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SARI/E POLITICAL ECONOMY ANALYSIS USAID/INDIA

FINAL REPORT

February 2012

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SARI/E POLITICAL ECONOMY ANALYSIS

USAID/INDIA

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ACRONYMS

ADB	Asian Development Bank
BEA	Bhutan Electricity Authority
BERC	Bangladesh Energy Regulatory Commission
BIMSTEC	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation
BPDB	Bangladesh Power Development Board
BUET	Bangladesh University of Engineering Technology
CEB	Ceylon Electricity Board
CERC	Central Electricity Regulatory Commission (India)
DABM	Da Afghanistan Breshna Moassesa (Afghanistan)
DABS	Da Afghanistan Breshna Sherkat (Afghanistan)
DOS	Department of State (USA)
IEX	Indian Energy Exchange
IFC	International Finance Corporation (World Bank Group)
JICA	Japan International Cooperation Agency
MEA	Ministry of External Affairs (India)
NTDC	National Transmission and Distribution Corporation (Pakistan)
NEA	Nepal Electricity Authority
PGCB	Power Grid Company of Bangladesh, Ltd.
PPP	Public-Private Partnership
PGCI	Power Grid Corporation (India)
PTC	formerly known as Power Trading Corporation of India
PUCSL	Public Utilities Commission of Sri Lanka
SAARC	South Asian Association for Regional Cooperation
SAFIR	South Asia Forum of Infrastructure Regulators
SAGQ	South Asia Growth Quadrangle
SARI/E	South Asian Regional Initiative for Energy
SARI-East	Bangladesh, Bhutan, India, Nepal and Sri Lanka
SARI-West	Afghanistan and Pakistan
SASEC	South Asia Sub-Regional Economic Cooperation
SACEPS	South Asia Centre for Energy Policy Studies
SI	Social Impact, Inc.
TAPI	Turkmenistan-Afghanistan-Pakistani-India Pipeline
TUTAP	Turkmenistan-Uzbekistan-Tajikistan-Afghanistan-Pakistan
UNDP	United National Development Program
USAID	United States Agency for International Development
USEA	United States Energy Association

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EXECUTIVE SUMMARY

To understand better the political and economic underpinnings that facilitate regional energy market formation and cross border energy trade in South Asia and to recommend strategies for its South Asian Regional Initiative for Energy¹ (SARI/E) program implementation going forward, USAID (United States Agency for International Development) engaged Social Impact, Inc. (SI) to conduct this political-economy analysis of cross-border energy in the South Asia region.

Over a seven-week period (October 29–December 16, 2011), the study team² interviewed members of governments, energy utilities, business chambers and associations, small and medium businesses as well as multinational corporations, legal practitioners, trade officials and members of civil society in Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka.³

CONCLUSIONS

Sub-Regions of South Asia

South Asia is composed of two very different sub-regions. The eastern sub-region (“SARI-East”) is comprised of Bangladesh, Bhutan, India, Nepal and Sri Lanka; the western sub-region (“SARI-West”) is comprised of Afghanistan and Pakistan. One major difference between the two sub-regions is that India represents a stable core for SARI-East and its economy is beginning to serve as an engine for economic growth for the other countries of the sub-region. The countries of SARI-East are market-focused and poised to develop commercial trading arrangements that, in conjunction with the “virtual energy grid” (described below), can facilitate the expansion of energy trade among each of its five member countries and are expected to develop over the next ten years.

By contrast, SARI-West has neither a stable core nor a central engine for economic growth. Instead, Afghanistan and Pakistan are characterized by fragile political systems, coupled with growing insecurity, which currently makes investment risky and development both difficult and expensive. SARI-West is, therefore, a high risk/high return environment for the development of energy projects.

¹ USAID’s South Asia Regional Initiative for Energy

² The Study Team included Robert Borgström, Team Leader (SI); Richard Edwards (Nexant) and David Garner (MSI) and was assisted by Ray Holton (Nexant), Rajan Kapoor (MSI), Kavita Kaur (Nexant), Michael Kugelman (SI), Mahendra Lama (Nexant) and Jennifer Oetken (SI).

³ In addition to the Team’s travel to Bangladesh, India, Nepal, Pakistan and Sri Lanka, interviews with stakeholders from Afghanistan and Bhutan were conducted by telephone and during a SARI/E-sponsored workshop in Kathmandu, Nepal, “Supporting the Development of Cross Border Transmission Interconnection Networks.” These interviews were supported by a desk study in which researchers, utilizing available, existing data, including previous reports and documents, prepared briefing books for each country.

The “Virtual Energy Grid”

The concept of a Regional Energy Grid implies a series of physical connections among the countries of South Asia similar to those found in South Africa, the European Union, the Nord Pool, etc. The construction of this physical network, if it occurs, would support the theme of regional cooperation that was the objective of establishing the South Asian Association for Regional Cooperation (SAARC) in 1985. Numerous studies have been conducted in the past, both at bilateral and regional levels, on the topic of energy exchanges. However, as of early 2012, the broad concept of a Regional Energy Grid has not been implemented and is unlikely to be implemented in the foreseeable future.

What is taking shape, however is a move towards bilateral interconnections between India and its immediate neighbors. These connections are shown in Figure 1. Table 1 presents the status of existing and proposed interconnections between India and other South Asian countries.

While these existing, developing, and prospective interconnections could represent the first steps in building a Regional Energy Grid, the further development of this physical grid seems tenuous. Currently, only nominal options exist for: (1) bilateral interconnections involving countries other than India (e.g., Bhutan-Bangladesh, Nepal-Bangladesh), or (2) the evolution of existing, bilateral connections into multi-lateral connections involving India and two or more neighbors (e.g., Bhutan-Bangladesh-India).

However, the anticipated unification of the Indian electricity grid by 2014, combined with (a) the development of strategic, bilateral interconnections between India and its neighboring countries, and (b) the potential expansion of existing electricity exchanges to encompass energy market transactions throughout the region, is building a platform for regional energy trade. This “Virtual Energy Grid” represents a realistic goal for South Asia over the next 10 years.

On February 6, 2007, India’s Central Electricity Regulatory Commission issued guidelines for setting up power exchanges in India. Subsequently, on June 27, 2008, the Indian Energy Exchange (IEX) began the first-ever power exchange in India. Although this arrangement presently accounts for only two percent of the energy sold within India—the remainder is sold under long-term, bilateral arrangements—IEX’s market share of India’s demand for energy is growing rapidly.

The significance of the growing market for electricity is that when this transactional model is placed on the platform of country-wide grid unification, it will be possible for India’s energy exchanges to effect transactions between any pair of buyers and sellers, regardless of their geographical location within India. Electricity will not have to be moved across the entire intervening distance; surpluses and shortfalls can be matched in real time by transactions in the trading room. This process of connecting buyers and sellers through a market is what we are calling the “Virtual Energy Grid.”

Figure Ex-I - Existing, Developing and Prospective Interconnections



Names and boundary representations are not necessarily authoritative.

U.S. Dept. of State

TABLE EX-1: STATUS OF EXISTING AND PROPOSED INTERCONNECTIONS

COUNTRIES	CONNECTION	INTERCONNECTION	STATUS	ESTIMATED DATE FOR FUNCTIONALITY
Bhutan	Punatsangchu (Bhutan) – Alipurduar (India)	400 kV DC	Existing	Currently operational
Bangladesh	Baharampur (India) – Bheramara (Bangladesh)	400 kV DC and 500 MW HVDC (upgradable to 1000 MW)	Under Construction	April 2013
Nepal	Approx. 20 linkages exporting power from India to small, isolated markets in Nepal.	Various lines at 132/33/11 kV	Existing	Currently operational
	Muzaffarpur (India) – Dhalkebar (Nepal)	125km, 400 kV, interconnection	Under Development	<ul style="list-style-type: none"> • Completion of connection for enhanced export from India: near-term [2014?] • Full utilization for export of excess generation from Nepal: 5-10 years
Sri Lanka	Madurai (India) – Anuradhapura (Sri Lanka)	130km (India); 91km (undersea cable); 150km (Sri Lanka) / 500 MW	Proposed - Joint feasibility study being reviewed.	Functionality: after 3+ years of construction once a decision to proceed is taken.
Pakistan		500 MW	Under discussion; negotiations.	Unknown; could be completed within 3-6 months.

By the year 2014, it is anticipated that there will be one, unified electricity grid within India. (While the Indian system initially developed with five independent grids, at present all but the southern grid already are linked together). When India achieves full grid unification, transmission system operators will be able to move electrons around the country, matching supply and demand and taking full advantage of India's diversity and complementarity.

Moreover, India shares a border with each of its South Asian neighbors, except Afghanistan, the Maldives and Sri Lanka. When India is linked to each of these countries, as well as to Sri Lanka⁴, by suitable high-tension, bilateral interconnections, India could serve as the nodal point for energy transfers around the region. In principle—and potentially in practice—surplus electricity produced in Nepal could be sold “virtually” to buyers in Bangladesh or even Sri Lanka.

Unlike a network of physical interconnections that will require significant investments in the building of transmission lines and related facilities across South Asia, a Virtual Energy Grid could begin to develop as currently-planned, bilateral connections are completed. For example, when the Bangladesh interconnection is completed in 2013, electricity could be bought and sold between parties in Bangladesh and in the northern parts of India. Furthermore, once the unified Indian grid is completed in 2014, such potential transactions could involve parties anywhere in Bangladesh and anywhere in India. Even more broadly, Nepal could sell energy into the Indian market, which could then “virtually” be transferred through India to Bangladesh, with no need for additional, connecting, physical infrastructure.

Priorities for a Sub-Regional Reform Agenda

SARI-East

Since its establishment in 2000, SARI/E has been successful in bringing stakeholders together around the region to discuss regional energy issues. Going forward, SARI/E can leverage this experience to focus stakeholder attention on the steps that will be required to support the development of Virtual Energy Grid in SARI-East countries. Going forward, SARI/E can leverage this experience to focus stakeholder attention on the steps that will be required to support the development of a Virtual Energy Grid for SARI-East countries.

Those steps fall into one of two general categories: “hardware” (the actual, technical issues associated with building and operating the required infrastructure) and “software” (the development of commercial trading arrangements, for which laws will have to be enacted, regulatory and other institutions of governance will have to be established, and existing utilities will have to be restructured and refocused upon competitive, commercial objectives). To date, stakeholders have focused disproportionately on the technical aspects of cross-border trade—the “hardware” of building the grid—leaving much more work to be done with the non-technical issues—the “software”.

⁴ The feasibility of an undersea cable linking India and Sri Lanka is under active consideration.

Notwithstanding the compelling case for the Virtual Energy Grid, taking the necessary steps to achieve that result will not be easy. Likely, this process may take decades and will extend far beyond the next phase of SARI/E. However, SARI/E can build on its past successes and provide meaningful support to this process.

SARI-West

This sub-region faces macro-level political and economic problems closely woven together that will be difficult to overcome in the near term. There are, however, practical ways for SARI/E to address this challenge. A SARI/E sub-regional reform agenda for Afghanistan and Pakistan might involve working with other donors, for example, to address specific aspects for one or more major cross-border initiatives. An element of this approach would be for SARI/E to support a demand forecast projection for Afghanistan and/or Pakistan in order to determine the scope for cross-border power trade to mitigate energy shortages. Additionally, representatives from Afghanistan and Pakistan should routinely participate in various SARI/E task force meetings. Such participation will continue to support regional dialogue between and among SARI/E Countries to focus on new ideas based on experience in the Eastern sub-region.

RECOMMENDATIONS

Task Forces

SARI/E should facilitate the establishment of focused “Task Forces” to address software issues critical to creating the commercial trading environment for an expansion of cross border energy trade. The composition of these Task Forces would include representatives of government, utilities, businesses, and other stakeholder organizations appropriate to the focus of the group.

In addition to SARI/E’s current task force on generation and transmission (SATURN), illustrative topics that SARI/E Task Forces could address include:

- Commercial trading arrangements
- Commercialization of utilities
- Legal issues of cross-border trading
- Harmonization of regulatory policies and practices
- Tariffs and subsidies

Not all Task Force Groups need to be established at the beginning of the new SARI/E program. In some cases, it may prove more acceptable, politically, to form an interim working group that can grow into a Task Force, if stakeholders appreciate the need for such an instrument.

Modalities for the Task Force would include:

- ***SARI/E Secretariat*** In implementing the next phase of SARI/E there should be a Secretariat that provides organizational support and facilitates the work of each Task Force, including preparation for each Task Force meeting and subsequent follow-up to provide continuity and a sustained focus on its prescribed activities.
- ***Permanent Task Force Groups*** SARI/E should strive to have each Task Force become a permanent working group. SARI/E should ask organizations to nominate an individual to become a *permanent* member of a Task Force. To ensure suitable continuity, organizations should nominate both a member and an alternate.
- ***Regularly Scheduled Meetings*** The Task Force should meet regularly (e.g. quarterly) or as may be appropriate to a particular task.
- ***Focused Agendas*** As far in advance as practicable, the SARI Secretariat should circulate an agenda for each Task Force meeting as well as other pertinent documents for review and discussion.
- ***Professional Facilitation*** On an as-needed basis, an independent facilitator should be available to help members of a Task Force discuss important issues with the goal of reaching consensus and moving the agenda forward in constructive ways.
- ***Demand-driven*** The next phase of SARI/E should be demand-driven, making focused transactional-level technical assistance and training available to SARI countries in the process of negotiating specific, cross-border energy-trading regimes. The new program should be set up to work on a task-order basis so that the program can provide specific assistance regionally, in close coordination with relevant member countries as needs evolve.

Coordination with Supporting Institutions

The study team explored options for working through regional institutions such as SAARC⁵ and broadening the base of participation to include other donors to ensure sustainability in SARI/E in the future. Although the study team concluded that no single, existing, regional organization in South Asia is appropriate for carrying SARI/E's legacy into the future, USAID should continue to work with other regional entities and coordinate activities of common interest and purpose, but retain its independence so as not to compromise its ability to meet stakeholders' needs as they develop.

⁵ South Asia Association for Regional Cooperation (SAARC); other regional institutions that were considered include: The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC); the South Asia Growth Quadrangle (SAGQ); the South Asia Sub-regional Economic Cooperation (SASEC) and the South Asia Forum of Infrastructure Regulators (SAFIR).

Engaging Civil Society and Media

SARI/E should provide targeted assistance (funding, technical assistance, and training) for awareness-raising activities on cross-border trade issues for the general public, the business community, academia, the media, energy regulators, government, and legal professionals working in the SARI/E countries engaged in cross-border energy trade.

Promoting Public-Private Partnerships (PPPs)

SARI/E should include the private sector in the task force structure described above, and consider creating a task force focused on promoting public-private partnerships (PPPs) and exploring ways and means to take advantage of the Government of India and other regional schemes and financing opportunities for PPP development for cross-border energy trade.

Documenting SARI/E Success Stories

SARI/E should devote sufficient resources in the next phase of the program to document program successes in fostering cross-border energy trade to date. Such documentation, in the form of success stories and case studies, should be presented on the SARI/E website and to the Task Forces, and be made widely available to media in the SARI/E countries. Furthermore, SARI/E documentation, including outputs of Task Force meetings, should be shared broadly among USAID Missions, in Africa and elsewhere, that are engaged in cross-border energy trade issues.

I INTRODUCTION

In 2000, USAID launched the SARI/E⁶ program to build institutional capacity, promote private sector and civil society participation and support regional forums, networks, and associations for the integration and regional trade of energy. For more than a decade, SARI/E has helped to bridge the political divisions within the region to foster cooperation on energy issues, but it is beyond the purview of SARI/E to assist countries to surmount their broader political differences.⁷ However, to understand better the political and economic context in which SARI/E works, USAID conducted this Political Economy Analysis for Cross Border Energy Trade in the South Asia Region (“Analysis”).⁸

The objectives of this Analysis are:

1. To understand the political and economic underpinnings that facilitate regional energy-market formation and cross-border energy trade in South Asia
2. To help prioritize an energy policy, regulatory, and institutional reform agenda
3. To recommend strategies and programs aimed at (1) harmonization of regional energy policies and (2) promotion of legal and regulatory frameworks conducive to the integration and regional trade of energy
4. To recommend strategies for SARI/E program implementation involving regional and/or sub-regional bodies, such as SAARC

2 METHODOLOGY

In October 2011, USAID/India engaged Social Impact, Inc. (SI) to conduct this analysis. The study team included Robert Borgström, Team Leader (SI); Richard Edwards (Nexant) and David Garner (MSI); and was assisted by Ray Holton (Nexant), Rajan Kapoor (MSI), Kavita Kaur (Nexant), Michael Kugelman (SI), Mahendra Lama (Nexant), and Jennifer Oetken (SI).

The Analysis included three phases:

1. **Preparation and desk review:** Utilizing available, existing data, including previous reports and documents, the team generated a detailed snapshot of cross-border energy trade in South Asia. Research assistants conducted much of this work and prepared briefing books for each country.
2. **Fieldwork:** Over a seven-week period, from October 29 to December 16, 2011,⁹ the team interviewed members of governments, energy utilities, business chambers and associations, and small and medium businesses, as well as multinational corporations,

⁶ South Asia Regional Initiative for Energy

⁷ The third phase of SARI/E will conclude in 2012.

⁸ For purposes of this analysis, “South Asia” refers to the continental countries of the Indian sub-continent: Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka, with the addition of Afghanistan.

⁹ See “Chronology” and “Persons Contacted” at Appendices D and E, respectively.

legal practitioners, trade officials, and members of civil society in Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka.¹⁰

3. **Report:** On December 16, 2011, at the conclusion of the fieldwork phase, the team presented its preliminary findings and conclusions to USAID in New Delhi. This final report reflects feedback and guidance received during that out-briefing.¹¹

3 CONCLUSIONS

3.1 THE SUB-REGIONS OF SOUTH ASIA

South Asia is composed of two very different sub-regions. The eastern sub-region, SARI-East, includes Bangladesh, Bhutan, India, Nepal and Sri Lanka; the western sub-region, SARI-West is comprised of Afghanistan and Pakistan. One major difference between the two sub-regions is that for SARI-East, India represents a stable core and its economy is beginning to serve as an engine for economic growth for the other countries of the sub-region. The countries of SARI-East are market-focused and poised to develop commercial trading arrangements that, in conjunction with the “virtual energy grid” (described below), can facilitate the expansion of energy trade among each of its five member countries and are expected to develop over the next 10 years.

By contrast, SARI-West has neither a stable core nor a central engine for economic growth. Instead, Afghanistan and Pakistan are characterized by fragile political systems coupled with growing insecurity, which currently makes investment risky and development both difficult and expensive. SARI-West is, therefore, a high risk/high return environment for the development of energy projects.

Table 1 presents comparative statistics for each of the SARI-East and SARI-West countries.¹²

¹⁰ In addition to the team’s travel to Bangladesh, India, Nepal, Pakistan, and Sri Lanka, interviews with stakeholders from Afghanistan and Bhutan were conducted by telephone and during a SARI/E-sponsored workshop in Kathmandu, Nepal, “Supporting the Development of Cross-Border Transmission Interconnection Networks.”

¹¹ The study team Leader presented the results of the team’s analysis at a SARI/E sponsored regional workshop on energy trade, organized by the United States Energy Association (USEA), in New Delhi on February 15–17, 2011.

¹² The characteristics of these sub-regions and their countries are summarized in Appendix A.

