



# ZORAMB NAAGTAABA ASSOCIATION (AZN)

Burkina Faso



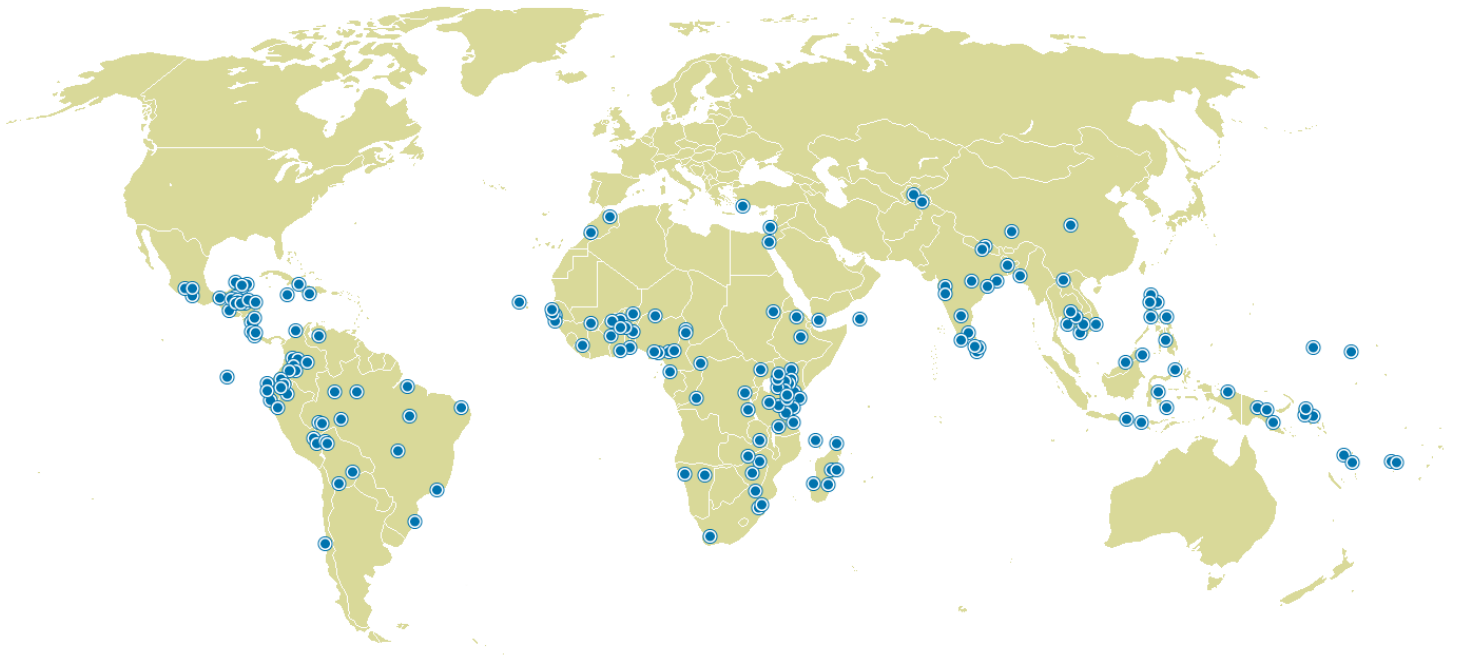
## Equator Initiative Case Studies

Local sustainable development solutions for people, nature, and resilient communities

# UNDP EQUATOR INITIATIVE CASE STUDY SERIES

Local and indigenous communities across the world are advancing innovative sustainable development solutions that work for people and for nature. Few publications or case studies tell the full story of how such initiatives evolve, the breadth of their impacts, or how they change over time. Fewer still have undertaken to tell these stories with community practitioners themselves guiding the narrative. The Equator Initiative aims to fill this gap.

UNDP's Equator Initiative, in partnership with ENDA Tiers Monde (ENDA), Open Society Initiative for Southern Africa (OSISA), United Nations Convention to Combat Desertification (UNCCD), and funded by the Global Environment Facility (GEF), identified examples of local ingenuity, innovation, and leadership in sustainable land management (SLM) in drylands in Sub-Saharan Africa. The following case study is one in a series that describes vetted and peer-reviewed best practices in SLM management, with the purpose of inspiring the policy dialogue needed to take local success to scale, to improve the global knowledge base on local environment and development solutions, and to serve as a model for replication.



