JRP-ACTIVITY REPORT

Oct, 2024

Activity Report For Solar Systems installation-JRP at Galdogob District.

SDC in collaboration with MOAI.

Oct, 2024

Contents

Introduction

The Joint Resilience Programme (JRP) is aimed at enhancing food security and livelihood opportunities through innovative agricultural techniques and renewable energy solutions. Salaam Development Center (SDC), a cooperating partner of the World Food Programme (WFP), is at the forefront of implementing this project, which is funded by the WFP and executed in close collaboration with the Ministry of Agriculture and Irrigation (MOAI). One of the key components of the JRP is the distribution of solar systems to selected farms in Galdogob and Bursalah districts to improve water access and irrigation while reducing the dependency on costly and non-renewable energy sources like diesel.

Diesel fuel has been the predominant source of power for irrigation systems in the rural communities of Galdogob and Bursalah districts. However, frequent price fluctuations, coupled with the environmental impact of fossil fuel use, have left many farmers struggling to afford consistent access to water for their crops. This has had a direct negative effect on agricultural productivity and has undermined efforts to promote food security in the region. Solar power, with its low operational costs and renewable nature, presents an ideal solution to these challenges.

The JRP solar system distribution initiative was launched to address these energy challenges by equipping selected farms with solar panels that will power water pumps for irrigation. This report outlines the detailed distribution process, including the methodology used to identify eligible farms, the technical specifications of the solar systems provided, and the impact these systems are expected to have on local agriculture. The goal is to support sustainable, cost-effective energy solutions that improve water access, reduce operational costs for farmers, and contribute to long-term food security in the region.

By shifting from diesel to solar energy, the selected farms will not only experience immediate cost savings but will also contribute to the environmental sustainability of agricultural practices. Furthermore, this initiative aligns with the broader objectives of the JRP, which include fostering community resilience, promoting the use of renewable resources, and supporting vulnerable farmers in overcoming the barriers to agricultural productivity. Through this distribution, the JRP continues to demonstrate its commitment to building resilience within Somali farming communities.

Specific Objectives

The primary objectives of the solar system distribution in the JRP are:

- To improve access to sustainable, cost-effective energy solutions for irrigation.
- To reduce the operational costs for farmers who rely on diesel-powered water pumps.
- To enhance agricultural productivity through improved water management.
- To support community-based farms in increasing their resilience to climate change impacts.

Methodology

The distribution process involved several key steps:

1. **Community mobilization and sensitization**: Local authorities and farmers were informed about the benefits of solar energy and its application in agriculture.
2. **Consultation with farmers' committees**: These committees, representing both Galdogob and Bursalah districts, played a significant role in identifying potential beneficiaries.
3. **Field assessments**: Field visits were conducted to assess farm suitability, based on pre-determined selection criteria (such as farm size, water source availability, and energy needs).
4. **Selection of farms**: A transparent selection process was carried out in collaboration with the MOAI and local authorities

Community Consultation and Farmers' Committee Involvement

The community consultation process was an essential component of the solar system distribution project, ensuring that the needs and priorities of the farmers were at the forefront of the decision-making process. Prior to the selection of beneficiary farms, a series of consultations were held with the farmers' committees in both Galdogob and Bursalah districts. These committees consisted of respected local farmers and community leaders who represented the broader agricultural community. Their role was to provide insights into which farms would benefit most from the solar systems based on their location, irrigation needs, and potential to contribute to community-wide agricultural productivity.

In Galdogob, the farmers' committee played a crucial role in identifying farms that were heavily reliant on diesel-powered water pumps and were struggling with the rising costs of fuel. Many of these farms had large plots of land but were unable to irrigate them effectively due to the high cost of diesel. The committee, through its consultation with local farmers, highlighted farms that not only required immediate intervention but also had the potential to support surrounding farms and contribute to the local food supply chain.

