Equator Initiative Case Studies
Local sustainable development solutions for people, nature, and resilient communities

GASKIYA FEDERATION OF MARADI FARMERS UNIONS
Niger

Empowered lives. Resilient nations.
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

Fédération des Unions de Producteurs de Maradi Gaskiya is a research-driven initiative that is bringing agro-ecological options to smallholder farmers. Comprised of 17 unions, 325 producer organizations and 12,742 members, the work includes promotion of high-yield crops, participatory planning, marketing of produce and organic certified seeds, as well as the diversification of agricultural production systems. Farmer incomes have improved significantly, with a percentage of union revenues invested into a revolving fund for community projects. Fast-growing and off-season crops are being introduced to provide food security and alternative sources of income for local women. Community radio has been used as a medium for information exchange, knowledge transfer and education.

KEY FACTS

EQUATOR PRIZE WINNER: 2014

FOUNDED: 2002

LOCATION: Maradi region, Niger

BENEFICIARIES: 17 unions, 325 producer organizations, 12,742 members

AREA OF FOCUS: Biodiversity, Sahelian agriculture

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Fédération des Unions de Producteurs de Maradi Gaskiya, or the Gaskiya Federation of Maradi Farmers Unions (hereafter referred to as FUMA Gaskiya), is one of the largest farmer organizations in West Africa. FUMA Gaskiya works in the Maradi region of Niger. The Maradi region covers an area of 38,500 square kilometers and is located in the south-central section of the country, approximately 650 kilometers east of the capital, Niamey. It is bordered by the Zinder region to the east, the Tahoua region to the west and the Agadez region to the north. At its southernmost reaches, the Maradi region shares a border with Nigeria. The city of Maradi is the region’s capital and administrative center, and is considered the economic capital of Niger. Proximity to the Nigerian border means both a steady stream of trade into the region, but also a security threat due to Boko Haram’s active presence in northern Nigeria.

The majority of the inhabitants of the Maradi region are Hausa, but other ethnicities living in the area include the Fulani, Bororo and Tuareg. Most of the residents of the region are agriculturists or pastoralists, with smaller numbers of families engaged in trade or the production of handicrafts. Increasing competition for land is a cause of friction and conflict between farmers and pastoralists.

Environment and climate in the Maradi region

The Maradi region is located in the Sahel. The north of the region is extremely dry shrub land, sometimes receiving as little as 200 millimeters of rain per year. The southern extent of the region is savannah forestland and receives 500 to 750 millimeters of rain per annum. This area of the Maradi region is considered the breadbasket of Niger and produces rain-fed staple crops such as millet, sorghum and cowpeas.

Rainfall events in semi-arid western Africa are becoming more erratic, with a variable onset of the rainy season. Extremes such as drought and torrential downpours during the growing season are becoming increasingly common. The soils of the Maradi region generally exhibit low levels of organic carbon and fertility, although more fertile soils are patchily distributed across the landscape. Erosion, deforestation and overgrazing are ongoing sources of environmental degradation, all of which are exacerbated by population growth.

Demography

Niger has a total fertility rate of more than 7.5 births per woman, the highest in the world. On its present trajectory, the country’s population is expected to double by 2031. The Maradi region is one of the most densely populated regions of Niger and is experiencing an annual population growth rate of more than 3.5 percent per year. Between 10 and 15 percent of children aged five and below in the Maradi region suffer from acute malnutrition.

On average, Niger experiences conditions that lead to food insecurity once every three years. Rapid population expansion in the Maradi region is placing greater stress on the environment and on agricultural output in particular. To date, grain production in the region has shown little increase, therefore continuing environmental shocks from climate change pose a serious challenge to long-term food security in the Maradi region.

