

Chapter 4

EMERGING FACTORS CONDUCTIVE TO ELECTRICITY TRADE

Since the mid to late 1990s, major changes are taking place in the region resulting in a greater degree of global integration and increased growth dynamism. In this context, several factors have emerged which improve the prospects for electricity and gas trade within the region and with its neighbors. These are discussed in relation to the countries with import potential, countries with export potential and transit countries.

4.1 Changes in the Development Approach and Growth Dynamism

During the last decade, there has been a major change in political mindset of the politicians. The approach to development is no longer dominated by inward looking import substitution strategies, propped up by restrictions and control of trade, exchange rates, and investment regimes. Development approaches have a new outward looking orientation with greater reliance on trade encouraged by liberalization of trade, exchange rate and investment regimes. In the mixed economies of India, Pakistan and Bangladesh, private investments and market mechanisms are making major headway while the role of central planning approaches are becoming much more limited. Imports are no longer considered a necessary evil, but as inputs and stimulants for increasing the competitiveness of domestic production in the internal and export markets. Such an approach has resulted in greater growth dynamism, and increased foreign exchange earnings and reserves,³² which, in turn, enables a greater degree of liberalization of trade and investment regimes. Thus the economies have gotten into a virtuous cycle in which growth and liberalization mutually reinforce one another. India is looking at the prospect of an annual GDP growth of 10% for the next 10/15 years. Pakistan is looking at 7% to 8% growth while Bangladesh hopes to grow at around 5% to 6%.

The magnitude and urgency of such growth rates translate into the urgency of increased and timely availability electricity and gas (among other energy forms). On the basis that the GDP elasticity of electricity demand would fall from 0.95 during FY 2004 – FY2012 to 0.85 during the next 10 years and further to 0.78 during the last ten years, India estimates that average annual electricity demand growth at the generation level would be at 7.5% through the FY 2031 to support an annual GDP growth rate of 9%. For supporting a 10% annual GDP growth rate electricity generation has to increase even faster. Pakistan and Bangladesh are also envisaging similar growth rates for electricity needs. Given the natural resource constraints and time constraints to develop them, Indian policy makers advocate the import of electricity from Nepal and Bhutan and gas through pipelines from Myanmar, Bangladesh, Iran and Central Asia.³³ Such imports supplementing LNG imports, coal imports, and acquisition of equity oil and gas in the foreign fields are seen as diversifying energy forms and supply sources and thus

³² As of April 2007, the total foreign exchange reserves of India, Pakistan and Bangladesh have exceeded \$230 billion equivalent nearly to a year's import requirement

³³ See *Integrated Energy Policy- Report of the Expert Committee*, Planning Commission, Government of India, New Delhi, August 2006, available at www.planningcommission.nic.in

enhancing energy security of the country.³⁴ Based on an analysis of its electricity demand growth and supply options Pakistan has also come to the conclusion that import of electricity from Central Asia to the extent of 1000 MW to start with and growing to 4000 MW in the next stage makes economic sense. The emergence of a political mindset which regards electricity and gas imports as practical options to enhance national energy security is an important phenomenon which improves the prospect of regional trade.

Bhutan's development strategy is clearly based on achieving power-export-led economic growth and it has recently commissioned a study to examine its options for the diversification of its export markets and the strategies for obtaining the best value for its exports in the medium to long term. Tajikistan and Kyrgyz Republic have decided in the last few years to pursue vigorously their hydropower export-led growth options and diversify their export markets into South Asia.

4.2 Increases in Power Transfer Capacities

In the countries with import potential there is a major ongoing effort to increase significantly the capacity of the backbone transmission systems to transfer power from one part of the country to the other parts. Thus India, Pakistan and Bangladesh have set up separate state owned Power Grid Corporations which are making significant investments in the expansion of the backbone transmission system and dispatch facilities with assistance from World Bank, Asian Development Bank and bilateral donors.

