Insecticide treated nets: The role of the commercial sector

Case study of three countries in sub-Saharan Africa
Since starting operations in 2003, Malaria Consortium has gained a great deal of experience and knowledge through technical and operational programmes and activities relating to the control of malaria and other infectious childhood and neglected tropical diseases. Organisationally, we are dedicated to ensuring our work remains grounded in the lessons we learn through implementation. We explore beyond current practice, to try out innovative ways — through research, implementation and policy development — to achieve effective and sustainable disease management and control. Collaboration and cooperation with others through our work has been paramount and much of what we have learned has been achieved through our partnerships.

This series of learning papers aims to capture and collate some of the knowledge, learning and, where possible, the evidence around the focus and effectiveness of our work. By sharing this learning, we hope to provide new knowledge on public health development that will help influence and advance both policy and practice.

A young Ugandan mother with her net.

Photo: William Daniels
2. Introduction

4. Background

6. Section 1: ITN and the commercial sector: a brief history

8. Malaria Consortium’s concept of market support

10. Section 2: Net experience for malaria prevention in three countries: Uganda

12. What happened

14. Results

19. Commercial sector or mass distribution?

20. Mozambique

22. What happened

23. The areas of support

24. Level of price support

26. Results

30. Nigeria

32. What happened

34. Results

37. Other challenges

39. Leakage of free public nets

40. Section 3: Lessons Learned

42. LLIN as the leading product

46. References

48. About Malaria Consortium
Background

Introduction

This learning paper takes a detailed look at the approaches of direct support to the commercial insecticide treated net (ITN) market that were implemented by Malaria Consortium and its partners as part of mixed models of malaria prevention in three sub-Saharan African countries.

It summarises the experience of Malaria Consortium and its partners in strengthening the commercial ITN market in Uganda, Mozambique and Nigeria, during a time when the environment for ITNs has been changing rapidly. In all three cases the interventions were flexibly applied to the needs of each commercial partner but consistently included three core elements:

1. Support to procurement and distribution in the form of seed stock, a 90-day credit line and/or a flat rate per long-lasting insecticidal net (LLIN) sold for distribution support

2. Support to brand advertising and promotion paid as a contribution to funds invested by the partner

3. Time-limited consumer price support per LLIN sold given directly to the distributor based on evidence of retail sales as a measure to bring the retail price closer to that of untreated nets in the market.

Because of the nature of the market forces it is very difficult, if not impossible, to conclusively demonstrate which intervention has which effect on demand and sales. However, by presenting the approach and results from Malaria Consortium’s support to the commercial ITN/LLIN market these three countries, we are able to show that a direct market support can be successful in establishing and sustaining a viable LLIN market.

A shop keeper in Enugu, Nigeria shows the nets she has for sale. Photo: Susan Schulman
Background

Mosquito nets, particularly those treated with insecticide, were increasingly used as part of malaria control from the late 20th century 1-5.

Studies in the 1980s and after showed the value of Insecticide Treated Nets (ITNs) in the prevention of malaria. A review of all available randomised studies on ITN first published in 1998, and updated in 2004, concluded that “insecticide-treated nets can reduce deaths in children by one fifth and episodes of malaria by half” in sub-Saharan Africa6. This firmly established ITN as a method of controlling malaria.

These nets had to be treated, however, with insecticide every six to 12 months in order to maintain a level of protection that went beyond the physical barrier of the net. This was often more difficult than anticipated. Even where single treatment sachets of suitable insecticide were commercially available, pick-up was low. Net re-treatments were limited to initiatives by non-government organisations (NGOs) or government campaigns, such as in The Gambia7, Uganda and China8. This resulted in very low rates of ITN ownership even in areas where mosquito net use was traditional and well-established.

The critical breakthrough that made ITN widely used for malaria prevention came with the development of long-lasting insecticidal nets (LLINs). The principle of LLINs is as follows: A high dose of insecticide is applied to the net, so that a small portion of insecticide is present on the surface while the remainder is kept in a “reservoir” either within or on the netting yarn. As the surface insecticide is used, washed away, rubbed off or otherwise lost, it is replenished from this reservoir. Such protection lasts at least three years, often longer.

The first LLIN (Olyset®) received a recommendation for public health use by the WHO Pesticide Evaluation Scheme (WHOPES) in 20019. By 2012, three LLIN products had full - and an additional nine interim - WHOPES recommendations.

The increasing availability of LLINs during 2001-2005 coincided with a re-vitalisation of funding for malaria control through The Global Fund to Fight AIDS, Tuberculosis and Malaria, the Department for International Development/UKaid, US President’s Malaria Initiative (PMI), Word Bank Malaria Booster Programme and others. This led to a significant scale-up in ITN distribution.

It also reignited the debate about whether ITNs should be supplied free to at-risk populations through the public sector as a matter of public interest, or whether it would be better to charge at least a small amount for them and apply a public-private partnership approach to building commercial markets for ITN10,11. Eventually it became clear that these positions are not really mutually exclusive12. By the end of 2011, most countries in sub-Saharan Africa had completed mass net distributions and were developing continuous distribution strategies.
ITN and the commercial sector: a brief history

Before the introduction of ITNs, households were only able to obtain mosquito nets through the commercial retail market. In areas where a net culture existed, the commercial market sustained high levels of net ownership with surprisingly high equity. Conversely, where a net culture did not exist, there was no net nor ITN market even when the commercial retail sector as a whole was well developed.

Where there had been no net culture, many donors supported social marketing projects in the late 1990s and early 2000s. This involved a single-branded, donor-subsidised ITN that was heavily promoted and sold through retail outlets. These outlets were supported by a warehousing and distribution system owned by the social marketing organisation.

The rationale for, and major advantage of, such an approach is to open the doors for the commercial sector (market priming). It establishes the product and demonstrates to potential producers and sellers that there is a market for it.

However, this is not the best solution for developing a strong commercial market where a net culture is emerging and a commercial sector with LLIN distributors and/or manufacturers exists. In this situation, the socially marketed ITN quickly establishes market hegemony of a brand that is not sustainable beyond the project life and is usually difficult to transfer to other manufacturers later. Rather than crowding-in the commercial brands, the subsidised ITN is crowding-out existing commercial products, and deterring new producers and retailers from entering the market.

Alternative market support approaches exist in the form of “total market approach” (TMA) and “making markets work better for the poor” (M4P). These emphasise the inclusion of all sectors of the market, and attempt to create an environment that will enable such markets to develop. They emphasise support to all aspects of the supply chain, including the consumer.

The largest application of such an approach to ITN was the “full market impact” model of the USAID-funded NetMark project 1999-2009. Working in seven countries in sub-Saharan Africa, the project facilitated the sale of 60 million ITNs through direct support to 41 net distributors. At the same time, it advocated for the waiver of taxes and tariffs and used behaviour change communication to promote ITN use.

While this project had some limitations (at times high levels of bureaucracy and no direct price subsidy) it truly strengthened the retail market for ITN and later LLIN. It also encouraged other organisations such as Malaria Consortium to think creatively about options for commercial sector support.

