

REPORT ON
THE ECOSYSTEM BASED ADAPTATION FOR FOOD SECURITY ASSEMBLY (EBAFOSA)
GHANA SOLAR DRYER INSTALLATION AT AKORTIEKROM
FROM 24TH TO 25TH OCTOBER 2020

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Introduction:

The Ebapreneur Solutions Ghana volunteers under the Ecosystem based adaptation for food security assembly (EBAFOSA) installed a locally manufactured solar dryer at Akortiekrom community. Akortiekrom is a predominant farming community in Birim south District, Eastern region of Ghana. The intervention sought to enhance community agricultural value chain solutions and reduce post-harvest losses using clean solar energy. The two-day community engagement process started from 24th to 25th October 2020.

To achieve the vision of Innovative Volunteerism, the EBAFOSA Ghana intervention followed four major phases to achieve its objective. These includes the needs assessment phase, the installation phase and the management phase and monitoring and sustainability phase.

The project team selected Akortiekrom as the immediate beneficiary after conducting successful needs assessment in four project intervention areas.

Criteria for the Needs assessment phase:

A community needs to meet the following criteria to benefit from EBAFOSA's intervention. These conditions include:

- i. The community must justify the presence of high post-harvest losses. In Akortiekrom, the base-line data showed prevailing post-harvest losses.
- ii. The community must be ready to provide litigation free lands to set-up the solar dryer.
- iii. In addition, the community needs to agree to finance the operation and maintenance cost of the installed dryer.

Akortiekrom proved to urgently need support based on primary data gathered.

Installation Phase

EBAFOSA provided structured guidance to youth to get training in developing solar dryers using locally available material to ensure affordability. These were youth who run the Ebapreneur Solutions Ghana climate action enterprise. These youth were also responsible for conducting the training and facilitation processes for eventual solar dryer users – the community. The community also provided designated parcel of land to install the solar dryer.

Courtesy call on traditional leaders

The Ebapreneur Solutions Ghana paid a curtesy call to the traditional leaders in the community. The team officially introduced themselves after which, the team communicated their primary assignment: to install the solar dryer. The chief and traditional leaders thanked the team and pledged the community's readiness and support for the project. [Figure 1 shows the curtesy call with the Traditional authorities.](#)

Land Siting

The community identified a parcel of land to install the solar dryer facility. Initially, a section of the community opposed the area selected. The reasons provided include:

- the proximity of the sites to a road. Some members of the community argued that any future road expansion could necessitate the relocation of the dryer.
- Again, another concern had to do with an individual opposing to use the land for communal gain.

After extensive deliberation, the community agreed to use the identified parcel of land as a solar dryer installation site. The community led the entire process without interference from Ebapreneur Solutions Ghana. The community subsequently contributed funds to clear the site.

[The Figure 2 shows site preparation in the community](#)

Installation of the Solar dryers

The Ebapreneur Solutions Ghana team successfully assembled and mounted the solar dryer in the community. In the gallery are detailed photo of the installation process. The detailed specifications of the solar dryer is below:

- Material used: Metal pipes, bolts and nuts, screws, hinges, profiles, wriggle wire, UV sheets,galvanised primer, black paint, rivet pins,
- Physical dimension: Height:5.5, Width:7ft and length:10ft
- Development specifications: Solar dryer structure is made into detachable metal pipes cut according to dimensions measured. This helps to be able to assemble and disassemble the structure before moving it to the site finally.
- The metal skeleton is braced with the profiles in which the plastic is fixed using the wriggle wire to hold it firmly.
- There are 2 vents made on the dryer one at the top and the other bottom(suck in air and suck it out) to regulate the heat inflow and outflow in the dryer.

After the installation of the solar dryer, the team is now set to conduct a series of tests with the community to validate the efficiency of the solar dryer in terms of drying efficiency for the different value chains in the area, and under different weather conditions. These tests will yield data that will be recorded as part of the dryer specifications.

Demonstration

After the installation, the Ebapreneur Solutions Ghana lead Innovative Volunteerism actor explained to the community the mechanism and principles of the solar dryer. A community asked questions afterward. The question asked focused on:

Understand the solar dryer principle

It was identified that solar dryer uses the principle of attracting heat rays from the sun,

through the UV plastics. Afterward, the heat trapped is absorbed and made to circulate within the solar dryers. Air vents allows air entre, circulation and exist the dryer.