Governance

FUMA Gaskiya is composed of 17 farmer unions, 325 producer organizations and 12,742 members. FUMA Gaskiya is governed by a General Assembly that is comprised of three delegates from each farmer member union. The General Assembly’s primary responsibilities include planning and approving short- medium- and long-term projects; proposing draft statutes, internal regulations and subsequent amendments; approving the organization’s budget and electing and overseeing the Board of Directors (comprised of seven members from farmer producing organizations) and the Auditing Committee (comprised of three members). The General Assembly meets twice a year. The Board of Directors is subordinate to the General Assembly and manages all of the tasks and decisions delegated by the General Assembly, including organizing meetings, implementing projects, creating development strategies, appointing the Executive Director, assigning duties and representing FUMA Gaskiya in court and in civil cases. The board has the authority to create special committees to implement organizational projects (e.g., bulk purchases of seed or fertilizer, field school management committee, etc.).
FUMA Gaskiya's goal is to contribute to the economic, social, cultural and technological development of farmer producer groups in the rural areas of the Maradi region of Niger. The organization accomplishes these goals by providing its membership access to agricultural innovations that increase food security, income generation and resilience.

**Promoting sustainable agriculture**

In the face of climate change and increasingly erratic rainfall, degraded land, low farm productivity and high levels of poverty, farmers in the Maradi region are proactively changing their agricultural methods to improve environmental and social conditions. FUMA Gaskiya assists farmers in the transformation of their agricultural practices in a variety of ways. For example, it buys fertilizer and seed in bulk for its membership, assuring timely, low-cost availability for the planting season. Innovative distribution networks, including mobile seed shops and seed fairs, sustain local seed systems and facilitate market penetration to remote areas. Packaging seeds in mini-packs keeps prices affordable while reducing waste (between 2010 and 2012, FUMA Gaskiya sold nearly 30,000 mini-packets of seeds in 170 villages).

Because most of its members are rural subsistence farmers, FUMA Gaskiya focuses on dissemination of affordable agricultural techniques that rely upon locally available resources. Farmers are trained to use materials such as wood ash and manure as fertilizers in place of expensive synthetic fertilizer inputs. Farmers are also trained to engage in early weeding of fields and to use innovative planting techniques to improve soil organic matter and increase germination rates. Millet is a staple crop in Niger, but often has poor seedling survival due to lack of rain or predation by insects, birds and rodents. Creation of “seed balls” is one innovation aimed at increasing seedling survival. Farmers are taught how to mix millet seed with loam, charcoal, manure, wood ash and water and form small spheres. The spheres are then immediately dried to prevent seed germination. When planted, the seed ball retains moisture while releasing nutrients to the growing seedling. Implementation of the seed ball technology has improved plant vigor and yields and reduced incidences of crop failure.

FUMA Gaskiya promotes agro-ecological intensification, such as intercropping, planting agricultural crops with trees and integrating crop-tree-livestock management systems. Such methods improve soil fertility, structure and nutrient cycling. Crop diversification provides farmers with greater security and resilience by spreading risk. In diversified agricultural production systems, farmers growing multiple crops have a greater buffer against drought and pest outbreaks; i.e., if one crop fails, the farm will still produce food and income. In its promotion of crop diversification, FUMA Gaskiya encourages its...
members to manage for genetic biodiversity by selecting and retaining local varieties of crops.

Participatory on-farm research

Participatory research has produced some of FUMA Gaskiya's most successful results. These collaborations, involving farmers and scientists, are rooted in participatory decision making and are dependent upon mutual respect and openness to new ideas. Farmers are in charge of cultivating and evaluating crops. On-farm trials have identified promising, locally-adapted plant traits (e.g., timing of plant flowering or resistance to drought or pests) that are singled out for further testing and propagation. Within the participatory research framework, farmers are able to decide their preferences for certain plant traits and production systems over others, engendering strong local ownership of the results. In this way, the participatory approach ensures that agricultural options are tailored to the particular needs of the farmers.

