

IMPROVING REGULATORY ENVIRONMENT FOR A REGIONAL POWER MARKET IN SOUTH ASIA

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ABBREVIATIONS

ADB	-	Asian Development Bank
AERA	-	Afghanistan Electricity Regulatory Authority
BEA	-	Bhutan Electricity Authority
BERC	-	Bangladesh Energy Regulatory Commission
BPC	-	Bhutan Power Corporation
CEB	-	Ceylon Electricity Board
CERC	-	Central Electricity Regulatory Commission of India
DABS	-	Da Afghanistan Breshna Sherkat
ETFC	-	Electricity Tariff Fixation Commission of Nepal
NEA	-	Nepal Electricity Authority
NEPRA	-	National Electric Power Regulatory Authority of Pakistan
NTDC	-	National Transmission and Dispatch Company
PGCB	-	Power Grid Company of Bangladesh
PUCSL	-	Public Utilities Commission of Sri Lanka
RPX	-	regional power exchange
SIAC	-	Singapore International Arbitration Centre
SARI/E	-	South Asia Regional Initiative in Energy
SAARC	-	South Asian Association for Regional Cooperation
SARPES	-	South Asia Regional Power Exchange Study
SEC	-	South Asia Association for Regional Cooperation Energy Centre
SRETS	-	SAARC Regional Energy Trade Study
USAID	-	United States Agency for International Development

EXECUTIVE SUMMARY

South Asian countries continue to face challenges such as poor access to energy, energy shortages, and concerns for energy security. The availability of primary sources for generating electricity vary across the region, and the potential for operational synergy provide room for cross-border electricity trade cooperation in the region. The economic and environmental benefits of such cooperation can be harnessed to its full potential if the existing barriers to enhance power marketing and barriers to cross-border trade of electricity can be reduced. For trade of electricity to be smooth across the region, policy and regulatory environments governing the power sector need to be harmonized. The adoption of the South Asian Association for Regional Cooperation (SAARC) Framework Agreement for Energy Cooperation (Electricity) during the 5th SAARC Energy Ministers' Meeting and the 18th SAARC declaration in Kathmandu in November 2014 is a step toward achieving this harmonization.

This paper examines the power sector regulatory and policy environment in the South Asian countries in the context of cross-border power trade. It identifies key issues influencing rapid development of cross-border power trade and provides specific recommendations to address these. Among others, some of the key areas that need attention are providing trading licenses, allowing open access transmission and distribution networks, coordinating transmission planning and power system operation, forming a nodal agency for cross-border power trading, and resolving disputes.

The paper provides recommendations to improve policy and regulatory environment in the short, medium, and long term. These include, among others, identifying a nodal agency for cross-border trade until it is opened for wider participation; harmonizing key rules governing access to transmission, including cross-border interconnections and pricing; reducing commercial barriers for electricity trade; developing a framework to address system imbalances related to cross-border trade; establishing bilateral mechanisms and a regional framework to resolve disputes; allowing open access initially for transmission network and later for distribution network; and developing a regional transmission plan and a harmonized grid code in the medium to long term. The paper also suggests possible changes required to the existing electricity legislations in individual countries to accommodate and enhance regional electricity trade.

The paper concludes that economic power exchange would not happen without the appropriate policies and without harmonizing legal and regulatory frameworks in all the necessary systems. If left to bilateral trading, the status quo of a limited trading regime will leave the vast economic, reliability, and environmental benefits unrealized. Experience across the world shows that such legal and regulatory changes can be accomplished successfully.

I. INTRODUCTION

Low access to energy, energy shortages, and energy security concerns are among the key drivers for strengthening regional power sector cooperation in South Asia. The availability of primary energy sources in the region vary—large hydro potential in Bhutan, India, and Nepal; indigenous resource limitations in Maldives and Sri Lanka; and unmet energy demand in Bangladesh, India, Nepal, and Pakistan that require significant energy imports (Rahman et al., 2011). The increasing aspiration for economic growth and better and sustainable lifestyle for about 1.5 billion population in the region through access to modern energy sources demand greater cooperation. Regional cooperation will help develop the regional primary energy sources to generate electricity, cross-border transmission infrastructure, and a regional framework that will coordinate energy resource development and trade of electricity across the region. In parallel with harnessing investment to generate electricity and cross-border power transmission infrastructure, development of a seamless regional electricity market is also required. That would need harmonizing policy, legal, and regulatory frameworks governing the power sector in the individual countries. Further, a regional mechanism is needed to develop coherent rules for grid connectivity, energy accounting, payment, and dispute resolution. This paper is an outcome of a detailed analysis of legal and regulatory aspects governing the power sector in individual South Asian Association for Regional Cooperation (SAARC) members in the context of a regional power market.

Small scale cross-border power trade involving isolated power networks in border areas such as those in the India–Nepal border and Bhutan–India border can continue even without harmonizing policy, legal, and regulatory environments discussed in the paper. This is also the case when generating stations solely dedicated for exports are directly connected to the power system across the border. In both these situations, though physically there are cross-border flows, electrically such flows occur within the same power system. However, mutual understanding between the governments of the countries involved is needed to proceed with such specific bilateral trade.

Techno-economic analysis of partially or fully integrated SAARC power systems indicates that cross-border power trading is both technically feasible and economically attractive (Wijayatunga et al., 2015). There are, however, a host of legal and regulatory issues that need to be addressed for cross-border trading to take place smoothly. This paper will first discuss the legal and regulatory requirements for developing a regional power market and evaluate these in the context of the current environment in the respective South Asian countries. Then, the paper will identify the necessary changes needed in the prevailing legal and regulatory environment to facilitate cross-border power trading in a phased manner.

II. SAARC ENERGY INTEGRATION

The SAARC countries aim to build greater cooperation initially in five agreed-upon areas: agriculture, rural development, telecommunications, meteorology, and health and population. To explore greater regional cooperation in the energy sector, a technical committee on energy was setup in January 2000. This engagement was enhanced in January 2004 with the Council of Ministers approving the creation of a specialized working group on energy.

Subsequently, the first meeting of the SAARC energy ministers held in Islamabad in October 2005 led to the formation of an expert group to identify options and potential of energy conservation and energy efficiency measures, and to formulate a road map for its implementation across the region.

A significant step to enhance energy cooperation in the region was taken in the Thirteenth SAARC Summit, which decided to setup the SAARC Energy Centre (SEC) in Islamabad. The main objective of the SEC setup in 2006 is to play the role of a regional institution of excellence that will initiate, coordinate, and facilitate SAARC programs in energy. SEC provides technical inputs to the energy working group. One of the key goals of SEC is to facilitate energy trade by establishing regional electricity and natural gas transmission grids.

The working group on energy during the Fifth Meeting held in Bhutan in April 2009, decided to establish experts' groups on oil and gas, electricity, renewable energy, and technology and knowledge sharing (including energy efficiency and coal). These expert groups will prepare the groundwork for energy cooperation in the specific areas. This will lead the way to energy sector cooperation in the SAARC member states. The task force on electricity has developed a common template on technical and commercial aspects of electricity grid interconnection among the SAARC member countries.

