GEF Small Grants Programme

JORDAN: Introducing Solar Energy to Reduce Carbon Emissions and Conserve Forests near the Dibeen Forest Reserve

Project No: JOR/SGP/OP5/CORE/CC/12/11

Grantee: Darb AsSafsaf Charity Society

Location: Sakeb /Dibeen Forest Reserve

SGP Contribution: US$ 23,000

Cash Co-Financing: US$ 23,258

In-Kind Co-Financing: US$ 12,857

Project Duration: 07/2012 – 12/2013

Number of people served: 720/2000

Focal area: Climate Change

Recognition: Two awards by the Royal Society for Conservation of Nature (RSCN)

Project Description

Deforestation is a serious issue in Jordan where only 1% of land enjoys forest cover. In support of Jordan's National Strategy for Renewable Energy, SGP supported a four-project cluster initiative to encourage communities to transition from firewood to solar energy powered water heaters. One such project, located in the Sakeb village between Jordan's Dibeen Forest Reserve and the Ajloun Nature Reserve, is discussed in more detail here. The project combined various strategies for sustainable forest management, including creating financial access to solar power through micro-finance, and educating community members in forest management and reforestation techniques. Due to the successful demonstration of the four projects, the initiative is currently being up-scaled with US $1.5 million in funding by the Jordan River Foundation (JRF) in communities across Jordan.

Background

Located in the heart of Jordan's northern National Forest and close to the old Roman city of Jarash - one of the main seven cities of Roman legacy, Sakeb village lies between two important Reserves - the Dibeen Forest Reserve and the Ajloun Nature Reserve. The National Forest and its reserves comprise the largest forest area in Jordan, a country whose total forest landscape covers a mere 1%. As one of the last pine-oak forests in the Middle East, the area hosts acres of Aleppo Pine, Palestine Oak, Greek strawberry, and Pistachio trees. The Dibeen Forest Reserve, one of Jordan's smaller nature reserves (measuring around 3.3 square miles), is home to at least 17 endangered species, including the Persian red squirrel and grey wolves. The area was protected as a nature reserve in 2004 under the initiative of the Royal Society for the Conservation of Nature (RSCN), a partner in this SGP project. The rolling hills of the Ajloun Forest Reserve in the uplands (around 5 sq mi), on the other hand, were declared an Important Bird Area by BirdLife International but also support other important species such as the roe deer, wild boar, porcupines, red foxes and golden jackals.

***Arbutus andrachne*, a species found in the local forest**

Around 18,000 residents live in the village of Sakeb. Family households, which usually comprise around 6 persons, often struggle with low incomes and high level of unemployment. More often than not, families have to resort to illegal logging to meet their basic energy needs for heating, which was identified as one of major causes for deforestation in the region. Recently, increasing pressure on the National Forest and increases in fuel and electricity prices raised the need to explore alternative, sustainable energy sources to avoid further degradation of the forests. While the Dibeen Forest Reserve is largely still intact, other smaller forest plots are being degraded by illegal logging and in some cases have already been fully destroyed.

Project Implementation and Key Activities

This project is part of a large four-project cluster initiative called "Local Community Initiative towards Renewable Energy" which SGP put together in support of Jordan's National Strategy for Renewable Energy. The initiative mainly targeted poor families, who rely on firewood as a primary energy source. The CBO Darb AsSafsaf Charity Society spearheaded the project in the village of Sakeb with the goal to protect nearby surrounding forests, reduce carbon emissions, and improve the quality of life for the local community. Promoting the utilization of solar energy as an alternative to firewood and raising active engagement in forest conservation were thereby the main strategies. The Management of the Dibeen Forest Reserve was a key partner working with the CBO, helping it to identify an alternative, sustainable energy source and to prepare the project proposal for SGP.