The CORE-WA project

In the CORE-WA project, funded by the German Ministry for Economic Cooperation and Development (BMZ), FUMA Gaskiya participated in a regional collaborative research project involving farmer organizations in Mali, Burkina Faso and Ghana. The project was designed along a zonal transect from the northern Sahel to the northern Guinea bioclimatic zone to examine farmer adaptation to climate change. FUMA Gaskiya's farmer union in Serkin Hausa, an area with an annual average rainfall of 400-500 millimeters, served as one of the northernmost study sites.

One of the aims of the project was to develop superior, trait-specific, farmer-preferred millet populations which would have the potential for wider adoption across particular climatic zones within the region. Farmers in Serkin Hausa implemented on-farm trials with native, climate-adapted varieties and selected their preferred plants at harvest, with men and women separately evaluating and scoring plant traits. Harvested millet panicles were displayed in front of each research plot and rated separately by men and women who deposited colored-coded cards (green indicating “good,” yellow “medium,” and red “bad”) into envelopes. This system allowed farmers and researchers to see a gender-disaggregated preference for each plot.

Both men and women expressed preferences for millet plants that produced long panicles because they can be easily tied into bundles for transport. The women, however, also identified plants with bristly seed panicles as a priority for subsequent research and planting trials. Their preference for the plant was twofold: first, it was local-adapted for earlier flowering and, second, the bristles provided a measure of deterrence against grain-feeding birds and pests. Subsequent trials of the cultivar have been very successful and seeds are now being produced for wider plantings in Niger. Farmers also selected additional plants for further research and testing based on traits such as resistance to the parasitic witchweed (Striga spp.), resistance to downy mildew and nutritional content.

From research partner to research leader

FUMA Gaskiya has evolved from a local partner in participatory research to a leader of research and development projects. Currently, it is leading an agricultural research project (“improving family welfare through diversifying production on women’s field in Niger”), funded by the McKnight Foundation, wherein female farmers set the priorities and objectives of research and scientists support them in implementation and analysis. Dr. Bettina Haussmann, a researcher with the University of Hohenheim and the West Africa liaison scientist for the McKnight Foundation’s Collaborative Crop Research Program, strongly supports this farmer-driven role reversal in traditional research relationships.
Radio Binta

FUMA Gaskiya established a community radio station in Serkin Hausa with the aim of informing farmers and building community. The radio station broadcasts a wide range of information relating to agroecology, including types and availability of locally-adapted seed varieties, seasonal forecasts, pest management, market prices for staple crops, the use of fertilizers and innovative agricultural techniques. The radio station was created at the request of a local woman named Binta. Although she died in 2007, the station was named in her honor. Because most households in the region have portable radios, the station provides an important educational service for farmers, particularly female farmers. Females in rural Niger rarely have access to independent sources of information and are overly reliant on husbands, relatives and neighbors for news. The radio station in part redresses the issue of gender inequality with respect to access to agricultural information. Radio programs created for Radio Binta are also shared with Radio Gabi, another station operating in the rural areas of the Maradi region.

“This constellation represents a real innovation and a kind of paradigm change in agricultural research for development. Conventionally, scientists propose a project and decide on the research agenda. Here, FUMA Gaskiya developed a project and female farmers decided on the research agenda, which was then supported by scientists. To my knowledge, this is a unique case in West Africa.”

Dr. Bettina Haussmann
Impacts

Biodiversity Impacts
FUMA Gaskiya’s focus on agro-ecological intensification, organic fertilizers and biological pest control systems improves soil microbioreversity, nutrient cycling, on-farm biodiversity and ecosystem services. Intercropping of legume crops increases soil nitrogen levels and can assist in reducing parasitism caused by witchweed. Promotion of local varieties of staple crops helps to conserve in situ agricultural biodiversity and provides farmers with a valuable genetic “insurance policy” against future environmental perturbations. Diversification of agricultural production systems through the introduction of species such as hibiscus, sesame, senna (Cassia tora), watermelon, tomatoes and other crops, attracts beneficial insects and provides farmers with additional resilience to environmental and economic stresses. Ongoing crop improvement projects through the participatory on-farm research program are giving farmers access to seed that is locally adapted to cope with the stresses of climate change.

