Assessing Nepal's Energy Security and the Role of Indian Cooperation

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ABSTRACT *Energy is regarded as an essential condition for the economic development of a country. It is one of the basics of health, education, nutrition, and the transportation and communication system. However, the availability and accessibility of the energy resources are primary concerns for both the developed and developing countries. All the activities such as economic, commercial and developmental depend on the availability and accessibility of energy sources. Therefore, the question of the reliable supply of energy resources has always been a core concern of the energy-security debate. In the same context, energy security of Nepal also needs to be visualised. Currently, Nepal is facing severe energy crisis despite having huge hydro resources. The focus of the paper is on examining Nepal's energy environment, and how it has emerged as a significant factor in blocking the economic growth and development of the country. The paper also analyses the failure of Nepal's energy policies and programmes which have been undertaken by the government. Besides, the paper investigates the reasons for limited bilateral cooperation between India and Nepal. Hence, at the analytical level, merit rests on examining the challenges that Nepal is facing in energy domain and also explores the possibilities of energy security in Nepal.*

Keywords: *Energy security, hydropower cooperation, economic-development, political instability.*

Nepal's energy crisis has been one of the most important security issues due to the huge imbalances in demand and supply of energy sources. Due to this phenomenon, load-shedding has become part of daily life across the country. On an average, the country experiences more than 10 hours of power cut per day due to its exhausted power grid. Nepal's national power demand is between 900 MW to 1000 MW (Kulkarni, 2012), whereas it supplies only around 780 MW. According to Planning Commission of Nepal, at the end of the 9th five-year plan (1998-2002), only 40 per cent people have access to electricity, and, 60 per cent of Nepal's population is still deprived of electricity (Adhikari, 2006). Nepal's per capita electricity consumption is 80 kilowatt-hours, which is among lowest in the world (Ebinger, 2011). In contrast, the average growth rate per capita energy consumption is more than 10 per cent which is recorded highest in the world. However, the current supply of electricity in Nepal is unreliable, expensive, and insufficient. Afram and Pero argued that "Nepal's electricity supply problems can be attributed to a number of factors, including high transmission and distribution losses, piecemeal expansion of the national grid, high cost of power purchase agreements, inefficiencies at the Nepal Electricity Authority, and underutilization of existing capacity" (Afram and Pero, 2012). The insufficient electricity supply imposes some costs on society, including equity costs, health and environmental impacts, and economic losses due to unreliable connectivity and productivity losses (Bergner, 2013). These electricity shortages have led to a heavy reliance on biomass burning for energy especially in rural areas, which has adverse health and environmental impacts, particularly for women and children.

Nepal's Energy Spectrum

Biomass and hydropower are two indigenous energy sources of Nepal. Among the entire energy resource base, biomass is the dominant source of energy because it supplies more than 85 per cent of total energy demand of the country; whereas the actual utilization of the hydro resource remains untapped. It is recognized that Nepal has secured 2nd position in term of having hydro resources after Brazil. The hydropower potential of Nepal is theoretically identified as 83,000 MW, out of which around 50 per cent is identified for technically and economically attractive for development (Gautam and Karki, 2004). This hydropower potential can shift Nepal's position from being a poor country towards developing Nepal. Though, the under-development of hydropower tells a different story in this regard. Nepal's energy resources are presently classified into three categories; Traditional Commercial and Alternative sources. Traditional energy resources can be termed as biomass energy resources which are by and large the main sources of energy consumption. Due to the excessive use of biomass products, the forest cover of Nepal has got affected. Energy resources coming from the commercial or business practices are grouped into commercial categories that particularly include the coal, grid electricity and petroleum products. Nepal totally depends on import of petroleum product as it has no proven reserve found in the country. Biogas, solar power, wind and micro level hydropower are categorized into the alternative energy resources (Gupta, 2012).

However, Nepal is not advance in technology to utilize its alternative energy. The current state of renewable energy production is just 0.61 per cent which is a matter of grave concern. The low share of hydropower in the energy system illustrates the paucity of electricity access in Nepal (Ebinger, 2011). Therefore; despite being blessed with 6,000 rivers with a high hydro-power generation potential, Nepal still dependent on traditional sources for her energy consumption. Gywali, the water expert of Nepal, argues that "the rivers hold the promise of abundant sources of energy that very few places in the world can match. But the evolution of complex problems involved in harnessing the cascading waters of the Himalaya began to cast doubts on the viability of quick development" (Gywali, 2001). Whatever reasons could be the major hindrance of under utilization of hydro resources, it is also widely accepted that the development of this sector can solve the energy crisis of Nepal.

