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## South Asia energy security: Challenges and opportunities

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## HIGHLIGHTS

- No South Asian country is going to be able to meet its energy needs domestically.
- Fostering cross border energy trade and promotion of investments opportunities are key solutions.
- India's neighbors have huge potential in hydroelectricity.
- Co-operation among nations to tap the energy resource can be a win-win situation for all.
- However it faces certain challenges.

## ARTICLE INFO

## Article history:

Received 28 August 2012

Accepted 31 July 2013

## Keywords:

Energy security

South Asia energy cooperation

Cross-border power trading

## ABSTRACT

South Asia has witnessed a growing imbalance between energy demand and its supply from indigenous sources resulting in increased import dependence. Energy endowments differ among the South Asian countries. However, access to the significant energy resources in the neighboring countries is denied, which increases the cost of energy supply and reduces energy security of the individual countries and of the region as a whole. The countries in the region could benefit significantly only by strengthening the mechanism of energy trade through improved connectivity. Therefore, greater cooperation within South Asia could be one of the most effective ways to deal with this Regional Energy deficit and ensure Energy Security of the Region.

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## 1. Introduction

The expanding economies of South Asia have led to an increase in the energy intensity which has resulted in the unprecedented hike in demand for energy sources. Thus, for South Asia energy security emanates from the growing imbalance between the demand for energy and its supply from indigenous sources resulting in increased import dependence (Newberry, 2007).

The drain on national resources to meet burgeoning energy import bills is a major political and social issue throughout South Asia. Hence, to meet the growing aspirations of the people and economies of South Asia, each South Asian country wants to secure reliable, sustainable and reasonably priced energy supplies to meet the ever increasing demand for commercial energy (Lall, 2009).

## 1.1. Energy scenario of South Asia

The International Energy Agency (IEA) projects that the energy demand in the South Asia would grow at more than the double of

the world over the next several decades. India's requirement alone is projected to increase more than 140% compared with an increase of only 55% for the world as whole.

The oil consumption growth rate is expected to be around six per cent in all countries. India with 5.7 billion barrels has the highest crude oil reserves in South Asia (B P Statistical Review of World Energy, 2012). In comparison to it Pakistan and Bangladesh have only 341 million barrels and 28 million barrels respectively. At current level of production, India is projected to exhaust its crude oil reserves in 30 years.

As far as natural gas is concerned India has proved reserves of 1.88 trillion cubic meters while Pakistan has 0.44 trillion cubic meters and Bangladesh has 0.39 trillion cubic meters of natural gas.

The electricity consumption varies from a low of 19 units per year in Afghanistan to over 540 units in India and Pakistan. The demand for electricity is growing at a rate of seven percent per year in most countries except Afghanistan, Bhutan and Maldives where growth rates of over 13% are expected in the first decade to meet rural electrification needs (Table 1).

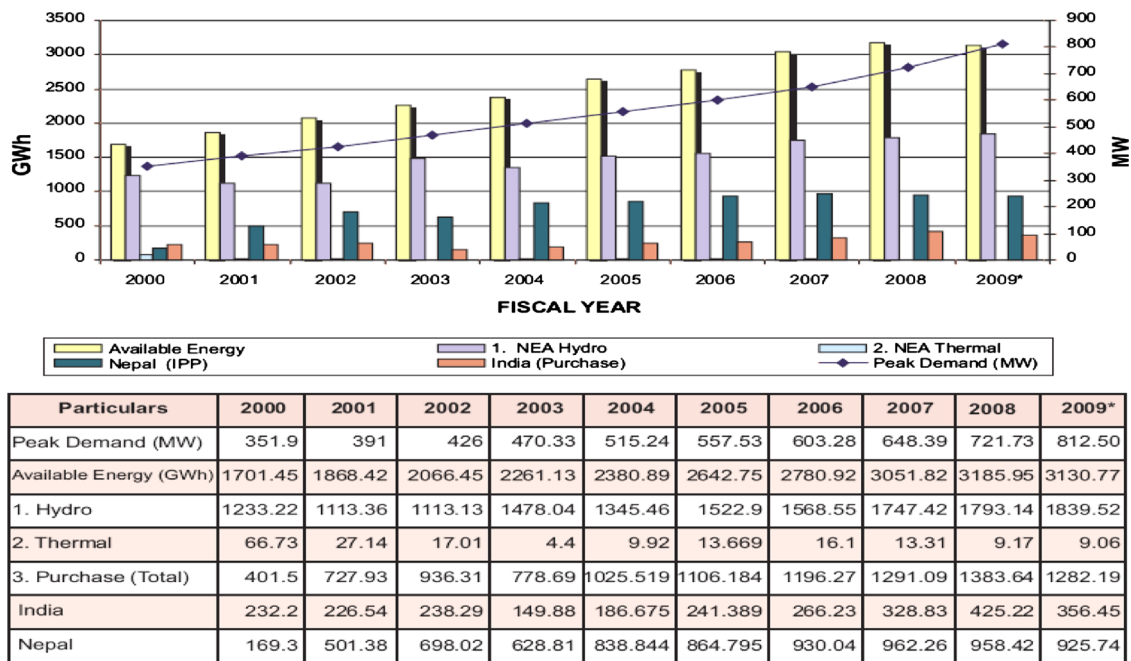
The share of renewable energy in indigenous energy production in India, Pakistan and Bangladesh is 45%. Among the South Asian Nations, India has taken a leading global role in renewable energy. At present, India is one of the world leaders in wind power

