



## INDO-BHUTANESE RELATIONS: THE EMERGING ENERGY COOPERATION

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### Introduction

Political calculations and economic interests greatly influence cooperation between states in international politics. Given that India and Bhutan's bilateral relationship is concentered by political goodwill and a robust economic partnership, the two have embarked on a challenging journey to take the second phase of their power cooperation forward. This would encompass generating 10,000 MW of power by 2020. Significantly, 80 percent of Bhutan's total trade is with India and the export of electricity to the Indian grid accounts for a sizeable portion of the trade. In 2009-2010, hydropower constituted 45 per cent of Bhutan's total exports to India. Indeed, hydel power is a key feature in India-Bhutan relations and will remain so in the future.<sup>1</sup>

At the outset it is significant to examine the larger contextual significance of the India-Bhutan partnership. Developments in 2007 and 2008 revealed that the second phase of power cooperation was in response to a mix of internal and bilateral developments. The year 2007 was a watershed in the relations between the two countries. It not only seen a successful end to the first phase of power cooperation but also marked a new framework of collaboration with the signing of the India-Bhutan Friendship Treaty.<sup>2</sup> Also, while projects like Punatsangchu were in pipeline, the commitment to generate 10,000 MW came up during the first empowered joint group of ministers meeting held in New Delhi in March 2009. It is important to note that in 2008, the Bhutanese cabinet sanctioned the Sustainable Hydro Development Policy, which delineated measures to invite private sector participation and foreign investment to develop hydropower resources in Bhutan.<sup>3</sup> Given the clear shift in Bhutan's policy towards 'opening up', in December 2009 India and Bhutan agreed to issue a joint press statement reiterating their commitment to achieve the target of 10,000 MW of power generation by 2020, thus blocking any participation of foreign players in the hydel sector.<sup>4</sup>

### Bhutan's Energy Profile

Bhutan's energy mix comprises primarily of fuel wood (domestic consumption) and hydropower (electricity exports). Ninety-nine per cent of the electricity generated is hydel and the remaining is from diesel power-generating plants. Electricity donates about 16 per cent of total energy supply in the country. Of the energy mix, coal constitutes eight per cent, fuel wood 57 per cent and imported fossil fuel 19 per cent.<sup>5</sup> Hydropower has a comparative advantage, given that the potential of hydel resources is 23,760 MW, of which only five per cent (1,480 MW) has been harnessed so far. Clearly hydro-electric projects are important for Bhutan both in terms of strategic foresight and as a foreign policy tool to engage with immediate neighbours such as India, extended neighbours such as Bangladesh and donor countries.<sup>6</sup>

Electricity was introduced in Bhutan in the 1960s, when the first diesel generating set was installed. In 1967, Bhutan started importing electricity from India, through the Jaldhaka hydropower plant, located on the Indian side of the Indo-Bhutan border in the state of West Bengal.<sup>7</sup> Power export started with the commissioning of the 336 MW Chukha hydel project in 1989, which laid the foundation for India- Bhutan power cooperation. The Chukha hydel project was a important test case in many ways as it set the tone for future cooperation. With 75 per cent of the total power produced from Chukha being exported to India, Bhutan realised the potential of hydropower projects as a means for earning more revenues.<sup>8</sup> Significantly, after the fruitful commissioning of the Chukha plant, two other hydro-electric projects came into operation - Kurichhu with a capacity of 60 MW and Tala with a capacity of 1,020 MW. Since 2003, there has been a spike in revenues from Rs.2.3 billion to Rs.10 billion in

2009, thereby substantively increasing export revenues from Indian assisted projects. Given the incremental returns, India and Bhutan signed a Memorandum of Understanding in December 2009, whereby India committed to buy 10,000 MW of electricity from Bhutan by the year 2020.<sup>9</sup>

### **Bhutan's Economic Relations with India**

India first provided development assistance to Bhutan in 1949, the year of its own independence. Efforts towards planned development in Bhutan began in the early 1960s and the First Five Year Plan of Bhutan was launched in 1961. As the principal donor for socio-economic development in Bhutan, India extends financial assistance to Bhutan's Five Year Plans. Development projects, such as infrastructure, road construction or hydropower plants, also rely heavily on technical expertise and contract labour from India.<sup>10</sup>

Between 2000 and 2013, Bhutan received 49 per cent of the grants and loans committed to foreign countries from the Indian budget, making it the largest recipient of Indian development assistance. India's contribution of Rs.4,500 Cr to Bhutan's 11<sup>th</sup> Five Year Plan (2013-2018) accounts for 68 per cent of India's total external assistance.<sup>11</sup>

