HYDROPOWER PROJECTS ON IRRIGATION CANALS

By

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Facing massive loadshedding, the Punjab Government Plans to create additional capacity for generating electricity by exploiting optimally its energy resources.

On November 6, the provincial government signed cooperation agreements with Chinese companies for developing wind and solar power projects of cumulative capacity of 1,200 MW and hydropower projects of total capacity 120 MW. Earlier, it had announced setting up of coal-based power project of 200 MW.

Five hydropower schemes of cumulative capacity of over 24 MW are to achieve commercial operations within two to three years' time. International tenders, inviting proposals on turnkey basis that cover design, engineering and supply of electrical and mechanical machinery, construction and commissioning of power plant have been issued. The projects are being financed by the Asian Development Bank (ADB) under its Renewable Energy Development Sector Programme.

The hydropower projects, each ranging from 7.64 MW to 2.82 MW capacity, are to be located on various irrigation canals. Marala project of 7.64 MW capacity is to be located in district Sialkot and Chianwali (5.38 MW capacity) in district Gujranwala, both on the Upper Chenab Canal.

Okara hydropower of 4.16 MW capacity will be installed on Lower Bari Doab Canal in district Okara, whereas Deg-out Fall project of 4.04 MW is being constructed on Upper Chenab Canal in district Sheikhupura, and a hydropower of 2.82 MW on Pakpattan canal. The hydropower stations, for which detailed feasibility studies were carried out in the recent past, will be interconnected with national grid for sale of power in bulk to the Wapda and NTDC (National Transformation & Dispatch Company) system.

Punjab's canal falls, barrages and rivers have a potential of generating about 6,000 MW for which 330 suitable sites have been identified and eight medium and small hydropower stations are in operation since long.

Under the Power Policy 2002, hydropower projects of capacity up to 50 MW are to be developed by the provinces. In the first phase, projects of about 300 MW cumulative capacity can be developed within a short span of time. There are more than 35 sites identified as potential projects of total capacity of 160 MW on canal falls located in Lahore, Faisalabad, Multan, Sargodha, D. G. Khan and Bahawalpur zones.

Detailed feasibility and environmental studies for most of these projects have been conducted by international and domestic consultants, whereas reports for others are at various stages of processing. Feasibility reports are ready for C. J. Link Canal project (44.30 MW), Rasul hydropower on River Jhelum (20 MW), Punjnad hydropower on River Chenab (15 MW), B. S. Link-1 Canal project (11 MW) and B. S. Link-1 (Tail) hydropower project (9 MW). There are another 22 projects for which feasibility studies are under preparation.

These include T. P. Link Canal project (10 MW), L. B. D. C. project (4.8 MW), Abbasi Canal project (4.70 MW), S. M. B. Link hydropower (4.48 MW), T. P. Link Canal-I project (4.23 MW), T. P. Link Canal-II (4.04 MW), B. D. C. project (3.30 MW) and other small projects of total 30.44 MW capacity. There are another 248 raw sites for which feasibility studies have yet to be undertaken.

Projects of below 50 MW capacity being developed by the private sector are Bambanwala-Sialkot hydropower of 6.29 MW on Head Main Line Upper Chenab Canal and Gujrat of 3.20 MW on Gujrat Branch Canal. In addition, there are ten projects of total capacity of 125 MW proposed on various barrages on Chenab, Jhelum, Ravi and Sutlej rivers.

Development of hydropower potential in Punjab on a large scale was rather over-due, which was initially assessed by Wapda sometime in 1992 ; Wapda was not allowed to implement these projects. Instead, the Punjab Government decided during 1995-1997 to develop these projects through private sector, having issued LOIs for setting up power stations at 22 identified sites. Not a single project however could materialize primarily due to lack of interest by investors. The provincial government too did not show keenness to develop the projects.

Later, in 2006, the government of Punjab evolved a policy for implementing hydropower projects in public or private sector under public-private partnership. Simultaneously, it launched its first hydropower project Khokhra of 3.20 MW on Upper Jhelum Canal utilising its own funds. But it too failed to take-off. Then, private sector was invited in 2007 to develop a number of projects totalling 13 MW on BOOT (Build, Own, Operate and Transfer) basis for which feasibility reports were to be prepared by investors. Again, there was not much progress on the projects.

In fact, the investors lost confidence due to inconsistent policies. Meanwhile, the Alternative Energy Development Board (AEDB) had introduced the Renewable Energy Policy, taking over authority and resources resting with provincial governments for developing small hydropower projects of 10 MW and above capacity. This policy too did not bring any results, in spite of extending numerous fiscal and financial concessions to prospective investors.

Another important factor causing inordinate delay in harnessing hydropower potential is the lack of support to indiginization of hydropower machinery, equipment and technical services. Facilities, capacities and capabilities exist to manufacture sizeable machinery required for medium hydropower projects and, more importantly, to undertake implementation of small mini hydropower schemes on turnkey basis.

The requisite technology however is essentially to be made available by foreign sources, under technical collaboration arrangements or joint venture agreements. The government needs to encourage local engineering industry through transfer of technology and adopting methodology of standardising modules for small and mini hydropower stations, wherever feasible, for achieving economy of scale.

Punjab has taken a lead in developing its energy resources, particularly hydropower on a fast-track basis. However, it needs to ensure expeditious award of contract and timely execution of projects to reap the benefits of cheap, renewable and reliable hydropower in these testing times of power shortages and ever-increasing tariff.