In addition to transitioning to renewable energy, the project employed a series of advocacy and incentive initiatives to move the community from illegal logging towards sustainable energy use. Trained members of the CBO, the NERC, and the private sector conducted information sessions, explaining the value of forest ecosystems and alternative renewable energy in reducing greenhouse gas emissions. They also explained how specifically these solar energy units work, and what benefits, including cost savings, communities members could expect from transitioning to solar energy. After these sessions, a list of interested families was prepared by the CBO who initially selected 37 families for the demonstration project.

In order to secure sustainability and continuity of project activities, the CBO established a revolving fund mechanism to help families finance the installation of solar units. The success of the revolving fund allowed the project to immediately expand solar energy coverage to an additional 81 household units and 5 community facilities. As a result, a total of 118 solar energy units were installed and 7 households received energy saving devices, including energy saving light pulps and awareness on "energy label" codes. Solar kits were also installed in five community facilities, including schools. To ensure sustainability of the solar powered water heaters, two community members were trained on solar kit installation and maintenance.

Community workshop

Environmental Impact

Most noticeably, providing households and schools with access to solar power as an alternative energy source has resulted in reduced dependency on firewood for their basic energy needs. This resulted in a substantial reduction in illegal logging around the National Forest and Dibeen Forest Reserve. According to figures from the Forest Reserve management, illegal logging of Dibeen's old growth, large trees was reduced by 30% (from 120 trees in 2011 to 85 trees in 2013), while the number of offenders taken to court decreased by 28%. With higher awareness about climate change and the importance of forests, local communities are now more involved in conserving their forest through protection measures. For example, they participated in local reforestation initiatives such as annual tree planting activities. The community was allocated 10.7 hectares, which had been partially logged in 2010, by the forest department to replant with trees. Furthermore, a network of volunteers now assists forest rangers and report illegal logging cases to the respective authorities.

Solar powered water heaters

Socio-Economic Impact

With the transition from firewood and gas to solar energy, 120 households or 720 family members, including 250 women, benefited directly from the solar powered water heaters. In addition, the installation of the kits in schools benefited 500 students. Overall, more than 2,000 people from Sakeb and surrounding villages learned about forest conservation, climate change, and renewable energies in the outreach sessions, community meetings, and other project activities. One third of the participants (600) were women, and one quarter (500) was school students. In addition, the activities benefited from the participation of 50 physically handicapped community members who now enjoy easy access to solar water heaters.

As a result of the solar water heaters and energy efficiency light bulbs, the participating households and schools were able to cut down electricity cost by 25-40%, according to an analysis of electricity bills before and after installation of the equipment. Beyond helping cover instalment payments for the solar energy units, these cost savings have raised living standards at the community level. Health improved as well. Since completion of the project, local government health centres have recorded higher levels of hygiene, as families enjoy access to hot water.

