Sub-Saharan Africa • Tanzania

A to Z Textile Mills: A Public Private Partnership Providing Long-Lasting Anti-Malaria Bed Nets to the Poor

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Sector • Health
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Summary

A to Z Textile Mills of Tanzania (A to Z) became the sole African producer of long-lasting insecticide bed nets (LLINs) in Africa in 2003. LLINs are a significant improvement over traditional ITNs, because they kill mosquitoes on contact for five years without re-treatment while resisting rips and tears. In contrast, traditional ITNs need re-treatment every six months and are prone to tearing. A to Z manufactures LLINs using a new technology that has been invented by Sumitomo Chemical Company of Japan and transferred to A to Z. A to Z produces the LLINs as a profit-oriented business venture and sells LLINs to both the open market and through the PPP.

Malaria is caused by a parasite transmitted through mosquito bites. Malaria kills one million people in the world each year, 90 percent of whom are located in Africa. The effects of malaria include the reduction of annual GDP in Africa by an estimated US$12 billion. Olyset LLINs are cost effective and still remain 50 percent effective in killing mosquitoes after five years. They reduce malaria morbidity by 50 percent and child mortality by 20 to 35 percent, and WHO has declared them safe for use by children.

Olyset LLINs are made accessible through direct and mobile marketing by A to Z, as well as through social marketing by the Government of Tanzania through a National Voucher Scheme, which avails subsidized LLINs to pregnant mothers and children under five years most vulnerable to malaria.

Introduction

The World Health Organization (WHO) recognizes malaria as one of the major health challenges undermining development among the poorest Africans, alongside HIV/AIDS and Tuberculosis. During the 1990s, African countries were faced with a worsening situation in which malaria became more and more resistant to an increasing number of drugs and insecticides. The poor were especially vulnerable to this increased threat as malaria became resistant to the cheapest anti-malarial drugs (based on chloroquine and sulfadoxine-pyrimethamine-sp). At the same time, the Organic Pollutants Treaty phased out global use of dicophane (DDT), which was previously used to kill mosquitoes in homes and residential areas. Consequently, this forced African governments to seek alternative malaria prevention and treatment approaches.

In 1998, the formation of Roll Back Malaria (RBM) provided a forum through which African governments can partner with other organizations in scaling up efforts to fight against the malaria pandemic in their member countries. RBM is a global partnership that was initiated by WHO, UNDP, UNICEF and the World Bank. RBM works with governments,

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1 Roll Back Malaria. 2007. What is Malaria? Available at: www.rbm.who.int/cmc_upload/0/000/015/372/RBMInfosheet_1.htm

2 The RBM Board is made up of academia, OECD donor countries and representatives of WHO, UNDP, UNICEF and the World Bank.
development agencies, NGOs and the private sector to reduce the human and socio-economic costs of malaria. The goals set by RBM, which included prompt access to effective treatment, promoting insecticide treated bed nets, improving vector control, prevention and management of malaria in pregnancy and improving prevention of and response to malaria epidemics were to be achieved by holding malaria endemic countries and other RBM partners responsible, thus boosting political commitment of African leaders to tackle the malaria pandemic.

The Abuja Declaration

In April 2000, fifty-three African heads of state and their representatives met in Abuja, Nigeria, to translate RBM’s goal of halving the malaria burden by 2010 into tangible political actions. The summit was planned and hosted by Nigeria’s President Olusegun Obasanjo, in partnership with the RBM partners, and culminated in all 53 countries signing the Abuja Declaration (see Appendix A). In the Declaration, the heads of state acknowledged the human and economic costs of malaria as follows:

- Malaria causes one million deaths annually in Africa
- Nine out of ten cases of malaria worldwide occur in Africa south of the Sahara
- Malaria costs Africa over US$2 billion per annum, yet it can be controlled for a small fraction of that amount
- The most impoverished people in the continent suffer most, and malaria keeps them poor
- A poor family living in a malaria-affected area may spend up to 25 percent or more of its annual income on malaria prevention and treatment
- Malaria has slowed economic growth in African countries by 1.3 percent per annum; as a result, GDP for African Countries is now 37 percent lower than it would have been in the absence of malaria

The Declaration set several objectives including: halving malaria mortality in Africa by 2010, initiating activities at the country level, allocating resources, ensuring access to affordable treatment within eight hours of the onset of symptoms (with particular attention to pregnant women) and health reforms to allow access to treatment for the poorest groups in society.