Table I - Comparison of South Asian Countries

	SARI-East					SARI-West	
Aspect/Value	Bangladesh	Bhutan	India	Nepal	Sri Lanka	Afghanistan	Pakistan
Population	162,000,000	708,427	1,210,000,000	29,391,883	21,283,913	29,835,392	187,342,721
Total Electricity Installed Capacity (in MW)	8,233 (2011)	1,505 (2010)	185,496 (As of Nov 2011)	706 (2010)	2,818 (2010)	~1,000* (2011)	21,813 (2010)
% of GDP Growth (2010/11)	5.8%	6.8%	8.5%	4.6%	8.2%	8.2%	2.4%
Per Capita Electricity Consumption (in kWh per annum)	200	746	700	100	500	~80	470
Access to Grid Electricity	40%	66%	50%	~46%	100%	~6%	60%
Principal Generation Resource	Gas, Coal	Hydro	Coal	Hydro	Hydro, Liquid Fuels	Hydro	Coal
System Losses in Electricity	23%	6.8%	>32%	26.5%	<15%	44%	~30%
Demand and Supply Gap	25%	Significant Surplus	>15% Deficit	Peak and Base Deficit	Some Deficit	Significant Deficit	26%
Exchange Rate (Relative to USD)	BDT 83	BTN 52	INR 52	NPR 83	LKR 114	AFN 48	PKR 90

3.2 THE “VIRTUAL ENERGY GRID”

3.2.1 The Regional Energy Grid

The concept of a regional energy grid implies a series of physical connections among the countries of South Asia similar to those found in South Africa, the European Union, the Nord Pool, etc. The construction of this physical network, if it occurs, would support the theme of regional cooperation that was the objective of establishing the South Asian Association for Regional Cooperation (SAARC) in 1985. Numerous studies have been conducted in the past, both at bilateral and regional levels, on the topic of energy exchanges. However, as of early 2012, the broad concept of a regional energy grid has not been implemented and, because of many barriers discussed in the “Regional Energy Overview” Section of this report, it is unlikely to be implemented in the foreseeable future.

What is taking shape, however, is a move towards bilateral interconnections between India and its immediate neighbors, shown in Figure 1. Table 2 presents the status of existing and proposed interconnections between India and other South Asian countries.

While these existing, developing, and prospective interconnections could represent the first steps in building a Regional Energy Grid, the further development of this physical grid seems tenuous. Currently, only nominal options exist for: (1) bilateral interconnections involving countries other than India (e.g., Bhutan-Bangladesh, Nepal-Bangladesh), or (2) the evolution of existing bilateral connections into multi-lateral connections involving India and two or more neighbors (e.g., Bhutan-Bangladesh-India).

Still, the anticipated unification of the Indian electricity grid by 2014, combined with the development of strategic, bilateral interconnections between India and its neighboring countries, and the potential expansion of existing electricity exchanges to encompass energy market transactions throughout the region, is building a platform for regional energy trade. This “virtual energy grid” represents a realistic goal for South Asia over the next 10 years.

Figure I - Existing, Developing and Prospective Interconnections



The significance of the growing market for electricity is that when this transactional model is placed on the platform of countrywide grid unification, it will be possible for India's energy exchanges to effect transactions between any pair of buyers and sellers, regardless of their geographical location within India. Electricity will not have to be moved across the entire intervening distance; surpluses and shortfalls can be matched in real time by transactions in the trading room. This process of connecting buyers and sellers through a market is the Virtual Energy Grid.

TABLE I: STATUS OF EXISTING AND PROPOSED INTERCONNECTIONS

COUNTRIES: INDIA AND...	CONNECTION	INTERCONNECTION	STATUS	ESTIMATED DATE FOR FUNCTIONALITY
Bhutan	Punatsangchu (Bhutan) ↔ Alipurduar (India)	400 kV DC	Existing	Currently operational
Bangladesh	Baharampur (India) ↔ Bheramara (Bangladesh)	400 kV DC and 500 MW HVDC (upgradable to 1000 MW)	Under Construction	April 2013
Nepal	Approx. 20 linkages exporting power from India to small, isolated markets in Nepal.	Various lines at 132/33/11 kV	Existing	Currently operational
	Muzaffarpur (India) ↔ Dhalkebar (Nepal)	125km, 400 kV, interconnection	Under Development	<ul style="list-style-type: none"> • Completion of connection for enhanced export from India: near-term [2014?] • Full utilization for export of excess generation from Nepal: 5-10 years
Sri Lanka	Madurai (India) ↔ Anuradhapura (Sri Lanka)	130km (India); 91km (undersea cable); 150km (Sri Lanka) / 500 MW	Proposed - Joint feasibility study being reviewed.	Functionality: after three+ years of construction once a decision to proceed is taken.
Pakistan		500 MW	Under discussion; negotiations.	Unknown; could be completed within 3-6 months.

3.2.2 Regional Energy Trading

On February 6, 2007, India's Central Electricity Regulatory Commission issued guidelines for setting up power exchanges in India. Subsequently, on June 27, 2008, the Indian Energy Exchange began the first-ever power exchange in India. Although this arrangement presently accounts for only two percent of the energy sold within India—the remainder is sold under long term bilateral arrangements—IEX's market share of India's demand for energy is growing rapidly.

The significance of the growing market for electricity is that when this transactional model is placed on the platform of country-wide grid unification, it will be possible for India's energy exchanges to effect transactions between any pair of buyers and sellers regardless of their geographical location within India. Electricity will not have to be moved across the entire intervening distance; surpluses and shortfalls can be matched in real time by transactions in the

trading room. This process of connecting buyers and sellers through a market is what we are calling the Virtual Energy Grid.

By the year 2014, there will be a single, unified, electricity grid within India (while the Indian system initially developed with five independent grids, at present, all but the southern grid is already linked together). When India achieves full grid unification, transmission system operators will be able to move electrons around the country, matching supply and demand, and taking full advantage of India's diversity and complementarities.

Moreover, India shares a border with each of its South Asian neighbors, except Afghanistan, the Maldives, and Sri Lanka.¹³ When India is linked to its neighbors by suitable high-tension, bilateral interconnections, India could serve as the nodal point for energy transfers around the region. In principle—and potentially in practice—surplus electricity produced in Nepal could be sold “virtually” to buyers in Bangladesh or even Sri Lanka.

Unlike a network of physical interconnections, which would require significant investments in the building of transmission lines and related facilities across South Asia, a Virtual Energy Grid could begin to develop as currently planned bilateral connections are completed. For example, when the Bangladesh interconnection is completed in 2012, electricity could be bought and sold between parties in Bangladesh and in the northern parts of India. Furthermore, once the unified Indian grid is completed in 2014, such potential transactions could involve parties anywhere in Bangladesh and anywhere in India. Even more broadly, Nepal could sell energy into the Indian market, which could then be transferred virtually (or “wheeled”) through India to Bangladesh, with no need for any additional, connecting, physical infrastructure.

¹³ The economic feasibility of an undersea cable linking India and Sri Lanka is being considered.

4 A STRATEGIC PARADIGM: POLITICAL, ECONOMIC AND POLICY ANALYSIS

4.1 INTRODUCTION

There are four factors that will promote power trading in the South Asia region in the near future:¹⁴

1. A major power crisis in several countries exists, leading to long hours of load shedding affecting social, economic and commercial activities. This can lead to political instability and there is considerable public pressure on the region's governments to improve the situation.
2. The leaders of South Asia want to expedite the process of energy exchange. They are moving forward with this, as indicated by declarations at various SAARC summits. At its 2011 summit in Male, SAARC mandated an intergovernmental framework agreement for energy cooperation and a study on the regional power exchange concept.
3. National, regional, and multinational organizations have worked to foster cooperation in the energy sector in South Asia.¹⁵
4. Power sector reforms have been a critical aspect of the liberalization and market-led reforms undertaken by several South Asian countries. In most cases, cross-border power exchanges are mentioned as part of the solution to energy/power shortages.

This section presents a strategic paradigm of our political, economic and policy analyses of South Asia. Four major topic areas are included:

- Regional Political, Economic, Social and Market Dynamics
- Prevailing energy policies and scope for harmonization
- Trade regimes and legal frameworks, and
- Structural and institutional frameworks

Tables 3–6, below, present the results of our analyses of each topic and for each South Asian country. The answers to each question posed in these tables provide insights into a possible technical assistance and training agenda for the next phase of the SARI/E program. In addition to

¹⁴ While there are several positive drivers for change, it is important to note that there are also powerful tensions that could make it difficult to move power across international borders. The biggest potential obstacles generally are political. In Nepal, for example, there is significant opposition to the idea of exporting Nepal's hydropower to India. Bangladesh's potential export of gas-driven, thermal power has long been blocked by internal political interests. In the case of Sri Lanka, the economics of an undersea cable for power trade may not be justified at this time. At the moment, tensions between India and Pakistan appear to be easing, but there are groups within Pakistan that may not want this to continue. An incident like the 2011 Mumbai bombing could easily derail possibilities for energy exchanges between India and Pakistan. In addition, the security situation in both Afghanistan and Pakistan could make it difficult to move power from Central Asia to South Asia.

¹⁵ This includes Petrobangla, Power Grid and Power Trading Corporations of India, and Electricity Authorities of Nepal, Sri Lanka and Pakistan. In addition, international agencies like the World Bank, ESCAP, Asian Development Bank, USAID (SARI-E), and UNDP have been active in the last few years, and SAARC has set up a technical committee, exclusively concerned with energy sector cooperation, under its Integrated Programme of Action and has established an Energy Center in Islamabad.

these tables, elaboration is provided in Appendix A (“South Asia Country Profiles—Key Issues”).

4.2 REGIONAL, POLITICAL, ECONOMIC, SOCIAL, AND MARKET DYNAMICS

Creating a sustainable market for investment in and implementation of cross-border energy trade in South Asia ultimately depends upon political support, social acceptance, and whether the economics of cross-border projects can successfully compete against national-level projects and alternative investment opportunities.

In the past, individual proposals for regional power trade have languished because there has been no agreed-upon implementation plan for regional power trade. While talks on regional power trade in South Asia have gained momentum with recent enabling legislation, there is no consistent bilateral or multilateral political support for regulatory provisions and investor incentives supporting cross-border power trading. On the economic side, there is increasing recognition that international finance institutions have an important role to play in helping to mobilize public and private capital for bilateral and multilateral projects, structured as Public-Private Partnerships.

Table 3, below, summarizes important elements of regional political, economic, social, and market dynamics among the SARI/E countries involved in cross-border trade discussions.

Table 3 - Regional, Political, Economic, Social, and Market Dynamics

	SARI – EAST					SARI - WEST	
	BANGLADESH	BHUTAN	INDIA	NEPAL	SRI LANKA	AFGHANISTAN	PAKISTAN
How well do political systems respond to the needs for cross-border energy trade?	Although supporting cross-border trade in principle, the political system is often polarized and combative.	Minimal support from the government; focus is on energy self-sufficiency. The political systems do not get in the way of cross-border trade.	Cautiously supportive, led by Ministry of External Affairs, which sees trade as a security risk to be managed over time.	Marginally—Nepal is struggling with larger, more complex issues like writing a new constitution and creating a federal state.	GoSL is actively pursuing a 500MWV submarine power cable between SL and India.	The political system generally supports cross-border energy trade and Afghanistan already imports energy from several countries.	Pakistan is on the brink of a crisis. However, an election within the next 12 months could produce a new government ready to undertake cross-border trade.
How receptive to change are key stakeholders?	Emphasis is upon energy self-sufficiency rather than the benefits of trade.	Little willingness to look beyond established trade with India.	Business interests are eager to move forward; government is more cautious about next steps.	Nepal is conflicted. Some commercial and political interests favor energy trade; most oppose it.	Politicians and labor unions have both resisted reform in the energy sector. Experts are skeptical of the economics of the cable.	Key stakeholders are relatively receptive to international energy trade.	Supportive in principle to international energy trade, but currently blocked by many domestic issues.
What forces will govern the pace and direction of change in the system?	Economic development within Bangladesh will determine the country's ability to participate in commercial energy trade.	Difficulty in raising funds to pay for internal programs may lead to further changes.	Willingness of other countries to initiate trading projects and energy technologies will probably govern the pace of change, as (or if) virtual trading becomes a reality.	Tension between internal political and governance challenges as the country struggles to write a constitution vs. access to Indian markets through mechanisms like IEX, which may permit easier trading opportunities.	Access to cheaper fuels, maintaining stability in the wake of the civil war, and civil society activism on environmental and alternative development issues.	External pressures from neighbor countries, plus market opportunities as a transit country, and perhaps donor conditionality.	Internal pressures as the economy moves ever closer towards political and economic crisis, coupled with a probable election

4.3 PREVAILING ENERGY POLICIES & SCOPE FOR HARMONIZATION

To encourage cross-border energy trade, policies, laws, and regulations need to be harmonized, especially with regard to energy trade, pricing, and contracts. Transmission protocols need to be established, supported by open-access rules and transparent tariff systems for production, transmission, and distribution. Effective energy policies would promote competitive markets in electricity generation and ensure that environmental and other public policy objectives are incorporated and made transparent to electricity sector stakeholders. Reforms are required in most South Asian countries so that public sector electric utilities could function on a commercially viable basis and be able to participate effectively in cross-border trade.

Table 4, below, summarizes the current state of play in terms of regional energy policies among South Asian countries.

TABLE 4 - PREVAILING ENERGY POLICIES & SCOPE FOR HARMONIZATION

	SARI – EAST					SARI – WEST	
	BANGLADESH	BHUTAN	INDIA	NEPAL	SRI LANKA	AFGHANISTAN	PAKISTAN
How do existing country energy policies advance cross-border trade?	<p>A multiplicity of different energy policies, ambiguously linked and overlapping, focus on issues other than cross-border trade.</p>	<p>Bhutan’s government has neither an integrated national energy policy nor any sort of policy framework to guide the energy sector.</p> <p>At the same time, there is a strong vision that energy is a valuable resource, and energy exports represent 45% of the GDP. De facto policies support cross-border trade, although this is currently on a government to government basis, with Bhutan enjoying a privileged relationship with India.</p>	<p>Polymakers are committed to advancing cross-border trade, promoting new transmission links with different parts of the country, and a national grid will be in place by 2014.</p> <p>The Electricity Act (2003) is widely praised as a game-changer for putting India in position to participate in regional energy trade. Promotion of competition in the electricity industry is one of the key objectives of the act. Trading has been recognized as the distinct activity.</p>	<p>Nepal does not have an integrated national energy policy. Its energy policies are a mix of market-friendly and protectionist measures. Many years ago it instituted policies to stimulate PPPs, but they were put on hold during the insurgency, and the country continues to struggle to implement them. On balance existing energy policies generally don’t advance cross-border trade. New laws will be required. A 2/3s vote of Parliament might also be required to approve energy exports.</p>	<p>GoSL is actively pursuing cross-border energy trade with India via the submarine cable project. Formal energy policy is largely silent on regional trade.</p> <p>The GoSL approved a National Energy Policy in 2006, emphasizing proper pricing, energy efficiency, and expanded delivery of energy services.</p>	<p>Existing energy policies do not impede cross-border trading. Afghanistan currently imports power from several neighboring countries.</p>	<p>On paper, policies are adequate for cross-border trade to proceed, but Pakistan’s larger economic and political challenges make it difficult at this time to proceed with cross border trade. This could change with a new election and next government.</p>

4.4 TRADE REGIMES AND REGULATORY/LEGAL FRAMEWORKS

In the absence of harmonized and predictable legal and regulatory frameworks, regional energy trade in South Asia will continue to be constrained by: (1) cumbersome regulatory processes that lengthen the time for governments and investors to make decisions; (2) unclear and fluid regulations and requirements; (3) approvals and authorizations that must go to the highest levels of government; (4) policies and regulations that change arbitrarily and/or frequently; and (5) discriminatory treatment in the application of laws, regulations, taxes, and required technical or operational standards.

To overcome such barriers and realize the potential benefits of an interconnected, regional energy system, cross-border projects will require several regulatory/legal “software” elements, which could help define SARI/E’s agenda going forward. These include legal frameworks establishing the relationship between government and other participants in the power sector industry, a clear separation between regulators and utilities, and in some cases a separation between generation and natural monopoly transmission functions. Regulatory frameworks need to ensure fair treatment between public utilities and private sector participants, set performance targets for public utilities, adopt commercial tariff policies, and establish a competitive and stable fuel supply market. Such frameworks should set performance targets for public utilities, adopt commercial tariff policies, and establish a competitive and stable fuel supply market. Such frameworks should also provide for the development of transmission grids through a mixture of public and private investments. Such frameworks should also provide simplified approval processes that reduce uncertainties and delays and establish clear, published, and consistent central and state-level regulation. Mutual benefits from cross-border interconnections must be identified and communicated broadly to stakeholders and the general public.

A snapshot of regional regulatory and legal frameworks’ impact on energy trade regimes, by country, is provided below in Table 5.

Table 5 - Trade Regimes and Regulatory and Legal Frameworks

	SARI – EAST					SARI - WEST	
	BANGLADESH	BHUTAN	INDIA	NEPAL	SRI LANKA	AFGHANISTAN	PAKISTAN
<i>How closely do existing laws reflect global standards?</i>	The legal and regulatory framework for Bangladesh’s energy sector is set out in a number of different acts and policies, including the Electricity Act 1910, the Bangladesh Energy Regulatory Commission Act 2003, the National Energy Policy 1996, and the Private Sector Generation Policy.	The 2001 Electricity Act and the Sustainable Hydropower Development Policy 2008 set out legal and regulatory frameworks for Bhutan’s energy sector. As a result, Bhutan’s legal and regulatory frameworks closely reflect, or continue to progress towards, international energy sector standards.	The Electricity Act 2003 sets out the Indian central government’s laws relating to the generation, transmission, distribution, trading, and use of power. These laws closely reflect global standards.	On paper, existing laws are a mix of market-friendly and protectionist measures. While they begin to reflect global standards, implementation has not moved forward because of major political problems over past 20 years. Some additional, proposed laws currently are blocked in the Constituent Assembly, and it is not clear when, or whether, they might be passed. NEA’s unbundled, vertically integrated model does not reflect global standards.	While several recent energy legal and regulatory frameworks represent significant progress, the vertically integrated utility model does not reflect global standards for optimizing efficiency.	On paper, existing laws partially reflect global standards, and the current legal regime does not impede cross border trading. Afghanistan imports more power than any other SARI country, and its current legal system permitting power imports could also support transit or export of power from Afghanistan to Pakistan and beyond. DABS’ unbundled, vertically integrated model does not reflect global standards.	On paper, existing laws partially reflect global standards, but implementation of laws has not moved forward because of political problems over the past several years. The realities of circular debt crisis and other problems of governance overshadow what is written on paper.

Table 5 (continued) - Trade Regimes and Regulatory and Legal Frameworks

	SARI – EAST					SARI - WEST	
	BANGLADESH	BHUTAN	INDIA	NEPAL	SRI LANKA	AFGHANISTAN	PAKISTAN
How well do they respond to commercial realities?	Despite the development of legal and regulatory frameworks, private investment in generation, competitive energy pricing, and financial solubility continue to challenge Bangladesh’s energy sector.	Not focused on formal commercial transactions, because trade is Government-to-Government, but 45% of Bhutan’s GDP comes from the power sector.	Adequately at the central level, less so at the state level. Over 90% of India’s energy still is sold under bilateral arrangements, in which the government has a leading role.	Poorly. NEA is vertically integrated, seriously over-staffed, and effectively bankrupt. Tariffs do not permit cost recovery, and there is little likelihood that they will change soon to reflect commercial or economic reality.	Ceylon Electricity Board (CEB) is reported to be financially insolvent in spite of debt restructuring in 2008 and rationalized tariff structure. Public Utilities Commission of Sri Lanka (PUCSL) is now responsible for determining tariffs, and in 2010, the first CEB tariff proposal was submitted to PUCSL.	Poorly. DABS is vertically integrated, somewhat over-staffed, and effectively bankrupt. Tariffs do not permit cost recovery, and there is little likelihood that they will change to reflect commercial realities.	Poorly. Governance problems over past several years have led to a circular debt crisis and other related commercial problems. Efforts to unbundle have essentially imploded. Under present conditions, it is very hard for the sector to act commercially.
Can clean energy policies drive cross border trade?	“Clean energy” is somewhat useful internally within countries—particularly for off-grid power supply—although it is generally useful on the margins of a country’s national energy production. It has a potentially important impact upon the environment, but for the most of the countries of South Asia, environmental concerns are a luxury and most people simply want reliable power. Because clean energy is usually intermittent, based on wind, sun, or running water, a requirement remains for continuous, base-load power, which typically comes from thermal sources. Consumers across South Asia generally are not prepared to pay a premium price for clean energy. In the specific case of Sri Lanka, recent policy changes have facilitated private-sector wind farms. The potential for trading intermittent wind power to India during off-peak hours represents one incentive for building the submarine cable project, and the opportunity to trade in clean energy during off-peak hours might become true for other SARI countries. On balance, however, the study team finds no strong reason for clean energy to drive cross border trade.						