The total interregional transfer capacity among the five regions of India (North, North-East, East, West and South) was about 5,050 MW in 2002 and it has reached 9,450 by FY 2006. At the end of FY 2007 the capacity will reach 16,450 MW upon completion of ongoing projects. By 2012 the interregional transfer capacity will reach 37,150 MW. This is being done to enable a much better utilization of the hydro and thermal capacity, facilitate the implementation of the open access transmission policy laid down in the new Electricity ACT of 2003 and assist in the evolution of a national power market. Three regions (East, North-East, and West) are already integrated and operate synchronously. Northern region will get integrated in FY2007. The Southern region is connected to Eastern and Western region in asynchronous mode with HVDC linkages. Further enhancement of this interconnectivity and synchronization with the rest of the national grid will take place in the medium term.³⁵

The most recent example of inter regional transfer capacity enhancement facilitating the absorption of 1,020 MW of power from Bhutan, is the construction of a 1,200 km long, 400 kV double circuit transmission line linking Siliguri in the Eastern region to Mandaula in the Northern region. It has enabled the power deficit Northern region to receive power from the Tala hydropower project of Bhutan (see Box 4.1).

³⁴ India has three LNG import terminals at Dahej, Hazira, and Dhabol. One more terminal at Cochin would be commissioned in 2009 (India Country Analysis Brief available at www.eia.doe.gov)

³⁵ See Annual Report of the Central Electricity Authority of India (FY 2006) available at its website www.cea.nic.in

Box 4.1: Transfer Capacity Enhancement Facilitates Absorption of Power from Bhutan

As a part of the Tala hydropower project in Bhutan two double circuit 220 kV lines will bring Tala power up to Siliguri in the state of West Bengal in the Eastern region which has a substantial surplus energy. The Northern region on the other hand has substantial shortage of energy and peak capacity. Thus the 1200 km long, double circuit 400 kV line linking the Eastern and Northern regions with a transfer capacity of 3000 MW and a capital cost of about \$358 million enables the absorption of the imported energy. This line is also noteworthy from the point of view of its construction on a BOOT basis by Powerlinks Transmission Limited, a joint venture between Tata Power- a private sector company (51%) and Power Grid Corporation of India Limited- the central government owned national grid company (49%), the first case of private sector involvement in the transmission segment. The joint venture raised funds from IFC and ADB and from domestic financing institutions (SBI and IDFC).

Source: The presentation by Powerlinks Transmission Limited in the India Electricity-2006 Conference (Plenary Session III- Transmission), New Delhi on May 12, 200

A 765 kV transmission system overlay (with 5,200 km in length and 24,500 MVA in transformation capacity) on the 400 kV backbone system is expected to be in place by FY 2012, further enhancing the transfer capacity and reliability. 800 kV HVDC lines are planned, inter alia, for receiving large volumes of power from Bhutan in the future.

Developments of this kind enlarge the market for imports. Developers of hydropower projects in Bhutan need not be constrained by the power surplus situation in the Eastern region, and can look for markets in the Northern, Western and Southern regions. This is clearly a major factor conducive to external as well as internal trade in India. Similar efforts in Pakistan to improve the north-south transfer capacity and in Bangladesh the east west transfer capacity represent positive development favoring regional trade.

4.3 Evolution of National Power Markets

The evolution of a nascent national power market in India in the last few years is a factor which will significantly improve the prospects of exports to India. This was facilitated by the enactment of the new Electricity Law in 2003 (which unbundled power trading from power transmission, provided for open access in transmission and recognized power trading as a separate licensed activity), the emergence of new, solvent and creditworthy power sector institutions (such as Power Grid Corporation and Power Trading Corporation), the adoption of Availability Based Tariffs (ABT) for bulk power sales in the national grid (mainly by central government owned large generating stations to the state electricity boards), and the special efforts to enforce payment discipline on the part of the electricity boards.

The Power Grid Corporation of India owns and operates the countrywide backbone transmission system at 400 kV level and above³⁶ and enables transfer of power from state to state and region to region and has undertaken the responsibility to provide open access and is adopting an electronic bidding system to resolve capacity congestion arising from

³⁶ As of March 2005, Power Grid Corporation of India owns operates and maintains one of the largest extra high voltage systems of the world, with more than 51,000 km of both AC and DC transmission network up to 765 kV level, and 85 substations with a total capacity of over 50,000 MVA. It also owns and operates five Regional Load Dispatch Centers. Over 45% of the power generated in India is transmitted through this national system which routinely operates at more than 99% availability each year. (see World Bank, Project Appraisal Document for a loan to Power Grid Corporation of India, December 2005)

demand from multiple short term customers. Power Trading Corporation is a joint stock company listed in the Bombay stock exchange. It buys power from surplus states and sells to deficit states. Its presence in the national power market greatly helped to increase the traded volume (Box 4.2).