In the 2000 Abuja Declaration, the African heads of state also resolved to ensure that 60 percent of the population at risk sleeps under insecticide treated nets (ITNs) by the target date of 2005. To help reach that target, African governments committed their respective countries to reduce tariffs and taxes imposed on mosquito nets, netting materials and insecticides, in order to lower retail prices. Tanzania was the first country to implement this policy and 20 more African countries have followed suit. By participating in this implementation these countries are also addressing the Millennium Development Goals (MDGs) for alleviating extreme poverty, namely:

3 See Appendix B for core indicators of malaria in Tanzania
To reduce child mortality by two thirds between 1990-2015
To improve maternal health and reduce maternal mortality by three quarters between 1990 and 2015
To combat HIV/AIDS, malaria and other diseases

Malaria Disease

Malaria is an acute life-threatening parasitic disease, which clinically manifests as chills, fever and profuse sweating. The clinical symptoms of malaria vary from no symptoms to severe symptoms, according to the species of the parasite, the patient’s state of immunity, the intensity of infection and the presence of accompanying conditions such as the presence of other diseases. Malaria is transmitted through mosquito bites, by a single-celled parasite known as plasmodium. There are four types of plasmodium: *P. malariae*, *P. ovale*, *P. falciparum*, and *P. vivax*. The latter two are the most common but *P. falciparum* is the most dangerous of the four, accounting for the majority of the deaths caused by malaria. Malaria is both preventable and treatable.

Globally, there are approximately 300 million cases of malaria leading to more than one million deaths a year. The majority of these occur in Sub-Saharan Africa where approximately 3,000 deaths occur each day, the majority of them being among children under five years of age (see Figure 1 for the African populations at risk of malaria). In Africa, approximately 10,000 women and 200,000 of their infants die of malaria infection during pregnancy each year.

Malaria increases poverty by significantly reducing productivity and social stability. It accounts for ten percent of the disease burden, 40 percent of public health expenditure, 30 to 50 percent of inpatient admissions and 50 percent of outpatient visits within the continent. Malaria also prevents children’s educational and social development, because of school absenteeism. Children who survive episodes of severe malaria often suffer from learning impairment and/or brain damage.

Rural and poor populations carry the overwhelming burden of malaria, because access to effective treatment is extremely limited. In rural areas, the infection rates are highest during the rainy season, which is a time of intense agricultural activity. Research indicates that families affected by malaria harvest 60 percent less crops than other families.

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5 United Republic of Tanzania, 2000
7 RBM, 2000.
In Tanzania, about 16 million cases of malaria are reported each year, leading to an estimated 125,000 deaths, with 80,000 of these occurring in children under five years of age. Overall, 93 percent of Tanzanians are considered at risk of infection.

![Figure 1: Population at Risk of Malaria in Africa](http://www.afro.who.int/malaria)

**PREVENTION AND TREATMENT STRATEGIES**

The World Health Organization recognizes malaria as a disease of poverty and as a cause of poverty itself. Its prevention is clearly of critical importance, and the targeted delivery of interventions to prevent it should make the best use of limited financial and human resources. WHO recommends the following package of interventions for the prevention and control of malaria:

- Effective case management for malaria illness
- Use of insecticide-treated nets (ITNs) to prevent infection
- Intermittent Preventive Treatment (IPT) to prevent a symptomatic infection among pregnant women living in areas of moderate or high transmission

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9 Roll Back Malaria. 2007. What is Malaria? Available at: [www.rbm.who.int/cmc_upload/0/000/015/372/RBMInfosheet_1.htm](http://www.rbm.who.int/cmc_upload/0/000/015/372/RBMInfosheet_1.htm)
Long Lasting Insecticide Nets (LLINs)

Bed nets are one of the most effective means for preventing the transmission of malaria. In malaria-prone countries it is common practice for people to sleep surrounded by a net that forms a physical barrier against mosquitoes. Bed nets are typically hung from the ceiling and drape the bed on all sides (see Figure 2). Bed nets have been in use on the African continent for almost a century, but their use is limited among poor people because of the costs involved. A typical LLIN costs an average of US$5 on the open market, and considering that each member of the family should have one, the cost is prohibitive for those who live near or below the poverty line of one dollar per day. Apart from the cost, impoverished people are sometimes reluctant to use LLINs for various reasons ranging from the fact that they are not used to them to misconceptions about LLINs. For example, they may have concerns about the safety of the chemicals within the nets.

LLINs like Olyset are embedded with insecticides that kill mosquitoes on contact. The nets act as a chemical death trap for mosquitoes, thus protecting the people sleeping under them from the mosquito bites. Traditional ITNs do kill mosquitoes on contact, but they are prone to tearing (see Figure 3) and must be re-treated with insecticide every six months, at a cost that is too high for most poor people.