4.5 STRUCTURAL AND INSTITUTIONAL FRAMEWORKS

Cross-border energy trade in South Asia will require harmonized structural, institutional, and legislative frameworks to establish the relationship between government and other participants in the power sector industry and ensure fair regulatory treatment for all parties.

A summary of issues regarding regional structural and institutional frameworks, by country, is provided below in Table 6.

Table 6 - Structural and Institutional Frameworks

	SARI – EAST					SARI – WEST	
	BANGLADESH	BHUTAN	INDIA	NEPAL	SRI LANKA	AFGHANISTAN	PAKISTAN
<i>What is the ability of transmission systems operators to discharge their duties in an effective, transparent, predictable way?</i>	Limited; a National Load Dispatch Center is operational, but no practice for day-ahead dispatching	Limited; National Load Dispatch Center not yet operational.	Good. Procedures are well established and effectiveness will be enhanced by the unification of the Indian national grid by 2014.	Limited	The fact that the CEB does not function as an independent transmission system operator could discourage investment in generation or distribution.	Limited	Limited
<i>What is the ability of regulators to discharge their duties in an effective, transparent and predictable way?</i>	Limited: Bangladesh Energy Regulatory Commission is seriously understaffed at both commissioner and staff levels. Staff numbers have been going down, and HR systems provide disincentives for working with the commission.	Bhutan Electricity Authority has full autonomy, but power sector is overseen and regulated by Ministry of External Affairs through Department of Energy.	Mixed: Central Electricity Regulatory Commission (CERC) is an apex body and national level regulator under the Ministry of Power; State-level regulators are also in place, but are accountable to state governments and often understaffed. Some experts talk of ‘regulatory capture.’	No meaningful regulator	The PUCSL operates in a reasonably effective and transparent manner, but its independence is questioned given its “advisory” role to GoSL.	No meaningful regulator	Negligible. Very limited real regulatory capacity

5 PRIORITIES FOR A SUB-REGIONAL REFORM AGENDA

5.1 SARI-EAST

Since its establishment in 2000, SARI/E has been successful in bringing stakeholders together around the region to discuss regional energy issues. Going forward, SARI/E can leverage this experience to focus stakeholder attention on the steps that will be required to support the development of a virtual energy grid in SARI-East countries.

Those steps fall into two general categories:

- “Hardware”—the actual, technical issues of building and operating the required infrastructure. Although every interconnection presents a technical challenge, the issues of design and construction are well within today’s state-of-the-art engineering and utility management.
- “Software”—the development of commercial trading arrangements, for which laws will have to be enacted, regulatory and other institutions of governance will have to be established, and existing utilities will have to be restructured and refocused upon competitive, commercial objectives.

Steps include:

1. Reaching the necessary political consensus in each South Asian country and, as appropriate, enacting legislation and formulating policies and practices to permit cross border energy trade
2. Building on existing Indian strategies to encourage private-sector investment and PPPs for cross-border energy projects
3. Completing the interconnections between India and its neighboring countries around South Asia
4. Harmonizing laws, policies, and practices governing commercial energy trade among the countries
5. Establishing independent regulatory regimes in each South Asian country and harmonizing regulations governing cross-border-energy trade
6. Functionally restructuring the energy-utility sector in each country, transforming those enterprises into competitive and commercially viable business units.
7. Ensuring that retail energy tariffs are cost reflective in each of the countries.

Of the steps outlined above, only one—the actual construction of interconnections—falls within the hardware category, yet typically, it receives the most attention from stakeholders. To date, stakeholders have focused disproportionately on building the grid, leaving much more work to be done on non-technical issues—the software.

Notwithstanding the compelling case for the Virtual Energy Grid, taking the necessary steps to achieve that result will not be easy. This process may take decades and will extend beyond the next phase of SARI/E. However, SARI/E can provide meaningful support to this process. Under

prevailing scenarios, it will take several years to construct the hardware for the Virtual Energy Grid, and those years represent an important window of opportunity to debate, design, and implement the software essential for operating that system.

5.2 SARI-WEST

Pakistan may make limited progress in the energy sector or may be on the cusp of yet another serious macro-economic and political crisis. In either case, it faces closely woven macro-level political and economic problems that are difficult to resolve and go far beyond the particular details of energy policies, energy regulations, or institutional reform. The same is essentially true for Afghanistan. The following major questions must be addressed in order to make significant progress in Pakistan's energy sector:

- Whether Pakistan and its macro-economic and governance problems could be addressed, and whether the problems of circular debt could be addressed
- Whether the political system can allow energy prices to be set somewhere close to market rates, and whether the social and political fallout of such price increases could be dealt with
- Whether generation, transmission, and distribution could be rationalized, either by successfully unbundling or by some other management mechanism(s)
- Whether the political and bureaucratic authorities could ever allow a regulatory agency to evolve into a meaningful independent body that would function separately from the government, whether it could avoid capture by special interests, and whether eventually, it could provide suitable oversight for the power and energy sector
- Whether the larger, national-level, enabling environment and climate for private-sector investment could be made more attractive
- Whether the well-known issues of corruption could be addressed

For Afghanistan, similar, interlinked issues are equally relevant, with the addition of even more serious concerns about national security and political fragility. However, such macro-level political and economic changes are not likely to happen soon, or during the next phase of SARI/E. In any case, addressing such challenges is beyond SARI/E's manageable interests. In the absence of meaningful progress on the larger issues suggested above, efforts to define a sub-regional reform agenda that looks at individual policies, regulations, or institutional reforms at present would not represent a good use of USAID resources.

Nevertheless, there may be more practical ways to look at the challenge. A SARI/E sub-regional reform agenda for Afghanistan and Pakistan might involve working with other donors, for example, to address specific aspects of some major, cross-border initiative like CASA 1000, the Turkmenistan-Afghanistan-Pakistan-India (TAPI) Pipeline, or the TUTAP Project (Turkmenistan-Uzbekistan-Tajikistan-Afghanistan-Pakistan). An element of this approach might be for SARI/E support in a demand-forecast projection for Afghanistan and/or Pakistan in order to determine the scope for cross-border power trade to mitigate energy shortages. Pursuing such strategies could move beyond each country's internal power sector problems, supporting instead

the development of a larger vision that could achieve traction over the next few years, and at the same time fall within SARI/E’s purview.

Beyond these kinds of activities, there are other important ways that SARI/E can support the Western Sub-region. Representatives from Afghanistan and Pakistan should routinely participate in various SARI/E Task Force meetings, even though their ability to operationalize outputs from such meetings when they return home might be limited. Such participation will continue to support regional dialogue between and among SARI countries, and might introduce new ideas based on the experiences in SARI-East. Efforts to improve generation and transmission practices certainly will be relevant. Efforts to move power through the mechanism of a virtual grid eventually might have some relevance. Such participation will also demonstrate how India and its neighbors in SARI-East might serve as models for SARI-West as well as elsewhere.

6 RECOMMENDATIONS

Based upon our analyses, the study team makes five recommendations with respect to the following areas:

- Task forces
- Coordination with supporting institutions
- Engaging with civil society and media
- Promoting public-private-partnerships, and
- Documenting SARI/E success stories

Each of these recommendations is detailed below.

6.1 TASK FORCES

6.1.1 Objectives

SARI/E’s objectives in this ongoing effort across both sub-regions of South Asia should be to:

- Facilitate policy dialogue and build consensus through the open exchange of ideas, sharing of experiences, and exploration of best practices in reaching solutions to common problems
- Support the harmonization of regional energy policies, including the harmonization of laws, policies, and regulatory frameworks
- Build a working-level model of cross-border cooperation that can be adapted to other developmental situations

To accomplish these objectives, we recommend that SARI/E support the establishment of focused “Task Forces”, primarily to address “software” issues critical to creating the commercial

trading environment necessary for expanding cross-border-energy trade. The composition of these Task Forces would include representatives of government, utilities, businesses and other stakeholder organizations appropriate to the focus of the group.

In addition to SARI/E's current Task Force on generation and transmission (SATURN), other illustrative tasks that SARI/E might focus on could include:

- Commercial trading arrangements
- Commercialization of utilities
- Legal issues of cross-border trading
- Harmonizing regulatory policies and practices
- Tariffs and subsidies

Not all Task Force Groups need to be established at the beginning of the new SARI/E program. In fact, in some cases, stakeholders may not be ready to form a formal Task Force; it may prove more politically acceptable to form an interim working group, that can grow into a Task Force, if stakeholders appreciate the need for such an instrument. The next phase of SARI/E should also continue to work through Task Orders, so that SARI/E thereby retaining maximum flexibility in order to focus on stakeholders' needs as they evolve. There may also be reason to form sub-committees, which specialize in certain functions, under the umbrella of a larger Task Force.

6.1.2 Modalities

SARI/E Secretariat

In the next phase of SARI/E's implementation, there should be a Secretariat that provides organizational support and facilitates the work of each Task Force, including preparation for each Task Force meeting and follow-up to provide continuity and a sustained focus on its prescribed activities.

Since a Task Force will meet only periodically, it cannot carry out operational activities. Instead, the SARI/E Secretariat should perform the necessary preparatory work before convenes and then follow-up after the conclusion of each Task Force meeting in order to provide continuity and a sustained focus on its prescribed activities. A Task Force may ask the Secretariat to commission a study or conduct certain kinds of analysis, for example. The results of such a study could then be formally presented at the next Task Force meeting.

Permanent Task Force Groups

SARI/E should strive to have each Task Force become a permanent working group. In the past, SARI/E has conducted many widely-attended conferences, seminars, and workshops. Rather than organizations designating participants on an *ad hoc* basis to attend a single event, we propose that SARI/E should ask stakeholder organizations to nominate an individual to become a

permanent member of a Task Force. To ensure suitable continuity, organizations should nominate both a member and an alternate.

SARI/E Secretariat program staff should visit with the leadership of each organization represented on a Task Force, and explain objectives and functions, as well as the duties, responsibilities, and expected tenure of its members. SARI/E should be proactive in outlining the professional qualifications, interests, and responsibilities of a prospective member so that the Task Force itself can be staffed suitably.

Regularly Scheduled Meetings of Task Forces

The task force should meet regularly (e.g., quarterly) or as may be appropriate to a particular task. In some cases, when a full meeting is not appropriate, there may be a need for virtual meetings via video-conferencing. Each task force should have specific objectives it seeks to achieve. Meetings should be more than periodic *ad hoc* discussions. Members should know the dates and venues of task force meetings over each coming year so they can focus appropriate attention to their duties and responsibilities as task force members, and seek counsel and guidance from their organization, government, or other relevant stakeholders in their individual country.

Focused Agendas

As far in advance as practicable, the SARI/E Secretariat should circulate an agenda for each Task Force meeting as well as other pertinent documents for review and discussion. *Ad hoc* and “TBD” items should be avoided. The objective is for each member and his/her organization to have ample opportunity to prepare to participate in the meeting. The Secretariat’s facilitators should also provide sufficient time for networking and informal discussions, but the plenary sessions should remain focused on the achievement of specific goals.

Professional Facilitation

While the SARI/E Secretariat should have experience conducting meetings and other events that stakeholders may wish to convene, we are distinguishing between the role of the “conference organizer” and that of the “meeting facilitator.” These are separate jobs requiring different skills and experience, and the SARI/E Secretariat should not seek to combine them in one person. Instead, one or more members of the Secretariat should be experienced in facilitating group interactions, and should be available “as needed” to facilitate relevant events. Task Force meetings should always be facilitated by external professional facilitators, who are not members of the Task Force.

An independent facilitator should help members of a Task Force discuss important issues with the goal of reaching consensus and moving the agenda forward in constructive ways. An independent facilitator should keep the proceedings “on track” by limiting discussion to the topic

at hand and preventing any one member from monopolizing discussions. He or she should also periodically summarize what the group has learned, and help them focus on issues they may not have addressed.

Each Task Force will generally operate by consensus. Since the Task Force will be composed of representatives from several countries and/or organizations, each of whom is likely to bring a particular agenda to the discussion, it would be difficult for one participant to exert leadership over the Task Force without risking the charge that a particular country or organization has taken control of the proceedings.

Demand-driven

The next phase of SARI/E should be demand-driven, making focused, transactional-level technical assistance and training available to those SARI countries in the process of negotiating specific cross-border energy trading regimes. The new program should be set up to work on a task-order basis so that the program can provide specific assistance regionally and in each country, as needs evolve.

6.2 COORDINATION WITH SUPPORTING INSTITUTIONS¹⁶

The SARI/E study team explored options for working through regional institutions such as SAARC¹⁷ and broadening the base of participation to include other donors to ensure sustainability in SARI/E in the future. Although the study team concluded that no single existing regional organization in South Asia is appropriate for carrying SARI/E's legacy into the future, USAID should continue to work with other regional entities and coordinate activities of common interest and purpose, but retain its independence so as not to compromise its ability to meet stakeholders' needs as they develop.

A number of organizations in South Asia have fostered regional energy sector cooperation in recent years. For example, the South Asia Association for Regional Cooperation (SAARC) has set up a technical committee on energy sector cooperation under its Integrated Programme of Action; it also established an Energy Centre in Islamabad, with support from SARI/E. The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) has also established a Centre for Energy to facilitate energy studies and the exchange of expertise.

Various technical and professional public sector organizations, including Power Grid and Power Trading Corporations of India and the electricity authorities of Nepal, Sri Lanka, and Pakistan, have also been exploring cross-border energy trade. International agencies, including USAID, World Bank, ESCAP, Asian Development Bank, USAID, and the United National Development Program (UNDP), have been active in recent years as well.

¹⁶ A discussion of the main, regional-supporting institutions follows, with detailed descriptions of each given in Appendix C.

¹⁷ South Asia Association for Regional Cooperation (SAARC); other regional institutions that were considered include: The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC); the South Asia Growth Quadrangle (SAGQ); the South Asia Sub-regional Economic Cooperation (SASEC) and the South Asia Forum of Infrastructure Regulators (SAFIR).

The study team explored options for working through regional institutions to ensure sustainability of SARI/E in the future. In particular, the team sought to understand how to leverage the convening power of regional institutions (especially SAARC) with energy policy-makers and regulators in the next phase of the SARI/E program.

SAARC. The study team discussed SAARC as a potential partner with virtually every interviewee during the course of the study. Without exception, stakeholders counseled against linking SARI/E too closely to SAARC. The reasons for this were consistent: decision making within SAARC is complex and time consuming because it works only by consensus of all of its member states, and the lack of a program budget and ministerial level representation results in limited ability to implement programs. Thus, SARI/E should not link its future activities to SAARC, nor should SAARC be a long-term option to sustain the SARI/E program following the next phase of USAID support.

BIMSTEC was not well known among interviewees in the region. Those familiar with its work did not recommend it as an implementing partner, although sharing information and coordination is appropriate.

South Asia Growth Quadrangle (SAGQ)/SASEC. As a sub-regional initiative launched under SAARC, the South Asia Growth Quadrangle (SAGQ) comprising Bangladesh, north-eastern India, Bhutan, and Nepal, enjoys geographical proximity, economic complementarities, and socio-cultural similarities that favor greater economic integration. Previous studies have concluded that power trading within the SAGQ sub-region would benefit all four countries. With the help of the Asian Development Bank (ADB), SAGQ launched the South Asia Sub-regional Economic Cooperation (SASEC), which has implemented various programs in the four-country region addressing tourism, trade, industry, and transportation, but nothing in energy. SARI/E should coordinate with SAGQ and SASEC as appropriate if they expand their activities into the energy sector.

SAFIR. SARI/E has worked informally with the World Bank-funded South Asia Forum of Infrastructure Regulators (SAFIR) for several years, and this relationship should continue. Because the study team recommends that SARI/E should focus more on the enabling environment for energy trade, including regulatory reform and harmonization in the region, SAFIR is a natural knowledge partner. Given its narrow focus on infrastructure regulation training, however, it is not a potential institutional home for SARI/E in the future.

6.3 ENGAGING CIVIL SOCIETY AND MEDIA

We recommend that SARI/E provide targeted assistance (funding, technical assistance, and training) for awareness-raising activities on cross-border trade issues for the general public, media, business community, energy regulators, government, and other professionals working in the SARI/E countries engaged in cross-border energy trade.

Several experts emphasized the importance of broadening the discussion on cross-border energy trade to include civil society and the media, which has a clear role to play in expanding public

participation in decision making on cross-border energy trade. For example, the Sri Lankan regulators noted that the submarine cable discussion to date had been internal for the most part and needed to be vetted in more public forums in order to attain broader understanding and acceptance. Government officials also recognized the important role of the private sector and regulators in ensuring that commercial arrangements are well understood. Other officials suggested that increasing awareness and capacity building on cross-border energy trade issues among attorneys general in the region could be a strategic intervention that SARI/E should consider. This was because the legal issues decided at the level above that of the regulators will be key to establishing viable trading regimes. Experts emphasized the importance of involving the business sector to enable them to engage more effectively with government on policy issues. As economies expand in the next few years, the business sector will be an increasingly important voice in setting energy policy, including the tariff, subsidy, commercial arrangements and regulatory issues facing cross-border trade. When the SARI Secretariat is working to set up a Task Force meeting, it may prove useful to invite representatives from civil society and/or the media, perhaps during the last day of a session, when the Task Force can announce some of its decisions, or proposed future actions.

6.4 PROMOTING PUBLIC-PRIVATE PARTNERSHIPS (PPPS)

We recommend that SARI/E include the private sector in the Task Force structure described above, consider creating a Task Force focused on promoting PPPs, and explore ways and means to take advantage of Government of India and other regional schemes and financing opportunities for PPP development for cross-border energy trade.

One important strategy to overcome barriers to cross-border energy trade would be for India to expand its existing scheme for promoting infrastructure PPPs to include incentives for implementing cross-border energy projects. In 2004, India established a committee on infrastructure to maximize the role of PPPs in key infrastructure projects. A secretariat was set up in the Planning Commission. Proposals under this scheme are being considered for funding, with the objective of making PPP projects commercially viable. The India Infrastructure Finance Corporation also provides a financial model for developing regional electricity networks.

6.5 DOCUMENTING SARI/E SUCCESS STORIES

We recommend that the next phase of SARI/E devote sufficient resources to documenting program successes in fostering cross-border energy trade to date. We also recommend that such documentation, in the form of success stories and case studies, be presented on the SARI/E website and to the Task Forces, and be made widely available to media in the SARI/E countries. Furthermore, we recommend that SARI/E documentation be shared broadly among USAID Missions in Africa and elsewhere that are engaged in cross-border energy trade issues.

Officials in the region suggested utilizing SARI/E resources to document program successes. Clearly, media has a role to play in expanding public participation in decision making on cross-border energy trade. Such documentation will also be useful in engaging other donors in SARI/E,

a theme that was also emphasized by USAID officials. The Asian Development Bank (ADB) is promoting private sector participation in energy infrastructure as a pillar in their 2020 strategy. Others emphasized the importance of leveraging donors like ADB, Japan International Cooperation Agency (JICA), the World Bank and the private sector to increase funding and clout among government policy makers. Public-Private Partnerships (and alliances) are an important theme within USAID throughout the region.

APPENDIX A. SOUTH ASIA COUNTRY PROFILES: KEY ISSUES¹⁸

SARI-EAST

The focus of SARI-East is the development of markets for energy. Existing, planned, and prospective transmission connections between India and its neighbors in the east provide the basis for multi-national trading employing the Virtual Energy Grid discussed earlier in this report. With India as the nodal connection for such trade, the countries of SARI-East would potentially be connected to the other sub-regional countries and also share the benefits of proximity and interaction with India, which serves as an engine for the sub-region's economic growth. The five countries of the eastern sub-region are briefly discussed, below:

Bangladesh

Background

Endowed with abundant natural resources, Bangladesh has good potential for continuing to develop its energy sector. Its geographic location, south of Nepal and Bhutan, east of India, and north of Myanmar, puts it in a prime position for cross-border power trading with its regional neighbors. However, despite its potential, Bangladesh's domestic energy sector is currently underdeveloped and is unable to produce enough power to meet its domestic demand.