Gender Mainstreaming and Social Inclusion

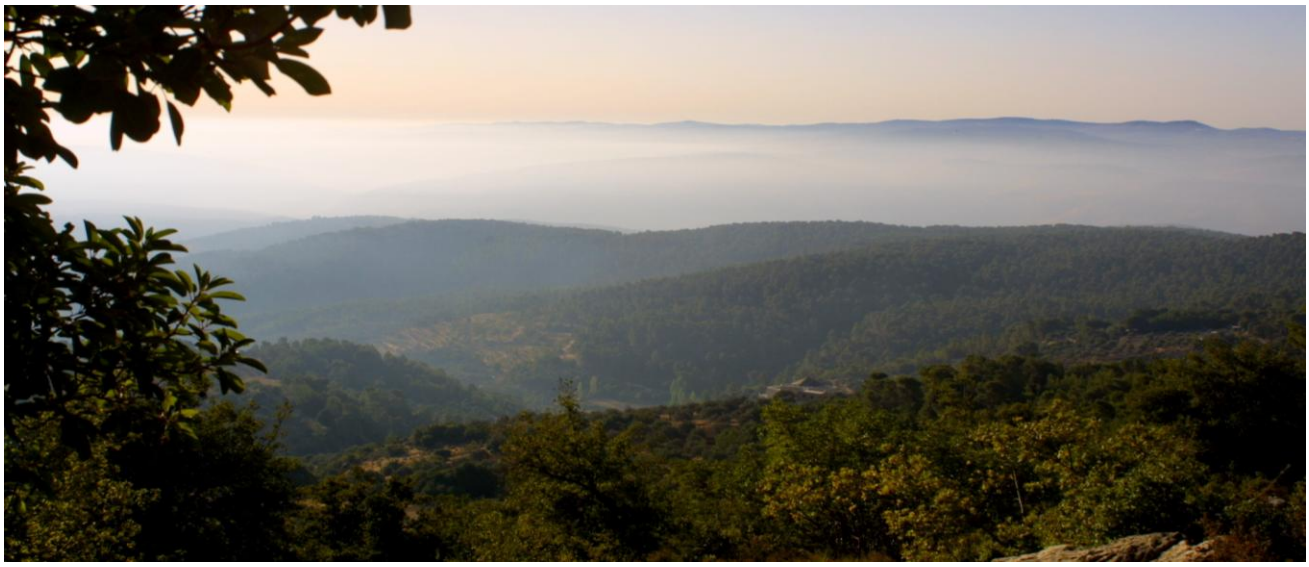
The project also promoted gender mainstreaming and other forms of social inclusion. For one, Sakeb's first women cooperative society was established upon the initiative of the CBO Darb AsSfsaf Charity Society. In Jordan rural areas, women cooperatives are initiated to undertake activities to empower women and improve their livelihoods through work on hand crafts, food processing and the like. SGP provided training for the Women Cooperative to strengthen its capacities. As a result, women are fully integrated in project activities, including awareness and information sessions. Women, who are traditionally in charge of cooking and household chores, were the main beneficiaries of the solar water units. They were also given priority to obtain soft loans to install solar water heaters at their homes. The CBO Darb AsSfsaf

Center of Education for the Disabled

was also able to establish a centre of education for disabled community members, thanks to funding from the Jordan River Foundation (JRF) and the Ministry of Social Development.

Sustainability

The project design was conceptualized in a way to integrate strategies to promote sustainability and scalability of project activities from the outset. A key component there was the establishment of a revolving fund mechanism, which provides easy financial access for community members who can pay off the equipment in small instalments generated by savings in electricity costs. The revolving fund allowed the CBO to expand coverage to another 81 households, in addition to the initial 37 solar units funded by SGP. Also, in addition to removing financial barriers to renewable energy, the project trained two community members in solar kit installation and maintenance. Overall, awareness raising activities achieved a greater awareness about energy use and climate change among community members.



A view of the Dibeen and Ajloun Forest Reserves

Beyond Project Impact: Replication, Up-scaling and Policy Influence

Darb AsSafsaf's success story went beyond Sakeb village inspiring other CBOs from the nearby villages to follow suit. Already, an additional 102 households received solar water heaters from five other CBOs outside Sakeb. Thus, in total, 223 households benefit from solar water heaters in the area. Furthermore, two NGOs were assisted by the Dibeen Forest Reserve and the Yarmuk Reserve in applying for a grant at SGP using the same model and obtained funding. Earlier this year, three other NGOs received funding from MercyCorps. Recently, a high level delegation of The Ministry of Social Development in Saudi Arabia visited the CBO to explore the adoption of the methodology to mountainous areas in Abha in Saudi Arabia.

On a national scale, SGP successfully networked with other national NGOs, such as the Jordan Hashimite Fund for Human Development, the Jordan Environmental NGOs Coalition, the Royal Botanic Garden, the Green Building Council, and the Royal Society for Conservation of Nature, among others. This resulted in the successful adoption of the solar water heater project idea by the "Jordan River Foundation (JRF)," which had been a partner of SGP Jordan on various community projects for more than 10 years. The success of the four SGP-funded cluster projects encouraged the JRF to seek large-scale funding for up-scaling this initiative, which it received from the Ministry of Planning and International Cooperation (MoPIC). (The Secretary General of MoPIC and GEF Operational Point is a member of SGP NSC, and he supported the JRF application.)