In addition to this, people find the whole process of re-treating the nets every few months inconvenient. The LLINs produced by A to Z do not need to be re-treated over their five-year life spans. This is a vast improvement compared to traditional nets. A to Z’s bed nets are made of polyethylene, which is strong and resistant to tears (see Figure 4).

The technology that enabled long lasting insecticide-treated bed nets is referred to as “olyset” and was invented by Japan’s Sumitomo Chemical Company. Their breakthrough concept was to directly incorporate the insecticide permethrin (a synthetic molecule similar to natural
pyrethrin which comes from a species of chrysanthemum) into the fibers of the net. The insecticide poses minimal risk to humans (it is certified as safe for pregnant women and children by the WHO). The nets can be washed and are guaranteed for five years. In practice in Africa, Sumitomo’s research claims that nets often last for more than seven years.

The use of insecticide-treated bed nets has been shown to give efficient protection against malaria in a wide variety of settings across Africa. LLINs have been found to reduce mortality among children less than five years by approximately 20 percent.\(^\text{10}\) While preventing malaria, LLINs also effectively reduce the incidence of anemia in expectant mothers and low birth weight in their infants. Both conditions are side effects of malaria.

THE DEVELOPMENT OF LONG-LASTING BED NETS

After the success of the Abuja Summit in which bed nets were acknowledged to be at the forefront of the war against malaria, WHO scientist Pierre Guillet\(^\text{11}\) conceived the original idea for the partnership, which he consequently developed with Steven Phillips, Medical Director for Global Issues and Projects at Exxon Mobil. Guillet’s idea was based on Sumitomo’s 1978 invention of olyset technology.

Guillet’s concept was very simple. As he described it, “Exxon would donate plastic, Sumitomo would provide the [olyset] technology, and a manufacturer would adapt it in Africa”.\(^\text{12}\) Once WHO had endorsed the long lasting effectiveness of olyset, Anuj Shah, CEO of A to Z Textile Mills in Tanzania, became interested. A to Z is one of the biggest bed net producers in Africa. At about the same time, the Acumen Fund also became interested in the technology’s potential to alleviate poverty and joined the partnership. Acumen fund subsequently drew in A to Z as the manufacturer by lending it US$325,000 to buy the requisite machinery and specialized chemicals. Acumen settled on A to Z after assessing several African manufacturers.

The final concept for the partnership was settled based on market economics rather than charity with the commercial partners achieving their objective of maximization of profits and nonprofit partners meeting their goals without interfering with market principles.

The partners formally launched the new technology on 26 November 2003 at A to Z Textiles Mills in Arusha, Tanzania.\(^\text{13}\) The technology launched amidst hope that the partners had set a precedent for an innovative and replicable public private partnership in the war against malaria.

\(^{10}\) Lengeler, 1998
\(^{12}\) Ibid.
A to Z Textiles

In 1966, A to Z Textile Mills started as a small garment making enterprise with six sewing machines in Arusha, Tanzania. The Indian-Tanzanian Shah family privately owns the company, and it is located approximately half a kilometre from Arusha’s town centre. A to Z began manufacturing traditional polyester mosquito net fabrics in the mid-1970s on a small-scale basis, but grew production to a larger-scale by 1997 using internally generated profits. Besides bed nets (which are the company’s main product, constituting 80 percent of total production) A to Z manufactures t-shirts, bed sheets, undergarments and household plastic items.

A to Z Textile Mills is a fully integrated textile mill which includes weaving, dyeing, knitting, cutting and making departments. The company produces six million LLINs annually for distribution in Tanzania and other African countries. A to Z is one of the lowest-cost manufacturers in Africa (on par with Asian firms), due to an intense focus on innovation and productivity. A to Z has a workforce of about 3,400, the majority being low-skilled employees involved in stitching jobs (see Figure 5). Women constitute about 90 percent of the A to Z workforce.

A to Z Textiles sells a large percentage of its LLINs to NGOs and development agencies such as UNICEF, The Global Fund, Population Service International (PSI), and USAID’s President’s Malaria Initiative (PMI). It also sells bed nets to the local market on a commercial basis, both through filling pre-orders and by active marketing. Over the last four years, A to Z has been expanding capacity and extending its product line. The company now produces bed nets in a variety of colors and sizes. It also produces olyset door covers and curtains (see Figure 6). These may prove to be a cheaper alternative to bed nets for poor people due to their multi-purpose functions.
The Partners

The following is a brief description of the partners involved in the long lasting bed nets project.

