



NETMARK REGIONAL AFRICA PROGRAM BRIEFING BOOK

Insecticide Treated Materials
in

ZAMBIA

September 2000



ABBREVIATIONS

AAR	Association for Aid to Refugees
ADRA	Adventist Development and Relief Association
AFRO	Africa Regional Office (World Health Organization)
AMREF	African Medical Research Foundation
<i>A.arabiensis</i>	<i>Anopheles arabiensis</i>
<i>A.funestus</i>	<i>Anopheles funestus</i>
<i>A.gambiae s.s.</i>	<i>Anopheles gambiae sensu stricto</i>
CBMPCP	Community Based Malaria Prevention and Control Programme
CBoH	Central Board of Health
CCZ	Clarke Cotton Zambia
c.i.f.	Customs, insurance and freight
CMAZ	Churches Medical Association of Zambia
CS	Capsule Suspension
DALY	Disability Adjusted Life Years
DAPP	Development Aid People to People
DHMB	District Health Management Board
DHMT	District Health Management Team
DRC	Democratic Republic of Congo
EC	Emulsifiable Concentrate
EPIMI	Eastern Province Integrated Malaria Initiative
EW	Emulsion in Water
FAO	Food and Agriculture Organization
FMCG	Fast Moving Consumer Goods
f.o.b.	Freight on board
GDP	Gross Development Product
GNP	Gross National Product
HMIS	Health Management Information System
ITNs	Insecticide Treated Nets (and materials)
JICA	Japanese International Co-operation Agency
JRS	Jesuit Refugee Services
KAP	Knowledge Attitudes and Practices
K	Zambian Kwacha
LWF	Lutheran World Federation
MA	Malaria Agent
MCC	Malaria Control Committee
MARA	Mapping Malaria Risk in Africa
MoH	Ministry of Health
NGO	Non Governmental Organization
NMCC	National Malaria Control Centre
NMCP	National Malaria Control Programme
PCI	Project Concern International
<i>P.falciparum</i>	<i>Plasmodium falciparum</i>
<i>P.malariae</i>	<i>Plasmodium malariae</i>
<i>P.ovale</i>	<i>Plasmodium ovale</i>
PSI	Population Services International
ODA	Overseas Development Assistance
RBM	Roll Back Malaria

SC	Suspension Concentrate
SES	Socio-Economic Status
SFH	Society for Family Health
TDRRC	Technical Disease Research Centre
UNICEF	United Nations Children's Fund
USAID	United States Agency for International Development
VAT	Value Added Tax
WHO	World Health Organization
ZIHP	Zambia Integrated Health Package
ZCCM	Zambian Consolidated Copper Mines

SUMMARY

Zambia had a population of 9.7 million in 1998, with about 68% of the population below the poverty line. The GNP per capita is US\$330. The annual growth in GDP for the period 1999-2003 is expected to be 3.9% while the growth in the GNP per capita to be -1.7%. Zambia is a low-income country with low levels of disposable income.

Malaria is endemic throughout the country, with about 15% of the total population at risk of stable endemic malaria. It accounts for 40% of all outpatient attendance and is responsible for 6.8 million disability adjusted life-years lost. The National Malaria Control Programme (NMCP) outlines insecticide treated nets (ITNs) as a key strategy for malaria control and significant progress has been achieved in the period 1995-6. The NMCP has planned various awareness programs for ITNs and has assisted in waiving taxes for nets for the employer-based scheme. There is one net manufacturer in Zambia; therefore the scale is limited. Estimates of net ownership vary with a recent study in 12 districts finding coverage of 20.8% for mosquito nets and 5.6% for ITNs. There are currently several Non-Governmental Organizations engaged in the provision of treated nets and a large unsubsidized employer based scheme in operation. Coils and aerosols are common anti-mosquito methods.

The estimated total sales for nets over five years are at least 2,571,308 and for insecticide treatment is 3,342,701 (not taking population growth into account).

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ZAMBIA

Map 1: General position of Zambia



1. BACKGROUND

1.1 Demographic information

Table 1: Demographic information ¹

Population (<i>mid-1998-millions</i>)	9.7
Average annual growth rate 1992-1998	2.6
Average household size	5.4
Age distribution < %15 years	48.6
Urban population (<i>% of total population</i>)	44
Male/Female Ratio	0.49 : 0.51 ²
Life expectancy at birth (<i>years</i>)	43
Infant mortality (<i>per 1000 live births</i>)	113
Total fertility rate	6.5
Illiteracy (<i>% of population age 15+</i>)	
Population projection by major cities (1,000s, 1999):	
Lusaka	1,269
Kitwe	467
Ndola	442
Livingstone	95
Urban / Rural Ratio	0.38 / 0.62 ³

Table 2: Population distribution by Socio Economic Status (SES)

Income (Kwacha)	% Males	% Females
<15,000	13	26
15,000 – 30,000	19	25
30,000 – 75,000	34	33
75,000 – 150,000	22	16
150,000 – 225,000	10	7
225,000 – 300,000	7	4
>300,000	12	6

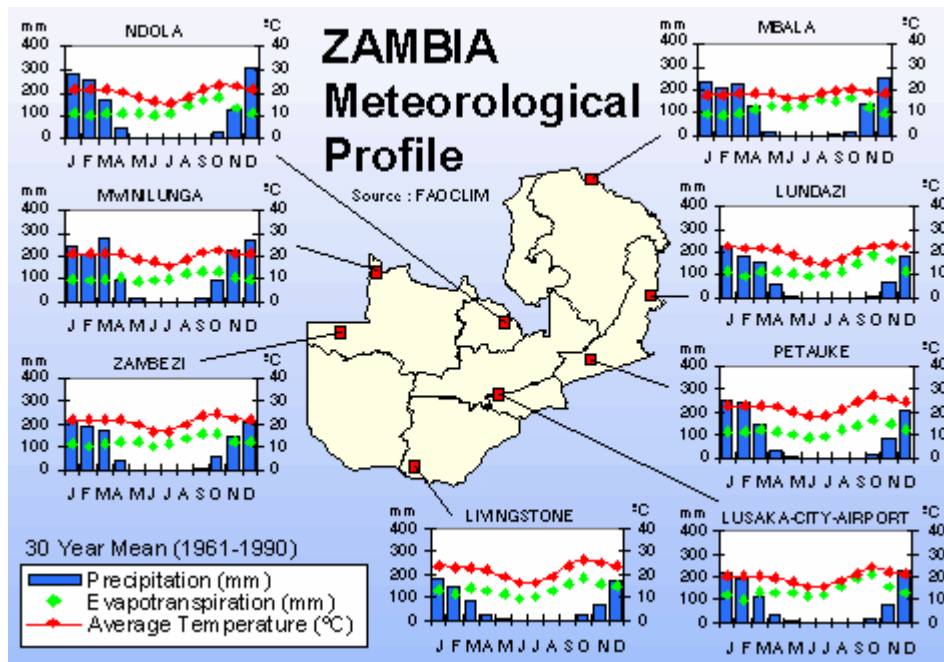
1.1.1 Ethnic groups and languages

English is the official language and the major vernaculars are Bemba, Kaonda, Lozi, Lunda, Luvale, Nyanja, Tonga and there are about 70 other indigenous languages.