Multilateral institutions such as the Asian Development Bank (ADB) and bilateral agencies such as United States Agency for International Development (USAID) have played a significant role in fostering greater energy sector cooperation in the region. Its South Asia Regional Initiative in Energy (SARI/E) started in 1998 has been focusing on various aspects of regional energy cooperation through studies and training programs.

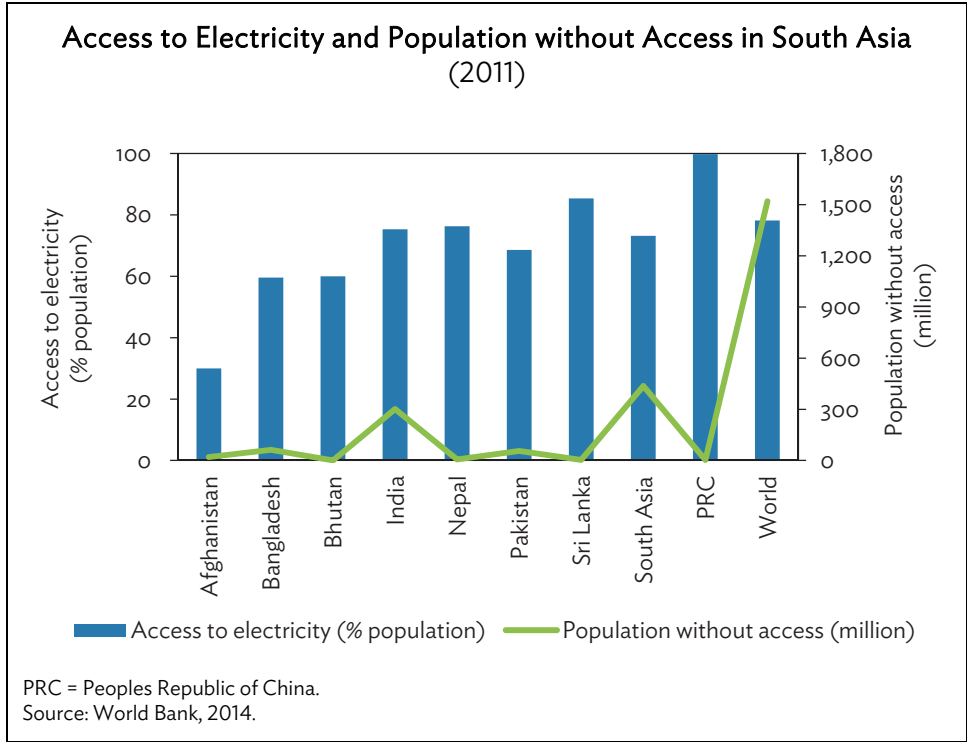
In 2007, ADB commissioned the SAARC Regional Energy Trade Study (SRETS) and administered it jointly with the SAARC secretariat with regular inputs and review from the SAARC member states. The study recommended four specific new areas to explore in regional energy cooperation. They are setting up of a regional power market, regional petroleum refinery, regional liquefied natural gas terminal, and a regional power plant. While SRETS did not deal with the policy and regulatory aspects of regional power market in detail, it emphasized the need for a broad agreement on the mechanisms to be followed at a bilateral level followed by those needed for a multilateral electricity trade platform. Rahman et al. (2011) suggested development of a SAARC regional energy trade and cooperation agreement and a regional trade treaty inclusive of energy trade. The region has experienced slow progress in expanding regional electricity cooperation and trade, and policy and regulatory initiatives are necessary to accelerate the process (Singh et al., 2015).

As a follow up activity, in 2010 ADB, jointly with SAARC, commissioned the South Asia Regional Power Exchange Study (SARPES) which this paper is based on. Subsequently in 2014, ADB commissioned a study to develop a regional cross-border electricity transmission master plan to identify the possible options for transmission interconnections within the SAARC region. The ongoing power trade between Bangladesh and India is expected to grow in its trading volumes with ongoing and possible future cross-border interconnections. Also expected are the development of large hydropower plants in Nepal, additional interconnections between India and Nepal, and large-scale trading volumes between India and Nepal. These circumstances require more focused attention to power trading. Therefore, ADB also initiated a study in 2014 to examine the feasibility of establishing separate entities for power trading in Bangladesh and in Nepal for cross-border power trade.

III. THE POWER SECTOR IN SOUTH ASIA

Most countries in the South Asia region continue to witness power shortages in spite of adequate primary energy sources available in the region. Apart from electricity shortages, a significant part of the population (about 300 million) do not have access to electricity. Amid shortages in India, buyers and

sellers have been able to trade electricity through a number of licensed traders as well as the two existing power exchanges. This has allowed a lot of dormant capacity (especially with the captive generators) to be brought to the market. While the trade of electricity constitutes a small proportion of total electricity generated in the country, the relevance and the effectiveness of a competitive platform such as a power exchange has been established.



The existing Bhutan–India, Bangladesh–India, and India–Nepal cooperation in trade of electricity is restricted to bilateral treaties and agreements, where designated nodal agencies from respective countries are solely responsible for export and import of electricity. The price of the electricity traded from a project is based on agreements that take into account relative sharing of the cost of the project and the project benefits, rather than a market-driven process reflective of current demand–supply conditions. Nevertheless, some developments highlight the growing acceptability of a market mechanism to engage in cross-border electricity trade. An India–Nepal electricity trade arrangement, where electricity is sold by a licensed electricity trader, and the nodal agency, from India to the Nepal Electricity Authority (NEA) on commercially determined prices is a positive step in this respect.

A task force to evolve a common template on technical and commercial aspects of electricity grid interconnections among the SAARC member states studied the techno-commercial as well as certain legal and regulatory aspects of each of the SAARC member countries (SAARC, 2010). The task force identified some of the technical benefits of interlinkages related to the power sector and reviewed some of the technical, operational, and legal and regulatory aspects of the SAARC member countries. The report overviews the existing power scenario in the member countries and the organization of the sector, and identifies key laws governing the sector. The report lists some of the existing trade arrangements and the power market environment in some of the member countries but does not elicit

a discussion on appropriate policy and regulatory changes required to help develop the power market in South Asia. Such a discussion is the main objective of this paper.

We identify the following four key areas that influence competition in a power market, and which allow for greater participation for electricity trading. These are generation licensing; transmission and its access; competition and market access; and taxation of import, export, and transit of electricity.¹ We first evaluate the current legal and regulatory status of these functions across seven identified SAARC member countries, namely Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka, and then suggest legal and regulatory changes for the development of a regional power market.² We further classify these recommendations as short term and medium term to help policy makers develop a road map to achieve the ultimate goal. The short-term recommendations indicate minimal changes needed to develop cross-border trading beyond the limited bilateral trading currently being undertaken so as to fully utilize new interconnection capacity that is likely to be built over the next 5 years.

