



Solar Irrigation System

Motivating Musahar Community Towards Lease Based Farming in Siraha



“Because of water scarcity I used to leave my 15 kattha land barren but leased 10 kattha of irrigated land from others for vegetable cultivation. Now, my land is also green. Thanks to solar irrigation system.”

Butni Devi Chaudhary, Balansher, Lahan Municipality, Siraha

“The Musahar community were forced to do labour works but the solar irrigation facility encouraged them to do farming and earn a living.”

Prathamlal Chaudhary, Ward Chair, Lahan Municipality 14, Siraha

Most parts of the terai region of Nepal lack irrigation facilities and depend upon the monsoon and winter rains for crop production. Farmers who are able to pay are using motors operated by petrol or diesel to pump ground water for irrigation because of unreliable supply of electricity. This not only increases the investment for agriculture, but also is contributing to increase greenhouse gases in atmosphere. Given the situation, use of solar-based irrigation system can be a good solution to overcome water scarcity without increasing carbon foot print. Though the initial investment cost for solar-based irrigation system is decreasing over time, the technology is still expensive for household level investment. Looking at the brighter side, the operation cost of the technology is comparatively cheaper since it operates with no cost once it's installed. Climate Change Agriculture and Food Security (CCAFS) has identified solar irrigation system as one of the best climate change adaptation technologies for the terai region (2017 CCAFS).

Musahar in terai are the Dalit communities who are mostly landless and have only few land. Most of them work in local market, and others as daily wage labourers. In Siraha, a project district of RTF project, 6% of its total population are Musahar (CBS 2011). The income of these communities are very low as they are mostly work as labourer in local market or landlords' farm. Landlords provide only 3 kg rice for one day of labor, and they get about NPR 300-500 in market when working as labour. More bitter truth is that most of them do not have land certificates and can't get any access to basic needs such as electricity meter box. Because of lack of proper income, they can't afford fees for education for their children and even for health. Also they have large family staying in the same small house. Some of them lease (adhiya) land from landlords and farm. The story is not different for the Musahar communities in Bhagwanpur and Balanser of Siraha. All of them are staying in public (ailani) land and have no land certificates. Their major source of livelihood is the daily wage labouring. They have the opportunity to improve their livelihood through agriculture but were not able to do so primarily due to the scarcity of irrigation water. Drought being one of the major reasons for their reluctance in farming, they have to resort to labour works earning merely Rs.400-500 per day. Even for the household



purpose women have a hard time managing water for the family and earning low wages for their livelihood. The National Farmers' Groups Federation (NFGF) played a major role in uniting the women of the 25 Dalit households of Balenshar to form a farmers' group called Dalit Mahila Krishak Samuha, and linking that group to LI-BIRD. To address their challenges, the CARE Nepal supported Right to Food (RtF) Project supported and installed a solar irrigation system as a climate smart solution in Balaneshar in 2017 that benefited those 25 households. The project paid the total cost of the installation which is Rs. 3.76 lakhs for solar equipment and an additional cost of Rs. 40 thousands for two borings. The community members provided their labour support to install the system that worth about NPR 22,500. The system is used to discharge ground water and is very easy to operate with a single switch that starts the motor to lift water and distribute using plastic pipes wherever necessary.

Impact of Solar irrigation system in the community

The community who had to resort to labour works for living are elated by the installation and have shown enthusiasm towards farming. All 25 farmers have started taking adhiya to benefit from this installation. They have cultivated vegetables such as potato, brinjal, cabbage, pumpkin, chilli, tomatoes and beans, from which each household saved about NPR 1,000 for vegetable purchases and earned about NPR 2,000 per month in the early stage of the production. Ms. Shyam Kumari Devi Sadaya had taken 15 katha land in adhiya in which many of the parts were left barren and few were utilized for subsistence. Many of the rice she cultivated used to be destroyed at the peak of its growth due to the lack of water. Now, she is getting better yields. She plans to completely stop the labour works and devote her time in farming; utilizing 5-6 katha of land cultivating various vegetables and rice for her family's consumption and sell some to the market. She also mentions that it has been much easier for them to do daily chores due to the easy availability and access to water. Otherwise, they were dependent on river water or boring which would dry up during the summer or the well water "which is very dirty".

Ms. Butni Devi Chaudhary has her own 14 katha land which was left barren due to the unavailability of water. She has taken 10 kathas land at another nearby place where she cultivates vegetables using boring water pumped through petrol to sell in the market. After the installation of the solar irrigation, she has sown wheat and cultivated beans and bitter gourd in her earlier barren land. Mr. Bindeshwor Sadaya has taken land in adhiya in which he has sown wheat in 10 katha, lentils in 7 kathas, potato and cabbage, spice and garlic in 1 katha. During the scarcity, most of his land is barren and it was difficult to manage water. He is very thankful to Right to Food project including NFGF and LI-BIRD. "In addition to consumption for my family, I have earned about 10,000 Rupees by selling these vegetables", adds Mr. Sadaya.

Eight members from the group also constructed the ponds for fisheries to earn some livings that they have never expected to succeed before the availability of water from solar. They kept 125 fingerlings in each pond and harvested to produce 80 kg fish in a season that had led to earning about Rs. 16,000.

Management of the solar irrigation system

The group has prepared a regulation for the use of the system. Though the system operated free of cost, the group has decided to collect Rs. 20 to irrigate per katha land for groups members and Rs. 50 for non-members. While using the diesel, per katha cost of irrigation is about Rs. 150. The collected amount will be added as the group's savings and used for the maintenance of the system.



Local elected Ward Chairperson Mr. Pratham Lal Chaudhary says that he is supporting the dalit community and supporting the organizations working for them. He said that the community were forced to do labour works and this solar irrigation facility will encourage them to do farming and earn a living. He mentioned that the Ward has already proposed to the Municipality to provide seasonal seeds to the community

Climate adaptation benefit of the solar irrigation

Even in climate stress, the solar irrigation system secures water for farming to the Musahar community, enhancing their adaptive capacity through community empowerment, and livelihood and economic improvement that ensures their food security.

Reference

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