1.2 Geography and Climate

Zambia is a landlocked country in Southern Africa to the east of Angola. Zambia is bordered by the Democratic Republic of Congo (DRC) to the north, Tanzania to the northeast, Malawi to the east, Mozambique to the southwest and Zimbabwe, Botswana and Namibia, to the south and southwest. The terrain is mostly high plateau with some hills and mountains. The capital is Lusaka and there are administrative divisions in the 9 provinces; Central, Copperbelt, Eastern, Lusaka, Northern, NorthWestern, Southern, Western.

Map 2: Meteorological profile of several sites in Zambia⁴



Zambia's climate is generally moderate and can be split into three periods. From December to April it is hot and wet, with torrential downpours. From May to August it is dry and fairly cool, from September to November, although remaining dry, it gets progressively hotter (Map 2). Most of Zambia is part of the high undulating plateau that forms the backbone of Africa, at altitudes of 1,000 to 1,600m. Several valleys cut through this plateau including the Zambezi, the Kafue, the Luangwa and the Luapula. There are several large lakes on the borders of Zambia, and much of the interior of the country consists of swampland and floodplain.

1.3 Economy

Zambia's economy depends very heavily on the copper industry. However, employment in the mining sector averages only about 10% of the formal sector employment. Much of the labor force in the formal sector serves the mining industry indirectly. Health receives 13% of government expenditures, up from 6-8% over the last decade. There has been progress in both privatization and budgetary reform, with the privatization of the mines being completed in 2000. However, with the decline in both the production and price of copper, which provides 80% of the nation's foreign currency intake, the economy has started to decline. Measures taken by the government to revive the economy include: full privatization, liberalization of exchange controls with introduction of Bureaux de Change, establishment of stock exchange and securities exchange commission, full remittance of after-tax profits, investments act, new mining and minerals act.

1.3.1 Basic economic indicators

Table 3: Basic economic indicators

GNP per capita	330
Poverty (%pop below poverty line)	68
GDP (US \$ billions)	3.4
Average annual growth in GDP (1999-03 projected)	3.9
Average annual growth in GNP per capita (1999-03 projected)	1.7
Per capita govt. health expenditure (US\$ 1990)	9.1
Combined donor and govt. per capita (US\$)	18
Net ODA from all donors (US\$ millions-1996)	192
Exchange rate: Zambian Kwacha per US\$1 (May 2000) ⁵	3000

1.3.2 Poverty levels

Household income or consumption by percentage share:

Lowest 10%: 1.5%
 Highest 10%: 31.3% (1993)

Urban households have a higher per capita income than rural households (K45,000/K17,000). In Lusaka the average income is K51,000, while in the Copperbelt it is K36,000. In the Western/North western province incomes are the lowest at K15,000.

Table 4: Population poverty levels ³

	Incidence of Poverty All Poor (%)	Incidence of Extreme Poverty ^a (%)	Non Poor ^b (%)
Zambia	72.9	57.9	27.1
Urban areas	56.0	36.2	44.0
Rural areas	83.1	70.9	16.9
Provinces			
Central	76.8	63.2	23.2
Copperbelt	65.0	46.8	35.0
Eastern	80.3	66.5	19.7
Luapula	80.9	69.2	19.1
Lusaka	52.0	34.1	48.0
Northern	81.1	66.8	18.9
North-Western	75.8	63.2	24.2
Southern	75.8	60.3	24.2
Western	89.2	78.0	10.8

^a Household with monthly adult expenditure less than K32,861 (K3,200 = US\$1 in August 2000)

^b Household with monthly adult expenditure greater than or equal to K47,187

1.3.3 Exports

Commodities; Copper, zinc, cobalt, lead, tobacco
Total Value (millions): US\$874.00 (f.o.b. 1998)

1.3.4 Imports

Total imports: US\$1,022 million

1.3.5 Budget

Revenue: US\$888 million
Expenditure: US\$835million

1.3.6 Industries

Copper mining and processing, construction, foodstuffs, beverages, chemicals, textiles, and fertilizer.

1.4 Political Stability

The border areas are the recipients of large numbers of refugees from the surrounding countries of Angola, DRC, and smaller numbers from Rwanda and Burundi. As of late August 2000, Angolans are entering Zambia at a rate of 150 per day and refugees from DRC at an estimated rate of 100 per day⁶. Border conflicts have also resulted in internal displacement as Zambians living near the borders have fled inland. These population movements have caused refugee and displaced populations to swell along Zambia's western and northwestern areas.

1.5 Transportation

Zambia has 2,164km of railway (1995), 39,700km of highway and 2,250km of waterways including the Zambezi and Luapula rivers and Lake Tanganyika. The only port or harbor is Mpulungu and there are a total of 112 airports (1998). The road infrastructure though poor in some areas is in reasonable condition and is used for overland transportation of goods.

2. MALARIA SITUATION

2.1 *Epidemiology and Entomology*

2.1.1 Burden

Malaria is the most significant health problem in Zambia. It accounts for the greatest number of Disability Adjusted Life Years (DALYs) lost (6.8 million) followed by ARI (5.4 million) and AIDS (3.2 million) ⁷. Data from health facilities shows that malaria accounts for 32% and 36% of all hospital, and health center admissions, respectively, and 40% of all outpatient attendances ⁸. Mortality statistics range from between 14% in hospitals and 20% in health centers. The greatest burden of disease falls on children who, in 1995, accounted for 44% of all reported cases and 47% of all hospital admissions. Malaria incidence rates have increased from 121.5 cases per 1,000 population in 1976, to 331.1 per 1,000 population in 1999 ⁹. The incidence rates vary from province to province; they are normally lower in the urban provinces around Lusaka and the Copperbelt, with the highest incidence rates being reported from Northwestern Province (468.3 per 1,000 population in 1999). However, these rates are reported from the HMIS which in 1999 included only data from Health Centers and not from hospitals. This may result in an imbalance in the relative validity of the data from rural areas, where most of the population attend health centers, and the urban areas, where a greater proportion of the population will present at hospitals.

