

Combating Malaria – Without DDT! Malindi, an African Example



Malaria can be eradicated step by step in Africa – just as in other parts of the world – by treating people who are infected, involving local groups, and implementing targeted environmental management. This example from Malindi in Kenya shows what can be achieved.



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Malindi: Malaria is no longer the number one disease

Seventy percent of Kenyans live in malaria-risk areas. And the coastal region is among the most threatened parts of the country. High precipitation levels, high temperatures, and high humidity mean that conditions there are perfect for the reproduction and survival of the *Anopheles* mosquito, which transmits the parasites that cause malaria. Malaria transmission rates can be very high in these regions all year around.

But according to Maurice Buni, director of the district hospital in Malindi, malaria is not as great a problem along Kenya's northern coast as it was just a few years ago. In 2002, malaria was the number one disease in Malindi, with the district hospital treating some 10,000 malaria patients each year. Today, only 500 to 600 cases are treated at the clinic annually, and malaria is only the fifth most frequent disease. Doctor Buni proudly notes that not a single patient died of malaria in 2009 and he says optimistically, „We're winning the fight against malaria.”

Spraying insecticides in homes, whether DDT or pyrethroids, is not part of the fight against malaria in Malindi, says Dr. Charles Mbogo, an expert on insects from the Kenya Medical Research Institute (KEMRI) working in close cooperation with ICIPE. The Kenyan Ministry of Health has not sprayed insecticides to kill malaria mosquitoes inside houses in Malindi since the early 1980s. Instead, the government distributes mosquito nets and offers free medical treatment. And, as Maurice Buni points out, people are active in community-based organizations, most of them as volunteers, in combating malaria. Some distribute bed nets or serve as mosquito scouts who search for possible breeding sites for the *Anopheles* mosquitoes. Others educate fellow citizens about preventive measures. More and more people in and around Malindi are well-informed about malaria symptoms, treatment methods, and prevention. And many of them now go to a doctor as soon as fever sets in, so they get treated on time.

ICIPE – spearheading IVM development in Malindi

The international Centre of Insect Physiology and Ecology (ICIPE) developed the integrated Vector Management approach used in Malindi in cooperation with the Kenya Medical Research Institute (KEMRI).

Support comes also from biovision who finance activities to implement IVM in Malindi and trainings for *Mosquito Scouts*.

Three Examples of Activities in the Fight against Malaria

Theatre against Nightmares
Kakanjuni is a village 30 minutes by bus from the highway that connects Kilifi and Malindi. The youth theatre group Jua Arts from Kilifi comes here regularly. Its performances are an attraction and draw large audiences, just as in December 2009, when the group presented two scenes from everyday life in a typical Kenyan family. In the first scene, a husband is not in favour of using mosquito nets, but then his pregnant wife comes down with malaria. A doctor explains the benefits of nets to the husband and treats the expecting mother. In the second scene, a young boy refuses to sleep under a mosquito net because



he thinks it will give him nightmares. His parents convince him that his fears are unfounded.

From conversations before and after the performances, 23-year-old actor Katlungo Mwamuye is certain they have an effect. „Today, more people use bed nets here than a year ago.” But changing people's behaviour takes time. A single performance cannot change everyone's behavior for the better from one day to the next. That's why the actors would like to perform more often!

Environmental Management in a Slum

Mohammed Salim is one of 20,000 inhabitants of Barani, a slum district in Malindi. Mohammed is 40 and lives there with his wife and seven children. He has declared war on „taka-taka” – the Kiswahili word for garbage – and is proud of his success so far.

An open space in the middle of Barani that is bounded by little shops used to look like a garbage dump. Municipal garbage collectors never came here. Salim wanted



to change that. Together with about fifteen other activists, he founded the Barani Community Health Workers in 2004. In 2007, the self-help organization convinced local authorities and residents that they should join in keeping this public space clean. But Salim was not just interested in having his neighbourhood look more pleasant. Rainwater collects in empty cans, bottles and plastic bags, creating ideal breeding conditions for *Anopheles* mosquitoes. And scientists, some of whom work for KEMRI, have shown that *Anopheles* mosquitoes can also survive in polluted water. The self-help group introduced a new service: for a monthly charge of 50 Kenya shil-

How Common Visions Can Become Reality

The vision many Africans share is that their native countries will become malaria-free and DDT-free at the same time. At the moment, the persistent toxic pesticide DDT is still being used to combat malaria in many African countries, even though use of DDT has to be abolished under the provisions of the Stockholm Convention.

In April 2009, representatives of African civil society, African public authorities, the United Nations Environment Programme, and the Pesticide Action Network (PAN) met for a workshop that was co-organized by PAN Africa and others and hosted by its partner organization AGENDA in Tanzania. The aim of the meeting was to network and develop common strategies for ending the use of DDT in combating malaria in East Africa. But projects have to be funded, so this kind of meeting is not only about effective approaches to solving the malaria problem but also about obtaining funds so that practical steps to combat malaria can become reality. That is why 24 Kenyans from the country's northern coastal region met in Malindi in December 2009 to learn the complicated procedures for submitting applications to international funding agencies. Some of the workshop participants were already organized. In Malindi, ten organizations united to form Punguza Mbu Malindi (PUMMA), the Malindi Mosquito and Malaria Control Association. Mohammed Salim from Barani is active in the PUMMA alliance and took part in the training workshop – an encouraging experience. He plans to join other activists in applying for more financial support. „We are highly motivated, and we know where we can acquire the information we need and that we have to submit our application on time.” Now Salim and his collaborators have to sit down together and draw up their applications – in a few years, malaria could be a thing of the past in and around Malindi.

