


Case for Hydro

Key to ensuring country's energy security

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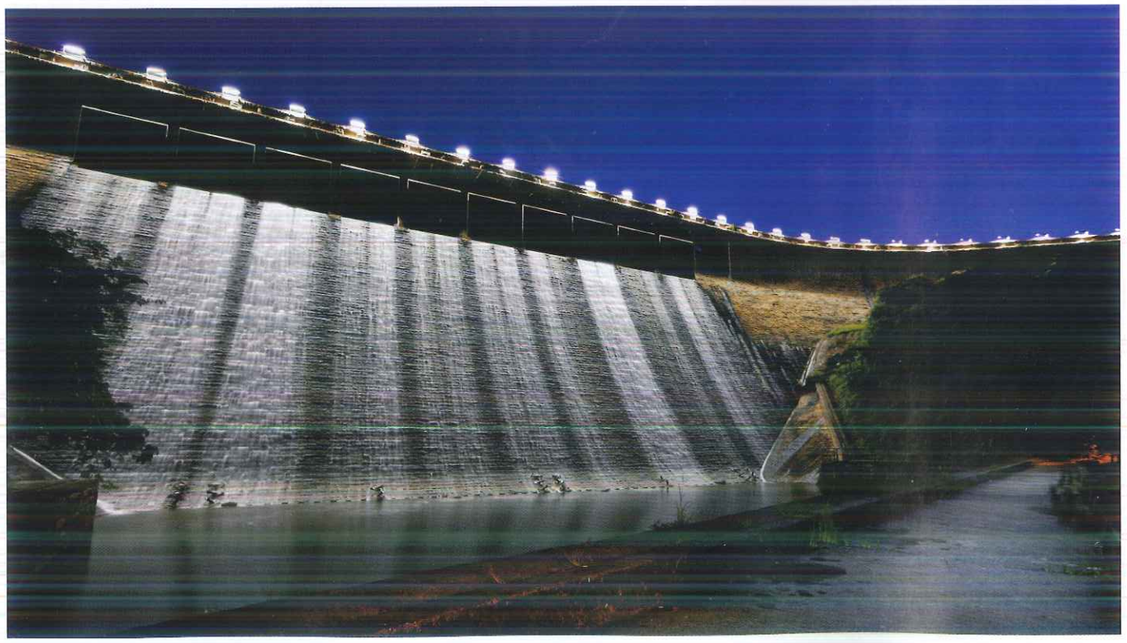
Electricity is *sine qua non* to India's economic growth and development. Although the country is projected as an emerging economy, large parts of it still remain in darkness. According to the India Brand Equity Foundation, in 2015, the total thermal installed capacity stands at 189.3 GW while the hydro and renewable energy installed capacity amounts to 41.6 GW and 35.8 GW respectively. Nuclear capacity, which remained the same during 2010-14, increased significantly to 5.8 GW. A number of issues pertaining to tariffs and distribution models have led to the power supply crunch in both remote and urban areas of the country. Under-utilisation of the various power generation sources has been one of the major obstacles in meeting the growing demand for electricity. If we realign our focus on hydropower we might be able to bridge the gap.

Not many countries are blessed with the resources needed to generate hydropower. But countries like Norway, Switzerland and Canada have harnessed their resources to the fullest and show an impressive achievement in this area, with the share of hydropower standing at 99 per cent, 76 per cent and 59 per cent respectively. When it comes to hydroelectric potential, India ranks fifth globally. Since Independence, the country's hydropower capacity has increased from 508 MW to about 41,650 MW. While this leap is laudable, one must realise that the share of hydro in the country's total power portfolio is not very impressive. As per reports by the Central Electricity Authority (CEA), the share of hydro capacity has been gradually declining over the past few years. If this trend continues, it is expected that the share of hydro in the country will come down to a mere 15 per cent by 2020.

