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## Trilateral Electricity Trade in Eastern South Asia

A Step Forward Towards Regional Integration

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## A bstract

*There is a vicious circle between economic growth, energy, and climate change. In this context, the south Asian region is in a dilemma on how to reconcile these three issues given its high vulnerability. In addition to that the region is moderately integrated despite sharing many common issues. The member countries face common challenges like the effects of climatic-induced disasters, pandemics, energy dependency, economic crises, etc.*

*The Ukraine war in February 2022 has aggravated the energy supply scenario worldwide and especially for the smaller countries of South Asia recovering from the shocks of the COVID-19 pandemic. The countries have realized that complete dependence on one source of energy could jeopardize the economic development and livelihood of their people.*

*Since the countries located in the eastern south Asian region—Bangladesh, Bhutan, India, and Nepal—have different levels of potential to generate green energy and they currently exchange energy under the bilateral framework, a sub-regional approach to energy cooperation would facilitate rapid carbon-free economic growth. Therefore, the existing bilateral arrangements need to be upgraded into a sub-regional framework as a step forward toward regional integration.*

Despite geographical proximity, sharing of common culture and history, stronger economic interdependence and setting up of the South Asian Association for Regional Cooperation (SAARC) in the early 1980s, the region is very poorly integrated compared to similar regional organisations like the European Union (EU) and the Association of Southeast Asian Nations (ASEAN). Some of the major elements of regional economic integration like physical connectivity, visa-free people-to-people movement, common currency, trade harmonization, mutual trust, regional identity, adherence to the SAARC resolutions, etc, have been missing in case of South Asia. This is not to deny that several attempts are being made at the bilateral, sub-regional, and regional levels to fulfill the vision of regional cooperation and address common challenges collectively; however, such attempts have often been victims of either bilateral disputes between member countries or failure of the member countries to reduce trust deficits among them. Sometimes the influence of extra-regional actors also plays a role in vitiating the local political environment and intensifying inter-state mistrust. Therefore, the net result has been poor regional trade and economic integration and even failure to develop mechanisms to address common non-traditional security issues, which could be catastrophic

for the people of South Asia given the poor socio-economic infrastructure and absence of a cooperative security framework in the region.

These emerging challenges could be more severe given the fact that South Asian region is ranked as one of the most vulnerable regions in the world. This is especially so because of the growing developmental aspirations of the countries in the region. While the countries in the region have pledged to adopt a sustainable policy to reduce carbon emissions to less than 50 percent in their overall economic activities by 2030, they have committed themselves to continue with the pace of human development under the Sustainable Development Goals (SDG). Moreover, countries like Nepal, Bangladesh, Afghanistan, and Bhutan are aspiring to graduate from Least Developed Countries (LDC) to developing countries. Reconciling carbon footprint with development is going to be problematic especially because of lack of resources to shift to a low-carbon growth trajectory. The adaptation funds are either unavailable or slow to come by. In fact, in the global climate change debates most of the SAARC member countries take a position different from that of India given their differential development aspirations.

Despite demographic, economic, territorial and military asymmetry between the SAARC countries, there are several commonalities in the region. One of these is the poor utilisation of resources for energy production and over-dependence on import-based fossil fuels. Although India has made rapid advances in terms of energy self-sufficiency by generating around 410 GW of electricity including 174.53 GW from renewable energy sources, other South Asian countries still continue to struggle to reduce their dependence on fossil fuels.<sup>1</sup>

The Ukraine war in February 2022 has aggravated the energy supply scenario worldwide and posed a major challenge to the economic growth of the smaller countries of South Asia recovering from the shocks of the COVID-19 pandemic. The countries have realized that complete dependence on one source of energy could jeopardize the economic development and livelihood of their people. Since Nepal and Bhutan were dependent on India for their fossil fuel supplies, the oil price hike in India under the impact of the Ukraine war automatically led to huge financial losses in Nepal. One media report indicated that “the state-owned Nepal Oil Corporation (NOC) was “losing NPRs[Nepali Rupees]16 for every litre of petrol and NPRs12 for diesel it sold, raking up losses of NPRs 5 billion every month,”<sup>2</sup> which could lead to further price hikes in the future.

The same has been the situation in Bangladesh. Since a major portion of energy production in Bangladesh comes from natural gas followed by fossil fuels, the rise in prices of crude oil and Liquefied Natural Gas (LNG) impacted both production and energy prices. As the price of energy in the world market continued to rise, the production at diesel-powered rental power

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<sup>1</sup> Parliament Q&A in January 2023. Minister for Power, New and Renewable Energy R K Singh said in a written reply to the Rajya Sabha. For details see <https://www.zeebiz.com/indian-railways/news-indias-non-fossil-power-generation-capacity-touches-174-gw-in-2022-221047> (accessed on 10 February 2023).

<sup>2</sup> Ramesh Kumar, “Ukraine crisis hits Nepal economy hard”, *Nepali Times*, 14 March 2022, <https://www.nepalitimes.com/here-now/ukraine-crisis-hits-nepal-economy-hard/> (accessed on 25 February 2023).

plants was halted, causing an imbalance in demand and supply. In addition to that the government stopped buying LNG from June 2022 onwards. This led to a gas crisis in mid-July, causing problems in power production. Recurring power cuts returned to Bangladesh after almost a decade when several diesel-powered energy plants were shut down during the summer due to the gas shortage and dollar crisis.<sup>3</sup>

Ukraine and COVID-19 are not the only black swan events that have jolted the economies of many countries. There could be many more such events to follow. Dealing with such unpredictable challenges could be difficult for a single country and therefore, there is an urgent need for a regional framework that could be guided by India's regional developmental outlook encapsulated in the motto, popularised by Prime Minister Modi: *sabka sath, sabka vikaash*.