India's assistance towards mega projects, including hydropower, is additional to its contribution to the Five Year Plans. India also offers petrol and cooking gas to Bhutan at the same subsidized rates at which it provides to its own population. The Agreement on Trade and Commerce signed by the two countries allows Bhutanese imports and exports from third-country markets to transit India without tariffs. India is not only Bhutan's main development partner but also its principal trade partner as 80 per cent of all imports come from India and 90 per cent of exports go to India.<sup>12</sup>

### **Energy Cooperation**

Need for energy drove India to start cooperating on energy with Bhutan and the first power plant to be commissioned as a joint venture project was the Chhukha hydroelectric plant in 1988. Since then so far its cooperation between the two countries has been a success. The Tala hydro-electric plant with a capacity of 1020 MW in 1996 is the biggest power project so far in Bhutan and also India's largest ever foreign investment.<sup>13</sup>

The estimated potential of Bhutan's hydro-electricity is 30,000 MW out of which about 23,000 MW is said to be economically viable. Presently, Thimphu exports about 1,000 MW surplus power to India from its three hydel projects. There are 10 more projects in the pipeline. Initially, bilateral hydropower projects, which were on a 60:40 ratio of grant to loan, have now been changed to 70 percent loan at 10 percent and 30 percent grants. Though the loan component has gone up, Bhutan is set to make volumes from the projects. A total cost of Rs 75,000 crores is said to be involved for completing the projects with a total installed capacity of 10,000 MW by 2020. On the other side, even the loan component is increasing for Bhutan.<sup>14</sup>

However, both Bhutan and India are in a win-win situation, as Bhutan makes its ascendancy toward a self-sufficient economy powered by hydro-power exports, India investment in Bhutan's hydropower has already proved economically viable. The Indo-Bhutan energy cooperation has already become a model that Asian Development Bank is promoting for SAARC countries. With energy demands peaking in SAARC countries, the potential of hydropower surplus countries like Bhutan and Nepal has come into focus.<sup>15</sup>

At a time when both countries are crediting the hydroelectric power cooperation as the defining factor in relations between India and Bhutan, the bilateral projects have their share of challenges. India is estimated to have doubled its demand by 2021 and would have to diversify its energy sources, Bhutan would have to face the increasing impact of climate change. Energy demand in India is said to grow to a whopping 2,83,470 MW by 2021 more than double of where it stands today. India has a peak power shortage of around 12%. There are also concerns with project delays and hence escalation of construction costs.<sup>16</sup>

The Druk Green Power Corporation of Bhutan has reported that water levels in rivers have been declining in recent years due to changes in monsoon patterns, thus leading to less hydropower production. Presently power plants are running on Punatsangchhu, Wangchhu and Dragmechhu river basins, while projects would be commissioned on Amonchhu and Mangdecchhu river basins by 2030.<sup>17</sup>

The two countries have also signed the Agreement on Cooperation in the Field of Hydroelectric Power (HEP) in July 2006, which outlines the framework for cooperation in the field of Hydropower. In May 2008, during the visit of the then Prime Minister Dr. Manmohan Singh to Bhutan, the two sides signed the Protocol to the 2006 Agreement concerning Cooperation in the Field of Hydroelectric Power and agreed to increase the export of electricity from Bhutan to India from 5,000 MW to 10,000 MW by the year 2020. Of these, three projects totalling 2940 MW (1200 MW Punatsangchu-I, 1020 MW Punatsangchu-II and 720 MW Mangdechu HEPs) are under construction. Out of the remaining 7 HEPs, 4 totalling 2120 MW (600 MW Kholongchhu, 180 MW Bunakha, 570 MW Wangchhu and 770 MW Chamkarchu) will be constructed under a Joint Venture (JV) model. Under the May 2008 Protocol, the two governments also established the Empowered Joint Group to expedite the development of hydropower projects in Bhutan.<sup>18</sup>

In April 2014, the two countries also signed the "Framework Inter-Governmental Agreement" concerning development of Joint Venture Hydropower Projects through the Public Sector Undertakings of the two countries. This Inter-Governmental

agreement provides the framework for implementing the four HEPs of Kholongchhu, Bunakha, Wangchu and Chamkharchu totaling 2120 MW, subject to completion of the due process of appraisal of their Detailed Project Reports (DPRs) including techno-economic viability, on a Joint Venture-model between Public Sector Undertakings of the two countries. This Inter-Governmental Agreement would also facilitate the commencement of these four projects and further strengthen hydropower cooperation between the two countries.<sup>19</sup>