Treatment with antimalarial drugs range from 100-500 Kwacha at health facilities, and from K200 (US\$0.16) (for a child's course of chloroquine) to K11,000 (US\$9) for a child's course of Halfan® at private outlets. These include opportunity costs of transport and lost productivity.

2.1.2 Endemicity

Malaria is endemic throughout Zambia with transmission ranging from holoendemic in the major river valleys to hypoendemic in large urban areas. Highland plateau areas and industrial towns are prone to epidemic malaria. Parasite prevalence rates in children under 14 years ranges from 76% in rural areas to 20-55% in urban areas. Over 95% of malaria is due to *P.falciparum*, with *P.malariae* and *P. ovale* accounting for the remaining 5%. The Malaria Control Programme has stratified malaria in Zambia into three strata according to climatic, topographical and economic parameters ⁸.

Urban and industrial sectors

These are areas of economic importance such as the Copperbelt. Transmission is hypoendemic and unstable, with higher endemicity at the periphery. As a result of the combined hypoendemic unstable nature of the malaria and unsustained partial/intermittent vector control activities, this population, representing 42% of the total, remains non-immune.

Highland Plateaus

These are farming areas located at 1200-1400m and above, with significant population movement (migrant workers). Transmission is generally seasonal with local variation depending on meteorological conditions. The area is prone to epidemics.

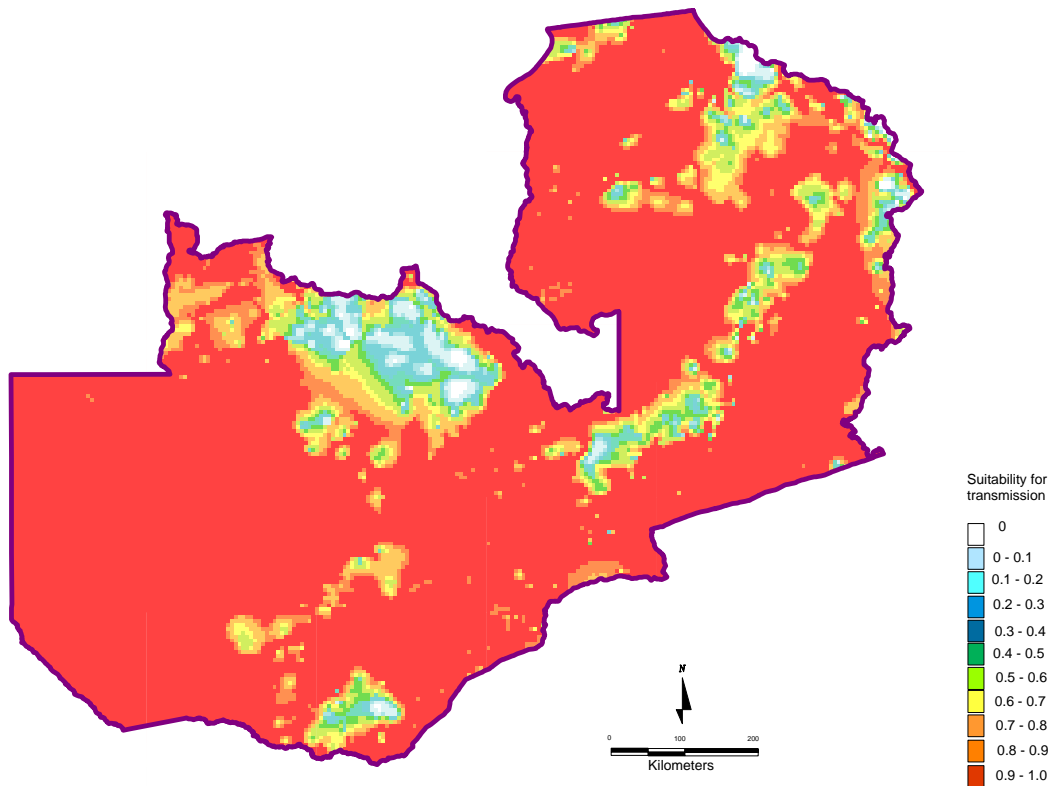
Lowland River Basins

These are areas along the river valleys, which generally lie below 900 meters. Transmission is perennial and hyperendemic, with the greatest burden of malaria falling on young children and pregnant women.

Total population at risk of stable endemic malaria: 6,220,000 ¹⁰.

Map 3 below illustrates the climatic suitability of transmission of stable malaria in different areas of Zambia. It must however, be noted that this map is based on climatic data only, actual endemicity on the ground may vary widely with that expected from climatic data.

Map 3: MARA map of climatic suitability for the transmission of stable malaria ¹¹

