Renewable Energy for Local Development in Bissora

Case study on an EU-ACP Energy Facility intervention for the introduction of community-run solar energy supply in off-grid communities

HUMANA
Fundación Pueblo para Pueblo

Partner & Collaborating Agencies

FPP Spain is the applicant in the *Renewable Energy for Local Development in Bissora* project. The development NGO is the Spanish national member of the Federation of Associations connected to the International Humana People to People movement (FAIHPP) and provides technical support to other national members, including ADPP Guinea Bissau.

ADPP Guinea Bissau is the implementing partner of the *Renewable Energy for Local Development in Bissora* project. The development NGO that has been operating projects in agricultural and community development as well as health and education in rural areas for 35 years and is the national member of FAIHPP. Through these interventions ADPP works to mobilise, organise and empower communities to enhance basic health and nutrition knowledge, access to basic services, and sustainably strengthen agricultural production and sources of income generation.

The **ACP-EU Energy Facility** (EF) was established in 2005 to co-finance projects on increasing access to modern and sustainable energy services for the poor in African, Caribbean and Pacific (ACP) countries, particularly in rural and peri-urban areas.

Author's note

and lessons learned throughout the R*enewable Energy for Local Development in Bissora* project, implemented by ADPP Guinea Bissau and financed by the European Union through the ACP-EU Energy Facility.

It was developed through a mixture of desk study and by accompanying the project's final evaluation field-visit. Data and information referred to in this report is sourced from project documentation and discussions with participants and project leaders. Its purpose is to provide insight and practical knowledge relating to community-run renewable energy projects and contribute to establishing best practice in the area.

ADPP Ajuda de Desenvolvimento de Povo para Povo Guiné-Bissau

ACP-EU Energy Facility Monitoring

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Introduction

Access to energy is a key enabler of socioeconomic development, yet approximately 1.2 billion people or 17 per cent of the world's population lack access to electricity, according to the International Energy Agency (IEA). The importance of addressing this need was recognised in the international agenda through SDG7: to ensure access to affordable, reliable, sustainable and modern energy for all by 2030. However, according to the IEA's Africa Energy Outlook in 2014, it is expected that over half a billion people will still lack access to electricity in sub-Saharan Africa in 2040 in current trends continue – ten years after the SDG deadline.

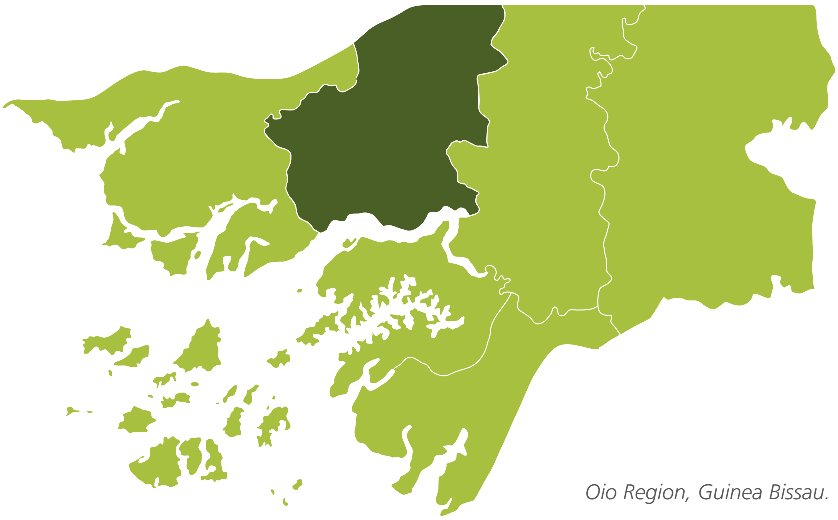
It is clear that the international community must come together and find innovative, effective and lasting solutions to fill this gap and ensure that the most vulnerable and hardest-to-reach groups of people achieve access to renewable sources of energy in the coming years. In 2005, the ACP-EU Energy Facility (EF) was established to co-finance projects that increased access to modern and sustainable energy services for poor communities in African, Caribbean and Pacific (ACP) countries, particularly in rural and peri-urban areas. A total of four Calls for Proposals were made under the EF, and in 2012, Fundación Pueblo para Pueblo (FPP) and ADPP Guinea Bissau began implantation of the *Renewable Energy for Local Development in Bissora* project in the Guinea Bissau's Oio region.