ACUMEN FUND

Acumen Fund is a non-profit organization that connects individual and corporate philanthropists with organizations that are developing innovative solutions to social problems around the world. Acumen Fund brings together the resources, ideas and people needed for these organizations to create long-term, measurable impacts. Their investments seek to alter market dynamics in the healthcare landscape of the developing world by reducing costs and increasing access to previously unavailable products and services. The Acumen Fund invests philanthropic resources in innovative social entrepreneurship enterprises.14

SUMITOMO

Founded in 1913, Sumitomo Chemical Company has grown to be one of the world’s leading multinational chemical companies with annual sales amounting to US$11 billion. Today, Sumitomo includes some 100 companies operating globally in six business sectors: basic chemicals, petrochemicals, fine chemicals, IT-related chemicals, agricultural chemicals and pharmaceuticals. Sumitomo is an innovative business with about ten percent of its 19,000 employees working in research and development functions.

WORLD HEALTH ORGANIZATION

The World Health Organization (WHO) is an agency of the United Nations concerned with public health. WHO’s mission is “the attainment by all peoples of the highest possible level of health,” and its major task is “to combat disease, especially key infectious diseases, and to promote the general health of the peoples of the world.”15 WHO also enters into partnerships with the private sector, including several with the purpose of controlling malaria.

UNICEF

UNICEF is the branch of United Nations that advocates for the rights of children. The organization works in 191 countries through country programmes and National Committees and is part of the Global Movement for Children – a broad coalition dedicated to improving the life of every child. UNICEF has an extensive global health presence and strong partnerships with governments and non-governmental organizations at national and community levels. Because UNICEF understands the threat of malaria to the health and progress of African children, it supports practical solutions for the women and children at greatest risk.

14 Africa Science News. 2006. Is the Global Fund commercializing Malaria? Available at: www.africasciencenews.org/1s%20the%20global%20fund%2
15 World Health Organization (2007)
EXXON MOBIL

Exxon Mobil came into being in 1999 after the formal merger of Exxon and Mobil petroleum companies. As of 2006, Exxon Mobil was the largest company in the world in terms of both revenue and market value.\(^{16}\) Activities include exploration for oil and natural gas, and the manufacture of fuels, lubes and chemicals.

OTHER PARTNERS

Other partners involved in the implementation of the ITN project include the Tanzanian Ministry of Health, the Government of Tanzania, the Global Fund to Fight AIDS, Tuberculosis and Malaria and several non-governmental organizations that work in the health sector in Tanzania such as CARE Tanzania, Population Services International and Mennonite Economic Development Associates. Kenya Peat Marwick Group was also involved in the partnership as an auditor.

Business Model

PRODUCTION

After exhaustive debate, the partners agreed that the financial sustainability of the initiative was essential. This meant that the for-profit partners had to make money from their activities. A to Z was suitable for the project because it was already one of the lowest-cost manufacturers of bed nets in Africa before the onset of this partnership. The Acumen Fund provided funds to A to Z for the purchase of machinery. Sumitomo waived license fees, trained A to Z technicians and helped make the company’s operations more efficient. A to Z also bought resin from Exxon Mobil and produced the ITNs in Tanzania. Exxon Mobil gave a donation to UNICEF to purchase ITNs and, in addition to this, retails ITNs at MobilMart service stations in five African countries.\(^{17}\) This arrangement allowed the profit-oriented companies to make money and the non-profit organizations to fulfill their missions as well.

PRODUCT

The long lasting insecticide treated nets are available in different colors and sizes. Market research was conducted to identify consumer tastes and preferences, resulting in the manufacturing of green, white and blue bed nets. The sizes are suitable for most sleeping requirements ranging from baby cribs to double beds.

MARKETING AND DISTRIBUTION

A to Z markets long lasting insecticide nets in two ways: direct marketing by the company in the open market and through the public private partnership.

A to Z employs ten salesmen placed in different regions of Tanzania who act as primary agents for the manufacturer and provide links to the secondary agents, including retailers and

\(^{16}\) Exxon Mobil (2007)

\(^{17}\) Fastcompany (2005), Net Profit. Available at: www.fastcompany.com/magazine/92/social-capital.html
outlets in each village, as well as wholesalers in each division. The salesmen collect orders, ensure consistent supplies of the bed nets and recruit new retailers. Members of the community (including private shopkeepers, community leaders, health workers and religious leaders) help recruit retailers to stock the LLINs in their shops. A reward system is in place for retailers and wholesalers who reach prescribed sales targets. Over time, any inactive retailers are replaced.

The majority of the nets were initially sold through the partnership, with the balance being retailed on the open market. This situation has changed over time as circumstances change. For example, the first phase of the voucher scheme (see below) ended at the end of 2006. Therefore, the majority of nets are currently being sold on the open market. Either way, A to Z operates as a normal profit-oriented business. These nets are subsequently sold to poor people at subsidized rates. Sometimes they are even given away free of charge to those suffering from extreme poverty.