In this regard, while regional integration has been failing in this region, the emerging triple challenges— energy transition under the climate change regime, emerging geopolitics, and maintaining a sustainable economic growth— could turn out as a blessing in disguise for the region. Although the region has huge renewable energy potential, especially in the Himalayas (hydro-power), long coast-lines (wind power), and land mass (solar power) in India, the member countries have been depending on countries outside the region due to their heavy dependence on fossil fuels. These renewable energy sources are not utilized fully due to perennial political instability in many countries, mutual trust deficit among countries, and absence of modern technology. Interstate cooperation has been affected by the reluctance of certain countries to approve of cross-regional transport and communication which could have generated an impulse for greater regional integration.

However, in the absence of a regional-wide consensus, there is room for sub-regional initiatives in South Asia. For example, the BBIN (Bangladesh-Bhutan-India-Nepal) sub-region has shown tremendous enthusiasm for effecting a cooperation framework which can be replicated at the regional level. The sub-region is of strategic importance as far as producing renewable energy is concerned and it could emerge as a powerhouse of South Asia given the hydropower potential in the Himalayan regions of Nepal, Bhutan, and India. From the point of view of the Himalayan countries, while the entire southern Himalayan region, including Myanmar and Sri Lanka, is a huge market for them, massive investment in renewable energy by India and Bangladesh could lead to a situation where Nepal and Bhutan could tap into the energy harnessed by these two countries during the lean period. There is already a robust cross-border transmission line in place between Nepal-India, India-Bhutan, and India-Bangladesh. However, so far most of the energy trade has been happening under the bilateral framework.

Against this backdrop of increased energy insecurity, issues like climate change and increasing price of electricity imports have begun to play a significant role in pushing for regional integration. A trilateral electricity trading mechanism could enable energy interaction at a sub-regional level which would act as a confidence-building measure for broader regional

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<sup>3</sup> Faysal Atik, "Bangladesh hit by energy crisis as Russia-Ukraine conflict drags on", *bdnews24.com*, 29 December 2022, <https://bdnews24.com/bangladesh/sknc6hkyyj> (accessed on 25 February 2023).

integration in the future. It could later include trade, culture, and other non-traditional security issues. Diplomatically, the trilateral electricity trade arrangement could be the first ever experiment of India at the regional level showcasing its intent and appetite for greater regional cooperation and integration.

## Perspective from Nepal

Nepal has a hydro-power potential of about 83,000 MW, out of which 43,000 MW is economically feasible. Nepal has always sought vision to maximize the development of its vast hydropower potential for domestic consumption and export (for enhancing its revenue earning). However, despite initiating hydro-power production as early as in 1911, the progress on this front has remained very slow for over a century. By 2005, Nepal produced only 557 MW electricity, which was insufficient to meet the demands of a growing population and economy. The year also marked the beginning of an acute power crisis, which lasted a decade that crippled the economy and growth severely. A monopolistic policy regime, underperforming utility, political instability, adverse geo-political influences, and overwhelming dependency on external financing were the key factors responsible for Nepal's inability to harness its potential.

The pace of development of hydroelectricity projects took off only in the post-Maoist insurgency period. With ambitious goal-setting, forward-looking policy and stakeholder alignment, Nepal was not only able to overcome the crisis, but also witness rapid project development led primarily by the private sector. What it had failed to achieve in more than a century, it could achieve in less than a decade.

As per the Economic Survey of 2021-22 of the Ministry of Finance, Government of Nepal (GoN),<sup>4</sup> the installed capacity of Nepal stood at 2205 MW in mid-March 2022.<sup>5</sup> The private sector contributed 1440 MW and the rest 581 MW came from the state-promoted single utility, Nepal Electricity Authority (NEA). Data from the Department of Electricity Development and the Office of the Investment Board of Nepal, the principal agencies of GoN involved in granting licenses for hydropower development reveal that feasibility license for 228 projects, with a total capacity of 16,415.40 MW has been granted to different companies for performing a feasibility study of the projects for development. Likewise, 217 projects with a total capacity of 8,306.50 MW, have been granted Generation License for project development. These remain in different stages of construction. Nepal's generation capacity is expected to reach 7,300 MW by 2025.<sup>6</sup>

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<sup>4</sup> Economic Survey 2020-21, Ministry of Finance, Government of Nepal, available at [https://www.mof.gov.np/uploads/document/file/1633341980\\_Economic%20Survey%20\(English\)%202020-21.pdf](https://www.mof.gov.np/uploads/document/file/1633341980_Economic%20Survey%20(English)%202020-21.pdf) (accessed on 25 February 2023).

<sup>5</sup> "A Year in Review Fiscal Year 2020/2021," Nepal Electricity Authority, Government of Nepal, 2021.

<sup>6</sup> Deepak Rauniar, "Balanced Hydropower Development in Nepal", *Commentary*, 16 June 2022, [The National Bureau of Asian Research \(NBR\)](https://www.nbr.org/publication/balanced-hydropower-development-in-nepal/), available at: <https://www.nbr.org/publication/balanced-hydropower-development-in-nepal/> (accessed on 25 February 2023).

The peak power demand of Nepal in June 2022 was recorded as 1,747.50 MW. With domestic supply (2205 MW in mid-March 2022) overtaking domestic demand, Nepal remains one of the few countries in the world with an energy surplus. This continues to draw enhanced attention from its immediate neighbours, who remain deficient both in green energy and fossil fuel-based energy. Furthermore, Nepal's energy can help them to offset their carbon footprint and achieve net zero goals in accordance with their respective climate change commitments.

Nepal remains keen to benefit from this unique opportunity by continuing the path of hydropower development for exports. Besides focusing on the development of a number of hydropower projects and high voltage (400kv) cross-border transmission lines with India, it has also been making serious efforts at the highest level both in India and Bangladesh to enable and activate electricity trade. It is well aware that India remains its primary export market and gearing its efforts towards not only exporting to India but also to use India as a transit country for export of electricity to Bangladesh.