IV. REGULATORY ENVIRONMENT FOR REGIONAL TRADE

South Asian countries have witnessed significant reforms and restructuring in the power sector. New legislations and amendments to the existing ones have led to the opening up of the sector to greater private investments and competition in some countries. Due to a common historical legacy, the power sector in most of the South Asian countries has been structured on a similar pattern, where government-owned integrated utilities largely generate, transmit, and distribute electricity.

The reform process in the power sector in the South Asian countries began in the early 1990s. The initial focus of the reform process was to create a space for private investment. Later, the process of reform was broadened to bring about changes in the market structure to enable competition at a varying pace and scope across the countries in the region. Delicensing of electricity generation, open access of transmission, and recognition of electricity trading has ushered in an era of competitive power marketing in India. Bilateral initiatives have led to cross-border cooperation for development of power projects and trade of electricity. The process of reform does not explicitly take into account the potential for a multilateral power trading mechanism in South Asia that would permit participants from member states to exchange electricity at a competitively determined price on a power exchange.

The experience of internal power market integration in India and cross-border power market integration in Europe, the Americas, Southeast Asia, and Africa provide insights to the evolution of regional market development (Singh and Toman, 2015). The growing trade of electricity among some of the countries highlights the technical feasibility and economic desirability of regional-level cooperation in South Asia. Restrictive agreements, however, limit the scope for participation in wider cross-border electricity trade and also stifle competition among buyers and sellers across the region. Based on these experiences and fundamental aspects of competition in power markets, the following enabling factors facilitate the development of a competitive regional power market in South Asia. These could be incorporated through appropriate changes in the legal and regulatory environment in the respective countries in a phased manner to accommodate differences in the status of sector reforms in each of the respective countries.

¹ This also covers some relevant aspects of distribution of electricity.

² Due to low and dispersed demand, and large distance separating Maldives from the other countries, the economic feasibility of its participation in cross-border trade seems very low. Hence, we exclude it from this analysis.

A. Trading License and Generation Delicensing

Recognition of and licensing for trading of electricity, including provision for cross-border trade would enable development of a cross-border market. In India, a trading license is not necessary to allow an entity to participate in power exchange. However, a trading license may be an advisable requirement for other countries, where generation remains a licensed activity. This would help limit trading to licensed entities at the initial stage, and provide flexibility to open up the domestic market later. Participation of entities located in SAARC countries on a competitive platform like the power exchanges in India would benefit both buyers and sellers. The generation licensees, bulk suppliers (if licensed separately) and distribution licensees can be recognized as deemed trading licensees. Separate licensing may be necessary for other entities interested in engaging in electricity trading. This can be relaxed later for market participants who would trade only on a power exchange. Initially, if desired, the participating member countries may identify a nodal government entity to engage in cross-border trade of electricity. Since this would limit market participation and competition, this should be used only on the short term. Market participation should be expanded with the onset of open access regulations for the transmission network. As a long-term goal, delicensing of generation would usher in an era of competitive markets in South Asia. Given the current experience in India, this would enhance private investment in increasing capacity in the respective countries, as well as prospects for cross-border electricity trade. Due to hydrological aspects, licensing of large hydroelectric power projects may need to continue. However, thermal and renewable generation can potentially be delicensed at an early stage in the rest of the South Asian countries.

B. Open Access to Transmission Network

Nondiscriminatory open access of transmission is one of the most important ingredients in developing a competitive power market.³ To enhance cross-border electricity trade, rules and regulations in granting open access should be introduced and harmonized across participating countries. Nodal agencies need to coordinate the procedures in granting open access for cross-border links. If a single nodal agency from a nation engages in cross-border trade, open access may not be required as cross-border interlinkages would be used solely by a single user. Harmonization of open access rules should ensure common definitions (in terms of short-term and/or long-term open access) and similar charges for grant of open access and time window for granting open access. Due to the increasing role of independent power producers (IPPs) and captive generating plants, and unbundling of integrated public utilities, nondiscriminatory open access is highly desirable to ensure development of a competitive market in the region.

C. Open Access to Distribution Network

Though open access is not essential at the initial stage, open access of the distribution network for eligible consumers (e.g., above 5–10 megawatts initially) would enhance market participation and introduce greater competition. This raises the concern for loss of cross-subsidization by larger industrial and/or commercial consumers who are eligible to choose their suppliers for meeting part or full requirements. Following the experience in India, a cross-subsidy surcharge may be initially introduced for such consumers and be phased out later.

³ Allowing access to the use of transmission network services by any party without discrimination to transfer power from a generating station to a load center at a fee set by the regulatory authority.

D. Coordinated System Operation and Treatment of System Imbalances

The grid code followed by the system operator in each participating country should be regionally coherent and provide for a coordinated system operation to facilitate cross-border trade.⁴ These include similar metering and data transmission protocol. Further, a mechanism to treat system imbalances due to departure from scheduled power transfer for the entities within the countries should be introduced to enhance grid discipline and reduce incentive for gaming. Until a mechanism is evolved for power systems in respective countries, imbalances from scheduled cross-border trade can be settled based on the prevailing commercial mechanism for unscheduled interchanges in India.⁵ Given India's successful implementation of such a mechanism, and adoption of the same under commercial agreements with entities in Nepal and Bhutan, a harmonized mechanism of similar nature may be devised for the region. This is essential for countries interconnected on a synchronous manner with alternative current links.

E. Transmission Planning

Investments in cross-border linkages are currently made through bilateral agreements. In case of cross-border trade being initiated through an identified nodal agency in respective countries, the transmission linkages can incorporate certain excess capacity to accommodate trade, including that through a power exchange. This would socialize the cost of transmission interlinkages. Further, as a uniform policy to develop such interlinkages, the importer of electricity under the bilateral contract should either invest such transmission links or, if built by the other party or private investor, pay for the applicable transmission charges. At a later stage, a regional mechanism to develop transmission in a regional power market would require coordinated planning across countries in the region. This would help to develop cross-border links with adequate capacity and redundancy to facilitate regional trade through a power exchange. The transmission costs of spare capacity will be shared by the respective entities or the existing beneficiaries of those linkages. A formal cost-benefit analysis regime such as the regulatory investment test in other countries may need to be introduced to provide a basis for transmission investment decisions, planning, and cost allocation.⁶

F. Energy Accounting, Clearing, and Settlement

With the increasing scale and scope of cross-border energy transactions, a regional mechanism for energy accounting, clearing, and settlement would be necessary. This would mitigate the risk against delay or default in payment and would also avoid disputes associated with such transactions. This should also account for transmission losses. Due to day-ahead and hour-ahead transactions, such a mechanism should be operated transparently on an electronic basis. A common currency (e.g., US dollar) for trade settlements would reduce currency risk for the participants.

⁴ A grid code is a technical specification which defines the parameters a facility connected to a public electric network has to meet to ensure safe, secure, and economic proper functioning of the electric system.