This document was developed to contribute to establishing best practice in community-run renewable energy projects. Its purpose is to share the experiences and knowledge attained throughout the life of the project with other civil society organisations. It situates the project's context and specific conditions in Bissora and target communities, as well as provides technical information on the project's approach and implementation. After looking at some of the project's results and impacts to date, lessons learned and locally specific challenges are explained in-depth. Finally, scalability and replicability are assessed as a reference for relevant stakeholders in future planning processes. The conclusions and recommendations section explores specific challenges that remain in ensuring the project impacts' longevity.

Background & Context

Approximately 80% of the population of Guinea Bissau lives in rural and peri-urban areas, with limited access to modern energies. Approximately 21% of the population is undernourished[1]. In the Oio region, 73% of the population lives on less than $2 per day and 45.6% lives on less than $1 per day[2]. Almost 66% of households in the region are affected by mild food insecurity and a further 3% suffer from moderate food insecurity[3]. Horticulture is generally practised almost exclusively by women and the sector faces major challenges, such as low use of agricultural inputs, manual irrigation methods and inefficient water use, low level of land tenure security, a lack of infrastructure for the processing and preservation of vegetables, and market access difficulties[4].

Guinea Bissau does, however, receive high levels of solar radiation ideal for tapping solar energy for both commercial and domestic purposes. The government has established a Renewable Energy Centre to promote collaboration with different stakeholders, as well as developed a National Renewable Energy Plan to promote renewable energy sources, which is expected to be adopted in the coming months.



Oio Region, Guinea Bissau.

Furthermore, there is increasing movement in this area at local, national, and regional levels through governmental initiatives and projects implemented and promoted by civil society, NGOs as well as multilateral and bilateral entities, such as the Global Environment Facility, UNIDO, the ECOWAS Centre for Renewable Energy Efficiency (ECREE) and the Sustainable Energy Fund for Africa, among others. The ACP-EU Energy Facility has funded four projects in the country since 2007, including ADPP's Renewable Energy for Local Development in Bissora project, with a total contribution of over 5 million Euros in total.

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[1] *FAO. 2015. The State of Food Insecurity in the World. http://www.fao.org/3/a-i4646e.pdf Accessed 03/01/2016.*
[2] *(Inquérito Ligeiro para a Avaliação da Pobreza (ILAP2) – INE/PNUD/WB 2011).*
[3] *FAO. Evaluation Rapide sur la Securité Alimentaire, Guinée Bissau, Octobre 2016. http://documents.wfp.org/stellent/groups/public/documents/ena/wfp288836.pdf accessed 03/01/2017.*
[4] *FAO. 2013. Cadre de Programation Pays (CPP 2014-2017). ftp://ftp.fao.org/OSD/CPF/Countries/Guinea%20Bissau/CPP%20Gunin%E9e%20Bissau%20-%20FAO%202014-2017%20Version%20Sign%E9e-1.pdf accessed 03/01/2017.*

Although private sector actors currently face significant barriers to market entry and expansion, stakeholders such as ECREE are working at a regional level to promote infrastructural development and a competitive business environment.