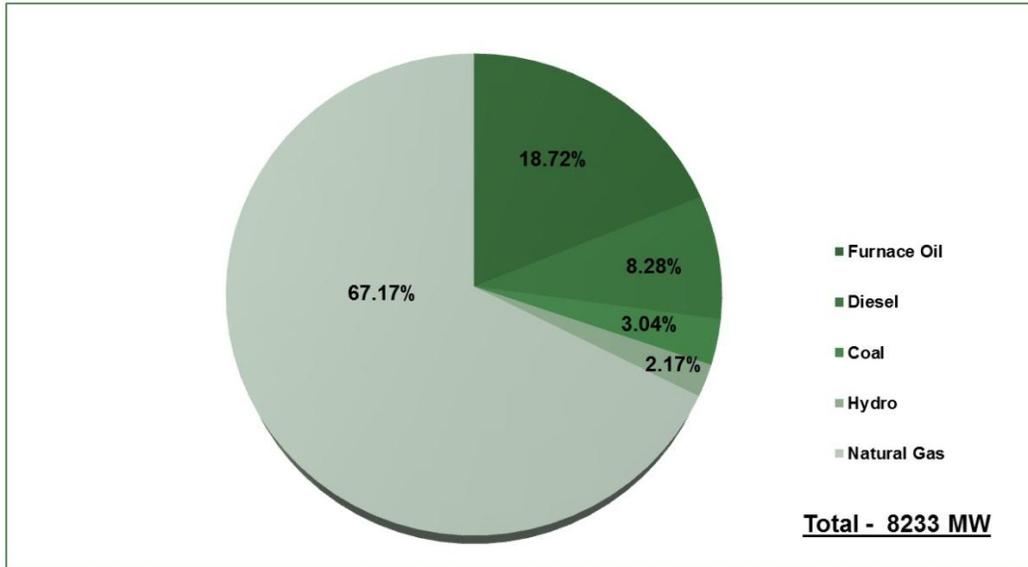
Economy

Bangladesh's economy has grown five to six percent annually since 1996, despite political instability, poor infrastructure, and corruption. Bangladesh remains poor and only 40 percent of the population had direct access to electricity. Insufficient power supplies are a key impediment to economic growth and the government is unable to pay commercial rates for non-domestic energy supplies.

¹⁸ A more detailed discussion of each country is presented in Appendix B.

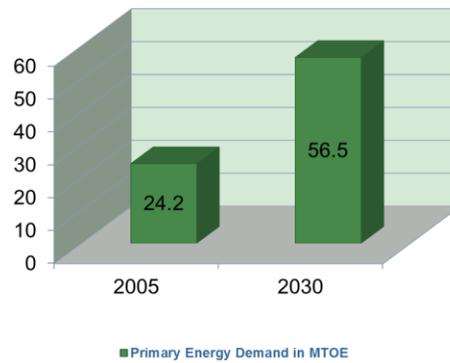
Energy Overview

Figure A-1 - Bangladesh's Installed Capacity as on November 2011 (By Fuel Type)



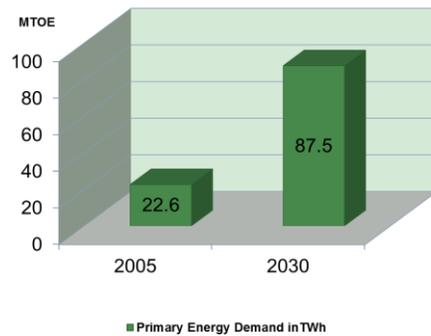
Source: Bangladesh Power Development Board

Figure A-2 - Bangladesh's Primary Energy Demand Forecast



Source: ADB - Energy Outlook for Asia and the Pacific, October 2009

Figure A-3 - Bangladesh's Electricity Demand Forecast



Source: ADB - Energy Outlook for Asia and the Pacific, October 2009

Bangladesh produces 697 billion cubic feet of gas annually. In 2008, natural gas accounted for around 89 percent of domestic power generation and over 75 percent of the overall commercial energy supply. While the government has increased natural gas production by 100 percent since 1998, the country faces enormous shortages in gas production, due to increased demand for power generation that is outpacing supply. The demand for power is expected to increase at eight to nine percent annually through 2020.

Responsiveness to cross-border trade

The Bangladesh government's 2010 Planning Commission Report prioritizes regional cooperation for the import of electricity, particularly from Bhutan, Nepal, and Burma. The government is reluctant to export natural gas until it determines whether its gas reserves are sufficient to meet domestic needs over the long term. Development of coal resources and coal-fired power plants, as well as importing hydropower from Nepal and Bhutan, could make Bangladesh more receptive to thermal (gas-fired) power export.

Power sector reforms

Bangladesh has passed numerous reforms since the 1990s, most of them meant to boost efficiency and introduce private sector involvement. The Private Sector Power Generation Policy 1996 was adopted to promote private sector participation in the generation of electricity. According to the policy, private investment in new power generation projects is to operate on a build-own-operate (BOO) basis. According to the Planning Commission, a third of Bangladesh's power is generated now by the private sector.

Legal and regulatory reforms

The Bangladesh Energy Regulatory Commission (BERC) Act 2003 established BERC as an independent and impartial regulatory commission to create an atmosphere conducive to private investment in the generation of electricity, and transmission, transportation, and marketing of gas resources and petroleum products; to ensure transparency in management, operation, and tariff determination in these sectors; to protect consumers' interests; and to promote the creation of a competitive market. Unfortunately, weak implementation of these reforms has resulted in substantially less impact than anticipated.

Generation, Transmission and Distribution

Energy sector unbundling involved the creation of new power generation companies, IPPs and other private sector investment in generation, the establishment of the Power Grid Company of

Bangladesh for transmission, and five new distribution companies, each assigned with handling distribution for different regions of the country. While this has led to reduced losses (technical and non-technical) and improved revenue collections, monopolies in transmission and local distribution companies remain.

Energy pricing

Tariffs continue to be set below the cost of supply which, in addition to extensive subsidies, seriously cut into the financial success of the energy sector. The average tariff of 5.2 cents/kWh is inadequate to cover the cost of supply and financial losses from the Bangladesh Power Development Board (BPDB) alone were estimated to be \$100 million in FY 2005. This inevitably reduces the attractiveness of investment in power generation or the energy market, and erodes the possibility for competitive trade.

Potential cross-border energy projects

Various cross-border energy projects have been proposed by the Indian government over the past few decades, including a gas pipeline that would have imported gas from Myanmar across Bangladesh to India, but no real actions have been taken. India has also proposed building thermal power generation plants in Bangladesh with excess energy being exported to India. A feasibility study for establishing transmission links between India and Bangladesh has been completed, and construction is now underway. The Government of Bangladesh in its longer range planning documents is also showing several additional, cross-border energy projects over the next two to three decades.

Bhutan

Background

About 66 percent of Bhutanese households have access to electricity. Much of the population resides in remote rural areas that have yet to be connected to the main electrical grid. Despite the many challenges that Bhutan faces in the development of its energy sector, the country has great potential to continue developing its hydropower. Currently, Bhutan is the only country in South Asia with a surplus power generation capacity.

The Economy

Bhutan is one of world's smallest and least developed economies. The livelihoods of 60 percent of the population depend on the agricultural and forestry sectors. The export of electricity has become an integral part of the Bhutanese economy and a driver of economic growth. Cross-border energy trade now constitutes 45 percent of the government's exports earnings.

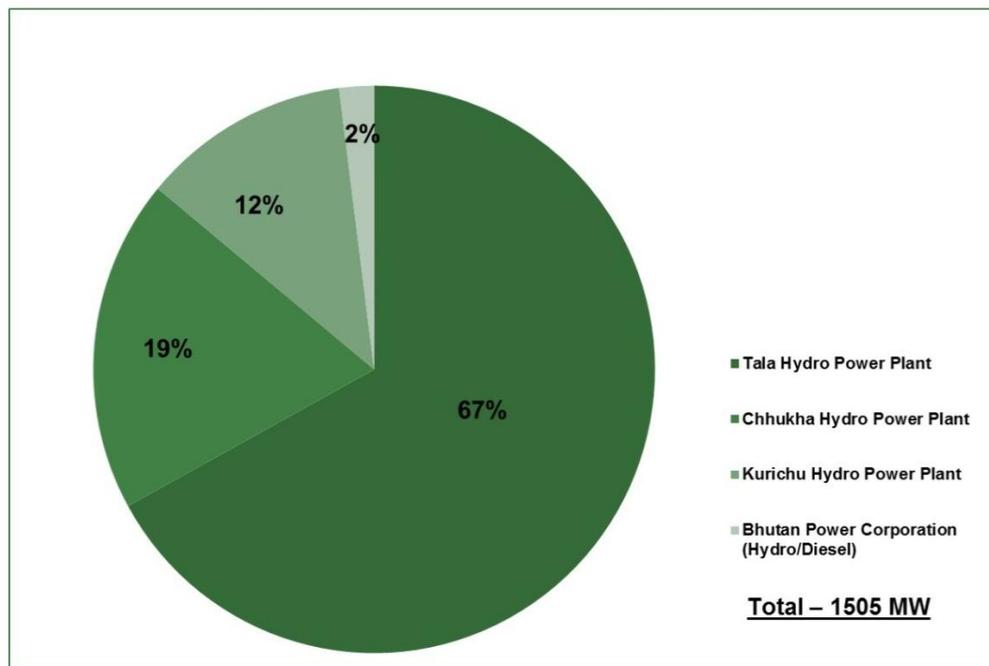
Energy Overview

Table A-I - Bhutan’s Power Supply and Demand Scenario 2009-2010

Total Generation	1505.6MW
Total Export	5353 GWh
Total Import	19.55 GWh
Total Domestic Consumption	~ 1665 GWh
Per Capita Energy Consumption	~ 2200kWh
Power System Demand	~ 194MW

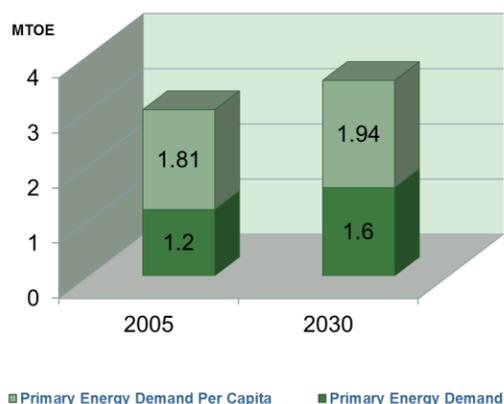
Source: Bhutan Department of Energy

Figure A-4 - Bhutan’s Total Energy Mix in 2009-10



Source: Bhutan Ministry of Economic Affairs

Figure A-5 - Bhutan's Primary Energy Demand Forecast



Source: ADB - Energy Outlook for Asia and the Pacific, October 2009

Bhutan's hydropower potential is estimated around 30,000 MW. Power trade with India is expected to increase from approximately 1,400 MW, currently, to 10,000 MW by 2020 and 20,000 MW by 2030. All petroleum products for commercial and household use are imported. However, most households still depend on biomass, primarily fuel wood, as a main energy resource.

Responsiveness to cross-border trade

While Bhutan's government emphasizes energy self-sufficiency, over 75 percent of the country's hydropower is exported to India. Bhutan has yet to demonstrate a formal interest in a broader regional energy trade regime, although the development of a viable Virtual Energy Grid,' could quickly change this dynamic as the modalities for regional trade come into existence.

Power sector reforms

The Electricity Act of 2001 restructured the energy sector, establishing the Economic Affairs Ministry (EAM) as the nodal agency for most energy-related matters and forming the Bhutan Electricity Authority (BEA) as electricity supply regulator.

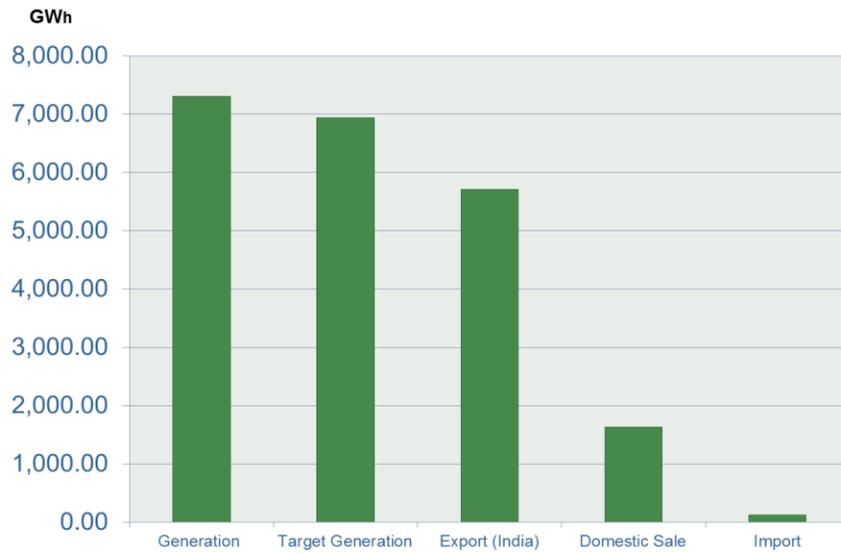
Legal and regulatory reforms

BEA was established by the 2001 Electricity Act to regulate the hydropower sector. It handles dispute resolution, license compliance, and electricity tariff regulations. The ability of the BEA to function as an independent regulatory body is open to question, since the government still appoints its members.

Generation, Transmission and Distribution

The state-owned Bhutan Power Corporation (BPC) is the sole domestic entity responsible for the supply, transmission, and distribution of electricity within Bhutan. In 2008, the Government of Bhutan established the Druk Green Power Corporation in order to develop and oversee Bhutan's hydro power generation. Druk Green electricity is sold to BPC, with the surplus being exported to India (see Figure A-10, below).

Figure A-6 - Druk Green Operational Performance 2010



Source: Druk Green

Energy pricing

Bhutan provides a high level of subsidy to domestic consumers, and the incentive schemes it operates for attracting power-intensive industries might adversely impact the growth of electricity exports from Bhutan. Distorted price signals could lead to serious misallocation of resources and might cut into the surplus available for export. The government also has first rights to purchase any power/energy that it requires at the off-take rate applicable at the generation station.

Potential cross border energy projects

The Government of India has entered into a Memorandum of Understanding (MoU) with the Government of Bhutan to develop 10,000 MW of additional hydropower capacity through the construction of 11 mega-projects by 2020, and these projects appear to be on track, with several scheduled for completion by 2016. Bhutan and India also have worked together to implement the Green Power Development Project (GPDP), which aims to expand regional clean power trade and increase access of the poor to renewable energy.

India

Background

In recent years the Indian government dramatically liberalized the energy sector by encouraging public-private partnerships. The Indian government's historical involvement, in the form of subsidies and state-owned companies that dominate the market, had distorted energy markets and deterred private investment. This tradition has been changing over the past two decades, however, and the Indian government has substantially unbundled the energy utilities.

Economy

The Indian economy continues to show impressive economic growth, averaging more than seven percent per year since 1997. With this growth, India has become a significant consumer of energy resources. India's Planning Commission estimates that to maintain eight percent GDP growth into the 2030s, its primary energy supply must grow to 2,360 billion kWh by 2020. However, the poor quality of the current power supply and frequent power outages could undermine India's growth potential.

Energy Overview

Table A-2 - India's Power Supply and Demand Scenario (2010-11)

Energy	In MU
Requirement	8,61,591
Availability	7,88,355
Surplus/Deficit	-73,236
Peak	In MW
Requirement	1,27,165
Availability	1,14,686
Surplus/Deficit	-12,479

Source: central Electricity Authority

Table A-3 - India's Power Supply and Demand Forecast (2011-12)

Energy	In MU
Requirement	9,33,741
Availability	8,37,374
Surplus/Deficit	-96367
Peak	In MW
Requirement	1,36,193
Availability	1,18,676
Surplus/Deficit	-17,517

Source: central Electricity Authority

Figure A-7 - India's Installed Capacity as on November 2011 (By Fuel Type)

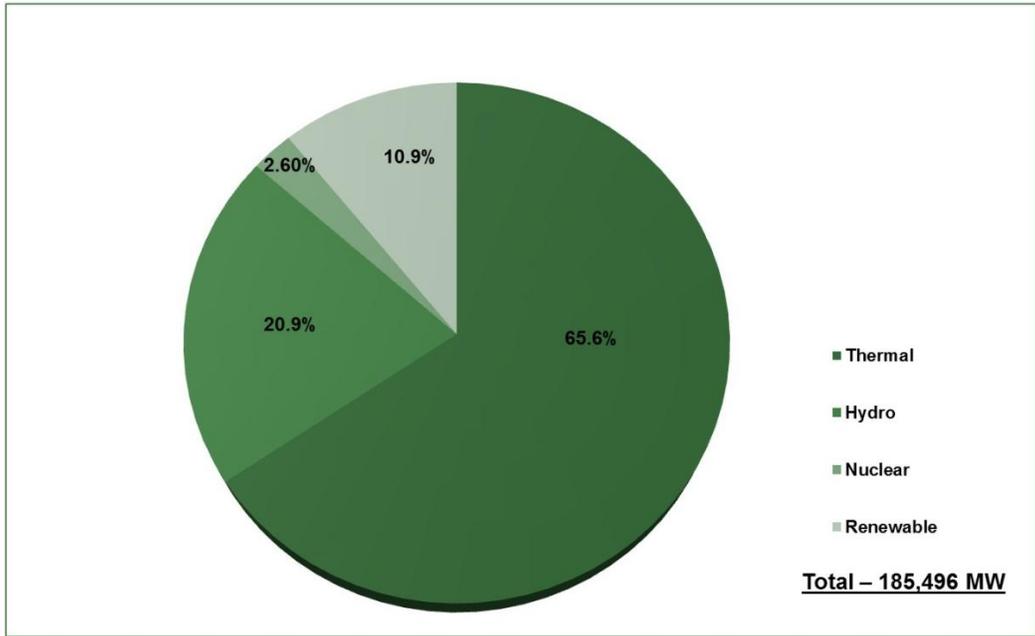
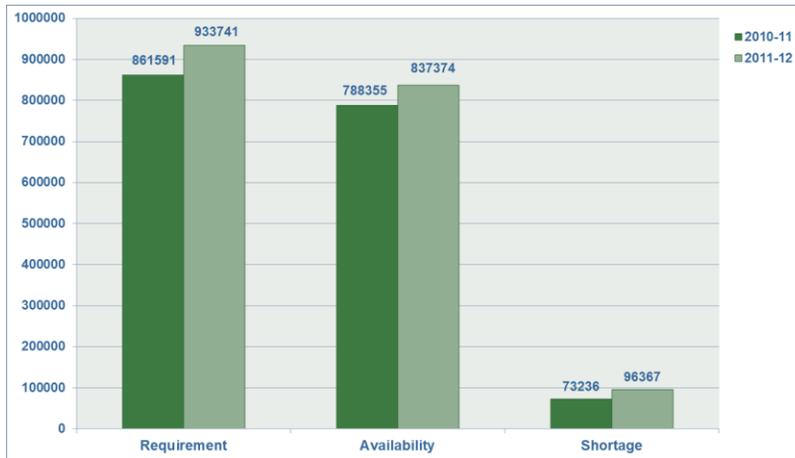
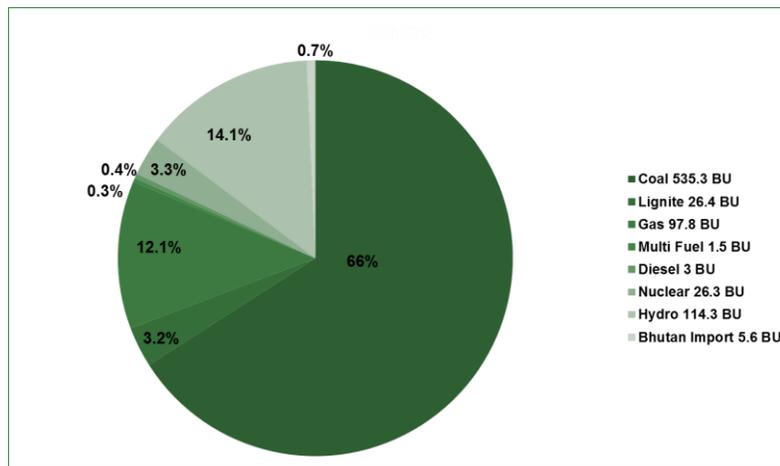


Figure A-8 - India's Energy Demand and Forecast (in MU)



Source: Central Electricity Authority

Figure A-9 - India Total Energy Generation in 2010-11 (By Fuel)



Source: Central Electricity Authority

Coal is the most abundant fossil fuel in India and it is one of the most important sources for meeting domestic energy needs. It accounts for 55 percent of the country's total energy supplies, a portion of which is exported to Bangladesh, Bhutan and Nepal. In addition to producing oil and natural gas from domestic resources, India now imports significant volumes of oil and natural gas from the Middle East and Africa.

