

## Energy Security in India: Challenges Ahead

Sandeep

JRF in Geography

Email: [sndpkhkh7@gmail.com](mailto:sndpkhkh7@gmail.com)

**Abstract:** *India is progressing at a very rapid rate. The markets are expanding, more and more people are moving to cities from villages, the industries are expanding. To sustain this rate of development India needs to fulfill its rising energy needs. Not only for development but energy security has now become a strategic commodity. However, in practice the government is yet unable to fulfill the energy requirements of the country. The prime reasons behind it is the privatization of power corporations and faulty policy design. Ensuring energy security will create more jobs and ensure national security at the same time. The policy makers need to consider the global perspective of inter dependence of countries rather than a local approach. A string energy policy is the need of the hour. Moreover, the sources of energy should be as much possible as renewable to sustain in the longer run. Hence the roadblocks in the geopolitical system regarding energy sector needs to be removed for the progress of nation. Another possible solution could be adopting the decentralized model of power distribution. The present research paper highlights the scenario and challenges of energy security in India.*

**Keywords:** Energy Consumption, Conventional Fuel, Energy Security, Infrastructure, Energy Conservation Act, NAPCC.

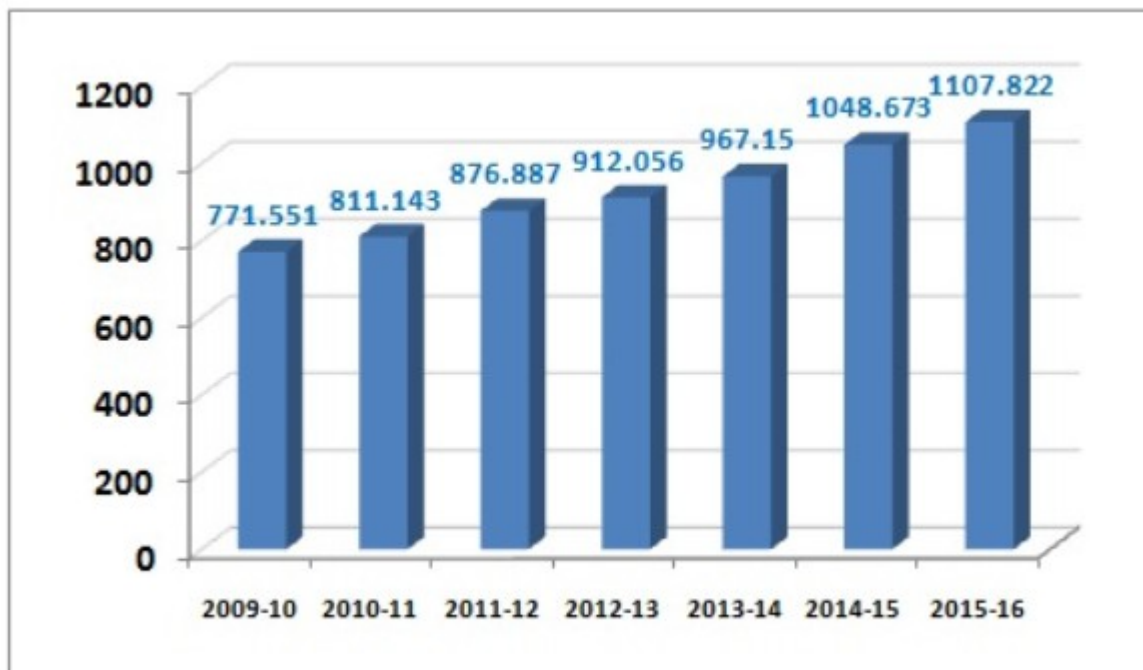
**Introduction:** It is a well-known fact that a large part of the rural population in India still lives in dark. Therefore, while making the policy this should be the prime objective of the government to electrify these villages. In order to meet the huge energy demands, imports would come in handy. However, due to major dependence of imports, India will be severely affected due to global market fluctuations. A strong economy will help in reducing the poverty in the country. Therefore, the economy too needs to be considered while devising the policy based largely on imports. Furthermore, India has also emerged as a responsible member in tackling the climate change and needs to meet its minimum carbon emission target. Thus, the situation is a complex one where either of the parameter can be affected while trying to achieve one of them. Domestic and conventional fuels can help India in achieving this target. However the need of the hour is to provide energy security within the next five years which is a tedious task. Effective energy management and governance is the key to tackle these problems. India has ample amount