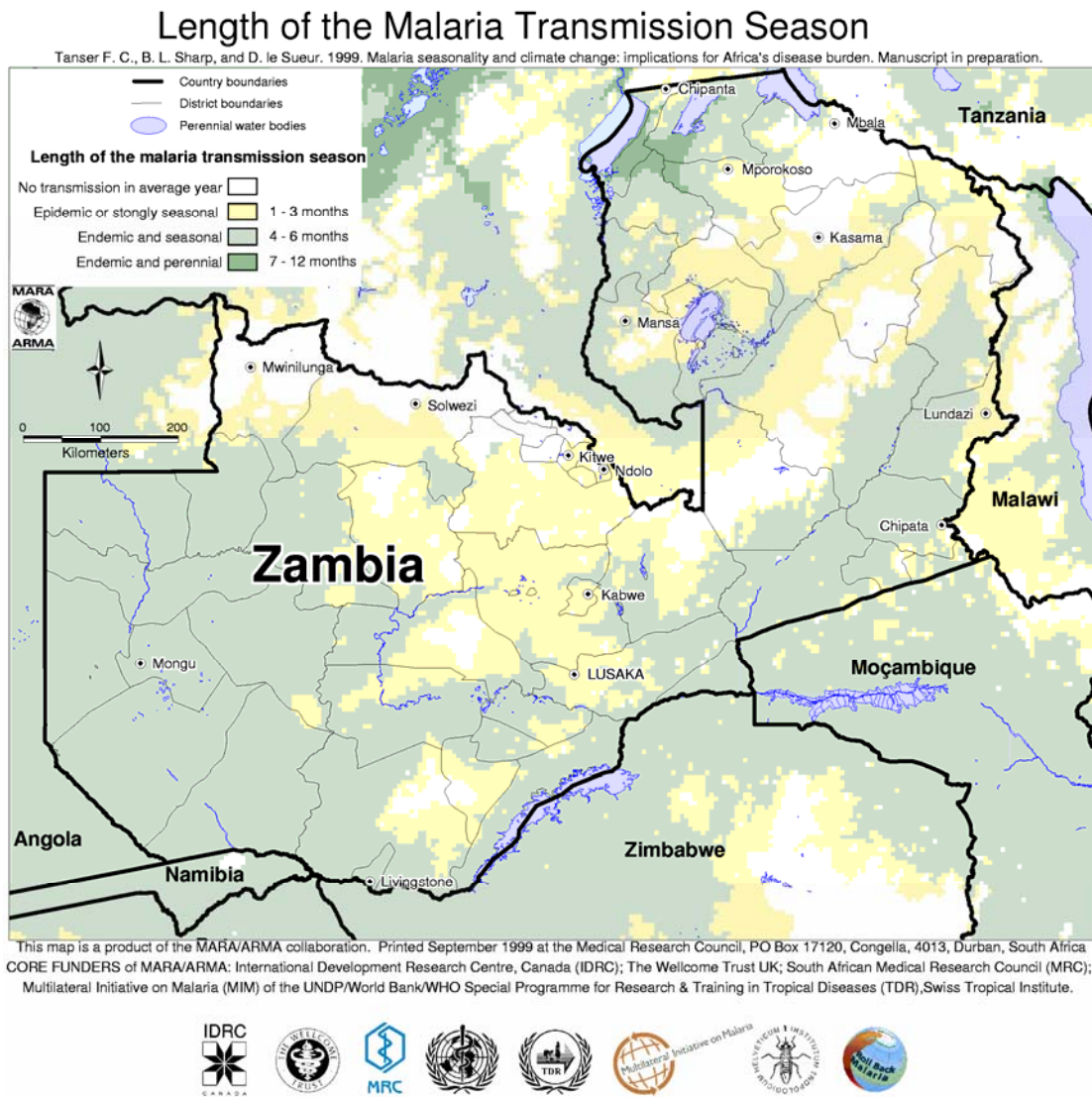


The map illustrates the malaria endemicity risk in Zambia as predicted by climate models.

2.1.3 Seasonality

Map 4 illustrates the variation in the length of the transmission season in different areas of Zambia. The map suggests that intense perennial malaria is present solely in an area in the north of Luapula Province, but with there being large areas of the country where transmission is present for 4 to 6 months of the year.

Map 4: Length of the malaria transmission season by area (MARA Map) ¹¹



2.1.4 Vectors

The major malaria vectors in Zambia are *A. gambiae* s.s. *A. arabiensis* and *A. funestus*, although little is known about their distribution. However, based on the behaviors of Anopheles, it is probable that the northern and wetter parts of the country (Northern Luapula, Copperbelt, Northwestern and part of Central Provinces) have *An. gambiae* s.s. and *An. funestus* as vectors. In the drier southern areas of the country *An. gambiae* s.s. and *An. arabiensis* are likely to dominate at different times of the year depending upon time of year and the rainfall and temperature variations⁹.

2.1.5 Local resistance to pyrethroid insecticides

Vector sensitivity testing to pyrethroid insecticides has not been carried out in any district of Zambia¹².

2.2 Malaria Control

2.2.1 Government control policies and strategies, including the place of ITNs

The current decentralized structure of health systems in Zambia was first outlined in 1992. Within this structure, the MoH acts as the main policy-making structure, with the Central Board of Health (CBoH) being the implementer of these policies. The National Malaria Control Centre (NMCC) is part of the CBoH. The districts have become the main administrative units through the District Health Management Teams (DHMTs). The goal of the National Malaria Control Programme is to reduce malaria-related morbidity and mortality through improved case management and community-based sustained implementation of malaria prevention and control. However, in May 2000 the 'Roll Back Malaria Strategy for Zambia' was developed. Participation in the development of this strategy was by partners from several different organizations and of many different professional cadres. The 5 objectives for ITNs identified are:

- To raise awareness of malaria and its prevention and create demand for ITNs using a public-private sector partnership
- To establish an effective public-private sector partnership to ensure availability of affordable bednets and appropriate insecticides to all sectors of the population
- To promote regular retreatment of ITNs with appropriate insecticides, both through the commercial sector and in public sector/NGO programs
- To ensure appropriate targeting of public sector/NGO-supported ITN interventions and their scaling up
- To develop a policy on the use of ITNs as part of the national malaria control policy and to update the Public Health Acts to include ITNs

2.2.2 Major actors

Donors

The major donor partners who have contributed, together with NMCC, to development and implementation of the RBM strategies in Zambia are WHO, USAID/ZIHP, UNICEF, JICA and FAO.

NGOs and other Organizations

There are several NGOs and other organizations that are partnering with NMCC in the effort to reduce morbidity and mortality due to malaria. These include: Society for Family Health (SFH); Churches Medical Association of Zambia (CMAZ); CARE Zambia; AFRICARE Zambia; Development Aid People to People Zambia (DAPP); World Vision Zambia; Adventist Development and Relief Association (ADRA); Lutheran World Federation; Project Concern International (PCI); Plan International; Association for Aid and Relief (AAR); Jesuit Refugee Services (JRS);

The Private Sector

The private cotton growing company Clark Cotton has been offering ITNs to its farmers in Eastern Province.

2.2.3 Past and current programs

Past programs

Past ITN projects have included ¹²:

- **A pilot project in the Chalimbana area in Chongwe District in 1994**, with support from the National Malaria Control Programme;
- **A pilot project in Samfya District with technical and financial support from UNICEF in collaboration with the Samfya DHMT**

The three initial communities targeted by the pilot project were Kasanka, Mushili and Matongo. In Kasanka, 5,000 nets were sold to community members between 1996 and 1997 representing over 60% coverage. The nets distributed were cotton, rectangular and white and two sizes; three-quarters and double-sized. The prices of nets were set at K4,000 for the single sized, K6,000 for the double sized and K10,000 for the family sized. In Mushili, 49% coverage was achieved. The proportion of households with at least one net was over 60%. White nets were not preferred here. A review of the programme in 1997 found that a total of 6000 nets were sold (71% of target population). Prices of mosquito nets ranged between K3,000 and 7,000 (US\$2.50-5.50). The programme achieved a high level of understanding of re-impregnation. For dipping, prices of K150 were charged in Kasanka and K500 in Matongo and Manokola ¹³. Nets were bought at US\$3-5 from Chemdol (South Africa) and procurement was through the UNICEF South Africa office.

