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CHALLENGES AND OPPORTUNITIES IN FLYASH UTILIZATION IN THE COUNTRY



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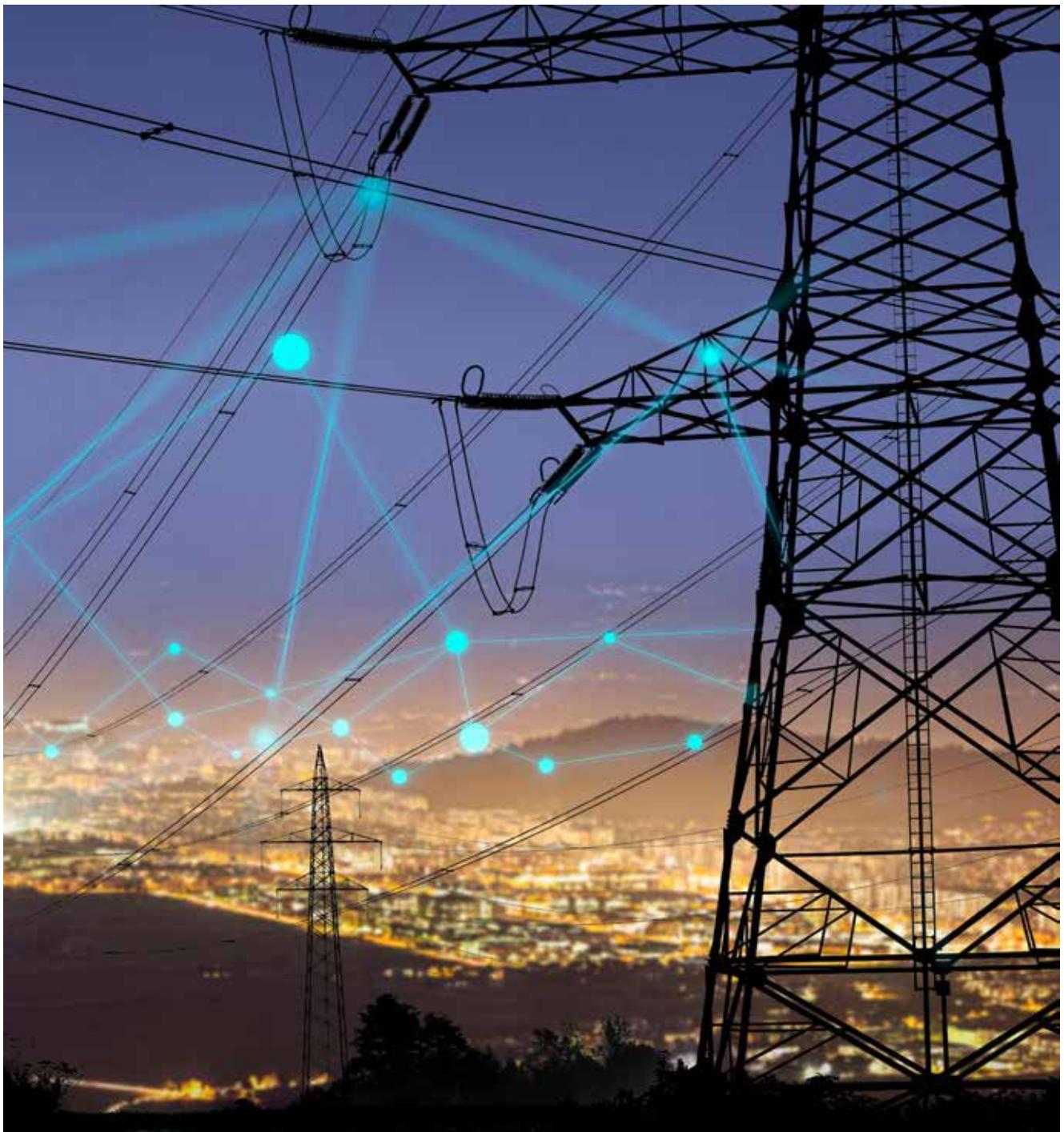
SPECIAL FEATURE:

**CROSS-BORDER ELECTRICITY TRADE BROUGHT TO THE FOREFRONT IN
THE AMENDMENT TO THE ELECTRICITY ACT 2003**

CROSS-BORDER ELECTRICITY

TRADE BROUGHT TO THE FOREFRONT IN THE AMENDMENT TO THE ELECTRICITY ACT 2003

The formal introduction of cross border trade of electricity in the Electricity Act of 2003 has opened doors for a wider alliance between India and its South Asian neighbours for electricity trading ultimately leading to a more solidified push towards the PM's vision of One World, One Grid, writes **Mr. Pankaj Batra, Project Director, SARI/EI, IRADe (also Ex-Chairperson, CEA)**.



The formal introduction of cross border trade of electricity in the Electricity Act 2003, is going to prove to be a game changer for South Asia. This would especially hold true in the case of electricity, as it comprises a major portion of the basket of energy products in South Asia. Earlier, we were looking only within the country to secure our energy needs. Of course, we grew from integrating states into regions, and regions into the National grid, where power can freely flow from any part of the country to another, depending on the need. The Government of India, as far back as 1964, through resolutions, conceived the Regional Electricity Boards with the objective of developing the power sector on a regional basis for optimum utilization of power resources in the regions. Five regions were conceived - the Northern Region, Southern Region, Western Region, Eastern Region and North-Eastern Region. Although this was conceived far back, the States got integrated into Regions only in the 1970-1980s. During the late 1990s, India had a huge surplus power in the Eastern Region and huge deficits in the Southern Region. This led the country to start thinking of integrating the Eastern Region with the Southern Region for a win-win situation for both these Regions, giving impetus to the formation of the national grid that was being discussed at the time. The Regions integrated into the national grid in the 1990s-2000s-2010s, finally achieving a fully integrated national grid in 2013. All this while, grid stability and reliability had been improving, while at the same time ensuring more and more optimal utilization of the country's power resources. Now, the time has come to look at a broader level, to take advantage of optimal utilization of power resources in the South Asia region.

