

## Global Health Initiative

### Public-Private Partnership Case Example

Building a public-private  
partnership to transfer the  
technology of a life-saving malaria  
prevention tool in Africa

#### Case categories

Organizations: **Acumen Fund, A to Z, Exxon Mobil, PSI, Sumitomo Chemical, UNICEF, WHO**

Partnership Type: **Technology Transfer** Location: **Tanzania** Programme: **Malaria**

#### Key questions

- What are the key success factors for developing locally-owned and managed capacity?
- How can a previously non-existent market for a life-saving product be generated?
- How can the competencies, presence and strategic priorities of multi-sectoral actors be most effectively aligned for successful partnering?

## Overview

### Summary

The mosquito net is a highly effective tool for malaria prevention. When treated with insecticide, nets have been shown to reduce mortality in endemic regions in Africa by about 20%.<sup>1</sup> However, the insecticide typically wears off after about six months, requiring regular retreatment to maintain efficacy. Additionally, the fabric of the net can be weakened by washing, making the net less effective over time.

This is the case study of how the Olyset® net was developed and deployed to address the need for a longer lasting, more durable, insecticide treated net. The Olyset® technology provides at least five years (or 20 washes) of protection, is more durable than any other net, and is one of the most effective malaria interventions on the market.

Although the Olyset® technology was first developed by Sumitomo Chemical Company in 1978, it remained in relatively small circulation until 2001, when two key developments took place. First, the World Health Organization Pesticides Evaluation Scheme (WHOPES) approved Olyset®, the world's first long-lasting insecticidal net (LLIN) as the first LLIN on its recommended list.<sup>2</sup> Second, Dr Pierre Guillet, a scientist with the WHO Malaria Division, and others began to conceive a scheme in which Olyset® nets could be widely deployed to address the over one million deaths<sup>3</sup> from malaria in Africa every year. To do so, global production capacity would have to be dramatically increased and the technology made available for local production in Africa.

Early in 2002, numerous discussions ensued on how to best support the opportunity to transfer the Olyset® technology that Sumitomo had agreed to provide to A to Z Textile Mills (A to Z), an African net manufacturer. In April of the same year, Dr Guillet met Dr Steven Phillips, Medical Director for Global Issues and Projects at ExxonMobil, at the 4th Meeting of the Roll Back Malaria (RBM) Global Partnership in Washington DC. It was at this meeting that Dr Guillet first introduced publicly the idea of a public-private partnership, the "Olyset® Consortium" that could bring Olyset® to Africa. Dr Phillips recalls: "His notion was at once simple and great. Exxon would donate the plastic, Sumitomo would provide the technology, a manufacturer would adopt it in Africa, and since this was such a good idea, everybody would do it more or less for free."<sup>4</sup>

By late 2002, initial ideas about the potential to use Olyset® LLINs in Africa had grown into a full-fledged public-private partnership (PPP) that included A to Z Textile Mills (A to Z), Acumen Fund, ExxonMobil, Population Services International (PSI), Sumitomo Chemical, UNICEF and WHO (see Appendix A). Representatives first gathered at a meeting convened by Acumen Fund in Geneva to discuss how to transfer the Olyset® technology, scale up production and create a distribution network that would provide Olyset® nets to those most in need.

Over the past three years, the Olyset® Consortium has demonstrated how to transfer and scale up new technology to Africa through collaboration and innovative approaches.

By advancing the concept of Africa-based capacity building and empowerment, the Consortium has helped A to Z become the first, and at this time only, African manufacturer to produce LLINs. A to Z produced 300,000 LLINs in 2004 and scaled up production to three million nets in 2005, providing coverage to over one million people in its first year of production.<sup>5</sup>

Even as the first impact from the Consortium is being realized, members agree that future engagement will require new approaches in order to support distribution and ensure affordability. As Anuj Shah, Chief Executive Officer of A to Z put it: "The work of fighting malaria and of creating viable long-term markets to support local efforts is just beginning."