⁵ In case of a delay in developing such a mechanism for national power systems, the identified nodal agency or bulk supplier would continue to bear the risks associated with such imbalances and absorb the associated financial implications.

⁶ Regulatory investment test is carried out to ensure that the investments in the power system, cost of which need to be recovered from the consumers through electricity tariffs, are prudent.

G. Policy for Regional Electricity Trade

The relevance and promotion of regional electricity trade and development of a market should be part of the national energy or electricity policy of the respective countries. This would ensure that the respective regulatory institutions take appropriate steps to facilitate cross-border electricity trade in the region. A regional electricity trade agreement among the SAARC countries could provide an umbrella framework to move toward a South Asian power market and facilitate appropriate legal and regulatory changes.

H. Taxes and Duties

Appropriate tax laws in all member states should provide for the exemption of export tax or import duties of electricity traded through a power exchange. Without this exemption, the development of a regional power exchange (RPX) could suffer. Anonymous bids on power exchanges cannot take into account different levels of duties and taxes, which can only be applied after a particular cross-border trade has been cleared by the exchange. The uncertainty of export tax or import duties would impede participation in power exchanges. Nepal's current level of export tax, for example, is low enough not to have significant impact on participation in a power exchange. However, a broad regional agreement should ensure that these levels are not significant in future and are regionally harmonized. Given the geographical topology of the countries and resource dispersion, mere transit of electricity through a nation for onward consumption may well be necessary to encourage multilateral trading. Each of the participating member countries should exempt electricity trade from transit tax on a reciprocal basis.

I. Dispute Resolution

A regional agreement should provide for joint resolution of dispute in the case of cross-border power trade. Toward this end, a coordination committee of the participating member states could be empowered to adjudicate between the parties involved in cross-border electricity trade. The recent power purchase agreement between entities from India and Bangladesh has chosen Rules of Arbitration of Singapore International Arbitration Centre (SIAC Rules) for the purpose of arbitration. This model can be followed up at a regional level as well.

V. PROPOSED CHANGES TO POLICIES, LAWS, AND REGULATIONS

The proposed policy, legal, and regulatory changes and introduction of a nodal agency to engage in cross-border electricity trading are evaluated in terms of their merits as well as demerits or challenges in implementation (Table 1). The identified areas to be addressed to create an enabling environment for the development of a competitive regional power market in South Asia are translated to specific legal, policy, and regulatory changes in respective countries in this section.

Keeping these requirements in mind, we identify some of the specific policy, legal, and regulatory provisions to be added or modified in the existing framework, or to be presented as a part of new legislative initiatives in respective countries.

Table 1: Key Changes to Policies, Laws, and Regulations: Advantages and Possible Actions

	Regulatory Legal Changes	Advantages	Possible Actions
1	Nodal agency to engage in cross-border trading	<ul style="list-style-type: none"> • Regional trade initiated • Electricity shortage reduced • Idling or excess generation capacity in the region used optimally 	<ul style="list-style-type: none"> • Allow trading license to enhance participation so that market and competition is opened
2	Trading license and generation delicensing	<ul style="list-style-type: none"> • Greater investment from generation delicensing produced • Avenues opened for trading license of unutilized generation capacity • Electricity shortage reduced • Competition enhanced 	<ul style="list-style-type: none"> • Improve system operation procedure and energy accounting for scheduling of trade transactions
3	Open access to transmission network	<ul style="list-style-type: none"> • Competition opened and access to cross-border electricity trade enhanced 	<ul style="list-style-type: none"> • Develop transparent and harmonized regulations for granting open access • Develop system operation to take care of open access customers
4	Open access to distribution network	<ul style="list-style-type: none"> • Electricity shortage for eligible industrial customers reduced • Use of costly standby generation to meet shortages by such consumers reduced • Competition and customer service enhanced 	<ul style="list-style-type: none"> • Develop transparent regulations for granting open access • Introduce a cross-subsidy surcharge that could be gradually phased out to avoid potential loss of cross-subsidy
5	Coordinated system operation and treatment of system imbalances	<ul style="list-style-type: none"> • Grid discipline improved • Low equipment failure due to grid instability reduced • Region's best practices adopted and experiences shared 	<ul style="list-style-type: none"> • Integrate metering and information communication technology (ICT)
6	Regulatory framework and transmission planning	<ul style="list-style-type: none"> • System reliability improved due to system integration and support during power crisis • Bilateral transmission links for excess capacity to support cross-border trade improved 	<ul style="list-style-type: none"> • Strengthen investment in transmission interconnections and systems • Initiate land acquisition
7	Energy accounting, clearing and settlement	<ul style="list-style-type: none"> • System for domestic energy accounting and settlement improved • Region's best practices adopted and experiences shared 	<ul style="list-style-type: none"> • Build capacity for integration and migration of information and communications technology
8	Policy for regional electricity trade	<ul style="list-style-type: none"> • Economic development of the South Asian region improved • Access to power in the region improved • Use of region's resources enhanced • Investment in power sector in the region increased 	<ul style="list-style-type: none"> • Develop procedures to move from bilateral to regional agreements
9	Import duty, export tax and transit tax	<ul style="list-style-type: none"> • Energy trade across region enhanced 	<ul style="list-style-type: none"> • Offset expected loss in tax revenue through economic gains due to higher economic growth, better electricity access and greater investment in the sector
10	Dispute resolution	<ul style="list-style-type: none"> • Investment climate in the power sector improved, as investors' risk perception would reduce. 	<ul style="list-style-type: none"> • Develop procedures to move from bilateral to regional agreements

Source: Authors' compilation.

The differences in governance structure, status, and pace of reforms in individual countries necessitate a gradual approach to implement suggested changes. The short-term initiatives are essential and are aimed at permitting entities to engage in cross-border trade, improving access to transmission, coordinated system operation, an electronic clearing and settlement system, and adoption of a system of dispute resolution. Tables 2 and 3 provide the specific measures involved for each of the SAARC countries without Maldives, which is unlikely to be connected to rest of the subcontinent in the foreseeable future.

A. Afghanistan

Afghanistan's domestic strife led to its loss of capacity to generate electricity, which slowed down development in the sector. There have also been limited and late attempts to bring in desired policies to encourage private market in the sector. Although the country imports electricity from its neighboring countries like Uzbekistan and Tajikistan under bilateral arrangements, new policy and regulatory initiatives are required to enhance its participation in a regional electricity market.

Draft law on electricity. Afghanistan's draft law needs to recognize electricity trading as a distinct commercial activity and licensing. Afghanistan Electricity Regulatory Authority (AERA), the proposed regulator, may be empowered to develop guidelines and issue licenses for trading. License provisions should allow for cross-border electricity trade including that through a power exchange. Generation (including independent power producers) and distribution licensees need to be recognized as deemed trading licensees for trade of electricity.