This learning paper is not intended as a general and comprehensive review of the contribution of the commercial market to ITN distributions or the different options to support market forces through public means, but rather summarises the conceptual thinking and practical experience of Malaria Consortium in strengthening the commercial ITN market in several countries and during a time where the environment for ITN has been changing rapidly. It is hoped the lessons learned can contribute to the ongoing discussions on how the successes in controlling malaria with ITN can be sustained in the near future in a resource constrained environment.

This paper summarises the thinking and experience of Malaria Consortium in strengthening the commercial ITN market during a time when the environment for ITNs was rapidly changing.
Malaria Consortium’s concept of market support

Malaria Consortium has worked closely with commercial sector partners in several countries. It has also – based on the previous familiarity of some of its staff with public-private-partnerships (PPP) for ITN – developed some ideas as to how the ITN market could be supported above and beyond the classic social marketing model.

Malaria Consortium’s initial involvement in the ITN retail market took place in Uganda during 2003-2005. This led to the implementation of a Department for International Development (DFID)/UKaid-funded project in Mozambique from 2005-2010, which had the strengthening of the ITN market as one of its focus areas. This was followed by a project in Nigeria, starting in 2008 and also funded by DFID, which includes support to the LLIN market as one of its components.

The organisation’s view of market support has remained consistent throughout. Its principal approach is of direct support to market forces and the creation of a net culture that drives demand for ITN in a sustainable fashion. However, the concept has evolved in the light of the scale-up of public sector LLIN mass campaign distributions.

This evolution can be divided into two principal phases:

### Phase one

Before the start of large-scale mass campaigns and with LLIN just emerging. At this point, conventional ITN (co-packaged nets with do-it-yourself insecticide treatment kits) still dominated the ITN market.

### Phase two

During and after the mass campaigns. During this time, the LLIN became firmly established as the state-of-the art method of net-based malaria prevention.

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<th>During phase one, the major hypotheses underlying Malaria Consortium’s support were:</th>
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<td>• If a minimum net culture and retail infrastructure exists, strengthening the ITN distributors directly allows for the establishment and expansion of a competitive market. This should be sufficient to enable increased access to ITNs, even in remote rural areas.</td>
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<td>• A direct consumer price subsidy allows ITNs or LLINs to compete successfully with cheaper non-treated nets and establish the LLINs products in the market.</td>
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<td>• The most cost-effective way to deliver the subsidy is at distributor level as it has the lowest management cost. The subsidy also is most likely to be delivered to the consumer if this method is used: distributors know that the higher value of the LLIN can only be appreciated if the price remains close to that of other products.</td>
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<th>These hypotheses were further tested during the mass campaigns, which led to the following realisations:</th>
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<td>• All public distributions leave gaps in supply as they do not reach every household with enough nets to cover all their members, but they do create or strengthen the net culture and thereby further increase demand for additional nets.</td>
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<td>• The loss of nets from the campaign through wear and tear and demand for choice (shape, colour, material) creates a significant and sustainable market for retail LLIN. This market for replacements can exceed the pre-campaign market.</td>
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<td>• Direct support to manufacturers and distributors can lead to a thriving LLIN market even when public free distributions are taking place.</td>
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The principles Malaria Consortium has applied to its commercial sector work are to:

- Encourage the shift of supply from untreated nets to ITNs and later LLINs as the dominating product on the market.
- Facilitate local manufacture where feasible by the transfer of LLIN technology or at least local production from LLINs netting material.
- Provide assistance to local distributors of LLIN according to individual needs (credit, marketing, distribution) in the most flexible way possible.
- Facilitate a reduction in the price gap between poor quality, untreated nets and LLINs using a consumer price subsidy - where this is acceptable and manageable without excessive cost.
- Advocate for the possibility of local distributors competing for public tenders of LLINs to strengthen their capacity to expand in the retail market based on reserves from institutional sales.

During the late 1990s and early 2000s donors, the international malaria community and manufacturers of LLINs were quite enthusiastic about an increasing role of the commercial sector in malaria prevention with ITNs. However, the scale-up of free mass distribution has dampened these initiatives considerably.

Donors have shifted their priorities towards mass campaigns and are less inclined to fund market-based activities. Manufacturers and distributors feel discouraged by this development from entering the retail market. This has made implementing market-based activities more challenging for Malaria Consortium and other organisations.

The common reservations expressed about engagement in the ITN retail market are that:

- With large free distributions, demand for commercial LLIN collapses
- People sell free nets, making it unattractive for legitimate distributors to enter the market. They cannot compete with the prices of “leaked” LLIN
- The poorest will never have access to commercial market nets
- The market (supply chain) must reach down to villages in remote areas to be successful

The extent to which these reservations have largely not been borne out by evidence and experience is detailed in the next section.
Net experience for malaria prevention in three countries

This section looks at Malaria Consortium’s work in Uganda, Mozambique and Nigeria and the extent to which the hypotheses mentioned in the previous section were borne out in practice.

Uganda

In Uganda net use has no tradition. Around 1993/94 an international NGO (AMREF) and a bilateral development agency (GTZ)* had started selling ITN in a few districts through cost recovery schemes and using communities or health facilities as sales outlets. Although the numbers were small it started an interest in ITNs, and others began at least to advocate for net use in their community work. Nonetheless, surveys in 1995 and 1996 by AMREF and GTZ indicated that less than one percent of households owned mosquito nets at that time.

ITN were included in the government’s first National Malaria Control Policy in 1998. This was followed in 1999 by the waiver of import tariffs as well as value added tax (VAT) for mosquito nets and netting material. Uganda was one of the first African countries to do this. In 2002 the Uganda Bureau of Standards adopted the WHO-recommended quality standards for mosquito nets which from January 1st 2003 were applied to all net imports. This created a favourable environment for the development of a commercial net and ITN market.

Classical social marketing of LLIN started in late 2000 by the USAID funded Commercial Market Project using the first polyester based LLIN, PermaNet®, branded as SmartNet. Initially limited to six districts the project went nationwide the following year. During 2000-2003, two small public-private-partnership projects were implemented by GTZ and the Mennonite Economic Development Associates (with funding from the Canadian International Development Agency). This directly supported initially two, then four, commercial ITN distributors in marketing and distribution. One of these sold the same polyester LLINs as the social marketing project but under its original brand name, PermaNet®. The other sold bundled ITNs (nets packaged with insecticide treatment kits). Direct support was also provided by the NetMark project which started its Uganda activities in 2003 and continued until 2007.

In early 2003 the commercial distributors combined had 1,043 retail outlets in 45 of the then 56 districts, almost as many as the 1,067 in 53 districts for the social marketing project. This triggered a heated debate within the ITN subcommittee of the Interagency Coordination Committee for Malaria (ICCM) as to whether or not social marketing had fulfilled its role of ‘market priming’ and should retreat. It was concluded that social marketing should be limited to difficult-to-reach areas and leave the rest of the country to the commercial partners. The social marketing project continued in this limited role until 2005 when it was phased out.

Distributions of free LLINs through the public sector and civil society were limited until 2003 and focused on the conflict-affected areas in the north of Uganda, or smaller projects within civil society organisations. Large numbers of free LLINs only became available in 2005 and thereafter through Global Fund grants and President’s Malaria Initiative (PMI), at a time when the commercial market was already well established and a net use culture was slowly evolving. The critical questions then were: what would happen to the commercial market for ITNs in the face of this free LLIN scale-up and how could partners be supported?