**PRICE**

A to Z produces LLINs as part of the normal business operations and makes standard profits on all LLINs sold either through the open market or through the public private partnership. The nets sold on the open market retail at TZS 6,410 (US$5).\(^{18}\) ITNs sold through the PPP are bought at market prices from the manufacturer and sold at a subsidized price of TZS 2,750 (US$2.15) to vulnerable groups. This selling price was determined through research based on experience from previous bed net projects and information on the purchasing power of vulnerable groups.

**PROMOTION**

A to Z promotes the nets it sells on the open market and the public private partnership promotes, publicizes and distributes LLINs in the low-income end of the market. This latter activity has led to creation of demand and adoption of the bed net culture among poor people and helped A to Z’s promotion efforts overall.

The United Republic of Tanzania and a number of the non-profit partners coordinated research to develop the most effective promotion materials, which included billboards, posters, leaflets, exercise books used in primary schools, t-shirts, umbrellas, caps and point-of-sale stickers and flags. Information, Education and Communication seminars were held for A to Z sales agents and groups of specially recruited village resource people once every six months. The village resource people include village leaders, village health workers, primary school teachers and Maternal and Child Health Aides.

**THE TANZANIA NATIONAL VOUCHER SCHEME**

The PPP also initiated the Tanzania National Voucher Scheme (TNVS), whereby the government subsidizes the cost of LLINs for pregnant women and young children while A to Z

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\(^{18}\) Mean Exchange Rate US dollar to Tanzanian Shilling in December 2006. One USD equals 1.282 TZS
Z carries out distribution and sales. His Excellency President of the Republic of Tanzania officially launched the scheme on 22 October 2004.

In order to effectively reach this group, a discount system was developed. The system is based on simple paper vouchers issued through the Maternal and Child Health (MCH) clinics. The vouchers are given to pregnant women when they visit MCH clinics, as well as to mothers of children under five years of age. The implementation of the voucher scheme reflects a successful public private partnership.

In order to assist the Tanzanian government in scaling up the LLIN initiative, the Global Fund to Fight AIDS, Tuberculosis and Malaria (GFATM) agreed to support the programme. GFATM used US$12 million to finance the TNVS, so that pregnant women and their infants (the groups most at risk from malaria) could have access to LLINs at greatly reduced prices.

Under the scheme, pregnant women are issued a discount voucher of TZS 2,750 (US$2.15) on their first visit to a Reproductive and Child Health clinic (RCH), which they use towards the cost of a LLIN in selected private sector retail outlets. The retailers are reimbursed on their next order with TZS 50 (US$0.04) for each voucher as a handling charge. The Tanzania National Voucher Scheme was rolled out in five stages, starting in October 2004, and reached the whole country by March 2006. The voucher scheme was divided into four components, which were implemented by different contractors selected through competitive bidding:

- Training and promotion: World Vision in association with CARE Tanzania
- Logistics: Mennonite Economic Development Associates
- Monitoring and Evaluation: Ifakara Health Research and Development Centre
- Audit: Kenya Peat Marwick Group

Council Health Management Teams (CHMT) played an important role in overseeing the activities of the RCH staff in distributing vouchers and disseminating malaria messages. A training and promotion contractor trained RCH and CHMT members on all issues related to the TNVS. Before the official start of the scheme, representatives from the training and promotion contractor visited each regional headquarters and district council to introduce the programme to the respective local authorities.

The logistics contractor, in close collaboration with the CHMT, ensured that the vouchers were distributed to all private, public and voluntary hospitals and to all health centres and

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19 The Global Fund was established in 2002 with the support of world leaders and the UN to address the concerns raised by the G8 meeting in Okinawa and the Abuja Summit to fight three of the worlds most devastating diseases i.e. malaria, TB and AIDS. It is a partnership between governments, NGOs, the private sector and affected communities, and its sole purpose is to raise funds and make grants to countries. It does not implement any programme but works through the existing machinery in each country. To date, it has disbursed US$6.6 billion to 460 programmes in 136 countries. [www.theglobalfund.org/en/](http://www.theglobalfund.org/en/)
public health dispensaries. The District Trade Officers assisted the logistics contractor by identifying retail outlets that could be selected for the voucher scheme.

TNVS utilizes the social marketing concept, which focuses on social benefit through the improvement of the peoples’ lives, rather than the financial gain of the marketer. TNVS offered a way of increasing demand for ITNs through promotion, while at the same time supplying nets at subsidized prices. The programme assessed the extent to which it reached the poorest in the served population through annual household coverage surveys.

