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THERE'S POWER IN NEPAL'S HILLS

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KATHMANDU, IDRC -- It is night time on the Godavari Road in Nepal's Kathmandu Valley. There is no moon, no electricity in the town or the villages, the night is as black as velvet. On such a night it is easy to understand why Nepal was once known as 'The Forbidden Kingdom'.

Yet out of the darkness in the village of Thaibo appears one single house, ablaze with light. On closer investigation the light proves to be several fluorescent tubes lighting both levels of a two-storey house that is set back some 20 metres from the road. The source of power is a small water mill.

With its hilly terrain and hundreds of rivers and streams fed by the permanent snows of the Himalayas, Nepal has long relied on the water mill as a source of energy. Though accurate statistics are lacking, there are thought to be as many as 25,000 traditional horizontal water mills in the hilly areas of the country.

But once inside the house it is apparent that this is not a traditional water mill. The ground floor is a single biggish room with cattle and chickens on one side. The rest of the space is taken up by a 220-volt generator, a rice dehuller, a flour mill and an oil expeller. Outside is a small thresher. All these appliances, and the lights, are worked by water power -- with a drop of less than 2.5 metres.

.../2

The heart of this mechanical wonder is a power unit designed and constructed by Akkal Man Nakarmi and his helping hands. He and his father have been building better water mills and improved milling devices for the past 20 years. Dozens of their machines are to be seen in various parts of the country. All are based on traditional Nepali technology, simply updated with modern improvements, so the machines are easily understood, operated and maintained by the village folk.

The machines are very efficient, and because they do not have to be imported at the cost of precious foreign exchange, and require no costly parts or maintenance, they are very competitive with foreign-made products.

But it is the versatility and effectiveness of their latest model that has brought the works of Akkal Man Nakarmi and his father a great deal of attention lately. The machine at the house in Thaibo is what they call the MPPU - for multipurpose power unit -- and it has some remarkable features.

Easy to install, the unit is modular and can be dismantled into conveniently portable loads for carrying to more remote villages over mountain paths. It can replace a traditional mill at relatively low cost (complete with generator, the MPPU costs about Rs.16,500 -- or US$1400), it is from four to eight times as efficient, and once in place it requires minimal upkeep.

Through primarily intended for direct mechanical power take-off the MPPU can be used solely for electrical power generation. And if there is no water source available it can be driven by any other convenient power source -- animal power, biogas, wind energy, even a combustion engine.

Intended initially as a simple village mill, the MPPU has since proven its worth as a power source for cottage industry. It can be used to run several

.../3

small machines, such as a saw, plane, or lathe for woodworking; it can power looms to weave silk or cotton; and it has even been adapted for use in a blacksmith's shop. In the home it can run a 3 kw generator to provide power for lights, radios, a small refrigerator, and charge batteries for other power needs.

Given all these advantages it is not surprising that the MPPU has attracted considerable attention since its first test run a year ago. The Agricultural Development Bank is considering low-cost loans to assist farmers to obtain the units; the neighbouring Kingdom of Bhutan has placed a preliminary order for four units; and enquiries have come in from India and Sri Lanka, and as far afield as the Philippines, Germany, and Switzerland.

Interest in water power is very high in Nepal these days. The Research Centre for Applied Science and Technology (RECAST) of Tribhuvan University is also studying development of small-scale water turbines and improvements to traditional water mills, and has taken a great interest in the MPPU.

At a workshop on renewable energy resources in Kathmandu earlier this year, participants stressed the urgent need for small-scale decentralized energy devices like the MPPU. It was pointed out that if all of those 25,000 traditional water mills could be upgraded to deliver 3 kw of electricity each, rural electrification could be achieved without the need for costly pylons and transformers, and miles of high tension wires.

Meanwhile, Akkal Man Nakarmi and his father, like the good inventors they are, are already working on improvements to the MPPU to make it even more versatile. And they dream of the day when the hills of Nepal will be dotted with their power units, bringing prosperity to the countryside.

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