

Decision Making in the Electricity Bureaucracy: Case of Budhi Gandaki

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Abstract: There is a power shortage in the Nepalese market and in the peaking demand as well. This clearly indicates the need for storage type hydropower stations. The Budhi Gandaki (storage) Project (BGP) was identified and studied in 1983. The project has been proposed with an installed capacity of 600 MW by constructing a 225 m high dam on Budhi Gandaki River in central Nepal. The main attraction of this project is its nearness to the load centers. The government of Nepal decided to implement the project for more than three times; but there were no seriously interested investor. It has been 25 years that we have been talking about this project; but why the project is not happening is a crucial question to be addressed. Only recently, six developers have shown interest to develop it in association with the Nepal Electricity Authority. It is also interesting to know about the status of this project that has been left untouched since early studies in the 1980s. Further, there is a proposal of a road construction network in the BGP site area which might ruin the project.

Key words: storage type hydropower projects, downstream benefits, private investment, resettlement and rehabilitation

Introduction

Despite Nepal's vast hydropower potential, less than 2% of the potentially economically feasible hydropower production has been achieved. The people are bearing power cuts for more than 16 hours a day in the dry season. This scenario is more critical at the peak time as the majority of the hydropower projects in Nepal are Run-of-River (RoR) type, and consequently the power available in the dry season is less by about one third to one fourth compared with the wet season, whereas the demand is larger at these times. This has led to the necessity of storage type projects that have many benefits like peaking, system balancing, flood control, navigation and can be used as multi-purpose projects for irrigation and water supply along with power generation. The storage type hydropower has various advantages in terms of storage of water and energy generation, instant generating capacity, and flexibility in providing base load and peak load services. Furthermore, the impact of climate change resulting less snow in the Himalayas is expected to aggravate the situation. For this, storage is an essential water requirement in the dry season.

Nepal's storage type hydropower projects open the possibilities for bilateral and regional cooperation. This development is associated with the multiple benefits like flood control, navigation and increased irrigation in dry season, which lead in turn to economic growth along the region. Nepal has identified several storage and cascade projects that are suitable for development under regional cooperation. However, it is now considered that the energy produced by the BGP will be required for the internal consumption.

Electricity Needs

Normal life of the urban dwellers has been crippled by the long hours of load shedding in the dry season in Nepal.

Ordinary people have to make plans according to the load shedding schedule. The power deficit was known to be a problem long before, but the inability to mitigate the problem by the authorities is definitely a common concern of the people. The power demand is rising by 10% per year; i.e. around 80MW, and the national system has an addition of 70 MW Middle Marsyangdi Hydroelectric Project (MMHEP) since last 10 years. This led to the deficiency in the national power system. Nepal is in dire need of storage-type hydro projects as it has been facing an acute power shortage for a couple of years mainly because most of the hydropower projects are run-of-river type, which generate low (about one fourth) during the dry season; whereas the demand is larger at these times. The only existing storage project Kulekhani HEP (60MW+32MW) is unable to meet the peaking demand in dry periods as it is in operation throughout the year to meet the peaking demands. The total installed capacity of electricity generation in Nepal is 687.7 MW and the possible generation is 500 MW in wet season and 200 MW in dry season against a demand of 720 MW (wet season) and 900 MW in dry season (FY 2008/09). With 100MW import, the net deficit is 120 MW in wet season and 600MW in dry season. There is deficit all year round. (10 year Hydro Electric Project Development Planning Task Force).

Facts of Budhi Gandaki

The proposed BGP is located near Benighat about 79 kms south-west from Kathmandu, capital of Nepal. The project envisages utilization of the hydroelectric potential of the Budhi Gandaki river, a tributary of Gandak River, for power generation by a storage type development. As per the study report of 1984, it would involve construction of a 225 m high earth and rockfill dam across the Budhi Gandaki river, about 2 km upstream of its confluence with Trishuli river

at Benighat, to create a reservoir with an effective storage capacity of 2755 million cu. m. The project has a capacity of generating 600 MW power with annual energy generation of 2495 GWh.



Index Map

The BGP is one of the attractive storage type projects. This project was given importance because the site is near the capital (Kathmandu), the main load Center and the national grid. The accessibility to the project site is very easy and convenient for the transportation of materials. The site is centrally located and less expenditure is accounted for access infrastructures. Despite many positive features and accessibility of the project, however, it is stalled.