of oil and gas reserves. However, they have not yet been fully tapped. Also, the renewable energy resources are not yet completely harnessed. India receives ample amount of sunshine around the year and therefore switching to solar energy could be a possible solution. However, economically it is not feasible without the government playing a key role in between and providing subsidy. Further, there is a need to boost the infrastructure of energy production and distribution. The energy production has been

plagued with corruption too which was highlighted by the coal-gate scam. Good governance is necessary to achieve energy security

**Energy Consumption in India:** India is a fast developing nation and therefore its energy needs are also increasing rapidly. India consumes around 3.5 percent of the world global energy. Estimates say that this share may increase to 10 percent by 2031. This can be further explained by the graph below:

Figure 1: Electricity consumption in India from 2009-10 to 2015-16



(Source: <http://www.electricalindia.in>)

From the following bar graph we can see that electricity consumption in on a constant rise in India. It can be observed that consumption has increased to 1.4 time in 205-16 as compared to 2009-10. Moreover, the consumption difference between 2009-10 and

2010-11 was 39.633 whereas in 2014-15 to 2015-16 it was 59. Hence, the trend of electricity consumption is rapidly increasing and the government needs to take adequate measures to ensure constant supply. India continues to face challenges in the energy

sector in the coming years. Even after an estimated addition of 17800 MW and a per capita consumption of 911 kWh, India still faced energy shortages of nearly 5% and peak shortage of 2% in 2015. This indicates that the present mechanism is unable to cope up with the demands. Therefore, the energy policies of India are questionable.

**Major Energy Policies of India:** The energy policies of India defines the way energy resources will be managed in the country. These policies act as a guiding source in developing at a rapid rate and at the same time ensuring energy security. They also help the country to achieve the goal of sustainable development. A few of such policies of India in the energy sector are as follows:

**1. Energy Conservation Act:** Drafted in 2001, this act aimed towards building a framework for improving energy efficiency in India after its amendment in 2010. Two important agencies that is the Bureau of Energy Efficiency (BEE) at the central level and State Designated Agencies (SDAs) at state level were created under this act. BEE acts as a regulating authority which aims to curb the energy wastage in the country. Under this act the agencies could notify the industries using excessive of energy and could set the rules and regulations regarding their energy conservation. In order to accomplish this, schemes such as Energy Conservation Building Code, Standards and Labeling, Bachat Lamp

Yojana, Demand Side Management, Designated Consumers, Promotion of energy efficiency in small and medium scale industries and certification of energy auditors and managers were devised.

**2. Electricity Act:** Earlier, the government had a strong hold over the electricity production and distribution under the Indian Electricity Act 1910, The Electricity (Supply) Act, 1948 and Electricity Regulatory Commissions Act, 1998. However, the government then realized that in order to bring reforms in this sector it needs to loosen its regulations. Therefore, the Electricity Act in the year 2003 was formulated to renovate the electricity sector. The privatization of electricity distribution increased the competition thus benefitting the customers. At the same time it ensured that there is transparency and subsidies are given to the needy.

**3. Integrated Energy Policy (IEP):** This policy was the first and foremost policy derived in 2008 to cater to the needs of the whole sector. The major aspect of this policy was to ensure a smooth transition to privatization of the energy sector. It aimed at investing more in traditional fuels available locally as well as renewable resources at the same time it ensured that proper subsidies were given. It was drafted in the form of a five year plan to help India in its energy requirements for the coming years.