Responsiveness to cross-border trade

Indian policymakers are committed to advancing cross-border trade, as indicated by the establishment of a nodal agency for power trade and an entity for electricity dispute resolution, as well as the pursuit of bilateral, energy-trade projects with India's eastern neighbors. However, India's longstanding security priorities have emphasized the ability to develop and source energy from inside the country. Regional energy trade could be seen by some as a threat to energy security.

Power sector reforms

The Electricity Act of 2003 removed licensing for power generation, separated transmission from generation and distribution, started international competitive bidding, and provided incentives for the formation of public-private partnerships. The government has also begun allocating captive coal blocks to private firms and providing tariff incentives for investment in the transmission sector.

Legal and regulatory reforms

A variety of national and state government ministries and agencies play active roles in shaping policy and regulating the energy market. State governments often have more power in regulating energy markets than the national government. The lack of integration and coordination between the agencies sometimes leads to duplications of effort, contradictory regulations, and some reduction of efficiency. Despite the creation of national and state electricity regulatory commissions (ERCs), there are no strong independent regulatory bodies within the sector.

Generation, Transmission and Distribution

The Indian constitution empowers both the national and state legislatures to provide policy and institutional frameworks for the operation of the electricity supply industry. This has delayed the promotion of competitive energy trade in South Asia. Some states have yet to unbundle generation, transmission, and distribution functions to encourage competitive, efficient, and transparent power trade. Also, many state governments still maintain control over the electricity distribution function by forming state-owned electricity-distribution companies.

Energy pricing

Although the ERCs are empowered to set tariff prices, the state governments are very influential in tariff pricing and collection by distribution companies. State governments face strong political pressure to subsidize household and agricultural electricity, and many state distribution companies fail to guarantee payment to power generation companies. This poses a potential obstacle to private investment in power generation and regional energy trade, which is fueled by market-driven policies that frown upon subsidies.

Potential cross border energy projects

India is involved in planning for a number of cross-border-energy projects, all bilateral. These projects involve the construction of electricity transmission lines between Nepal, Bhutan, Sri Lanka, Bangladesh, and possibly Pakistan.

Nepal

Background

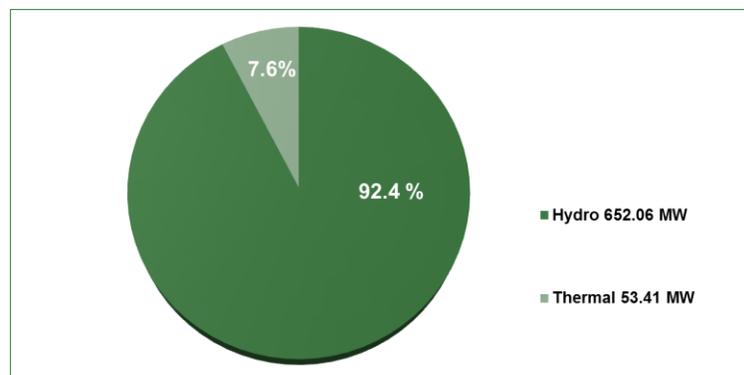
In the aftermath of a 20-year insurgency, Nepal's politicians are still constructing the formal components of a new political system and have had little time for issues such as energy trading. Political instability has also prevented the implementation of energy sector reforms. Within Nepal, there is growing concern over Nepal's domestic energy and trans-border, energy-trade policies. Increasingly, political parties assert that government should focus on generating energy for domestic use rather than for export to India.

The Economy

Nepal is one of the world's poorest and least developed countries. Agriculture accounts for about one-third of GDP and provides livelihoods for roughly 75 percent of the population. Currently only about 56 percent of the Nepalese population has access to electricity¹⁹ and per capita annual electricity consumption of 80 kilowatt-hours is among the lowest in the world.

Energy Overview

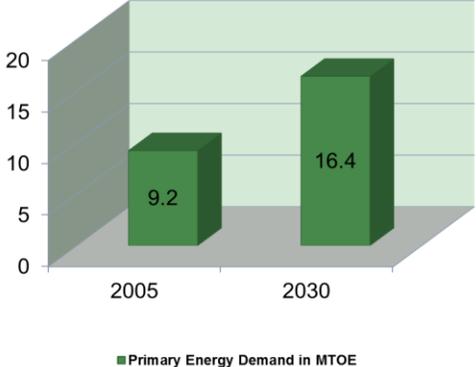
Figure A-10 - Nepal's Installed Capacity in FY2010-11



Source: Nepal Electricity Authority

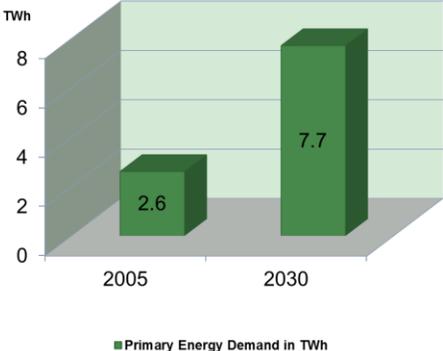
¹⁹ Of which 46 percent are grid connected; 10 percent are off-grid from micro-hydro, etc.

Figure A-11 - Nepal's Primary Energy Demand Forecast



Source: ADB - Energy Outlook for Asia and the Pacific, October 2009

Figure A-12 - Nepal's Electricity Demand Forecast



Source: ADB - Energy Outlook for Asia and the Pacific, October 2009

Nepal's accessible hydropower generation potential is estimated to be around 42,000 MW.²⁰ However, hydroelectricity accounts for only three percent of Nepal's overall national energy supplies. Biomass, (wood, animal, and agricultural waste) constitutes approximately 86 percent of Nepal's energy resource mix. Imported fossil fuels, mainly oil and coal, constitute eight percent of Nepal's energy resource mix. Electricity is available to only a small percent of urban consumers for only a few hours per day, except during the height of the monsoon season. Power shortages during the winter are acute and growing.

Responsiveness to cross-border trade

Cross-border-energy trade has emerged as a fractious political issue because many parts of society regard water as a natural resource and believe it should be used to generate energy for use within Nepal, rather than for export to India. Most political parties say that until Nepal's own power needs are met, power should not be exported to India.

²⁰ Nepal's nominal hydropower potential is more than 80,000 MW, but most of this is not "accessible."

Power sector reforms

Nepal's energy-related policies reflect a mix of market-friendly and protectionist measures. More than 25 years ago, Nepal began to institute energy reforms to stimulate private investment and promote efficiency. Then new energy laws, for the most part, were put on hold during the insurgency period, and today the country continues to struggle to implement them. In fact, any reforms that extend beyond the lifespan of a particular government become politically infeasible, seriously stalling reform efforts.

Legal and regulatory reforms

Nepal's power sector does not have a meaningfully independent regulator. The Electricity Tariff Fixation Commission (ETFC) was established to monitor and supervise the safety and quality standards of the electrical system, as well as regulate transmission functions. However, the ETFC is relatively new and as yet is not able to ensure proper procurement, allocation of resources, or enforcement of regulations by government agencies. Given its political nature, terms of regulatory appointments, and public sources of funding, the ETFC cannot be considered an independent regulatory body.

Generation, Transmission and Distribution

Nepal's power system remains vertically integrated, with the Nepal Energy Authority (NEA) responsible for electricity generation, transmission, and distribution. No firm consensus exists regarding unbundling and some argue that the small size of Nepal's energy sector should discourage full unbundling.

Energy pricing

NEA has yet to develop a coherent tariff system. Many cite the current electricity tariff structure, in which prices are insufficient to cover costs, as one of the main deterrents to private investment. Electricity is highly subsidized contributing to the present situation in which demand greatly outpaces supply.

Potential cross border energy projects

In Nepal, construction of small and medium-sized hydropower stations with a high installed cost per KW results in a very high-cost power supply system. At the same time, Nepal's own near and medium-term energy demands alone do not justify larger cost-effective hydropower stations. Nepal currently is working to increase its imports of electricity from India through construction of a new cross-border-transmission line. The World Bank recently agreed to provide \$99 million (US) to increase cross-border electricity trade. This package will fund construction of a transmission line between the two countries that initially will allow the import of 150 MW of thermal power to Nepal during the winter months. Further, the Nepal Energy Authority (NEA) has become a client of India's PTC (formerly known as Power Trading Corporation of India). Under this arrangement, PTC can trade for power on the Indian Energy Exchange (IEX) in NEA's name. This may allow NEA to begin to participate almost immediately in power trading through IEX. With the construction of the new transmission line from India to Nepal, access to such an energy exchange market might open the way to cross-border trading, provided the Nepalese political environment permits it to go forward.

Sri Lanka

Background

Years of civil conflict have hindered the growth and development of Sri Lanka. Despite this fact, Sri Lanka is in the process of rebuilding and currently has a relatively strong energy sector. However, if grievances and human rights issues were to be left unaddressed by the government, civil strife could erupt again, with negative effects on the economy.

Economy

The Sri Lankan economy is currently growing at an estimated eight percent, annually. However, the Sri Lankan economy is predominantly service-based (e.g., tourism), with limited prospects for further industrial development, so growth will be somewhat constrained over the long term.

Energy Overview

Figure A-13 - Installed capacity in MW (as of December 2010)

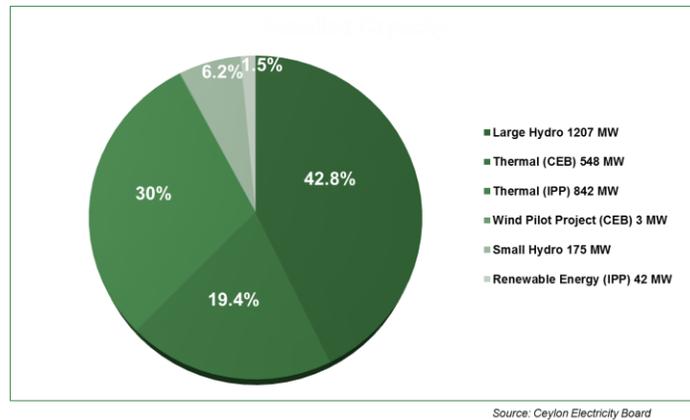


Figure A-14 - Sri Lanka's Primary Energy Demand Forecast

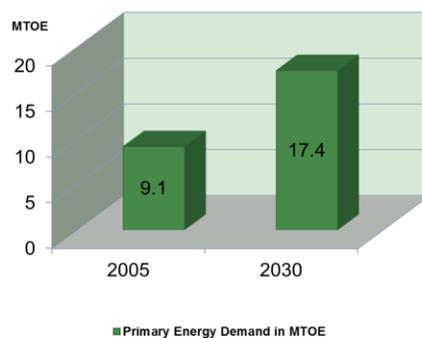
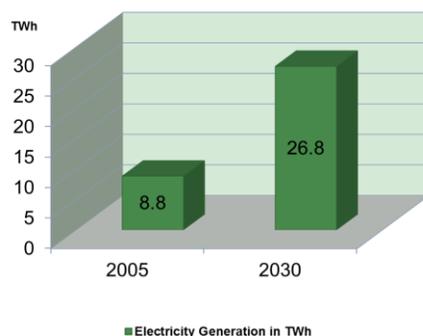


Figure A-15 - Sri Lanka's Electricity Generation Forecast



Source: ADB - Energy Outlook for Asia and the Pacific, October 2009

Currently, Sri Lanka enjoys the highest electrification rate of any South Asia nation, with over 90 percent of the population having access to electricity from the grid. Sri Lanka has a total installed capacity of over 2,800 MW. Around 54 percent of this capacity comes from hydroelectric plants. However, the price of electricity in Sri Lanka is still the highest in South Asia, due to heavy reliance on imported diesel fuel for much of their power production.

Responsiveness to cross-border energy trade and Potential for Cross Border Projects

The GoSL's Ministry of Power and Energy and the CEB have been in active discussions with the Power Grid Corporation of India Ltd. over the past four years regarding the feasibility of building a 500MW, submarine power cable between the two countries. The two countries have co-financed a major study on the project, which, as of early 2012, is being analyzed by both sides.

Power sector reforms

Sri Lanka's power sector is firmly vertical. There are currently only two power sector utilities, the Ceylon Electricity Board (CEB) and the Lanka Electric Company (LECO). Since the 2009 Electricity Act's stipulates that only small power plants can be privately owned, the option of unbundling also faces legal constraints. Despite this fact, the energy sector has witnessed the rapid emergence of small, private, oil-burning thermal-power plants and recent reforms have fostered the rapid growth of private wind farms.

Legal and Regulatory Reforms

There is currently no provision in Sri Lankan customs law for energy trading outside its borders. Additionally, a multi-buyer model will have to replace Sri Lanka's current single-buyer (CEB) system in order to establish a regional market for energy trade that includes IPPs. However, the Electricity Act of 2009, along with fierce political opposition, makes changing the legal and regulatory framework difficult.

Transmission and Distribution

The Ceylon Electricity Board (CEB) is the owner and operator of the entire national electricity grid. CEB is solely responsible for the transmission of all electricity and no other entities are permitted or licensed to transmit electricity. The CEB is also responsible for distributing

electricity to 85 percent of consumers on the national grid and the Lanka Electricity Company (LECO) is permitted to supply electricity to consumers only in urban and sub-urban areas.

Energy Pricing

In 2008, the government restructured the CEB's debt and rationalized tariffs so that CEB's recurrent expenses will be met by the tariffs. The average retail tariff was increased by about 30 percent. The Public Utilities Commission of Sri Lanka (PUCSL) now is responsible for determining tariffs and in September 2010, the first CEB tariff proposal was submitted to PUCSL.

SARI-WEST

While SARI-East potentially is linked together by the state of India, the western sub-region has no such unifying core economy or potential engine for economic growth. Instead, it is defined by fragile political and economic systems, and what some experts see as a civil war within and across Afghanistan and Pakistan. For SARI-East, India may serve as a unifying mechanism for energy trade through mechanisms like PTC and the Indian Energy Exchange. SARI-West has no such mechanism to help link the states together. What might serve as an integrating principle over the medium term, however, is the vision of Afghanistan (and perhaps Pakistan) serving as a land bridge to convey power from energy-rich Central Asia to energy-deficit South Asia. Several large, trans-border projects are being discussed. Some of these—if they ever come into being—can be characterized as “high risk/high reward.” However, there is no way to say when such projects might actually happen. The two countries of SARI-West are discussed, below.

Afghanistan

Background

The Government of Afghanistan, its regional neighbors, and the international community all recognize Afghanistan’s strategic importance between energy-hungry South Asia and energy-surplus Central Asia. At the same time, Afghanistan faces serious challenges in developing its energy sector. Years of conflict have stunted growth in the energy sector, as well as overall economic growth. Currently, Afghanistan has one of the lowest per capita consumption rates of electricity in the world.

Economy

After decades of conflict, Afghanistan’s economy has improved significantly since the fall of the Taliban regime in 2001, primarily due to international assistance and improvements in the agricultural sector. Weakness in the country’s power infrastructure, along with a deteriorating security environment and a weak human resource base, severely constrains Afghanistan’s economic development. According to official statistics, access to electric power is around seven percent of the population.

Energy Overview

Figure A-16 - Afghanistan's Installed Capacity in 2010 (in MWh)

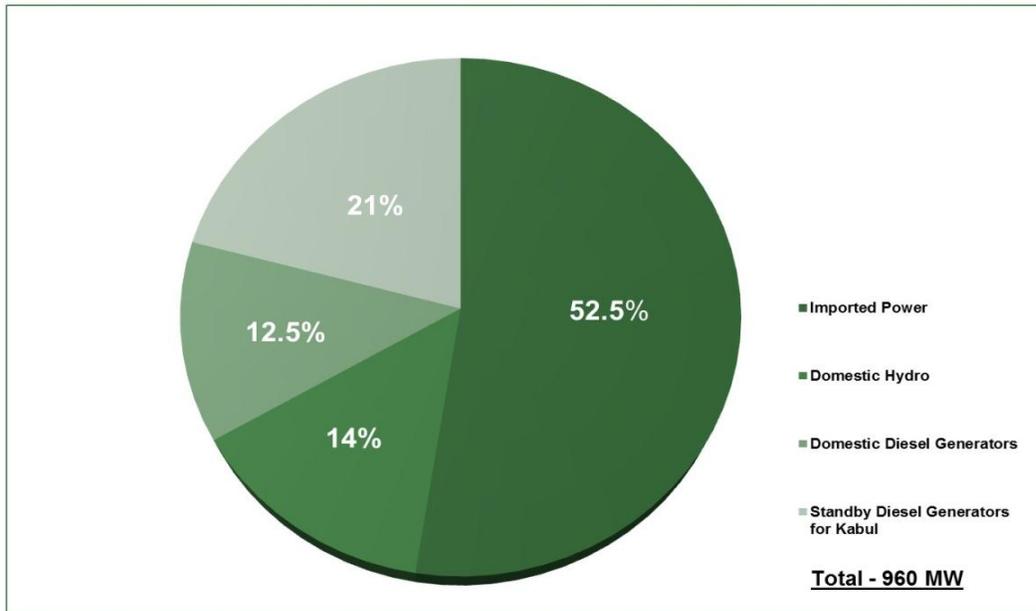
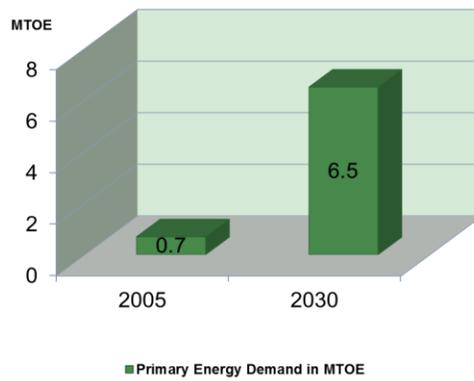
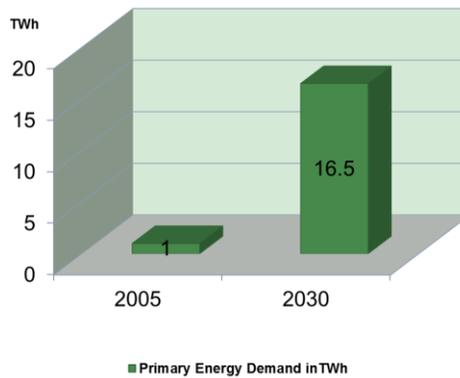


Figure A-17 - Afghanistan's Primary Energy Demand Forecast



Source: ADB - Energy Outlook for Asia and the Pacific, October 2009

Figure A-18 - Afghanistan's Electricity Demand Forecast



Source: ADB - Energy Outlook for Asia and the Pacific, October 2009

According to some experts, Afghanistan could hold up to 36 trillion cubic feet of natural gas waiting to be exploited in the north, while oil reserves could amount to 300 billion barrels, which should be enough to meet the country's own domestic needs for oil and gas for the next generation or longer. Furthermore, Afghanistan's mountainous terrain presents opportunities for hydro power. It also has huge reserves of high-quality coking coal in the central part of the country, receives huge amounts of sunshine each year, and may have some potential for wind energy.

Responsiveness to cross-border trade

Afghanistan is one of South Asia's most active countries in regional energy trade. It already imports natural gas from Central Asia and Iran. Efforts are underway to increase imports from Uzbekistan, Tajikistan, Turkmenistan, and Iran and to upgrade cross-border transmission links. However, Afghanistan's emergence as a land bridge for energy exports from Central to South Asia will occur only in the medium term.

