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successstories

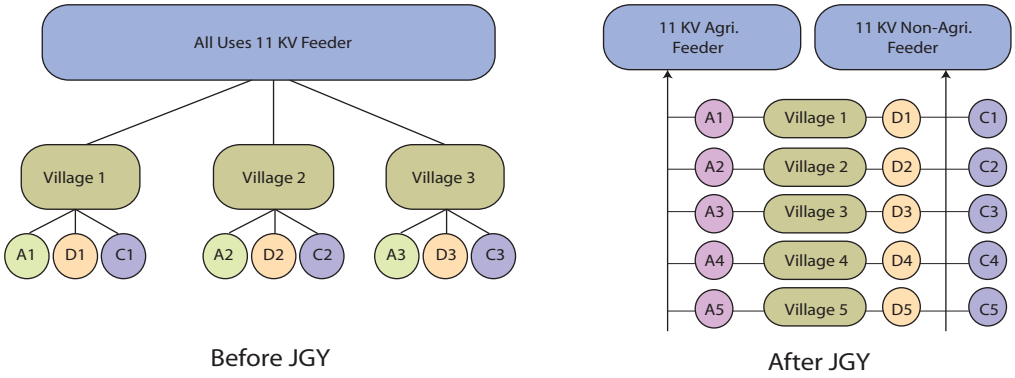
Issue 9 - 2011

Innovative electricity scheme sparks rural development in India's Gujarat State

Rewiring the rural electricity grid led to a surprisingly wide range of benefits

The *Jyotigram Yojana* implemented by the Government of Gujarat reduced farm power subsidy, capped groundwater overdraft and improved the quality of rural life.

IWMI
International Water Management Institute



Separating electricity feeder lines for agricultural and nonagricultural users was the spark that ignited Gujarat's agricultural revolution. kV = kilovolt; Agri. = agriculture; A = agricultural user; D = domestic user; C = commercial user; JGY = *Jyotigram Yojana*. *Source:* IWMI.

An innovative solution

Ten years ago, Gujarat's Chief Minister faced a situation of depleted aquifers, a nearly bankrupt electricity board and powerful agricultural lobbies resistant to metered electricity tariff that would rein in soaring farm power subsidies.

Donors and power experts all wanted the State Government to meter all tube wells and charge farmers a consumption-linked tariff. But strong farmer lobbies opposed the proposal. IWMI researchers had recommended a second-best practical solution with three components: (a) intelligent rationing of farm power supply to match farmers' irrigation needs as closely as possible; (b) a roster of power supply to different villages along a strict time schedule; and (c) supply of full voltage, uninterrupted power to agriculture during the rationing hours to overcome farmer resistance. The suggestions made by IWMI were relevant to the government because it helped achieve its aim of providing 24/7 three-phase electricity to rural households and other non-farm consumers. Under a scheme called *Jyotigram* ("Lighted Village") *Yojana*, USD 260 million was invested in separating electricity feeder lines for agricultural and nonagricultural users to make farm power rationing effective and tamper proof. Combined with other measures, *Jyotigram Yojana* resulted in an agrarian boom, viable electricity utility, reduced aquifer depletion and a happier citizenry in the countryside.

Wide range of benefits

Before the scheme was implemented, main feeder lines served all the domestic, agricultural and commercial connections for a group of 2–5 villages. To ration farm power supply, three-phase power was limited to 8 hours daily. But illegal theft of power by farmers was rampant, causing reduced voltage for non-farm consumers. Feeder separation made theft difficult and rationing effective. Meters were installed on each feeder to eliminate theft. *Jyotigram* benefits were possible only because: (a) the political leadership backed the utility staff in curbing theft; and (b) the government implemented all the three recommendations made by IWMI on intelligent rationing of agricultural power supply. Many other states have embarked on separating agricultural feeder lines, but have not taken on board the other two recommendations made by IWMI researchers. Benefits here have been limited.

By providing a continuous, reliable full-voltage power supply for restricted hours daily, the *Jyotigram Yojana* made it possible for farmers to keep to their irrigation schedules, conserve water, save on pump maintenance costs and use labor more efficiently. These and other benefits helped drive agricultural production to new heights while improving the quality of life for farming families. While the gross domestic product (GDP) from agriculture grew at 2.9% per annum for India as a whole, Gujarat recorded nearly 10% growth from 2000/2001 to 2006/2007—the highest in all India for that period.

Reducing some of the risk involved in farming helped boost on-farm incomes, which meant less out-migration to cities. Some of the most profound impacts were improvements in the lives of rural women. Reliable electricity and higher household income meant that women had a bit more time to spend with their children in the evenings.

Donors and collaborators

Sir Ratan Tata Trust, Mumbai.

For more information

For more information on this and related projects, you can contact IWMI's South Asia Regional Director, Madar Samad (m.samad@cgiar.org) or visit the IWMI website (www.iwmi.org).

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