On May 1, 2021, Nepal became the first country in South Asia to engage in day-ahead trading on the Indian Energy Exchange (IEX) by importing up to 350 MW of power. Though Nepal has been importing power from India for some time now, it has mostly been under a bilateral power purchase agreement between state-owned utilities of the two countries on a fixed price regime. Access to IEX, opened up opportunity for Nepal to benefit from the demand and supply-driven price regime of the Indian power market. This arrangement was upgraded on November 2, 2021, when Nepal, got selected to sell electricity through a competitive bidding process for the first time directly in the Indian market. It was initially allowed to sell 54 MW from its two hydropower projects and the volume quickly increased to 364 MW from six hydroelectric projects by June 2022. These developments have proved to be that breath of fresh air that Nepal longed for more than a century.<sup>7</sup>

As a result, electricity has become one of Nepal's top five exports and an important source of foreign currency earnings. In November 2022, NEA reported that it was trading Nepali Rupees 10 billion (1 Indian Rupees/INR = 1.6 NPRs) of electricity in the Indian market. It is well known that Nepal suffers a huge trade deficit with India and such trade is likely to restore the balance in Nepal's favour<sup>8</sup>. For the first eleven months of the fiscal year 2020-21, the volume of bilateral trade remained at INR 610.49 billion, out of which imports from India to Nepal was INR 554.12 billion and exports to India from Nepal stood at INR 56.37 billion<sup>9</sup>. The additional revenue earned through electricity export from India has helped the Nepali economy significantly. For a land-locked country like Nepal, without much potential for exports, any

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<sup>7</sup> Herath Gunatilake, et al., "Hydropower Development and Economic Growth in Nepal," ADB South Asia Working Paper Series, No. 70, June 2020.

<sup>8</sup> Prithvi Man Shrestha, "Power export earns Nepal Rs10 billion", *The Kathmandu Post*, 02 November 2022, <https://kathmandupost.com/national/2022/11/02/power-export-earns-nepal-rs10-billion> (accessed on 25 February 2023).

<sup>9</sup> "Trade and Commerce," Embassy of Nepal, New Delhi, available at <https://in.nepalembassy.gov.np/trade-and-commerce/> (accessed on 25 February 2023).

opportunity available for bridging the burgeoning trade deficit with India helps Nepal, which gives a fillip to inter-state trade.

## Nepal and India: Win-win situation

India needs power not only to sustain its economic growth and future developmental aspirations but also to ensure general welfare of its citizens. As per the World Economic Forum (WEF), India's total energy consumption is expected to more than double by 2040 from what it was in 2020.<sup>10</sup> With an installed capacity of 410 GW as of December 31, 2022, even though India remains the third-largest producer (and also consumer) of electricity in the world, it is not sufficient to meet its present and future power needs. India wishes to achieve five-fold economic growth through initiatives like 'Make in India', 'Skilling India', 'Digital India' and many more. Sufficiency of power remains critical for achieving this growth.<sup>11</sup>

India also remains a world leader in clean energy production. At 174.53 GW, it is already the fourth-largest country in the world in terms of its installed renewable energy capacity.<sup>12</sup> Furthermore, it has set an ambitious goal of achieving 500GW of renewable capacity by 2030 and plans to invest INR 2.44 trillion (1 US Dollar = INR 81.75) by 2030. Achieving this requires stepping up the renewable capacity three times its present value each year till 2030.<sup>13</sup>

Hydropower provides a clean reliable, efficient, safe, and inexpensive source of power. Moreover, hydroelectricity is also useful in addressing the rapid increase in the gap between demand and supply. It can help to mitigate climate change and help countries meet their climate commitments. Nepal is rich in power and it is in the interest of India that Nepal continues to maintain its momentum of hydropower development. With over a dozen cross-border transmission lines (*see Annexure-1 and 3*), some of which are operational and some in advanced stages of development, the excess power from Nepal could easily travel to India. Buying power from Nepal could help India to i) avoid making too much capital investments in its power sector and reduce pressure on it while it invests in other competing sectors such as education, health etc.; ii) provide immediate access to clean power to propel its economic growth; iii) meet its international commitments on renewable energy and iv) rightly claim leadership position in different important world platforms.

<sup>10</sup> "Power Sector in India," *India Brand Equity Foundation*, an initiative of the Ministry of Commerce and Industry, Government of India, available at <https://www.ibef.org/industry/power-sector-india> (accessed on 25 February 2023).

<sup>11</sup> Ratul Puri "Why the power sector in India, is key to it's growth," *World Economic Forum*, 09 March 2016, available at [https://www.weforum.org/agenda/2016/03/why-the-power-sector-in-india-is-key-to-it-s-growth/?DAG=3&gclid=Cj0KCQiAz9ieBhCIARIsACB0oGKeqiPSVf2w7ToB8pyeWkCH1uFNRPq770ftu8OzsoPhtpyD0J8seLAaAmPHEALw\\_wcB](https://www.weforum.org/agenda/2016/03/why-the-power-sector-in-india-is-key-to-it-s-growth/?DAG=3&gclid=Cj0KCQiAz9ieBhCIARIsACB0oGKeqiPSVf2w7ToB8pyeWkCH1uFNRPq770ftu8OzsoPhtpyD0J8seLAaAmPHEALw_wcB) (accessed on 25 February 2023).

<sup>12</sup> Jacob Koshy "Plan to install 500 GW of renewable energy capacity by 2030 to cost ₹ 2.44 trillion," *The Hindu*, 08 December 2022, <https://www.thehindu.com/news/national/cost-of-transmitting-clean-energy-in-india-to-exceed-2-trillion/article66235468.ece> (accessed on 25 February 2023).

<sup>13</sup> "India takes another big step towards achieving 500 GW of non-fossil fuel based electricity installed capacity by 2030," PIB, Delhi, 07 December 2022, <https://pib.gov.in/PressReleasePage.aspx?PRID=1881484> (accessed on 25 February 2023).

Besides bridging the trade gap, the INR earning from electricity trade would also help Nepal in strengthening its foreign currency savings as it currently sells its foreign currency to buy INR. Similar is the case with India. The ability to buy power from Nepal in INR helps to i) reduce pressures on its foreign currency reserves and exchange risks (from having to either import electricity from a country that accepts only hard foreign currency or spend hugely for importing equipment for projects that it would have to construct to meet its power needs; and ii) further strengthen its policy of internationalizing the INR.

