

Key Measurable Results & Impacts

Total pumps installed	Panels per village	Panel capacity (W)	Required pump capacity per village (m ³ /day)
36	7-12	80-130	25 for irrigation 5-10 for consumption

Water pump voltage and capacity ranges installed in target villages

Building	Units	Panels per unit	Batteries per unit	Panel capacity (W)	Total capacity installed (kWh/year)
Schools	11	1	2	80	1,228.59
Mosques	9	2	2	80	2,010.42
Health Centres	7	2	2	80	1,563.66
Community Centres	24	3	3	80	8,041.68

Technical specifications for photovoltaic installations in community centres across target villages

- Off-grid solar powered house systems installed in 51 community facilities for: 24 community centres, 11 schools, 7 health centres and 9 mosques. Facilities provide light and power for phone charging and televised events and other information services.
- 39 solar powered water pumps, operated with off-grid solar panels were installed in 24 communities to improve access to drinking water and water for irrigation in community gardens.
- Total agricultural yields of participants increased 71%.
- Reported Farmers Income increased an average of 159%.
- 7 Community Processing Centres were opened, each with machines for processing groundnuts, rice, maize, sorghum and millet and a small store for product sale.
- 1 Jatropha oil bio-fuel production system and two power generators adapted to run on bio-fuel to supply the main agricultural product processing Centre in Watina.

Other impacts:

Feedback from communities in the project evaluation revealed that the installation of solar-powered water pumps and increasing access to processing equipment for different staple crops has, amongst other things, **reduced women's workload**.

The construction of community centres has had a **positive impact** on the **sense and cohesion of communities, particularly for young people**. The villages have begun adult literacy classes and preschools in community centres, taught by trained volunteers from the community. Lighting installed in community centres facilities that classes can take place in evenings and at times which do not interfere with agricultural activities or other responsibilities.



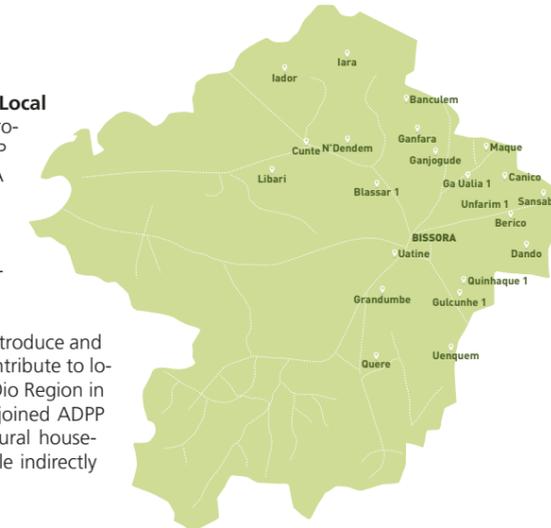
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The views expressed in this publication do not necessarily reflect the views of the European Commission.



Renewable energy for local development in Bissora, Guinea-Bissau

The "Renewable Energy for Local Development in Bissorā" project was implemented by ADPP Guinea-Bissau and HUMANA Fundación Pueblo para Pueblo from 2013-2016. Financing was provided by the **ACP EU Energy Facility** and the project also received support from Humana Portugal.



The **project's overall objective** was to introduce and establish renewable energy systems to contribute to local development in the Bissorā Sector of Oio Region in Guinea-Bissau. A total of 2,600 farmers joined ADPP Farmer's club, directly benefiting 2,600 rural households and a total of 15,000 persons, while indirectly reaching 58,000 persons in the region.

Specific Objectives and key activities diagram

Project activities contributed primarily to:

- Increase the access to solar and sustainable bio-fuel energy supply in rural areas.
- Increase human capacities to encourage renewable energy uptake in rural areas, wherever cost-effective.
- Reduce environmental impact by promoting sustainable sources of energy.

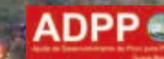
Key activities implemented included:

- Organization of 2,600 farmers in clubs of 50 farmers and establishment of demonstration gardens and plots for agricultural training activities.
- Establishment of solar-powered pump systems including water tank and distribution system to communities and fields.
- Construction of community Processing Centres with oil pressing machine and generators adapted to use bio-fuel.
- Installation of solar-powered house systems in community facilities.
- Strengthening of community structures and capacity building for energy facility management and maintenance.
- Community outreach activities and production reinforcement activities.