The reservoir of the proposed BGP covers about 49.8 square kilometers which was expected to displace about 10,000 people or 2000 families (at the time of study in 1984). With the population growth of 2.3% in the area, it is expected that the number of people to be displaced is 17,660 in 2009. The project will affect the residents of 18 VDCs—eight in Dhading District and 10 in Gorkha District, About 5,000 hectares of land including 1,240 hectares of

agricultural land are expected to be submerged.

The BGP was intended to be started in 1984, 1996, 2004, and 2007 but the project could not materialize so far.

Political Commitments

Despite commitment by the political leaders for speedy hydropower development, it has not yet been translated to implementation. The BGP is an example that has not started despite it being a priority project of both Nepal and India for 25 years. There is lack of political commitment for the speedy development of the sector.

Gandak Treaty

The Gandak Treaty signed between Nepal and India in 1959 is very harmful to Nepal. It totally curtailed Nepal's right to utilize the Gandak water within Nepalese territory. The Treaty as revised

in 1964 partially restored Nepal's right for transvalley use of water except in the period of February to April. After the completion of the BGP, the dry season flow of the Gandak River will increase substantially.

Before we take the decision to implement the BGP, however, it will be wise to try to further amend the Gandak Treaty to lift the restriction on the transvalley use for the months of February to April.

India's Involvement

In the mid-1990s, the BGP was envisaged as a mutual benefit project with India. It was later withdrawn at the Secretary level meeting held in November 1996. It should be noted, however, that these cost effective hydro projects should not be allocated solely for foreign investment and export to India at arbitrarily fixed cheap export royalty. The consequence will be that Nepal will have to bear social and environmental consequences, whereas downstream riparian countries will receive downstream benefits like flood control, irrigation etc.

India will be interested in storage projects so that they will have regulated water in the dry season and flood control in the monsoon. They are also interested to make the inter basin water transfer links. The case shows that the major downstream benefits will be towards the Indian side by the regulated flow. Based on this fact, India should invest certain equity in the project sighting the above benefits. The Indian government, however, does not show its willingness to invest for the said benefits. A question will always arise as to why Nepal should submerge its valuable farm land/forests and displace its people; and then share the benefits with India. A reasonable export tax on the energy generated by large storage projects may compensate for the losses suffered by Nepal in the storage projects. In the case of the BGP, however, the energy generated would be consumed in Nepal itself.

Nepal and India's power systems and demands/

Table 1 Salient Features

Salient Feature of the Project	
Location	
Region	Central/Western Development
District	Dhading/Gorkha
Type	storage
Installed capacity	600 MW (4 x150 MW)
Net head	185 m
Design discharge	430 m ³ /s
Dam height	225 m
Live storage	2755 million cubic meters
Dam type	rockfill with inclined core
Powerhouse type	underground
Tunnel length & diameter	276 m /12m
Average annual energy	2495 GWh
Access road length	2.5 km
Transmission length	65 km (220 kV)
Project cost	US\$ 774 million (1983) Rs 45,250 million (Indian currency) at 2006 price level (Source: CEA/Govt. India)



Budhi Gandaki Valley

availability are complimentary. In wet season, there is very high potential of hydropower generation in Nepal due to high flows in the rivers but the demand is low. In dry season, the potential of generation is low but the demand is high. In India the situation is reverse. This gives us an opportunity to export power to India in wet season and import about equal energy (thermal generated) from India. For this no haggling of price is required. It is a brilliant strategy. For this Nepal should negotiate with India. Storage projects are expensive. There are environmental and social issues. The project will have short life of about 50 years due to reservoir filled up with sediments. Hence, only the most important storage projects should be undertaken. There should be appropriate mix of ROR, storage, and seasonal export/import from India.

Investors' Problem

Despite the fact that expressions of interest were called for BGP several times by Nepal's Department of Electricity Development (DOED), not a single developer came forward. The reason probably was due to the large scale displacement problems involved. For hydropower projects, which have long gestation periods, the private investors need some type of commitment from the government. Generally private investors have problems with the resettlement issues, particularly in the large projects where thousands of people will be displaced involuntarily. There is no risk-sharing mechanism between the government and the private sector. But favorable conditions for the investors to invest are yet to materialize despite the amended hydropower policy. Similarly, they also point out unstable government, conflict, social and resettlement issues as other problems for large investment in Nepal.