## Business Case

### Vision

The members of the Olyset® Consortium envisioned a partnership that would:

- Prove the basic principles of technology transfer and local capacity building as they apply to malaria prevention interventions
- Enable a sustainable, local supply of long-lasting insecticidal nets
- Significantly improve protection of vulnerable populations, particularly pregnant women and children

They believed that a staged approach would help them realize this vision and ensure successful technology transfer, scale-up and distribution of the Olyset® net. The steps were:

- Facilitate the transfer of the Olyset® technology to an African net manufacturer
- Support scale-up of operations
- Develop robust distribution channels to expand reach

### Case for Action

Over 550 million people are at risk of contracting malaria in Africa.<sup>6</sup> In Tanzania alone, the malaria burden amounts to 18 million new cases and 100,000 deaths each year.<sup>7</sup> Economically, this costs about 3.4% of GDP, or some US\$ 119 million of national resources.<sup>8</sup>

Insecticide treated bednets (ITNs) have proven to be one of the most effective methods of malaria prevention.<sup>9</sup> Net usage can help to decrease malaria incidence by as much as 50%.<sup>10</sup> The Abuja target<sup>11</sup> calls for providing 60% of vulnerable populations with access to preventive measures, including mosquito nets. This already challenging target is complicated by the need to retreat conventional nets every six months to maintain their effectiveness.<sup>12</sup> A longer lasting product providing similar efficacy and coverage, over a longer time frame, would provide significant value.

Olyset® LLINs fit that description exactly. Made of high-quality polyethylene mesh, they remain durable and effective for a minimum of five years; they never need retreatment and represent a cost-effective supplement to the current portfolio of treated and untreated nets.

In 2002, Olyset® was the only product of its kind available in Africa. By using royalty-free technology transfer, the Consortium addressed the immediate market opportunity and provided additional structural benefits, such as:

- Developing locally owned and managed industrial manufacturing capacity
- Demonstrating the economics of production so that others could replicate the model of technology transfer and production
- Creating a previously non-existent market for a life-saving product
- Minimizing costs related to transportation, distribution and delivery time by manufacturing LLINs in Tanzania, close to primary consumer markets

### Partner Inputs

Six key partners in the Consortium helped the Olyset® net realize its full market potential and reach those who would most benefit from a long-lasting net. The roles of the partners varied, based on the parts of the process that they were best equipped to contribute to, given their distinctive operational capabilities.

- **Acumen Fund** is a non-profit, global venture fund interested in developing private commercial markets in which companies can sustainably operate to provide goods and services to underserved populations. Acumen Fund has unique financing and project management expertise.<sup>13</sup>

## Business Case (continued...)

### Partner Inputs (continued...)

- **A to Z** is the largest net manufacturer in Africa. The company is uniquely placed to help create a strong and sustainable commercial net market due to its local market knowledge and strong relationships with local distributors and retailers.
- **ExxonMobil's** mandate to “make a difference to the people of Africa”, especially its employees and their communities, is complemented by an internal standard established by the company: a malaria death is as unacceptable as a death from a workplace accident. To these ends, ExxonMobil leveraged their capabilities around technical and project management assistance and advocacy.
- **Population Services International (PSI)** is a non-profit organization that supports marketing strategies to promote health products and services at subsidized prices to enable low-income and vulnerable people to lead healthier lives.<sup>14</sup> PSI leveraged its branding and marketing expertise.
- **Sumitomo Chemical** is the originator of the Olyset® technology and the largest manufacturer of Olyset® LLINs. The company used its innovation, technology transfer, materials support and quality assurance capabilities to advance the project from inception through manufacturing.
- **UNICEF's** mission to protect children involves supporting malaria control programmes in over 30 countries in Africa and, as such, offers the procurement power of the largest institutional buyer of nets.<sup>15</sup>
- **WHO** provides a global forum for advocacy of PPPs and the use of LLINs and brings institutional confidence of the Olyset® net through its endorsement.

