidence and mortality rate will be realized.

(2) Project Outline

This is a project to distribute LLIN free-of-charge, targeting pregnant women in five provinces, namely Cabo Delgado, Nampula, Inhambane, Manica and Sofala. The logistics and the trainings of the health workers in the relevant provinces will be implemented in collaboration with DFID and MC (Figure 5). Through the implementation of this project, LLIN will be procured in order to support the achievement of Mozambique’s overall goal (Table 2) “to increase mosquito net ownership rate among pregnant women, to 95% in 2008”.

2-2 Basic Design of the Requested Japanese Assistance

2-2-1 Design Policy

(1) Basic policy

The project sites will be the five provinces described previously, where malaria

awareness-raising and education as well as free-of-charge LLIN will be provided to pregnant women visiting health facilities for antenatal care. The storage of the mosquito nets, logistics and the training of health workers will be implemented through the current system employed by MC. The mosquito net distribution from the District Health Authority to the endpoint will be implemented under the responsibility of the government of Mozambique.

For this project, the request was made for the actual number of mosquito nets to be provided to pregnant women visiting the relevant hospitals, Health Centers and Health Posts, based on the plan to supply one LLIN per pregnant woman at the time of antenatal visit. From the implementation schedule, it will be necessary to predict the annual number of pregnant women visiting for the first time public health facilities (hospitals, Health Centers, Health Posts) in 2008. According to the Ministry of Health of Mozambique, the proportion of pregnant women against the total population is 4.9% throughout the country. However, as it was revealed during this study that the proportion differed in each province, the actual number of pregnant women who received at least one antenatal care in 2005 was determined, and the proportion was recalculated based on the estimated population of the provinces in the same year. The proportion of pregnant women against the population in the five provinces were thus estimated to be between 4.03% and 6.15% (average 5.38%), and 557,000 pregnant women will receive their first antenatal care in 2008, an estimation made based on the following calculation formula.

$$\text{Annual number of women receiving antenatal care} = \text{Provincial population of the relevant year} \times \text{Proportion of pregnant women against population (based on 2005 data)}$$

From the experience of UNICEF and other donor projects, the need for 10% buffer stock should be anticipated, in preparation for unexpected increase in the number of beneficiaries due to population fluidity.

Meanwhile in Cabo Delgado and Inhambane, mosquito nets have already been distributed to pregnant women and children under five, by UNICEF in 2004 and 2005. The total quantity distributed was 46,707 units, of which 5,375 units were distributed to pregnant women in Cabo

Delgado, and 3,500 units in Inhambane. Therefore, the quantity of mosquito nets to be provided by this project was calculated by subtracting the number of nets already distributed from the above-mentioned annual number of women receiving antenatal care.

$$\text{Mosquito net quantity} = \text{Annual number of pregnant women receiving antenatal care} - \text{mosquito nets already distributed in the past (2004, 2005)} + \text{Excess stock}$$

Table 3 summarizes the quantity of LLIN supply in this project, total population and the estimated number of pregnant women in 2008, based on 2005 data.

Table 3 Mosquito net procurement by province

Province	Population 2005	No. of pregnant women receiving ANC in 2005	Women receiving ANC against population	Est. no. of pregnant women having received nets	2008					
					Population forecast	Est. no. of pregnant women receiving ANC	ANC visitors not yet received LLIN	Buffer stock	Necessary Q'ty of LLIN	LLIN procurement Q'ty (to nearest 1000)
Cabo Delgado	1,617,165	88,783	5.49%	5,375	1,717,430	94,287	88,912	8,891	97,803	98,000
Nampula	3,676,003	226,212	6.15%	0	3,958,899	243,631	243,631	24,363	267,994	268,000
Inhambane	1,381,023	74,931	5.43%	3,500	1,476,750	80,128	76,628	7,663	84,291	85,000
Sofala	1,637,819	66,076	4.03%	0	1,755,825	70,830	70,830	7,083	77,913	78,000
Manica	1,320,232	62,631	4.74%	0	1,441,654	68,392	68,392	6,839	75,231	76,000
合計	9,632,242	518,633	5.38%		10,350,558	557,268	548,393	54,839	603,232	605,000

## (2) Policies regarding procurement and installation

1) Since WHO/UNICEF approved LLIN, which this project plans to supply, cannot be procured from Japan, the procurement will be made from a third country.

