

# Self generation for self consumption

by Tharuka Dissanaikie

**The Sri Lankan Government over the past few months has been actively promoting the concept of private generation of power for self consumption especially among the industrial and corporate sectors, in a move to resolve the power shortage problem, once and for all.**

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Never has power generation been as much in focus as it is now. In the good old days people watched in awe as volumes of water thundered through the gates of the Victoria dam. Today, however, the picture is quite different. The Victoria Reservoir does not have enough water to open its gates. Nor has any other large scale reservoir in the country at least not enough water to feed the ever expanding grid, servicing an ever expanding industrial and commercial sector.

Therefore, of late, power generation of any kind is looked upon with warm welcome. This was obvious at a recent opening of a small scale hydro plant at Dickwella. The plant was built by a private entrepreneur and the 1.2 MW of electricity it generated was all fed to the grid. But what was most interesting was the presence of a large number of CEB (Ceylon Electricity Board) officials there as well as the chairman Dr. Leslie Herath. This was ample evidence to show that the government is opening doors for private power generation and is even ready to buy generated electricity at a unit price.

During the past four months or so, the CEB and the Ministry of Power and Energy has been actively encouraging the concept of “self generation for self consumption”. Since February, they prompted industries and offices to purchase their own generators, the import duty of which would be paid by the government. This was mainly done as a measure to soften the blow of the power crisis on industries. But the idea caught on. In April, the BOI (Board of Investment) put out an advertisement calling for BOI approved projects to from those who are interested in private power generation, offering monetary grants for such projects.

In the estate sector, there are already two grid-connected micro hydro plants (installed capacity is below 100 KW) which are in operation. These small power plants are rehabilitated versions of the old British estate plants. The power generated from these plants were used for their tea factories and the excess power is fed to the national grid at a predetermined price. The CEB, has openly welcomed these small scale attempts at private power generation as a positive step towards reducing the industrial burden on the national grid and of conversly boosting the to grid capacity. "With regard to it small-scale plants generating 5MW or less, we will buy power as and when they generate. But plants of with larger installed capacity will A have to come to a definite Power of Purchase Agreement with the CEB before they commence", said an official of the CEB.

The BOI, very concerned about the impact of power shortage on foreign investment in the country, has introduced a novel scheme to encourage industrialists to generate their own power. The BOI will give a grant incentive of Rs. 3 million per MW installed to projects that have BOI status. The industrialists could choose their own source of power be it hydro or diesel. Any imported equipment would be released to the industrialists duty free. The projects qualifying for this grant will necessarily have to be registered under section 17 of the BOI law no.4 of 1978. Another qualifying factor is that the company should be willing to install a plant with a minimum generating capacity of 250KW or higher. Those companies who are interested in the scheme should be able to commission the generating plants by the end of September this year. Under the scheme, BOI will request the entrepreneurs to generate their own power from time to time as and when there is a power shortage. A company can choose to utilize their generator during other periods also but will not be under any obligation to do so. Those enterprises receiving this special BOI package will not be entitled to any CEB concessions or incentive. The companies are free to come to an Independent agreement with the CEB to sell excess power to the grid should they so require.

"Already we have had some 160 inquiries on this scheme. We are now in the process of qualifying the projects for the scheme", said Vidarshan Fernando of the BOI.

While the state sector has it's valid reasons for promoting private generation, it is interesting to observe the private sector also investing in and encouraging power ventures. DFCC (Development Finance Credit Corporation) approved loans for and shared in the equity of the Rs. 88 million Dickwella power project. The plant

which was commissioned in April, uses hitherto unutilised water of the Dick Oya to activate six turbines of 175 KW capacity each. The power project was built and run by Vidya Silpa. It is owned by a consortium of shareholders identifying themselves as Hydrotech Lanka Dick Oya (Pvt.) Ltd. The company is also involved in other mini hydro power projects in the water-rich hill country. The plant supplies some 8.6 million units of electricity to the national grid every year. Each unit of electricity is sold at nearly Rs.3 per unit. DFCC Managing Director M.R. Prelis, speaking at the opening of the plant said that although the finance company took a certain risk in investing in this pioneering project, he was sure of the returns. The DFCC agreed to release loans for this project even before the power Purchase Agreement was signed with the CEB. Mr. Prelis said that private sector investment in micro hydro power projects is economically very profitable. Unlike in large-scale hydro projects, the dangers to human and natural environment in small-scale hydro power projects are lessened to a great extent.

The central highlands of Sri Lanka has enormous potential for micro hydro power still untapped. Small hydro stations need no large-scale deforestation, evacuation or dams. They operate on the simple principle of hydro power water channeled through small concrete weir to a pipeline which is connected to a turbine which is eventually connected to a generator. The water flow is thus converted to electricity.

The tea (and some rubber) estates of the hills have an edge over others when it comes to hydro power generation. This is because a large number of estates still have plants that were built by the British planters long before the grid lines ever reached them.



This means that most estates already have the necessary field work done for them a site found, pipelines and channels built and machinery in place. Of the some 450 plants that existed in the estates only a handful are still in running condition. Some have just been left to rot. The estate sector became interested in rehabilitating existing plants when grid electricity became increasingly expensive. Ranil Senaratne of Fentons (Pvt.) Ltd., who rehabilitated the Thalawakele estate hydro plant which is now connected to the grid, said that the plant was running prior to it's rehabilitation at a capacity of 20 KW. Today, it has an installed capacity of 100 KW. The plant has enough water supply to run at capacity for an estimated eight months per calendar year. "An interesting aspect about the project is that it has managed to use mostly locally manufactured equipment to redo the plant. Only the alternator was purchased from abroad", Senaratne said. The electrical parts were fabricated by Fentons while the mechanical parts were done by another local concern. This has brought the entire project cost down by as much as 75 percent. "When normally it would have cost only Rs. 2.5 million." Senaratne said. The project was completed last February (1995) and was grid connected in September. According to Senaratne the plant cost could be recovered by the end of next year and thereafter the owners could earn a total profit from the generated power.

He added that the project was running smoothly upto now and that the Fentons were ready to deal with any repairs that could come.

Intermediate Technology Development Group is an NGO (Non government Organisation) whose scope of work includes micro hydro power development. They have been involved in aiding the rehabilitation of estate hydro plants and also developing hydro schemes for villages not serviced by the grid. The group is particularly interested in promoting local fabrication of machinery used for power plants.

Already they have installed locally fabricated turbines at several estate plants. Fabrication of a large, nearly 1 MW turbine for a mini hydro site is currently underway. The NGO pays special attention to promote self-employment in the manufacturing and maintenance areas of micro hydro power development and they conduct a micro hydro training programme for locals at minimal cost.

Therefore considering the over- all picture, one could conclude that the growing interest in power generation and exploiting the potential for small-scale hydro

plants has resulted in many governmental and other organizations gearing themselves for the increased demand. The interest in promoting environment-friendly, long-term economical technology is certainly a healthy trend as is promoting local industry in manufacturing parts and training technicians. With threats of a continuing power shortage, the coming months will only see more and more interest in private generation.