



INDIA'S ENERGY SECURITY – CHALLENGES AND SOLUTIONS

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ABSTRACT

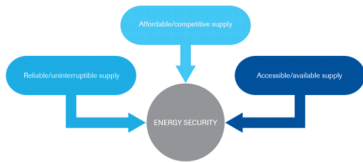
The concept of energy security generally presented as low vulnerability of vital energy systems. This paper emphasis the countries energy security as the input of energy policy framework and describes the threat impacts on energy. Many important issues such as use of non-efficient machines, high energy intensity in manufacturing processes, high aggregate technical and commercial losses in power distribution and international oil politics with interdependencies between all the dimensions are also discussed. The paper also focuses on Non-compliance of energy conservation act and its unscrupulous implication on countries energy problems. Some recommendations are also presented to make India as energy secure nation.

**KEYWORDS** : Energy security; energy independence; energy audit , energy conservation building code, security index

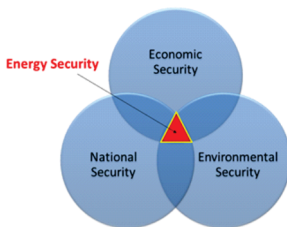
INTRODUCTION:

Energy security means every citizen must have access to uninterrupted energy supplies during all the times at reasonable price. Three conditions of energy security must be satisfied –

1. Reliable and uninterrupted energy supply.
2. Access to energy all time.
3. availability of energy at affordable and competitive price.

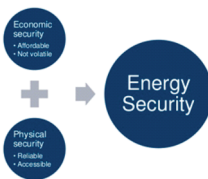


It means energy must be available to all peoples 24X7 hours from all the resources of energy such as Coal, Diesel, Petrol, Electricity, Gas etc. Many descriptions of energy security



are available in literature. The definition of Energy security by the United Nations is as 'the continuous availability of energy in varied forms, in sufficient quantities and at affordable prices' [World Coal Institute, 2005]. In terms of energy security, a key issue is resource availability, that is that the actual physical quantity of the resource obtainable round the world (i.e., long-run security). Another facet of energy security is that it would like for system dependability with continual provide of energy, significantly electricity, to fulfil

What is energy security?



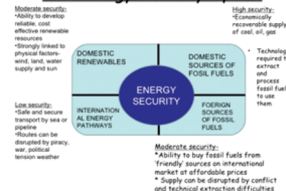
peoples demand at any given time (i.e., short-run security).

There are several factors governing the secure supply of energy [World energy outlook, 2018]:

- Diversification of power generation capacity—to enable generation costs to stay moderately stable.

- Prices—energy should be available at reasonable price.
- Stages of investment required—a vital investment is required to satisfy the forecast growth in energy demand and also the accessibility of that investment is problematic in developing countries.
- Comfort of transport—energy should be transported without delay on the market.
- Focus of suppliers—the reliance on foreign fuels from a restricted variety of suppliers will increase the chance of antagonistic market impact.
- Availability of infrastructure proficiency—countries should have access to totally different energy sources to attain a various energy combine.
- Inter joining of energy systems—the interconnection of energy systems, significantly electricity, should be thought of.
- Fuel changeover—variation within the uses of fuels might also be necessary for energy security.
- Political intimidations—the energy provide system is prone to disturbances caused by political unrest, benefits and terrorist attacks. As mentioned above, Energy security may be further classified as long term and short term security. Long term energy security correlates with national economic developments while short term energy security is related with daily demand of energy and its supply.

The energy security square



Energy security is the key of national security, economic security and environment security. It means, threats to energy security will effect economically and environmental security of the country.

Is India energy secured country?

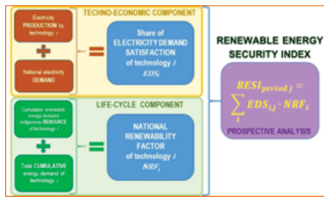
Unfortunately, the answer is no. we are among the energy unsecured country of the world.

We are depends upon the various resources of energy such as Petroleum, Natural Gases, Uranium etc. on import from other countries. Due to political imbalance of energy exporting countries or with geo-political conditions our energy supply will be adversely affected. The pricing of these energy resources are depends upon international market where we have no control. A large population of the country is still using kerosene for lighting.

The availability of fossil fuels in India such as Coal, lignite is diminishing day by day hence we cannot run our thermal power station for many years. Due to environmental mitigation, loss of biodiversity and ecosystems it will not be possible to construct large hydropower projects.

**CHALLENGES:**

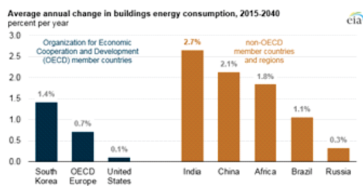
Since independence previous governments did not seriously focus on increasing the electricity generation from non-renewable energy, the only progress happens in last 4 years. It is estimated that only 15 % of the total energy demand is available from non-renewable energy sources. In addition to energy crises, we are among the most energy wastage country in the world. The energy intensity in manufacturing process is very high in India, as comparable to Europe, China, Japan and USA. It is because of less awareness of energy saving opportunities in manufacturing sectors and use of non-efficient machine.



In our country non ISI marks equipments are widely used. Although they are available in market at low prices with low efficiency and causing high energy losses. In India there are approximately 2 crores agricultural pumps sets, they consume 14 billion units of electricity per year and there is 50 lakhs pumps sets increase annually. It is estimated that out of which 80% pumps sets are nonstandard and inefficient which have the efficiency of 30% hence caused the energy losses of 70%.

Similarly, in small and medium industries numerous motors compressors, drives, belt conveyors, crushers, fans, blowers etc. are not energy efficient therefore causing the energy losses. Although there is a law which prevents production and sale of none ISI mark equipment (usually called China made, Delhi made) but these are available everywhere which has no address of manufacture, no bills, no taxes and no quality testing. In our power sectors transmission and distribution losses are very high as compare to other countries. Approximately 30 to 40% electricity is lost in distribution lines which are termed as aggregate technical and commercial losses. Government policies such as free electricity or subsidised tariff also causing loss to Discoms.

According to provision of energy conservation Act 2001, energy audit is mandatory for every industry. Unfortunately, most of the industry did not follow to conduct this. The act also made it mandatory to follow national energy conservation building code (ECBC) in every big commercial building (such as shopping malls, hospitals, multiplex etc.) but municipal corporations are not implementing the code strictly.



**RECOMMENDATIONS –**

for being energy secure nation following remedies must be enforced: We must shrink our dependency on large thermal and hydropower of generation, and to increase the distributed power generations from Solar, Wind, geo thermal and tidal power sources. Indigenous sources of petroleum and natural gases must be exploited more and to increase the production reducing our dependency on import. In order to increase the number of electric vehicles, Government must encourage and protect the production and sell of electric busses, electric cars and electric two wheelers. To establish electric vehicles charging station and every places. The physical security is required in all power houses, transmission lines and substations to prevent the terrorist attack. Strict rule and policy against the production and sells of non-efficient, non-standards equipment. Strict action must be taken against industries not conducting annual energy audit and compliance of ECBC . By

reducing the line loss of transmission and distribution companies and no to free electricity. Public awareness and publicity on energy conservation is the need of time. By implementing these measures India can become an energy secured nation.

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