- **A pilot project among Women's Clubs initiated by the Tropical Disease Research Centre (TDRC) with WHO financial support in Ndola rural, Copperbelt Province;**
- **USAID, JICA and Zambia Common Agenda initiated the Eastern Province Integrated Malaria Initiative (EPIMI) in 1998;**

- **In 1998, the DHMT of 10 districts were supported by the NMCC to operationalize the implementation of ITNs, WHO supported the initiative** by donating 10,000 nets and insecticide for treatment.

Present and planned programs

District Health Management Team (DHMT)

The ITN programs in the 10 districts supported by NMCC/WHO folded in most of the districts after the distribution of the first batch of nets. However, a review was recently conducted of this programme in one of the districts where it is still running (albeit with problems)¹², Chongwe District, Lusaka Province. The biggest constraint identified for the sustaining of this programme by the DHMT is the sourcing of nets and insecticide. The nets are presently being purchased from private importing companies in Lusaka. The price of these nets varies from K15,000 to K18,500 depending upon size. Sources of insecticide have not yet been identified (supplies from NMCC are still being used).

United Nations Children's Fund / National Malaria Control Centre (UNICEF / NMCC)

UNICEF Zambia has been supporting the NMCC and DHMTs to implement a Community Based Malaria Prevention and Control Programme (CBMPCP) since the Samfya pilot project began in 1995. In 1998/1999 implementation was expanded to the rest of the communities in Samfya and three more districts in Luapula Province (Mansa, Mwense and Nchelenge). 55,000 nets and required amount of insecticide were distributed. The programme in each district is planned by the DHMT with guidance from the NMCC. The DHMTs and Rural Health Centre (RHC) staff are trained in CBMPCP by staff from the NMCC. Malaria Agents (MAs) are then selected by the community and trained by DHMT/RHC staff. The MAs then elect a Malaria Control Committee who is the main implementer of the programme. Nets and insecticide are procured and distributed by UNICEF, via their procurement center in Pretoria. The nets are rectangular, green and are available in 3 sizes, double (K11,000 / \$4.60), family (K12,000 / \$5), extra family (K13,500 / \$5.63) ICON is purchased at \$40/500ml (\$0.60/net, 1500 nets per unit). There is a commission of K500 to the MA and K500 to the MCC for each net sold. There is also a commission of K500 for every 4 nets retreated. Nets are treated at point of sale and recommended for retreatment after 12 months or after 3 washes. The MAs provide a door-to-door retreatment service. The programme has recently changed to deltamethrin (K-O Tab®) as the insecticide of choice. A revolving fund is in place where the money deposited by the communities is transferred to a dollar account in Lusaka.

NMCC and UNICEF are planning to expand the CBMPCP to 28 districts in Eastern, Western, NorthWestern and Northern Provinces.

Japanese International Co-operation Agency (JICA)

JICA provided nets and insecticide for the scaling up of the CBMPCP in Samfya District.

Food and Agriculture Organization (FAO)

FAO provided funding for the CBMPCP training of several of the communities in Mwense and Nchelenge District; they have procured nets and insecticide for the same communities. These nets and insecticide will be distributed by the DHMT and the proceeds will be banked and deposited in the dollar account along with the proceeds of the UNICEF nets.

United States Agency for International Development / Zambia Integrated Health Package (USAID/ZIHP)

The USAID-funded Zambia Integrated Health Project (ZIHP) has an emphasis on the training of DHMT staff, Community Health Workers (CHWs), and volunteers on Neighborhood Health Committees (NHCs) and malaria control sub-committees.

Society for Family Health (SFH)

SFH manages an ITN social marketing project, which is being implemented through the EPIMI, which is a joint venture between SFH, BASICS Project, and the NMCC. The project is in 3 districts in Eastern Province (Chipata, Chama, Lundazi). The project has also been implemented in Kitwe in Copperbelt Province.

The product is branded as 'PowerNET' and 'PowerCHEM'. It includes a net with a K-O tab and instructions in a plastic, resealable bag to be used for the treatment process. The target was an initial supply of 20,000 nets (and US\$80,000 funding for advertising and promotion). 2,238 nets were sold in the first four months of the project and more than 20,000 have been sold in total. The nets are from Chemdol (Global Manufacturing, S.A.), bought for US\$4.05-4.45, sold for K9000/\$3.60, then resold by community sales agents at K10,000/US\$4 and by a few commercial outlets at K12,000/US\$4.80. Green, rectangular nets are supplied in double (150x180x150) and family (190x180x150) sizes. K-O tab is procured from Chemdol at US\$.80/tab. Multiple net usage is being promoted for households so adults and children are covered. Distribution is through Neighborhood Health Committees, Agricultural Extension Officers, Kamoto Hospital, and commercial channels.

SFH are also planning to procure Permanets (overbranded as 'Safenite') for commercial sale (unsubsidized) in urban areas throughout Zambia. They have an initial procurement of 10,000 nets, but plan to procure more as required. This programme is supported by USAID.

UNICEF / SFH

UNICEF and SFH are planning a joint programme in Kasama District, Northern Province. UNICEF will implement the CBMPCP in rural clinics and SFH will implement in urban clinics. In the urban clinics SFH will target under 5 year olds and pregnant women, this targeting is not an approach they use in their programs in other districts.

CARE

CARE manages a 2 year Infant and Child Mortality Reduction Project (ICMRP), in Lusaka (8 compounds) and Ndola (6 compounds). 400 nets were procured from the NMCC for free (supplies were limited so they are still sourcing 1600 more). Icon® was also free from the NMCC (in future, CARE will source nets from elsewhere and buy insecticide locally). Nets are sold at: K10,000 (US\$4) or K13,000 (US\$5.20) if already treated. The target market is children under 5 years and pregnant women. Sales are subsidised to target households in project areas. Distribution is through community groups, with individuals trained to educate, sell, and retreat. Each project establishes a revolving fund. Communal dipping is planned for re-treatment.