#### 4. Ultra Mega Power Projects (UMPP):

This scheme was launched in the 2005 and aimed towards expanding the power capacity of the nation. In order to increase the competition, the allocation of coal based power plants with more than 4000MW capacity was done through bidding. The coal used in these plant may be domestic or imported and SPV is in charge of obtaining all the administrative clearances prior to the award of the project itself. This significantly reduced the time take to accomplish the projects. However, the sudden spike in the coal price would hamper its progressing. The UMPP was in a fix as it could not increase the tariffs which were bid based under the Purchase Power Agreement (PPA) with the distribution corporations.

**5. National Action Plan on Climate Change (NAPCC):** This policy was drafted in the year 2008 and as the name suggests it aimed towards sustainable energy production. India due to its geographical location is quite vulnerable to many natural disasters hence this policy helped in progressing sustainably. Moreover, this policy also presented India as a responsible member on global stage towards the global warming. Under this scheme India has decided to not exceed its per capita carbon emission more than the permissible level of developed nations. In order to achieve this target eight national

missions have been devised as given below:

- National Mission for Sustainable Agriculture (NMSA)
- National Mission for Sustaining the Himalayan Ecosystem (NMSHE)
- National Mission on Enhanced Energy Efficiency (NMEEE)
- National Mission on Green India (NMGI)
- National Mission on Strategic Knowledge on Climate Change (NMSKCC)
- National Mission on Sustainable Habitat (NMSH)
- National Solar Mission
- National Water Mission (NWM)

However, despite all these efforts many region of India are still in the dark and electricity is far from their reach. Moreover, the state governments still exercise control over a large part of the energy sector. The sector also suffers from lack of capital and fuel too.

**Challenges:** In ensuring energy security in India, there are certain challenges that need to be dealt upon with first. Only after overcoming these challenges, India can attain energy security in the coming years. These are as follows:

- **Assessment and Pricing:** The incompetent bidding and corruption are two big major hurdles in leading India towards energy security. The scams like coal-gate

exposed the inability of the government in allocating the coal reserves to certified corporations. This in turn would increase the fuel cost in thermal power plants thus directly affecting the consumers. Moreover, the subsidy would not reach to the designated consumers which would create a sense of dissatisfaction in the consumers. The pricing mechanism needs to be revised as to benefit more and more consumers.

- **Infrastructure:** It is quite evident that India still lacks the necessary equipment for transmission of energy. As a result a large share of the population has no access to electricity. After the privatization of this sector, the India companies faced a stiff competition from the international market. The Bharat Heavy Electrical Limited (BHEL) a major stakeholder in the India electric market lost to Chinese suppliers. The low production cost of Chinese material is the prime reason behind this. Therefore, the expansion and upgradation of the power distribution sector is now largely based on the investments by the Chinese suppliers. But, if the government bans Chinese products, there is a big possibility that Indian makers may be unable to cope up with the demands thus leaving the country at a standstill. Here, the government needs to step forward and boost the Indian companies to expand their reach to ever locality and corner of the country. An alternative to this could be to boost the transmission network of renewable energy development. However, the states do not

consider it necessary to spend a part of their budget on this. A strong infrastructure can ensure that renewable energy produces in a water energy rich area can reach to the remotest corner of the mountains. The delay in land allocation for renewable energy projects delays the goal of energy security further. Also there is a need of technical skill and knowledge to progress towards energy security.

