



## Feed the Future Country Fact Sheet

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# Agriculture Fuels Renewable Energy in India's Rice Belt through Husk Power Systems

About one third of India's population, spread across some 125,000 small rural villages, lacks access to electricity. Although the Government of India has adopted a number of policy reforms to increase power generation, for the most part these policies haven't yet reached the rural villages that most need power, since many are located far from the country's utility grid.

Looking for ways to support energy resources in India, entrepreneurs Gyanesh Pandey and Ratnesh Yadav discovered in 2002 that small rice millers were mixing discarded rice husks with diesel as a way to reduce their diesel consumption and save money.

Pandey and Yadav created Husk Power Systems, which designs, installs and operates biomass-based power plants. In June 2009, the [Overseas Private Investment Corporation](#) (OPIC), the U.S. Government's development finance institution, committed a \$750,000 loan to the company for the development of several rice husk-powered generation facilities. This deal was critical to Husk Power Systems, which had been unable to obtain sufficient funding from the Government of India or private investors to cover its expansion.

Husk Power Systems' process for making electricity from biomass is based on gasification, in which the rice husks are heated to high temperatures, causing the materials to decompose into a mix of combustible gases. The gases are then burned to produce heat or steam that activates a gas turbine and produces electricity.

Because there is such an abundance of rice in India, rice husks offer a steady supply of renewable energy. In 2007, for example, India produced more than 141 million tons of rice. Every ton leaves about a quarter ton of rice husks, most of which is dumped into landfills.

The technology needed to convert the husks to electricity is simple, and well-suited for small rural villages with limited technical capabilities. The entrepreneurs recognized that, when not combined with diesel, the rice husk biomass could be gasified without emissions, resulting in clean energy for local communities.

Husk Power Systems distributes power through a "point-to-point" system that connects each household or business directly to the power station through a main line. A village manager estimates the likely power consumption of each customer based on their lighting and appliance requirements, and this estimate is used to determine an appropriate pre-payment.

A basic connection through Husk Power Systems provides a household with two 15-watt compact fluorescent lights, together with mobile phone charging throughout the period each day that the plant runs (up to eight hours in the evening). Children in these households now have sufficient lighting to do their homework at night and villagers reported an improved sense of security.

Each mini-power plant serves about 500 customers. Husk Power Systems is now working strategically to locate plants in remote villages where it can reach a large number of households. Notably, it has achieved an average penetration rate of 75 percent within the first two months of operation in a new village.

*OPIC mobilizes private capital to help solve critical development challenges and, in doing so, helps open up markets for the U.S. private sector. OPIC supports U.S. private sector investments in some Feed the Future countries through insurance, debt financing and support to private equity funds. [Learn more](#) about OPIC's work with Husk Power Systems.*