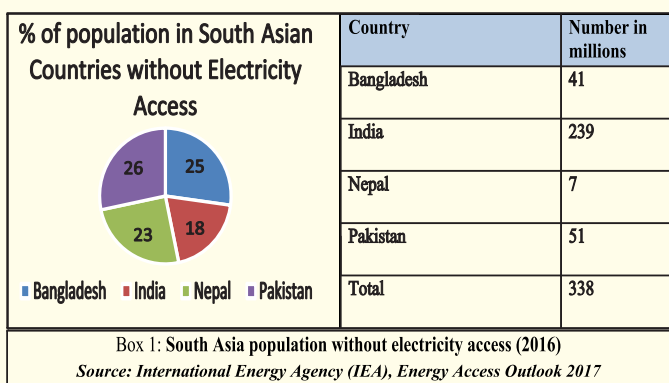


Socio-economic benefits of Cross Border Electricity Trade in South Asia

Policy Brief

Energy access scenario

Globally, 1.3 billion people are without access to electricity, of which around 338 million are in South Asia. Energy poverty is one of the key reasons for the lack of economic development and low gross domestic product (GDP) in South Asia. Sustained economic growth in South Asia is highly dependent on enabling sustainable generation, transmission and distribution of electricity within the region. Differing resource endowments, development needs and demand patterns among the countries in South Asia create significant opportunities for cooperation and trade in the energy sector.



The studies were done in Nepal, Bangladesh and Bhutan covering issues such as increasing energy access in Bangladesh, the impact of hydro dams on villages around dam sites in Nepal and Bhutan, low carbon development and the role of hydropower, as well as economic, gender and technological issues confronting society. The surveys explored society and energy interactions, and connected Cross Border Electricity Trade (CBET) with ground level realities by

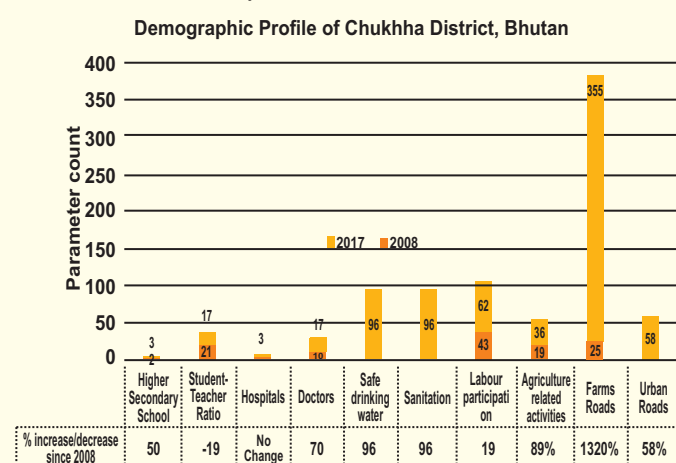
capturing voices of people through surveys. Key learnings and policy recommendations from these studies are presented here.

Socio-economic impacts of hydropower projects in Bhutan and Nepal

South Asia has a potential of 350 gigawatts (GW) hydropower, of which only 20 percent has been exploited. Nepal and Bhutan have economically feasible hydro potential of 40 GW and 23.7 GW respectively. India, the largest economy in the South Asian region, has driven investments in power projects in Bhutan and Nepal.

The Tala Hydro power plant is one of the largest power plants in Bhutan and has the capacity to produce 1022 megawatts (MW) where the Government of India invested in CBET to India. The power trade has been a win-win situation for both India and Bhutan: India received electricity, and Bhutan got the revenues. In Bhutan, the revenue generated from the power projects has driven investments in the social sector and infrastructure projects. The per capita income of Bhutan was US \$2,805 in 2017, which is much higher than that of India's at US \$1,715. All households, schools and Basic Health Units (BHUs) in the local communities are 100 percent electrified with 24/7 availability. Field level surveys were done to assess the impact of electricity on gender and the standard of living in the Chukhha district where the Tala Power Plant is established. It was found that access to electricity has predominantly improved the quality of lives of students, women and rural households. Further,

the quality of services of BHUs, transport and communications also improved tremendously. The use of electric cookers and water boilers proved to be extremely beneficial for women. With reduced cooking times, women could engage in other economic and non-economic activities. It also resulted in reduced exposure to smoke created by fuelwood, which, in turn, improved the health of women. The quality of social life also improved with access to electricity.