Similarly, in Bursalah, the farmers' committee emphasized the importance of supporting community-owned farms, which serve multiple households and contribute to the village’s water and food security. During the consultations, farmers voiced their concerns about the inconsistency of diesel supplies, the environmental impact of fossil fuel usage, and their eagerness to transition to a more sustainable energy source. The committee's input was vital in selecting farms that would maximize the impact of the solar system distribution, ensuring that the benefits extended beyond individual farms to the larger community.

The active involvement of farmers' committees not only ensured transparency in the selection process but also strengthened the sense of ownership and responsibility among the community members. This participatory approach increased community buy-in, fostering a collaborative environment that will support the long-term success of the solar system installations.

Developing Selection Criteria

The following criteria were used to select farms for the distribution of solar systems:

- **Proximity to reliable water sources**: Farms that had access to boreholes or shallow wells were prioritized.
- **Energy costs**: Farms that were struggling with the high cost of diesel for water pumping were given preference.
- **Farm size**: Larger farms, with more significant irrigation needs, were prioritized to maximize the impact of the solar systems.
- **Community benefits**: Farms that could serve multiple neighboring farms or were part of community-owned irrigation schemes were given preference.
- **Land topography**: Farms located in areas suitable for solar panel installation with minimal obstructions from trees or buildings.

Distribution Overview

Each of the three selected farms was equipped with a solar energy system consisting of **54 solar panels**, each rated at **450 watts**. This configuration was carefully chosen to meet the irrigation needs of the farms while ensuring sufficient energy output throughout the day. These solar panels are designed to power water pumps for irrigation, significantly reducing the need for diesel generators, thus lowering operational costs and minimizing environmental impact.

- **Farm 1 (Galdogob - Muhubo Gurxan)**: Muhubo Gurxan's farm, located in Galdogob, was one of the largest beneficiaries of the solar system distribution. Her farm relies on a borehole that supplies water not only to her crops but also to neighboring farms. Before the solar installation, she struggled to afford the high diesel costs required to keep the water flowing, which limited the amount of land she could irrigate. With the solar system now in place, she can expand her irrigation to cover a larger portion of her farm while also providing water to surrounding farms, significantly improving agricultural output in the region.
- **Farm 2 (Galdogob - Abdiqadir Khelif Hashi)**: Abdiqadir Khelif Hashi's farm also heavily relied on a diesel-powered irrigation system, which was becoming unsustainable

due to fluctuating fuel prices. The installation of the solar system has provided him with a reliable and cost-effective energy source, allowing him to increase his farm's productivity. His borehole not only supports his farm but also supplies water to nearby farms and livestock, making the impact of the solar system even more widespread. With 54 solar panels generating 450 watts each, Abdiqadir can now irrigate his crops more consistently, resulting in better yields.

- **Farm 3 (Dudun Tuulo-xanan)**: Dudun Tuulo-xanan's community-owned farm, located in Bursalah, serves the entire village and surrounding farms. This borehole is the primary water source for the community, making it a crucial piece of infrastructure. Prior to receiving the solar system, the community faced frequent challenges in maintaining water access due to the high cost of diesel. The new solar system has dramatically reduced these costs, ensuring that the farm and the entire village have consistent access to water for both crops and household use. The 54 solar panels provide sufficient energy to power the community's water needs, making this project a vital contributor to local resilience.

Identification of Successful Farms

Farm Information			Assessment criteria						
S/N	**Name of Farm Owner**	**Phone number**	**site**	**Requested**	**water source**	**Farm size**	**Land topography & solar feasibility**	**Community benefit**	**Status**
1	**Muhubo Gurxan**	**7789759**	**Galdogob**	√	**Borehole**	√	√	√	**Accepted**

2	**Abdiqadir khelif Hashi**	**7757 573**	**Galdo gob**	√	**Boreh ole**	√	√	√	**Acce pted**
3	**Iskaashata da Tuulo xanan- Farhaan Haji yuusuf**	**7786 136**	**Dudun -tuulo xanan**	√	**Boreh ole**	√	√	√	**Acce pted**

The identification of farms for solar system distribution was based on a combination of factors, including water accessibility, farm size, and community benefits. Each farm selected played a crucial role not only in its own productivity but also in supporting surrounding farms and communities.