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## PROJECT SUMMARY

Developed in response to water scarcity, environmental degradation, declining agricultural yields and high rates of poverty, Association Zoramb Naagtaaba brings together 10 villages to restore degraded land through the reintroduction of traditional agricultural approaches. In demonstration plots set up by local farmers, sorghum yields have tripled and space has been created for farmers to learn first-hand about hedge and pond construction and new agricultural techniques that restore land and improve productivity. In 2013 plant production increased by 55 percent and sales increased by 153 percent compared to 2012. Hedgerows have been used to recover storm water without any further erosion to the land. Tree-planting efforts are improving soil fertility and reducing run-off and degradation. Solar electric fences are used to protect crops from grazing livestock, while agricultural extension services are provided to reach farmers working their own land.

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## KEY FACTS

EQUATOR PRIZE WINNER: 2014

FOUNDED: 1989

LOCATION: Oubritenga and Kourwéogo Provinces, Central Plateau District, Burkina Faso

BENEFICIARIES: 10 villages

AREA OF FOCUS: Biodiversity, land reclamation





# Background and Context



Association Zoramb Naagtaaba is headquartered in Guié village on the Mossi Plateau in central Burkina Faso, 60 kilometers northwest of the capital, Ouagadougou. The landscape is flat savannah with a few hills and cliffs and has an average elevation of 350–400 meters. The soils are a mix of laterite and sandy clay and are relatively shallow, low in fertility, and erosion-prone. The area lies on the southern edge of the Sahelian ecological zone and receives 700–800 millimeters of rain per year, mostly between May and October.

Agriculture and animal husbandry are the two major activities in the region. Villagers also produce artisanal crafts in the dry season, including pottery, fabrics, metalwork, leather goods and wood carv-

ings. People in the Guié Region were once self-sufficient, but severe droughts in the early 1970s led to food shortages, loss of livestock and poverty. Deforestation, soil erosion, overgrazing, poor agricultural practices and bushfires have caused further environmental degradation. With a growing population, more erratic rains and advancing desertification, many farmers in the region struggle to feed themselves, and out-migration from the region has become common. Cash disbursements sent back from emigrants now play a major role in the local economy, allowing villagers to purchase goods (food, carts, motorcycles, construction materials) and to pay for social activities such as weddings and funerals.





# Key Activities and Innovations



Between 1990 and 1995, Association Zoramb Naagtaaba established the Guié Pilot Farm on 2 hectares of degraded lands in Guié Village. The aim of the pilot farm was to serve as a showcase and learning center for the successful integration of agriculture, agroforestry and animal husbandry in a holistic land management system specifically designed for the Sahel environment.

## *Hedgerow perimeters*

The key innovation at the Guié Pilot Farm is the use of hedgerows (bocage in French, wégoubri in the local Mooré language) to enclose agricultural production areas. A trench is dug around the production area for establishment of the hedgerow. A fence of wooden posts and barbed wire is erected in the trench and tree seedlings are planted on either side of the fence. As the trees mature, they form a hedgerow. This living fence serves a multitude of purposes, the most important of which is to keep livestock out of production areas. The hedgerow also protects crops from heavy winds that of-

ten damage crops in the Guié Region. Hedgerows protect against erosion and slow water evaporation from enclosed soils. Leaf litter from the hedgerow fertilizes the soil and can be added to compost. Species selected for use in hedgerows are nitrogen-fixing species, which help restore soil fertility, and fruit trees which produce food and other useful products. For example, physic nut (*Jatropha curcas*) is often planted for its oily fruit, which can be made into soap, lamp oil, or biodiesel. Regular trimming and maintenance of the hedgerow also provides farmers with extra fuel wood.

Outside the hedgerow, a 15 meter-wide firewall is cleared of vegetation yearly to protect the hedgerow from bushfires. Inside the hedgerow, a soil embankment is created at the edge of agricultural fields. The embankment ensures zero runoff, as all rainwater is retained inside the hedgerow perimeter. The enclosed area is divided into private fields and common areas, with paths and additional ditching to catch water and prevent erosion. At the lowest end of the enclosure, a pond catchment area is dug to receive excess runoff during the heaviest of rainstorms. The pond area is surrounded by trees to slow evaporation. The pond catchment raises the water table in the enclosure and any excess water is used, when possible, to water plants or livestock when fields are left fallow. Narrow cuts with cattle guards are created in the hedgerow to allow farmers access to enclosed farmlands; larger gated access points in the hedgerow permit access of machinery or livestock to penned areas.