Graph 1: Comparative changes in demographic profile of Chukhha district, Bhutan 2008- 2017

Source: National Statistics Bureau, Bhutan

The demographic profile of the Chukhha district in 2017 compared with 2008 (Graph-1) suggests an improvement in sanitation, availability of safe drinking water and an increase in the number of schools. The project construction has led to tremendous improvement in farm roads, urban roads and diversification of agricultural activities.

The Rahughat Hydroelectricity Project, located in the Myagdi district of Nepal, has the capacity to produce 32 MW of power. The project was jointly financed by the EXIM Bank (India) and the Nepal Electricity Authority. The project was sanctioned in 2006 and was scheduled to be completed in 2016, but is still under construction, as the process was suspended due to the contractor's inability to carry out the works. Focused group discussions and surveys were done to assess the impact of the Rahughat project on the standard of living of the locals. The study revealed that the local communities did not accrue much benefit in the form of job creation, as the contractors and sub-contractors did not hire locals, but brought laborers who were willing to work for lower wages from outside the district and

even from India. The acquisition of the land did, however, create wealth for the local villagers who received rates 60 percent plus higher rates compared to the prevailing market. Many villagers who benefited from the land sale invested in road construction machinery which remained unutilized when the project was halted and the equipment went un-rented. The project, however, improved the road infrastructure in the project area where an all-weather road was constructed, connecting the villages to the highway. Local communities anticipate that the project completion would lead to access to better education, health services and drinking water in the area. Access to electricity amplified rural economic activities such as growth in the hospitality business, while warehouses for various contractors to store their equipment was established in and around the power projects, providing jobs and income to the community.

Socio-economic impacts of CBET in Bangladesh

Bangladesh is one of the least electrified countries in South Asia, with the lowest per capita electricity consumption in the region. This means almost half the people in rural areas are still living in the dark with no power supply. Cross-border electricity imports between Bangladesh and India started in 2013 through Beharampur (India) and Bheramara (Bangladesh). A 400 Kilovolt (KV) double circuit line passes through the two substations in the two countries and allows Bangladesh to import 500 MW through this connection. After CBET was initiated, research was undertaken to understand how gaining access to electricity has made socio-economic impacts on the lives of people residing in the Bhangapara village in the Ramkrishnapur union in Bangladesh. In order to better understand the impacts of grid electricity, another village, Chilmari, in the same Upazila was selected as a control village. Survey results reported that electricity has widened the horizons of the people. Better connectivity has improved the exchange of information related to work and business. Earlier, when the village was their entire world, daily wage laborers went without work for several weeks in a year. Now, workers can access information on where employment is needed and choose to work where there are better salaries. New technology that came with the introduction of

electricity has improved people's livelihoods and the economy in these villages.

The quality of the electricity, however, is still a concern in the villages surveyed, as load shedding is an everyday affair.

Some of the effects and impacts of expanding grid electricity in rural Bangladesh, based on the surveys done in two bordering villages, are provided in Table 1.

Nature of Service	Effect	Positive Impacts
Electrification	Increase in land prices Improved infrastructure Investments Connectivity	Wealth generation Transport Health Education Income
Lighting	Hours of Study Change in time use	Education Health
Mobile Phones	Communication	Savings Employment Income Education
Cooking	Reduce air pollution Utilise time for productive activities	Time Saving Health Education
Computers, TV	Information Knowledge Skill Development	Jobs Income Health and Well being
Transport	Increased mobility	Time & Cost Savings Jobs
Fan/Coolers	Increased working hours Reduced heat stress	Income Health Education
Refrigeration	Storage of vaccines Medicine storage	Health
Water Pumping	Clean potable water	Time savings Health