- **Farm 1 (Muhubo Gurxan's farm)**: Muhubo's farm was selected due to its strategic location and the importance of its borehole for neighboring farms. The solar system will help her expand her farm's irrigation capacity while maintaining water supply to other farms in the area. Her selection was also driven by the fact that she had been struggling with diesel costs, which were limiting her ability to farm efficiently. The solar installation will relieve this financial burden and enable her to increase her production.
- **Farm 2 (Abdiqadir Khelif Hashi's farm)**: Abdiqadir's farm was chosen for its potential to support multiple other farms through its borehole. His high diesel expenses were not sustainable, and the introduction of solar energy will allow him to irrigate his farm more efficiently and provide water to livestock in the area. His selection was also based on the farm's ability to significantly improve local food security once freed from the dependency on costly fuel.
- **Farm 3 (Dudun Tuulo-xanan)**: This community-owned farm was selected due to its importance in providing water to an entire village. The farm's borehole serves not only agricultural purposes but also the water needs of the community. Installing a solar system here ensures that the community will have reliable and affordable access to water, which

is critical for both farming and daily life. The community ownership model also means that the benefits of the solar system will be widely shared among village members.

Implementation Strategy

The implementation strategy involved several key steps, each critical to the success of the solar system distribution:

1. **Procurement of solar systems**: The procurement process focused on acquiring high-quality solar panels, inverters, and water pumps that were suitable for the specific needs of each farm. The systems were designed to be durable and capable of meeting the high energy demands of agricultural irrigation. Special attention was given to selecting components that were easy to maintain and repair, ensuring that farmers could operate the systems with minimal external support.
2. **Installation and training**: The solar systems were installed by trained technicians, with input from the farmers to ensure the systems were tailored to the specific layout and needs of each farm. Alongside the installation, farmers were given hands-on training on how to operate and maintain the systems. This included basic troubleshooting skills and guidelines for regular system checks, ensuring that the farmers could manage the systems independently and avoid prolonged downtime due to technical issues.
3. **Monitoring and evaluation**: Post-installation, a monitoring and evaluation framework was put in place to track the performance of the solar systems. Regular follow-up visits were scheduled to assess the systems' efficiency and address any emerging issues. The monitoring process also included collecting data on farm productivity before and after the installation to measure the direct impact of the solar systems on agricultural yields and operational costs.

Challenges

The project faced several challenges during the distribution and installation phases:

- **High demand for solar systems**: All 35 farms involved in the JRP project expressed a desire to receive solar systems, but budget limitations allowed for only 3 installations in this phase. This high demand highlights the widespread need for renewable energy solutions among farmers, but it also presented challenges in terms of managing expectations and prioritizing the most urgent cases.

- **Logistical difficulties**: Transporting the solar panels and related equipment to remote farms in both Galdogob and Bursalah proved to be logistically challenging. Poor road conditions, particularly in the rainy season, delayed the delivery of some components, causing minor setbacks in the installation schedule. Efforts were made to work closely with local authorities to improve transportation routes where possible.
- **Technical capacity limitations**: While the selected farmers received training on how to operate and maintain the solar systems, there is a limited availability of skilled technicians in the region. This poses a long-term challenge for system maintenance, as technical issues may require specialized knowledge that is not always accessible locally.
- **Water management challenges**: Although the solar systems provide a reliable energy source for irrigation, there are still challenges related to water management, particularly in drought-prone areas. Ensuring that farmers use water efficiently to maximize the benefits of the solar systems remains a key focus of ongoing training and support.

Impact and outcomes

The following key findings emerged from the solar system distribution initiative:

- **Increased farm productivity**: The solar systems have already resulted in increased agricultural productivity, as farmers can now irrigate their crops more consistently and affordably. The shift from diesel to solar energy has allowed for expanded irrigation areas, leading to higher crop yields and improved food security in both Galdogob and Bursalah.
- **Cost savings for farmers**: By eliminating the need for diesel fuel, the solar systems have significantly reduced operational costs for the beneficiary farms. These savings are expected to increase over time, allowing farmers to reinvest in their farms and further improve productivity. The initial cost of solar installation is quickly offset by the long-term savings on fuel expenses.

