Integrated Water and Energy Solutions for Irrigation in Rural India

Sustainable Development Goals Addressed

Organization, Institution or Company
Energy Efficiency Services Ltd, a Public Sector Company under Ministry of Power. Case study recommended by TERI
Location of project site, Country
India
Brief narrative description of objective/project/activity/initiative
India's agricultural sectors consumes close to 20 per cent of electricity in the country. However, in many parts of the country consumption of energy and water is hugely inefficient. In many agricultural areas, farmers are heavily subsidized or not billed for the electricity use in agriculture and water pumping for irrigation. Water leakage is also high in many irrigation systems, further aggravating the problem. The traditional agricultural sector relies on old and inefficient pumps for irrigation. Most farmers cannot afford modern pumps. Inefficient pumps consume much energy and require frequent expensive repairs. During recent years, Energy Efficiency Services Ltd, a public sector company of the Government of India, implemented a comprehensive agricultural demand side management programme. The programme includes various measures. One programme element seeks to advance the use of solar PV mini grids for daytime agricultural pumping. Another programme element seeks to disseminate domestically manufactured high efficient pumps.
Economic, environmental and climate benefits, challenges and lessons learned
The programme offers farmers to replace old pumps with modern energy efficient ones, which can save energy, and be operated by remote control thus only using water when really needed. Under the programme, farmers pay for the new pumps in instalments which are the same or lower than their electricity bill savings. The programme provides win-win-win solutions, saving energy and water, whilst also reducing GHG emissions from the agricultural sector. Farmers who install solar PV for powering irrigation pumps will be allowed to sell any excess electricity to the grid of the local distribution companies (subject to availability of a grid connection). Some estimates suggest that farmers in India may be operating as many as 20 million inefficient pump sets. The more of these pump set are replaced the higher the energy efficient gains. Estimated suggest that India could realize electricity savings in the agricultural sector alone equivalent to as much as 4,300 million kWh. As electricity for farmers is subsidized the Government could, over time, realize some US$3,100 Million equivalent in public subsidies. The agricultural demand management programme will also have significant environmental benefits as it could mitigate potential GHG emissions estimated at nearly 35 million tons.

Additional information: website addresses and contacts
Energy Efficiency Services Ltd website: https://www.eeslindia.org/content/raj/eesl/en/home.html Prayas Energy Group (2018): Understanding the electricity, water, agricultural linkages http://www.indiaenvironmentportal.org.in/files/file/Understanding%20the%20Electricity,%20Water%20&%20Agriculture%20Linkages.pdf

	

Photos by EESL https://www.eeslindia.org/content/raj/eesl/en/Programmes/AgDSM/photo-gallery.html