On similar grounds, Bangladesh remains interested in importing power from Nepal. Over the last decade, Bangladesh has openly expressed its desire to either import electricity or develop its own power projects in Nepal at the highest level, and discussions at the ministerial and secretary levels between Bangladesh and Nepal attest to that desire which is well-documented.<sup>14</sup>

Given the committed market for Nepali power in Bangladesh, and, the intense desire of both countries to realize this, one would expect that things would have already taken off had there been shared boundaries between them and it would be a different story by now. However, the export of power to Bangladesh from Nepal requires the power to flow through Indian territory using Indian transmission line infrastructures for which the support of India becomes necessary. The three countries, therefore, need to develop a framework of cooperation underlining their respective roles and responsibilities, technical and financial technical obligations, among other things. This would provide the blueprint for other such sub-regional cooperation efforts in future.

For the export and import of electricity, they need India's support for the transmission line. Nepal and Bangladesh remain separated by a mere 27 kilometres along the Siliguri Corridor, popularly known as the Chicken's Neck area. The corridor already remains severely constrained on many fronts. From India's point of view, all the land transportation, broad gauge railway lines, communication and transmission lines and many other sensitive infrastructure occupy this corridor, leaving out very little space for development of any additional infrastructure.

However, numerous solutions have been proposed to overcome this barrier. One of them could be that Nepal delivers power to India at a convenient border location and it can be transmitted to Bangladesh from there under an agreed framework through a convenient border crossing point with Bangladesh.

It remains clear that without India's support, power trade between Nepal and Bangladesh cannot take off enabling them to achieve their desired trade goals. A tripartite consensus and agreement, therefore, remains essential. India-Nepal relationship, though very strong at the core, contains elements of mistrust that affect interaction between them. It is believed that power export by Nepal to Bangladesh is misinterpreted in some quarters in India. The

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<sup>14</sup> Prithvi Man Shrestha, "Bangladesh-Nepal energy cooperation; the horizon of new possibilities," *The Kathmandu Post*, 12 January 2023, <https://kathmandupost.com/national/2023/01/12/nepal-and-bangladesh-lobby-india-for-corridor-to-trade-electricity> (accessed on 25 February 2023).

pronouncements by the leadership in Nepal that it does not consider India its sole power export market is not also taken well by the certain sections of people in India. There are also other elements of mistrust that have contributed to making India cautious about allowing Nepal to trade with Bangladesh through its territory.

With extra hydropower generation capacity at hand in Nepal and well developed cross-border transmission line infrastructure in place between Nepal and India, as well as India and Bangladesh, one can argue that the infrastructure should no longer be a bottleneck for the power trade between Nepal and Bangladesh. There is a need for building confidence and trust. A better approach would be to start discussing how the three countries can secure their best interests, while mitigating mutual concerns.

A recent media report suggests that this has finally started to happen. It has been reported that the three countries have started working on a trilateral energy sales and purchase agreement to start up to 50MW of power export from Nepal to Bangladesh through India.<sup>15</sup> If this is true, India too stands to benefit financially not only in terms of the wheeling charges for using the Indian power transmission lines, but also from foreign exchange earnings.

In light of the huge trade deficit Nepal has with India, the demand for INR remains huge in Nepal. Under the trilateral energy sales and purchase agreement for the passage of 9000 MW that Bangladesh seeks to buy from Nepal by 2040, there also remains enough opportunities for India to secure a major source of foreign currency income by purchasing power from Nepal in INR to boost its overall capacity, and selling power to Bangladesh from its own pool in foreign currency.

## Bangladesh Perspective

Today, Bangladesh is very close to achieving the status of a middle income country by 2026. Therefore, it is important for the country to maintain a robust economic growth rate. Sustained and secure energy and power supply would be critical to retain the growth rate in Bangladesh. The natural gas (50.82%) is still ranked at the top followed by heavy fuel oil (27.98%) and coal (7.93%) as primary source that sustain Bangladesh's electricity generation capacity whereas only 229 MW of electricity capacity or 1.03% of the total capacity is coming from solar power.<sup>16</sup>

With an aim to increase the power generation capacity in the shortest possible time and also to meet the demand of one of the fastest growing economies in the region, Bangladesh has allowed twenty oil-fired Quick Rental (QR) power plants to resolve the power crisis on an urgent basis. These QRs played a crucial role in electricity generation till 2021 and successfully met the

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<sup>15</sup> Prithvi Man Shrestha, "Nepal notifies India on deal with Bangladesh to seek facilitation for power trade", *The Kathmandu Post*, 16 October 2022, <https://kathmandupost.com/money/2022/10/16/nepal-notifies-india-on-deal-with-bangladesh-to-see-facilitation-for-power-trade#:~:text=Money-.Nepal%20notifies%20India%20on%20deal%20with%20Bangladesh%20to%20seek%20facilitation,energy%20sale%20and%20purchase%20agreement>. (accessed on 28 January 2023).

<sup>16</sup> Syed Samiul Basher Anik, "A partnership of and for power", *The Dhaka Tribune*, 27 April 2022, <https://www.dhakatribune.com/op-ed/2022/04/27/a-partnership-of-and-for-power> (accessed on 28 January 2023).

demand of growing economic need of the country.<sup>17</sup> The problem started with the rise of price of diesel, furnace oil and LNG in the international market as a consequence of Russia-Ukraine War, which has contributed to the price hike of electricity in the domestic market which has a bearing on the rising inflation in Bangladesh. These circumstances have forced Bangladesh look for alternative renewable energy sources, which are considered perfect alternative to fossil fuels, considering the ever-growing demand for electricity and the need for the future.<sup>18</sup> As such, tapping on renewable sources from across the region is getting the highest priority. Bangladesh has already set a target to increase the share of power generation from renewable sources to 40% by 2040 and this is where Bangladesh is sincerely counting on regional cooperation in the energy sector to fulfil its obligation on renewable energy.