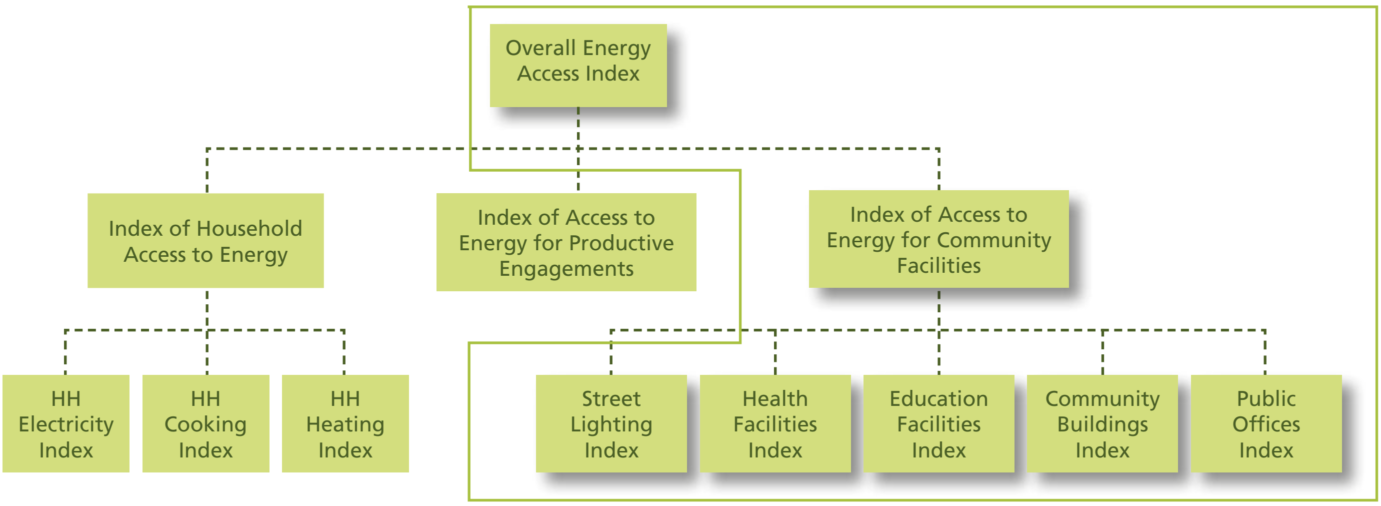
While an obvious component of private sector participation is in the supply and maintenance of renewable energy systems and their parts, in contexts such as Bissora, complementary markets such as financial services also present a potential opportunity which should be promoted in policy decision making and regional efforts.

Energy Access

The concept of energy access is not simply a matter of whether or not energy services exist in a given geographical context. In practice it must take into account quality, quantity, usability and affordability, to name just a few influencing factors. In Bissora town, the electricity supply had been unreliable and the generator that sources 12,000 people had not be running for 2 years when the project started. Few people outside Bissora town have access to electricity. Within the Heirarchy of Energy Access Indices established by the Energy Sector Management Assistance Program (ESMAP), the activities in this project contributed to the improvement of the Index of Access to Energy for Community Facilities, as it does not influence household level access.

Table 1 reflects the different areas involved in measuring energy access across a community. The project dealt specifically with introducing stand-alone PV systems for lighting and small appliances in Health Facilities, Education Facilities and Community Buildings.

Table 1: Heirarchy of Energy Access Indicators



Prior to the project, no community facilities in the target villages were provided with ener-gy. Table 2 has been adapted from the ESMAP definition and summarises the key attrib-utes of energy at different tiers of energy access. The project worked to increase access in target communities from Tier-0 towards Tier-2.

[5]*ESMAP (World Bank Group). Beyond Connections: Energy Access Redefined. August, 2015. Available from: https://openknowledge.worldbank.org/bitstream/handle/10986/24368/Beyond0connect0d000technical0report.pdf?sequence=1&isAllowed=y accessed 01/02/2017.*

Table 2: Summary of Multi-tier Matrix for Measuring Access in Community Infrastructure with key attributes for Tiers 1 and 2[6]

Energy Access	No.	Basic	Advanced			
Attibutes	Tier-0	Tier-1	Tier-2	Tier-3	Tier-4	Tier-5
Peak available capacity (W)	-	Min 3 W	Min 50 W	Min 200 W	Min 800 W	Min 2000 W
Daily supply Availability	-	Min 2hrs	Min 4hrs	Min. 50% of working hours	Min. 75% of working hours	Min 95% of working hours
Typical technology	-	Solar lanterns	Standalone solar systems	Generator or mini-grid	Generator or grid	Grid

Photovoltaic technology

Providing entry-level access to energy in off-grid, rural areas such as Bissora can be done through one of two main approaches: mini-grid or stand-alone systems. Despite dramatic decreases in installation and start-up costs in recent years, however, high up-front costs remain one of the primary barriers to increasing renewable energy access and consumption.