Bhutan's grid has been integrated with the Indian grid since the first Government of India-supported hydro power plant, Chukha Power Project (336 MW), came up in Bhutan in stages during 1986-88. We have been trading electricity with Nepal since 1971, through radial connections, feeding only the border areas of Nepal, which were disconnected from the Nepalese grid, through mutual agreements. It is only recently, that both these countries are looking at much greater trade of power with the construction of Dhalkebar-Muzaffarpur 400 kV line in 2016, to supply power to large areas of Nepal, and anticipating trade taking place in both directions in the future. We also started exporting 500 MW power to Bangladesh in 2013, which was increased to 660 MW in 2017 and to 1160 MW in 2018. This has helped Bangladesh industries to get power immediately, and at competitive rates. The country's GDP rate, at 8.5% in 2019, was the highest in South Asia. There is also discussion between the Governments of India and Sri Lanka to connect the two countries through HVDC (High Voltage Direct Current) connections, to start trading of power between the two countries. The major hold-up is the cost of interconnection.

The natural complementary mix of generation resources in South Asia make the region's countries very good potential partners for trade in electricity. Nepal and Bhutan have predominantly hydro based power, which is seasonal and



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depends on water inflows. On the other hand, India and Bangladesh have predominantly thermal based power, which is firm. India has mainly coal-based and Bangladesh oil & gas-based resources. There are many occasions when the excess water in Nepal is being spilled during the monsoon season, whereas this zero-cost energy could have been used in India or Bangladesh. Similarly, Nepal suffers from inadequate power during the low inflow season. This prompted both countries-India and Nepal- to sign a banking arrangement for power in January 2019. Under this, the excess electricity from Nepal can flow to India during the monsoons and the same quantum of energy can be returned to Nepal in the winter season, when there is least inflow. It also allowed use of other opportunities for barter of power, even on a daily basis. Besides, India has a huge potential for wind and solar power, unlike its neighbouring countries. The neighbouring countries can purchase this renewable power from India, in order to fulfil their obligations to humanity for reduction of emissions. Nepal and Bhutan, through their fast-acting hydro generation, can provide for balancing of the intermittencies of renewable generation. These depend on the vagaries of nature, which would otherwise disturb grid stability. IRADe, a leading think tank in India, under the SARI/EI (South Asia Regional Initiative in Energy Integration) program supported by USAID, have been attempting to facilitate trade in energy resources, the main portion of which is electricity, through technical assistance and capacity building to the Governments of South Asian countries, so as to enable them to trade in electricity.

European nations' grids have been integrated since 1999 and even before, to some extent, and are reaping the benefits of integrated operation since then, since it is economically beneficial to all countries. More and more nations are joining the European grid due to the benefits accruing to them due to

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the interconnection. In November 2014, India along with the other countries of the South Asian Association for Regional Cooperation (SAARC), had signed the SAARC Framework Agreement for Energy Cooperation (Electricity), an agreement to enable cross-border electricity trade among the member states on a voluntary basis. Studies done by Integrated Research and Action for Development (IRADe), under the SARI/EI program, show that all the countries involved in trade in electricity, in South Asia, gain in terms of economic value. Later, in August 2018, the BIMSTEC countries also signed a memorandum of understanding for establishing grid interconnection between the members of the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC). The member states of the BIMSTEC are India, Bangladesh Myanmar, Sri Lanka, Bhutan, Nepal and Thailand.

Although cross border trade in electricity was going on with neighbouring nations since many years, it is only now that it has been introduced formally into the Electricity Act 2003 to give it a legal status by coining this term, and adding the function of making Regulations on Cross Border Trade in Electricity to the existing functions of CERC. Cross border trade of electricity is



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defined in the amendment as transactions involving import or export of electricity between India and any other country and includes transactions related to passage of electricity through our country in transit between two other countries.

This, therefore, allows countries without common borders to trade in electricity through a third country for optimal utilization of power resources in South Asia. This trade could be expanded further to implement the Hon'ble Prime Minister's vision of "One Sun One World One Grid". A ground level initiative in this regard is the MNRE calling for bids in May 2020 for Developing a Long-Term Vision, Implementation Plan, Road Map and Institutional Framework for Implementing "One Sun One World One Grid", to prepare a vision and roadmap for initially interconnecting Africa through Middle East, South Asia to South East Asia, followed by global interconnections, to utilize the renewable energy potential to take care of future energy needs in the globe. The vision is till 2050, with the principle behind being simple - the sun will always be shining in some part of the world or the other. Therefore, the energy from the sun and other renewable energy sources, can be used

to cater to the energy needs of the entire world. This will also reduce the balancing requirements of the grid for grid stability.

With cross border trade of electricity being given a thrust by inclusion in the draft Electricity [Amendment] Bill 2020, not only will all nations in the region benefit, but this may lead to a larger integration of the entire world for optimal utilization of power resources globally. This would be particularly more so in case of renewable energy resources, leading to a greener world. India would also increase its stature in world rankings and hence stand to gain geopolitically from this initiative.

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