Da Afghanistan Breshna Sherkat (DABS) may be recognized as a nodal agency to engage in commercial cross-border electricity transactions on an interim basis until trading is recognized and licensed. The issue of trading license to entities other than generation and distribution licensees needs to be addressed. The following are proposed activities for AERA:

- (i) Establish transmission charges for access to transmission.
- (ii) Issue regulations for nondiscriminatory open access to transmission and distribution system. Nondiscriminatory open access for distribution system may be limited to identified eligible consumers, giving them a choice to buy power from other sources including a power exchange.
- (iii) Develop a grid code for coordinated system operation with neighboring countries (AERA and DABS).
- (iv) Develop a regionally coherent commercial mechanism to treat system imbalances from schedule.
- (v) In the interim, settle imbalances from scheduled cross-border trade of electricity can as per prevailing unscheduled interchange mechanism in India.
- (vi) Exempt itself from prior approval and price determination of the procurement and or sale of electricity through a regional power exchange.

New energy policy. The new energy policy should develop cross-border transmission links under bilateral or multilateral agreements with capacity margin to facilitate cross-border trade of electricity. DABS should develop a plan for cross-border transmission linkages (including transit of electricity) in coordination with entities in participating countries. Initially, the new energy policy should provide for a bilateral dispute resolution for cross-border power trade, and later, jointly develop a regional mechanism for resolution of dispute related to regional power market.

Key Changes	Afghanistan	Bangladesh	Bhutan	India	Nepal	Pakistan	Sri Lanka
Commerce trading license restrictions	Exemption from trade license from relevant commerce ministry.	Exemption from trade license from relevant commerce ministry.	Exemption from trade license from relevant commerce ministry. The license provisions of BPC to include export and/or import of electricity.	Exemption from trade license from relevant commerce ministry.	Exemption from trade license from relevant commerce ministry.	Exemption from trade license from relevant commerce ministry.	Exemption from trade license from relevant commerce ministry. Generation licensees to be allowed to sell electricity through power exchange.
Dispute resolution	Bilateral resolution of dispute followed by a regional mechanism.	Bilateral resolution of dispute followed by a regional mechanism.	Bilateral resolution of dispute followed by a regional mechanism.	Bilateral resolution of dispute followed by a regional mechanism.	Bilateral resolution of dispute followed by a regional mechanism.	Bilateral resolution of dispute followed by a regional mechanism.	Bilateral resolution of dispute followed by a regional mechanism.
Tariff determination			Exempt from determination of tariff for generation not regulated by a power purchase agreement, and selling for cross border trade.	This is already provided for.		NEPRA to exempt or preapprove power acquisition on competitive basis.	Transmission and Bulk Supply License to include power procurement from a regional power exchange.

BEA=Bhutan Electricity Authority, BERC= Bangladesh Energy Regulatory Commission, BPC = Bhutan Power Corporation, ETFC = Electricity Tariff Fixation Commission of Nepal, NEPRA = National Electric Power Regulatory Authority of Pakistan, PUCSL= Public Utilities Commission of Sri Lanka, RPX= regional power exchange, SAARC = South Asian Association for Regional Cooperation.

^a Such an investment can be undertaken to transmit power under a bilateral power purchase agreement. This would ensure its financial viability. Similar transmission links built under existing bilateral agreements between India–Nepal, India–Bhutan, and India–Bangladesh can be used to support cross-border electricity trading. Similar criteria would be applicable in the case of other countries.

^b This may be subjected to an upper price limit by local regulator or government. Similar criteria would be applicable in the case of other countries.

Source: Authors' compilation.

Table 3: Suggested Revisions to Policies, Laws, and Regulations for the Medium Term (Up to 5 Years)

Key Changes	Afghanistan	Bangladesh	Bhutan	India	Nepal	Pakistan	Sri Lanka
Deemed trading licenses	Deemed trading license for generation and distribution licensees to engage in commercial cross-border electricity transactions.	Deemed trading license for generation and distribution licensees to engage in commercial cross-border electricity transactions.	Already provided for.	Already provided for.	Deemed trading license for generation and distribution licensees to engage in commercial cross-border electricity transactions.	Deemed trading license for generation and distribution licensees to engage in commercial cross-border electricity transactions.	Deemed trading license for generation and distribution licensees to engage in commercial cross-border electricity transactions.
Open access in transmission	Nondiscriminatory open access for transmission.	Nondiscriminatory open access for transmission.	Nondiscriminatory open access for transmission.	Already provided for.	Allow nondiscriminatory open access to transmission network.	Allow nondiscriminatory open access to transmission network.	Allow nondiscriminatory open access to transmission network.
Regulatory guidelines	Proposed regulator or appropriate agency to issue license guidelines for deemed trading licenses and open access transmission.	BERC to issue license guidelines for deemed trading licenses and open access transmission.	BEA to issue license guidelines for open access transmission.	Already provided for.	NEA to issue license guidelines for deemed trading licenses and open access to transmission.	NEPRA to issue license guidelines for deemed trading licenses and open access to transmission.	PUCSL to issue license guidelines for deemed trading licenses and open access to transmission.
Commercial mechanism to settle imbalances	Develop a regionally coherent commercial mechanism for system imbalances.	Develop a regionally coherent commercial mechanism for system imbalances.	Develop a regionally coherent commercial mechanism for system imbalances.	Harmonize the prevailing mechanism with the regionally coherent commercial mechanism for system imbalances.	Develop a regionally coherent commercial mechanism for system imbalances.	Develop a regionally coherent commercial mechanism for system imbalances.	Develop a regionally coherent commercial mechanism for system imbalances.
Transmission charges	Proposed regulator to establish transmission charges for third party access to transmission.	BERC to establish transmission charges for third party access to transmission.	BEA to establish transmission charges for third party access to transmission.	Already provided for.	NEA to establish transmission charges for third part access to transmission.	NEPRA to establish transmission charges for third part access to transmission.	PUCSL to establish transmission charges for third part access to transmission.

Key Changes	Afghanistan	Bangladesh	Bhutan	India	Nepal	Pakistan	Sri Lanka
Grid code	Proposed regulator to develop a grid code for coordinated system operation with neighboring countries.	BERC to develop a grid code for coordinated system operation with neighboring countries.	BEA to develop a grid code for coordinated system operation with neighboring countries.	Harmonize the prevailing grid code with those agreed among the regional participants.	NEA to develop a grid code for coordinated system operation with neighboring countries.	NEPRA to develop a grid code for coordinated system operation with neighboring countries.	PUCSL to develop a grid code for coordinated system operation with neighboring countries.
Transmission plan	DABS to develop plan for cross-border transmission links in consultation with relevant neighboring countries.	PGCB to develop plan for cross-border transmission links in consultation with relevant neighboring countries.	BEA to develop plan for cross-border transmission links in consultation with relevant neighboring countries.	CEB to develop a plan for cross-border transmission links in coordination with entities in participating countries.	NEA to develop plan for cross-border transmission links in consultation with relevant neighboring countries.	NTDC to develop plan for cross-border transmission links in consultation with relevant neighboring countries.	CEB to develop plan for cross-border transmission links in consultation with India.
Trading license to other parties	Issue of trading licenses to any suitable party.	Issue of trading licenses to any suitable party.	Issue of trading licenses to any suitable party.	Already provided for.	Issue of trading licenses to any suitable party.	Issue of trading licenses to any suitable party.	Issue of trading licenses to any suitable party.
Open access in distribution	Allow nondiscriminatory open access for distribution network.	Allow nondiscriminatory open access for distribution network.	Allow nondiscriminatory open access for distribution network.	Already provided for.	Allow nondiscriminatory open access for distribution network.	Allow nondiscriminatory open access for distribution network.	Allow nondiscriminatory open access for distribution network.