Table 1: Impacts of electrification and electricity in bordering villages of Bangladesh

The study also highlighted that importing electricity from India is one of the most economical choices for Bangladesh. Since this prevents the country from having to exploit its natural resources and developing fossil fuel-based power plants, it reduces the country's greenhouse gas (GHG) emissions and has notable environmental benefits. The funds saved from not having to invest in new infrastructure for the power sector can now be invested in other sectors and help boost the country's economic growth. Importing electricity instead of producing

electricity through primary energy sources will also expedite the process of providing electricity to the target population: remote villages that were previously not electrified can be given electricity without having to go through a long waiting period.

Policy recommendations

Power generation project design

The Rahughat Hydropower project provides lessons on the need for redesign of power development projects. Lowest bidding should not be the sole criteria for the selection of bidders: value for money (VFM) criteria, and not simply the lowest price, where appropriate VFM criteria should include risk mitigation and compliance on time, in addition to environmental factors in consideration. The local population should be an important stakeholder of the project and such projects should invest in development of local skills and capacity building. These activities should be part of the project design to have wider engagement and involvement of local communities for the creation of jobs for the locals. Power projects act as major stimulants to the local economy and their co-benefits include improved infrastructure and connectivity.

Socio economic development

Electricity has a multiplier effect on the economy. The revenue generated from the power projects further drive investments in the social sector and infrastructure projects as is observed in the case of Bhutan. Revenues generated from the power trade have the potential to boost Nepal's economy, which has a high electricity generation potential.

When people gain access to electricity, the economy is supported by new electric technologies; women can adopt modern cooking practices, primary healthcare centers can be equipped well, students achieve improved academic performance, and the general quality of life is dramatically improved.

The case studies of villages in Bangladesh being electrified clearly show that electricity improves the quality of life significantly for both women and men, but especially women since they are now able to expand their usual chores throughout the day and engage in more activities. Some of the positive impacts of expanding grid electricity

in rural Bangladesh include wealth generation, communication, transport, health, education, income and employment.

Quality of electricity

Frequent power cuts and low voltage are major concerns in most South Asian countries. Load shedding is common and happens daily in rural and urban areas. The power shortages need to be addressed. Given the varying demand patterns in the South Asian region, CBET can help provide uninterrupted quality electricity—and that, too, at competitive prices. The provision of uninterrupted and quality electricity can help achieve and sustain economic growth in the region.

Distribution of electricity.

Power trade does not guarantee the distribution of electricity to rural people. It has been observed that urban and industrial areas have higher demand for electricity and generally get priority over villages from the limited pool of electricity. Rural areas that lack access to electricity are usually ignored in the process, and as a result they have no development gains, which further marginalize them. CBET policies also need to include the provision of basic electricity facilities for rural areas so that people in these areas are not deprived of electricity and can improve their standard of living. To start with, the provision of basic lighting service makes a significant difference in rural areas. CBET can thus play an important role in the

provision of electricity for the rural population in India, Bangladesh and Nepal who do not have access to electricity. This will also benefit the countries supplying the electricity as they will receive additional income.

Sustainable Development Goal 7 (SDG7): SDG 7 aims to achieve universal access to affordable, sustainable and clean energy for all. Regional energy cooperation in South Asia can lead to achieve sustainable energy for all by 2030, and it has the potential to achieve other SDGs linked with access to electricity.

Conclusion

Energy poverty can impede a community from progress and lower its quality of life. This urgently calls for greater energy cooperation between nations in South Asia, as an adequate energy supply can be all that is needed to pull a community out of extreme poverty. A more equal distribution of energy can contribute to greater equality in gender, health, nutrition and education in the world. While CBET offers huge benefits, there are various related technical, political and regulatory challenges that need to be addressed in a timely and effective manner. But it is well worth the effort as CBET has huge potential to support South Asia's aggressive pursuit of economic growth and help achieve SDGs.

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