### Goals & Outcomes

By the time of the official November 2004 launch of Olyset®, the technology transfer was complete and the distribution of the 300,000 nets produced in the first year was underway.

Encouraged by this initial success, individual members of the Consortium have established the following longer term goals:

- Prove that technology transfer from multinational corporations to local manufacturers is possible and transferable to other local companies
- Increase supply of Olyset® LLINs in Africa by scaling up production capacity
- Identify and begin to develop new private distribution channels

### Financing

In addition to in-kind and human capital support, each member of the Olyset® Consortium also contributed financially to the initiative. Financial support is estimated to total over US\$ 1.3 million. Specific contributions include:

- **Acumen Fund** provided US\$ 1 million<sup>16</sup> in innovative debt financing and grants to A to Z to develop production capacity and private distribution channels.
- **ExxonMobil** contributed US\$ 250,000<sup>17</sup> to UNICEF to purchase and distribute Olyset® nets in Cameroon.
- **PSI** has invested over US\$ 15,000<sup>18</sup> in brand and consumer research to support marketing and distribution efforts.
- **Sumitomo Chemical** paid US\$ 35,000<sup>19</sup> for the evaluation of Olyset® by WHOPES.

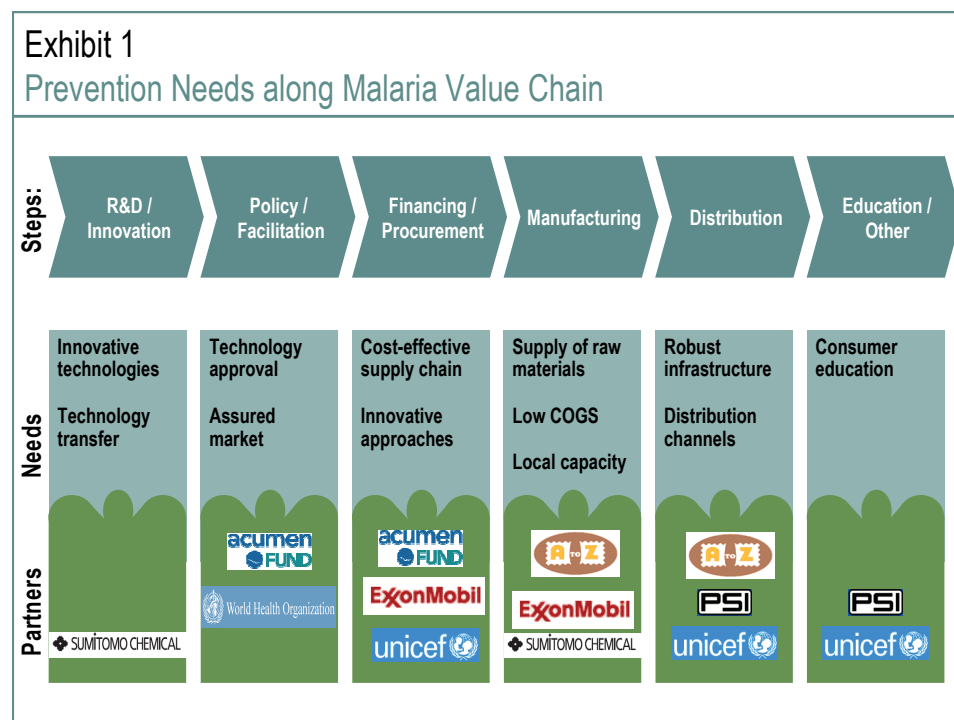
## Programme Description

*“It is very clear: the problem of malaria in Africa needs a solution in Africa. Producing Olyset® nets locally saves lives, provides employment, increases the standard of living and builds markets that support economic development across the continent.”*

– Anuj Shah, Chief Executive Officer, A to Z, Tanzania

### Value Chain

The Olyset® partners aligned their capabilities to the specific dimensions of need along the malaria value chain as depicted in Exhibit 1.