Box: 4.2: Power Trading Corporation of India- A Major Solvent Buyer in the Market

Power Trading Corporation of India Limited is a listed company in the Bombay Stock Exchange. Its shareholders include Promoters such as NTPC, NHPC, PFC, PGCIL and DVC (39%), and Financial Institutions such as IDBI, IFCI, IDFC, LIC and GIC and Banks (14%), Mutual Funds (5.6%), Tata Power Company (10%), other Private Corporate bodies (4.6%), Foreign Investors (10.8%), and the General Public (16%). In FY 2006 it traded 10,119 GWh with a turnover value of \$695 million, and made a profit before tax of \$12.7 million. Its IPO in FY 2004 was oversubscribed to the extent of 42 times and its share is trading consistently at more than five times its face value.

After the enactment of the new Electricity Law in 2003 which recognized electricity trading as a separate activity to be licensed, the Central Electricity Regulatory commission had issued 20 licenses for power trading. About eight of them including Power Trading Corporation are authorized to trade over 1000 GWh annually and the more prominent among them include NTPC Power Trading Company, Reliance Energy Trading Company, Tata Power trading Company and Adani Exports Limited. While Power Trading Corporation continues to be a dominant player, other companies are making headway and secured a market share of 27% by FY 2005. The traded volume rose to about 3% of the total volume of power transmitted in the national grid. The existence of such credible, solvent and regulated trading companies in the market would greatly facilitate export of electricity to the Indian market. In fact, Power Trading Corporation is heavily involved in the cross border power trade among the utilities of India, Bhutan and Nepal.

The introduction of the Availability Based Tariffs (ABT) for bulk supplies in the national grid since mid 2002 has led to the emergence of significant trade in electricity within India (see Box 4.3). Trade in electricity in FY 2007 amounted to about 15,000 GWh or about 3% of the total volume handled by the national grid. Traded prices ranged from 12.5 cents/kWh (off-peak) to 13.7 cents/kWh (peak) in the third quarter of 2006. Payment discipline of the state electricity boards have improved substantially since the conclusion a Tripartite Agreement (TPA) of May 2001 among the States, the Government of India and the Reserve Bank of India. This was based on the one-time waiver of 60% of the interest/surcharges on delayed payments/dues as of September 30, 2001 and the securitization of the remaining balances through the issue of tax free bonds (with an interest rate of 8.5% and a maturity of 15 years including a moratorium of five years) by the states. Twenty eight states have signed the TPAs and have issued bonds for a total value of \$6.64 billion. The TPAs provide for incentives for the prompt settlement of future monthly bills. When payment default occurs, the supplier is expected to reduce the level of supply. If the default continues, the supplier is expected to approach the Ministry of Finance of the Government of India for direct payment of the dues by the Reserve Bank of India from central government's allocation of funds to the defaulting state. As a result of these arrangements payment discipline by the state electricity boards have greatly improved and most central government-owned power entities report collection

efficiencies of about 98%. Such an improvement in the payment discipline of the electricity boards, which have for long been considered major credit risks, is a factor which should favor the prospects of increased trade.

Box 4.3: Availability Based Tariff Promotes Trade in the National Grid in India

Central government-owned generating companies (such as NTPC and NHPC) own and operate about 39,900 MW or about 32% of the India's total installed generation capacity. The capacities of their various large generating units are allocated to the relevant state electricity boards at the time of their construction. The tariff for the sale of this electricity in the past used to be designated in terms of a composite kWh charge only and billing was on the basis of monthly net energy drawn from the national grid. This was not conducive to discourage the electricity boards from drawing substantially more or less than the allocated capacity. They could overdraw during peak hours and under-draw during off-peak hours without any financial consequences. This greatly interfered with the merit order dispatch and adversely affected the frequency in the grid. Also it provided no incentive to the states to trade the unwanted portion of their allocated capacity.