Socioeconomic Impacts
Between 2008 and 2012, the number of seed producers in FUMA Gaskiya increased from eight to more than 200. This expansion has created job opportunities and ensured that members receive high-quality seed. FUMA Gaskiya estimates that it has facilitated the production and marketing of more than 45 tons of certified, improved millet seed over the past five years, generating more than 36,000 USD. Revenue earned from seed sales is placed in a revolving fund that is used to support reinvestment in seed production, buttress community health and education services and assist farmers in difficult times, e.g., during drought or after harvests when prices are low. The seed program also increases access to improved cultivars that address food insecurity. Improved cultivars of pearl millet have increased farmer yields by as much as 100 percent. Fast-growing cultivars mature more quickly and provide food during the “hunger gap” in the early months of the growing season when late crops have not yet matured. In addition, promotion of iron- and zinc-rich pearl millet cultivars has helped to reduce the incidence of malnutrition in women and children.

Gender
Women comprise 52 percent of FUMA Gaskiya’s membership, and a number of the organization’s programs specifically target women as beneficiaries. Many women have difficulty accessing land for farming in Niger, and when they are given access to land, it is often marginal and infertile. To address this issue, FUMA Gaskiya created a small-scale garden initiative to encourage women to grow crops close to their homes during the off-season. Women were trained to use locally available materials, such as wood ash and sanitized urine, to improve soil fertility. The small-scale gardens diversify household diets, improve nutrition and give women a measure of independence from their husbands with respect to preparing food for the family.
Women are involved in FUMA Gaskiya’s test trials of different crop varieties, and the women evaluate their preferred plant characteristics separately from men. Women’s input and preferences have been considered and addressed in the selection of varieties of okra, hibiscus and senna (Cassia tora). Women were also responsible for identifying a promising new millet cultivar which produced superior quality crops in subsequent plantings. This millet variety shows great potential for adoption in other regions of the Sahel and could contribute to food security in the region. The enthusiast response of local farmers to the new millet cultivar has gained the women who selected it both recognition and stature.

A recent FUMA Gaskiya project funded by the McKnight Foundation will focus exclusively on female farmers, gender issues related to agriculture in Niger and family nutrition. These initiatives underscore FUMA Gaskiya’s commitment to valuing female agricultural knowledge and empowering women.

**POLICY IMPACTS**

The partnership between the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the Institut National de Recherche Agronomique du Niger (National Agricultural Research Institute of Niger, INRAN) and FUMA Gaskiya won ICRISAT’s prestigious “Outstanding Partnership Award” in 2010. The success of the collaborative partnership between agricultural research organizations and FUMA Gaskiya has convinced donors, researchers and politicians of the value of including farmer producer organizations in agricultural research and policy making. ICRISAT’s 2010 annual report sites collaboration with FUMA Gaskiya as a model and catalyst for change of the agricultural research agenda in the Sahel. FUMA Gaskiya was further recognized by ICRISAT as the “Outstanding Partner” for 2010.

FUMA Gaskiya participated in the “Gestion Intégrée De La Mineuse De l’Epi Du Mil” (GIMEM) or “Integrated Management of Pearl Millet Head Miner” research program funded by the McKnight Foundation’s Collaborative Crop Research Program (CCRP). The research involved testing of biological control systems from millet head miner, a serious pest of the staple crop. The study also included evaluation of pearl millet varieties for resistance to the millet head miner. Dr. Ibrahim Baoua (INRAN/CERRA), who participated in the research, was accorded national recognition by the government of Niger for his work to control the millet head miner. This recognition has called attention to the need for further governmental support of agricultural research and inclusion of farmer unions in outreach programs.
**SUSTAINABILITY**