### Activities

#### **Innovation**

The Olyset® technology developed by Sumitomo Chemical incorporates a 2% Permethrin insecticide directly into polyethylene resin prior to the extrusion of the fibres. This allows the material to retain its chemical properties even after washing, making it one of the most durable (minimum of five years and never needs retreatment) and cost-effective nets on the market.

#### **Policy and facilitation**

Consortium members developed a business plan for technology transfer and local production of LLINs to bridge the gap between the tremendous unmet social need for local malaria prevention solutions and the untapped opportunity of the Olyset® technology.

Once WHO recommended Olyset®, signalling to others that the LLIN was an important element in the fight against malaria, Sumitomo Chemical agreed to transfer the technology royalty-free to A to Z. In addition to its role as an initial catalyst, WHO continued to support the partnership by providing technical advice.

#### **Financing and procurement**

Acumen Fund further brokered the technology transfer between Sumitomo Chemical and A to Z and bore the initial capital investment risk by providing US\$ 325,000 of debt financing to A to Z. This enabled its purchase of capital

## Programme Description *(continued...)*

### **Activities** **(continued...)**

equipment and factory modifications to start a manufacturing line with a capacity of about 300,000 nets in the first year.

UNICEF procured 90% of A to Z's first year production of 300,000 Olyset® Nets.

#### ***Manufacturing***

With no profit expectation, Sumitomo Chemical agreed to transfer the Olyset® technology royalty-free. Guided by its corporate commitment to contribute to society and its desire to support its chemical market, it also delivered raw materials to A to Z and provided ongoing quality control support and technical advice.

In support of its programmes to build local capacity, ExxonMobil leveraged its technical and industry expertise. The company supplied chemical engineers for on-site technical support and advised on supply chain and manufacturing optimization plans.

Continued innovation at the factory-level brought the wholesale price down from the original ~US\$ 10 per net to the current ~US\$ 6 per net. Although the point-of-purchase price for Olyset® LLINs tends to be higher than other ITNs, a recent study contends that the cost per year of providing coverage with an LLIN could be as much as 36% less expensive than providing coverage with a conventional net primarily due to its longer lifespan.<sup>20</sup>

#### ***Distribution***

UNICEF has supported distribution of the nets to the most vulnerable populations through hospitals and antenatal clinics. ExxonMobil awarded a grant to UNICEF to develop a voucher programme in Cameroon, which would serve as the footprint for a national distribution programme that would include Olyset® LLINs.

Ten per cent of production in the first year was distributed through existing private distribution channels. To support the development of commercial channels, PSI supported distribution of the nets and marketing through its network of private retailers.

UNICEF has also coordinated efforts at the global level and, together with The Global Fund To Fight AIDS, Tuberculosis and Malaria (the Global Fund), has supported Tanzanian consumer-subsidy voucher programmes. The US\$ 1 billion of committed financing through the Global Fund will result in the procurement and distribution of 110 million nets (a subset of which may be Olyset® LLINs), predominantly in Africa.<sup>21</sup>

Acumen Fund's second investment of US\$ 675,000 (US\$ 400,000 loan, US\$ 275,000 grant), made in 2005, will support private market development and creative distribution systems that promote long-term growth while addressing the needs of local communities, such as direct sales through village-styled women's groups.

#### ***Education***

PSI has supported branding and associated national marketing campaigns to stimulate the growth of retail distribution networks, and has promoted the Olyset® nets through consumer-education radio and roadshow campaigns.

## Programme Evaluation

### Key Success Factors

The Olyset® Consortium has been a product of vision and commitment. A number of key success factors contributed to its overall success, a few of which are outlined in Exhibit 2.