In Tanzania, there was a rapid overall increase in people using LLINs due to a number of factors including the social marketing campaign, the existing demand for mosquito nets (which was extremely high due to the highly visible mosquito nuisance) and the existing active private sector distribution system for the nets.

The use of LLINs has also been promoted through lobbying for reduction of taxes and tariffs on mosquito nets, netting materials and insecticides. The Ministry of Health and Social Services has made efforts to coordinate LLINs manufacturers in applying for tax exemptions of the polyester yarn, one of the raw materials in the manufacturing of mosquito nets.

Development Benefits

ACCESSIBILITY
The nets produced by A to Z Textiles are accessible to the people most affected by malaria, due to the adoption of social marketing as a strategy to deliver the LLINs. The discount voucher system facilitated access for pregnant women and young children, without excluding the poorest. The programme allowed LLINs to reach many of the most remote rural settlements where the poorest people are concentrated.

EFFICIENCY AND SAFETY
Consistent use of LLINs has been shown to decrease severe malaria by 45 percent, premature births by 42 percent and all-cause child mortality by 17 to 63 percent. In most settings, LLINs are the most effective way that families can protect themselves from malaria. In August 2004, the American Journal of Tropical Medicine and Hygiene suggested that pyrethroid-treated nets (like A to Z’s nets) are as effective for malaria control as house spraying with DDT. Thus a positive side effect of bed nets is to reduce the use of DDT, in general. In Tanzania, LLINs are currently protecting more than five million individuals from mosquitoes and malaria. The World Health Organization has certified the nets as safe for children.

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20 Social marketing is the use of marketing principles and techniques to influence a target audience to voluntarily accept, reject, modify or abandon a behavior for the benefit of individual groups or society as a whole (Kotler et al, 2002 and Andreason, 1995).

COST EFFECTIVENESS
LLINs are slightly more expensive than traditional ITNs to purchase, but the benefits outweigh this because they remain 50 percent efficient at killing mosquitoes on contact after five years. When the cost of re-treating traditional ITNs is factored in, LLINs are much more cost effective than traditional ITNs.

CREATION OF EMPLOYMENT
Production of the LLINs has already created over 3,200 new direct jobs (of which 90 percent are filled by women) with those who work for A to Z earning 20 to 30 percent more than employees of traditional ITN makers. The increased income offers opportunities for better housing, better quality education for children, improved access to healthcare and higher standards of living.

IMPROVED PUBLIC HEALTH
A lower incidence rate of malaria means that the general level of health in the country will improve. The total result is less suffering and reduced pressure on public health services, thus enabling increased attention to other public health problems such as AIDS and tuberculosis. The fact that the price of the LLINs is subsidized allows even the poor to afford protection against malaria.

ECONOMIC BENEFITS
A healthier nation is a more productive nation, and in addition to this, there will be substantial savings on the resources used to treat malaria. All this will be reflected in an improved GDP. The Tanzania National Voucher Scheme also contributes to economic activity by further involving local distributors and retailers.

Innovations

PUBLIC PRIVATE PARTNERSHIP
This public private partnership is innovative, because it benefits low-income people by allowing the profit-oriented businesses (i.e. A to Z, Sumitomo, Exxon Mobil, contractors, distributors and retailers) to make money. At the same time it also allows the non-profit organizations such as the Tanzanian government, WHO and UNICEF to achieve their respective objectives. All of this is done without distorting market economics.

THE VOUCHER SCHEME (TNVS)
The design of the Tanzania National Voucher Scheme ensures broad coverage of distribution of the ITNs and leverages the reach of the commercial distributors. This scheme encourages pregnant women to consistently attend the antenatal clinics, which results in proper postnatal care that is beneficial to both child and mother. The scheme not only increases accessibility to the ITNs but also stimulates private sector activity in Tanzania, because the ITNs are locally produced and distributed to the vulnerable groups.
**A TO Z TEXTILE MILLS**
A to Z Textile Mills produces LLINs from polyethylene which is much stronger than polyester, thus the nets are more durable than the traditional nets. The long lasting insecticide-treated bed nets remain effective for up to five years with no need for re-treatment (unlike the traditional nets, which last about six months). A to Z has innovated further by producing insecticide treated window curtains and door coverings using the same material, thus reducing mosquito invasion in homes.

**Challenges**

**NON-PROFIT PARTNERS**
In their effort to support use of ITNs, the not-for-profit partners face many challenges including limited financial resources and the cost and logistics of distribution and publicity.

**CREATING A BED NET CULTURE**
There has been the necessity for the partners to create a bed net culture, which has been largely non-existent among most vulnerable groups. In the most remote parts of Tanzania this has been done through social marketing, which aims at achieving substantial and sustainable use of LLINs, thereby improving the social status of the poor and vulnerable groups rather than only the financial gain to the marketer. The Tanzania National Voucher Scheme utilized the social marketing concept and achieved national coverage in Tanzania in March 2006.