Realizing the potential for renewable energy power trade, as has been mentioned above Bangladesh signed an energy cooperation agreement with Nepal in 2018 to facilitate Cross Border Electricity Trade (CBET) to import up to 9,000 MW of hydropower from Nepal by 2040. Moving this process forward, during the fourth ministerial meeting in August 2022, Nepal and Bangladesh agreed to jointly develop hydropower plants, transmission lines and build capacity for the two countries' energy sector. Bangladesh has initially targeted to import 50 Megawatt (MW) and subsequently increased it to 500 MW.<sup>19</sup> The Nepal Electricity Authority (NEA) and the Bangladesh Power Development Board (BPDB) have already sent a request to the NTPC Vidyut Vyapar Nigam Ltd (NVVN) of India for a trilateral power trade agreement to enable the export of 50 megawatts of power generated in Nepal to Bangladesh as it would not be possible without using the power transmission facility of India. Bangladesh has also decided to buy 500MW of electricity from the 900MW Upper Karnali Hydropower Project titled, "GMR Upper Karnali Hydropower Limited" developing by India's GMR Group. Besides, Bangladesh has also agreed to develop the 383MW Sunkoshi-3 Hydropower Project in a joint venture in association with the private sector.<sup>20</sup> All these arrangements for power trade could be possible if the three countries can agree on a mutually acceptable power sharing mechanism.

As part of recent efforts to expedite CBET, Bangladesh Prime Minister, during her state visit to India in early September 2022, raised this issue with the Indian authorities to be allowed to

<sup>17</sup> Sakib Bin Amin, et al., "Quick rental power plant: Extend or Escape? *Policy Insights*, A publication of Policy Research Institute of Bangladesh, Dhaka, 21 November 2019.

<https://policyinsightsonline.com/2019/11/quick-rental-power-plant-extend-or-escape/>

<sup>18</sup> Eyamin Sajid, "Regional energy trade: This is how Bangladesh can achieve renewables target", *The Business Standard*, 03 September 2022, <https://www.tbsnews.net/bangladesh/energy/regional-energy-trade-how-bangladesh-can-achieve-renewables-target-489330> (accessed on 02 February 2023).

<sup>19</sup> "Hydropower import: Bangladesh, Nepal and India on final stage of deal," *The Daily Star*, 23 March 2021, <https://www.thedailystar.net/southeast-asia/news/hydropower-import-bangladesh-nepal-and-india-final-stage-deal-2065557> (accessed on 31 January 2023).

<sup>20</sup> Prithvi Man Shrestha, "Nepal notifies India on deal with Bangladesh to seek facilitation for power trade", *The Kathmandu Post*, 16 October 2022, <https://kathmandupost.com/money/2022/10/16/nepal-notifies-india-on-deal-with-bangladesh-to-seek-facilitation-for-power-trade#:~:text=Nepal%20and%20Bangladesh%20plan%20to,the%20exchange%20of%20500MW%20electricity> (accessed on 28 January 2023).

import power from Nepal and Bhutan using Indian Territory. Later, in the month of December in 2022, Bangladesh's State Minister for Power, Energy, and Mineral Resources requested Indian cooperation in this regard while attending a conference in New Delhi organized by the Confederation of Indian Industries (CII) on grid connectivity in the BIMSTEC.<sup>21</sup> If the statements of the Ministers in Bangladesh are to be believed, there are initiatives which have already been undertaken to find out available feasible options to enable Bangladesh getting hydroelectricity from Nepal through Indian Territory.

### **Renewable energy: Prospects and Opportunities**

At the COP26 conference in 2021, the Prime Minister of Bangladesh announced government's plan to generate 40% of electricity from renewable sources by 2041 and mentioned an initial plan to have 10% renewables in its total power generation capacity by 2020 according to the Power Sector Master Plan 2010's projection. However, at the end of 2020, the country was able to take its renewable footprint only to 3.50% of its total 22GW power generation capacity.<sup>22</sup> The failure to achieve the target by a big margin was owing to a lack of adequate resources and proper planning. Because of the limitation of the primary fuel resources (gas, coal, oil and hydro), Bangladesh has decided to diversify its power generation capacity to ensure supply security. Regional energy import is a big part of that diversification drive whereas cross-border energy trade will be a potential option to capitalize on renewable sources from neighbouring countries.<sup>23</sup> If this can be done, it will minimize the electricity generation cost, ensure supply of electricity from a cheaper source and optimize the possibility of access to reliable and affordable electricity and finally contribute to efforts aimed at reduction of environmental and climate change impacts to fulfil the obligation of SDG 7.

In this context, it goes without saying that regional cooperation would receive a big boost if these three countries can craft out a mutually beneficial framework. That power trade has been beneficial for the trading countries is obvious. In fact, the lower unit cost of per MW of electricity traded has been playing a major role in expanding the regional power market in Eastern South Asia. In 2013, Bangladesh started importing electricity up to only 500 MW, which has now reached 1,160 MW in 2022, which is around 10% of total power consumption in Bangladesh at the moment. It is notable that the Indian Electricity was about 38.27% cheaper than what the local producers charge per unit on an average and the cost of cross-border traded electricity was around 107% cheaper if it is compared with the local liquid fuel-based electricity

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<sup>21</sup> Prithvi Man Shrestha, "Nepal and Bangladesh lobby India for corridor to trade electricity", *The Kathmandu Post*, 12 January 2023, [Nepal and Bangladesh lobby India for corridor to trade electricity \(kathmandupost.com\)](https://www.kathmandupost.com/news/nepal-and-bangladesh-lobby-india-for-corridor-to-trade-electricity) (accessed on 25 February 2023).

<sup>22</sup> Eyamin Sajid, "Regional energy trade: This is how Bangladesh can achieve renewables target", *The Business Standard*, 03 September 2022, <https://www.tbsnews.net/bangladesh/energy/regional-energy-trade-how-bangladesh-can-achieve-renewables-target-489330> (accessed on 01 February 2023).

<sup>23</sup> Eyamin Sajid, "Loss-making BPDB finds cross-border power import a low-cost option", *The Business Standard*, 30 August 2022, <https://www.tbsnews.net/bangladesh/energy/loss-making-bpdb-finds-cross-border-power-import-low-cost-option-486550> (accessed 02 February 2023).

cost.<sup>24</sup> In fact, the average cost of locally-generated electricity using gas, coal and liquid fuel-based production, was a little over Bangladeshi Taka (Tk) 8 per unit and the average cost of diesel- and furnace oil-based electricity was above Tk 12 per unit whereas the per unit cost of the imported electricity was only Tk 5.80 in 2021. This is the reason why Bangladesh is trying to tap into the regional renewable energy sources to ensure a cost effective and sustainable supply of energy.