Power sector reforms

The national public utility for power, Da Afghanistan Breshna Sherkat, or DABS, is still a vertically integrated monopoly, holding full responsibility for energy importation, plus domestic generation, transmission, and distribution. Afghanistan's energy sector lacks real private investors, largely because of weaknesses in the investment and security climate and enabling environment. Kabul is trying to make changes to its energy sector to bring in more private investment, particularly on the transmission side.

Legal and regulatory reforms

Legal frameworks and independent regulatory bodies have yet to be established for the energy sectors. The Ministry of Energy and Water (MEW) provides nominal regulatory and policy frameworks for the power sector. Without the necessary legal frameworks and regulatory bodies in place, however, significant problems are emerging. Corruption is widespread in the distribution process, including extra fees for connections, bribes for meter readers, and bypassing of meters.

Generation, Transmission and Distribution

Over the past eight years, Afghanistan has increased dramatically its domestic production and import of energy. Most generation projects are funded by donors with limited cost sharing by the government. However, transmission to the national grid continues to be disconnected and fragmented. As the least developed entity in the power system, distribution significantly limits the availability of power supply.

Energy pricing

Electricity pricing in Afghanistan is heavily subsidized: a kilowatt hour of electricity is sold for three Afghanis, but costs 7.5 Afghanis to produce. The current tariff regime does not recover the costs of generation, transmission, or distribution. DABS is insolvent because it cannot collect the tariffs necessary to cover energy supply costs. Each year, millions of dollars are lost due to low tariffs, technical losses, and collection failures. Technical and non-technical losses are at 40–50 percent, caused in part by overloaded facilities, but mainly due to corruption, theft, and inadequate metering and billing.

Potential cross border energy projects

Afghanistan has the potential to participate in several cross-border-energy projects. The CASA 1000 (Central Asia-South Asia) Project is scheduled to evacuate 1,300 MW of power from Central Asia and send it on to Pakistan. The Turkmenistan-Afghanistan-Pakistani-India (TAPI) Pipeline would send 33 billion cubic meters of gas through Afghanistan to Pakistan and India. The TUTAP Project (Turkmenistan-Uzbekistan-Tajikistan-Afghanistan-Pakistan) has recently been proposed as a way to increase the economic viability for moving power from Central Asia and bringing it to Pakistan, and perhaps someday to India.

Pakistan

Background

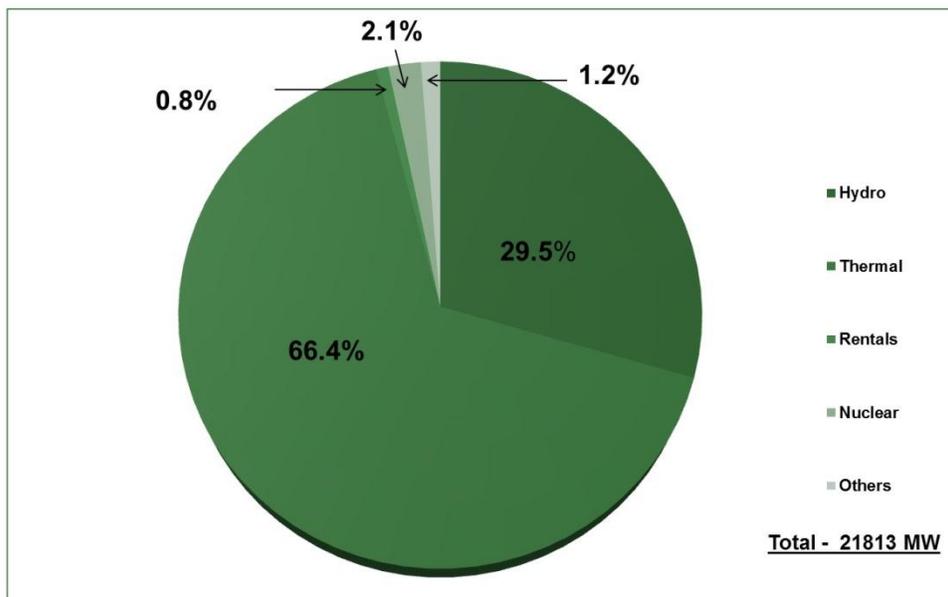
Pakistan's political systems are currently in a state of flux. Pakistan may continue on its current path and make some limited progress while it moves towards elections, which will probably happen sometime within the next 12 months. Some experts think these elections may happen before the end of this year, and might result in a new government with a clear mandate. If this were to happen, it could prepare the ground for significant changes in governing practices, opening the door to serious cross-border energy trade.

Economy

Currently, approximately 25 percent of Pakistan's population lives below the poverty line and since 2008, the GDP's growth rate has vacillated between two to five percent. In 2010, inflation was estimated at over 13 percent and some experts claim the country is very close to bankruptcy. The Pakistani rupee has depreciated almost five percent over the past six months, and the Central Bank is reportedly printing two to three billion new rupees per day.

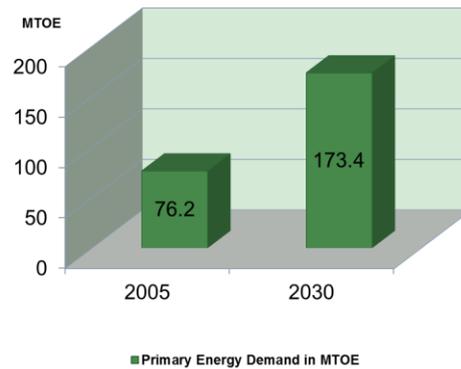
Energy Overview

Figure A-19 - Pakistan's Installed Capacity in FY 2009-2010 (in MW)



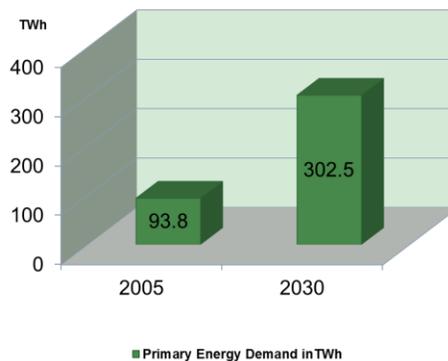
Source: Pakistan Ministry of Water & Power

Figure A-20 - Pakistan's Primary Energy Demand Forecast



Source: ADB - Energy Outlook for Asia and the Pacific, October 2009

Figure A-21 - Pakistan's Electricity Demand Forecast



Source: ADB - Energy Outlook for Asia and the Pacific, October 2009

Pakistan has enormous energy potential, with abundant natural gas and coal reserves and hydropower potential of 46,000 MW. Unfortunately, to date Pakistan has been able to exploit only a fraction of its energy potential. Electricity shortfalls are currently estimated at 5,000 MW, with the deficit growing by approximately 1,500 MW per year. The result has been substantial load shedding, and a significant impact on the country's GDP.

Responsiveness to cross-border energy trade

Currently, demand is soaring, but domestic resources are rapidly diminishing. As a result, stakeholders' acknowledge a need to look outside Pakistan to fulfill the country's energy needs. For more than 15 years, Pakistan has expressed interest in the TAPI pipeline, and India and Pakistan have reportedly agreed to export 500MW of Indian power to Pakistan. Iran seems to be at work on the Iran-Pakistan pipeline project.

Power sector reforms

While Pakistan's energy sector has been vertically integrated since independence, there have been some efforts at partial unbundling. However, these early efforts at unbundling have yielded few benefits, and in fact have contributed to the energy sector's acute "Circular Debt" crisis. Despite these troubles, the National Planning Commission has called for full deregulation of the energy sector, new tariff policies, and phasing out hidden subsidies, which in time could eventually lead to a multi-buyer/multi-seller model, if the recommendations of the Planning Commission ever take effect.

Legal and Regulatory Reforms

Despite having created legal and regulatory frameworks meant to attract private investors, many aspects of these frameworks have yet to be institutionalized. Pakistan's National Electricity and Power Regulatory Authority (NEPRA), created as an autonomous agency to ensure fair competition and consumer protection, has yet to evolve into a meaningfully independent regulatory body. Its ability to function autonomously is frequently compromised by political decisions that undermine its authority.

Transmission and Distribution

Currently, the National Transmission and Distribution Corporation (NTDC) functions as the sole purchaser of all electricity generated by producers. Transmission and distribution losses are a major problem. Weak grid infrastructure, as well as electricity theft, result in roughly 30 percent transmission and distribution losses.

Energy Pricing

Energy tariffs paid by households and industry remain substantially lower than the cost of generating and transmitting power, due to government subsidies. The government's refusal to raise energy tariffs to correspond with actual energy costs has contributed to a massive circular debt crisis. Given Pakistan's poverty, high unemployment, and political fragility, however, the notion of removing subsidies is fraught with political risk.

Potential Cross Border Energy Projects

Four major potential projects are being discussed: (1) The IP (Iran-Pakistan) gas pipeline, for which construction is almost complete on the Iranian side, but which would still need about 800 km on the Pakistani side; (2) The CASA 1000 Project, which seeks to bring 1300 MW of hydropower from Tajikistan and Kyrgyzstan, through Afghanistan, to Pakistan; (3) TAPI, a gas pipeline, would convey 33 billion cubic meters of natural gas annually from Turkmenistan, through Afghanistan and Pakistan, to India; and (4) TUTAP, a new initiative that has been proposed as a way to increase the economic viability and overall scale for moving power from Central Asia to Pakistan. While all of these projects represent important opportunities, it is impossible to predict when or whether these projects might actually move to realization, given the current fragile political situation in SARI-West.

Table B-1 - Model of Cross-Country Comparisons – Illustrative Data

	Political responsiveness to x-border energy trade	Stakeholder responsiveness to change	Power sector reforms to date	Existing energy policies	Status of regulatory & legal framework	Over-arching institutional framework for regional energy markets	Political stability	Access to finance
Afghanistan	2	2	1	1.5	1.5	1.5	0.5	0.5
Pakistan	1	1.5	2.5	2	2	2	1.5	0.5
Nepal	1	1	1	1	1	1	2	1
Bangladesh	2	3	3	3	3	3	3	2
Sri Lanka	4	3.5	2	3.5	3.5	3	3.5	4
India	4.5	4.5	4.5	3.5	3.5	4	4	4
Bhutan	5	5	4	5	4	5	4	4.5

APPENDIX C. SUPPORTING INSTITUTIONS

SAARC (SOUTH ASIAN ASSOCIATION FOR REGIONAL COOPERATION)

The South Asian Association for Regional Cooperation (SAARC) is an organization of South Asian nations, founded in December 1985 and dedicated to economic, technological, social, and cultural development emphasizing collective self-reliance. Its member states are Bangladesh, Bhutan, India, the Maldives, Nepal, Pakistan, and Sri Lanka. Afghanistan joined the organization in 2005. Meetings of heads of state are usually scheduled annually; meetings of foreign secretaries, twice annually. It is headquartered in Kathmandu, Nepal. SAARC works by consensus of all member states. As a result, decision-making can be a lengthy and bureaucratic process. SAARC is essentially a forum to ratify decisions made by the member states; as such it is not an operational organization. On the other hand, there has been considerable effort put into energy sector issues, as described on the SAARC website and summarized in Appendix C of this report. The SAARC Energy Centre was established in 2005 to promote development of energy resources and energy trade in the region. To date, much of SAARC's effort has been in the form of establishing various task forces and expert working groups to discuss regional issues, but so far progress has been limited to creating the Energy Center and sponsoring several major studies and regional meetings.

Securing sustainable energy supplies to meet energy needs at reasonable/affordable prices has become a major energy policy imperative of SAARC Member States. The sky-rocketing oil prices and increasing energy demand have put severe strains on resources of all South Asian Countries. It has serious implications including slowing economic development, increasing inflation, deepening poverty and causing political and social instability in the region.

The South Asian region is energy deficient as it does not produce enough oil and gas to meet its needs and thus depends heavily on imports. Most of the member states are also not able to generate sufficient electricity to meet their demands. It has been estimated that energy needs of South Asia will increase three times in the next fifteen to twenty years.

The SAARC process of regional cooperation in the energy sector began in January 2000 with the establishment of a Technical Committee on Energy. The Technical Committee on Energy met twice. Thereafter, recognizing that this vital area requires focused attention, the Council of Ministers approved the creation of a specialized Working Group on Energy in January 2004.

The first meeting of the SAARC energy ministers (Islamabad, 1 October 2005) formed an expert group to deliberate on the options and potential of energy conservation and energy efficiency measures and to formulate a road map for implementation in the SAARC region. The expert group formulated a road map for implementation by the member states.

The Thirteenth SAARC Summit decided to establish the SAARC Energy Centre in Islamabad; to promote development of energy resources, including hydropower, and energy trade in the region; to develop renewable and alternative energy resources; and to promote energy efficiency and conservation in the region. The Centre was established in 2006, but is not perceived broadly as an effective institution by regional energy experts.

A task force has finalized a common template on technical and commercial aspects of electricity grid interconnection amongst the SAARC Member States.

A SAARC Energy Trade Study (SRETS) was completed with the assistance of the Asian Development Bank. It identified four trade options for further SAARC consideration. As a follow on, SAARC commissioned a study on regional power exchange, which is likely to be completed in 2012. The Study will explore the development of a regional power market involving SAARC countries that already have interconnections, as well as those that have planned interconnections. It will also examine both the economic and technical requirements of establishing a regional power exchange that would maximize the potential for power transfers among SAARC regions to reduce power shortages and take advantage of economic benefits.

An expert group on electricity, in its meeting held in January 2011, considered the concept paper on the road map for developing the SAARC market for electricity (SAME) and the concept paper on the SAARC Inter-Governmental Framework Agreement for Regional Energy Cooperation. Progress on these concepts was reviewed at the energy ministers meeting held in Male, Maldives in September 2011.

Summary of SAARC Energy Meetings Focused on Cross-Border Energy Trade:

Islamabad Declaration, 2004: Concept of Energy Ring was discussed.

Dhaka Declaration, 2005: Establishment of the SAARC Energy Centre to promote development of energy resources and energy trade in the region;

Colombo Summit, 2008: Concept of Regional Inter-governmental Framework

Colombo Meeting of Energy Ministers, 2009: Pursuing Energy Ring and Formation of Sectoral Expert Groups (e.g. gas, electricity, renewable energy etc.)

Thimphu Summit, April 2010: Authorized the SAARC Energy Centre in Islamabad to prepare an Action Plan on Energy Conservation. India proposed to prepare a Roadmap for developing SAARC Market for Electricity (SAME) on a regional basis.

- ***Male Summit, 2011:*** Directed the conclusion of the Inter-governmental Framework Agreement for Energy Cooperation and the Study on the Regional Power Exchange Concept and the SAARC Market for Electricity work.

SAGQ AND SASEC

The South Asia Growth Quadrangle (SAGQ) is another institution that could support the implementation of regional power sharing. The SAGQ was launched as a sub-regional initiative under SAARC. It includes Bangladesh, Bhutan, India, and Nepal. SAGQ aims to accelerate sustainable economic development among the member countries. In addition to energy, it also seeks to work with transportation, communication, trade, and investment facilitation, tourism, natural resource usage, and the environment. While SAGQ operates within the framework of SAARC, it appears to have more ability to shape and implement policy and projects. With the help of the Asian Development Bank, SAGQ was able to implement the South Asia Sub-regional Economic Cooperation (SASEC) 1–3. SASEC was able to implement various programs in the four-country region addressing tourism, trade, industry, and transportation. Despite the cooperation, SASEC projects have been relatively small. The budget for the latest project, SASEC 3, amounted to only \$1 million. Additionally, SASEC has implemented projects only in sectors that have been relatively benign, politically, such as tourism. Projects with greater political implications, such as energy, might prove more difficult to implement through SASEC and SAGQ.

BIMSTEC

The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is another major regional institution which chairs the Technology Sub-sector Committee. Myanmar is currently the Country Chair of the Energy Sub-sector. BIMSTEC members include Bangladesh, India, Sri Lanka, Thailand, Myanmar, Bhutan, and Nepal. BIMSTEC was created with the goal of promoting regional cooperation in social and economic development projects, as well as creating links between the region and international institutions. The organization is divided into multiple, functional bodies. There is a policy-making body that convenes large summit meetings and ministerial meetings, which are the main bodies in creating and shaping policy in the relevant areas between the countries. In order to facilitate cooperation in the energy sector between member states, the BIMSTEC Energy Centre was created. The Energy Centre primarily conducts research that will support policy development and analysis. The Centre currently provides standardized data as it relates to the energy sector as well as conducting assessments, feasibility studies, and policy analysis, and ultimately aspires to project implementation. It also provides a forum for discussing energy policies and projects among the BIMSTEC countries.

SAFIR

The South Asia Forum for Infrastructure Regulation (SAFIR) was established in May 1999 with the support of World Bank. SAFIR aims to provide high quality capacity building and training on infrastructure regulation and related topics, in South Asia and to stimulate research on the subject by building a network of regional and international institutions and individuals that are active in the field. It also aims at facilitating effective and efficient regulation of Utility and infrastructure industries, initiate beneficial exchange of knowledge and expertise, and set the trend of rapid implementation of global best practices.

SAFIR aims to:

- Provide a platform for experience sharing amongst the regulators of the region
- Build regulatory decision-making and response capacity in South Asia
- Facilitate the regulatory process
- Conduct training programs to serve regulatory agencies and other stakeholders
- Spur research on regulatory issues
- Provide a databank of information on regulatory reform processes and experiences

SAFIR's most visible activity is the Core Course on Infrastructure Regulation. The core course is aimed at utility regulators and their staff, senior government officials working on the reform of the infrastructure sectors, and executives from public and private regulated infrastructure service providers. The core course delivers practical lessons on the regulation and restructuring of infrastructure from within and outside the region. It also provides an ideal opportunity for participants to exchange their own experiences and to build networks within the region.