Implementing partner:



By our members:



Approach for Sustainability / Exit Strategy

Farmers' Clubs, which 2,600 farmers participated in as part of the project were used to introduce trainings focussed on sustainable production and productivity improvements and the development of income generating activities. They also formed the basis for the establishment of commercialization committees, water management committees and committees for the management of community centres and installed solar panels. These committees were designed and developed to manage and ensure the sustainability of installed technologies and facilities.

Established **committees** are in charge of system maintenance, collecting utility fees and general management of the installations. ADPP project leaders worked with committees to establish connections with service providers and set fees for installations based on an 11-year return on investment period.

Community Centres raise money by charging phones and televised events such as football games.

At agricultural product **Processing Centres**, 15% of the products processed are kept as a fee. The centres sell the products kept as fee and buy additional products from farmers, process them and sell them directly at the centres or at local markets, at market price and covers running costs.

To ensure **sustainability of the intervention** and continued community cooperation, during the final year of the project, Farmers' Clubs and communities were supported in establishing a Legal association, the ACACB.

The **ACACB** is a commercial trust to which buildings, equipment and property was transferred. The association was created with the idea of taking on the responsibility of facility and equipment maintenance, facilitating trade and ensuring the provision of services to the community farmers. It is expected that profits will be used to provide for additional extension of services, improve and expand processing centres and to include new farmers as part of the association. The association is directly linked to the water, power and community centre committees already created.

Over the next five years, the association also plans to develop a community banking system to aid communities in the maintenance and financial management of PV systems.



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Lessons learned & Recommendations

Farmers Clubs as a basis for enhanced impact

Community structures, such as those developed in the Farmers Club approach, play an important role in **facilitating community ownership and management of new installations and technology**. These contribute to project effectiveness, efficiency, impact and its sustainability. It is also the basis for scaling up or replicating the project and its focus in other areas.

Community involvement in planning and processes

Extensive community engagement is important when **introducing new technologies** to ensure ownership, correct placement and relevance. Complementary tools such as a participatory mapping exercise can be useful in the consultation processes to identify community needs, resources and capacity.

Jatropha is not a viable biofuel for Guinea Bissau at this stage

The variety of jatropha that grows in the project area is highly acidic and produces significantly less oil than varieties in other countries effectively rendering it non-competitive in comparison to diesel. However it was a positive Pilot initiative, the produced oil is being used to **produce soap** which is sold in the Processing Center stores. Part of the produced oil is being stored for **emergency use by the power generator**.

Engagement of local suppliers and service maintenance providers

As much as possible, parts, equipment and maintenance services should be sourced locally to **guarantee** ongoing maintenance, repair and replacement capacity. If there are not yet present, the **training of service providers** can underpin project success.

Financial sustainability in the long-term

In areas where there is a lack of financial services, new strategies must be developed to support efficient and transparent financial management of systems. Mobile banking, when introduced in Guinea-Bissau, will surely provide an effective tool to manage payments. Meanwhile ACACB is developing a **community banking system** to aid communities in the financial management.