Hydropower Development in Nepal

Nepal's energy history has been dominated by its efforts to develop its hydropower resources. The first hydropower development program had started in 1911 with the opening of Pharping power plant in the south of Kathmandu. The second and third were Sundarijal hydropower and Chisang Khola which had established in 1934 and 1942 respectively. However, major changes came in the area of developing hydropower after the 1990s when Nepalese government had started giving particular attention to this sector. In this context, The Hydropower Development Policy of 1992, the Water Resource Act of 1992, and the Electricity Act of 1992 were a turning point for Nepal hydro sector. Nepal's government had encouraged private sector participation in the hydro sector (Energy Sector Synopsis Report, GON, 2010). The Government had also announced to give fiscal incentives for development of hydropower so that they can meet their energy requirements. The Hydropower Development Policy of 2001 particularly insisted on attracting foreign and domestic investment that has aimed to develop hydro-energy as an alternative to biomass (The Hydropower Development Policy, GON, 2001). The Rural Energy Policy of 2006 had proposed the development of coherent rural energy policy which adequately addresses the energy needs of the rural population (The Rural Energy Policy, GON, 2006). The Nepalese government had also formulated a Ten Years Hydropower Development Plan in 2009. Besides, the Government had also set a goal to achieve 10,000 MW electricity by 2020 in which people's participation was identified as a key activity to meet the objectives of the energy sector.

However, achieving these targets require foreign investment, market surety and political stability. Development of any country depends on the stability of the government. But, Nepal's political instability and poor law and order situation continue to hamper its developmental process. Along with political instability, the developments of hydropower projects were also plagued by lack of finance, lack of technology and weak environmental assessment policy. All promised declarations by the short-lived government regarding the development of energy sector were paralysed due to the political turmoil and other concerned factors. Uncertainty associated with an unstable political situation tends to reduce investment and the speed of economic development. Since the 1990s, the country has shifted from an absolute monarchy to a parliamentary democracy, enduring in the process of long civil war, the murder of the royal family, and at least 25 different governments, have been the cause for political landscape in the country. This tendency of frequent changes in government has delayed the implementation and completion of some major reforms regarding the development of the country and which has further weakened socio-economic growth of Nepal.

India-Nepal Energy Cooperation: The Challenges and Way Forward

One of the major actor developing hydropower projects in Nepal is India. The history of first water cooperation between India and Nepal had started during the 1920s when British India needed to harness Sarda (Mahakali) river to develop irrigation facility in India. Since then both the countries have been engaged in cooperation for water resource development (Dhungel, 2004). India was one of the first countries to assist Nepal in its development agenda, setting up the country's first development cooperation mission in 1952. Initial investments and assistance were provided for hard infrastructure projects such as roadways and airports. Since then, assistance has been extended to the various other sectors including the development of hydropower (Kumar, 2016). In this context, India and Nepal together had signed three major treaties like Kosi in 1954, Gandak in 1959 and Mahakali in 1996. Being a multipurpose scheme, the major aims of these agreements were flood control, irrigation facilities and hydropower generation. The importance of water resource development in Nepal on mutual basis lies in the fact that it not only facilitates Nepal's agricultural and industrial growth and provides hydropower for its growing energy requirement, but also generates capital through exporting surplus hydroelectricity to energy deficient India.

However, these treaties were severely criticized by the opposition in Nepal. The critic was of opinion that the project did not benefit Nepal rather it benefited India (Upreti, 2006). It was claimed that these treaties had given extraterritorial rights to India for an indefinite period without obtaining adequate compensation and benefit from the projects. Hence, the loss of control over the land was interpreted as a loss of Nepal's sovereignty.

Since then, the history of negotiations between India and Nepal has been dominated by controversies due to perceptional different and lack of trust between citizens and governments of both countries. The Nepalese have long viewed Indian as a hegemonic power that will harm this tiny neighbour. They feel that they got an unfair deal in treaties like Kosi and Gandak. Gyawali had stated that in case of Kosi and Gandak treaties, Nepal could do nothing as all management powers have been retained by Indian side (Gyawali, 2011). Hence, it can be argued that water is currently a source of some tension between India and Nepal, but Chaturvedy and Malone have argued that "like Bhutan, water could become the greatest asset to the relationship if a more confident, respectful and cooperative approach is engineered by the two governments" (Chaturvedy and Malone, 2011).

As far as India-Nepal energy cooperation is concerned, the small projects like Trisuli, Devighat were constructed with aid and help of India have been the successful example of bilateral cooperation. Likewise, despite the challenges, together India and Nepal have singed so many projects regarding the development of hydropower potential. There are four major storage projects under Indo-Nepal cooperation initiative. These are Chisapani- Karnali (10, 800 MW), Pancheswor (6, 480 MW) Budhi Gandak (600 MW) and Sapta Koshi Dam (3, 600 MW). These four projects would provide a total capacity of 22, 000 MW of installed capacity (Water and Energy Commission Secretariat, GON, 2011). Recently, positive momentum in Indo-Nepal relation was observed. Both governments have shown their commitment to bring all critical issues on the table. Thus, it can be argued that the successful engagement of Nepal with India can help the country to overcome from energy scarcity.

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