BEA=Bhutan Electricity Authority, BERC= Bangladesh Energy Regulatory Commission, CEB = Ceylon Electricity Board, DABS = Da Afghanistan Breshna Sherkat (vertically integrated power utility in Afghanistan), ETFC = Electricity Tariff Fixation Commission of Nepal, NEA = Nepal Electricity Authority, NEPRA = National Electric Power Regulatory Authority of Pakistan, NTDC = National Transmission and Dispatch Company, PGCB = Power Grid Company of Bangladesh, PUCSL= Public Utilities Commission of Sri Lanka.

Source: Authors' compilation.

Trade or commerce policy. The trade and commerce policy should allow for the following:

- (i) No custom duty on import of electricity and no export tax on export of electricity.
- (ii) No transit charges (apart from transmission charges) for electricity transit through the country.
- (iii) Import, export, and transit of electricity should be exempt from licensing from relevant commerce ministry/department.

B. Bangladesh

Bangladesh adopted regulatory reform in 2008 paving the way for setting up of the Bangladesh Energy Regulatory Commission (BERC). However, the sector's structure has not altered significantly to reduce market barriers encourage competition.⁷ An amendment to the Electricity Act 1910 or a new law may incorporate the following:

- (i) Recognize licensing and electricity trading as a distinct commercial activity. Issue of trading license to entities other than generation and distribution licensees.
- (ii) Permit Bangladesh Power Development Board (BPDB) identified nodal agency to engage in commercial cross-border electricity transactions on an interim basis till trading is recognized and licensed.
- (iii) Allow nondiscriminatory open access for transmission.
- (iv) Allow open access for distribution for designated consumers (i.e., above certain level of connected demand and voltage of connection).
- (v) Empower the transmission licensee, Power Grid Company of Bangladesh PGCB, to develop a plan for cross-border transmission linkages in coordination with entities in participating countries.

Bangladesh Energy Regulatory Commission Act, 2003. BERC should be empowered to issue licenses and terms and conditions for electricity trading to allow for cross-border electricity trade including that through a power exchange. The generation and distribution licensees will be recognized as deemed trading licensees for trade of electricity. In addition, BERC should:

- (i) Exempt itself from prior approval and price determination of the procurement and/or sale of electricity through a regional power exchange.
- (ii) Issue regulations for nondiscriminatory open access to transmission and distribution system. Nondiscriminatory open access to distribution is necessary to give eligible consumers a choice to buy power from other sources including a power exchange. Regulations for open access should allow for coordination with the nodal agency in respective neighboring country in the case of cross-border interlinkages.
- (iii) Establish transmission charges for access to the transmission network.
- (iv) Amend the BERC Act (Sec. 22[f]) for development of a grid code, which would allow the national load dispatch agency to coordinate system operation with cross-border entities.
- (v) Develop a regionally coherent commercial mechanism to treat system imbalances from schedule.

⁷ Although competitive bidding was introduced for setting up some of the power projects in the country.

- (vi) In the interim, adopt mechanism of unscheduled interchange transactions as per CERC regulations to settle imbalances from scheduled cross-border trade of electricity or deal with the imbalances as per contracts governing the cross-border trade electricity.
- (vii) Provide for joint resolution of dispute in the case of cross-border power trade through a regional mechanism.

National electricity policy (revised version). The revised version of the national electricity policy should develop cross-border transmission linkages under bilateral and/or multilateral agreements with capacity margin to facilitate cross-border trade of electricity. Initially, it should provide for a bilateral dispute resolution for cross-border power trade, and later develop a regional mechanism jointly with all South Asian countries, for resolution of dispute related to regional power market.

Trade and commerce policy. Cross-border electricity trade should be exempt from export tax or import duty to facilitate such trade and to facilitate efficient price discovery on the regional power exchange. In case electricity trade needs transit of electricity through Bangladesh, such trade should be exempted from transit tax on a reciprocal basis. Bangladesh presents a unique proposition where electricity generation in the northeast of India could be transited on land through that country. Exemption of transit tax on such a flow should be encouraged with the aim of Bangladesh also being a beneficiary of development of such projects. Import, export, and transit of electricity should exempt from licensing from the relevant commerce ministry or department.

C. Bhutan

Bhutan is uniquely positioned with significant potential of hydro resources for export of electricity, which remains a key objective of policy reform in Bhutan. However, current policy and regulatory regime should aim at following changes to enhance its participation in a broader South Asian market.

Electricity Act of Bhutan, 2001. Generation licensees are already permitted to engage in export and import of electricity as per the comprehensive license issued by Bhutan Electricity Authority (BEA). The Electricity Act of Bhutan, 2001, provides for a trading license (Sec. 22.1). However, BEA is authorized to designate a single bulk supplier for import and export of electricity (Sec. 40). This significantly limits market participation. Amendment to Section 40 should limit the role of the designated bulk supplier only in the context of generation plants owned by the Government of Bhutan. Revisions to the act may also include:

- (i) Ensuring that the regulating authority exempt itself from prior approval, and price determination of procurement and/or sale of electricity through a regional power exchange.
- (ii) Ensuring that license conditions of Bhutan Power Corporation (BPC) do not include export and/or import of electricity.
- (iii) Enhancing Section 38.1 of the Electricity Act of Bhutan, 2001 to provide for nondiscriminatory open access to transmission network for more flexibility to generators to sell electricity to parties other than BPC.
- (iv) Using open access in transmission and distribution (by BEA).
- (v) Clarifying that Sections 11.1 (i) (b) and 14.1 (iv) exempt determination of tariff not regulated by a power purchase agreement if electricity is sold by a generating licensee through a power exchange or a tendering process, where price is determined competitively. Alternatively, Section 17.1 (iii), which empowers the Minister of Energy to

set general policies for tariff determination, can be invoked to exempt regulation of generation tariff in the above cases.

- (vi) Adding that the grid code should account for commercial treatment of system imbalances from schedule and harmonizing it throughout the region for appropriate treatment of the cross-border imbalances under Section 89 of EAB, 2001.
- (vii) Adopting, in the interim, the mechanism of unscheduled interchange transactions as per CERC regulations to settle imbalances from scheduled cross-border trade of electricity or deal with the imbalances as per contracts governing the cross-border trade electricity.
- (viii) Developing a plan for cross-border transmission linkages by the Department of Hydropower and Power Systems (DHPS), Ministry of Economic Affairs and BEA in coordination with entities in participating countries. While currently, a long-term plan for Bhutan accounts for this, it only envisions trade of electricity as per cooperative agreements with India.