Advantages of hydro plants

However, there are inherent advantages associated with hydropower. It is a flexible source of electricity as its stations can be ramped up and down quickly to adapt to changing energy demands. It takes 60 to 90 seconds to bring a unit from a cold start to full load. This is much shorter than the time taken by gas turbines or steam plants. In addition, hydroelectric dams do not directly produce carbon dioxide as they do not burn fossil fuels. Further, a hydro plant can be in service for many more years as compared to conventional or even other renewable energy plants. Tata Power's hydro plant commissioned in 1915 is an example.



Hydro plants are multi-purpose. Besides supplying power, they can be useful in irrigation. And, if conceived appropriately, they can be operated as pumped storage plants to provide peaking power at an economical cost. Hydro plants not only require minimum maintenance but they also provide stability of power tariffs. Unlike thermal plants, hydro plants do not require fuel, thus leading to zero expenditure on resource imports.

Issues faced by hydro plants

While the inadequate growth of hydropower projects in India can be attributed to a host of challenges faced uniquely by this sector, the same is compounded by the recent market condition of low tariffs. However, low tariffs are not based on any economic principles but are a result of the poor fiscal condition of the buying discoms as well as lack of choice of sales to willing buyers due to the non-availability of the transmission corridor and the lack of amenable open access conditions. Besides, due to the prevalent construction norms, the capital cost of a hydro plant falls in the range of Rs 100 million-Rs 120 million per MW.

The way forward

To build India's hydropower capacity, power purchase planning in the country must not be based solely on current power tariffs. The discoms need to consider the future scenario as well. All stakeholders need to consider an appropriate mix of hydro in their portfolio of bulk power purchase by a discom for better energy security. In addition, the Electricity Act envisages the enforcement of the renewable purchase obligation (RPO) with a view to encourage the development of renewable sources. At present, the renewable sources are restricted to small-hydro projects (SHPs) of less than 25 MW size. The responsibility of managing SHPs is with the Ministry of New and Renewable Energy and the objective is to address the power problems in remote and inaccessible areas of the country.

The country has received a positive response to the setting up of renewable energy projects such as wind and solar. However, as large hydro plants are not a part of these renewable sources, they are not a preferred source to meet the RPO. Notwithstanding the above, in view of the distinct advantages of hydro plants over renewable source like wind and solar, it is necessary that the concept of a hydro purchase obligation be implemented, in line with the RPO.

The government's present policy allows for hydropower plant tariffs to be determined by the regulatory commission under Section 62 of the Electricity Act. At the same time, several investors have shown interest in setting up merchant hydro plants and have been awarded contracts through competitive bidding. However, in view of the present low merchant prices and the fact that projects have been delayed due to factors beyond their control, many projects have either become unviable or have not yet started construction. Therefore, it is necessary that power from these projects is sold on a regulated basis, that is, the tariff should also be determined by the regulatory commission under Section 62 of the Electricity Act.

Also, the lack of basic infrastructure hinders the progress of all hydro projects and increases the risk of the project not being completed within the time and costs envisaged at the beginning. It is imperative for the above infrastructure to be built in time and monitored satisfactorily by the state and central authorities in order to ensure that the hydro project is completed on schedule.

There are several hydro projects in states like Himachal Pradesh, Uttarakhand, Arunachal Pradesh and Sikkim where many developers have been holding implementation agreements or MoUs for years together with no progress. A central team of experts including the CEA, the Ministry of Power and the state power secretary should come together to take this forward. The lending institutions are mostly comfortable with a loan tenor of less than 10-12 years. However, keeping in mind the long life of a hydro project and the aim of reducing its tariff, soft loans with long tenors could be extended to hydro projects.

Climate change and other negative effects of using fossil fuels for power generation, along with the growing concerns over energy security, are driving the expansion of hydropower around the world. India is endowed with rich hydropower resources, which makes this one of the most important potential sources to meet the energy security needs of the country. We must not lose sight of this, or the opportunity. ■