## *Zaï cultivation technique*

Once the hedgerow perimeter is in place, soil restoration begins with the implementation of the Zaï cultivation technique, an indigenous water and soil conservation method adopted from farmers living in the Yatenga region in northwestern Burkina Faso. In Zaï cultivation, farmers dig holes 30 centimeters in diameter and 15 to 20 centimeters in depth into barren, encrusted soils (locally termed zipelle) during the dry season. A circular ridge is formed around the top of the hole to retain water and the hole is filled with compost and seeds.







When the rains come, the holes fill with water and the ridges prevent the seeds and organic matter from washing away. The surrounding hardpan soil acts as a pot, concentrating the nutrients in the compost and keeping the holes moist and drought-resistant during the dry season. Implemented over several seasons, the Zai technique gradually restores soil structure, fertility and water retention capacity. In addition to the Zai cultivation technique, farmers are taught

to practice crop rotation to prevent soil depletion and strengthen resistance to pests and weeds. Rotated crops include millet, cowpeas, peanuts, hibiscus, sesame and a locally-adapted variety of sorghum.

The Zai cultivation technique is augmented by agroforestry. Taller trees are planted in the central axes of agricultural fields, out of the way of mechanized or animal-drawn plows, to provide shade. Selected trees include nitrogen-fixing acacias as well as fruit trees. AZN has established a nursery to provide farmers with seedlings used in reforestation projects as well as in the construction of hedgerows. The nursery, like the pilot farm, engages in research and development, experimenting with new agricultural and agroforestry methods and disseminating useful results to farmers in the surrounding communities.

### *Rotational grazing*

To reduce environmental damage caused by wandering livestock, a system of rotational grazing is integrated into the hedgerow perimeter system. Livestock are kept in a penned enclosure within the hedgerow, or outside of the hedgerow. Livestock are daily led to designated, enclosed areas for grazing. Grazing areas are rotated to prevent environmental damage. Previously grazed lands are allowed to lie fallow and are used to grow hay to feed livestock during the dry season when there is a shortage of grass. Concentrating and enclosing animals during the day and night facilitates collection of manure for use as compost.



*“I notice that it doesn’t rain enough, there’s a lot of wind and the desert is expanding. All this can drive us to difficult living conditions.”*

*Salfo Sore*



# Impacts



## BIODIVERSITY IMPACTS

The Guié Pilot Farm has restored denuded lands, maintained biodiversity and provided a sustainable land management model for farmers in the region. As Mathias Sawadogo, Adjunct Director of the Guié Pilot Farm recounts, “Where the farm currently is, the land used to be bare. Even grass could not grow there. Those who cultivated this place finally had to abandon it. Today, people see that this place is prospering again.”

Association Zoramb Naagtaaba provides technical and financial assistance to farmers from 10 villages. Farmers wishing to establish a hedgerow perimeter send a request to the organization for assistance through their local village council. To date, AZN has facilitated the establishment of more than 500 hectares of hedgerow-enclosed farmland on the Mossi Plateau in the villages of Guié, Cissé-Yargho, Douré and Doanghin, and another 155 hectare project is currently in progress. The hedgerow perimeters have restored soil biodiversity, increased forest coverage and provided habitat for insects, birds and animals. These green oases halt land degradation and the spread of desertification. Over the past eight years, Association Zoramb Naagtaaba's nursery has produced more than 220,000 tree seedlings, 80 percent of which are native species. Hedgerows and reforestation efforts have re-introduced regionally-diminished tree species and ameliorated the local environment.

## SOCIOECONOMIC IMPACTS

### *Food security*

Farmers working in hedgerow-enclosed agricultural farmlands created with AZN's assistance have seen their yields increase dramatically. For example, farmers using the Zai cultivation method produce yields that are two to three times greater than their neighbors who do not use the Zai technique. Farmers in the Mossi Plateau working in hedgerow perimeter farms are now producing enough staple

crops to supply their families with food year round. Some even have surpluses which they are selling as a source of income.

Before receiving training from AZN, local farmer Bilwaongo Sawadogo often faced food insecurity and could not afford to send his children to school. Implementing techniques taught by AZN, he has been able to increase his yields, purchase chickens and cattle, send his children to school and help neighbors in need. Speaking of his future plans, Sawadogo says, “I plan to create a family garden and grow vegetables. My family will have eggplant, melons, zucchini and peppers in large quantities.”