APPENDIX D. CHRONOLOGY

Table D-I Political Economy Analysis for Cross Border Energy Trade in the South Asia Region

Date (2011)	Organization/Event	Location	Meeting With	Team/Counterparts	Remarks
Oct. 11	Project Overview	Teleconference	SP	RB, DG, LB, AJ	
Oct. 20/21	SI HQ In-Brief	Arlington, Virginia		RB, DE, DG, JR	
Oct. 25	USEA	Washington, DC	John Hammond Andrew Palmateer Sara Blandford (phone)	RB, DG, JR	
	USAID	Washington, DC	Anne Convery Allen Eisendrath Sharon Hsu Monique Nowicki Gordon Weynand		
Oct. 26	Brookings	Washington, DC	Charles Ebinger	RB, DG	
	US Dept. of State	Washington, DC	Carla Bock Anne Convery Robert Deutsch Drew Lebkuecher Kelsey J. Wittenberger	RB, DG, JR	
Oct. 27/29	IFC	Washington, DC	Raghuveer Sharma	RB	
	Travel: Washington, DC to New Delhi, India			RB, DG	Arrive Oct. 29
Oct. 30	Team Planning Meeting (informal)	New Delhi, India	SP	RB, AK, KK, AP, DG	
Oct. 31	Team Planning Meeting at USAID	New Delhi, India	EC, SP, AM, CS, MT	RB, KK, AP, DG	
Nov. 1	US Dept. of State, at USAID	New Delhi, India	Jason P. Donovan Shannon P. Hill Isabelle Chan	RB, DG, KK, AP / SP, AB, AM, CS, MT	

Date (2011)	Organization/Event	Location	Meeting With	Team/Counterparts	Remarks
			Sam Shanowski		
Nov. 2	Submission of Deliverable: Work Plan				Accepted by USAID
	IL&FS Infrastructure Development Corp.	Gurgaon, India	Haziq Beg V.L. Dua S.C. Misra	RB,DG, KK / AB	
	(India) Ministry of External Affairs	New Delhi, India	Sanjiv Ranjan	RB, DG SP Shannon P. Hill	
Nov. 3	Central Electricity Authority	New Delhi, India	Ravinder	RB, DG / AB	
	(India) Ministry of Power	New Delhi, India	Ashok Lavasa	RB, DG / SP	
		New Delhi, India	Rita Acharya	RB, DG / SP	
Nov. 4	(India) Ministry of New & Renewable Energy	New Delhi, India	Gireesh B. Pradham	RB, DG / SP, CS	
Nov. 7	Confederation of Indian Industry	New Delhi, India	Bhupendra Kumar Singh	RB, DG / AB	
Nov. 8	Power Grid Corp. of India, Ltd.	Gurgaon, India	Avinash M. Pavgi Subir Sen	RB, DG	
	PTC India Ltd.	New Delhi, India	R. C. Chaudhary Arun Kumar Rakesh Kumar Rajiv K. Mishra Harish Saran S. S. Sharma	RB, DG / SP	Formerly, Power Trading Corp. of India, Ltd.
			Tantra Narayan Thakur Arun Kumar Rakesh Kumar	RB, DG / SP	
	Indian Energy Exchange Ltd.	New Delhi, India	Rajesh K. Mediratta	RB, DG	
Nov. 9	USAID	New Delhi, India	Elizabeth Warfield	RB, DG / SP, AB, AM	

Date (2011)	Organization/Event	Location	Meeting With	Team/Counterparts	Remarks
	Briefing on “Energy and Environmental Security; A Cooperative Approach in South Asia.” – Consortium of South Asian Think Tanks (COSATT), New Delhi, India			RB, DG / SP	
Nov. 10	Center for Social Research	New Delhi, India	Ranjana Kumari	RB, DG	
	<i>Social (informal)</i>	New Delhi, India	Rajendra K. Pachauri	RB, DG	
Nov. 11	Travel: New Delhi to Kathmandu			RB, DG	
Nov. 14	USAID / Nepal In-Brief	Kathmandu, Nepal	Sheila Lutjens Tahalia Barrett Gautam R. Bajracharya	RB, DG, ML / SK	
	US Dept. of State	Kathmandu, Nepal	Patricia A. Mahoney	RB, DG, ML / SK	
	Nepal Electricity Authority	Kathmandu, Nepal	Ram Chandra Pandey Er. Rameshwar Yadav	RB, DG, ML / SK	
	Dept. of Electricity Development, (Nepal) Ministry of Energy	Kathmandu, Nepal	Sanjay Sharma	RB, DG, ML / SK	
	Dinner – USAID / SARI/E Workshop – “Supporting the Development of Cross Border Transmission Interconnections Networks”, Kathmandu, Nepal			RB, DG / SP, SK	
Nov. 15/16	USAID / SARI/E Workshop – “Supporting the Development of Cross Border Transmission Interconnections Networks”, Kathmandu, Nepal			RB, DG, ML / SP, SK	
Nov. 17	(Nepal) Ministry of Energy	Kathmandu, Nepal	Balananda Paudel (Secretary)	RB, DG, ML / SP, SK	
			Posta B. ogati (Minister)		
	US Dept. of State	Kathmandu, Nepal	Timothy Trenkle	RB, DG, ML / SP, SK	
	Project Mid-Term Review	Kathmandu, Nepal	SP	RB, DG, ML	
Nov. 18	Embassy of India	Kathmandu,	Jaideep Mazumdar	RB, DG /	

Date (2011)	Organization/Event	Location	Meeting With	Team/Counterparts	Remarks
		Nepal	(DCM) Paneet R. Kundal	SP, SK	
	Lunch - United Community Party of Nepal	Kathmandu, Nepal	Surendra Pandey	RB, DG / SP, SK	
	The World Bank	Kathmandu, Nepal	Rabin Shrestha	RB, DG / SK	
	Asian Development Bank	Kathmandu, Nepal	Bijay Karmacharya Shahid Parwwez	RB, DG / SK	
Nov. 21	Sanina Hydropower / Independent Power Producers Association, Nepal	Kathmandu, Nepal	Pradeep Gangol Subarra D. Shrestha	RB, DG / SK	
	SN Power Holding Singapore Pte Ltd.	Lalitpur, Nepal	Sandip Shah	RB, DG / SK	
	Lunch - Royal Norwegian Embassy	Lalitpur, Nepal	Inge Harald Vognild	RB, DG / SK	
	Nepal Infrastructure Development Co.	Lalitpur, Nepal	Ananda Jha	RB, DG / SK	
Nov. 22	Clean Energy Development Bank	Kathmandu, Nepal	Janak Lal Karmacharya	RB, DG / SK	
	US Dept. of State	Kathmandu, Nepal	Timothy Trenkle	RB, DG / SK	
Nov. 23	Rastriya Janashakti Party	Kathmandu, Nepal	Prakash Chandra Lohani	RB, DG / SK	
	USAID / Nepal-Out-Brief				Cancelled by Mission
	Nepal Water Partnership	Kathmandu, Nepal	Iswer Raj Onta	RB, DG / SK	
Nov. 24	Himal Media	Lalitpur, Nepal	Karnak Dixit	RB, DG / SK	

Date (2011)	Organization/ Event	Location	Meeting With	Team/ Counterparts	Remarks
	Lunch – Institute for Social and Environmental Transition	Lalitpur, Nepal	Dipak Gyawali	RB, DG / SK	
	South Asian Association for Regional Cooperation (SAARC)	Kathmandu, Nepal	Tareque Muhammad	RB, DG / SK	
	United Marxist Leninist Party (UML)	Kathmandu, Nepal	Gokarna Bisht	RB, DG / SK	
Nov. 25	Travel: Kathmandu to Dhaka			RB, DG	
Nov. 27	USAID / Bangladesh In-Brief	Dhaka, Bangladesh	Paul Sabatine	RB, DG / SMK	
	US Dept. of State	Dhaka, Bangladesh	Sophie Yan Gao Alexander Gazis	RB, DG / SMK	
	Power Grid Co. of Bangladesh, Ltd.	Dhaka, Bangladesh	P. K. Roy Arun Kumar Saha Jamal Ullah	RB, DG / SMK	
	American Chamber of Commerce in Bangladesh	Dhaka, Bangladesh	A. Gafur Aftab ul Islam	RB, DG / SMK	
Nov. 28	Power Division, Ministry of Power, Energy & Mineral Resources	Dhaka, Bangladesh	Mofazzel Hossain Mohammed Hossain Tapos Kumar Roy Mahboob Sarwar-E-Kaint	RB, DG / SMK	
	Bangladesh University of Engineering & Technology	Dhaka, Bangladesh	M. Nurul Islam	RB, DG / SMK	
	Bangladesh Energy Regulatory Commission	Dhaka, Bangladesh	Abdul Mannan Manjur Morshed Talukder	RB, DG / SMK	Consultants for World Bank

Date (2011)	Organization/Event	Location	Meeting With	Team/Counterparts	Remarks
			Emdadul Haque Syed Yusuf Hossain Salim Mahmud	RB, DG / SMK	
Nov. 29	Bangladesh Power Development Board (BPDB)	Dhaka, Bangladesh		RB, DG / SMK	
	Energy and Power	Dhaka, Bangladesh	Mollah Amzad Hossain	RB, DG / SMK	
	Asian Development Bank	Dhaka, Bangladesh	Rahman Murshed	RB, DG / SMK	
Nov. 30	Keystone Business Support Co. , Ltd.	Dhaka, Bangladesh	Rishad Ahmed Fouzul Kabir Khan	RB, DG / SMK, JS	
	Bangladesh Enterprise Institute	Dhaka, Bangladesh			Cancelled
	Meeting at US Embassy	Dhaka, Bangladesh			Cancelled by Mission
Dec. 1	Tetra Tech ARD, Inc	Dhaka, Bangladesh	Zarina Rahman Khan	RB, DG	USAID Strengthening Democratic Local Governance Project
	USAID / Bangladesh Out-Brief	Dhaka, Bangladesh	Richard Greene Ramona El Hamzaoui	RB, DG / SMK, JS	
	Travel: Dhaka to Islamabad			DG	
Dec. 2	Travel: Dhaka to Colombo			RB	
Dec. 3	Arrive in Colombo			DE	
Dec. 5	USAID/Sri Lanka In-Brief	Colombo, Sri Lanka	Salma Pieris	RB, DE / PD	
	Ministry of Power & Energy	Colombo, Sri Lanka	Upali Daranagama	RB, DE / PD	

Date (2011)	Organization/ Event	Location	Meeting With	Team/ Counterparts	Remarks
	Sustainable Energy Authority	Colombo, Sri Lanka	Thusitha Sugathapala	RB, DE / PD	
		Islamabad, Pakistan		DG	
Dec. 6	US Dept. of State	Colombo, Sri Lanka	Christopher Gunning	RB, DE	
	World Bank	Colombo, Sri Lanka	Sumith Pilapitiya	RB, DE / PD	
	Sri Lanka Energy Manager's Association	Colombo, Sri Lanka	D D Ananda Namal Tilak Syambalapatiya Amila Wickramasinghe	RB, DE / PD	
		Islamabad, Pakistan		DG	
Dec. 7	Energy Solve International, Ltd.	Colombo, Sri Lanka	M S Jayalath	RB, DE / PD	
	Public Utilities Commission of Sri Lanka	Colombo, Sri Lanka	Damitha Kumarasinghe	RB, DE / PD	
	Asian Development Bank	Colombo, Sri Lanka	Savindi Jayakody Seiji Noda	RB, DE / PD	
		Islamabad, Pakistan		DG	
Dec. 8	Formerly with Asian Development Bank	Colombo, Sri Lanka	P. N. Fernando	RB, DE / PD	
	Ceylon Electricity Board	Colombo, Sri Lanka	Kamani Jayasekera Nihal Wickramasuriya	RB, DE	
	Ceylon Chamber of Commerce	Colombo, Sri Lanka	Haarin Malwatte S. M. Sathiacama	RB, DE / PD	

Date (2011)	Organization/ Event	Location	Meeting With	Team/ Counterparts	Remarks
	U.S. Dept. of State	Colombo, Sri Lanka	Charles W. Fowler	RB, DE	
		Islamabad, Pakistan		DG	
Dec. 9	USAID / Sri Lanka Out-Brief	Colombo, Sri Lanka	James F. Bednar Salma Pieres	RB, DE / PD	
	JICA	Colombo, Sri Lanka	Gen Hashimoto Priyantha Serasinghe	RB, DE / PD	
	UNDP	Colombo, Sri Lanka	Ananda Mallawatantri	DE	
		Islamabad, Pakistan		DG	
Dec. 10	Travel: Colombo to New Delhi			RB, DE	
	Travel: Islamabad to New Delhi			DG	
Dec. 11	Briefing (informal) & Team Planning Meeting	New Delhi, India	SP, AB	RB, DE, DG	
Dec. 12	Working Session	New Delhi, India		RB, DE, DG	
Dec. 13	USAID / India – Briefing to Mission Director	New Delhi, India	William Hammink Elizabeth Warfield Olivier Carduner SP	RB, DE, DG	
Dec. 14	Working Session	New Delhi, India		RB, DE, DG, KK	
Dec. 15	Working Session	New Delhi, India		RB, DE, DG, KK	
Dec. 16	Indian Energy Exchange Ltd.	New Delhi, India	Rajesh K. Mediratta	RB, DE, DG / AB	
	SARI/E Out-Brief	New Delhi, India	SP, AB, AM, CS, MT Pooja Bagga Kasturi Basu	RB, DE, DG	Telephone link with USAID/Nepal

Date (2011)	Organization/Event	Location	Meeting With	Team/Counterparts	Remarks
			Apurva Chaturvedi Jason Donovan, Jeremy Guftason, Sharon Hsu Shannon Hill Anil Thapa		
Dec. 17	Travel: Depart New Delhi for Portland			DE	
Dec. 18	Travel: Depart New Delhi for Washington, DC			RB	
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APPENDIX G. SCOPE OF WORK

August 25, 2011

The South Asia Regional Initiative for Energy (SARI/E)

**United States Agency for International Development
New Delhi/India**

Scope of Work

Political Economy Analysis for Cross Border Energy Trade In the South Asia Region

Summary

Political, economic and institutional considerations are foremost amongst the issues in South Asia which need to be resolved first if the prospects of cross border energy trade are to be improved. Political economy analysis aims to situate development interventions within an understanding of the prevailing political and economic processes in the region. USAID has recognized the importance of understanding the political and economic processes that promote (or block) cross-border energy/power trade. There is a need to conduct a South Asia political economy analysis to clearly analyze and understand the policy underpinnings that facilitate cross border energy trade. This will mark the beginnings of a decided shift in SARI/E assistance towards increased country ownership, alignment of aid with the host countries' priorities, systems and procedures, and the move from project to sectoral and structural assistance. There is also the expectation that sound analytical work might provide a firmer footing for the policy reforms agenda and provide more common ground for working with several countries.

The study methodology addresses five dimensions of the energy/power trade environment: Political, Social and Market Dynamics; Harmonization of Energy Policies; Legal and Regulatory framework; Structural and Institutional framework; and, Supporting Institutions. Through these dimensions, a strategic paradigm shall emerge for understanding the countries' political, economic, social and institutional systems for cross-border energy cooperation, as well as a holistic view of their ability to trade efficiently, securely and support business development, sector reforms and commercial transactions.

The study will build on existing efforts of the South Asia Association for Regional Cooperation (SAARC) in formulating a regional energy framework agreement and support the goals of the SAARC Energy Center in advancing regional energy trade. A key element of the cross-border energy trade is the concept of a SAARC power grid which is currently under discussion following the recent conduct of a Asian Development Bank (ADB) study on SAARC Regional

Energy Trade Study (SRETS) that analyzes and evaluates the potential for or impact of energy trade among SAARC member states.

The SARI/E sponsored Political Economy Analysis for Cross Border Energy Trade in South Asia is expected to be complementary to the ADB study. As a companion study to SRETS it is envisaged that it shall examine or assess (i) political, economic, social and market dynamics of energy trade in the region, (ii) prevailing energy policies and the scope for development of harmonized power/energy market policies, (iii) prevailing trade regimes, the regulatory and legal frameworks of the member countries, (iv) various structural and institutional frameworks for developing a functional power/energy market in the region.

1. Introduction

Over the last two decades South Asia (SA) has been one of the fastest growing regions in the world, with an average annual growth rate of 6% as measured by GDP per capita. Yet despite this impressive macroeconomic growth, the energy sector in the region has not been able to keep pace, and continues to experience chronic problems of shortage of supply and poor quality of service. It is estimated that the regional average economic growth rate of six percent per year is constrained by two-three percent annually due to lack of energy resources. In South Asia, huge population growth (currently home to about 20 % of the world's population), coupled with expanding economies, has spurred ever-increasing pressures of energy demand for countries in the region. The International Energy Agency (IEA) has projected that South Asia could have the highest growth rate of energy consumption in the world by 2020. With a regional population of nearly 1.5 billion, more than half do not have access to commercial energy sources. Providing energy to its vast population remains a massive challenge for the entire region.

To compound this already dire situation, in order to meet the rising energy demands SA governments have had to increase their reliance on oil imports, to the effect that all the countries without exception rely on these supplies to meet more than a quarter of their commercial energy needs. The projected increase in energy demand, fueled by economic growth requirements over the next five years, will further increase the regions reliance on indigenous coal and imported oil and liquefied natural gas (LNG). Concurrently since climate change and energy security have emerged as key global challenges of the 21st century, policies and programs facilitating innovation and large-scale adoption and deployment of clean and renewable energy will need to play a central role in SA alongside policies targeted directly at reducing poverty and GHG emissions.

This very brief snapshot of the status of the energy sector in South Asia clearly shows that the situation is quite unsustainable. To remain at the status quo will likely result in economic difficulties, persistence of high poverty levels, and long-term political and security malady and risks. It is therefore quite imperative that a new model must be developed to address South Asia's energy situation as a whole. A model that advances regional energy trade, both bilateral and multilateral, offers the countries of South Asia the opportunity to meet multiple energy and security goals. However, introducing the countries into a regional energy agenda entails greater complexity due to regional disparities and historical animosities and thus pose a higher risk in implementation. In addition to the challenges inherent in creating a regional energy market,

South Asia faces particular and political, institutional, infrastructural (eg. power transmission bottlenecks) and regulatory issues that make a South Asia Regional Energy Cooperative effort challenging – but not impossible.

Regional sharing and diversifying the use of available energy resources would address many of the growing energy security concerns, advance USG's geopolitical interests and accelerate economic development of the region. The region's energy security interests underlie the increasing appeal of entering electricity and to some extent gas trade among the South Asian countries. While India's rapid economic growth drive up its energy demand, smaller countries like Bhutan and Nepal enjoy excess domestic capacity, with 30,000 and 40,000 MW hydropower potential respectively. In theory, cross-border trade among India and its South Asia neighbors could improve the welfare of all countries by allowing all nations to enjoy lower relative prices arising from the comparative advantage of their neighbors' relative energy resource endowments and technologies. For example, India could fuel its growing economy through clean energy options, thereby avoiding additional reliance on its low quality coal. Differences in production costs will encourage cross-border trade as long as the price differentials are sufficient to repay the investment and operations and management costs of interconnecting the grids. Power grid interconnections enhance supply reliability, peak load control and opportunities for capturing economies of scale. The extreme seasonality of both generation and demand among South Asian countries increases these potential benefits. For example, surpluses from hydropower generation in Nepal during the wet season can be delivered to India, and India can provide reciprocal support during the dry season. Despite tremendous benefits to be derived out of regional co-operation, the region has had limited energy co-operation in the past. Limited cross-border transmission interconnections and cross-border trading transactions are taking place only between India and Bhutan and to a lesser extent between India and Nepal. Discussions are underway between Bangladesh and India and between Sri Lanka and India that are evaluating opportunities for power transfer. Recent reports also indicate that similar discussions though far from the public eye is on between Pakistan and India for potential power supply to Pakistan where in the short-term 500 MW of power is expected to be imported.

The USG's QDDR has emphasized the importance of fostering greater regional and sub-regional integration and cooperation in South Asia. To this end efforts are underway to engage the SAARC Secretariat in Kathmandu on possible areas of engagement such as regional energy cooperation. Energy is one of SAARC's priority sectors and its energy center in Islamabad is among the most active of the SAARC centers and has set up four expert working groups on regional electricity, oil & gas, renewable energy and technical/knowledge sharing. On behalf of the SAARC Energy Center, ADB is currently completing a major study on regional energy trade which is planned to be finalized and publically available at the SAARC Energy Minister's meeting at Dhaka in September 2011.

Political considerations and regulatory inconsistencies currently pose the greatest barriers to cross border energy trade in the region. It is indeed past time that politicians, policy makers, civil society, media, NGOs and financing institutions pushed for a greater integration of the SA energy sector.

2. Rationale: Addressing Political and Policy Barriers

In addition to the challenges inherent in pursuing a regional energy trade, South Asia faces particular issues in forging an intra-regional cooperation. SARI/E is helping bridge the gap of barriers and distrust among South Asia governments. It showcases examples of the benefits of regional cooperation; provides counterpart funding and resources; provides unbiased support for regional initiatives; presents a platform to discuss cross border trade; and promotes infrastructure interconnections. It also helps create markets and mechanisms for transparent trade practices, clean energy access, efficiency, conservation and renewable sources.

SARI/E has already played an instrumental role in bridging political divisions within the region. India's recent MoUs to evaluate opportunities for bilateral power exchange with Bangladesh and Sri Lanka provide two examples. In both instances, SARI/E has successfully brought these parties to the MoU stage, despite ongoing political tensions. SARI/E has also facilitated technical information exchange and feasibility studies to assess the interconnection opportunities. Notably, SARI/E promotes these linkages indirectly every time it creates platforms for information exchange and cooperation on the full spectrum of regional energy issues. In spite of these efforts the pace has been slow and the ability of SARI/E to assist countries surmount their political differences is limited. Notwithstanding, SARI/E needs to be re-oriented in performing a gap-filling and link-building function on political, institutional and regulatory issues slowing regional energy trade.

Apart from dismantling political barriers and distrust, SARI/E's gap-filling and link building function in the countries' common goal to achieve efficient and diversified energy supply mix and economic growth, include i) promoting cooperation on energy issues in which regional public and private cooperation is lacking, ii) showcasing examples of benefits arising from regional cooperation, and iii) providing funding, resources and neutral support for initiatives such as the establishment of regional centers of excellence.

