

# Claro Energy targets solar-based pumping; in talks with VCs for funding

Its solution has caught the Bihar government's fancy but growth to a large extent is a function of its ability to raise capital, writes Ranju Sarkar



**SOUMITRA MISHRA**  
Partner, Claro Energy

Bunty Singh is a large farmer in Bihar's Gopalganj district. In the absence of reliable supply of electricity, he used to incur ₹2.42 lakh a year on diesel because he had to depend on his diesel generator (DG) set and a 5-Hp pump to irrigate his 40 hectares of farmland.

Last year, he bought a solar power solution for ₹9.5 lakh and hopes to recover this cost in four years by saving on diesel expenses and maintenance of the DG set. Singh doesn't mind the investment.

Besides irrigating his fields, the solar system leaves him some surplus power to charge mobile phones or run a thresher for harvesting grain. More important, he can now grow three crops a year against two earlier—he used to skip the garma season (in between kharif and rabi season) when evaporation is very high and, hence, the diesel consumption. Many farmers in Bihar's Gopalganj and in Nalanda district, home to chief minister Nitish Kumar, have started adopting this solar solution offered by Claro Energy, a Delhi-based start-up which has sold 65 installations in Bihar. Many of these have been bought by state government departments and big farmers. Claro is now working with lenders to come up with a financing plan to bring down the upfront cost for farmers.

The opportunity is huge. Many rural consumers don't have access to reliable power, with states running big peak power deficits: Bihar (30.2 per cent), Maharashtra (27.3 per cent), Uttar Pradesh (26.4 per cent) and Punjab (20.5 per cent). Worse, many states curb supply to agriculture as they are not able to recover the cost of supply or are forced to supply power for free. As a result, farmers are forced to use diesel-fired pumps to irrigate their fields.

Bihar alone has a little over one million privately-owned pumps fuelled by diesel, while state government departments (nurseries, animal husbandry) have 12,468. Uttar Pradesh, the next state Claro Energy is targeting, has a base of three million privately-owned pumps, while state departments have 13,000. States are keen to cut the subsidies on diesel; Bihar gave one of ₹690 crore last year.

"Claro has executed 35 solar pumps, and all are working well," says Kishor Kumar, senior officer at the minor water resources department of the state gov-



**Solar-based pumping at work at a farm near Patna. Claro decided to target Bihar as it had high power deficits and being in the Gangetic plains, the water table was high — five metres after monsoon, and 10 metres in other months**

ernment. Under the Kosi Restoration Scheme, phase II, Bihar plans to restore many of its high-capacity pumps (17-30 Hp) in five districts of the Kosi basin, a World Bank scheme.

There are 275 pumps of 7.5 Hp, which it plans to solarise under this scheme. "The only constraint is cost, which makes it difficult for small and marginal farmers to adopt this," says Kumar.

## The early days

When Kartik Wahi and Soumitra Mishra met at the Kellogg School of Management, US, in 2010, they thought of doing something in the waste management space in India.

They soon realised these would be long gestation periods. Those days, cleantech was the big theme in the US, which coincided with the National Solar Mission in India. Many business houses jumped the bandwagon to set up on-grid solar projects, which saw some 1,000 Mw of capacity going onstream in the last two years. In a sector where technical and commercial losses can be as high as 40 per cent, the duo felt these projects did not make sense. They began looking at off-grid,

decentralised generation and then settled for a solar-based application, like solar-pumping. "We said let's try to generate power where it is needed," says Wahi from his two-room office in Delhi's Lado Sarai village, next to Qutub Minar. This is when they roped in their third partner, Gaurav Kumar, Wahi's batchmate in engineering college. Gaurav, having worked in Punj Lyod, came with strong project execution skills.

They decided to target Bihar, as it had high power deficits and being in the Gangetic plains, the water table was high — five metres after monsoon, and 10 metres in other months. That was the easier part. "Solar pumping was a non-existent terminology. People had heard of solar lights, solar lanterns; nobody thought they could do solar pumping," recalls Wahi.

