

Solar Drip Irrigation for Smallholder Farmers in Morocco

Key Project Information

The mission of the planned project *“Solar Drip Irrigation for Smallholder Farmers in Morocco”* is to provide smallholder farmers in Morocco access to clean electricity to power their irrigation systems. This is achieved through the installation and operation of solar PV systems, replacing fossil fuel-powered equipment.

The project activities shall be supported by carbon funding for the reduction of greenhouse gases for which registration under the Gold Standard is addressed. The Gold Standard is one of the highest available standards for climate change mitigation projects, following strict social and environmental criteria. This project description has the purpose to inform stakeholders in the context of the local stakeholder consultation. These consultations are part of the certification procedure of the Gold Standard.

1. Project Description and Design

The project will consist of the installation and operation of PV systems on smallholder farms across Morocco. These PV systems displace the powering of inefficient irrigation systems with fossil fuels.

Many farms in Morocco are not connected to the national power grid. To irrigate their crops, the farmers commonly use diesel and butane-powered motors, which either directly power a submersible water pump via a v-belt or connect to a dynamo, which then powers an electric pump. This pumping system is usually combined with an inefficient ditch irrigation system where a lot of water is lost. Such irrigation systems have contributed to the decline of groundwater levels in Morocco threatening soil fertility. Furthermore, farmers are dependent on fossil fuel prices and spend a lot of time sourcing these fuels over long distances.



Farm in Zagora, photo by Sabine Altmann (Solar Future)



photo by Erich Wörle (Solar Future)

This project shall offer farmers an alternative to fossil fuel-powered water pumping: a hire purchase of a PV system, which is paid off over a period of 6 years. The savings in fuel costs can cover the monthly instalments. The farmers therefore do not have any extra costs compared to the baseline scenario. The PV systems are managed and monitored remotely and can be switched off in case farmers do not pay their instalments.

Before farmers can start their hire purchase of a PV system, they are required to install an efficient drip irrigation system, a water reservoir and an electric submersible pump. This investment is eligible for support from the Maroc Vert programme¹ and therefore does not represent a large barrier for farmers. This enhances the impact of the project, since beyond the replacement of fossil fuels it fosters the uptake of resource-efficient agricultural technologies.

On average, one system saves around 20 tCO₂ per year. The project schedule foresees the installation of up to 75 PV systems per year.

a. Project participants as of now:

atmosfair gGmbH: Annika Richter [richter@atmosfair.de]

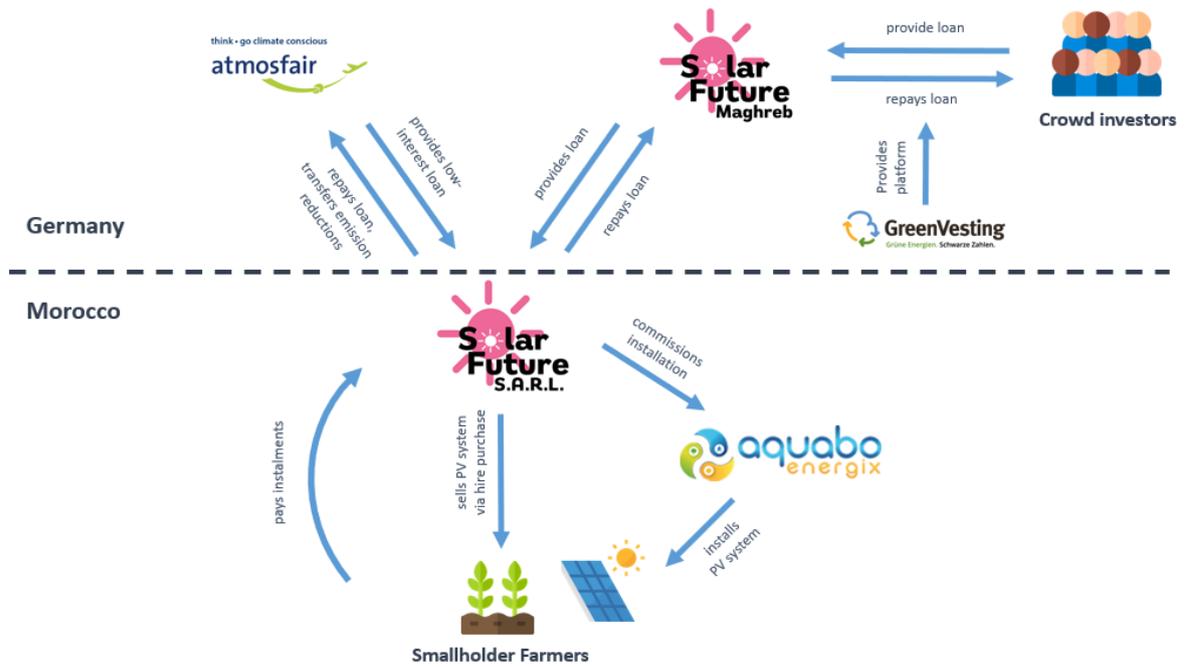
b. Tentative organisational structure:

Solar Future S.A.R.L., a Moroccan SPV, will implement the project in Morocco and will be responsible for the operation and maintenance. They will subcontract the EPC Aquabo Energix S.A.R.L. for the installation and management of the PV systems.

Solar Future Maghreb GmbH & CO KG, a German SPV, will manage co-funding from crowd investors collected on the crowdfunding platform GreenVesting.com.

atmosfair gGmbH, a non-profit company from Germany, will provide co-funding and coordinate the activities relevant for the Gold Standard certification process.

¹ <http://www.agriculture.gov.ma/pages/la-strategie>



The following diagram represents the currently planned management structure

2. Social, economic and environmental benefits and impacts

Besides reducing GHG emission in line with the UN's Sustainable Development Goal (SDG) number 13, this project will contribute also to the following other Sustainable Development Goals:

- SDG 7: ensuring affordable access to clean energy for smallholder farmers
- SDG 8: taking economic pressure off smallholder farmers by generating savings in fuel expenditure
- SDG 12: raising awareness for and promoting sustainable water management
- SDG 15: combating desertification and promoting sustainable land use