The underdevelopment of power market institutions poses the greatest barrier to a regional power exchange and therefore presents the greatest opportunity for SARI/E involvement. To harmonize policies on the regulatory side, SARI/E ran the Regional Energy Regulation Partnership to focus the attention of senior SA country officials on regulatory organizations, tariff and rate setting, and consumer affairs. In addition to transparent, independent regulatory institutions, a regional power market requires close cooperation of national transmission utilities that serve as transmission system operators. To this end, SARI/E recently helped launch the South Asia Transmission Utilities Network (SATURN) to gather the region's senior-level transmission officials in discussion of transmission policy, systems operations and management, as well as private sector involvement including Independent Power Producers (IPPs). Finally, a functional power market requires consistent, transparent methods for raising capital, allocating capital, and setting transactions. To this end, SARI/E's regional executive peer exchange program convenes senior level representatives from both private and public sectors, including government, energy trading organizations, regulatory agencies, transmission companies, power generation and distribution companies, IPPs, private investors and the business community. Through this dialogue, SARI/E helps catalyze the development of regional power markets that optimize the region's energy sources and thereby mobilize capital towards its highest valued uses, including clean and renewable energy technology.

Despite the efforts of SARI/E, there is a long way to go before cross border power trade is developed to its full potential in the region. It is a complex issue having multiple dimensions of political, policy and regulatory implications that need to be constantly assessed. The wide variations among SARI/E countries in various factors like politics and governance, economic structure, policy issues and regulatory practices, technical expertise, mix of energy resources, legal requirements, and financial capabilities greatly affect and influence the pace and prospects of regional cross power trade. For instance, India has a multiple-buyer, multiple-seller market model whereas in all other SA countries the single-buyer model is prevalent. In addition, India has a well developed regulatory mechanism at the state and central levels which is relatively independent from the executive branch whereas elsewhere in the region these institutions are at their infancy. Thus, South Asia faces difficulties from a regulatory perspective; harmonizing regulation to advance cross-border power trade across South Asia is a formidable task.

The study will build on existing efforts of the South Asia Association for Regional Cooperation (SAARC) in formulating a regional energy framework agreement and support the goals of the SAARC Energy Center in advancing regional energy trade. A key element of the cross-border energy trade is the concept of a SAARC power grid which is currently under discussion following the recent conduct of a Asian Development Bank (ADB) study on SAARC Regional Energy Trade Study (SRETS) that analyzes and evaluates the potential for or impact of energy trade among SAARC member states.

3. The Study: Statement of Work

Political, economic and institutional considerations are foremost amongst the issues which need to be resolved first if the prospects of cross border energy trade are to be improved. Political economy analysis aims to situate development interventions within an understanding of the prevailing political and economic processes in the region. USAID has recognized the importance of understanding the political and economic processes that promote (or block) cross-border power trade. Institutional issues also present some difficulties for SA energy integration. The SA region faces a dearth of politicians, bureaucrats and technical experts versed in the intricacies of intra-regional markets, with the possible exception of India; indeed, individual countries (notably Afghanistan) are lacking the expertise needed to handle their own domestic energy needs. Therefore, major capacity-building efforts that SARI/E has been engaged in, needs to be further scaled up. In addition, redundant bureaucracies overseeing the energy/power sector should be reformed to facilitate more efficient intra-regional collaboration.

There is a need to conduct a South Asia political economy analysis to clearly analyze and understand the policy underpinnings that facilitate cross border energy trade. This will mark the beginnings of a decided shift in SARI/E assistance towards increased country ownership, alignment of aid with the host countries' priorities, systems and procedures, and the move from project to sectoral and structural assistance. There is also the expectation that sound analytical work might provide a firmer footing for the policy reforms agenda and provide more common ground for working with several countries.

The SARI/E sponsored Political Economy Analysis for Cross Border Energy Trade in South Asia is expected to be complementary to the ADB study. As a companion study to SRETS it is envisaged that it shall examine or assess (i) political, economic, social and market dynamics of energy trade in the region, (ii) prevailing energy policies and the scope for development of harmonized power/energy market policies, (iii) prevailing trade regimes, the regulatory and legal frameworks of the member countries, (iv) various structural and institutional frameworks for developing a functional power/energy market in the region.

The study will cover Afghanistan, Bangladesh, Bhutan, India, Nepal, Pakistan, and Sri Lanka. . The issues will be discussed with all stakeholders in the region including the governments, electricity regulatory commissions, utilities, financial institutions, developers and consumer organizations. Inputs on issues and recommendations will be sought from the stakeholders and will be included in the report, as appropriate. Dialogue will be sought with SAARC to identify and achieve consensus on the most appropriate areas for collaboration on the political and economic aspects of regional energy trade .

3.1 Study Analysis: Background review:

SARI/E has done an extensive work for fostering cross border power trade in the region for the last decade or so. The SARI/E Political Economic Analysis is a quantitative and qualitative assessment of the policy, political, and economic dimensions of energy trade among the SA countries. A positive trend is the emergence of sub-regional grids that are taking shape among these countries and should be the subject of scrutiny to understand and analyze future trends leading up to a well connected regional grid. The broad situational analysis of the status of cross-border energy/power trade in SA is as follows:

Sub regional Cooperation: India, Bangladesh, Bhutan and Nepal: The four countries are complementary not only in their geographical proximity but also in terms of the basket of energy resources available, the seasonal characteristics of energy demand and supply and the vast pool of institutional and technological expertise available within the region. The “Four borders study” prepared by SARI/E has determined that it is technically feasible to build transmission interconnection in the Four Border area that would benefit all four countries in the region.

Bilateral Cooperation: India and Nepal: Nepal has significant potential in hydropower although only 3% of Nepal’s demand is met through hydro. There is a good potential for exploiting the inherent load pattern diversity between India and Nepal to improve the overall system availability of the two countries. The bilateral exchange of power at the borders between the two countries is presently at a paltry level of 50 MW. However, most of the power exchanged between the two countries occurs on a limited basis, through bilateral agreements that use two lines connecting a Nepalese power station to the Indian state of Bihar. As of 2009, a third line from Nepal is under construction and the two countries have signed a MoU to develop four 400/220 kV transmission lines that would connect their national grids. Nepal plans to develop 2,230 MW of hydropower which includes 400 MW for export to India by 2020. Recently in 2010, SARI/E experts advised Nepal Electricity Authority (NEA) on the tariff setting principles

and parameters for the preparation and negotiation of transmission services agreements with Indian developers and investors.

Bilateral Cooperation: India and Bhutan: India has already assisted Bhutan technically and financially in the development of several hydroelectric projects that send excess power to India's power grid at generous rates reflecting the unique protectorate relationship that colors the countries historic partnership. As Bhutan possesses approximately 30,000 MW of hydropower potential, the two countries have entered into an agreement for 10,000 MW of hydropower projects to come online by 2020 and supply power to India. Currently Bhutan supplies about 1500 MW of power exports to India from principally the Chukha and Tala hydro electric power projects that were developed and financed by the Govt. of India as a joint venture with the Royal Govt. of Bhutan.

Bilateral Cooperation: India and Sri Lanka: India has signed a MoU with Sri Lanka and funded a feasibility study for an undersea electric cable connecting the two countries. Though separated from India by 26 miles of water, the pass is shallow and therefore conducive to a submarine cable. The benefit of such a connection would be to enhance system reliability and power between two power systems. Based on pre-feasibility studies by SARI/E and the Power Grid Corporation of India Ltd., the connection at a cost of \$ 450 million will create potential for high voltage direct current transmission of 500 MW in the short term and 1000 MW in the medium-to-long term from India to Sri Lanka.

Bilateral Cooperation: India and Bangladesh: With approximately 580 billion cubic meters of proven gas reserves, Bangladesh presents opportunities for both gas and electricity supply. While gas supply might not be feasible at this time, Bangladesh holds up to 150-300 MW of excess capacity during off-peak hours. The Bangladesh India Electrical Grid Interconnection project currently underway would allow 200 MW to flow from India to Bangladesh starting in 2012 with the ability to expand to 1000 MW. In addition to addressing Bangladesh's energy shortages, the project would allow both countries to benefit from the asynchronicities in demand (eg. the countries' different peak demand times and weekly and seasonal holiday differences) to achieve better power deployment with the same amount of supply.

Multilateral Cooperation: CASA 1000 Project: The CASA 1000 transmission project is envisaged to transmit electricity from several Central Asian countries (Uzbekistan, Tajikistan, Kazakhstan, Turkmenistan) through Afghanistan to Pakistan and eventually to India. Phase 1 of the project, which is currently operational, carries electricity from Tajikistan, Turkmenistan and Uzbekistan to Afghanistan at the medium transmission voltage of 220 KV. In phase 2, a high voltage line (500 KV HVDC) will run from Tajikistan and Kyrgyzstan through Afghanistan to Pakistan, providing 300 MW to Afghanistan (Kabul) and 1000 MW to Pakistan (Peshawar). An MoU has been signed to create a public-private partnership to move forward with Phase 2. In the last and final stage, phase 3, high-voltage lines could be constructed to bring additional electricity from the Central Asian countries to India. SARI/E is currently providing advisory services to the Ministry of Water and Power, Govt. of Pakistan in its review of CASA 1000 feasibility reports and agreements.

SAARC Regional Energy Trade Study(SRETS): The main objective of the SRETS is to prepare an action plan to improve regional dialogue and promote energy projects with regional benefits and win-win options. The action plan will explore the possible ways for establishing better dialogue among SAARC member states to promote interregional power trade, exchange of technology, sharing of examples of best practices, and better networking among energy sector professionals. The SRETS will identify the major physical, institutional and policy constraints hindering energy trade among SAARC member states and recommend an integrated approach to overcome these constraints and enhance regional dialogue on energy trade. On behalf of the SAARC Energy Center, ADB is currently working on SRETS which is planned to be finalized and publically available at the SAARC Energy Minister's meeting at Dhaka in September 2011.

3.2 Analysis Coverage:

The following subject matter areas are proposed for the analysis. The analysis can be modified to include any number of subject matter areas based on USAID's needs and requirements, i.e., not all areas need be included in the analysis. However, for regional comparison purposes, the subject matter areas impacting cross border power/energy trade needs to be consistent across all countries.

1. National and regional economic, trade and policy perspectives
2. Political barriers, consensus and will
3. Govt. responsiveness, governance, accountability and transparency
4. Institutional capacity, legal and regulatory frameworks
5. Energy sector planning and investment mobilization
6. Energy sector reform; national and regional transmission systems
7. Structural reforms, current status and potential requirement
8. Role of civil society and media
9. National and regional energy security and climate change
10. Energy demand, supply diversification and economic indicators

A second energy link with Central Asia is the proposed Turkmenistan-Afghanistan-Pakistan-India (TAPI) gas pipeline. The 1,680 kilometres (1,040 mi) pipeline will run from the Dauletabad gas field to Afghanistan. From there TAPI will be constructed alongside the highway running from Herat to Kandahar, and then via Quetta and Multan in Pakistan. The final destination of the pipeline will be the Indian town of Fazilka, near the border between Pakistan and India. The initial capacity will be 27 billion cubic meters (bcm) of natural gas per year of which 2 bcm will be provided to Afghanistan and 12.5 bcm to each Pakistan and India. The pipeline was expected to be operational by 2014. The cost of the pipeline is estimated cost at US\$7.6 billion. The project is to be financed by the Asian Development Bank. The documentation of SARI/E work available at site www.sari-energy.org could be used to build on the detailed analysis including reports from the World Bank and the Asian Development Bank.

3.3 Analysis Perspectives

The SARI/E supported Political Analysis Study of Cross-Border Energy Trade in South Asia methodology addresses five dimensions of the trade environment: Political, Social and Market Dynamics; Harmonization of Energy Policies; Legal and Regulatory framework; Implementing Institutions; and, Supporting Institutions. Through these five dimensions, a strategic paradigm emerges for understanding the countries' political, economic, social and institutional systems for cross-border energy cooperation, as well as a holistic view of their ability to trade efficiently, securely and support business development, sector reforms and commercial transactions. As a multi-dimensional analysis, the study team will develop detailed quantitative scorings, along with a qualitative report, in each of the above-mentioned areas, using the following framework:

Political, Social and Market Dynamics: In addition to the challenges inherent in pursuing a regional energy market, South Asia faces particular issues in forging intra-regional cooperation. The first and foremost obstacle is the complicated political scene. Social and market challenges must also be addressed in order to move towards a South Asia Regional Energy Cooperative. Political concerns will weigh heavily on any plans for a regional energy cooperative in South Asia. The India-Pakistan relationship, unfortunately, encompasses a long history of distrust which is likely to spill over into energy policy. India's relationship with Bangladesh, while not overly hostile as the one with Pakistan, is quite volatile although recent events have been encouraging. The India-Bhutan is a model for bilateral cooperation in energy trade in SA and could be replicated with additional market driven caveats with Nepal and Sri Lanka.

How well does the countries' political system respond to the needs for cross-border energy trade? How receptive to change are the key stakeholders (eg. politicians, bureaucracies, civil society)? What forces or factors govern the pace and direction of change in the system?

Harmonization of Energy Policies: The development of harmonized power market policies in South Asia presents the greatest impetus to a regional power exchange and therefore offers the greatest opportunity for cross-border energy trade. This will catalyze compatible power sector reforms in all of these countries, facilitating the creation of transparent, independent regulatory commissions, the unbundling of monopolies, and competitive pricing that incorporates the value of clean and renewable energy.

How do existing country energy policies advance cross-border trade? What is the status of power sector reforms in South Asia? Is there political consensus to reforms that unbundle vertically integrated monopolies and address transmission bottlenecks? At a minimum, have country authorities separated generation from transmission and established clear wheeling rights and market trading platforms to promote generator competition and accurate price signals at the wholesale and retail levels? Are there any specific social obligations to be addressed? (i.e., requirements to subsidize or serve rural populations before exporting, etc?)

Legal and Regulatory Framework: All SA countries will need to develop a regulatory driven common market design supported by a legally enforceable policy of open, non-discriminatory access to transmission systems. Though power purchase agreements (PPAs) could provide a

legal structure for bilateral trade, PPAs might offer limited efficiency gains because political pressures and bargaining imbalances often prevent rational tariff schemes. Rather, an optimal market design would likely involve either a regional power exchange or a regional power pool. Only then can a regional treaty or trade arrangement successfully be implemented after harmonizing national grid codes, establishing cross-border tariffs and other surcharges such as royalties and custom duties, and applying existing legal agreements that avoid double taxation.

How closely do existing laws reflect global standards? How well do they respond to commercial realities? Do they embed the realities of an optimal market design? Can clean energy policies drive cross-border trade?

Structural and Institutional Framework: Independent regulatory institutions provide the greatest impetus to a regional power exchange and therefore existence of a robust regulatory mechanism is a precursor to cross-border trade. In addition, a regional power market requires close cooperation of national transmission utilities that serve as transmission system operators. Safe and reliable cross border trade will require advance and real-time cooperation among the countries' transmission system operators (TSOs). TSOs will need to coordinate and share: i) grid standards, ii) carrying and transfer capabilities, iii) open-access tariffs, iv) congestion management, v) regional grid expansion, vi) dispute resolution procedures, and vii) general operating standards. Whether its cooperative structure occurs as a power exchange, with a common dispatch center, or as a loose pooling arrangement, with a common dispatch center for each country, the regional trading system will require a common information center to supply each country with real-time information regarding supply, demand and transmission constraints.

What is the ability of implementers (eg. TSOs) and enforcers (Independent Regulators) to discharge their duties in an effective, transparent and predictable way?

Supporting Institutions: A functional power market requires consistent, transparent methods for settling transactions, raising capital and allocating capital. Consistent and transparent markets allow public and private supporting institutions alike to trade according to best available information, efficient pricing, and with minimum transaction costs. These supporting institutions include, government agencies, energy trading organizations, generation, transmission and distribution utilities, financial institutions, private investors, business community and civil society (as consumers).

How deeply rooted in the countries' are the laws and institutions that govern energy/power markets? Do the many needed individual "parts" of the system exist, and if so, do they work together?

Partnership: The study will evaluate and examine opportunities for partnership between SAARC and SARI/E to advance regional energy integration and energy security through initiatives jointly proposed and implemented in close coordination and agreement. Specifically the analysis would recommend areas and activities that are suitable for a joint effort and the modalities for achieving a mutually agreeable and coordinated outcome.

4. Implementation Team and Approach

The team conducting the analysis activity would include political economy specialists experienced in using the tools for political economy analysis and handling 2 – 3 subject matter areas each. The team members must have the detailed knowledge of the design and development of energy markets and the political, economic and technical issues associated with regional energy trade. The team would be well aware of the polity and economy of the South Asia region with prior experience of working on infrastructure issues in the region. A team member would be responsible for compiling the different report sections into one document, and preparing the executive summary and recommendation charts. A team leader would oversee the scope as well as coordinate the study with stakeholders in each of the SARI/E countries, ADB and potentially, SAARC. A coordinator based in the Home Office would work remotely with local support responsible for scheduling interactions with the stakeholders and providing copies of relevant documents among other things.

The analysis activity would also include the use of local expertise to provide background information, insight into reform progress and local issues/circumstances, and to validate findings and recommendations.

More specifically, the analysis will be performed as follows:

Preparation:

- Utilize easily available existing data, including previous reports and documents available at SARI/E, SAARC Energy Center, ADB and WB websites, including country power utility websites, to generate a detailed snapshot of the cross border power trade in the region. Much of this research would be conducted by junior staff of the implementer and compiled into a briefing book for the assessment team.

Fieldwork:

- Interact with the stakeholders at varying levels to get their perspective on the subject matter. These interactions may include personal meetings, conference calls or e-mail exchanges or through participation in round table discussions. Such interactions should encompass a 360 degree review of each of the subject matter areas, i.e. include consultations with members of the government, energy utilities, business chambers and associations, small and medium businesses as well as multinational corporations, legal practitioners, trade officials, and members of civil society.
- Utilize policy analysis tools to facilitate collection of data, analysis and implementation monitoring, reduce costs, as well as increase quality and uniformity of the overall analysis results.

- Work in close partnership with USAID Missions, as well as other U.S. government agencies and implementing partners to understand and strengthen SARI/E activities and how they can be refocused toward enhancing cross border power trade

, Conferences:

- Participate in a SARI/E sponsored Regional Workshop on Energy Trade organized by the United States Energy association (USEA) in Delhi in early 2012. The purpose is to present the the results of the study and obtain feedback on the views of country governments and other stakeholders.

Report:

The consultant will prepare a final report providing the recommendations, methodology, findings and analysis. Prior to developing the report, the consultant will prepare a draft Table of Contents including the illustrative number of pages/sections that comprise the report for review by SARI/E, USAID.

5. Timings:

The study will begin on October 1 '11 and will end on December 31 '11. The following schedule might be taken as a guideline:

Preparation Time: 2 weeks

Country Analysis: Country assessments would be conducted back-to-back over a 8week period

Report Preparation: 3weeks. The regional report would be submitted to SARI/E for review, comments and approval within 4 weeks of the end of the country assessments.

Total: 13 weeks or 3 months.

6.Deliverables

1. Regional Analysis Report: This report will address the regional political economy analysis, underscore the priority of policy reforms needed, and identify the activities that SARI/E should work on for facilitation of cross border power trade. The report would also contain sections for each South Asian country except the Maldives, prepared by the analysis team and will give country specific recommendations about policy reforms to be achieved for facilitation of cross border power/energy trade.

7. Results

1. Analysis of the political, economic and policy underpinnings that facilitate regional energy market formation and cross-border energy trade.
2. Prioritization of a policy, regulatory and institutional reform agenda
3. Prioritize the policy reforms areas amongst a whole set of complex, inter-disciplinary issues to facilitate the cross border power trade.
4. Evaluate and recommend a coordinated strategy for program development and implementation with regional bodies such as SAARC
5. Provide a detailed list of recommendations to advance policy dialogue and consolidate political consensus

8. Reporting

The contracting officer's technical representative (COTR) for the Social Impact IQC is based in the Program Support Office. S/he will provide appropriate direction to the contractor, with technical input from the Office Director for the SARI/E program and his alternate, the SARI/E Program Manager.

9. Estimated Budget:

For more information, please visit
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