To overcome these problems, the concept of Availability Based Tariff was introduced in mid 2002. This involves: (a) a fixed capacity charge/kW/month payable by the electricity board, based on the capacity allocated to it and linked to the availability of the plant; (b) a regulated variable energy charge based on the actual scheduled consumption; and (c) a special unscheduled interchange (UI) charge for deviations from schedule.

The UI charge is linked inversely to the frequency in the grid and is high at Rs 6.00/kWh (or 14.3 cents) when the frequency goes down to 49.02 Hz (high demand situation) and becomes zero when the frequency is at 50.5 Hz or higher (low demand situation). For this purpose the energy is metered in 15 minute blocks and the average frequency is taken into account. In the range 50.5 Hz- 49.02Hz the UI charge increases from 0 by Rs 0.08 for each reduction in frequency by 0.02 Hz in a linear fashion.

Since the states pay a fixed capacity charge based on the capacity allocated to them, they have a strong incentive to draw the allocated energy or to sell the unwanted portion of such energy to other buyers. Overdrawing during high demand periods (frequency lower than 50.5 Hz) penalizes them heavily through a high UI charge. Similarly generators get high UI charge for extra generation during periods of high demand and have no incentive to generate extra energy during periods of low demand since the UI charge becomes zero.

The introduction of ABT has greatly improved the frequency conditions of the national grid, promoted intelligent load management of the part of electricity boards, enabled a more meaningful merit order dispatch and above all, facilitated the emergence of a significant volume of energy trade in the national grid (which grew from 1617 GWh in FY 2002 to greater than 15,000 GWh in FY 2007)

The maximum UI charge at 49.02 Hz was fixed in FY 2003 at Rs 4.2/kWh based on the cost of electricity from generating sets using high speed diesel (with a fuel cost of Rs 13.33/liter) as representing the short term marginal cost.

With changes in high speed diesel prices the UI charge went up to Rs 6/kWh, and then came down to Rs 5.7 in 2004. On the same basis the UI charge should be Rs 9.3 (23.25 cents) for FY 2008, but to avoid too steep a revision, the Central Electricity Regulatory Commission has fixed it at Rs 7.5/kWh (18.75 cents) with effect from April 30, 2007, as an interim measure, based on the cost of generation from combined cycle power stations using naphtha as fuel.

Sources: Bhanu Bhushan, ABC of ABT, A Primer on Availability Based Tariff, 27 June 2005 and CERC Order dated April 5, 2007 in Petition No.15/2007 available at www.cercind.gov.in

4.4 Increasing Involvement of the Private Sector

A greater degree of private sector involvement in the power sector is likely to improve the prospects of trade, as private businesses are constantly on the look out for cost effective supply additions and attractive markets to increase the volume of their business and their profits. During the last fifteen years, private sector involvement in the power sector of South Asia region had grown notably, though not as much as in other regions. In Pakistan, Bangladesh Nepal and Sri Lanka, private sector is involved to the extent of 20% to 30% of national generation capacity (see Table 4.1). India's percentage is lower at 12.1%, but the capacity, in absolute size, is large. Further, the data does not include about 18,740 MW of captive generating capacity owned by other businesses. Under the Electricity Law of 2003, generation activity no longer requires a license and transmission licensees are obliged to transmit electricity from captive generation units to other customers or to the grid to sell their surplus power. The Power Finance Corporation is putting together several "ultra mega projects" (4000 MW to 6000 MW each) packages for possible development either as private projects or in the form of public private partnerships. Some of them will be based on domestic coal and be integrated units with their own block of captive coal mines. Others will be based on imported coal. The experience that South Asian countries have gained in dealing with BOT/BOO entrepreneurs and in the varied contracting and guarantee and risk mitigation mechanisms should be of great relevance while they negotiate import and export contracts.