So, the first challenge was to demonstrate the concept, which they did with demonstration farms of varying sizes, sensitising the state machinery. Claro worked closely with agriculture-focused institutions and state government

## FACT BOX

Area of business  
Solar pumping

Turnover:  
₹2.6 crore

Target:  
₹100 crore  
by March '15

departments (like animal husbandry and wetlands), which bought into the idea after seeing the benefits of the solar pumping. To promote use of wetlands, a state minister came up with the idea of having fish ponds in these areas and using solar pumps to top up the water level, coining an adage, *niche machli, uppar bijli* (fish cultivation below, power generation on top through solar panels, saving space).

## The challenges

Currently, Claro's customer mix is 75:25 in favour of the government, with farmers contributing the rest. It is trying to make it 60:40 and then eventually 50:50. While big farmers have bought into the idea, 80 per cent of them in Bihar have holdings of less than a hectare (2.47 acres). The challenge is to make the set affordable for them.

For irrigating one hectare, a farmer needs a 1-Hp pump and 2-KvA DG set, on which he would incur diesel expenses of ₹41,000 a year if he runs it for 1,000 hours a year (five hours a day for 200 days a year). A solar system with the

same pump and DG capacity will cost a farmer ₹2.2 lakh, which he can recover in four years by saving on annual expenses of around ₹41,000 on diesel.

Claro is talking to banks and other lending agencies to try and bring in a debt package, which will bring down the upfront cost to the farmer. States are doing their bit to promote solar pumping — Bihar, Jharkhand, and Uttar Pradesh have come up with incentive schemes. Claro is participating in these tenders, with some other firms. Bihar's scheme is for installation of 560 solar-powered pumps where the state is extending a 50 per cent subsidy, on top of 30 per cent extended by the Centre. Tamil Nadu and Maharashtra are mulling similar programmes.

"The first three years are going to be sluggish, like it was in wind power or the capacity build-up under the National Solar Mission," says Wahi. In a little over two years (starting in January 2011), Claro posted a turnover of ₹2.5 crore and a small net profit of ₹6 lakh for the year ended March 2012. Getting the state governments to adopt is a huge opportunity, and the firm is looking at a pipeline of ₹100 crore of orders from these schemes.

Claro claims gross margins of 30-35 per cent. But cashflow is volatile, as a lot of it goes in giving bank guarantees (for participating in tenders) or in ramping up the payroll. A key constraint is funding, or the lack of it, which could hurt growth. Though its model is not capex heavy — it places an order for equipment when it gets one — lack of capital will inhibit its ability to grow. It doesn't have access to working capital; a credit line of ₹1-2 crore could do it a world of good. Banks don't give unsecured lending, and want collateral.

"We are 29-year-olds, with no assets. Our only access to funds is friends and family; we operate on a build-to-order model," says Wahi. Claro is in talks with VCs and hopes to rope in an investor in three-six months. Experts say there's demand for Claro's solar pumping solution as costs (rentals go up sharply) and availability of DG sets during the season is an issue, and enjoy states' support. "The model is scalable but in a B2G (business to government) business, you need deep pockets," Praneet Gupta, head of strategy, Cummins, said in his personal capacity.

## EXPERT TAKE



"We believe Claro has a great founding team and a viable business model of working in partnership with governments. This can be augmented by directly engaging with farmers and community-level sales. Every horse power of installed solar pumping by Claro Systems would ensure irrigation to four to five small farmers, who would improve their productivity by about 30 per cent and save the government and farmers \$1,000 in diesel costs and 3.15 tonnes of carbon a year. India is a water-stressed country, and agriculture already accounts for about 90 per cent of water withdrawal. We hope Claro develops frameworks for sustainable water withdrawal through integrated watershed management in the areas they operate. Claro also needs to ensure it, along with the government and the community, is responsible for long-term productive use of the pumps installed. Otherwise, like most government projects earlier, despite all the good intent, there would be a graveyard of defunct projects in five to seven years."

*Karthik Chandrasekar, managing director, First Light Accelerator, an early-stage venture capital fund which has been evaluating Claro Energy for investment*



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