- **Positive environmental impact**: The transition from diesel to solar energy has had a measurable positive impact on the environment. By reducing reliance on fossil fuels, the farms are contributing to lower greenhouse gas emissions, which aligns with broader goals of environmental sustainability. This shift also reduces soil and water pollution associated with diesel spills and runoff.
- **Community benefits**: The farms equipped with solar systems are not only benefiting individual farmers but also supporting the wider community by providing reliable access to water for surrounding farms and livestock. In particular, the community-owned farm in Dudun Tuulo-xanan has ensured that the entire village has consistent water access, which is crucial for both agriculture and daily life.
- **Scalability potential**: The success of this initial solar system distribution highlights the scalability of the project. With additional funding and support, more farms could be equipped with solar energy systems, further improving agricultural productivity and food security across the region.

Recommendations

To ensure the continued success and expansion of the solar system distribution initiative, the following recommendations are made:

- **Expand the number of solar systems distributed**: Given the high demand and the clear benefits observed, efforts should be made to secure additional funding to expand the distribution of solar systems to more farms. Expanding the number of installations will further improve agricultural productivity and contribute to community resilience.
- **Increase technical support and capacity building**: While the initial training provided to farmers was essential, there is a need for ongoing technical support to ensure that the systems are maintained properly. Establishing a local network of technicians who can provide regular maintenance and troubleshooting services will be critical to the long-term success of the solar installations.

- **Promote water efficiency practices**: To maximize the benefits of the solar systems, farmers should be encouraged to adopt more efficient irrigation practices. This could include the introduction of drip irrigation systems, which reduce water waste and improve crop yields. Additional training on water management should be provided as part of the ongoing support to farmers.
- **Engage local authorities in infrastructure development**: Improving road access to remote farms will reduce logistical challenges in future distribution efforts. Collaboration with local authorities to maintain and upgrade transportation routes will ensure that solar equipment and other agricultural inputs can be delivered more efficiently.
- **Monitor and document the environmental benefits**: The positive environmental impact of the solar systems should be carefully monitored and documented. This data can be used to support further funding applications and to promote the benefits of renewable energy in agricultural practices. A detailed environmental impact assessment should be conducted to quantify the reduction in greenhouse gas emissions and other environmental benefits.

Conclusion

The distribution of solar systems under the JRP project has proven to be a highly successful initiative, with immediate benefits for both individual farmers and the broader community. The transition from diesel-powered irrigation systems to solar energy has resulted in increased agricultural productivity, significant cost savings, and positive environmental impacts. These solar installations have not only improved water access for crops and livestock but have also enhanced community resilience by reducing reliance on costly and unsustainable energy sources.

Moving forward, the success of this initiative underscores the importance of expanding solar energy solutions to more farms in the region. With the right support and continued collaboration between JRP, local authorities, and the farmers themselves, this project has the potential to make a lasting impact on food security and sustainable agricultural practices in Somalia. The lessons learned from this initial phase will guide future efforts to scale up the use of renewable energy in rural farming communities, ensuring that the benefits of solar power reach even more farmers and contribute to long-term resilience in the face of environmental and economic challenges.

ANNEXE; Distribution pictures of Solar System

Figure 1; SDC staff with SECCO assessing one of the farms that have been selected to install solar system