2) After the arrival of LLIN in Mozambique, the following issues will be implemented under the responsibility of the Mozambique government.

i) The storage, transport, management of the mosquito nets

ii) Record-keeping and archiving of mosquito net distribution

- iii) Progress report to JICA office in Mozambique, at intervals of project implementation
- iv) Monitoring after project termination

3) Installation work

The distribution project will involve no installation works.

4) Collaboration with DFID and MC

Although the mosquito net distribution in the relevant areas of this project is under the responsibility of the Mozambique government, in reality, MC plays a central role in the distribution activities with the financial support of DFID. If this project is to be implemented, both DFID and MC have expressed their commitment to work in collaboration in the overall operation of the project, including the distribution of the procured nets, logistics management, transport of the nets from the mosquito net warehouses rented by MC to the District Health Authorities, trainings of health workers on malaria awareness-raising and education.

(3) Policy regarding local contractors

This project will include neither local procurement nor installation works, therefore, local contractors will not be involved.

(4) Policies regarding the management and maintenance of the implementing organization

The Ministry of Health of Mozambique will guide and supervise the Provincial Health Authorities and the District Health Authorities to which the procured materials and equipment will be distributed, oblige record-keeping of distribution results and their reporting to the central government, and will ensure the management and the storage of those records. Furthermore, a sequential reporting on the progress of mosquito net distribution and post-distribution monitoring will be made through JICA office in Mozambique.

Regarding the maintenance of mosquito nets distributed to pregnant women, instructions on long-term use, etc. will be provided to the pregnant women at the time of distribution, as part of

the awareness-raising and educational activities.

(5) Policy regarding the grading of materials and equipment

The mosquito nets to be procured in this project will be LLIN approved by WHO/ UNICEF. The WHO-approved LLIN is currently being sold by two manufacturers (Sumitomo Chemicals, Vestergard Frandsen).

2-2-2 Basic Plan

(1) Equipment Plan

Based on the basic policies described above, the distribution quantity of LLIN by relevant province, and the quantity to be transported to the storage of each site are summarized in Table 4.

Table 4 Procured quantity, port of discharge and storage sites by province

Province	Distribution quantity	Port of discharge	Storage site	Quantity (units)
Cabo Delgado	98,000	Nacala	Nampula city	372,000
Nampula	268,000			
Inhambane	85,000	Maputo	Maputo city	89,000
Sofala	78,000	Beira	Beira city	182,000
Manica	76,000			
Total	605,000			605,000

(2) Target

In this project, one LLIN will be provided to each pregnant woman visiting a hospital, a Health Center or a Health Post in Cabo Delgado, Nampula, Inhambane, Sofala or Manica province.

(3) Distribution Plan

After the arrival of the mosquito nets in the exclusive warehouses in the capital city of Maputo and in the cities of base point, Nampula and Beira, the nets will be inspected, and delivered from, the Japanese side to the government of Mozambique, and are stored. The responsibility of the

management of those mosquito nets lies with each Provincial Health Authority and MC, and under close collaboration with the District Health District Health Authorities in each target province, the nets will be regularly delivered from the base point warehouses to each District Health Authority. The District Health Authority receiving the nets will, in turn, deliver them to its hospitals, Health Centers and Health Posts. Those health facilities will then distribute the delivered LLIN to the pregnant women. Each pregnant woman will be issued a Mother's Card at the first antenatal visit, which she must keep until delivery, and the card will be stamped to indicate the reception of a net, in order to prevent duplicated distribution.

The recorded data of the quantity of mosquito nets received by the facility and their reception dates/time,etc., will be collected through the Provincial Health Authorities and consolidated at the Ministry of Health and MC office in order to confirm appropriate distribution of the mosquito nets as planned. Eventually, the name of the pregnant woman receiving the net, the date/time of distribution, distribution results, etc. will be periodically reported to the higher level organizations such as the District Health Authorities, Provincial Health Authorities, and to the Ministry of Health National Malaria Control Department and to MC Head Office.

### 2-2-3 Basic Design Drawing

In this project, LLIN will be provided to individual pregnant woman, and the preventive action for malaria infection shall be put into practice by the pregnant woman herself. Table 5 below shows the comparison between the content of the initial request and that prepared after the basic design.