Churches Medical Association of Zambia (CMAZ)

Distribution channels for ITNs are through mission hospitals and clinics. Baseline surveys were performed in three pilot health institutions before introducing ITNs. Over 6,200 nets were treated and distributed in the three pilot institutions. Sixteen institutions have bought nets to date. Sales are subsidized through funding from NORAD, although CMAZ recognizes the need to decrease the subsidy. Nets are bought at K26,000 (US\$10.40), (Emnet, Zimbabwe), K16,000 (US\$6.40), (Tanzania-through local agent) and sold at less than 50% of cost at K3,000 - 5,000 (US\$1.20 -

2). White, conical nets are used. Insecticide (*deltamethrin*) is bought locally from MacMed: (40 containers at K56,000/L, 500 sachets at K4,500/15ml. Nets are treated at a cost of \$0.18/net.

Development Aid People to People (DAPP)

DAPP have an ITN project in Chibombo District.

World Vision

World Vision has ITN projects in Gwembe, Sinazongwe and Choma Districts in Southern Province.

Adventist Development and Relief Association (ADRA)

ADRA have implemented an ITN project in Chadiza District, Eastern Province.

Lutheran World Federation (LWF)

LWF have community based ITN projects in Lundazi and Chipata Districts

Project Concern International (PCI)

PCI are providing ITNs to orphans and vulnerable children in Kiwe, Lundazi, Chama and Chipata Districts.

Plan International

Plan International has ITN projects in 3 communities in Chadiza District.

Association for Aid and Relief (AAR)

AAR has procured 3,000 Permanets for distribution in Meheba refugee settlement, Solwezi District.

Clarke Cotton Zambia (CCZ)

CCZ has an innovative and unsubsidized microcredit ITN project covering most parts of Eastern Province with a potential customer base of 45,000 cotton farmers. CCZ sells a package of a K-O net and K-O tab, on a credit scheme. Nets sell for K28,000-K42,000 (US\$11.66 - US\$17.50) for single, and double sizes respectively, and individual treatment tablets for K4,000. There was an initial supply of 20,000 nets, with a plan to import and sell another 10,000 nets in 1999.

3. CONSUMER MARKET FOR ITNs

3.1 Policy context

3.1.1 Luxury or public health product (nets)

Both factory-treated ITNs and insecticides for retreatment of nets are recognized as public health goods; untreated nets and netting materials are not.

3.1.2 Policies on taxation and tariffs ¹⁴

Nets/Netting & Insecticide:

Import tax: 15%

VAT: 17.5%

Total applied duty on nets: 50%

Insecticide:

Import tax: 15%

(COMESA originating products are subject to 40% of the general tariff rate)

Pre-treated nets or kits of net and treatment are VAT free

3.1.3 Registration and licensing procedures

Insecticides require approval from the Environmental Council in Zambia and a fee of K15,000 per product, as well as a K100,000 on products requiring a clearance certificate, is paid. No import license is required. An import declaration form is required to be filled with an import levy of 5% on the value of the goods being imported. There are no foreign exchange controls and donor funded imports are given a 15% tariff discount. Donor financed projects are import duty and tax-free. Inflation is a major non-tax barrier making micro-credit schemes more complex to administer due to different rates of exchange at the time of purchase and payment.

3.2 Current market

3.2.1 The insecticide control market

The insect control market has seen increased competition since liberalization of the economy in 1992. Before then, only two products i.e. Cooper by Africa Health and Target by Reckitt and Colman were available in Zambia (these products were mainly protected from competitors because they were locally packaged). The anti-mosquito control measures used are coils, aerosols, repellents and home made measures such as burning of leaves/herbs. Major brands include Baygon, Ridsect, Target, Doom and Aeroguard.

Table 5: Insect control products and their costs

Manufacturer	Product Name	Size (ml)	Price (K)
Insecticide spray			
Bayer / SA	Baygon	200	4,500
Bayer	Baygon	100	3,500
Sara Lee	Ridsect	235	4,220
Reckitt and Colman	Target	200	4,500
Reckitt and Colman	Target	250	4,200
Roberts Home Care /SA	Doom	325	6,300
Roberts Home Care	Doom	100	3,500
Mosquito coils			
Roberts Home Care	Doom		1,400
Sara Lee	Ridsect		1,500
Repellents			
Reckitt and Colman	Aeroguard	125g spray	3,700

Baygon, Ridsect and Target are advertised on television very intermittently. All the products above are sold in supermarkets, drug stores, chemists and minimarts.

3.2.2 Mosquito Nets

Table 6: Mosquito nets available in Zambia

Country/ Manufacturer	Ndola Weaving Textiles Ltd. (Zambia)	Vestergaard Frandsen	Emnet Ltd. (Zimbabwe)	Chemdol – netting from Ninjan and Lester (South Africa)	A to Z Textiles Ltd. (Tanzania)	Siamdutch (Thailand)	Sunflag Ltd. (Tanzania)
Form							
Sizes & Prices		All, permanet		White (double)			
Product Visibility/ Trade Channel							
Estimated Sales							
Contact Details of distributor/ Agent	Chemdol (Zambia) Ltd. - 'Global Nets and Netting'	TRADCO, 274516, 272194 Tradco@zammnet.zm	'ImpregNET' (net/K-O Tab) EcoMed Ltd. (K-O Net)	MacMed Ltd. (assorted) Chemdol Zambia, Godfrey Mulemba, 272793		Sangiene Ltd. (assorted)	Local shops ('Mmbu' nets, 'Deluxe Mosquito Net')

Nets are not evident in the general market except in Lusaka where prices are approximately K25,000 (US\$8) in the Lundazi market. In Lusaka, nets are also found in the second-class trading, district. In Samfya town, nets from Tanzania are available in the shops for K24,000-28,000 (compared to K11,000-13,500 available from the NMCC/UNICEF programme).

Table 7: General wholesale net sizes and prices

Net size	Price (K)	Price (US\$)
Rectangular		
Single	30,000	10
Three-quarter	25,000 – 37,500	8 – 12
Double	K38,000 – 48,000	12 - 15
Conical		
Three-quarter	K25,000-52,000	8 - 17
Double	K20,000-58,000	7 – 19
King	K31,000-137,000	13 – 45
Queen	K110,000	35
Infant	K93,000	30

3.2.3 Insecticides

Insecticides are available from the respective agrochemical distribution channels. Individual treatment packages are not readily available except when ordered with nets. These channels are the agrochemical depots for local farmers and through the employer based public health programs.