Bangladesh has always remained at the forefront to support any multilateral initiative taken at SAARC, BIMSTEC and BBIN for boosting cross border electricity trade (CBET) in the south eastern region. The country has also been engaged in bilateral discussions with both India and Nepal since quite a long time to set up a sub-regional power grid to support the energy needs of the respective countries. Though Bangladesh is slowly transiting from a chronic power-deficit country to a power-surplus one over the decades with the current installed capacity to generate 25,566 MW, the daily consumption rate is around 14,000 MW contributing to a gap between installed capacity and consumption rate. This gap could increase significantly particularly in winter causing huge operational losses, and this unused power reaches as much as 60% of the grid power generation capacity. This extra power could have been exported to the energy market of the regional countries.<sup>25</sup> Bangladesh has now been facing a huge overcapacity and the country is obliged to pay capacity charges to the power plants' owners on a regular basis. It is estimated that the annual capacity payment reached around \$1547.57 million in FY2021 which has caused huge operational loss (amounting to Tk11,509.12 crore).<sup>26</sup> The amount of loss may increase if the country fails to utilize the full capacity of power generated domestically. If Bangladesh can integrate itself with the regional power market and the proposed trilateral power purchasing agreement among three countries- Bangladesh, India and Nepal- fructifies, it would be of enormous importance for Bangladesh to bring sustainability in the power sector generation sector. Currently, it is not possible due to the lack of infrastructure and absence of procedure.

### Trilateral Mechanism

The proposed trilateral cross border power trade agreement will be a milestone in the diplomatic history of regional cooperation in South Asia. It might open enormous opportunities for this least-integrated region of the world and the countries of this region can get rid of the existing tendency of relying only on bilateral arrangements. The cost of ignoring regional and sub-regional cooperation has been immense and the countries of South Asia have started feeling the need of it to ensure sustainable growth and development. Earlier, a number of initiatives had been undertaken to bolster regional cooperation on energy and power using the platform of South Asian Forum for Infrastructure Regulation, South Asian Sub-regional

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<sup>24</sup> Eyamin Sajid, "Loss-making BPDB finds cross-border power import a low-cost option", *The Business Standard*, 30 August 2022, <https://www.tbsnews.net/bangladesh/energy/loss-making-bpdb-finds-cross-border-power-import-low-cost-option-486550> (accessed 03 February 2023).

<sup>25</sup> Syed Samiul Basher Anik, "Will Bangladesh join IEX in launching a new era for electricity? *The Dhaka Tribune*, 17 June 2022, <https://www.dhakatribune.com/op-ed/2022/06/17/will-bangladesh-join-iex-in-launching-a-new-era-for-electricity> (accessed on 27 January 2023).

<sup>26</sup> Ibid.

Economic cooperation (SASEC), SAARC and BIMSTEC. But none of these saw the light of the day because the member countries failed to reach a consensus. Now there is a golden opportunity to operationalize such initiatives to boost up, at the very least, the energy and power cooperation among the countries of South Asia at a sub-regional level.

The emergence of BBIN framework in 2015 has provided a mutually agreed framework to promote trilateral or multi-lateral cooperation in the field of transport and energy cooperation. The BBIN sub-region, which has higher potential for producing renewable power compared to other region in South Asia, can emerge as the highest concentration of renewable energy sources which can be shared with a maximum number of countries and people. The current intraregional energy trade within the BBIN bloc is limited to bilateral electricity trade between India and Nepal, India and Bhutan and India and Bangladesh, which needs to be trilateral or multilateral among these countries setting up a common power grid.

Only then, the countries of this sub-region can ensure sustainable supply of power at competitive prices to sustain their economic growth.<sup>27</sup> A possible regional grid connectivity may help attain the greater goal, especially in the context of sustainable development and climate change and fulfilling the agenda of SDGs. In a study done by ESCAP "Integrating South Asia's Power Grid for a Sustainable and Low Carbon Future" highlighted five critical areas to foster energy cooperation that would (a) deliver an increased supply of electricity, (b) provide enhanced energy security by diversifying supply, (c) reduce costs through arbitrage and economies of scale, (d) tap into underexploited energy resources such as hydropower and (e) allow greater use of variable renewable energy through balancing generation over larger pooled areas.

The countries located under BBIN are perfectly placed to boost electricity trade among themselves. Whereas Bangladesh and India can import excess power available with Nepal and Bhutan to meet their peak demands during summer and rainy seasons and can export to Nepal which suffers from huge demand of electricity during the winter. This seasonal demand variation might pave the way of boosting regional cooperation in this sector.<sup>28</sup>

## Challenges

- Policy and regulatory framework have been major challenges before the regional integration. BBIN member countries feel that India's guideline for cross-border electricity export/import (*see annexure-2*) has been a major hurdle in investments and

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<sup>27</sup> Khawaza Main Uddin, "Stepping towards multilateral energy cooperation", *The Financial Express*, 22 April 2022, <https://thefinancialexpress.com.bd/views/stepping-towards-multilateral-energy-cooperation-1650639266> (accessed on 27 January 2023).

<sup>28</sup> Eyamin Sajid, "Time to shift to cross-border energy trade to harness regional resources", *The Business Standard*, 04 September 2022, <https://www.tbsnews.net/bangladesh/energy/time-shift-cross-border-energy-trade-harness-regional-resources-489806> (accessed on 02 February 2023).

export of electricity, especially in Nepal. They feel that the guidelines set by India project energy as a strategic commodity rather than as a development enabler.<sup>29</sup>

- Several technical and mechanical challenges need to be addressed before finalising a tripartite agreement. For example, despite over dozen cross border connections between Nepal and India, there is an urgent need for synchronous operation of the central part of Nepal with the Indian system for high- capacity power transmission.<sup>30</sup> And more importantly, most of the existing transmission lines have limited capacity single-phase connections.