Due to the specific needs and of target communities in this project, combined with local supplier options, stand-alone systems were the preferred option. Table 3 presents an overview of different factors to consider in appraising which technology is most suited to local context and existing access, as well as project capacity

Table 3: Attributes of Stand-alone systems vs. Mini-grid systems

	Stand-alone system	Mini-grid system
Purpose	Lighting and appliances	Lighting and appliances – all uses, including industrial
Key component	Generation, storage, lighting, AC appliances, building wiring	Generation plus single/three phase distribution plus controller/transmission
Typical size	10W-5kW	5kW+
Regulatory Framework	Primarily unregulated retail market Quality standards	Licensing Quality and safetu PPA, tariff & consumer disputes Grants & subsidy scheme
Overheads relative to output at entry-level access	Medium	High

[6]*See note 5 and PwC. Electricity beyond the grid: Accelerating access to sustainable power for all Global power & utilities series, May 2016. https://www.pwc.com/gx/en/energy-utilities-mining/pdf/electricity-beyond-grid.pdf. Accessed 02/02/2017.*

Biofuels in Africa[7]

Even though there have been some issues associated to food insecurity and deforestation, biofuels can resolve in some way our dependence on fossil fuels. Many developed countries such as Brazil, USA, EU, Canada, Australia and Japan have established mandates to increase biofuel consumption, most of it coming from abroad. Sub-Saharan African countries have been lethargic in this process due to various barriers such as financial barriers, technical expertise, land availability, and government policies. The table below represents a SWOT analysis of developing the biofuel sector in Sub-Saharan Africa.

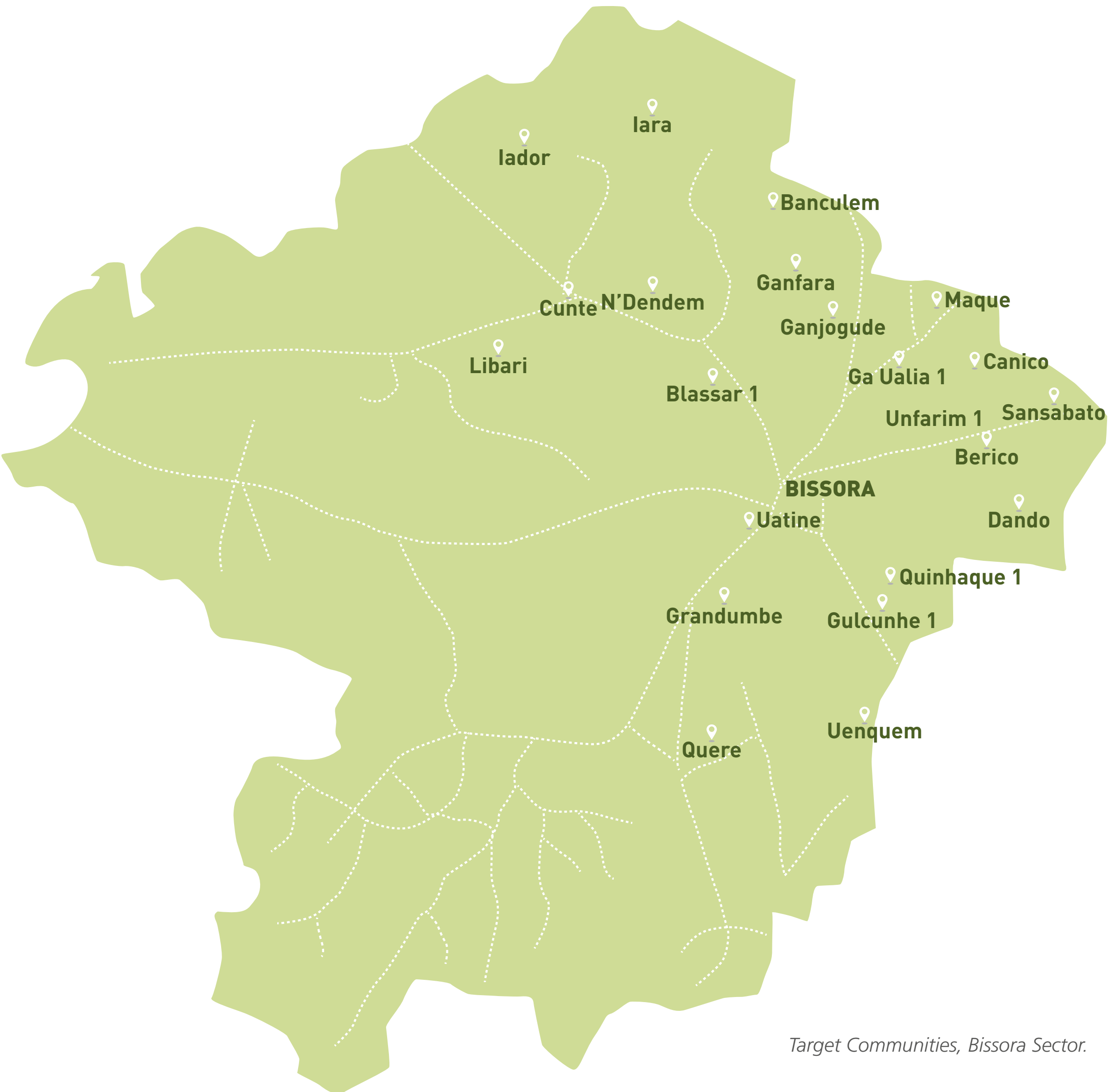
Table 4: SWOT analysis of biofuels in Sub-Saharan Africa.

