

# Combating Malaria without DDT: An ecosystem and community approach in Beer, Senegal

A pilot project to raise awareness of the causes of malaria and initiate non-chemical methods and activities for its prevention



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# Malaria in Senegal

This project contributes to the millennium development goal to reverse the incidence of malaria, and the Stockholm Convention aim to eliminate DDT globally.

No part of Senegal is free from malaria. Among its population of 13 million, the World Health Organisation (WHO) reports that this debilitating disease causes more than 20 per cent of deaths among children under five. The government National Programme for the Fight against Malaria (PNLP) says its effects generate poverty and are profoundly negative on both household livelihoods and the national economy. Government programmes have reduced malaria rates in Senegal. But communities remain at high risk. About 80 kilometres from the capital of Dakar, in the Niayes region, malaria cases in the village of Beer rose between 2008 and 2011. More than half were children. Neither the community of around 1000 nor its small health centre had information about malaria causes and prevention to help them cope.

The global fight against malaria is primarily based on household insecticide application, distribution of insecticide-treated bed nets and artemisinin-based drugs. Senegal has largely adopted these strategies. But mosquitoes develop resistance to pesticides, and parasites have multi-drug resistance. The WHO says these approaches cannot be sustained.

In September 2011, Pesticide Action Network (PAN) began a pilot project in Beer drawing on experiences in Kenya, Ethiopia and elsewhere<sup>1</sup>. Dr Charles Mbogo (KEMRI/ICIPE) is supporting efforts in Senegal, bringing his experiences from Kenya of implementing holistic Integrated Vector Management (IVM) to give communities knowledge and training to tackle mosquito breeding sites. This environmental approach links with strategies for bed nets and free medical treatment.

In Senegal, PAN works with the village health centre and the Union of Market Gardeners, which promotes sustainable agriculture. With 875 members locally, the Union helped mobilise around 300 locals for the initial meeting. The project benefited from liaison with the Senegal government malaria programme.

<sup>1</sup> Environmental Strategies to replace DDT and control malaria, PAN Germany, 2010.

## Making a difference. Three examples of the project activities to fight malaria

**The pilot project in Beer ran from September 2011 to December 2012. Within this limited phase, the team and the villagers made significant impacts.**

### Knowledge is power

In resource-limited villages, accurate knowledge is truly important to help people improve their local environment and protect their health. Before getting the information and guidance from this project, the Beer community was powerless to make changes that would defend them against malaria. Almost all residents, 93 per cent, had almost no information about malaria causes and prevention.



PAN Germany publications detailed ecosystem based approaches and PAN Africa developed two interactive radio programmes where malaria experts explained ways to combat malaria and took listeners' questions. These were broadcast on the popular local community *Radio Mbambilor* station. They covered the causes of malaria, habits of mosquito larvae, potential to combat malaria using environmental and other prevention methods and more. Marième Fall, a Beer resident who has many times suffered malaria, said *the programme has helped us to better understand how to protect ourselves against malaria.* The information in briefings and on the



radio was reinforced with talk sessions at the local health centre. These targeted events were attended by 80 Beer villagers. The women of the village showed a particular interest and made up 55 of those present, sharing their deeper knowledge with others.

### Sanitation saves lives

Villagers in Beer were unaware that local conditions encouraged the mosquito vectors of malaria. Many potential mosquito breeding sites existed near houses and in fields, including food waste, refuse and stagnant water. The pilot project used global positioning systems (GPS) to identify all potential mosquito breeding sites. In November and December 2012, about 300 women and girls and 200 men and boys in the community joined in a sanitation clean-up to clear rubbish and repair latrines. At the end of the pilot period all houses had some improvements to sanitation. Pape Abdoulaye Diou, a resident of Beer and president of the local Union of Market Gardeners, said: *Now we understand the role of*

# From pilot project to a launch pad

## **Malaria control programmes can become more effective if communities are equipped with information and support to organise themselves to fight malaria.**

In the relatively short period of this pilot project the strategies adopted at village level in Beer have improved knowledge and awareness of the sources of malaria; initiated ecological management strategies that reduce mosquito breeding sites; and helped the Beer community organise to maintain ecosystem management. Remediation sessions are now held every week to improve the local environment. The village is now divided into seven neighbourhoods, each with a group composed of young men and women to monitor sanitation activities and direct remediation work.