For example, on January 29, 2023, the Nepal government's request to the Bihar state government of India to provide an additional 90 MW of electricity was not possible immediately due to the low-capacity domestic transmission lines and existing single-circuit cross-border line. There are a dozen cross-border transmission lines between Nepal and India- 33kV, 132kV and 400kV capacities. Only the Dhalkebar-Muzaffarpur Cross Border Transmission Line has 400kV capacity, which can transport around 1,000MW. Other 11 cross-border transmission lines can transport just between 5MW and 125MW power.<sup>31</sup>

- Other technical challenges are: harmonization of frequency standards, voltage standards, reactive power management, real-time data availability at the load despatch centers, and setting up of voice communication between load despatch centers are essential for the smooth supply of electric power from one country to another.<sup>32</sup>
- There has been a perception in the smaller countries that there could be some domestic lobby in India behind slow progress in the trilateral agreement on energy cooperation.<sup>33</sup>
- There is a need for a dispute resolution mechanism. So far, the countries have been resolving the disputes by having dialogue at the bilateral level. In case of a trilateral agreement, the member countries could form a separate institutional mechanism to resolve disputes.

<sup>29</sup> "The Price of Power: The Political Economy of Electricity Trade and Hydropower in Eastern South Asia," *The Asia Foundation*, June 2018, New Delhi, p.16.

<sup>30</sup> S. R. Narasimhan, et al., "Success Story of India-Nepal Power System Operation" *Conference Paper*, presented at 8th International Conference on Power Systems (ICPS), place is not available, pp-2-4. The PDF version of the paper is available on [https://www.researchgate.net/publication/340690494\\_Success\\_Story\\_of\\_India-Nepal\\_Power\\_System\\_Operation](https://www.researchgate.net/publication/340690494_Success_Story_of_India-Nepal_Power_System_Operation) (accessed on 25 February 2023).

<sup>31</sup> Prithvi Man Shrestha, "Nepal seeks to buy extra 90MW power from Bihar to increase supply to Birgunj factories", *The Kathmandu Post*, 29 January 2023, <https://kathmandupost.com/national/2023/01/29/nepal-seeks-to-buy-extra-90mw-power-from-bihar-to-increase-supply-to-birgunj-factories> (accessed on 25 February 2023).

<sup>32</sup> S. R. Narasimhan, et al., "Success Story of India-Nepal Power System Operation" *Conference Paper*, presented at 8th International Conference on Power Systems (ICPS), place is not available, pp-2-4. The PDF version of the paper is available on [https://www.researchgate.net/publication/340690494\\_Success\\_Story\\_of\\_India-Nepal\\_Power\\_System\\_Operation](https://www.researchgate.net/publication/340690494_Success_Story_of_India-Nepal_Power_System_Operation) (accessed on 25 February 2023).

<sup>33</sup> "The Price of Power: The Political Economy of Electricity Trade and Hydropower in Eastern South Asia," *The Asia Foundation*, June 2018, New Delhi, p.8.

- In 2016, a trilateral cooperation among Bhutan, Bangladesh and India was discussed and draft of the MoU was circulated among the three countries. That would enable Bangladesh to invest in the Bhutanese power sector to re-import the electricity. Interestingly, no visible progress has happened in this regard so far.<sup>34</sup>
- Last but the least, the growing Chinese interest in the hydro energy sectors of Nepal could delay a trilateral agreement between Nepal, India, and Bangladesh since India takes the hydro energy sector in the Himalayas as a strategic issue given the competition and conflicting interests of India and China in the Himalayas.

The possibility of materializing the proposed trilateral power trade framework among Bangladesh, India and Nepal would largely depend on the development of a mutually agreed operational and sharing mechanism in terms of production and transmission. Any cross-border cooperation regarding the development of an interconnected power grid comprising these countries would be mutually supportive and beneficial for all. This cooperation will contribute to lower energy costs, improve reliability, reduce carbon emissions, and boost synergies among clean energy resources.

## Recommendations

1. There is a need for resilient and synchronized technical arrangements at the border points and at the same time there is also a need for a harmonized standard of pricing systems to ensure affordability, market competitiveness, and confidence among countries as well as the investors.
2. The existing bilateral arrangements should be upgraded and institutionalized by having a tripartite agreement between Nepal, India, and Bangladesh. This arrangement could be part of the BBIN framework.
3. A robust trilateral mechanism, technical synchronization, and guaranteed uninterrupted supply would facilitate investment and promote the participation of the private sector to further expand the cross-border electricity trade across the region.
4. There are domestic actors and vested interested groups in all the three countries, who subscribe to the rhetoric that this would not be strategically beneficial for each one of the countries. The positive narratives need to be circulated using the platforms of civil society and media.

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<sup>34</sup> “Bangladesh to invest in Bhutan’s hydropower,” *Kuensel*, Thimphu, 18 May 2016, <https://kuenselonline.com/bangladesh-to-invest-in-bhutans-hydropower/#:~:text=The%20Sheikh%20Hasina%20government%20of,the%20production%20from%20the%20project>. (accessed on 25 February 2023)

5. There are issues that need to be resolved in terms of resolving seasonal demand and supply through coordinated policies, data sharing, and establishing separate direct communication channels between load despatch centers and regulatory bodies in all the countries.
6. As the largest country in the region, India should take a proactive role in this regard. It would benefit India both economically and diplomatically.