Exhibit 2: Key Success Factors and Examples

Key success factors for engagement	Examples
Define how company will benefit	Launch of Olyset LLINS in the African market will support A to Z and Sumitomo Chemical in developing sustainable markets for nets
Define how others will benefit	Olyset technology will save lives. The technology transfer will support building local African markets
Determine what level of engagement is required	Sumitomo Chemical increased support to provide quality assurance to meet international WHO standards
Identify where you are positioned to contribute uniquely	UNICEF leveraged its relationships in the public sector to support distribution to vulnerable populations
Develop roadmap for engagement	WHO, UNICEF, and others drove development of a strategic partnership roadmap
Ensure sustained corporate leadership and support	Sumitomo Chemical continues to provide technical support and quality control. PSI continues to lend marketing expertise
Identify partners to complement efforts	ExxonMobil and Sumitomo Chemical leveraged their unique technical capabilities to support the scale-up of production
Use targeted approach	Acumen Fund supported A to Z's initial focus on the local market and future expansion across Africa
Establish clear metrics for success	A goal of 300,000 nets produced in the first year ensured ability to measure outcomes
Shape external expectations	ExxonMobil and Sumitomo Chemical actively participate in the communication of the Olyset success story

### Evaluation Process & Metrics

The initial desired outcomes of the Consortium's work were to transfer the Olyset® technology and to produce and distribute 300,000 Olyset® nets within one year. Over time, however, it became clear that the key metrics by which the Consortium was tracking its own success were broader than the number of nets produced. Additional metrics included: the number of nets distributed; A to Z's ability to increase business operation efficiency; net access and coverage for vulnerable populations; and attribution of net use to positive health impact. Examples of Consortium outcomes include:

#### **Production scale**

- Over 300,000 nets were manufactured by 2004.
- A to Z production capacity has increased from 300,000 to three million per year.

#### **Business operations**

- Since A to Z began using Olyset® LLINs, productivity has increased considerably.
- Producing Olyset® LLINs locally in Tanzania has significantly reduced delivery time (from production facility to market) by up to two months.

#### **Distribution**

- By December 2005, approximately 1.5 million Olyset® LLINs have been distributed in sub-Saharan Africa. Conservative estimates place Olyset® net coverage at over 3 million people protected.

#### **Access and coverage**

- 95% of LLINS produced in 2004 were sold in public markets for distribution to the most vulnerable populations, 5% were sold in private markets.
- The retail distribution network has expanded significantly, to cover 25 countries.

#### **Anecdotal health impact**

- All 3,000 A to Z employees, among whom few cases of malaria have been reported own and use Olyset® LLINs.

A village that was supplied with Olyset® nets from the factory in Tanzania is reporting significant reductions in malaria.

## Evaluation Process & Metrics (continued...)

The full health impact of the initiative has not yet been formally measured, but several members of the Consortium have plans to develop and measure progress against health impact metrics over the next few years. Some of the specific partner plans for health metric creation are as follows:

- **Acumen Fund** is working with several researchers to develop consumer-pricing models that address the affordability of Olyset® LLINs.
- **Sumitomo Chemical** is working with A to Z to develop metrics to document the health impact in Tanzania.
- **UNICEF** is working with the Rockefeller Foundation to examine policy implications for ITN (including LLIN) manufacturing and distribution.<sup>22</sup> It is also in the process of conducting Multiple Indicator Cluster Surveys through 2005 to determine ownership and use of ITNs (including LLINs).<sup>23</sup>

## Future Plans

The next stage in Olyset®'s evolution will be to increase the affordable supply of Olyset® LLINs. This will entail: 1) scaling up production to realize economies of scale, 2) developing private markets to meet the demand created by the introduction of consumer subsidies and other LLIN products, and 3) increasing market competition by adding additional suppliers.

Moving forward, the key hurdles will include additional technology transfer, product innovation, pricing, development of private distribution channels in an asymmetrical marketplace, increasing competition, and volatility in demand forecasting. To sustain the momentum of the original initiative, the partners are supporting ongoing efforts on both the supply and demand side.