Table 5 Initial request and plans made after basic design

Items	Initial Request		After Basic Design	
Target provinces	8 provinces	Cabo Delgado, Niassa, Nampula, Zambezia, Tete, Manica, Sofala, Inhambane	5 provinces	Cabo Delgado, Nampula, Manica, Sofala, Inhambane
Materials	Long Lasting Insecticidal Nets (LLIN)		Long Lasting Insecticidal Nets (LLIN)	
Quantity	730,000 units		605,000 units	
Beneficiaries	Pregnant women of 8 target provinces		Pregnant women of 5 target provinces	



#### 2-2-4 Implementation Plan

Materials and equipment (LLIN) will be procured from a third country, and the contract shall be made with a Japanese company selected by general competitive bidding. As for product inspection, the inspection before shipment will be delegated to a third party organization. At arrival in Mozambique, the contractor will deliver the procured LLIN to the warehouses designated by the Mozambique government (storage sites described in Table 3-1), at which point the responsibility of the Japanese side is fulfilled.

The Malaria Control Unit of the Ministry of Health of Mozambique is the responsible organization for the implementation of this project, and will oversee the distribution, maintenance and management of the LLIN. In practical terms, the transport/ logistics of the LLIN will be carried out by a local contractor consigned by MC, who will be in charge of the storage in warehouses, as well as the delivery to the District Health Authorities of the target provinces.

##### 2-2-4-1 Implementation Policy

This project will be executed under the scheme of Japanese Grant Aid, and the exchange of notes approved by the governments of both Japan and Mozambique will conclude the agreement, thus officially initiating the project implementation. Subsequently, consultants of the Japanese company will undertake the implementation designing, and the materials and equipment will be procured by the supplier selected by general competitive bidding.

##### 1) Implementation organization of the recipient country

The implementation organization of Mozambique will be as follows:

Responsible organization: The Ministry of Health

Implementing organization: Malaria Control Unit, Ministry of Health

##### 2) Consultant

After the exchange of notes by the governments of both countries, the Japanese consultant will immediately contract a consultancy Agreement with the Ministry of Health of Mozambique,

following the procedures of Japanese Grant Aid. This Agreement will be validated only with the certification of the Japanese government. Based on this Agreement, the consultant will implement the following operations:

- i) Tender preparation stage: Preparation of bidding documents, final confirmation of specification
- ii) Tender stage: Provision of assistance in relation to the contractor selection for materials and equipment procurement, and in relation to the procurement contract
- iii) Procurement stage : Supervision of procurement and distribution of materials and equipment

### 3) Supplier for materials and equipment procurement

The Supplier for materials and equipment procurement will be selected by open bidding, and a contract will be signed with the government of Mozambique. The contract will only be validated with the certification of the Japanese government. Based on this contract, the supplier will procure the planned materials and equipment, transport and deliver them to the Mozambican side. The target areas of this project are five provinces of Mozambique, and the materials and equipment will be passed over from the Supplier to the Ministry of Health, at the capital city of Maputo, Beira and Nampula where the mosquito net exclusive warehouses are located.

#### 2-2-4-2 Implementation Condition

The materials and equipment will be procured from a third country (China or Viet Nam). The procured LLIN shall be of WHO-approved specification. The exclusive warehouses located in the base points of Maputo, Nampula and Beira shall be the delivery sites under the responsibility of Japanese side, where the LLIN will be handed over to Mozambican side. Subsequently, the materials and equipment will be distributed to the District Health Authorities of the relevant provinces with the costs being borne by the government of Mozambique. In practical terms, MC will provide the funding and know-hows (logistics, awareness-raising and educational activities)

necessary for the project execution.

#### 2-2-4-3 Scope of Works

Responsibilities of Japan and Mozambique regarding procurement and installation are shown in Table 6 below.

Table 6 Responsibilities

Items	Japanese side	Mozambican side
Procurement of materials and equipment	Relevant materials and equipment (LLIN)	—
Transport of materials and equipment	Transport from the third country to the warehouses in Mozambique, located in the capital city of Maputo, Nampula and Beira	Transport the materials and equipment stored in warehouses to District Health Authorities of five target provinces, subsequently to Health Centers and Health Posts.
Installation works	N/A	N/A

#### 2-2-4-4 Consultant Supervision

The project, being a procurement project of materials and equipment, will be supervised at each of the following stages.