**COSTS**
Subsidizing LLINs for the most vulnerable groups does provide optimum health benefits in the long run, but it is also expensive. And it is clear that without the subsidies, some poor people could not afford the LLINs.

**FUTURE COMPETITION**
There are other major producers of traditional insecticide-treated bed nets in Tanzania, namely, Sunflag Limited, Moshi Textiles Mills and TMTL. A to Z’s competitive edge is its low-cost status and the fact that it is the only producer of LLINs in Africa so far, but this is unlikely to remain for long because the contract with Sumitomo is non-exclusive. Therefore the challenge for A to Z is to convince the public that LLINs are superior to traditional bed nets and to prepare for competition that is likely to intensify. Also, the elimination of duties on imported LLINs is anticipated to create additional competitive pressure in the local market.

**CHALLENGES TO SCALING UP**
Challenges to scaling up include the following:
- Resin, which is the main raw material in production of LLINs, is a chemical product of petroleum, thus change in petroleum prices results in unpredictable change in prices of resin.
- Machinery and spare parts needed for the expansion of the plant are very expensive; therefore, significant capital investments are needed for further scaling or replication of A to Z’s business.

**Scalability & Replicability**

UNICEF and WHO have emphasized the need for further development of the long lasting bed net technology and the involvement of additional partners. They are also encouraging similar transfers to other African companies and increased funding to subsidize the purchase of the LLINs for the poorest families. Sumitomo has expressed its willingness to transfer the olyset technology to more African countries. The model has achieved scale and reach throughout Tanzania through the TNVS, and it has served as an example for Kenya, which has also emulated the scheme. If the Abuja targets are to be achieved, this translates to opportunities for producers of traditional ITNs to venture into the production of LLINs.
References


Interviews


Wisu, Jane. Regional Health Officer, Mt Meru Regional Hospital, Arusha. 5 January 2006.

All photographs courtesy of Acumen Fund 2006.
Appendix A: The Abuja Declaration

AFRICAN SUMMIT ON ROLL BACK MALARIA 25 April 2000, Abuja, Nigeria
The Abuja Declaration on Roll Back Malaria in Africa
By the African Heads of State and Government

We, the Heads of State and Government of the 53 countries of Africa, meeting in Abuja, Nigeria on 25 April, 2000, Recalling the Harare Declaration of 2-4 June 1997 on Malaria Prevention and Control in the context of African Economic Recovery and Development, and the subsequent African Initiative for Malaria control in the 21st century which became Roll Back Malaria in Africa in late 1998, Bearing in mind other major Declarations on health and development adopted by the Organization of African Unity (OAU), Recognizing the disease and economic burden that malaria places on hundreds of millions of Africans and the barrier it constitutes to development and alleviation of poverty, Taking note that

- Malaria accounts for about one million deaths annually in Africa,
- Nine out of ten cases of malaria worldwide occur in Africa south of the Sahara,
- Malaria cost Africa more than US$2 billion in 1997, and can be controlled for a small fraction of that amount,
- Those who suffer most are some of the continent's most impoverished and that malaria keeps them poor,
- A poor family living in malaria affected areas may spend up to 25% or more of its annual income on prevention and treatment,
- Malaria has slowed economic growth in African countries by 1.3% per year as a result of which GDP for African countries is now 37% lower than it would have been in the absence of malaria,

Considering that malaria is preventable, treatable and curable, Acknowledging the commitment to improving health and promoting well-being of Africa's people from development partners, Appreciating the momentum offered by Roll Back malaria movement to help reduce their malaria burden, Emphasising that a unique opportunity now exists to reverse the malaria situation in Africa,

1. REDEDICATE OURSELVES TO:


2. COMMIT OURSELVES TO AN INTENSIVE EFFORT TO:

i. Halve the malaria mortality for Africa's people by 2010, through implementing the strategies and actions for Roll Back Malaria, agreed at the summit.
ii. Initiate actions at country level to provide resources to facilitate realization of RBM objectives.
iii. Work with our partners in malaria-affected countries towards stated targets, ensuring the allocation of necessary resources from private and public sectors and from non-governmental organizations.
iv. Create an enabling environment in our countries which will permit increased participation of international partners in our malaria control actions.