### *Increasing Supply*

- **A to Z** is expanding its manufacturing base and increasing production capacity to over 7 million Olyset® LLINs by June 2006.<sup>24</sup>
- **ExxonMobil** has increased overall investment in malaria prevention and control to US\$ 11.5 million. It is also planning to leverage its petrol service stations, known as MobilMarts, in four countries to enhance net distribution efforts.
- **Sumitomo Chemical** is committed to further collaborations around technology transfer and will continue to monitor the quality of local manufacturers' products.<sup>25</sup> Sumitomo Chemical is also investigating other applications of the technology, such as coverings for windows, doors and roof eaves. The company will invest in a joint venture facility with A to Z to scale up its annual global production to over 23 million nets by mid-2006.
- **WHO** convened a business meeting in Johannesburg in September 2004 as a follow-up to the strategic plan, which called for increasing the supply of LLIN's through technology transfer with multiple local companies. More than 50 participants from private sector attended, indicating an opportunity to expand the production reach throughout Africa.

### *Addressing Demand*

- **Acumen Fund's** investment of US\$ 675,000 will support the development of new distribution channels to support private market growth.
- **PSI** has expanded distribution into six regions in Tanzania, and will continue improving coverage of vulnerable populations by supporting the growth of local retail networks.
- **UNICEF** will continue to procure and distribute ITNs (a subset of which may be Olyset® LLINs) targeting pregnant women at antenatal clinics, children coming in for routine immunizations and communities involved in measles vaccination campaigns. Together with Global Fund, it has supported the Tanzanian consumer-subsidy voucher programmes.

## Future Plans (continued...)

- **WHO** is further stimulating development of innovative technologies for vector control to address the growing demand for prevention interventions. It is working with the Global Fund to ensure effective use of the approximately 20 million mosquito nets that can be procured by the US\$ 108 million approved over five years for purchase of ITNs. Since several malaria-endemic countries have established guidelines recommending the purchase and distribution of LLINs, it is expected that there will be an increasing demand for the Olyset® LLINs over the next few years.

There is no doubt of the success the Olyset® Consortium has had in addressing the market and human need for the Olyset® LLIN. By supporting the evolution of the Olyset® LLIN, from an innovative technology to a protective mechanism saving lives on a daily basis, the Consortium has proven that collaborative approaches work. The experience of the members shows that enlightened self-interest (i.e., partner focus on actualizing individual incentives) not only anchored each partner to a common public health goal, but it did so in a way that has sustained multi-party engagement over the course of the initiative. The story of Olyset® has just begun, and with the hard work and support of the Olyset® Consortium, its future remains bright.

*“This experience can be a model for others...the strengths of the Consortium, as well as its limits, will only make the next partnership stronger. It is just a matter of recognizing the opportunity when you are at the crossroad.” – Dr Pierre Guillet, WHO*

## Endnotes

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9. RBM, "A to Z and the Olyset® Technology Transfer," RBM Partnership, 17 November 2004
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23. Interview, Dr. Kopano Mukelabai, 9 December 2005
24. Interview, Anuj Shah, 8 December 2005
25. Mboyah, Duncan. "Malaria: Africa Confronts its Number One Killer," *Eastern Africa*. online edition. February 2005

## Related Resources

### Websites

#### **Partnership Resources**

Global Health Initiative: <http://www.weforum.org/globalhealth>

Roll Back Malaria Partnership: <http://www.rollbackmalaria.org>

#### **Olyset® Partner Websites**

Acumen Fund: <http://www.acumenfund.org/Work/HealthTechnology/Investments.asp>

ExxonMobil: [http://exxonmobil.com/corporate/citizenship/gcr\\_health\\_AHI.asp](http://exxonmobil.com/corporate/citizenship/gcr_health_AHI.asp)

Population Services International (PSI): <http://www.psi.org/malaria/>

Sumitomo Chemical: <http://www.sumitomo-chem.co.jp/english/responsible/pdf/2005csr/2005csre-4.pdf>

UNICEF: [http://www.unicef.org/health/index\\_malaria.html](http://www.unicef.org/health/index_malaria.html)

WHO: <http://www.who.int/malaria/>

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