##### 1) Cross-checking of equipment before shipment

Cross-checking of equipment before shipment will be carried out by the third party organization, and the inspection will include i) cross-checking the equipment list of the contract and the shipping documents, ii) confirmation of the delivery date, iii) checking the quantity and packing of the product.

##### 2) Reception of materials and equipment at the three warehouses in Mozambique

###### i) Inspection of equipment

The materials and equipment procured in Japan and the third country will be centralized in the above-mentioned warehouse. At this point, the consultant will check the materials

and equipment for the specification, the quantity and for any damages.

ii) Sorting of equipment

The Mozambican side, including MC, will sort the materials and equipment stored in the warehouses, according to the final destinations in each districts.

#### 2-2-4-5 Procurement Plan

Having appropriate quality will be a prerequisite for the procurement of materials and equipment. The accuracy of specification must be controlled, and inspections on quality must be carried out at the time of procurement.

##### (1) Long Lasting Insecticidal Net

The LLIN procured by the project will be the products of WHO-approved manufacturers. The products currently approved are OlysetNet and PermaNet, and the selection between the two manufacturers will be made by open bidding.

#### 2-2-4-6 Quality Control Plan

The procurement shall be made from the countries listed in Table 7.

Table 7 Procurement of materials and equipment

Planned equipment	Local	Japan	Third Country	Remarks
Long Lasting Insecticidal Nets(LLIN)			○	Viet Nam or China

#### 2-2-4-7 Implementation Schedule

Table 8 Implementation Schedule

Project month	2007												
	1	2	3	4	5	6	7	8	9	10	11	12	
Exchange of Notes	▼												
Agreement with Consultatnt		▼											
Detailed Design		■	Final confirmation of Project contents										
		□	Preparation of tender documents										
			■	Approval of tender documents									
				▼	Tender announcement								
				□	Briefing								
					▼	Bidding							
					■	Tender evaluation							
Procurement Supervision					▼	Contract with successful tender							
					□	Discuss/ meeting with the supplier							
						▨ Equipment production & Procurement							
			▨	▨	▨	Inspection of equipment by independent agency							
						▨ Equipment transportation							
			■	■	■	Inspection and delivery							

### 2-3 Obligation of Recipient Country

Listed below are the obligations of the Mozambican side when the Japanese Grant Aid Project is implemented. ,

- To ensure appropriate and prompt custom clearance for the procured materials and equipment.
- To secure warehouses necessary for the storage of the procured materials and equipment, and for the transport to the District Health Authorities of the target provinces.
- To distribute LLIN from the District Health Authorities to the final destination within the area.
- To bear the expenses related to the issuance of the authorization to pay (A/P) and the commission paid.
- To bear the expenses related to the distribution of the procured materials and equipment.
- To implement the educational/ enlightenment activities regarding the use of mosquito nets,

targeting the beneficiaries.

- To report the distribution progress to Japanese side through local JICA office.
- To provide annual reports to Japanese side through local JICA office.

## 2-4 Project Operation Plan

### (1) Distribution costs within Mozambique

In this project, Japanese side will bear the costs of transportation of the equipment from the third country to the warehouses in Mozambique's capital city Maputo, Nampula and Beira. However, the transport costs from those warehouses shall be borne by the Mozambican side. Moreover, trainings of local staff will be necessary prior to the delivery of mosquito nets, and those trainings in each target area must be finished by October 2007, when the nets are due for arrival. Table 9 below summarizes the budget of Phase I provinces (Inhambane, Nampula and Cabo Delgado, starting from 2005) and Phase II provinces (Inhambane, Nampula, Cabo Delgado, Sofala, Manica, starting from 2008).

Table 9 Budgets in the target provinces

currency: Metical

Item	Phase I (2005-2007)	Phase II (2008-2010)
Mosquito net procurement	41,306,512	39,906,126
Transport, transport expenses, warehouse cost	23,657,790	27,505,998
Marketing survey	27,166,672	28,082,470
Implementation promotion, employment	33,958,678	28,437,734
Project management, support	67,345,902	69,504,838
Total	193,435,554	193,437,166

As previously described, DFID and MC are supporting the logistics and trainings of local staff, and their contributions are also planned for Phase II.