A net beneficiary in Uganda.

Photo: William Daniels

* German Technical Cooperation, now called GIZ
**What happened**

Malaria Consortium started work in Uganda in 2001. While the organisation actively participated in the work of the ICCM ITN subcommittee, an opportunity to support the commercial ITN market directly at a larger scale did not arise until 2005. This was as part of the USAID/PMI-funded AFFORD project.

The objective was to promote the access to, and use of, various health products and services. These were mainly in the areas of HIV/AIDS prevention and care, reproductive health and family planning, as well as malaria prevention and treatment. In contrast to the classical social marketing approach, the overall concept of this project was to support as much as possible existing brands already marketed by the commercial sector.

These activities comprised three major components:

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<th>1. Support to the phasing out of classical social marketing in favour of expansion of the ITN market by the commercial partners.</th>
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<td>This was mainly accomplished by the active participation in the ITN subcommittee of the ICCM subcommittee, which included the commercial partners. Encouragement of these partners to see themselves as part of the Roll Back Malaria partnership and represent their interests strengthened the position of the private sector as a significant contributor to malaria control. The ITN subcommittee also encouraged and facilitated other private sector players such as large employers (e.g. banks) in their efforts to get involved in ITN promotion and distributions.</td>
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<td>Malaria Consortium also supported and funded the development of plans for a national ITN voucher scheme which was to be funded through a Global Fund grant and would have given the commercial ITN retail market a strong incentive to expand. However, a political decision was later taken by the Ministry of Health not to pursue this project any further.</td>
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<td>Another important contribution made by Malaria Consortium was the strong and successful support for the participation of the local LLIN distributors in tenders for LLIN procurements for campaign distributions through the Global Fund grant and PMI.</td>
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<th>2. Limited consumer price subsidy for ITNs/LLINs and other direct assistance in marketing and distribution.</th>
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<td>Following consultation with the commercial ITN sector partners and an in-depth situation analysis, a detailed support strategy was developed under the AFFORD project. This was based on the following three principles:</td>
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<td>1. <strong>An open approach, involving commercial partners in the early stages of the planning process.</strong></td>
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<td>2. <strong>Maximum flexibility according to individual partners’ needs and minimum administrative requirements - within regulatory and budgetary limits.</strong></td>
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<td>3. <strong>Complementarity to existing support from other sources (e.g. NetMark) in order to avoid double funding and maximise its effects.</strong></td>
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<td>The strategy then focused on the following four interventions:</td>
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<td>• Support the retail market as well as institutional sales through local distributors. Institutional sales contribute significantly to the expansion of the retail market by providing the distributor/manufacturer with the necessary volumes and capital to finance the initially cost-intensive market expansion.</td>
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<td>• Directly support the retail operations of all those current and future commercial partners who fulfil defined eligibility criteria in order to:</td>
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<td>— Enable them to reduce the prices of their high quality products to a level similar to the current prices of poor quality, untreated nets. That means quality becomes the main contributing factor to the consumer’s choice of product.</td>
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<td>— Allow them to expand their distribution networks beyond the current reach, giving access to an increasing proportion of the population.</td>
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Prioritise LLIN as the product of choice for sustainable malaria prevention in line with the national malaria control strategic plan through:

- Emphasis of the advantages of LLIN in the communication and brand promotion.
- Preferential price support to LLIN so that the retail price is compatible with non-LLIN products.
- Encouragement and technical support to current and new distributors in the market to include an LLIN product, either from one of the international manufacturers or by applying pre-sales dipping techniques with long-lasting insecticide treatment kits currently under WHOPES evaluation.

Build capacity among the distributors/manufacturers where needed in the areas of market analysis, financial planning, communication and promotion, and monitoring and evaluation.

The level of price support was Uganda shillings (USH) 5,000 per LLIN (US$3.00 at 2006 exchange rates). The overall funds for price support were fixed and each partner initially received support for up to 5,000 nets sold (on providing evidence that the nets went into retail sales) and thereafter price support was given based on sales.

Other support was given based on each partner’s marketing plan and could include funds for seed stock, a 90-day credit line for purchases from the manufacturer and support for transportation of nets.

Each partner also received support for brand-specific advertisement and promotion, for which 30 percent of the cost had to be contributed by the partner in the first year and 50 percent in the second year.

3. Facilitation of institutional sales by commercial partners to Civil Society Organisations (CSO) for community distributions through the CSO “virtual LLIN facility”.

As part of the overall commercial sector support strategy, the LLIN facility intended to combine two elements, the demand for LLIN of CSOs with funding for community activities but no funding for the nets and the commercial sector’s capacity to deliver them. This was to be achieved by mediating and facilitating the procurement and supervising the implementation to ensure quality. It was a ‘virtual’ facility in the sense that it did not itself store or move the LLIN. Instead, CSOs were invited to apply by detailing what type of community distributions they had planned, their capacity to implement and monitor and how many nets the needed.

Once the CSOs had been selected the participating commercial partners could bid to supply these LLIN directly to the CSOs target area and were paid out of the funds allocated to the LLIN facility. CSO in turn received a briefing and support in the monitoring and evaluation (M&E) of the distribution activities.
Results

A complete picture of the development of the market is available from 1999 to 2008. The market for nets in Uganda developed considerably from 1999 onwards. As summarised in Figure 1, the overall net output in Uganda increased from a mere 80,000 nets in 1999 to 480,000 in 2002, then broke the 1 million mark in 2004, reaching almost three million in 2007 after which it slightly fell to 2.3 million in 2008. Initially, the informal market provided over 50 percent of the nets and these were all untreated. In 2001 the social marketing project primed the market for LLINs selling 70,000 pieces in 2001 and peaking in 2003 with 180,000 sold LLINs. Based on the decision to limit and then phase out classical social marketing, sales declined in 2004 and in the last year, 2005, reached 63,000. At the same time the sales of the commercial ITN partners continually increased starting from 130,000 in 2001 and 217,000 in 2003. In 2005 the half million mark was broken and in 2008 sales were slightly more than one million. Informal sales of untreated nets benefited from the market momentum and increased until 2005 after which they rapidly dropped to an estimated 300,000 in 2008. The decline of untreated nets coincided with the uptake of free public sector distributions which was about 500,000 in 2005 and 2.2 million in 2007.

Figure 1: Total net output by source in Uganda and the proportion of LLINs
The proportion of LLIN among all output in Uganda was 2.0 percent in 2000 (Figure 1), increasing to 25 percent with the start of LLIN social marketing and the first commercial LLIN distributor entering the market. The proportion increased to 44.1 percent in 2003 and after a short drop in 2005 rapidly increased further to 83.7 percent in 2008 indicating a successful shift to this new malaria prevention tool.