Table 8: Insecticides available in Zambia and their specifications

Product	Lambda-cyhalothrin	Cyfluthrin	deltamethrin	Permethrin	Alpha – cypermethrin
Manufacturer	Zeneca Public Health	Bayer Ltd.	AgrEvo (Aventis) Environmental Health	Gleneagles Healthcare (Scotland) MacMed (local manuf.)	Cyanamid
Distributor	Chemdol (Zambia) Ltd. P.O Box 33325 Lusaka	Bayer Ltd.	Sangiene Ltd.	Ecomark Ltd. P.O Box 2699 Harare – Zimbabwe	Rhône-Polenc
		AgrEvo	MacMed Ltd.		
		Ecomed Ltd. Siamdutch	Focus Development Laboratories Ltd.		
Brand name	ICON ®	Solfac ®	* K-Othrine ® # K-O Tab ®	Mosqpel ® Permecote ®	Fendona ®
Form	Liquid EC ^a or CS ^b	Liquid EW ^c	* Liquid # dispersible tablet	EC	SC ^d

^a EC = Emulsifiable Concentrate

^b CS = Capsule Suspension

^c EW = Emulsion in Water

^d SC = Suspension Concentrate

Size	1 liter		* 1 liter / 20 liter	10ml	250ml / 1litre
Packaging	bottle		Bottle / drum	sachet	bottle
Price					
Product visibility outlets	/				
Promotion materials					
Promotion activities					
Estimated sales					
National registration					
WHO/PES status					

3.2.4 Distribution

The main regions where nets are presently distributed either directly or through the distributors are Lusaka, Eastern, Copperbelt and Luapula Provinces. The main distribution channels include NGOs, the military, Zambian Consolidated Copper Mines (ZCCM), boarding schools, medical institutions, and District Health Management Boards (DHMB). Large companies with credit programs for employees (e.g. Nakambala Sugar Estate, Clark Cotton), and hotels/safari camps, may also be distributors. Most distributors do not target the individual. The local shops and tabletop vendors get most of their supplies from traders smuggling across the Tanzania and Malawi borders (e.g. Mmbu Nets' from Tanzania). Imported nets from South Africa are also available from South African stores (such as Shoprite).

3.3 Market analysis

3.3.1 Urban / Rural differentiation

It is estimated that Lusaka accounts for about 60% of the Zambian market and at least 10% of the Zambian population ¹⁵

3.3.2 Projected market

Some Market Segments

- Mining Companies
- Government – Army, Police, Hospitals, National Service
- Boarding Schools
- The Tourism Industry
- The Fishing Industry
- Agricultural Sector
- General Consumer market

Assumptions

- In every family the mother and father share a bed/mat and two children share one bed/mat.
- The warm market is comprised of those currently using sprays, coils or repellents. Empirical data for this is not available and is assumed at 40%.
- Families buying nets for the first time would be willing to buy only one net.
- Distribution of nets and insecticides would be nation-wide through private sector channels.
- There will be high intensity promotional efforts supported by public and private channels.
- 20% of families buying one net would buy a second net the following year.
- 30% of these nets would be retreated in every year (every six months).
- Annual increases in net sales would be 30% in year 2, 25% in year 3 and 15% in year 4.
- Annual increases in insecticide sales assume 30% retreatment of existing and new nets and a growth in sales related to the number of nets.
- The *low growth* represents 15% of the market being reached in year one and all these would be sold with insecticide. *Medium growth* represents 25% of the warm market being reached in year one. And the *high growth* represents 35% of the warm market being reached in year one, all nets being sold with insecticide.

Illustrative Sales over 5 years ^x

Number of households for targeting

Total Population (<i>millions</i>)	9.7
Estimated average family size	5
Warm market (% households)	40
Number of families using other repellents (warm market)	1,293,333

Table 9: Estimated 5-year sales
(pending market research)

3.4 Trading issues

3.4.1 Trade channels

As in many other countries, most Fast Moving Consumer Goods (FMCG) companies sell their products through the use of distributors. For instance Lever Brothers has at least 6 main distributors nation-wide. Distributors get the supply of products directly from the manufactures and in turn they service the wholesale and the retail channels. There are approximately 200 wholesalers, 150 supermarkets, 3000 stalls, 1200 over-the-counter groceries, and 1000 tabletop vendors in the country ¹⁶. Anti-mosquito products are distributed through the wholesaler trade, supermarkets and the open market (consisting of hawkers, kiosks, and grocers). The Shoprite Supermarket is rated the number one distributor for Lever Brothers Zambia. There are 14 Shoprite Supermarket stores in the country.

On average, the wholesale trade margins ranges between 10%-15% per unit of sale and the retail trade margin ranges between 30%-40% per unit of sale.

^x Population growth has not been taken into account (1998 populations used).

3.4.2 Promotional methods ¹⁷

- Chemdol places advertisements in the Lusaka Lowdown, a monthly periodical read by expatriates.
- EcoMed B advertises K-O Tab (Kenya, Zimbabwe, Zambia) and has plans for advertising in local newspapers and other media.
- Malvec is a private company contracted by AgrEvo to build ITN business through EcoMed, in Zambia and the region.
- The CBoH has placed some general advertisements on malaria. However, there is limited knowledge of ITNs in the media.
- SFH also uses PA systems on vehicles (for condom social marketing).

4. CULTURAL AND BEHAVIOURAL ASPECTS OF ITN USE

4.1 Net ownership

A workshop in 1998 hosted by NMCC and attended by partners including CDC, JICA, SFH, USAID and UNICEF selected 19 indicators to be used as the National Malaria Baseline ⁹. The data used is from multiple sources including CBOH/MOH HMIS, household and facility surveys conducted by USAID/ZIHP, and ITN programme data from SFH. A household survey in 12 districts conducted by USAID in 1999 found that the number of households with a mosquito net was 20.8% and with an ITN was 5.6%. Of the households with an ITN the proportion who had just 1 net was 3.5%, the proportion with 2 nets was 1.1% and those with 3 nets was 0.6%. Multiple ITN ownership is being encouraged, as it is common that if there is only one ITN in the household it is used by the father, mother and possibly babies, young children are not covered first. A recent survey by a team from WHO in the three districts of Chongwe, Mansa and Mwense found household mosquito net coverage to vary from 23.7% in Chongwe to 44% in Mwense with an average coverage of 28.3% ¹².

4.2 Net use

The USAID household survey carried out in 1999 (see 4.1), found the proportion of children under 5 having slept under a mosquito net in the past 7 nights, to have been 7.5%, and those having slept under an ITN to have been 1.9% ^a. The proportion of pregnant women who had slept under a mosquito net in the last 7 nights was 26.8%, whilst the proportion having slept under an ITN is unknown.