Table 4.1 Private Participation in South Asia Power Sector

Country	Private Sector Involvement		
	Generation (% of national capacity) and Capacity in MW	Transmission	Distribution
Afghanistan	nil	nil	nil ³⁷
Bangladesh	30% (1,260 MW)	nil	Rural areas handled by RECs
Bhutan	nil	nil	nil
Nepal	21.75% (148.7 MW)	nil	nil
India	12.1% (15,431 MW) Source: www.powermin.nic.in	1200 km 400 kV double circuit line	States of Delhi, Orissa, cities of Bombay, Calcutta, Surat and Ahmedabad
Pakistan	31% (6,045 MW)	nil	KESC privatized as a VIU (11% of consumers and 14% of sales of Pakistan)
Sri Lanka	28.2% (718 MW) Leased 6.3% (160 MW)	nil	nil

The emergence of large and reputed business houses of India (such as Tata, Reliance and many others) with global reach, as key players in the energy scene, and the emergence of many reputed and regulated private sector power trading companies in the recent years improves the prospect of increased private sector involvement not only in the domestic private sector, but also in investments abroad (for example in Nepal, Bhutan, Bangladesh and Myanmar) in projects dedicated for exports to India, mitigating to a major extent the problem of public sector involvement discussed in section 3.5 earlier.

³⁷ There is one small exception. Privately owned Omar Electric Company with an installed capacity of 1.0 MW supplies about 8,500 consumers in the city of Ghazni (see *Lack of Access to Power (Energy) in Afghanistan*, World Bank, November 2006)

The proposal of the Tata Group made in 2004-2005 to invest \$2 billion to \$3 billion in Bangladesh in a 1000 MW gas fired combined cycle power plant, a 500 MW coal fired power plant, a fertilizer factory using gas and a steel finishing mill using gas, which would also involve export of electricity to India illustrates the possibilities of cross border investment and trade in relation to gas and electricity. Among other things the proposal would also enable the extension of gas pipeline to this westernmost part of Bangladesh enabling the conversion of a few oil fired power plants to switch to gas. The government has not yet been able to respond. The proposal is considered by the Tata Group to be still in the “pause” mode till the final decision could be given by Bangladesh after the elections scheduled for early 2007.³⁸

4.5 Proposals to Improve the Commercial performance of the Utilities

A major public enterprise reform is sought to be undertaken by reorienting the Accelerated Power Development and Reform program (APDRP) of the government of India.³⁹ The key elements of this reorientation are: (i) automatic meter reading of all distribution transformers and use of Geographical Information System that maps the distribution system in order to pinpoint the exact locus of power theft and the offender combined with staff incentives for the resulting additional revenue; (2) Use this data to split the ATC losses into its components, technical losses, billing losses, collection losses and theft losses to design corrective measures for each; (3) bifurcate agricultural pumping load from non-pumping load in all rural feeders and devise methods of measuring agricultural pumping load; (4) for all loads above 50 kW, introduce intelligent or smart meters which enable real time, remote recording of consumption data and allow remote control over the power supplied through each meter; (5) introduce time-of-day metering using the capability of the above mentioned smart meters; (6) link all assistance to the state power sector from the central government exclusively to loss reduction and viability improvement; (7) use the key baseline data thus generated for determining the transition funding needs under outcome driven privatization models that seek to restore the viability of distribution systems. Pursuit of the efforts along these lines would improve the financial viability of the electricity boards, which is seen as a key for the sector health and for improving the prospects for electricity trade. Similar efforts could be relevant in Pakistan and Bangladesh too.

4.6 Structural and Institutional Changes with Potential to Favor Trade

Sector reforms based on the concepts of distancing the government (separation of policy making, regulatory, ownership and operation functions), unbundling vertically integrated utilities into separate entities responsible for different business functions such as generation, transmission and distribution, introduction of the concepts of third party access to the transmission and distribution wires services, and liberalization involving the provision of the choice of supplier to at least distribution companies and large suppliers are known to be conducive to internal and external electricity trade. Such reforms in their

³⁸ See India /Bangladesh: *Tata deal breaks integration barriers*, Oxford Analytica, 25 August 2004 and also the Country Analysis Brief on Bangladesh (July 2005) available at www.usdoe.eia.gov. See also press reports in India and Bangladesh during September-November 2006