During his visit to Bhutan in 2014, Prime Minister Narendra Modi laid the foundation stone of the 600 MW Kholongchu hydro-electric project, a joint venture between India and Bhutan. This project, which is to be developed by SJVNL along with Druk Green Power Corporation, is estimated to cost more than Rs 3,868 crores to be contributed in the ratio of 50:50 by both the JV partners.<sup>20</sup>

Bhutan is endowed with abundant water and hydropower forms an important sector of the Bhutanese economy. So far, Bhutan has commissioned three major hydropower projects while three more HEPs; Punatsangchu I (1200 MW), Punatsangchu II (1020 MW) and Mangdechu (720 MW) are scheduled to be commissioned in 2018-19. The sale of hydropower accounted for the largest share of the country's GDP. It is also the most important export item contributing about 40 percent of Bhutan's total exports. Druk Green Power Corporation, which controls all electricity generation plants of the country, is the highest tax payer of the country.<sup>21</sup>

India's support in the development of the hydropower sector in Bhutan is the centrepiece of Bhutan-India economic cooperation and is one of the main pillars of bilateral cooperation. The cooperation in the hydropower sector is full of opportunities and has been recognized by both Bhutan and India as being mutually beneficial. India finds her interests fulfilled in alleviating their power deficiency by supporting Bhutan and Bhutan in turn finds an opportunity to optimize its national income through power exports to India. This sustainable win-win situation for both sides makes the relationship between the two nations even stronger and long lasting.<sup>22</sup>

Bhutan economy is facing a severe credit crunch and a rupee crisis, which is said to be due to the construction costs of hydropower projects. Bhutan also faces climate change concerns. Also, Bhutan realizes that its overreliance on hydropower exports is not in interest of the country's healthy economy. The country needs to diversify its sources of revenue. However with no immediate substitute for revenue generation, Bhutan will continue to continue its cooperation with countries in the Indian Sub-continent.

### **A Win-Win Partnership**

Hydropower development in Bhutan has been the cornerstone of India-Bhutan cooperation. The model consists of India supporting Bhutan in building hydropower projects, by providing finance – a mix of grants and loans – and technical support to design and construct the projects.

Bhutan not only gets electricity for its own use, but also exports the surplus power to India, earning much needed revenue and foreign exchange. India gets relatively cheap power. Hydropower exports contribute around 40% to Bhutan's revenue and 25% of its Gross Domestic Product.<sup>23</sup>

For many decades, this has been seen as an ideal win-win arrangement, and there are plans to expand it massively. While Bhutan's installed hydropower capacity in 2015 was 1,608 megawatts, the 2006 India-Bhutan agreement on hydropower, with an additional protocol in 2009, stated that India would help Bhutan install 10,000 MW of hydro capacity by 2020, and purchase all the surplus power. However, this model is now fraying at the edges, and threatens to unravel. When this author visited Bhutan in 2014, there were already voices of concern regarding the large upscaling of this model, questioning its economic and ecological efficacy.<sup>24</sup>

### **Conclusion**

Hydropower projects in Bhutan are an example of win-win cooperation, providing a reliable source of inexpensive and clean electricity to India, generating export revenue for Bhutan and cementing our economic integration. So far, Government of India has constructed three Hydroelectric Projects (HEPs) in Bhutan totalling 1416 MW (336 MW Chukha HEP, 60 MW Kurichhu HEP and 1020 MW Tala HEP), which are operational and exporting surplus power to India at a rate of Rs 2.12 per Kwh (for Tala HEP and Kurichhu HEP) and Rs 2.25 per Kwh (for Chukha HEP). About three-fourth of the power generated is exported and rest is used for domestic consumption. Hydropower exports provide more than 40% of Bhutan's domestic revenues, and constitute 25% of its GDP.

The ongoing cooperation between India and Bhutan in the Hydropower sector is covered under the 2006 Agreement on Cooperation in Hydropower and the Protocol to the 2006 agreement signed in March, 2009. Under this Protocol, Government of India has agreed to assist Royal Government of Bhutan in developing a minimum of 10,000 MWs of hydropower and import the surplus electricity from this to India by the year 2020.

India takes credit in having a happier neighbour on its north as its contribution to the happenings in Bhutan is more than substantial. India's effective neighbourhood approach will prove conducive towards building a cohesive and durable relationship

with Bhutan in the coming days. India's bilateral political relations with Bhutan have matured over the years and are characterised by close trust and understanding and extensive cooperation in the field of economic development, particularly in the mutually beneficial sector of hydroelectric power.

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