Assess how to monitor and detect the rate of moisture loss

The community was trained on a traditional approach. To determine the rate of moisture loss, the mass of a crop will be taken prior to placing it in the solar dryer. Afterward, intermittent mass will be taken to determine the moisture loss. An easier approach is to purchase and fix a moisture and heat detector.

Capacity development

The capacity of some selected community members need to be developed to manage the solar dryers. Subsequent capacity training workshops needs to be organized for the community.

In addition, a member of the Ebapreneur Solutions Ghana team needs to be in the community to understudy the efficiency of the solar dryer. The Ebapreneur Solutions Ghana needs to develop a template to capture community usage, prevailing weather conditions, among other factors to help develop long-term predictability of drying intervals.

Safety

The community has promised to construct a protected fence around the installed dryer. The protection will help prevent children from tampering with the Ultra Violet rubbers used for the solar dryer.

The management phase:

The management phase focuses on the sustainable management of the installed facility. It focuses on the transfer of skills and requisite capacities to the community to fully utilize and optimize the solar dryer facility. To attain an efficient management phase, the community needs to:

- i. Form a new or reorganize existing community groups
- ii. The community needs to identify group leaders to sphere head the process
- iii. If the facility is communal owned, at least two community individual needs to be identified to receive capacity development on the operation of the facility.
- iv. The community must agree on an amount to pay for the operation and maintenance.

In Akortiekrom, the community already has an existing Cocoa association with an elected person as chief farmer. To this end, Ebapreneur Solutions Ghana intends to use this existing association in order to avoid any potential conflict. Likewise, the chief farmer has been actively involved in the entire project implementation.

The team conducted interviews with the community members on how the facility will benefit them (taking into consideration their post-harvest losses before the installation of the dryer. The Ebapreneur Solutions Ghana looks forward to producing a short video story of the entire process for a broader audience.

The community was yet to identify the service charges of the solar dryer. The community is yet to identify personnel to operate the facility. These delays undermines the full realization of the potential of solar dryer facilities to the community.

Ebapreneur Solutions Ghana team member needs to spend a couple of weeks to assist build the capacities of volunteers to operate the facility. Arrangement can be made to ensure that community conduct a meeting on tariffs setting during the period.

Guaranteeing sustainability by fostering partnership with the District Assembly:

Ebapreneur Solutions Ghana is in close collaboration with the Birim South District Assembly to guarantee the sustainability of the solar dryers taking into account, the distance and poor network connectivity. The Ministry of Food and Agriculture (MoFA) field officer will serve as the liaison between the Ebapreneur Solutions Ghana team and community.

A whatapp group page of all key stakeholders will be developed to facilitate coordination and information sharing. In addition, we recommend if possible to incentivize the field officer of MoFA to ensure regular monitoring of facility.

Conclusion:

The Ebapreneur Solutions Ghana team successfully installed a solar dryer at Akortiekrom.

Lessons learnt moving forward

- i.** Ebapreneur Solutions Ghana team needs to undertake additional capacity development training with the community to ensure the sustainability of the dryers and its optimal use.
- ii.** The community willing and buy-in is an asset to guarantee project success. (E.g. Our coming to the community was impromptu due to the poor network connectivity. They didn't get the information in time. However, they provided accommodation for the team.
- iii.** EBAFOSA Ghana need to develop template to guide the field officer and community volunteer on data capturing as a means to assess the efficiency of the installation
- iv.** A short documentary will be produced to share best practices and lessons learnt from Ghana
- v.** Engaging District Assemblies from the project preparation stage facilitate buy-in and ownership

- vi. The acquisition of moisture detector can help ascertain accurate data for predicting rate of dryness under certain prevailing conditions. Findings from this data can be shared in peer-reviewed journals as means to promote clean solar energy.
- vii. Communication barrier pose a challenge to undertake regular monitoring. To augment this, Ebapreneur Solutions Ghana needs to incentivize the field officer of MoFA to serve as a liaison between the community and the Ebapreneur Solutions Ghana team.
- viii. EBAFOSA Ghana needs to manage community perception and expectation through continuous capacity development engagement.

Gallery

Team working on the frame of the solar dryer



Team rapping UV plastics around the solar dryer



Semi-finished solar dryer



Team addition finishing the solar dryer



Community picture of community inspect solar dryer installation