With respect to the commercial partners, there were three important developments which are shown in Figure 2. The first is the phase-out of bundled ITNs after 2006 which, by 2008 had almost completely disappeared (93 percent of sales being LLINs) and partners only sold LLINs recommended by WHOPES. Secondly, the retail proportion of LLINs was not very high with 40-55,000 LLINs per year, but stayed constant even in the face of the massive increase of free public sector LLINs after 2005. Thirdly, institutional sales were clearly the largest part of the business for these partners and constituted between 79 percent and 94 percent of all LLIN sales. These institutional sales to NGOs and government comprised only nine percent of all public LLIN distribution but increased to 17 percent in 2007 and even 50 percent in 2008.

The overall net output in Uganda increased from a mere 80,000 nets in 1999 to 480,000 in 2002, then broke the 1 million mark in 2004, reached almost 3 million.
Figure 3: Map of geographical coverage of commercial partners in 2005
In 2006, 65,000 nets were subsidised for five commercial partners. This included bundled ITNs. Only 18,000 of the subsidised nets were LLIN, 53 percent of that year’s LLIN retail sales by partners.

The price subsidy through AFFORD was implemented in two waves. In 2006, a total of 65,000 nets were subsidised for five commercial partners. This included bundled ITNs (at a lower subsidy of US$2.10) and only 18,000 of the subsidised nets were LLINs. 53 percent of that year’s LLIN retail sales by partners. The second wave was implemented in 2008 covering only LLIN sales of four partners - and four brands of LLIN - with close to 28,000 LLINs subsidised representing 49 percent of that year’s LLIN retail sales. Both waves were accompanied by marketing and generic behaviour change communication campaigns and were reported to expand the retail outlets (see Figure 3). However, field visits of the AFFORD team found that the full subsidy was not always passed to the consumer, and some retailers sold the nets with a USH 3,000 price reduction rather than the paid for USH 5,000.

The contribution of Malaria Consortium to support the commercial ITN sector in Uganda was only one of many, but, the contribution was critical in creating the environment in which these changes took place.

In 2006, 65,000 nets were subsidised for five commercial partners. This included bundled ITNs. Only 18,000 of the subsidised nets were LLIN, 53 percent of that year’s LLINs retail sales by partners.
According to the final report on the CSO LLIN facility, this intervention mediated the supply and distribution of 355,000 LLINs in four waves between 2007 and 2009 involving 63 CSOs in 42 districts. This represented approximately 20 percent of the institutional sales of the commercial partners during this time.

One of the main ways of assessing the success of malaria prevention with ITNs is the ownership coverage captured as the “proportion of households which own at least one ITN”. In addition to household surveys the indicator can also be estimated from the ITN distribution data using modelling*. Results from both resources are presented in Figure 4. ITN ownership increased from 1.6 percent in 2001 to 15.9 percent in 2006, which corresponds to a period where no major public sector distributions took place. The coverage increased further to 46.7 percent in 2009, which involved both the public and commercial sector.

As can be seen in Figure 4, the net distributions further declined in 2009 before a massive push of free, public distributions of over seven million in 2010 which brought the estimated ITN ownership coverage to 74 percent.

* The model used here was NetCALC which uses the number of ITNs distributed in a given population and the expected average durability of the net to estimate ownership coverage.

For more information about NetCALC, see http://www.malariaconsortium.org/pages/209.htm.

Figure 4: Total net distributions and sales in Uganda (green bars), estimated net (magenta) and ITN (black) ownership coverage from modeling and results from national surveys (diamonds, DHS=Demographic and Health Survey, MIS=Malaria Indicator Survey).
Commercial sector or mass distribution?

The proportion of all existing nets that were obtained from the commercial sector (pharmacies, shops, markets or hawkers) was 72.3 percent in the 2006 Demographic and Health Survey\textsuperscript{19}, demonstrating the dominating role of the commercial sector at the time. This proportion dropped to 34.9 percent in the 2009 Malaria Indicator Survey\textsuperscript{20} and in an area in western Uganda where a universal coverage campaign had taken place a year before, the rate was 11 percent, 26 percent urban and four percent rural\textsuperscript{21}.

There is further evidence from non-national surveys undertaken by Malaria Consortium that even with directly following free public sector distributions there is a demand for nets from the commercial sector.

The first example is from surveys in two districts, Adjumani and Jinja in 2007, five to seven months after the distribution of free LLINs through antenatal care (ANC) clinics or through community-based campaigns targeting children and pregnant women. In Adjumani district in the north-west of the country, eight percent of households had bought a net from the commercial market in the months following the distribution. This rate was higher after the ANC distribution, with 12 percent of households buying compared to the campaign with five percent\textsuperscript{22}.

The second example is from Jinja, in western Uganda, and took place during the five to nine months following a universal coverage campaign. That campaign distributed an average of three free nets per household. Here, one in every five households ended up not having enough nets for all family members. Eleven percent of households had obtained an additional net from the commercial sector (28 percent urban and nine percent rural) and 43 percent of these nets were LLINs\textsuperscript{21}.

In Adjumani District in the north-west of the country, eight percent of households had bought a net from the commercial market in the months following the distribution.
Following the war of independence, and the civil war that ensued, Mozambique started a rapid social and economic development in the second half of the 1990s. Although a retail market for consumer goods was well developed by the turn of the century, this did not include nets as a mosquito net culture did not exist at that point.

A survey by the NetMark project in five selected provinces in November 2000 showed an overall household net ownership of 26 percent but only about every fifth net (27 percent) was reported as ever being treated with an insecticide. The commercial sector was the major source for nets (95 percent), particularly open markets, which provided 50 percent of commercial nets.

A classical social marketing project was started shortly thereafter by Population Services International with initial funding from DFID/UKaid and later various other sources, selling an over-branded LLIN (PermaNet®). However, the numbers sold were small, less than 50,000 per year. Analysis undertaken by Malaria Consortium in 2005 showed that nets were still mainly imported from Tanzania and Malawi, many of which were social marketing bundled ITNs and mainly sold by small scale traders in open markets. The classical social marketing only lasted a few years and never reached significant numbers. At this point, there were neither net manufacturers nor commercial distributors of ITNs or LLINs in Mozambique.

An ITN policy and distribution strategy from the National Malaria Control Programme was first drafted only in 2006. However, public sector distributions on a smaller scale were carried out since 2000 mostly funded through UNICEF and USAID and implemented by NGOs. These nets were mainly sold at community level to families with children or pregnant women at subsidised prices ($0.50-1.00). These distributions totalled approximately 700,000 during 2000-2003 and 400,000 in 2004 but only covered selected provinces and districts. Large-scale LLIN campaigns linked with a measles immunisation started in 2006 in Manica and Sofala provinces with 700,000 LLINs distributed.

* NetMark carried out a baseline survey but never became active in Mozambique

Mozambican women show their net recipient cards prior to a mass distribution.
Photo: Ruth Ayisi
While originally designed as mainly a commercial sector support intervention, the focus shifted quickly to a greater emphasis on the public sector.

Among other factors, this was triggered by a decision of the Ministry of Health in early 2006 that all ITNs distributed through the public sector must be free and that public distribution should be the main channel. Following the project review, the importance of the commercial sector component further declined in the second phase. At that point, mass campaigns and universal coverage moved into focus for the National Malaria Control Programme as well as the donor community.