Development of the project-affected area should be done focusing mainly on the resettlement/rehabilitation of displaced people, construction of infrastructure like roads, schools, health posts, water supply, etc. With these developments, people think that they are also benefited by the project. The alternative could be the Public Private Partnership (PPP) module where the local stakeholders also invest a certain percentage in the construction of the project so that they think that the project does not belong only to the government but also as their own property and, thus, show their commitment for the early completion of the project.

Nepal Government's Commitment

The Nepal government has committed to develop 25,000 MW in 20 years and provide electricity to its entire people. Storage type projects displace significant number of people from their settlements. So to gain the confidence of the people, there must be a strong bonding commitment between all the parties about the construction of such reservoirs. The government needs to ensure an investment-friendly environment so that private parties can feel safe to invest in the large projects.

Nepal is upper riparian country and India and Bangladesh are lower riparian countries. With the construction of high dams in Nepal, India and Bangladesh will get the benefits of flood control in monsoon and irrigation facilities in winter and the extra power generation from their regulated flow. And according to the international practices, the benefits and costs of construction of dams including other losses are to be shared among the riparian countries. The conflict between the upper and lower riparian countries may affect the political relationship between them. Therefore, certain provisions need to be made according to international laws to resolve the water disputes regarding sharing of cost and benefits. Example of Columbia River treaty could be taken, where the downstream country compensates upstream country for 50% of the additional benefits, the benefits are hydropower generation and flood control between the USA and Canada.

Bureaucratic Thinking

The bureaucrats and the technocrats were quite clear that Nepal is going to have energy deficit without any storage type project in the early 1990s, other than Kulekhani; but at the same time they were attracted towards Arun III (402 MW), which was going to be initiated. The Arun-III was eventually cancelled by the World Bank, which was the striking part for construction of any mega scale construction in Nepal.

Upcoming Ground Realities in the BGP Site

There is now a road link along the BGP reservoir area. If this road comes into operation before the commissioning of the project, many parts of the road, along with a large part of the fertile land will be submerged. Similarly, the road will encourage many people to shift to the roadside for better transportation facilities and business opportunities. It will further complicate the resettlement issues. So, there should be coordination between the implementing government bodies about the status of the upcoming project and the suitable locations of the infrastructures.

There is no stable government in the country for the past one decade, and since the policies and development initiatives made by the previous governments might not be supported by successive governments, previous decisions are likely to be changed. Due to the uncertain condition of the country, private investors are unable to express their

commitment for investment as they do not feel the security of their investments.

Moreover, such hydro projects must be seen as an interdisciplinary project rather than just an engineering project. The government should encourage local private companies/institutions to take up such project, in collaboration with larger foreign investors, which can address the present power shortage.

Recent Development

Recently, the Government of Nepal has, through a cabinet decision, given the NEA authority to develop Budhi Gandaki in association with other partners in the Public Private Partnership (PPP) mode. Six private international companies including Indian companies have shown their interest for investment in the project in collaboration with NEA. An evaluation committee has been formed, coordinated by a board member of the NEA. A French Company (edf) has shown interest in development of Budhi Gandaki and Kali Gandaki. The PPP is the right approach to develop BGP. The Government of Nepal should take the responsibility of managing involuntary resettlement and the private sector taking other responsibilities. Further, the 10 year Hydroelectric Project Development Planning Task Force has proposed a schedule for its implementation with completion of a detailed project report (DPR) by mid-2011, with pre-construction works at end of 2013, construction start-up by 2014 and project completion by 2018. By this time, all the energy generated by this BGP will be consumed internally in Nepal.

Conclusion

The BGP, primarily targeted for export, is now a prime project for internal consumption. The BGP should be implemented early to tackle the severe energy crisis in Nepal. It should be in partnership with the private sector, with the government of Nepal taking responsibility for involuntary resettlement and risk sharing issues. Road construction in the project area is a serious concern. And, development of the area (the BGP site) without prior consultation with the electricity authority can ruin such sites forever.

It is also necessary to develop a modality to get Nepal compensated by the lower riparian state for the regulated flow and flood control benefits by submerging Nepal's valuable agriculture land and large numbers of people displaced from their homes.

It is necessary to put this project in a fast track.

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