

Bhutan banks on 'white gold' hydropower

July 7 2013, by Rachel O'brien



The Bhutanese border city of Phuentsholing pictured on May 29. Home to meditating monks and Himalayan nomads, the sleepy kingdom of Bhutan has set its sights on becoming an unlikely energy powerhouse thanks to its abundant winding rivers.

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Hydropower plants have already harnessed the country's water flows to

light up nearly every Bhutanese home, [generating electricity](#) that is sent to remote villages by cables strung through rugged mountain terrain.

It is a rapid transformation for the long isolated nation, where less than a quarter of households had electricity in 1999—the same year Bhutan became the last country to introduce television.

But the kingdom now has much greater ambitions for renewable hydropower—already its biggest export—which it hopes will provide more than half of its [gross domestic product](#) by the end of the decade.

"It is the white gold for Bhutan today," said Chhewang Rinzin, managing director of state-owned Druk Green Power Corporation, which runs the country's hydropower sector.

Bhutan's first megaproject, opened in the southwestern Chukha district in the 1980s, is now one of four major plants which between them have almost 1,500 megawatt capacity—at peak output roughly equivalent to a large [nuclear power station](#), and only five percent of Bhutan's hydropower potential.

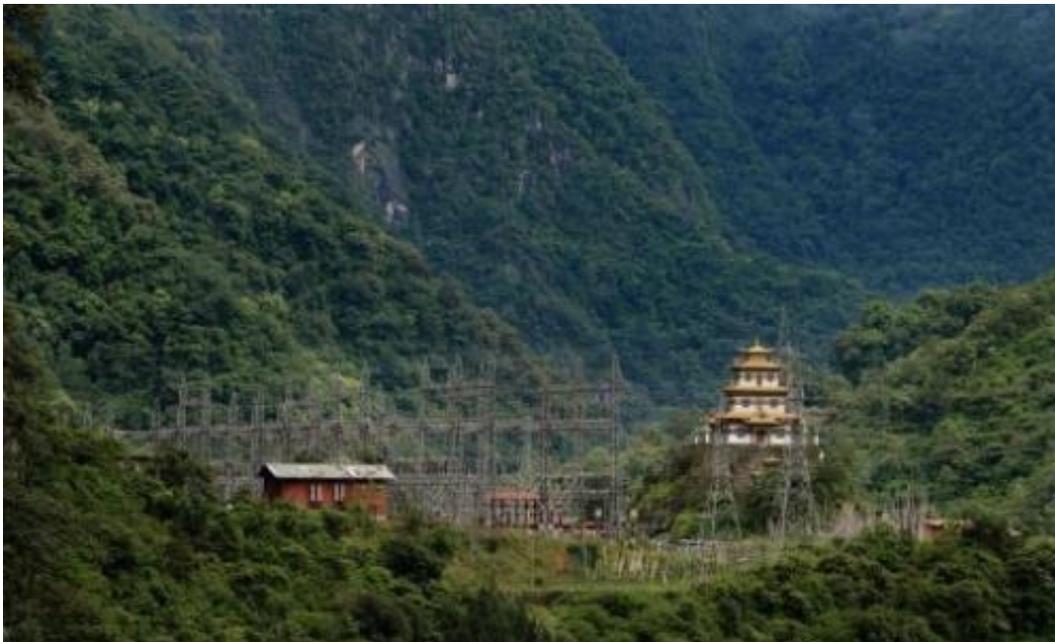
Already going far beyond domestic needs in summer months, when [monsoon](#) rains fill up the rivers, most of the electric power is sold to India, Bhutan's giant energy-hungry neighbour.

In cooperation with the Indian government, and funded by its grants and loans, the kingdom is now aiming to reach capacity of 10,000 megawatts by 2020 through the building of 10 new plants.

In contrast, politically deadlocked and once war-racked Nepal has just 700 [megawatts](#) of installed capacity, despite being among the top potential hydropower producers in the world according to the World Bank.

"India we see as a market that cannot be satisfied," Rinzin said of the demand for Bhutan's [natural resource](#), which is driving [economic growth](#) estimated by the Asian Development Bank at 8.6 percent this year.

While hydropower is hailed as the country's ticket to self-sufficiency after years of depending on donors, there are reservations about the speed and scale of its development while other sectors of the economy lag behind.



A Buddhist temple sits near an electricity grid main of the Chukha hydro power station in south-eastern Bhutan, on May 29, 2013. Home to meditating monks and Himalayan nomads, sleepy kingdom has set its sights on becoming an unlikely energy powerhouse thanks to its abundant winding rivers.

One of the first new plants being built, the Punatsangchhu I project, is projected to cost about two billion dollars—more than Bhutan's total gross domestic product. And there are nine more projects to complete.

"While no one disputes that harnessing hydropower energy is the way to go, there is concern that Bhutan is trying to do too much, too soon," said an April editorial in the national Kuensel newspaper, titled "Drowning in hydropower".

At the Chukha plant, colourful murals depicting the Buddha's life-cycle contrast with the whirring machinery but hint at the country's unique development model of pursuing "Gross National Happiness" (GNH).

Retaining Bhutan's Buddhist cultural identity and protecting the environment are key parts of the GNH philosophy, which aims to balance the financial advancement of the nation with spiritual well-being.

The existing hydropower schemes are all "run of the river" sorts that depend on natural water supplies rather than large reservoirs, designed to cause less disruption to their surroundings.

But three reservoir dams have been proposed among the upcoming projects to ensure plentiful water in the rain-free and freezing winter months, when power output currently drops by about three-quarters.

Rinzin says Bhutan's steep and sparsely-populated valleys will suffer much less impact than areas affected by big Indian or Chinese reservoirs—the number of households displaced is in the hundreds rather than thousands.

But Samir Mehta, South Asia programme director at US-based watchdog International Rivers, expressed concern at a lack of transparency around the proposals and their impact. "The level of public engagement is not known," he said.

He warned that [hydropower plants](#) also face serious threats from climate

change, given Bhutan's susceptibility to floods from lakes formed high in the mountains by melting glaciers.



River flows under prayer flags on its way to the Chukha hydropower plant, in south-eastern Bhutan, on May 29, 2013. Home to meditating monks and Himalayan nomads, sleepy kingdom has set its sights on becoming an unlikely energy powerhouse thanks to its abundant winding rivers.

In the capital Thimphu, people have other concerns on their mind about hydropower's rise, sometimes described as "jobless growth".

Despite its dominance in Bhutan, Druk Green has a staff of only 1,800, expected to rise to no more than 6,000, in a country where unemployment is a growing worry among its youthful population of 736,000.

The construction phase is more labour-intensive, but only 10 to 15 percent of these jobs are going to the Bhutanese by Rinzin's calculation, as most of the building work is carried out and overseen by Indians.

"It's money in and money out," said Tenzing Lamsang, editor of The Bhutanese newspaper. "Your own companies are not making the money that they should."

The kingdom, which is holding its second parliamentary elections after shifting to democracy in 2008, is already hugely dependent on India for imports and soaring demand led it to run out of Indian rupee supplies last year.

Many think the flurry in hydropower development, and subsequent demand for costly imported equipment and machinery, exacerbated the crisis.

While he believes in hydropower's long-term benefits for Bhutan, Lamsang says the financial and environmental concerns show that it should not be relied upon to the cost of other industries.

"The danger here is that we put all our eggs in one basket. If the basket does fall or something happens to the basket, then we're in for a lot of trouble."

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