As a result, JRF received $1.5million in funding and is currently undertaking a national project to install solar units in other villages all over Jordan. According to estimates by the NERC, this replication will reduce emissions by 26,000 tons of CO2 on an annual basis. Moving into SGP's next operational phase, SGP Jordan is aiming at further replicating and up-scaling the project in close collaboration with the recently established National Renewable Energy Fund (NREF), to which it has already established channels of communication.

Contribution to National and Global Environmental Benefits

By promoting solar energy and forest conservation, the four-project cluster contributes directly to Jordan's National Strategy for Renewable Energy, which was launched by the Ministry of Energy and Natural Resources in 2012. The projects are also in direct alignment with GEF's and SGP's strategies for the current operational phase (OP5), as laid out in SGP Jordan's Country Programme Strategy, which also sets renewable energy as a priority in target communities. Given that the project is being up-scaled by JRF through a US $1.5 million initiative, and potentially by SGP with NREF, the installation of solar water heaters in communities all over Jordan could contribute significantly towards the reduction of greenhouse gas emissions on a global scale.

Orchis anatolica **can be found in the Dibeen Forest Reserve**

The Role of SGP and its Partners

SGP's point of intervention was to connect the community and the Darb AsSafsaf Charity Society with other appropriate partners to implement the alternative energy project and to enable financial access for the community through a sustainable micro-finance mechanism. To this end, a National Steering Committee (NSC) member of SGP Jordan linked the CBO with Jordan's National Energy Research Center (NERC) for technical guidance. Throughout the project, SGP Jordan worked closely with the CBO to help its staff build capacity in project management, and administrative and financial issues.

The Dibeen Forest Reserve was Darb AsSafsaf's key partner because of the immediate proximity of the project site and the direct impact of Sakeb residents' harmful practices on the Reserve. The National Energy Research Centre (NERC) and Ministry of Industry and Trade were consulted on the Jordanian Standards of Solar Energy Units, while the Royal Society for the Conservation of Nature (RSCN), and the Royal Scientific Society (RSS) each contributed specialized know-how, knowledge transfer, and outreach activities. The Jordanian River Foundation, a long-term partner of SGP, joined at a later stage after all four projects had achieved measurable impact. SGP provided advice on establishing the revolving fund and successfully networked with other partners to replicate and upscale the project.

About the Grantee

The Darb AsSafsaf Charity Society was established in 2009 and has a total of 90 members from Sakeb's community. The CBO aims at helping the less fortunate families of Sakeb and nearby villages. Its target groups include poor families, students, orphanages and the disabled from Sakeb and other nearby villages.

Challenges

There were some difficulties in convincing the beneficiaries to install the appropriate capacity of solar units. This challenge was overcome by convincing the beneficiaries that the capacity is chosen to fit the family needs and the average number of family members (usually 6-7 people).

Lessons learned

Providing financial access to renewable energy equipment for poor people while demonstrating the cost effectiveness is key for securing the uptake of new environmental technologies. The revolving fund successfully managed to provide a large number of additional households with access to solar powered heaters. In fact, more than 6 times as many households were covered through the revolving fund than from the original project budget.

Networking and linkages through members of the National Steering Committee (NSC) are critical components in building partnerships and promoting up-scaling a project. For example, having an official of the National Energy Research Centre (NERC) on the NSC provided an important linkage to the NERC for technical guidance. On the other hand, having an official of the Ministry of Planning and International Cooperation (MoPIC) serve on the NSC and as GEF OFP provided him with the opportunity to see the effectiveness of the projects first-hand and support large-scale funding for the upscaling through the JRF.

Clustering of projects may increase the impact of demonstration projects. Funding with the same focal areas and in most cases in close-by locations, have the potential to show bigger impact, reduce operational cost, obtain higher cost sharing at the project level, provide more effective technical assistance to grantees and enhance networking & knowledge sharing amongst local communities with similar environmental and social challenge.

Area around Sakeb Village