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## Annexure-1

### Existing and upcoming transmission lines in Eastern South Asia

#### India-Nepal

##### *Operational*

1. 400kV Muzaffarpur (India)-Dhalkebar (Nepal) D/C
2. 132 kV Tanakpur – Mahendranagar (Nepal) S/C
3. 132 kV Valmikinagar-Surajpura S/C
4. 132 kV Kataiya(GSS)-Kusaha D/C
5. 132 kV Kataiya – Kusaha S/C (New)
6. 132kV Raxaul – Parwanipur S/C
7. 132kV Nanpara, UP (India) – Kohalpur (Nepal) D/C
8. 33 kV Nanpara – Nepalgunj (Nepal) S/C
9. 33 kV Sitamarhi-Jaleshwar S/C
10. 33 kV Raxaul-Birganj S/C
11. 33 kV Jaynagar-Sirha S/C
12. 33 kV Kataiyya-Biratnagar S/C<sup>35</sup>

##### *Under construction*

1. Gorakhpur (India) – Butwal (Nepal) 400kV D/C (under construction)
2. Dhalkebar (Nepal) – Sitamarhi (India) 400kV D/C (under construction)

##### *Planned*

1. 220 kv Inarwa-Basantpur (Bihar)-Baneshwar-Tumlingtar (Nepal) D/C
2. Six 400kV cross-border transmission lines. They are: Attariya-Uttarakhand, Lamki-Bareli, Kohalpur-Rupaidiha, Butwal-Gorakhpur, Muzaffarpur-Dhalkebar (Second Line) and Inaruwa-Bihar. Of these lines, construction of Butwal-Gorakhpur, Muzaffarpur-Dhalkebar (Second Line), and Lamki-Bareli is scheduled to be completed within 2028.<sup>36</sup>

#### India-Bangladesh

1. Baharampur (India) – Bheramara (Bangladesh) 400kV D/C lines along with 2x500 MW HVDC back-to-back terminal at Bheramara
2. Surajmaninagar (Tripura) in India to Comilla in Bangladesh 400kV (operated at 132kV)
3. Katihar (India)-Parbotipur (Bangladesh) and Bornagar (India) 765kV Double Circuit (Proposed)

<sup>35</sup> S/C - Single Circuit, D/C – Double Circuit

<sup>36</sup> “NEA conducts final tests on new Nepal-India transmission line”, Nepal Energy Forum, Kathmandu, 20 February 2016, <http://www.nepalenergyforum.com/nea-conducts-final-tests-on-new-nepal-india-transmission-line/> (accessed on 27 February 2023).

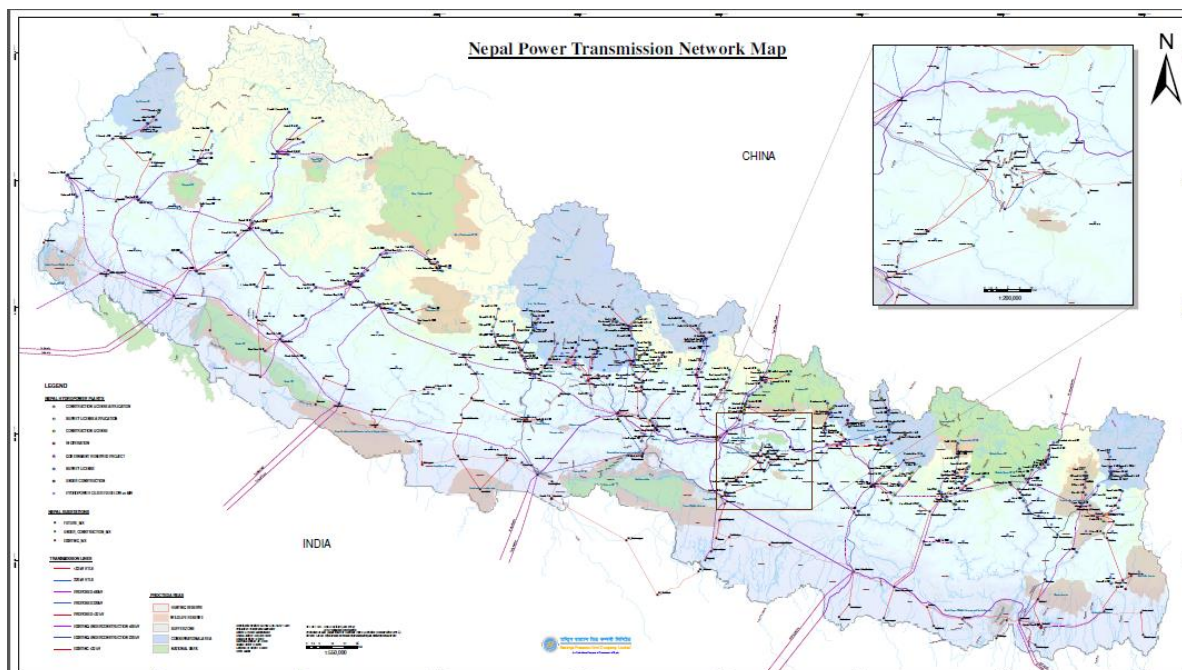
## Annexure-2

### List of regional and bilateral agreements for electricity cooperation

1. [Memorandum of Understanding for establishment of the BIMSTEC Grid Interconnection](#), signed in Kathmandu on 31 August 2018.
2. [SAARC Framework Agreement for Energy Cooperation \(Electricity\)](#), signed in Kathmandu, on 27 November 2014.
3. [Agreement between the Government of Nepal and the Government of the Republic Of India on Electric Power Trade, Cross-Border Transmission Interconnection and Grid Connectivity](#), signed in Kathmandu on 21 October 2014.
4. [Procedure for approval and facilitating Import/Export \(Cross Border\) of Electricity](#) by the Designated Authority, Central Electricity Authority, Ministry of Power, Government of India, issued in February 2021.
5. [Guidelines for Import/Export \(Cross Border\) of Electricity-2018](#), Ministry of Power, Government of India, dated 18 December 2018.
6. [Guidelines on Cross Border Trade of Electricity](#), Ministry of Power, Government of India, 05 December 2016.
7. [MoU between the Government of Nepal and the Government of the People's Republic of Bangladesh on cooperation in the field of power sector](#), signed in Kathmandu on 10 August 2018.
8. [MoU between Government of the Republic of India and Government of the People's Republic of Bangladesh on cooperation in power sector](#), signed in New Delhi on 11 January 2010.

### Annexure-3

**Map: Nepal Power Transmission Network Map**



**Source:** <https://moewri.gov.np/storage/listies/May2020/nepal-power-transmission-network-map.pdf>

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