3. RESOLVE TO:

Initiate appropriate and sustainable action to strengthen the health systems to ensure that by the year 2005,

i. At least 60% of those suffering from malaria have prompt access to and are able to use correct, affordable and appropriate treatment within eight hours of the onset of symptoms.
ii. At least 60% of those at risk of malaria particularly pregnant women and children under five years of age, benefit from the most suitable combination of personal and community protective measures such as insecticide treated mosquito nets and other materials to prevent infection and
suffering.
iii. At least 60% of all pregnant women who are at risk of malaria, especially those in their first pregnancies, have access to chemoprophylaxis or presumptive intermittent treatment.

4. **CALL UPON:** All member states to undertake health systems reforms which will,

   i. Promote community participation in joint ownership and control of Roll Back Malaria actions to enhance their sustainability.
   ii. Make diagnosis and treatment of malaria available as far peripherally as possible including home treatment.
   iii. Make appropriate treatment available and accessible to the poorest groups in the community.

5. **PLEDGE TO:**

   **Take immediate actions to:**

   i. Implement in our countries the approved plan of Action attached to this Declaration.
   ii. Develop mechanisms to facilitate the provision of reliable information on malaria to decision makers at household, community, district and national levels, to enable them take appropriate actions.
   iii. Reduce or waive taxes and tariffs for mosquito nets and materials, insecticides, anti-malarial drugs and other recommended goods and services that are needed for malaria control strategies.
   iv. Allocate the resources required for sustained implementation of planned Roll Back Malaria actions.
   v. Increase support for research (including operational research) to develop new tools and improve existing ones.
   vi. Commemorate this summit by declaring April 25th each year as Africa Malaria Day.

6. **REQUEST:**

   The Regional Committee of the African and East Mediterranean Region to follow up the implementation of this Declaration and report of the OAU regularly.

7. **MANDATE:**

   The government of Nigeria to report the outcome of this summit to the next OAU summit for follow up action in conjunction with the United Nations Agencies and other partners.
CASE MANAGEMENT AND DRUG POLICY:

Antimalarial Drug Policy:

Sulphadoxine-pyrimethamine is the first line drug for uncomplicated Malaria. It is also used for the prevention of malaria in pregnancy. Amodiaquine is the second-line (treatment failure) drug and Quinine is recommended for Severe Malaria.

In Zanzibar, a combination of Artesunate and Amodiaquine is used as first line drug for uncomplicated Malaria. Sulphadoxine-pyrimethamine is used for the prevention of malaria in pregnancy. Artesunate-Lumefantrine is the second-line (treatment failure) and Quinine is recommended for Severe Malaria.

Drug Therapeutic Efficacy Testing Profile in Selected Sentinel Sites:

<table>
<thead>
<tr>
<th>YEAR</th>
<th>SENTINEL SITE</th>
<th>DRUG</th>
<th>EFF (%)</th>
<th>LTF (%)</th>
<th>ACR (%)</th>
<th>Sample Size</th>
</tr>
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<tbody>
<tr>
<td>2000</td>
<td>Kajala</td>
<td>CQ</td>
<td>16</td>
<td>11.5</td>
<td>74.4</td>
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<td>CQ</td>
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<td>CQ</td>
<td>13</td>
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<tr>
<td>2000</td>
<td>Muhiza</td>
<td>CQ</td>
<td>27</td>
<td>23</td>
<td>50</td>
<td>NA</td>
</tr>
</tbody>
</table>


SUMMARY OF CORE IMPACT AND CORE OUTCOME INDICATORS:

Core Impact Indicators in Tanzania:

- Proportion of deaths attributed to malaria among children under five in selected health facilities
- Under five case fatality rate in selected health facilities
- Proportion of morbidity inpatient attributed to malaria in Under five in selected health facilities

Global Target in 2010

- Under five crude death rate (per 1000) - 144.8
- 38.2%
- 2.8%
- 46.0%

Abuja Target in 2005

- Proportion of children under five with uncomplicated malaria correctly managed in health facilities - 52.7%
- 29%
- 11.4%

Proportion of children under five with fever presenting in the last three months at the time of survey

- Proportion of under five with fever in communities surveyed in 2001 - 11.4%
- 60%

- Proportion of children under five sleeping under mosquito nets
- Proportion of children under five sleeping under RNs
- Proportion of pregnant women sleeping under mosquito nets
- Proportion of pregnant women sleeping under RNs

Sources: Ministry of Health - BRM Baseline Survey in Selected Districts (Luwero, Siaya, Kigungu, Mityana, Mubende, Masaka, Serere, Kamuli, Kampala, Masindi, Kapchorwa, and Mbale) in Tanzania (2001)
September 2007

The information presented in this case study has been reviewed and signed-off by the company to ensure its accuracy. The views expressed in the case study are the ones of the author and do not necessarily reflect those of the UN, UNDP or their Member States.

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