Strengths	Weaknesses
• Reduction in imported petroleum oil • Reducing the dependency on fossil fuels • Carbon sequestration • Reducing greenhouse gas emissions • Energy security	• High capital costs • Low energy yields • Requirements for large hectares of land • Affects the ecological systems • Ineffective governing policies
Opportunities	**Threats**
• Increased job opportunities • Increased income for rural people • Diverse fuel options • Infrastructural development • Increased electricity supply	• Reduction in the availability of land • Affects the soil fertility • Food insecurity, if edible feedstock are used • Some feedstock require high water content

[7] *Patrick T. Sekoai * and Kelvin O. Yoro, Biofuel Development Initiatives in Sub-Saharan Africa: Opportunities and Challenges, 22 June 2016.*

Project Details

The Renewable Energy for Local Development in Bissora project, implemented by ADPP Guinea Bissau from 2013-2016, aimed at increasing access to renewable energy sources in Bissora, a rural area of the Oio region in Guinea Bissau, with an overall objective of improving living standards and local economic conditions in rural low-income areas of Guinea Bissau.



Target Communities, Bissora Sector.

Objectives

The project's overall objective was to introduce and establish renewable energy systems for local development in the Bissora Sector of Oio, Guinea Bissau. A total of 24 extension workers, 4 technical extension workers and 2,600 rural households benefited from the project.

Box 1: Specific objectives and key activities carried out in the project

Specific Objectives

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

Highlighted Key Activities

- Establishment of solar-powered pump systems incl. a water tank and distribution system to communities and fields.
- Construction of community processing centres with oil pressing machine and generators adapted to use biofuel.
- Installation of solar-powered house systems in community facilities.
- Strengthening of community structures and capacity building for energy facility management and maintenance.

The Farmers Club Model

ADPP agriculture and rural development interventions organise beneficiaries into groups, or clubs, of approximately 50 people, through which they receive training on improved production and conservation agriculture techniques, receive inputs, and access information about farmer support mechanisms. Members of each club elect a committee of five people who are in charge of managing club activities. ADPP policy promotes that committees include at least three women.

These clubs are the core operational unit of ADPP agriculture and rural development interventions and are central not only to effective delivery of project activities and outputs, but also long-term sustainability of the project. ADPP has been working with international support in the region since 2008, when the Danish Ministry of Foreign Affairs financed a two-and-a-half year project targeting 600 beneficiaries. The following year, AECID, the Spanish Aid Agency, began a two-year project for a further 2,000 beneficiaries. The EU-ACP project targeted these same beneficiary groups, further strengthening the structures already in place.

