

Using renewable energy for more sustainable use of precious water sources for food production in Burkina Faso

In the second phase of our management of a Sida-funded project that is upgrading hydro-agricultural infrastructure and further developing promising value chains, NIRAS is promoting the 'Nexus-Agriculture-Energy-Water' approach. The goal is to improve farming livelihoods, particularly among women, by using renewable energy to improve access to and management of water for irrigation of market garden crops.



“Ever since we received the borehole and sprinkler system, our garden never runs out of water. In addition, we can do other business while the garden is watered.”

Secretary of the women's collective operating the Zagtouli market garden testified on a recent visit by the Swedish Embassy in Ouagadougou.

Burkina Faso is a landlocked nation in the semi-arid sub-Saharan region of Africa known as the Sahel. The country is considered among those on the front line of the global climate crisis. It is heavily reliant on agriculture for sustenance and as a source of income for the majority of the population, but periods of increasingly severe drought and flooding have wreaked havoc in the sector and are contributing to food insecurity.

The government of Burkina Faso has taken proactive measures over the past decade to address the problems facing the agricultural sector, particularly in terms of providing sustainable access to water. With funding from the Embassy of Sweden, and NIRAS-provided technical assistance, the country has implemented the Agricultural

Valorisation of Small Dams Project (ProValAB) first phase (2018-2021), which focused on the development and rehabilitation of irrigation perimeters centered around small dams at various sites.

In its second phase of implementation (2022–2024), ProValAB's goal is to enhance the capacity of all stakeholders to improve food security through better hydro-agricultural management practices and increasing the yield and market competitiveness of agricultural produce in regions Center, Center East, Center North, Center West, and Plateau Central. As part of our assistance to this strategic sector, the NIRAS team is promoting the use of renewable energy as a means to make water more accessible for use in the irrigation of market garden crops.

ProValAB's achievements to date:

- Improved governance of hydro agricultural infrastructure, including restructuring and development of accountability measures for water user committees.
- Gender mainstreaming, with 40% increased participation of women in executive bodies.
- Development and implementation of extension tools to support the agro-pastoral and fisheries sectors, aimed at building the capacity of producers and improving yield.
- Participatory identification of target value chains (such as rice, tomatoes, onions and fish) subject to development support.
- Partnership with technical structures within the framework of collaboration protocols.



Building on a legacy of working with small dams and irrigation

Prior to ProValAB, another Sida-funded project – Reduce the Vulnerability of Small Dams to Climate Change – was launched in 2010 and completed in 2016 to rehabilitate small dams and irrigated perimeters and build capacity among water user committees at various sites in the country. ProValAB arose in 2018 as a direct result of the final evaluation of that project, which highlighted the need to continue support in these two areas as well as improving the production capacities of the country's agricultural operators and strengthening their links to the market. In its second phase of implementation, ProValAB is building on the previous successful phase that resulted in the **rehabilitation of 444 hectares of irrigated perimeters and five small dams**, among other supporting activities such as construction or rehabilitation of agricultural support infrastructure, and training for farmers and fishermen on production techniques adapted to climate change.

A core lesson from the first stage is that **sustainability of dam-site management must be based on socio-economic viability, healthy fiscality, and water user fees** to maintain state interest in investing in heavy infrastructure for the benefit of a variety of small producers, women, men, and youth. These resources must be used wisely, efficiently, and equitably.

Consolidating these achievements is key for ProValAB, which emphasises the following aspects:

- Sustainable and equitable management of water infrastructure and resources;
- Empowerment of women and youth;
- Improvement of food security and market access;
- Action informed by the effects of climate change;
- Use of renewable energy.



97%

Of ProValAB 1 beneficiaries experience improved or stabilised food security situation



48%

Increase in income from selling farm produce



274%

Increase in income from agricultural work

The meeting point of agriculture, water, and energy

ProValAB's bottom line remains improving the living conditions of households engaged in agricultural work at the project's intervention sites. To achieve this, the project sets out to update hydro-agricultural infrastructure and further develop promising value chains. The NIRAS team assists ProValAB to promote the 'Nexus Agriculture-Energy-Water' approach that was developed as part of market gardening perimeters areas. Using renewable energy, the approach makes it possible to provide water easily and manage it for the irrigation of market garden crops, which in turn reduces the arduous nature of agricultural work. Another ProValAB innovation is the installation of a micro-spray irrigation system as a pilot case for rational water management for the benefit of producers.





NIRAS also assists ProValAB in implementing the 'Nexus Food Security-Humanitarian Aid-Peace & Security' approach. The operationalisation of this approach results in:

- Improving women's household food security;
- Peaceful management of water resources and developed land; and
- Establishment and strengthening of social cohesion between the beneficiaries.

During a Swedish Embassy visit to the project site, farmers recounted that prior to ProValAB, it was hard to afford vegetables such as lettuce, fruit, and tomatoes. But now with the continuous water supply and capacity to grow a wider variety, access to fresh vegetables has greatly improved. Households have diversified their diet through the consumption of vegetables they produce in the market garden.

Water scarcity used to cause disputes among farmers looking for sufficient supply for their farms. Today, the renewable energy-powered irrigation systems allow more efficient management of water, which is available to all farmers at any time with the need for conflict. In addition, easy access to water enables women to have more time to participate in social activities, which in turn has contributed to the creation of stronger social cohesion and strengthened the solidarity among the community.

A greater focus on gender



In the Burkina Faso, women constitute 52% of the workforce and provide a large part of the workforce in the agricultural sector both in subsistence farming and cash crops. However, as they do not enjoy equal conditions with men in accessing and controlling productive resources, women's economic empowerment continues to be an essential element of ProValAB. In the first phase, the team engaged with the local communities to investigate why women have smaller plots than men, why they obtain less income from their crops, and how they could improve their income. As a direct result of these community discussions, Farmer Business School training courses were launched for women to help them overcome some of the obstacles they are facing. Most of the participating women were illiterate or had short schooling, but images, storytelling, sketches, group work and practical exercises helped break the message down. In the current phase, the improved access to renewable energies in production or processing units will enable women to improve their incomes.

"The farmer business school has been a gamechanger for me," said Ms. Nana Pendewendé Adéline, one of the women who participated in training courses educating female farmers about cropping calendars, crop budget calculation, marketing of harvested products, child, and adult nutrition, and household economy. "Before, I was just planting without really knowing what I should do. But since the training, I know how to manage my horticulture garden, what are the best seeds to use and how much of fertilizer I need. I note all my expenses and after harvesting calculate how much I have spent. Then I know for what price I should sell my produce."

On the right track

ProValAB's projected results include better land and water management and increased yields in terms of crop and fishery production. Other expected outputs include the promotion of better post-harvest management, greater market access, development of value chains, and greater competitiveness of agricultural and fishery products. All in all, ProValAB looks set to surpass the achievements of its predecessors by supporting sustainable practices in water use for agriculture and contributing toward solutions addressing the problem of food insecurity in Burkina Faso.