The development of the commercial market was in general based on the “direct market support” approach similar to that used in Uganda and building on the following principles:

- Direct support to commercial partners and their brands without creating additional, artificial brands (social marketing), emphasis on local capacity development of commercial partner’s distributors
- Sustainable market development with initial “priming”, i.e. temporary price support in order to facilitate the establishment of the ITNs on the market
- Concentration in phase one on those areas that are economically viable, including urban centres outside the three programme provinces.
- Preferential support to long-lasting insecticidal nets (LLIN)
- Development of support mechanisms jointly with commercial partners
- Creation of a net culture through generic promotion and behavioural change communication (BCC) supporting the commercial market development

What happened

In early 2005 a partnership led by Malaria Consortium was awarded a contract by DFID/UKaid to implement a programme for the “Development of a Sustainable ITN Market for Malaria Prevention in Mozambique” initially in the three provinces Inhambane, Nampula and Cabo Delgado. This project had two major components which were expected to complement each other in building a sustainable net use culture and market for ITNs:

1. Distribution of highly subsidised ITNs through the public health system, namely to pregnant women during their first ANC visit
2. Support to the growth and expansion of a viable commercial market

“I am not lying in my bed; this is not my mosquito net. I do not use a mosquito net. We only have one and there’s no place for me” Allen Namawejje, Uganda

Photo: Adam Nadel
The areas of support were:

### Procurement and distribution

Establishing or expanding a distribution network requires a constant flow of nets and can absorb a considerable amount of nets or capital. Two approaches were applied here:

1. **Seed stock and credit for the procurement of nets**
   Seed stock was given at an equal amount of $20,000 to each participating partner either as an annual payment of $10,000 during the two years of phase one of the programme or as a single payment at the beginning. In addition, each partner was eligible to receive a credit for the procurement of nets repayable in monthly instalments, starting after three months. The level of this credit was negotiated on the basis of the submitted business plan.

2. **Support to retail operations**
   Each distributing partner was eligible to receive distribution support. These funds could be used flexibly by the partner to support distribution points, as incentives to wholesalers/retailers, for office support or warehousing. Support within this component was proportionate to the number of nets turned over at a rate of $1 per ITN.

### Brand advertising

In addition to the generic promotion campaign for LLIN by the project, commercial partners were encouraged and supported to establish their own, branded advertisement. Funding was proportional to the amount the partner was willing to invest and subject to review of the marketing plan by the project BCC experts. The initial minimum contribution of the commercial partner was 30 percent of the cost in year one of the programme and 50 percent in year two. Funds were made available to the commercial partners in a timely fashion so they did not need to pre-finance this activity. Partners also received technical support in the design of messages and/or materials by either the communication expert on the Malaria Consortium Partnership team r one of the other partners.

### Price support

The purpose of the subsidy is to reduce the price of high quality ITNs and LLINs to consumers for a limited period of time in order to establish the products on the market and give them an edge vis à vis cheaper, poor quality nets.

### Positioning within the distribution chain

From a public health perspective, the subsidy is ideally given at the endpoint of the distribution chain, at the level of the consumer (see Figure 9). This would ensure the subsidy actually reached its intended target. However, the management and cost implications for such an approach are considerable since some evidence has to be collected at the retailer’s level, e.g. a stamp taken from the net package to a separate sheet and then submitted to the distributor, similar to that used in voucher schemes.
An alternative would be to apply the subsidy between the manufacturer and distributor, subsidising the import price of the net. This would have a very low management cost. There would, however, also be less certainty that nets have reached their target since subsidised nets could spend longer at the warehouse before reaching a consumer.

The approach actually used by the Malaria Consortium Partnership lay between these two extremes. The subsidy was given at the distributor level, but was not based on the number of nets imported. Instead, it was based on submitted lists of nets sold/distributed to retail outlets, wholesalers or institutions (NGOs, cooperatives, etc).

Initially the project also supported the distribution of bundled ITNs, given the lack of available LLIN brands. However, the ultimate goal was to establish various LLIN brands in a growing commercial market and push out the conventional bundled ITNs. As a result, the price subsidy was different for the two types:

<table>
<thead>
<tr>
<th>Type</th>
<th>Price/Subsidy</th>
</tr>
</thead>
<tbody>
<tr>
<td>LLIN</td>
<td>$2.50/net</td>
</tr>
<tr>
<td>Conventional ITN</td>
<td>$1.25/net</td>
</tr>
</tbody>
</table>

The specific amount was based on the price analysis of the market at the time and calculated so that a medium-sized LLIN could end up at a consumer price of $4 and a bundled ITNs at $3.25.

Some changes were made to the design of the support during the second phase of the project, namely:

- Only WHOPES-recommended LLIN were supported
- Price support was only given for retail sales, not institutional sales to NGOs
- Seed stock was no longer provided
- Distribution support was reduced to $0.75/ net
- Contribution of partners to brand advertisement was reduced in steps from 50 percent to zero percent

**Level of price support**

**Proposed placement**
Figure 6: Map of project provinces for phase one (light green) and additions for phase two (green)

Malaria Consortium Partnerships LLINs sold at a market in rural Nampula, Mozambique in 2009. Photo: Pedro Sa da Bandeira
Results

In contrast to the situation in Uganda, there were no previously existing local distributors of ITNs or LLINs that the Malaria Consortium Partnership could support. However, the partnership did include an international LLIN manufacturer and a local distributor of agro-chemical products, as well as a businessman interested in expanding his net and insecticide shop into an ITN distribution company. Building on these contacts, three commercial partners were then supported during the period October 2005 to March 2010. Two other companies showed interest but ultimately collaboration could not be established.

Over the course of the project 748,700 ITNs were sold by the commercial partners of which 409,000 (55 percent) were LLINs. As shown in Figure 7, there was a gradual shift from bundled ITNs to WHOPES recommended LLINs with LLINs contributing 10 percent of all sales in 2006, 33 percent in 2007, 82 percent in 2008 and 100 percent thereafter. While partners were allowed to sell their products anywhere in the country, they were asked to focus on the three initial project provinces to the extent economically feasible given the generic promotion and supporting BCC campaign undertaken there by the project as well as the fact that Nampula is one of the economic centres of the country. As a result 57 percent of all ITN sales was in the core project area.

Sales by the commercial partners comprised approximately a quarter (24 percent) of the total ITN output generated by the project (3.1 million). The other major contribution of 1.6

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**Figure 7:** Distribution of ITN supported by Malaria Consortium Partnership (MCP) in Inhambane, Nampula and Cabo Delgado between 2005-2010 and the total number of free LLINs distributed nationally in Mozambique
million LLIN was the ANC routine distribution system to pregnant women. This started in 2005 in Inhambane Province, expanded to Nampula and Cabo Delgado in 2006, and Manica and Sofala in the second phase of the project. In addition, 687,000 LLINs were distributed through mass campaigns, mainly in 2007. Campaign distributions picked up again in 2010, when Mozambique shifted from LLIN distributions to vulnerable groups, to universal access for all populations at risk of malaria.

The total public distributions led to a massive scale-up in universal access to LLINs, as can be seen in Figure 7.