Box 2: Total Financial Investment in project

€1,785,004
EF-ACP Investment

€2,387,008
Total Investment

€600,004
Applicant and partner contributions

€167
Average investment per beneficiary over four years

Technology

Two main technologies were promoted in the project. The first involved the installation of photovoltaic systems for water supply through the installation of water pumps for consumption and agricultural purposes, as well as power for lighting and appliances in community facilities including schools, mosques, health centres and community centres. The second technology was the generation of bio-fuel by pressing jatropha seeds and adapting cookers and engines to work with the newly produced bio-fuel.

The installation of water pumps for water consumption and agriculture drip irrigation was analysed and the company provider was selecting between two brands Grundfos pumps and Lorenz. The Grundfos fulfilled all required specifications however it was shown that their specific equipment had proven inappropriate for conditions in Guinea Bissau. Lorenz pumps had smaller parts or processes with origin in China, with required special permission from the EU delegation as there were “Country of Origin” issues. This permission was granted in the third year of the project after issues with Grundfos equipment.

To increase access to water for both drinking and irrigation, the project installed a total of 36 solar-powered water pumps across 24 villages. Depending on water tables and the locations of existing boreholes, either one installation was provided for both purposes, or two separate installations were constructed. The following table reflects the range of voltage and pump capacity of solar panels and pumps installed in villages.

Table 5: Water pump voltage and capacity ranges installed in target villages

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

The primary function for energy in community facilities was for lighting and small appliances. Community centres required the most capacity as televisions were also installed to host football games, films and other information and entertainment services. The following table reflects the technical specifications for installations in community facilities.

Table 6: Technical specifications for photovoltaic installations in community centres across 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

Jatropha curcas is a plant belonging to Euphorbiaceae family that produces a significant amount of oil from its seeds. It is a non-edible oil-bearing plant widespread in arid, semi-arid and tropical regions of the world. Jatropha is a drought resistant perennial tree that grows in marginal lands and can live over 50 years. The plant is widely used in Guinea Bissau, primarily as a natural barrier to agricultural fields. Farmers in the project were trained to cultivate, collect, press and store jatropha seeds safely. The generators at the main processing centre in Watine were converted to be able to run on both diesel and bio-fuel. However, it was discovered that the jatropha in the area is more acidic and has higher water content than varieties found in other African countries. The oil's acidity decreased its compatibility with the generator, causing the occurrence of rust with significant maintenance implications. Furthermore, seven kilograms were required to produce one litre of oil, as opposed to four kilograms per litre in other contexts, effectively rendering it non-competitive in comparison to diesel.

Planned Financial Sustainability of Photo Voltaic Systems

During project implementation, a management committee of five people was chosen by beneficiaries in each community for each PV facility. Committee members were chosen by vote with ADPP project leaders promoting the role of women in key decision making positions. The objective of achieving 60% female representation on committees was not achieved, however all committees do have female members, with varying degrees of responsibility.

The 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. Fees established for use of water pumps varied between villages, but was generally a set annual or monthly payment from families. Community Centres raise money by charging phones and televised events such as football games. The majority of schools charge a small fee to cover their running costs, which includes PV system maintenance. Communities do not, to date, charge fees for installations at mosques or health centres.

Although the project evaluator was of the opinion that these efforts would not likely be enough to cover larger mid to long-term costs such as battery or panel replacement, feedback from the Chief Consultant of Danish Energy Management during a project visit noted the practice as a strength in comparison similar projects in the region.

As part of the exit strategy, ADPP established the Asociaçao de Clubes de Agricoltores Comercial de Bissora (ACACB – Bissora Commercial Farmers Club Association, in English) to provide an opportunity for centralised administrative assistance to communities. This association is in its primary stages and activities are centred primarily on commercialisation of products from the seven processing centres. 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.

Results & Impacts

Overall, the project had notable positive impacts on the lives of community members. Over the course of four years, average yields per farmer increased 71%, and income increased 159% from baseline data.

Feedback from communities in the project evaluation revealed that the installation of solar-powered pumps for both drinking and irrigation water, as well as increasing access to processing machines for different staple crops has reduced women's workload and the effort required to carry out day-to-day activities. With additional training, the drip irrigation system is expected further reduce the workload of women as they are most often responsible for irrigating crops and, prior to this project, water sources for irrigation were located at significant distance from gardens and fields. It is anticipated that this increased access will have significant impacts in the annual dry season and in communities which regularly face water scarcity.

