

Generation of Hydero Power from Small Sources to Support Manufacturing in Rural Areas of North East India

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1. Introduction

Power is basic requirement of all economic activities. Without energy to run our industries, whether small, medium or large, no industrial activity can flourish. In the remote areas of our country, particularly in the lesser developed north east, it is imperative that we tap whatever feasible sources of power generation that exist.

The north eastern region is topographically hilly with numerous sources of water be it small streams flowing down the several hills or the mighty Brahmaputra, whose power generation capacity has not yet been accessed accurately. The large hydro electric projects which will have individual capacities of several thousand MWs (like Subansiri 2000MW and Dibbing 3000MWs) are being investigated by the Government of India, as they are beyond the scope of the state Government. However, numerous sites exist in the northeast which will be in 10s or of KW or a few MW.

These smaller sites have the following very distinct advantages.

- Being small they cost less and as such the funds can be organized rather easily.
- Such sites are dispersed and can be easily located close obviously minimizes the cost of power transmission. In its wake it adds to other advantages like reduced transmission losses and lesser maintenance.

- The very remote areas of the NE region (in Arunachal Pradesh there are numerous villages each with ten or less households) are located several KMs from the nearest road.

Hydro power generation, unlike thermal, is very eco friendly. Even more so, whatever disadvantages that exist for large hydrous, like storage dams etc are generally absent for small hydrous. Normally the storage capacity is very low. At most sites it is almost nil. This of course, has an inherent disadvantage of reduced generation during the winter season.

The location of such projects is so selected that the low discharge can fulfill the demand for the evening power requirement. In many cases support is provided by Diesel generation or solar power.

2. History of Development

India celebrated the centenary of Hydro power Development on the 10th November 1997. The first hydro power station in India was installed at SIDRAPONG near Darjeeling in West Bengal. The initial installation was two sets of GUNTHER turbines rated at a head of 275 ft and a capacity of 65kW each. Darjeeling was the summer capital of India during the British Raj when the capital of India was at Calcutta prior to being shifted to Delhi. The first hydro station was closely followed by Shillong (present day Meghalaya). The hydro

station planned and installed by Sri M Viswesaraya was a close follower. The hydro station at umtru and umiam near Guwahati were developed only after independence.

3. Private Sector

Private sector involvement in hydro power generation in the north east had been and even now it is almost nonexistent. Arunachal Pradesh, which has the maximum number of hydel stations, does not have any running station owned by the private sector. Some sites were allotted to few private parties but their performance till date is very dismal. some privately owned stations were installed near Margheritta in Upper Assam for some British owned tea estates but were later closed down mainly due to the obsolescence of design.

New developers are only now stepping into this field. Some stations were developed by a South India company primarily engaged in road construction. A local enterprise Messrs Agnipa Energo pvt Ltd has started the construction of the 2.0MW pohumara SHP near pathshala. The Rani Kalmoni SHP only about 25 km from Guwahati near the Meghalaya border had made a good start but was stopped due to the unfortunate violent death of the developer.

The main reason for such hesitance of private developers to invest in the hydro sector is the high

cost of the hydro projects and the very long gestation period.

One good possibility for the small hydro power projects is to provide lighting and heating power for our forces in the remote northern Himalayan borders. This prospect is being developed by the India army and other paramilitary forces.

Many SHPs were developed by private Tea Estates in the Darjeeling and Doors areas in northern West Bengal. they have been running very well. The tea industry and hydro power generation are in a kind of 'Made For Each Other' situation as both run well during the rainy season. It is unfortunate that the tea estates in Assam have not been able to take much advantage of this situation.

The SHPs in most locations are not Grid Interactive i.e. they cannot be paralleled and connected to the power grid due to technical reasons. The capacities and the generation voltage of SHPs are comparatively very small as compared to the grid power owned and run by the large generators.

Small hydro power is virtually a free mode of power generation as absolutely no fuel cost is involved. The only recurring cost is towards interest on invested capital funds, depreciation and very small amount of operation and maintenance. Once installed this mode of power generation continues to supply power for years.