A closer look at the details of the commercial sector sales is provided in Figure 8 and illustrates two important findings:

1. Institutional sales of bundled ITNs and LLINs were dominant in the first year but then reduced until the end of 2007, which saw a rapid scale-up of retail sales. After the price subsidy for institutional sales was dropped in 2008, they further reduced, but did not disappear completely.

2. Although there was a significant decline after the first quarter of 2008 in the overall sales this was not a collapse of the market. Instead, it was the termination of the price subsidy for bundled ITNs. Retail sales of LLINs continued at similar levels until the first quarter of 2010, i.e. during a time when free public nets saw a dramatic increase (see Figure 7).

Over the course of the project, 748,700 ITNs were sold by the commercial partners, of which 409,000 (55 percent) were LLINs.
In order to capture the development of the retail market for ITNs, Malaria Consortium, with support from the London School of Hygiene and Tropical Medicine, developed a retail market survey which was carried out three times during the project: in 2006, 2008 and 2009.

A fixed sample of markets and trading centres was selected in the three provinces stratified into three levels of remoteness: the provincial capital, markets along the major roads and markets along the rural, minor roads. All eligible shops were visited each year to determine whether the outlet sold any nets and, if it did, a detailed interview was undertaken with the shop owner or assistant.

The surveys screened a total of 14,500 outlets and found that even in 2006 about 55 percent of all sampled markets and trading centres had at least one shop that sold nets. This was true even in remote places and did not change significantly over time. However, the proportion of markets that had any of the supported partners’ LLIN products available dramatically increased from zero percent in 2006 to 19 percent in 2008 and 32 percent in 2009 (Figure 9).

Similarly, the proportion of ITN selling outlets that sold LLINs rather than bundled nets increased from five percent in 2006 to 25 percent in 2008 and 64 percent in 2009.

The retail market surveys also captured the variety of nets on sale. They showed that the proportion of shops with more than one brand, net size or colour increased in

![Figure 9: Results from the retail market surveys showing the proportion of market places with nets and LLINs (left) and the average retail price of the supported LLINs and other nets (right)](image)
the remote areas from four percent to 32 percent. Thus, they caught up with the more central markets which showed a proportion of 37 percent in each survey.

Initially it had been anticipated that with the consumer price subsidy the retail price of an LLIN could be around $4. The retail market survey, however, indicated that the average price was slightly over $5 for a medium-sized, rectangular LLIN. This price was more or less the same as bundled ITNs and untreated nets, which had been the intention. In addition, an external evaluation of the commercial sector component of the project in December 2009 concluded that partners “appear largely to have passed on these subsidies to consumers”, although they pointed out that the subsidy would not be sustainable.

Information on the changes of ITN ownership at population level is available from the 2007 Malaria Indicator Survey and the 2010 endline survey undertaken by Malaria Consortium. While the increase of ITN ownership compared to the 2003 data was only moderate in 2007 (Figure 10), 53 percent of households owned at least one ITN in 2010. More importantly, of all nets owned in 2010 84 percent were LLINs. This was not only the case for nets obtained from the public sector (86 percent LLINs) but also those obtained from the commercial market (79 percent LLINs). The proportion of all owned nets that were from the commercial sector in 2010 was 30 percent; at household level, 18 percent of all families owned a net that was bought from the retail market.

The surveys screened a total of 14,500 outlets and found that even in 2006 about 55 percent of all sampled markets and trading centres had at least one shop that sold nets. This was true even in remote places and did not change significantly over time.

![Figure 10: Trend in household net and ITN ownership coverage in the three project provinces (2003: DHS, 2007 MIS, 2008 MICS [nets only], 2010 Malaria Consortium survey)](image-url)
As with Uganda and Mozambique, mosquito net usage had not been firmly established across Nigeria.

In the 2003 Demographic and Health Survey, rates of household ownership were 12 percent for any net and two percent for ITNs. The first public sector distributions of ITNs were in 1999 through UNICEF, but the major source of nets (and later ITNs) was the commercial market. Two social marketing organisations - Futures Group and the Society for Family Health - started their marketing of ITNs between 2002 and 2004, but their scope was limited.

In 2002, the NetMark project began its Nigeria operations. At first it supported four, later seven, local distributors as well as local manufacturers of polyester nets. It supported the waiver, or at least reduction of taxes and tariffs for nets and insecticide. It had varying degrees of success as tax rates fluctuated between five percent and 75 percent (with zero percent tax on LLINs). All waivers were temporarily suspended in 2008.

From 2004 onwards, NetMark focused increasingly on free ITNs distributions in the public sector supporting some of the early campaigns of the National Malaria Control Programme (NMCP). The project continued to engage in generic promotion of ITNs as well as a small-scale voucher scheme funded by ExxonMobile.

Initial public sector free ITNs distributions were channelled through UNICEF funded activities and linked to immunisation and general child health interventions. With the Scale-up for Impact (SUFI) campaign, numbers of ITNs, and from 2006 onwards LLINs, increased. However, they remained targeted to young children and pregnant women until 2009 when NMCP and the country RBM partnership started large-scale state-by-state LLIN distribution campaigns. These targeted the entire population, aiming to distribute two LLINs to every household in the country, which would amount to over 60 million LLINs in total.
In 2008 a partnership led by Malaria Consortium was awarded a contract by DFID for a large scale project entitled Support to the National Malaria Control Programme, (SuNMaP). In addition to providing assistance at the national level for all aspects of malaria control, SuNMaP also supported projects in initially six, and from 2012, 10 of the 37 states of Nigeria. One of the six project outputs refers to malaria prevention and includes a component of support to the commercial ITN sector.

### What happened

The design of SuNMaP’s support to the commercial ITN/LLIN market was based on the rationale and principles already described for Mozambique, namely:

1. Support to procurement and distribution in the form of seed stock, a 90-day credit line and a flat rate per LLIN sold for distribution support
2. Support to brand advertising and promotion paid as a contribution to funds invested by the partner
3. Consumer price support of $2 per LLIN sold, given directly to the distributor based on evidence of retail sales

The confidence of the project that this approach would work, even with the already anticipated scale-up of free public distributions, was based on model projections using the NetCALC tool. This indicated that following the campaigns and the resulting high household ownership levels of ITNs, there would still be a need to replace nets lost through wear and tear, or fill existing gaps. It was anticipated there would be sufficient demand to sustain a viable commercial market even in the face of free distributions through ante-natal clinics.

In contrast to the Mozambique model, partners in Nigeria received an initial advance payment based on anticipated sales and promotional activities.

These were then reckoned against submitted evidence. Following scrutiny of each partner’s capacity and business plans, contracts with three partners were made in the second quarter of 2009 and sales started in June-July 2009. One of the contracted partners was a net manufacturer; the others were distributors of agro-chemicals and pharmaceuticals respectively.