*Dr AB Gueye of the government National Programme for the Fight against Malaria noted: For us these are promising strategies because they help in the fight against malaria.*

The improvements in the project area are significant but the villages could achieve far more with even small resources particularly to support nearby villages and analyse and deal with eco-systems management of mosquito breeding sites. The Deputy Mayor of nearby Kayar, Ms Mb Gueye said: *The activities of this project should be extended to neighbouring villages as their populations must also be aware that they can fight malaria without chemical products.*

Professionals and practitioners guiding the project in Senegal recommended extending and expanding the work into a four-year programme. Ms Aita Sarr Seck from the Directorate of Environment and Classified Establishments said: *The project should be extended to better assess its impact on the population. Its activities should be disseminated. Actors in health and the environment must be aware of the existence of action and research that establish effective means to fight against malaria vectors with sustainable strategies.*

## **The quality of advice has improved, actions reduce breeding sites**

Community Health Workers in Beer say that now, *“during the consultations we educate patients about prevention methods against malaria”*.

Following home visits, the Community Health Workers noted that cleaning now discourages indoor mosquito infestations and utensils containing water are covered. Some wells have been covered and help to get fitted lids would motivate most people to adopt this practice. Some growers have introduced fish into marshy areas both to eat and for larval control.

## **School absenteeism has declined**

The rate of absence of students from school has decreased as the local health centre has improved its ability to treat children with malaria. The Director of the Beer Elementary School said that there are normally significant absences due to malaria during the prime malaria period. From 2009-2011, between 20-30 per cent of students were absent from illness, mainly malaria. In 2012, the proportion dropped to only 4.6 per cent.



*sanitation in the battle against malaria and so children, women and men are committed to improving standards in our village.* The community has now set up groups who monitor and carry out on-going remediation activities. Children are involved too, and environmental education has been introduced in the village elementary school to encourage their understanding and involvement.

## **Committed, informed and equipped: coordinated actions**

Beer village has a remarkable local health centre managed by a committee of village-members and supported by contributions

from the population, with no financial subsidies from the State. A volunteer community health worker administers first aid and gives health advice. Those suffering malaria previously went to the Bayakh clinic, 16 kilometres away. One father observed that: *The health hut Beer could not help as it was suffering from a cruel lack of equipment.* The PAN project strengthened the centre and trained health workers in the need for environmental management to fight malaria. In May 2012 the project ran a workshop for 20 Community Health Workers from five nearby villages. The three trainers were: an entomologist from the university Laboratory of Vector and Parasitic Ecology; an environmental toxicologist from PAN Africa; and the head nurse of Bayakh. The health workers drew up a plan of activities and urgent improvements.

The training, planning and subsequent support transformed the ability of the Beer health centre to combat malaria. The health workers now hold talks to inform, educate and work with the community on important prevention actions and ecosystem manage-

ment. The centre has improved its effectiveness too. It has water and electricity, supplies of rapid diagnostic tests to confirm malaria cases with certainty, and stocks of antimalarial drugs. By December 2012, the centre workers had visited 32 families to discuss household-specific actions such as: clean toilets, rubbish-free homes, covered standing water and fitted lids on septic tanks.



# Help support pioneers in West Africa now

**Several years ago, PAN began documenting the experience initiated in Mexico with integrated holistic methods to combat malaria without DDT and other chemical pesticides.** The evidence-based strategies developed by Mexican scientists put communities in command of their health and environment. Successful implementation of the community and ecosystem approach at Malindi in Kenya and Tolay in Ethiopia shows the strategy can be employed in Africa when adapted to local conditions. PAN Africa and PAN Germany are working to bring the practical knowledge of these pioneers in combating malaria without DDT to more people, who can launch similar initiatives in their own region. The flagship project in Senegal demonstrates how, with help from partners, this can be implemented. The Kenya Medical Research Institute (KEMRI)/International Centre of Insect Physiology and Ecology (ICIPE) assists through its scientific adviser, Dr Charles Mbogo. Two local partners bring health and environmental aspects appropriate to the community: the Union of Market Gardeners in Integrated Production and Pest Management (UPM/IPM) of the Niayes region, which has 875 members in seven villages and promotes sustainable development through good agricultural and environmental practices; and the Beer health centre, managed by a committee of five village-members and supported by contributions from the population.

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**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.**

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Donations can be made to: GLS Gemeinschaftsbank, bank code 430 609 67, account number 203 209 6800, reference 'Combat Malaria'.

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Further information on this project and this topic, are available at the PAN Germany website at: <http://tinyurl.com/75nuepa>.



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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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