Local Facts about Malaria

Lower Incidence of Malaria

In 2002, malaria was the most frequent illness in Malindi. In the district hospital there, one in five in-patients admitted to the hospital and 29 percent of those treated as out-patients suffered from malaria. Four years later, in 2006, the rate of verified malaria cases had dropped to 14 percent. By early 2010, the incidence of malaria was down to three percent. Deaths due to malaria are now an exception.

More Bednets

The Malindi district hospital has distributed and sold significantly more bed nets since 2006. From 2008, pregnant women and children under five years of age receive bed nets free of charge. In 2005, 570 mosquito nets were handed out, followed by 3,251 in 2006, 3,677 in 2007, 8,038 in 2008, 6,309 in 2009, and 2,920 in 2010. The total number of bed nets used in Malindi is not recorded. A large number of organizations are involved in this programme.

lings (about € 0.50), its members collect household garbage and store it temporarily. They use the money to rent a municipal garbage truck about once every two weeks. But not everyone who lives in Barani can afford to pay for this service. There is not enough money.

Scouts against Malaria

Anton Shida takes a sample of rainwater from the swimming pool of an abandoned villa. Algae and mosquito larvae float in the pool. He takes a close look. He can tell the difference between *Anopheles* larvae and the larvae of other mosquito species. If he finds *Anopheles* larvae, then he dissolves tablets in water and pours the solution into the pool. The tablets contain dried bacteria that are called *Bacillus thuringiensis israelensis* or *Bti*. Mosquito larvae die if they eat these bacteria. Shida, who is 46 years old, is one of 16 mosquito scouts. Every scout is responsible for monitoring two areas that are each about one square kilometre in size – one in Malindi, the other outside of Malindi, for example in



an area where farmers grow rice in stagnant water – to check for *Anopheles* mosquitoes. The scouts' work is financed by the Swiss Organization Biovision. Each scout is paid 7,200 Kenya shillings (about € 70) per month. Dr. Mbogo, a specialist on insects who works for KEMRI, says that the scouts' work is based on a simple idea. „If 100 female mosquitoes lay 200 eggs each in a pond, then 20,000 larvae will develop.” They can all be killed with a single *Bti* tablet. The scouts also explain to residents why it is important that they cover water tanks so mosquitoes cannot lay their eggs in them. „People have to take responsibility themselves and shouldn't wait for the go-

vernment to take action,” Dr. Mbogo says. Such measures can reduce the mosquito population by 70 percent and more. The insect specialist would like to see the project extended to all of Kenya – and ultimately to all of Africa. But so far, there is just not enough money to realize this plan. Funds from Europe have made it possible to organize workshops where information can be passed on. In Malindi, about 400 residents already know what they have to look out for as private mosquito scouts. Dr. Mbogo calls this initiative a win-win situation. If the number of *Anopheles* mosquitoes is reduced thanks to effective environmental management, then the area sees a reduction in transmission not only of Malaria parasites but also of the pathogens that cause other diseases such as yellow fever and Rift Valley fever. And it is less likely that mosquitoes will develop resistance to insecticides that are applied to bed nets or houses, or that plasmodia (the pathogens that cause malaria) will become resistant to newer drugs such as artemisinin.

Help Support Pioneers in West Africa Now!

Several years ago, PAN began supporting scientists in Mexico, documenting their experience with integrated holistic methods of combating malaria for readers all over the world. Our commitment was inspired by the desire to enable people in other countries to profit from the successful work in Mexico. Meanwhile, this approach has been applied effectively elsewhere in Central America. And as Malindi in East Africa shows this strategy can be employed in Africa, if it is adapted to suit local conditions.

PAN Africa and PAN Germany want to ensure that the practical knowledge of pioneers *in combating malaria without DDT* can be shared with more people, who can then launch similar initiatives in their own region. That is why PAN Africa and PAN Germany are planning a flagship project in Senegal. The project will utilize the methods successfully developed in Mexico and in other countries and profit from experience in Malindi. Any and all support for this undertaking is most welcome.

Help us realize a flagship project in West Africa that will reduce the incidence of malaria without the use of the persistent toxic pesticide DDT.

Contact: PAN Germany, info@pan-germany.org, Phone +49 (0) 40 - 399 19 10-0
Donations can be made to: Postbank Hannover, bank code 250 100 30,
account number 470 588 - 307, reference „Combat Malaria”

For Further Reading

We invite you to visit the English pages of the PAN Germany website at www.pan-germany.org/gbr.htm, where you will find further information on this topic. You can also order prints of the following information material (which is also available in German) for a small charge:

- PAN Germany (2009): DDT and the Stockholm Convention – States on the edge of non-compliance (DIN A4, 40 pages)
- PAN Germany (2009): Phasing in Alternatives to DDT – Reasons, experiences and links (DIN A4, 8 pages)
- PAN Germany (2010): Environmental strategies to replace DDT and control malaria (DIN A4, 31 pages)
- PAN Germany (2010): Control malaria without DDT! There are more options than currently used (DIN A4, flyer, 6 pages)



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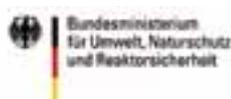
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PAN Germany is a charitable organisation which provides information on the adverse effects of pesticides and promotes environmentally friendly and socially just alternatives. We are part of the Pesticide Action Network International. Our working areas range from critical-constructive assessments of policy and legislation to practical services for farmers and consumers.

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