A project annual review by an external team was undertaken in July 2010 and came to the conclusion that the commercial ITN component should be re-designed. The major concern of the review team was the massive scale-up of free public sector nets which they felt was threatening the chances to develop a commercial LLIN sector. In addition they recommended that the lessons learnt in the first year be more thoroughly evaluated before a new strategy was finalised. This was to include:

- An assessment of the benefits of subsidies provided in terms of their appropriateness and effectiveness
- The efficacy of the media interventions supported
- A more detailed assessment of the potential size of the (un-subsidised) retail market that reflects capacity and willingness to pay

Support to the commercial partners was then ended in September 2010 while a new intervention strategy based on M4P approach was developed. By March 2012 some activities regarding the generic promotion of LLIN had started but no direct support was given to partners. Roll-out of this new strategy is being followed with great interest.
Results

While precise distribution figures from the public sector are readily available (29,30), this does not apply for the commercial sector outside the SuNMaP project and are, for some years in the Figures below, based on estimates.

As shown in Figure 11, the commercial sector dominated the overall net output between 2004 and 2007 when it contributed 50-70 percent of all nets. Public sector distribution shifted to LLINs in 2006/07 while bundled ITNs continued to dominate sales in the commercial sector at least until 2008. After the end of various social marketing projects, and the mass public net campaigns from 2009 on, commercial net sales seem to have declined significantly.

Sales of LLINs by SuNMaP-supported partners started in the second quarter of 2009. The largest number - over 300,000 LLINs – were sold in the third quarter (Figure 12). Sales also peaked in the third quarter of 2010, the second year of the massive public distributions, but in that quarter they only reached 150,000. One of the partners only sold bundled ITNs until early 2010 after which time all sales were LLINs. Total sales for 2009 were 500,000 and 391,000 for 2010. However by September 2010, when the support ended, sales by partners dramatically reduced and only ranged between 22,000 and 41,000 per quarter (no data are available after June 2011). During the phase of direct support, between 28 percent and 47 percent of sales by partners were direct...
Mosquito net retail market surveys were carried out in 2010 and 2011 (see Figure 12 for timing) using a design similar to that used previously in Mozambique. The three principal areas included were Kano, Anambra and Ogun/Lagos states and in each the three strata of central/urban, main and minor roads were sampled. For each round the same markets and trading centres were included and all potential outlets scanned for net sales.

As shown in Figure 13 the proportion of market places that had any nets on sale was 44 percent in 2010. LLIN was clearly the most common product: 80 percent of all net-selling outlets had only LLINs in stock. This was very similar even in remote areas, where 40 percent of markets sold any LLINs. Following the change in strategy and cessation of direct support, the proportion of markets with any nets available dropped to 25 percent and more so in remote sites with 17 percent. However, when only net-selling outlets are considered (Figure 13) it becomes clear that the change is mainly caused by the drop in LLINs. Bundled ITNs lost much less and untreated nets increased from a share of 13 percent to 53 percent.

LLIN was clearly the most common product: 80 percent of all net-selling outlets had only LLINs in stock. This was very similar even in remote areas, where 40 percent of markets sold any LLIN.
Between the end of 2009 and November 2011, seven state-wide, population representative surveys were carried out in Nigeria in order to assess the outcome of the free mass campaigns. The major outcomes regarding ITN ownership are shown in Figure 14 and demonstrate two important points:

1. The distribution campaigns dramatically increased ITN ownership of households but between 21 percent and 49 percent were still without any ITN.

2. Based on the policy of limiting distributions to two nets per household, the proportion of households with ‘enough’ ITN - one ITN for every two family members - was only between 30 percent and 42 percent. As a result, between 12 percent and 39 percent of households lacked sufficient LLINs.

This provides evidence that the hypotheses underlying the initial commercial sector support strategy in Nigeria was correct, namely that the free distributions would create demand rather than hamper it and that LLINs can be established in the market even during a phase of massive free distributions.

Figure 13: Key results from the 2010 and 211 retail market survey in Kano, Anambra and Lagos/Ogun states
Other challenges

Two questions that are best discussed as a cross-cutting issue in the potential role of the commercial sector are:

1. What is the potential of the commercial market to reach the poorest section of society? Are these households able to afford LLINs at market prices?

2. To what extent do free public sector nets leak into the commercial market making it difficult for retailers and distributors to compete financially? What is the main source of such leakages?

Household wealth

The data sets from household interview surveys were re-evaluated to look at levels of net ownership and use in relation to household assets. These surveys, undertaken by Malaria Consortium or its partners between 2009 and 2011, were used for secondary analysis of access to ITNs and LLINs from the commercial sector by the different wealth quintiles.

Households were identified that had obtained a net from any of the commercial sources either in the period since the mass LLIN campaign or in the 12 months preceding the survey. The proportion of households procuring any net from the commercial sector was at similar levels in western Uganda with 11.3 percent and the three provinces of the MCP in Mozambique with 10.4 percent. Of these nets, 81 percent were LLIN in Mozambique and 39 percent in Uganda. As reported earlier in this paper, the rates of procurement from the commercial sector were only around 1-3 percent in Nigeria with a high of 6.6 percent in Kano state but even here on average 74 percent of the nets from commercial sources were LLINs.

Free distributions create demand rather than hamper it

LLINs can be established in the market even during a phase of massive free distributions

Figure 14: The household ownership of at least one ITN and one ITN for every two family members 4-11 months after the free mass campaign in seven states.
Figure 15 presents these data by wealth quintile and shows that – as would be expected – the highest wealth quintile in all countries had the highest rate of net purchase from the commercial sector, in general at least twice that of the poorest quintile. However, the gradient between the lowest three wealth quintiles was minimal, indicating that the poorest households had very similar access to commercial sector nets as did the middle section of the wealth distribution (around five percent).
Leakage of free public nets

There is little doubt that nets from various public sector distributions or subsidised sales through social marketing appear on the open market. There are very little data on the magnitude of this problem which is likely to vary from country to country and change over time. However, the available data from all three countries show that retention rates of these nets vary between 98 percent and 90 percent in the first six-12 months following distribution. The nets lost are predominantly given away to family or friends for use, or lost to fires or stolen. Even using conservative assumptions, under two percent of the public sector nets could have been sold on the market in these countries. This strongly suggests that the leakage does not occur at household level but at the various storage and transport stages preceding the distribution to the end user.

Using figures from the distribution campaigns in Nigeria, and comparing these with the estimated total state-wide net count based on the household surveys indicates that the potential leakage varies between states. This ranges from less than 100,000 nets or nine percent of all distributed, to over a million or 40 percent of all nets allocated to the campaigns. Further studies are currently under way to clarify this point in the Nigerian context.

As storekeeper in Nigeria shows an LLIN from his stock. Photo: Akintunde Akinleye

Retention rates of these nets vary between 98 percent and 90 percent in the first six-12 months following distribution.
Lessons Learned

So what are the lessons for future interventions and support across the ITN sector? This section starts with Malaria Consortium’s experience country by country.

Uganda

In Uganda, the commercial ITN sector was quite well developed by a number of other projects including market priming for LLINs through classic social marketing. The public free distributions did not begin until after the market was already established and were limited in numbers in the first years. The Uganda experience shows:

1. In a situation where an ITN market already exists at the time of the scale-up of free, public distributions, institutional sales can significantly support the survival of a strong commercial sector.

2. Classic social marketing, if appropriately time-limited, is able to prime the ITN market without crowding out an expanding commercial market.