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**Table 1**  
Electricity scenario of India, Pakistan, Bangladesh, Bhutan and Sri Lanka  
Source: AF-Mercados EMI

Aspect/Value	India	Pakistan	Bangladesh	Nepal	Bhutan	Sri Lanka
Per capita electricity generation (Kwh/annum)	700	600	200	100	746	500
Access to electricity	50%	65% of villages	40%	NA	NA	100%
Demand and supply gap	> 15% deficit	> 25%	25%	Peak and base deficit	Significant surplus	Some deficit
Principal generation resource system losses in electricity	Coal > 32%	Hydro, gas and liquid fuels NA	Gas and Coal 23%	HydroNA	HydroNA	Hydro, liquid fuels < 15%



**Fig. 1.** Total energy available and peak demand in Nepal.  
Source: International Operation Division, Bharat Heavy Electricals Limited, New Delhi.

generation, ranking fifth behind Germany, Spain, the US and Denmark, in total installed capacity. India is also world's fifth largest manufacturer of silicon solar modules in the world.

Traditional fuels meet 95% of the energy demand in Afghanistan, 87% in Nepal and between 30% and 80% in other countries of South Asia. The share of biomass consumption as a percentage of total consumption has declined to about one-third in India and Pakistan, remains at two-third in Bangladesh and Sri Lanka, and is higher than 85% in Afghanistan and Nepal.

## 1.2. Opportunities for South Asia energy cooperation

The very fact is that no South Asian country is going to be able to meet its energy needs entirely from within its own domestic resources. India has significant coal deposits, Bangladesh has natural gas and Bhutan and Nepal have substantial undeveloped hydropower potential (Nexant Study, 2004). Greater cooperation within South Asia could be one of the most effective ways to deal with regional energy deficit (Ahmad, 2000). World Bank study describes such an approach as providing a "logical and rational public policy choice ... a win-win situation to all the participants" (Krishnaswamy, 2007). There are following areas where energy cooperation could be possible.

### 1.2.1. Exploitation of hydropotential and investment opportunity

India's neighbors have huge potential in hydroelectricity, and co-operation among nations to tap the energy resource can be a win-win situation for all. The governments of the region need to take an active role in developing strategic cooperation for optimum exploitation and sharing of energy resources. Hydropower potential is one of the largest energy resources in the region.

**Nepal:** Total installed capacity is about 690 MW of which hydro constitutes 88.33%, thermal – 0.29% and imported power is 11.4% (BHEL, 2011). Nepal has huge exploitable hydropower potential of 44,000 MW. However, Nepal experiences perennial power deficit. 2/3 of population has no access to electricity. In fact in 2009, the load shedding was a severe as 16 h per day, bypassing the forecast/provisioned 9 h per day. In 2008–09 there was a 2.58% growth in peak power demand which went up to 812.50 MW from 721.73 MW (Pandey, 2011). At the same time there was a 10.58% growth in energy demand which reached to 3859 GWh from 3490 GWh (Fig. 1).

**Pattern of power consumption:** The pattern of power consumption indicates that the domestic tariff is higher than industrial tariff despite 95% of power consumption being done by domestic users (Figs. 2 and 3).

**Opportunities:** The Government of Nepal is giving priority to develop its vast hydropower reserves in order to meet its growing demand for energy and power export to India. Large potential

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