Table 10: Household net usage in two areas of Zambia

District / Area	% Households
Macha (Southern Province)	12
Mtendere Hospital (Lusaka Province)	16

4.3 Net treatment / retreatment

Samfya Project A survey on knowledge attitudes and practices in a community based malaria control project in Samfya District in Luapula Province in Zambia in 1996 ¹⁸ representing 2% of the population revealed the following results:

The Samfya study found that the majority of those with bednets (52%) in the sample population said that they wash their nets less than six times a year while 28% said that they wash theirs twice a year. 26% of those without nets said that they would wash their nets less than six times a year and 26% twice a year. 99% of respondents said that they would buy a net if one were brought to them. 42% had heard about ITNs from health workers and community malaria control agents. 99% knew that they were effective at preventing malaria. 39% of net owners wanted their net treated and 95% of all respondents said that they would use a treated net.

^a The period in which this data was collected is not known, seasonality of usage may affect these coverage rates.

4.4 Factors supportive of or obstacles to ownership, correct use, and treatment

In the Samfya District study (see 4.3) malaria was ranked as the primary health problem by 37% of respondents and 50% of them perceived malaria to be transmitted by mosquitoes. 98% said that malaria was common in the community and 8% said that using mosquito nets could prevent malaria. 92% thought that mosquitoes were more numerous in the rainy season. 21% prevented biting by sleeping under a home made net (although this was in a project area and thus did not reflect national coverage). All respondents knew what a mosquito net was, 55% had used one before and of these 21% were still using one. An assessment of willingness to pay, demonstrated that for single nets, 22.5% would be willing to pay K500, 22.5% K1,000, 20% K2,000, 8.2% K3,000 and 9% K4,000. For the double nets, 23% would be willing to pay K1,000, 41% K2,000, 16.4% K3,000, 23% K4,000 and 7.4% K5,000.

5. OTHER PROMOTION INFORMATION

5.1 Communication information

5.1.1 Telephone

The telephone facilities are among the best in sub-Saharan Africa with 2 satellite earth stations.

5.1.2 Television

Zambia National Broadcasting operates the only television station in the country. Television sets are owned by 35% of the Zambian population. The average rate for a 30 second TV spot ranges from US\$23 – US\$85 depending on whether prime time or not.

Total number of televisions: 215,000

Table 11: Costs per television spot at various times

Time / Channel	60 seconds (K)	45 seconds (K)	30 seconds (K)	15 Seconds (K)	7 Seconds (K)
Prime News	604,010	335,005	262,900	134,200	105,050
Prime +	543,120	301,510	237,490	120,780	94,270
Prime	483,120	268,400	220,00	96,800	84,700
A+	228,400	185,600	142,800	68,500	57,100
A	138,400	88,300	70,000	34,000	27,000

Time distribution

17.00 – 18.00	A+
18.00 – 18.50	Prime time
18.50 – 19.00	Prime +
19.00 – 19.30	Prime News
21.30 – 22.00	A+
22.00 - midnight	A Time

5.1.3 Radio

There are 4 national stations, Radio 1, Radio 2, Radio 4 and Radio Phoenix. In addition there are a number of community stations that have been established mainly by the Catholic Church and these stations carry no commercial advertisements. Generally radio listenership is high in local languages. Listenership for Radio 1 is 2.7 million people, 1.2 million people for Radio, 700 thousand people for Radio 4 and 400 thousand people for Radio Phoenix.

The average rates for a 30second radio spot ranges from US\$6 – US\$11 depending on whether primetime or not.

Total number of radios: 1,889,140

Table 12: Radio stations and their coverage

Station Name	Station Owner	Language	Coverage
Radio 1 (SW)	ZNBC	Zambian	National (2.7million)
Radio 2 (SW)	ZNBC	English	National (1.2 million)
Radio 4 (FM)	ZNBC	English	Line of rail (200,000)
Radio Phoenix (FM)	Hickey Studios	English	Lusaka and Copperbelt

There are a number of community stations that have been established mainly by the Catholic Church. They do not carry commercials at the moment

Table 13: Costs per radio spot at various times

Time/Channel	60 Seconds (K)	45 Seconds (K)	30 Seconds (K)	15 Seconds (K)
Prime	49,720	41,360	33,110	24,860
A	39,570	32,976	26,380	19,786
Special B	35,973	29,978	23,982	17,987

Note the difference in rates between channels and stations is very minimal. The highest rates have therefore been given.

5.1.4 The print media

There are 3 daily newspapers, Times of Zambia with a circulation of 30,000, Zambia Daily Mail with a circulation of 20,000, and The Post with a circulation of 15,000. There is only one weekly newspaper, the National Mirror with a circulation of 12,000 and 2 Sunday newspapers, the Sunday Times of Zambia and Sunday Mail with circulation of 20,000 and 35,000 respectively.

Table 14: The print media, their specifications and costs

Name of publication	Size	Frequency	Unit cost	Circulation
Times of Zambia	Broadsheet	Daily	4,600 pcc	30,000
Zambia Daily Mail	Broadsheet	Daily	4,600 pcc	20,000
Sunday Times of Zambia	Broadsheet	Sunday	4,600 pcc	20,000
Sunday Mail	Broadsheet	Sunday	4,600 pcc	35,000
The Post	Tabloid	Daily	4,560 pcc	15,000
National Mirror	Tabloid	Weekly	684,00 pp.	12,000

5.1.5 Interpersonal communication

Drama groups are highly effective and are commonly used forms of communication.

5.1.6 Outdoor communication

Either advertising agencies or individual companies own the outdoor hoardings. The average rates for outdoor rentals ranges from US\$400 to US\$800 per month depending on size and location.

5.2 Advertising and promotion companies

Broughton Advertising

Contact details:

Broughton Advertising

1st Floor, Room 146,

Permanent House,

Cairo Road

PO Box 30304

Lusaka, Zambia

E-mail: broad@zamtel.zm

International affiliation: FBC Worldwide

ANNEX 1

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The purpose of this document is to serve as a resource for those interested in planning and launching ITN promotional activities in Zambia.

An initial briefing book was assembled by Ms. Rima Shretta of the Malaria Consortium in December 1999, who carried out a “desk review” and compiled already-existing information on ITNs in Zambia. This expanded briefing book incorporates supplemental information obtained during in-country visits made in May 2000 by the staff of Academy for Educational Development, Group Africa, Inc., Johns Hopkins University, SC Johnson and was updated by Jayne Webster of the Malaria Consortium in September, 2000.