### *Local development*

In addition to its environmental programs, Association Zoramb Naagtaaba, with assistance from multiple partners, invests considerable resources towards rural development in the Mossi Plateau. This includes support to six local schools, the maintenance of a health center with a pharmacy and ambulance corps, and construction of a maternity center and a nursery for children. Prior to the construction of the AZN health center, the nearest clinic was 20 kilometers away and often difficult to reach during the rainy season. The local health center provides Guié residents with medicines, vaccines and treatment for diseases such as malaria, which accounts for more than 50 percent of visitations each year. Acquisition of three tractors has improved farming efficiency in hedgerow-enclosed farms. Association Zoramb Naagtaaba has built 40 kilometers of forest-lined roads that connect villages. Additionally, AZN has constructed a public kitchen, a village wellhead, latrines and showers, and holding ponds for watering livestock.

### *Festival of the Rural World*

Every year, since 2002, Association Zoramb Naagtaaba convenes a Festival of the Rural World (the “Ruralies”) that brings community members from all 10 villages together to celebrate agriculture and local culture. The occasion includes dancing, music and educational dramas that comically, but incisively, address local environmental is-



sues such as: desertification, livestock migration and bushfires. One of the highlights of the annual festival is the award ceremony for local farmers. Prizes are given to top performing farmers in the areas of: Zai cultivation, perimeter establishment and maintenance, and agroforestry. The winners are awarded prizes ranging from phosphate supplements for soil to a motorcycle; from a wheelbarrow to a one-time use of an AZN tractor. The annual celebration builds community cohesion and fosters friendly competition amongst farmers, helping to spread the adoption of hedgerow perimeter farming and Zai cultivation techniques.

### *Commitment to youth*

To stem the tide of out-migration, Association Zoramb Naagtaaba has committed vast resources to the training and retention of youth. In 2008, AZN established the Training Centre for Rural Planners (CFAR), a three-year apprenticeship in Sahelian agricultural practices for youths aged 14-18. The coursework for a certificate in rural development includes: hedgerow management, agro-ecology, agro-forestry, ditching, erosion control and other pertinent topics. CFAR is a cornerstone for the long-term establishment of agricultural expertise and capacity building in the region.

More than a third of the school budget in the 10 villages served by AZN is used to support college and university students (more than 270 students in 2014). The community is also sponsoring two students to train in medicine to reinforce local health care capacity. In conjunction with the addition of computer labs at local schools, the



launching of 'Ciné- Yam,' a program to create educational and environmental documentaries for local screenings and internet releases, has captured the interest of local youth who might otherwise seek such opportunities away from home. In addition to educational support, Association Zoramb Naagtaaba attempts to engage youth by convening biennial soccer matches.

### *A "New Deal" for rural farmers*

More than 80 percent of the Burkinabe population depends upon agriculture and livestock for their subsistence. Climate change, droughts and encroaching desertification threaten food security and self-sufficiency in a fragile environment. Conservation of water, soil and biodiversity through construction of hedgerow perimeters increases resilience to climate change. The holistic approach to landscape management manifest in the Guié Pilot Farm, offers villagers a, "New Deal," as one AZN staff member notes. In this, "New Deal," agriculture and livestock management are no longer synonymous with erosion and degradation; instead, they work in harmony with nature. Such a system allows farmers to retain their dignity while improving the environment and their economic well-being. These sentiments are echoed by Mathias Sawadogo, Adjunct Director of the Guié Pilot Farm: "What I want to leave with my children is the knowledge of the new agricultural methods and the techniques of wooded perimeters. If I teach them these new practices, they will become self-sufficient and they will not suffer."



## GENDER

AZN's investments in local health care and education are directly benefiting women in the community. In late 2013, schools in the Guié area began offering literacy classes. The majority of enrollees were older women who had never attended school and young girls. The health care center gives women ready access to medical advice on hygiene, nutritional care, vaccinations and contraception. Additionally, a newly constructed maternity center provides facilities for prenatal and postnatal care and sanitary birthing. Women take part in AZN activities and are particularly active in the management of the tree nursery. Many women also participate in the pay-for-labor system associated with the construction of perimeter hedges, fire breaks, roads and ditches. Such work provides women with a source of income that can be used to purchase livestock or to improve the home. Every March, Association Zoramb Naagtaaba celebrates International Women's Day with a festival organized and run by local women. The day's activities are meant to sensitize men to the importance of women in Burkinabe society, and include bicycle racing, running, dancing and dramatizations.