For communities and in particular, young people, community centres have become a meeting place where people now have access to information and entertainment, as well as charge mobile phones. Prior to the project, community members were forced to travel to Bissora town to access these services, which can be up to half a day's journey away. Furthermore, some community centres run adult literacy classes and preschools, taught by volunteers from the community.

Box 3: Summary of key measurable results

- Total agricultural yields of participants increased 71%
- Average Reported Farmers Income increased 159% 39 water pumps were installed in 24 communities, with each community having access to water for consumption and irrigation
- Drip-irrigation systems established in 24 communities
- 7 Community Processing Centres were opened, each with machines for processing groundnuts, rice, maize, sorghum and millet.
- Off-grid solar powered house systems installed in 51 community facilities for: 24 community centres, 11 schools, 7 community health centres and 9 mosques
    - These facilities provide light and power for phone charging and televised events such as football games, movies and other information services.

Lessons Learned

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

The project originally planned to introduce jatropha as a biofuel crop to be used for running processing centre generators. The initiative was based on successes using the plant in other countries. In Guinea Bissau, the plant is widespread, however has not been cultivated, and it was expected that small-scale farmers could find an additional source of income by cultivating the plant as a field boundary and collecting and extractive oil from the seeds.

During the project design phase, cost effectiveness was calculated using information from other contexts and countries where the plant's seeds had been successfully used as a biofuel. However, the variety of jatropha in Guinea Bissau is highly acidic, and does not produce enough oil for the process to be cost effective in comparison with diesel. In addition, harvesting season for the crop here coincides with harvesting for other cash crops, such as cashew, decreasing enthusiasm for the activity in target communities.

For future projects, further analysis should be done when attempting to replicate techniques and initiatives from other countries' contexts. In Oio and Guinea Bissau cashew fruit by-product could provide a source of biofuel which has further potential benefits, such as a reduction in waste from fruit processing, and would possibly face less barriers in introduction.

Community involvement in planning and processes

Community buy-in for this project was essential in order to achieve long-term sustainability and maintenance of solar-powered systems, and the project faced challenges installing climate-appropriate equipment. Two years into the project, many installed pumps were not functioning and installed solar panels had been stolen from others. These two major setbacks meant that the project was at risk of losing the communities' commitment.

In large part due to swift action from ADPP and effective cooperation with the European Delegation, technical issues were resolved within a short amount of time. In communities where solar panels had been stolen ADPP proposed that, instead of replacing the panels entirely, that they would contribute half of the value for replacement if the community could come up with the other half. Three of the six affected communities have been able to raise the required funds to date. Feedback from communities revealed that the distance between communal fields, where pumps were located, and villages decreased their ability to secure the installations. As of the writing of this document, communities and ADPP are in discussions to decide more appropriate locations for the communal fields.

Given the history of the project prior to 2013, it is understandable that this detail was possibly not considered in preparation for this project. Complementary and participatory activities, such as community mapping exercise could have been useful to help guide the decision making processes surrounding community resources and potential locations of installations.

Local suppliers & maintenance providers

One particularly successful part of this project in comparison to similar projects in the country was that all systems and the majority of parts were supplied by local providers and communities were connected with local maintenance service providers. This has ensured easy access to repairs and parts as the need for services has arisen.

Financial Sustainability in the long-term

Committees were formed and trained to manage each installation, during which fees were established within each community for use of water pumps, community centres and schools with a return on investment of 11 years. Furthermore, each committee was connected with local PV maintenance service suppliers. At the time of evaluation the majority of communities were successfully collecting money and had been able to fund repair costs to date.

However, efficient and transparent cash management is a significant challenge in the area, which has no access to formal financial services. A number of communities have requested a more effective way to ensure enough money is saved to replace batteries and other significant mid to long-term costs in system longevity, and one objective of the ACACB is to explore options to implement a community banking system. Although tools such as mobile banking could provide an option to cover such needs in the future, at the time of this writing, the service is currently unavailable in Guinea Bissau. In the meantime, ADPP and other NGOs could facilitate connections between communities and private PV companies should the current approach become unfeasible.

