



# A GROWING SUSTAINABLE BUSINESS (GSB) CASE STUDY

## A UNDP Initiative

### Fighting Malaria and Poverty in Madagascar



Malaria infects 350 million people, and kills 1 million every year. About 90 per cent of all malaria deaths in the world today occur in Africa south of the Sahara. Medication is often expensive, and in many cases, malaria has grown resistant to treatment.

Madagascar, like many African countries, is plagued by a high incidence of both malaria and poverty, with over 50 per cent of its population living below the poverty line, and few employment opportunities.

The island is exceptionally rich in biodiversity, however. Of the 10,000 plants native to Madagascar, 90 per cent are found nowhere else in the world. *Artemisia annua* L. is an aromatic annual herb that grows abundantly in Madagascar, from which a substance called artemisinin is extracted and purified. Artemisinin is a key component of the latest generation artemisinin combination therapy (ACT) antimalarials recommended by the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF) as an effective treatment for malaria.

#### CHALLENGE

Unfortunately, when the WHO recommendation was first made in April 2004, the global supply of *Artemisia* could only satisfy part of the demand, estimated at 185 million treatments. Several large pharmaceutical laboratories (Novartis, Sanofi-Aventis, Cipla) therefore tried to secure additional sources of artemisinin.

Moreover, a significant increase in supply is expected to bring down antimalarial treatment costs and make them more accessible to affected populations.

Bionexx is the only large-scale producer of artemisinin in Madagascar and is one of the very few African-based producers. The company is faced with the challenge of increasing its supply to meet growing demand and to ensure profitability.

**"The most satisfying point in the project is seeing the real impact our project has had on the ground in the past three years. Our network of out-growers is now 2,000 strong with the objective to reach 5,000 in the coming two to three years."** ~Charles Gibrain, President, Bionexx

#### THE GSB SOLUTION

To address problems in the artemisinin value chain, Growing Sustainable Business (GSB) at the United Nations Development Programme funded a feasibility study that would help improve production techniques at cultivation sites operated by Bionexx, and analyse opportunities for the small farming community in Madagascar.

GSB also convened potential partners to ensure the success of the project. Rutgers University, in collaboration with the Business and Market Expansion (BAMEX) programme funded by United States Aid for International Development, supplied technical help. TechnoServe, a non-governmental organization, provided technical support for the first season's harvest and advised on improved techniques. Thanks to the potential scalable development impacts, the project has been able to mobilize several funding partners such as the Millennium Challenge Account and the European Union, through AEDS and the Office technique d'études et de coopération internationales.

Local authorities were involved with information dissemination to the rural farming population. Local non-governmental organizations and farmer leaders were involved in farm management to ensure that the project was well integrated into the local context.

## BUSINESS MODEL

Malagasy rural areas are characterized by numerous micro-operations involved in subsistence farming. One of the major obstacles to the transition to a commercialized system of agriculture is the isolated nature of the communities, thus reducing access to needed inputs and to markets for selling products. This isolation, combined with the lack of transport and information on market conditions, has restricted their economic opportunities. Bionexx has resolved these problems by assuring transport for production and information exchange among participating farmers, organized in partnership with the town mayors.

Bionexx has invested nearly US\$3 million to date in the scheme and another \$5 million in extraction/purification equipment.

Production forecasts of 3,000 metric tons of *Artemisia* dry material will produce 25 million treatments per year, by far exceeding the needs of Madagascar, which are estimated at 4 million treatments per year. Bionexx has already secured a number of buyers to purchase their supply.

**A family from Marovoay participating in the small farming programme explains that before becoming involved in the Bionexx out-grower scheme, they only produced manioc to feed the family. Artemisia has enabled them to earn 10,000 MGA per 100m<sup>2</sup>. The average small farm (5,000 m<sup>2</sup>) can earn 500,000 MGA (US\$300 per year) during the dry season. They also produce rice for their own consumption and beans, which they sell at the market.**

## DEVELOPMENT IMPACT

The project contributes to the Millennium Development Goals, first by helping combat malaria by increasing the global supply of artemisinin and thus helping stabilize the price of antimalarial treatments. It also contributes to poverty alleviation, by creating new employment and revenue-generating opportunities.

One of the most important problems for the rural regions in Madagascar is lack of employment opportunities. Bionexx has created 80 permanent positions in the processing factory (Innovexx), another 50 permanent employees within Bionexx, plus an additional 400 seasonal jobs. Average salaries are higher than those the employees earned previously in other jobs. Permanent employees benefit from training in *Artemisia* cultivation techniques, French language and interest-free loans.<sup>1</sup>

Furthermore, more than 3,000 small out-growers have partnered with Bionexx to cultivate *Artemisia* and supply the dry matter needed for extraction. Bionexx provides stable revenues for farmers, thus reducing their vulnerability to price volatility. The purchase price of *Artemisia* is fixed at the beginning of the season, and purchase is assured by Bionexx. The predictability of dealing with a fixed price contract secures a stable revenue source for farmers.

## SCALABILITY

In 2005, Bionexx started farming *Artemisia* on 100 hectares of land and began developing extraction and purification techniques with its technical partner Indena, an Italian company. After nearly four years, cultivated lands had spread to nearly 1,000 hectares in several rural regions. Bionexx intends to increase cultivated production to 2,000 hectares between now and 2010, and plans to extract and purify around 15 to 20 metric tonnes of *Artemisia* in its local factory in Fianarantosa.

1. United Nations Industrial Development Organization, 'Enterprise Solutions to Poverty: Examples of success in Madagascar', UNIDO, 2007.