## 2-5 Project Cost Estimation

### 2-5-1 Initial Cost Estimation

1. Costs to be borne by the Japanese side

Table 10 Project cost estimation

Articles	Project cost estimation (hundred million yen)
Equipment	4.28
Implementation design/ Procurement supervision	0.21
Total	4.49

## 2. Costs to be borne by the Mozambican side

None in particular.

## 3. Exchange rate calculation

Exchange rate as of :November 2006

Exchange rate :1USD=115.54 JPY

Local currency(Metical) :1 MT=4.39 JPY

### 2-5-2 Operational & maintenance Cost

The ultimate distribution destination of a Long Lasting Insecticidal Nets (LLIN) procured by the project will be pregnant women's home, and the women receiving the net will be responsible for the maintenance.

The mosquito net will be used throughout the year, regardless of the season, but unlike ITN, LLIN will not require periodic insecticide impregnation as the effectiveness of the insecticide will last from 3 to 5 years. In addition, the durability of LLIN is said to be approximately 5 years. Therefore, a LLIN is almost completely maintenance-free for the duration of use, and will require no technical maintenance method nor place a financial burden on the users.

### 2-6 Other Relevant Issues

- Transport will be difficult during the rainy season in Mozambique, since the roads are unpaved, especially those connecting the Health Centers/Health Posts in the rural areas. Therefore, the delivery dates of the mosquito nets should be scheduled, and their

distribution implemented, in the dry season.

- The distribution organization of this project is under the responsibility of the Ministry of Health of Mozambique in principle. In practical terms, however, the operation of the project will be carried out by MC. Therefore, the procurement contractor and the consultant must work in close contact and collaboration with the Ministry of Health and MC, in order to coordinate the internal distribution plan of the Mozambican side.
- An interim report regarding the progress of mosquito net reception and distribution will be requested to the Mozambican side. Since MC is in possession of direct information, mutual exchange of information with the Ministry of Health and with MC will be necessary.

## **Chapter 3 Project Evaluation and Recommendation**

### **3-1 Project Effect**

The following effects will be expected from the implementation of this project:

#### 1) Direct effects

- The achievement of the country's goal, "to increase mosquito net ownership rate to 95% by 2009", will be promoted, targeting pregnant women of five target provinces (estimated number of target population in 2008: 557,268 pregnant women).
- By providing mosquito nets to pregnant women, malaria infection will be prevented, and malaria related maternal mortality ratio (480 maternal deaths/ 100,000 live births, in 2000) will be reduced. Furthermore, it will be possible to avert physical and financial burdens resulting from miscarriages, stillbirths, low birth-weight deliveries, anemia, kidney disorders, and brain disorders caused by malaria.
- By providing mosquito nets to pregnant women, it may be possible to prevent malaria infection not only among pregnant women but also the new borns, in which malaria infection may lead to life-threatening conditions, thus reducing the malaria-related mortality rate among children under five (152/1,000 in 2004).

#### 2) Indirect effects



- Through the awareness-raising/ educational activities provided during mosquito net distribution, the knowledge of malaria prevention will become widespread among community residents.
- The country's total number of malaria infected cases and malaria-related deaths will be reduced.
- The decrease in the number of malaria infected cases will result in the reduction of medical costs and relieve the burden of health workers.
- The decrease in malaria infection among pregnant women will lead to improved infant growth and development.
- The decrease in malaria-related infection rate may result in increased labor force/ production capacity.
- As the distributed LLIN will not require re-impregnation of insecticide, the maintenance of mosquito nets will be simplified and burdens reduced.

### **3-2 Recommendation**

- Although the mosquito net procurement/distribution in this project will be for 2008, continuous procurement/distribution by the government of Mozambique will be desired.
- Taking Mozambique's geographical and climatic conditions into consideration, best possible efforts should be made to distribute the equipment procured by the project within the dry season. The distribution of the materials and equipment after delivery will be under the responsibility of the Mozambican side.
- The result of mosquito net distribution (by province, by district, by health facility) should be reported from the Mozambican side to the Japanese side. It will be desirable to report the results of post-project monitoring, including trends in malaria infection rate and mortality rate, etc., to Japanese side. MC, providing supportive activities, has the intention to report through JICA office.