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The Farmers Club Model

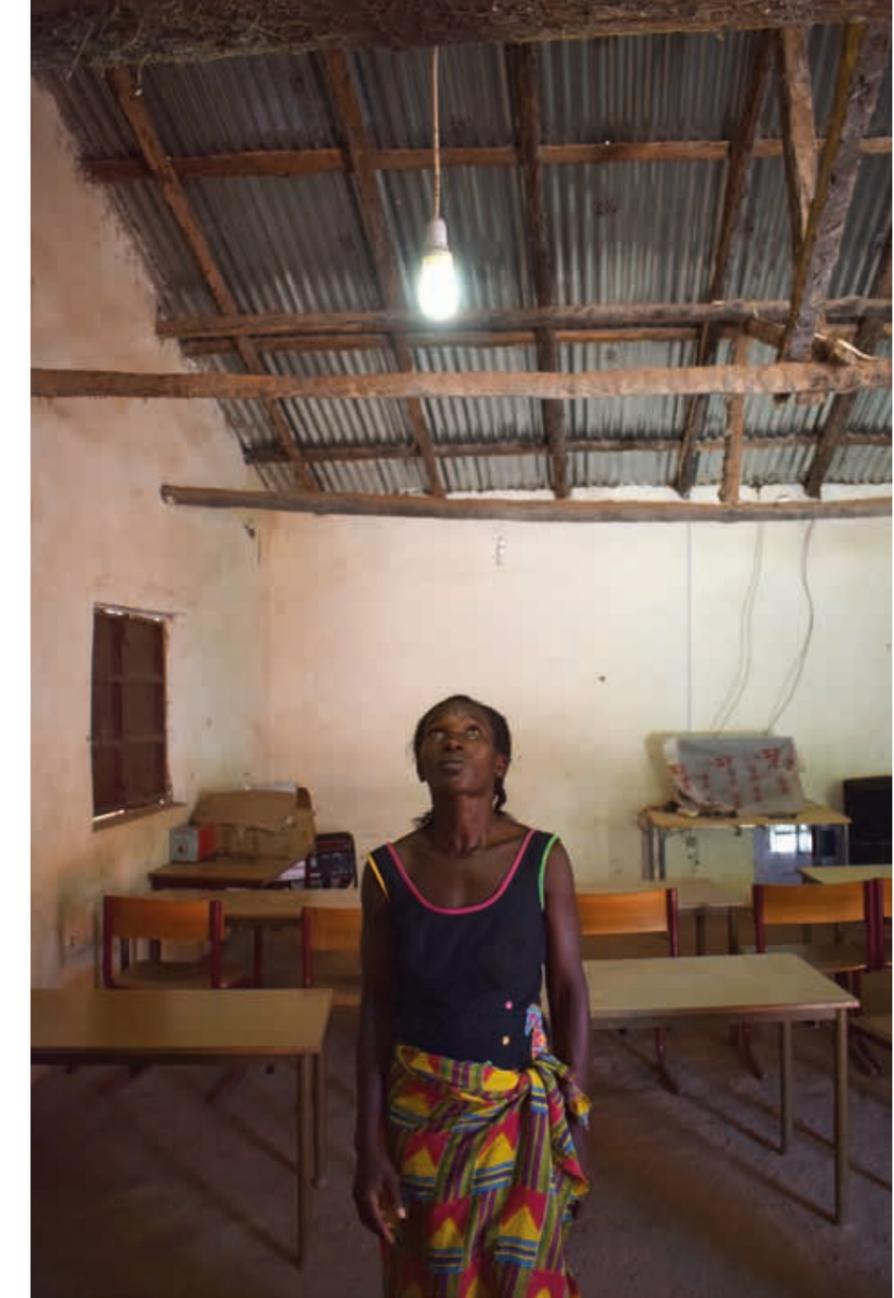
The project was implemented using Humana People to People's **Farmer Club** Model for agricultural and rural development interventions. In the case of this specific project, ADPP mobilized 2,600 farmers and invited them to join clubs of approximately 50 farmers each. **Vulnerable farmers, young farmers and women** are specifically targeted and supported in joining the projects. Male and female farming Instructors have the technical knowledge and resources to facilitate achievement of the goal pursued by the project. They support the internal organization of the Clubs members and encourage them to elect a committee of 5 farmers and to establish demonstration plots and gardens. These are used for joint learning and to introduce farmers to agricultural methods, technologies and crops.

The **focus** of the **Farmers' Clubs** approach is to provide farmers with the knowledge, tools and resources necessary to sustainably improve agricultural production and productivity. Through joint learning and the promotion of locally-appropriate farming methods, technologies and crops, Farmers' Clubs aim to support farmers, their families and the wider communities to improve their livelihoods, food and nutrition security and resilience. Environmental conservation is central to the FC approach; including water, soil, ecosystem services and biodiversity. In addition, health and gender are included as cross-cutting elements of the program.

The Farmers' Clubs are conceived to **operate as cooperatives** through which credit as well as market access for inputs and the sale of surplus production is facilitated. The structure of a Farmers' Club with an elected committee, in which female participation is encouraged, is designed to build local institutional and social assets and ensure a sustainable framework for continued cooperation amongst farmers after financial support for the project ends.

As observed in the case of the ADPP Renewable Energy for Local Development in Bissorá project as well as in other projects globally, Farmers' Club can form a **basis for the introduction of renewable off-grid energy systems** where the private market has not provided for the sustainable energy needs of rural populations. The combination of working with farmers and facilitating the establishment of social and community structures that continue to operate after project finalization, supports the sustainability of interventions in time and contributes to the long term positive impacts on livelihoods and poverty.

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