## POLICY IMPACTS

The Guié Pilot Farm has served as a model case study for regional desertification workshops held by the International Development Research Center (IRDC), the interstate committee for the fight against drought in the Sahel (CILSS) and the African Conference on the Great Green Wall. AZN also serves as a research site for students from national and international institutions of higher learning, particularly for students interested in rural development and sustainable land management. Exchange visits between farmers and NGOs in West Africa have spread the adoption of techniques used by Association Zoramb Naagtaaba to countries such as Togo and Niger. AZN is also a regular participant at environmental conferences in Burkina Faso and the West Africa region. Production of a training manual and an instructional video on establishment of hedgerow perimeters is likely to impact future agricultural policies in the Sahel and should be viewed as a contribution to the United Nations Convention to Combat Desertification (UNCCD).



*“It is important to empower local communities because if we don’t, natural resources will diminish and we will face an exodus to other places where resources are abundant. Only the elderly and children will remain in the villages.”*

*Mariam Sampebgo*



# Sustainability and Replication



## SUSTAINABILITY

According to estimates by the Association Zoramb Naagtaaba, the cost of installing a hedgerow perimeter is approximately 600 USD per hectare. Increased agricultural yields within hedgerows provide farmers with enough surplus income to pay back the initial investment in three to five years. Once established, hedgerows, fire breaks and ditches are owned by the local community and are maintained annually with inputs of labor and readily available materials, with relatively little cost. The working operations of AZN, particularly the running of local schools and the health clinic, are still dependent on outside sources of funding. Association Zoramb Naagtaaba has

generated revenue from the establishment of a store where local farmers can rent agricultural equipment, as well as from its nursery, which has increased the price of seedlings to reflect true costs of production. Additional projects that may generate revenue for the group include the construction of a guesthouse and a gas station. AZN also is exploring how it can obtain further income as a technical advisor for the construction of perimeter hedgerows in the region.

## REPLICATION

The Guiè Pilot Farm has been replicated in three other areas: the Filly pilot farms in Yatenga in northern Burkina Faso, the GOEMA project in Sanematenga in eastern central Burkina Faso and in Gogi, Mali (undertaken by the DANAYA association). Plans for replication of an additional pilot farm in Barga, northern Burkina Faso, are underway and will be implemented by the NGO Terre Verte (Green Earth). Although it is capital- and labor-intensive to install, the hedgerow perimeter technique of integrating agriculture, agroforestry and livestock into a comprehensive land management system shows great promise for the Sahel region. Establishment of more hedgerow perimeters in the Sahel region could be facilitated by low-interest loans or micro-credit institutions. Aerial photographs of hedgerow perimeters on the Mossi Plateau reveal them to be verdant green belts in a dry landscape. In the long-term, the hedgerow perimeter system of land management may be one of the most cost-effective means of halting desertification in rain-fed agricultural areas like the Sahel.

## PARTNERS

Association Zoramb Naagtaaba has benefitted from partnerships with a number of donors and NGOs over the years. Two of the organization's earliest partners were the NGOs Terre Verte and SOS Enfants, which provided funding and technical expertise. More recently, Terre Verte has partnered with AZN to produce a video and technical manual explaining the construction of the hedgerow perimeter. Donations from Service d'Entraide et de Liaison (Mutual Aid and Liaison Service) were





used to fund land reclamation and to establish the tree nursery. Mission Enfance, a humanitarian NGO based in Monaco, contributed to the construction and rehabilitation of six schools in the Guié area, as well as other technical projects. Fondation Terra Symbiosis (Earth Symbiosis Foundation) and ASED have funded some of AZN's training programs. Many other European donors have supported the operational costs of AZN's environmental, educational and health care initiatives, including ASTRE, Fondation Lemarchand (Lemarchand Foundation) and others.

AZN has no formal partnerships with government agencies, but Burkina Faso's Ministry of Agriculture is aware of their work and officials from the ministry have visited Guié a number of times. The local schools and health center comply with standards set by the Ministry of Education and Ministry of Health, respectively. The Ministry of Economy and Finance provided the organization with a tax exemption for equipment purchased overseas.



*“Our rural society is at a crossroads, at a decisive phase for its survival.”*

*Henri Girard*

## FURTHER REFERENCE

- AZN [website](#)
- Green Earth (Terre Verte) [website](#)
- [Wégoubri](#) – film depicting construction of hedgerows and pilot farms by AZN
- [Technical manual for constructing a bocage](#)
- Sos Enfants [webpage](#) describing support to AZN

## PROJECT PARTNERS

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