3. With some stimulus, the commercial market can make an effective shift from bundled ITNs to LLINs.

Mozambique

Mozambique had no established ITN market at the start of the support activities. Public sector distributions were initially limited to ANC distributions and some campaigns targeted at vulnerable groups.

A large-scale support programme was started in a situation where a commercial market for ITNs was very limited. There were no local distributors of ITNs or LLINs other than a small social marketing project. The results show that:

1. The support mechanisms were sufficient to attract three LLIN distributors into the market and facilitate sales of almost 750,000 ITNs or LLINs - even in the face of large scale free public distributions.

2. There was no significant expansion of the market but a successful penetration of LLINs which, at the end of the support project, were the most common net product in the market.

3. Institutional sales and especially the price subsidy for LLINs (which was largely passed on to the consumers) were critical elements in establishing a viable LLIN market.

Nigeria

Nigeria had a fairly well-developed net market with a number of local manufacturers and little pressure from public distributions. This market, however seems to have significantly contracted before LLINs could be firmly established. In addition, the scale-up of mass campaign distributions was much greater in Nigeria than in Uganda or Mozambique.

Support for the commercial ITN sector in Nigeria was initially very similar to that in Uganda and Mozambique. However, concerns were raised by external reviewers that the approach used was not adequate given the massive free public distributions. These concerns led to a change in strategy and termination of the direct support to distributors. None the less, over the 15 months it lasted, the support programme showed that:

1. Partners were able to sell 890,000 LLINs, establishing LLINs as the most commonly available net product in the retail market survey. Eighty percent of net-selling shops had LLINs available, while only 13 percent had bundled ITNs or untreated nets.

2. Termination of the support caused a significant drop in sales, especially of LLINs, with untreated nets pushing into the gap demonstrating that there was still demand.

3. There was good evidence that the free mass campaigns did create demand for additional and replacement nets as not all households were reached by the campaign and not all that were reached had sufficient nets to cover all family members.
LLIN as the leading product

The LLIN was successfully established as the leading product in the retail market in all three countries. This happened despite the sheer number of free public nets distributed. This success applied not only to the urban centres but also in markets along the minor roads.

The overall sales volume of LLINs under the commercial market per year was highest in Nigeria with 720,000, followed by Uganda with 396,000, and Mozambique with 81,000 per year. However, if we use the population size as an approximate indication of the market size the order is Uganda with 12.4 LLIN sales per 1,000 population per year, Mozambique (8.1) and Nigeria (5.1). This order reflects the previously described situation regarding LLIN market development versus free public distributions. It suggests that the earlier the market support starts before the scale-up of free nets, and the slower this scale-up occurs, the better the result.

The Nigeria case is particularly interesting as direct support to distributors, as well as consumer price support, was stopped after 15 months. During this period, the programme was quite successful in establishing LLINs in the market. A major concern was that the large-scale free distributions would make it impossible for the commercial LLIN market to stabilise and grow. However, data from the seven post-campaign surveys implies that the original assumption - that free distributions would create sufficient gaps to stimulate demand for the commercial sector - was correct.

Furthermore, the market surveys show some decline in the market (mainly in Kano) but also a significant increase of untreated nets at the expense of LLIN. This suggests that the termination of the support programme may have been short-sighted and a more gradual transition to a new M4P-based intervention strategy would have left the LLIN market in a better position.
Direct market support

The components of direct market support Malaria Consortium has applied in the three countries are in no way unique. Most of the elements have been used by other approaches such as the NetMark project and are also considered in the new M4P approach for Nigeria. The two aspects that are innovative, however, are the emphasis on institutional sales as a vehicle to enhance the distributor’s capacity to invest in the retail market, and the direct consumer price support. The rationale of a time limited subsidy is based on the existing evidence that price elasticity for ITN is very low, meaning that even if the consumer understands the increased value of LLINs over untreated nets or bundled ITNs, the price gap between these products must be small enough for quality to take priority.

The experience on this issue by Malaria Consortium would suggest that distributors and manufacturers realise the need for such price reductions and are generally willing to pass them on to the consumer. This is also supported by the limited data available on retail prices from Mozambique which showed the LLIN price very close to those of other nets. The major issue with this intervention is the difficulty in providing solid evidence for the donor that the subsidy does indeed reach the consumer. There are two possibilities: the first is using a ‘lean’ management solution giving the subsidy to the distributor – as Malaria Consortium has done. The second is when an elaborate evidence chain (for instance, involving vouchers) is established but this has considerable management costs. This is an area where more work is needed to find a system that would make such a subsidy acceptable to donors as well as manageable on the ground. Modern communication technology could provide a solution.

Interventions that work

The nature of market forces means it is very difficult to demonstrate conclusively which intervention has had which effect on demand and sales. But looking at the approach and results from Malaria Consortium’s support to the commercial ITN/LLIN market in these three countries it seems clear that a direct market support can be successful in establishing and sustaining a viable LLIN market.

The main lessons are that:

- Free public mass net distributions do not prevent the establishing of an LLIN market. Rather, they support it through demand creation based on gaps and need for replacements. However, they also create some problems through the variable levels of leakage at different points in the distribution chain.

- The resulting demand for LLIN is not limited to the wealthier sections of society but also reaches poorer households. Overall, this is sufficient for a viable LLIN market whether with direct support to distributors or indirectly through creation of a “enabling environment” in the M4P approach.

- The period of campaign-based free public LLIN distributions is now reaching its end in many countries, giving way to comprehensive continuous distribution strategies that include distributions through routine services (health and education) as well as demand driven approaches (push-pull model). The documented experience on the role of the commercial LLIN sector as part of a mixed model. With the funding for free public distributions declining, countries and donors need to be encouraged to put more emphasis on commercial sector support once again.
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FURTHER READING
List of WHO recommended long-lasting insecticidal mosquito nets
Malaria Consortium

Malaria Consortium is one of the world’s leading non-profit organisations specialising in the comprehensive control of malaria and other communicable diseases – particularly those affecting children under five.

Malaria Consortium works in Africa and Southeast Asia with communities, government and non-government agencies, academic institutions, and local and international organisations, to ensure good evidence supports delivery of effective services.

Areas of expertise include disease prevention, diagnosis and treatment; disease control and elimination; health systems strengthening, research, monitoring and evaluation, behaviour change communication, and national and international advocacy.

An area of particular focus for the organisation is community level healthcare delivery, particularly through integrated case management. This is a community based child survival strategy which aims to deliver life-saving interventions for common childhood diseases where access to health facilities and services are limited or non-existent. It involves building capacity and support for community level health workers to be able to recognise, diagnose, treat and refer children under five suffering from the three most common childhood killers: pneumonia, diarrhoea and malaria. In South Sudan, this also involves programmes to manage malnutrition.

Malaria Consortium also supports efforts to combat neglected tropical diseases and is seeking to integrate NTD management with initiatives for malaria and other infectious diseases.

With 95 percent of Malaria Consortium staff working in malaria endemic areas, the organisation’s local insight and practical tools gives it the agility to respond to critical challenges quickly and effectively. Supporters include international donors, national governments and foundations. In terms of its work, Malaria Consortium focuses on areas with a high incidence of malaria and communicable diseases for high impact among those people most vulnerable to these diseases.

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