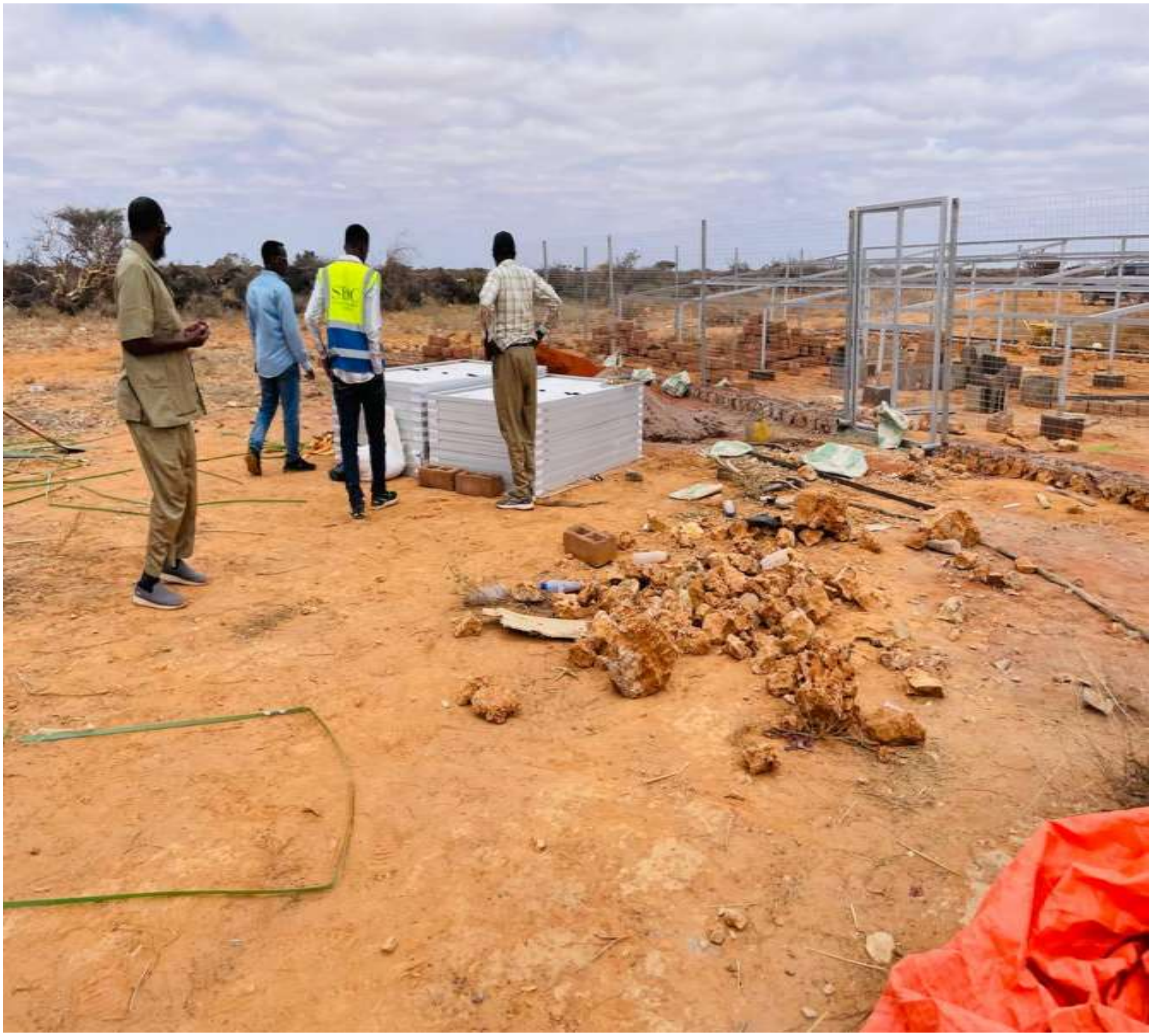

Figure 2; SDC staff distributing solar panels

Figure 3; on-going installment of muhubo gurxan's farm

Figure 4; completed solar system installation in Muhubo gurxan's farm

Figure 5; Beneficiary of solar system installment in Dudun-Tuulo xanan training how to operate.

Figure 6;installed solar system and handover in Galdogob site.

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Signed Solar system Beneficiary list

Serial Number	Name of the beneficiary	Location/ Site	System Information	Status	Beneficiary signature
JRP-SOLAR SY 1	Abdulqaadir khelif hashi	Galdogob	54 solar pane 405w	installed	
JRP-SOLAR SY 2	Muhubo Gurxan	Galdogob	54 solar pane 405w	installed	
JRP-SOLAR SY 3	Farxaan Xaaji yuusuf	Dudun-Tuulo xanan	54 solar pane 405w	installed	