Bhutan Sustainable Hydropower Development Policy 2008. As per Section 5.2 of the policy, the government may avail itself the royalty energy either as energy or as cash, based on the highest off-take rate at which the power or energy from the plant is sold by the developer to its buyers. In case of sale of through a power exchange, a very high price may often be realized for a small quantity for a limited duration while average price may be significantly lower. This provision could be suitably amended to consider the higher of the average price of sale of electricity through a power exchange and the maximum off-take rate for rest of the power sold. Other suitable alternatives that could also be explored include:

- (i) Developing cross-border transmission linkages under bilateral or multilateral agreements with capacity margin to facilitate cross-border trade of electricity.
- (ii) Initially, providing for a bilateral dispute resolution for cross-border power trade. Later, jointly developing a regional mechanism for resolution of dispute related to regional power market.

Trade and commerce policy. The policy should provide for exemption from export tax and import duty or transit tax for cross-border electricity trade including that through a power exchange. Import, export, and transit of electricity should be exempt from licensing from relevant commerce ministry or department.

D. India

Policy and regulatory reforms in the power sector in India have embraced market reforms. Development of bilateral market through licensed traders and competitive power changes have contributed significantly to increasing the share of short-term power trade in the country. However, cross-border electricity trade has remained limited to bilateral arrangements through identified nodal agencies. While the market reform experience in India provides a benchmark to follow, India also needs to ease rules for cross-border electricity trade to assure greater regional confidence.

Electricity Act 2003. The act should provide for joint resolution as per contracts under existing agreements of dispute in the case of cross-border power trade through a regional mechanism. Initially, bilateral contractual agreements would follow the procedure. Transmission planning is needed to coordinate with nodal agency in the neighboring countries for cross-border links.

National electricity policy. The national electricity policy should:

- (i) Recognize and highlight the development of a competitive market in South Asia through cross-border trade as part of the development of the power sector.
- (ii) Allow power exchanges to accept participation by entities located and registered in the participating SAARC countries. This will need amendment to respective bylaws and rules of the each exchange and be approved by the Central Electricity Regulatory Commission of India (CERC).
- (iii) Exempt transit fees due to the power exchange. The presence of a transit fee would impede trade through power exchange as the extent of such a transit would only be known after the trade has been cleared through a power exchange.
- (iv) In the absence of such a concession by India, regional market would be limited to bilateral trades with clear knowledge of the implication of the transit tax on landed cost of power, especially for electricity trades through bilateral agreements and/or contracts. Regulations for open access to transmission should be coordinated with other countries in South Asia for cross border interconnections.
- (v) Initially, provide for a bilateral dispute resolution for cross-border power trade, and later, jointly develop a regional mechanism for resolution of dispute related to regional power market.

National transmission plan. The national transmission plan should develop cross-border transmission links under bilateral or multilateral agreements with capacity margin to facilitate cross-border trade of electricity. CEA should develop a plan for cross-border transmission linkages in coordination with entities in participating countries.

Bylaws and rules of power exchanges. The rules should extend membership of the exchange to eligible entities located in SAARC and other countries. Relevant changes for technical and financial criteria need to be incorporated and approved by CERC.

Trade or commerce policy. The policy should exempt from export tax, import duty, or transit tax the cross-border electricity trade including that through a power exchange. Import, export, and transit of electricity should be exempt from licensing from the relevant commerce ministry or department.

E. Nepal

Nepal is endowed with significant hydroelectric resources, which remain underdeveloped compared to its domestic requirements. The country can gain significantly from economies of scale in development of hydroelectric resources for export of electricity. The changes in the policy and regulatory and the regulatory environment of the sector are below.

Electricity Act, 2049 (1992). Electricity trading its licensing should be recognized as a distinct commercial activity. The Nepal Electricity Authority (NEA) or the regulator may be empowered to develop guidelines and issue licenses for such trading. License provisions should allow for cross-border electricity trade including that through a power exchange. NEA, as a nodal agency, currently engages in commercial cross-border electricity transactions. Some private developers have been allowed to export electricity under respective agreements. This should be extended by recognizing all generation and distribution licensees as deemed trading licensees for cross-border trade of electricity. Other adjustments could include:

- (i) Issuing trading license to entities other than generation and distribution licensees.
- (ii) Granting nondiscriminatory open access to transmission network.
- (iii) Gradually introducing distribution open access. This would allow designated consumers a choice to buy power from other sources including the regional power exchange.
- (iv) Establishing transmission charges for access to the transmission network (by NEA or the regulator).
- (v) Providing for joint resolution of dispute in the case of cross-border power trade through a regional mechanism.

Nepal Electricity Authority Act, 2041 (1984) and/or Nepal Electricity Regulatory Commission Bill 2065 (2008). The following amendments to the act include:

- (i) Empowering NEA or the regulator to issue license for power trading including terms and conditions, and providing deemed trading licensee status for generation and distribution licensees.
- (ii) Allowing NEA or the regulator to issue regulations for nondiscriminatory open access to transmission and distribution system. Regulations for open access should allow for coordination with the respective agency in neighboring countries in case of cross-border transmission interlinkages.
- (iii) Exempting the Electricity Tariff Fixation Commission of Nepal (EFTC) or the regulator from prior approval of the procurement and/or sale of electricity through a regional power exchange, and price determination.
- (iv) Developing a plan for cross-border transmission linkages in coordination with entities in participating countries (NEA).
- (v) Developing a regionally coherent commercial mechanism to treat system imbalances from schedule (NEA or the regulating authority). In the interim, mechanism of unscheduled interchange transactions as per CERC regulations may be adopted to settle imbalances from scheduled cross-border trade electricity.

Hydropower Development Policy 2001. The Nepal Electricity Regulatory Commission Bill 2064 (2007/2008) explicitly recognizes electricity trading and development of competitive market. The bill is yet to be enacted. The bill should develop cross-border transmission linkages under bilateral and multilateral agreements with capacity margin to facilitate cross-border trade of electricity. Initially, it should provide for a bilateral dispute resolution for cross-border power trade and later jointly develop a regional mechanism for resolution of dispute related to regional power market.

Trade and commerce policy. The trade and commerce policy should exempt from export tax, import duty, or transit tax electricity to be traded through a power exchange. Import, export, and transit of electricity should be exempted from licensing from the relevant commerce ministry or department.

F. Pakistan

Pakistan currently trades electricity with some of its neighboring countries. It is also developing transmission links with Central Asian countries for import of electricity. Given significant resources as well as domestic market for electricity, the country can play an important role in a regional electricity market. The policy and regulatory changes to allow greater market access and participation are below.

Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997. The Electric Power Act 1997 needs to recognize electricity trading as a distinct activity. The National Electric Power

Regulatory Authority of Pakistan (NEPRA) should be empowered to develop guidelines and issue licenses for electricity trading. License provisions need to provide for cross-border electricity trade including that through a power exchange. This should include a deemed trading licensee status for generation and distribution licensees. The act should:

- (i) Allow for issuance of trading license to entities other than generation and distribution licensees.
- (ii) Permit the National Transmission and Dispatch Company (NTDC) to engage in commercial cross-border electricity transactions on an interim basis until trading is recognized and permitted.
- (iii) Allow procurement or sale of electricity through a regional power exchange to be exempted from prior approval and price determination by the NEPRA. Section 32 of the NEPRA Act, which empowers the regulator to approve a power acquisition should either exempt or preapprove electricity bought on a competitive basis like that through a power exchange including a regional power exchange.
- (iv) Provide for nondiscriminatory open access to an electricity operator or a bulk consumer. This provision should also cover traders and other entities to be made eligible for engaging in cross-border trade of electricity.
- (v) Gradually introduce distribution open access for identified designated consumers.
- (vi) Allow distribution companies to develop individual power procurement plan. Currently, NTDC is empowered as the Central Power Purchasing Agency to procure power on behalf of the eight distribution companies of the former Pakistan Water and Power Development Authority. This limits the ability of the individual distribution companies to procure power independently. Until such independence is allowed, NTDC's mandate should include power procurement under cross-border trade including that through a regional power exchange.
- (vii) Extend the distribution companies' ability to sell electricity across borders and not limit it to other distribution companies. Such extension should explicitly recognize trading through a regional power exchange. Further, in the case of power procurement or sale through a regional power exchange, the price determined on a competitive basis should not be subject to NEPRA's approval and cost so incurred be permitted in the respective tariff calculations.
- (viii) Allow NEPRA to issue a separate price for use of transmission assets of a transmission licensee for electricity trade, and provide procedures to determine transmission loss.
- (ix) Develop cross-border transmission linkages under bilateral and multilateral agreements with capacity margin to facilitate cross border trade of electricity.
- (x) Develop plan for cross-border transmission linkages in coordination with other participating countries (NTDC).
- (xi) Initially, incorporate a mechanism for bilateral dispute resolution for cross-border trade and later, work toward developing a regional mechanism for resolution of dispute related to regional power market.
- (xii) NEPRA to develop a regionally coherent commercial mechanism to treat system imbalances from schedule. In the interim, mechanism of unscheduled interchange transactions as per CERC regulations may be used to settle imbalances from scheduled cross-border trade electricity.

Trade and commerce policy. In case a regional electricity trade needs transit of electricity through Pakistan, this should be exempted from transit tax on a reciprocal basis. Further, such trade should also

be exempted from export tax or import duty. Import, export, and transit of electricity should exempt from licensing from relevant commerce ministry or department.

G. Sri Lanka

The following are suggested amendments to policies and regulations.

Sri Lanka Electricity Act, No. 20 of 2009 and Public Utilities Commission of Sri Lanka (PUCSL) Act, 2002. The acts could be amended to:

- (i) Recognize licensing and electricity trading as a distinct commercial activity. PUCSL may be empowered to develop guidelines and issue licenses for such trading. License provisions should allow for cross-border electricity trade including that through a power exchange. The above license conditions should provide for deemed trading licensee status for generation and distribution licensees. This would also need an amendment in Section 17 of PUCSL Act).
- (ii) Issue trading license to entities other than generation and distribution licensees.
- (iii) Permit CEB to engage in commercial cross-border electricity transactions on an interim basis till trading is recognised and permitted.
- (iv) Grant nondiscriminatory open access to transmission network to promote competition in the power sector. As per the provisions of the PUCSL Act (Sec. 23), PUCSL may need to be empowered to issue regulations to mandate open access.
- (v) Grant nondiscriminatory of distribution system in phases to allow identified designated consumers choice to buy power from other sources including a power exchange.
- (vi) Amend Section 16 (b) to allow a generation licensee to sell electricity through a competitive platform like a power exchange.
- (vii) Exempt from prior approval of PUSCL the procurement or sale of electricity through a regional power exchange. PUSCL should also be exempt from determining the price. Amendment to Section 43.2, which allows the Transmission and Bulk Supply Licensee to procure electricity only through a competitive tendering process, may add that power procurement from a regional power exchange as a means of competitive power procurement.
- (viii) Exempt PUCSL from regulating prices determined competitively on a power exchange.
- (ix) Develop cross-border transmission linkages under bilateral or multilateral agreements with capacity margin to facilitate cross border trade of electricity.
- (x) Develop a plan for cross-border transmission linkages in coordination with other participating countries (CEB).
- (xi) Initially, provide for a bilateral dispute resolution for cross-border power trade. Later, jointly develop a regional mechanism for resolution of dispute related to regional power market. PUSCL may develop a regionally coherent commercial mechanism to treat system imbalances from schedule. In the interim, mechanism of unscheduled interchange transactions as per CERC regulations may be adopted to settle imbalances from scheduled cross-border trade electricity.

Trade and commerce policy. Cross-border electricity trade should be exempted from export tax or import duty. Import, export and transit of electricity should exempt from licensing from relevant commerce ministry or department.

VI. CONCLUSION

South Asia holds significant potential in developing a regional power market. A regional power market can harness economies to invest in and operate a power system that will provide access to electricity for a larger percentage of the population. This, however, involves harmonizing technical, economic, and legal or regulatory issues across the region.

The paper discussed ways to develop the policy, legal, and regulatory framework that needs to precede large-scale investment in a regional power market. We identified core legal and regulatory issues that include trading licenses, open access transmission, and formation of a nodal agency to be entrusted with cross-border power trading, as well as power system operation and dispute resolution.

Economic power exchange needs harmonization of the appropriate policies and legal and regulatory frameworks in all the systems involved. Bilateral trading merely encourages a limited trading regime, leaving the vast economic, reliability and environmental benefits to be fully realized. The experience in India and a number of international power market developments show that legal and regulatory changes have been accomplished successfully.

Finalization of the SAARC Framework Agreement for Energy Cooperation (Electricity) during the 5th SAARC Energy Ministers Meeting and the eighteenth SAARC declaration in Kathmandu in November 2014 paved the way for greater regional cooperation in the power sector. The specific changes identified in the paper are now summarized in Tables 2 and 3. These can help further the process of harmonization of the policy and regulatory framework for the power sector in the region.

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Improving Regulatory Environment for a Regional Power Market in South Asia

The paper critically examines the power sector regulatory and policy environment in the South Asian countries in the context of cross-border power trade. It identifies key issues influencing rapid development of cross-border power trade and provides specific recommendations to address them. The paper concludes that economic power exchange would not happen without the appropriate policies and without harmonizing legal and regulatory frameworks in all the necessary systems. If left to bilateral trading, the status quo of a limited trading regime will leave the vast economic, reliability, and environmental benefits unrealized. Experiences across the world show that such legal and regulatory changes can be accomplished successfully.

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