FUMA Gaskiya is supported by membership fees from its member unions and is economically self-sufficient. Its governance structure is democratic and transparent and entirely run by its membership, creating a strong local sense of ownership of the organization and its programs. FUMA Gaskiya has implemented a “reverse pyramid” structure whereby farmers are actively involved in producing and marketing seed for wider distribution. Seed production and marketing have grown steadily each year, a harbinger of long term sustainability. FUMA Gaskiya’s growing membership (new farmer producer groups seek to join the organization each year) is a testament to its efficacy and sustainability. In an area poorly served by agricultural extension, FUMA Gaskiya, with assistance from research institutions, is filling an invaluable private sector role by providing farmers with access to agro-ecological innovations and technologies. Strong partnerships with research organizations give the organization access to international donors for implementation of joint research projects that benefit subsistence farmers.

**REPLICATION**

FUMA Gaskiya’s partnerships with agricultural research institutions are facilitating the transfer of agricultural skills and knowledge to more than 12,000 farmers in Niger. The success of local seed trials implemented in Serkin Hausa has led to adoption and testing of the model in other FUMA Gaskiya unions, including Sae Saboua, El Kolta, Tessaoua, Dargue and Maiki. At the regional level, FUMA Gaskiya members, with the assistance of ICRISAT, have participated in exchange visits and training sessions with farmer’s organizations from outside Niger, such as the Union des Agriculteurs du Cercle de Tominian (Farmers Union of Tominian Cercle) in Mali, Union Départementale des Producteurs de Nobéré (Departmental Union of Nobéré Producers) in Burkina Faso and the Kamwinstonthe women’s group in Ghana. This peer-to-peer learning framework facilitates the exchange of knowledge about new agriculture technologies and crops. It allows farmers to replicate the best ideas and agricultural innovations offered by each institution across the region. Farmer exchanges also encourage “outside-the-box” thinking, such as self-organized field trials of fonio (Digitaria exilis) as a fodder crop in Niger (elsewhere, for example in Mali, it is a staple crop).

**PARTNERS**

Partnerships with research institutions, particularly the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), the Institut National de Recherche Agronomique du Niger (National Agricultural Research Institute of Niger, INRAN) and the University of Hohenheim, have given FUMA Gaskiya member farmers opportuni-
ties to participate in agronomic research activities. Some of these farmer-researcher collaborations, such as those funded by the McKnight Foundation, have developed local seed systems, yielded new farmer-selected cultivars of staple crops and introduced innovative pest-control strategies. The McKnight family is currently funding a project targeting female farmers in the Maradi region with the aim of improving household food and nutrition security. The German Ministry for Economic Cooperation and Development (BMZ) funded two projects involving FUMA Gaskiya, one addressing crop diversity as a climate change adaptation (the CORE-WA project) and another analyzing abiotic production constraints to Sahelian agriculture. The Bill and Melinda Gates Foundation supported research aimed at integrating genetic and natural resource management techniques for millet production and developing the pearl millet value chain. The United Nation’s Food and Agriculture Organization (FAO) assisted FUMA Gaskiya in the purchase and distribution of bulk orders of seeds and fertilizers for its member producer organizations.

“Similar partnerships are being put in place with various organizations throughout the region – vital examples of ‘science with a human face’ – science that has a direct impact on local people while creating international public goods.”

International Crops Research Institute for the Semi-Arid Tropics
FURTHER REFERENCE

- FUMA Gaskiya [Flicker page]
- ICRISAT annual report 2010, including a section on their work with FUMA Gaskiya
- CODE-WA project description

PROJECT PARTNERS

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UNDP partners with people at all levels of society to help build nations that can withstand crisis, and drive and sustain the kind of growth that improves the quality of life for everyone. On the ground in 177 countries and territories, we offer global perspective and local insight to help empower lives and build resilient nations.

The Equator Initiative brings together the United Nations, governments, civil society, businesses and grassroots organizations to recognize and advance local sustainable development solutions for people, nature and resilient communities.

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