Profile: DESI Power

Providing green power in India through minigrids

Challenge

Despite its fertile land, the district of Araria in the Indian state of Bihar is one of the poorest in India. To escape its poverty, many young villagers migrate to cities in search of jobs. The challenge is to reduce migration by improving agro-productivity by selling irrigation water to small-scale farmers and creating nonagricultural jobs in the district.

DESI Power empowers rural communities with electricity and irrigation solutions.

Innovation

Founded in 1996, DESI Power (www.desipower.com) provides reliable and renewable electricity and employment to reduce rural poverty and promote economic development by installing and running biomass mini-grids. The mini-grids provide households with light, farmers with irrigation water and agriculture processing, and small entrepreneurs with increased earning opportunities.

From 1998 to 2008, DESI Power built, tested, and modified power plants and mini-grids until it created a technology that worked in the rural context: stand-alone power plants that run on local biomass and solar power. The company now operates mini-grids in 14 villages. To make the business model financially viable, it sells electricity to anchor clients like telecom towers, rice mills, and other clients that use electricity for productive use. It uses the revenues from these customers to cross-subsidize service for household use.

The radius of the larger power stations is one kilometer. People who live outside that power station's catchment area can be connected through DESI Power's tiny grids, which supply 10–20 households with enough power to light their homes, charge their phones, and supply irrigation water.

DESI Power trains villagers to run and maintain the village grid, often employing women. It seeks to create self-reliant villages with a decentralized electricity-driven development process based on local value addition of agro-residues, renewable energy, and other resources. About two-thirds of new income generated stays in the village.

Impact

In the 14 villages in which DESI Power is active, 2,000 people benefit directly from its power. The company's biomass gasifiers provide electricity that is about 25 percent less expensive than diesel-based generation and more reliable. In all villages where DESI Power has installed a plant or set up a solar pump for irrigation, it has replaced the diesel generator sets, reducing CO_2 emissions. In addition, the company has created at least 25 direct and 200 indirect jobs per village.

Scaling Up

DESI Power has scaled up only slowly, partly because of lack of finance. One power plant and micro-grid requires USD 55,000–70,000 of investment. Electricity-consuming microenterprises can create local jobs, but it costs about USD 15,000–25,000 per village to set up businesses and upgrade machines. DESI Power is now in the process of raising funds to build power plants, micro-grids, and some anchor loads in 100 villages, an effort that requires substantial funds.

WORLD BANK GROUP

This series on Inclusive Innovations explores business models that improve the lives of those living in extreme poverty. Editors are Elaine Tinsley and Natalia Agapitova. Researched and developed by Intellecap.

The operations of DESI Power are not yet profitable, because of the large capital outlays, lack of constant load, and fact that no financial arrangements are available to help local entrepreneurs develop their businesses in rural areas. The first pilot power plant in a village was financed by the grant DESI Power won from the World Bank's Development Marketplace. Other donors, such as the Rockefeller Foundation, are providing soft loans and grants to invest in new power plants, micro-grids, and some key anchor loads.

The government's focus on central grid expansion and its lack of support for decentralized power provision, limit scaling up. Without the government's cooperation, DESI Power cannot create a micro-grid using central grid infrastructure, which would enable it to speed up project development and access to many customers. There is no policy that accepts and promotes mini-grids as a means of reaching full electrification in rural areas. A solution for the coexistence and interaction of the centralized and decentralized systems, would greatly improve access to energy in rural areas.