³⁹ This section is drawn from *Integrated Energy Policy- Report of the Expert Committee*, Planning Commission, Government of India, New Delhi, August 2006, available at www.planningcommission.nic.in

simpler forms have been going on for over a decade in the region. Though they have been progressing somewhat slowly and, in the eyes of many observers, somewhat ritualistically, they nevertheless represent a move in the right direction improving the prospects of national and regional trade. The situation in the region in this respect is summarized in Table 4.2

Table 4.2: Status of Sector Structural and Institutional Reform

Country	Distancing the Government	Unbundling	Third Party Access to Wires Services	Regulation
India	Complete at the Federal level. Formally complete in most states	Completed at the Federal level and in most states and ongoing in the remaining few states	Approved for national grid. Ongoing for state grids (early stages)	Central regulatory commission is functional. State regulatory commissions are functional in 27 of 29 states
Pakistan	Formally complete	Power wing of WAPDA had been unbundled into four generation companies, one transmission company and nine distribution companies. KESC had been privatized as a VIU	Not yet	Regulatory body NEPRA is operational. Its capacity for sector oversight is still evolving
Bangladesh	Formally Complete	Partially complete. The transmission function has gone to PGCB. Substantial generation and distribution is still combined in BPDB, though Dhaka area has DESA and DESCO. Rural area distribution is handled by rural cooperatives.	Not yet	Regulatory body established, but not yet fully operational
Bhutan	Formally completed recently	No vertical unbundling. The four generating companies also handle some local distribution. BPC handles some generation, transmission and distribution	No	Not yet. Bhutan Electricity Authority created under a 2001 law is not yet fully operational
Nepal	Formally complete	No. NEA is still a vertically integrated utility	No	NETFC exists. Its capacity and autonomy appear limited. It does not regulate bulk supply tariffs
Sri Lanka	Regulation has not been separated yet	No final decisions yet. CEB is still a VIU. LECO handles distribution in a small area.	No	Due to frequent change of governments no decision had been taken yet.
Afghanistan	Not yet	Not likely in the short term	No	No, though there are plans for the future

In the Indian national grid the dispatch is largely based on the bilateral contracts (long term PPAs based on prices regulated by central regulatory commission) between central government owned generating companies and the state electricity boards. As explained in Section 4.3 above the adoption of ABT and UI charges and the presence of power trading companies have led to lively interstate trading in electricity and the emergence of real time spot markets and short term contracts with UI rate acting as the price signal. Within the state grids the transmission companies had been acting as the single buyer buying from IPPs, central and state government generating companies and selling to distribution companies and large consumers in the state at the bulk supply tariffs approved by state regulatory commissions. Recently the transmission companies have been asked shed this

role and transfer this function to an appropriate trading body. In Pakistan, National Transmission and Dispatch Company (NTDC) acts as the single buyer, though there is provision for future trading among the distribution entities, generators and large consumers. In Bangladesh BPDB acts as the single buyer, buying power from all generators and selling it to DESA, DESCO and RECs at bulk power tariffs. It has also substantial distribution responsibilities of its own. When the structural reforms take root and become fully operational in the three countries with major import potential they will clearly improve the prospects of regional trade.

Structural reforms of this kind have been delayed in Sri Lanka on account of the frequent change in government and the differences in their approaches. Afghanistan's situation needs to be stabilized before it could start sector reforms. However, such reforms are crucial in this important transit country for promoting trade between Central Asia and South Asia. In such small systems as Nepal and Bhutan, structural reforms of this type may not be an urgent need.

4.7 Efforts to Lessen Political Tensions

Efforts are going on to reduce the political tension between India and Pakistan by undertaking a series of high level dialogues and confidence building measures such as enabling travel of businessmen, road, rail and air links, and common and cooperative programs to fight terrorism. Trade barriers are being reviewed to minimize their impact and facilitate trade. In Nepal the insurgency appears to have been overcome and the prospect for a stable democratic regime appears bright. After the elections of Bangladesh in early 2007, political disturbances are expected to subside and major decisions on cross border investments are likely to be made. Afghanistan situation which appeared to be moving towards stabilization in the last year or two seems to be facing a potential reversal of that trend. On the whole regional political tensions appear to be lessening.