- **Investment:** Capital plays a key role in expansion of any sector and this holds true in the case of energy sector too. According to the WEO 2011 India requires investment of 999 billion USD for power plants and 632 billion USD for transmission and distribution structure until 2035. Moreover, the distribution of investment needs to be as par with the demands. For instance, North-East India requires a lot of power capacity additions but they only have 0.04% in terms of private proprietorship when compared to other states like Gujarat which have almost 58% of private investment. Therefore, every region needs to be specifically focused as negligence would pay back heavily. The private investors need to be encourages in such regions and lured by means of incentives. The states providing free electricity should realize that this service is worth of payment. The payment of this service will make it economically more affordable in other regions of the country. Clear policies needs to be devised for fair competition in the coal mining sector. Fair practices and responsible governance will

bring in more investments. Also, a smooth and speedy mechanism for investment through the bureaucracy is required. The coal sector requires more privatization as it would bring in the necessary skill and technology which the government still lacks in realization of coal mining to its fullest potential. Whereas in case of renewable energy the government should provide incentives on skill and equipment rather than power tariff. Therefore good policies and governance is the foremost requirement for capital investment.

- **Lack of Fuel:** The supply of fuel to the energy production plants has always been an issue. Due to lack of fuel, the power plants are operating at lower levels than prescribed optimum levels. The investors refrain from investing the capital as they are unsure about the returns due to underutilization of power plants. Moreover, strict control over environmental resources delays the projects for mining. This slow rate of fuel production disrupts energy production. The bureaucratic procedures and corruption too hampers the availability of coal and natural gas. This makes the country more dependent on imports thus destabilizing the economy.

**Conclusion:** Most of the scholars agree to the fact that energy policies and their implementation will decide the future of energy security in India. Therefore, the process of policy making needs to be accelerated and a smooth mechanism needs to be devised. Good practices like using energy efficient appliances

needs to be accumulated in the public. The governance machinery needs to realize its role in ensuring energy security and thus clearances related to energy production should be done with haste. Moreover, the administrative clearances need to be framed together for transparency and attracting capital investment. The development of partnerships like International Solar Alliance needs to be encouraged. Deployment of technology to harness the untapped renewable resources should be done to pave the way for energy secured and prosperous India.

#### References:

- [1] **Energy Conservation Act**, 2001.
- [2] A. K. Reddy, "Indian Power Sector Reform for Sustainable Development: The Public Benefits Imperative," **Energy for Sustainable Development**, Vol. 5, 2001.
- [3] S. C. Bhattacharyya, "The Electricity Act- 2003: Will it Transform the Indian Power Sector?," **Utilities Policy**, Vol. 13, 2005.
- [4] T. Thakur & Others, "Impact Assessment of the Electricity Act- 2003 on the Indian Power Sector," **Energy Policy**, Vol. 33, 2005.
- [5] R. Banerjee, "Comparison of Options for Distributed Generation in India," **Energy Policy**, Vol. 34, 2006.
- [6] Planning Commission, "Integrated Energy Policy: Report of the Expert Committee", Government of India, New Delhi, 2006.

- [7] A. Bagchi, "Role of Planning & the Planning Commission in the New Indian Economy: Case for a Review," **Economic and Political Weekly**, Vol. 12, 2007.
- [8] A. P. Chikkatur & Others, "Sustainable Development of the Indian Coal Sector," **Energy Policy**, Vol. 34, 2009.
- [9] M. Goyal, "Repowering—Next Big Thing in India," **Renewable & Sustainable Energy Reviews**, Vol. 14, 2010.
- [10] S. Bhawan, "Report of the Working Group on Coal & Lignite for Formulation of Twelfth Five Year Plan," **Clean Coal Technology**, Vol. 145, 2011.
- [11] N. K. Sharma, & Others, "Solar Energy in India: Strategies, Policies, Perspectives and Future Potential," **Renewable and Sustainable Energy Reviews**, Vol. 16, 2012.
- [12] H. Khatib, "IEA World Energy Outlook 2011—A Comment," **Energy Policy**, Vol. 48,
- [13] 2012.
- [14] <https://www.jagranjosh.com/articles/energy-security>.
- [15] [https://en.wikipedia.org/wiki/Energy\\_policy\\_of\\_India](https://en.wikipedia.org/wiki/Energy_policy_of_India).
- [16] <http://www.electricalindia.in>