Scalability & Replicability

In order for the project to be replicated in other parts of the country or scaled up in the Bissora region, various factors and potential barriers should be considered. Context refers to the country, sector and solar capacity factors that must be in place for the project to be profitable. Technical factors determine whether it is feasible to scale-up or replicate. Economic factors reflect viability of scaling up, validating whether investment analysis and business models hold at a larger scale. Factors related regulation and stakeholder buy-in reflect the extent to which the current regulatory and social environment is ready to embrace a scaled-up version of a project or whether a new location is suitable for receiving a project. The following table is a non-exhaustive list of such factors to consider in the potential replication or scaling-up of this project.

Table 7: Factors influencing replication or scaling-up of project

	Context	Technical	Economic	Regulatory	Stakeholder acceptance
Factors to consider in scaling up/ replicating	• high level of solar direct normal irradiation • Ag sector formed mostly by small-size farms, highly dependent on groundwater resources • Primary energy source fossil fuels or biomass • Agriculture main economic sector	• Wide geographic spread between proposed installations and low level of PV use, making mini-grid option less feasible • Local suppliers and service suppliers available to community • Pump size and strength appropriate to community needs	• Estimated 11-year ROI for community-managed installations • Long-term economies of scale in maintenance and supply services as access to PV increases in the region	• Low level of regulations or minimal regulatory framework	• Engagement of community members and leaders • Engagement of and collaboration with local, regional and national authorities • Community structures and capacity in place to manage systems
Potential Barriers to scaling-up/ replicating	• Predominance of low value crops • Varying water table levels/ water scarcity	• Lack of technical capacity and skills • Suppliers and market access	• Large initial investment costs • Limited access to financial services for small holders	• Lack of policy or policy barriers to solar energy	• Low stakeholder participation • Insufficient needs assessment

Conclusions

Introducing even entry-level access to rural, off-grid communities often presents additional challenges over and above the existing logistical and human resource capacity barriers associated with new technologies. ADPP's experience and the lessons learned from implementing the Renewable Energy for Local Development in Bissora project can be of use to other CSO actors that are considering implementing a similar intervention to introduce community-run renewable energy services in rural communities. ADPP's long-term presence in the area and with target communities, as well as already having community structures in place through the Farmers Club approach, significantly contributed towards the project's success and the human resource capacity of target communities to take on the ownership and management of installations.

While the positive impact of the project on beneficiary communities is clear; the experience has underlined the benefits of comprehensive and complementary activities in the consultation process. Although ADPP has a long-standing relationship with stakeholder communities and considerable consultation was carried out prior to project implementation, the introduction of new technologies revealed certain difficulties that, while not easily foreseeable, could have been pre-empted through further participatory planning mechanisms. For example, a participatory mapping exercise could have revealed more suitable locations for demonstration fields as well as irrigation and drinking pumps. Such activities are highly recommendable for future projects looking to install community-run energy facilities.

Another major challenge in ensuring the sustainability of community-run renewable energy projects is connected to a lack of financial services that can manage user payments and contribute to securing enough liquidity to replace larger-cost items such as batteries and solar panels in the long-term. In Guinea Bissau in particular, this is a significant issue as there are few banks outside Bissau city and mobile banking is in its very initial phases.

These types of infrastructure related challenges can only be addressed with extensive multi-sectorial partnerships and development. Solutions found while waiting for this development will also need to be taken into account. ADPP has facilitated the creation of an association with, among other activities, a mandate to introduce a community banking system. It is foreseen that mobile banking will be an effective tool for this system once the service is available in the Oio region. Political and private sector support to strengthen and compliment such efforts is encouraged.

While there are many challenges to achieving access to sustainable and affordable energy in Guinea Bissau and indeed Western Africa, there is a real momentum for change that CSOs, the private sector, policy makers and communities must take advantage of An obvious role for CSOs such as ADPP in these areas is as a point of entry for renewable energy technology. At the same time there are likely further opportunities for the private sector in complementary markets and services that complement and add value to CSO capacity and scope for end users, beyond the status quo of supply and logistical services.

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