4.8 An Increase in Regional Cooperation Efforts

South Asian Association for Regional Cooperation (SAARC) in which all the seven countries covered by the study and Maldives are presently members has been taking special interest in the energy cooperation in the recent years. In the Islamabad Summit meeting held in January 2004, a decision was taken to establish a Working Group on Energy to study South Asia Energy Cooperation including the concept of an Energy Ring. The Council of Ministers Meeting held at Islamabad during 20-21 July 2004 approved the report of the Working Group containing a range of topics related to energy cooperation. The Working Group thereafter decided to pursue action in respect of (a) Exchange of Energy Information, (b) Environmental friendly energy, (c) Creation of a regional Power Grid, and (d) cooperation on renewable energy. SAARC Energy Center had been established in Islamabad to carry out studies and coordinate energy cooperation and trade among the member countries. In the most recent SAARC Heads of State summit meeting (April 3-4, 2007) and the SAARC Energy Ministers meeting (March 7-10, 2007) the rapidly increasing energy demand to meet the developmental needs and the role of the regional energy trade to meet such demand figured prominently. The government leaders gave expressions of strong support to regional energy trade and reiterated their political commitment to promote such trade. They endorsed the concept of energy ring (which inter alia, focuses on electricity interconnections among the member

countries). The Energy Center will carry out a study on the concept of the Energy Ring with help from Asian Development Bank. The Second SAARC Business Conclave, a gathering of private sector business associations in the region took place in Mumbai during February 17-18, 2007. Its Mumbai Declaration calls for increased energy cooperation to enhance energy production and transmission among SAARC countries. There is strong private sector interest to make cross border energy sector investments, provided sector policy reforms are fully implemented, and mechanisms for managing cross border investments are put in place.

Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) in which Bangladesh, Bhutan, Nepal, Myanmar, India, Sri Lanka and Thailand are presently members is also active in the field of energy. The first Energy Ministers' Conference held in Delhi in October 2005 approved a BIMSTEC vision of Trans-border Power Exchange and Grid Interconnections country by country to enable eventual flow of electricity across the member countries. It also resolved to: (a) evolve a common regulatory framework for developing grid interconnections; (b) develop the hydropower potential of the region to support economic growth; (c) to further enhance cooperation in the development of various hydropower projects

ECO (Economic Cooperation Organization) was created in 1985, first including Iran, Turkey, and Pakistan. The other seven members-- Afghanistan, Azerbaijan, Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan – were added in 1992. ECO has had a number of meetings devoted to energy trade, most recently in Bishkek, in May 2004 and in Teheran, in June 2005. The latter meeting was organized in cooperation with the World Bank and with participation of other donors such as Asian Development Bank (ADB) and Islamic Development Bank (IsDB). The participants agreed to pursue energy trade initiatives through two broad sets of activities: (i) promoting specific projects whose potential has already been demonstrated through analytical work; and (ii) undertake additional analytical work on the investment and policy fronts. ECO has launched a study of electricity interconnections among the ECO countries, financed by IsDB. Another study entitled *Trading Arrangements and Risk Management in International Electricity Trade in ECO Countries* is being carried out under the World Bank financing.

The regional Economic Cooperation Conferences in Kabul (2005) and Delhi (2006) discussed at length regional energy cooperation opportunities and the Kabul and Delhi declarations called for continued efforts to interconnect electricity systems and promote electricity trade within the region as well with the western neighbors of the region.

There are also several other regional cooperation organizations such as Shanghai Organization for Security and Cooperation in which Iran, India and Pakistan have observer status. It is increasingly focusing on economic cooperation in addition to security matters.⁴⁰ Such a surge in discussions on the regional cooperation in the electricity and gas sectors augurs well for regional electricity trade. Most of these organizations are making only a limited tangible progress mainly on account of the political tensions in the regions. Once the political tensions subside, the existence and the activities of such organizations would lead to faster progress in regional trade.

⁴⁰ See William Byrd, Martin Raiser and others, Economic Cooperation in the Wider Central Asia Region, World Bank Working Paper No.75, 2006 for a fuller listing of the various organizations.