



## RESEARCH ARTICLE

### A BRIEF STUDY OF THE ENERGY CRISIS AND ITS SECURITY

**\*Binod Kumar Goutam**

Assistant Professor, Manrakhan Mahto B.Ed College, Kedal, Ranchi

#### ARTICLE INFO

##### Article History:

Received 17<sup>th</sup> February, 2025  
Received in revised form  
28<sup>th</sup> March, 2025  
Accepted 08<sup>th</sup> April, 2025  
Published online 28<sup>th</sup> May, 2025

##### Key words:

Energy Crisis, Industrial Revolution, Industrialization, -Business and Non Business Sources of Energy, Geopolitical Weapons, River Valley Project, Gas Tragedy.

**\*Corresponding author:**  
**Binod Kumar Goutam**

#### ABSTRACT

The energy crisis is a global problem that arises mainly due to the excessive use of fossil fuels, limited availability of resources, and increasing energy demand. This crisis not only affects economic growth, but also fuels environmental imbalances and climate change. Development of alternative and renewable energy sources such as solar, wind, biomass energy and hydropower is essential to ensure energy security. In addition, energy conservation, use of efficient technology and policy reforms by the government also play an important role. The study briefly discusses the major causes, impacts and safeguards of the energy crisis to strive towards a sustainable energy solution.

**Copyright**©2025, **Binod Kumar Goutam**. This is an open access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**Citation:** Binod Kumar Goutam. 2025. "A Brief Study of the Energy Crisis and Its Security". *International Journal of Current Research*, 17, (05), 32739-32742.

## INTRODUCTION

Energy is the basis of economic development. No country can progress unless it has sufficient energy resources. Humans have been using energy since ancient times. Earlier the population was less and the needs of human beings were limited, but with the passage of time, the population increased and human needs also started increasing. However, in the late 18th and early 19th centuries, there was an industrial revolution in England, whose influence soon spread to other areas of the world. As a result, industrial development started taking place in different parts of the world and the demand for energy also increased. Along with industrialization, urbanization and means of transport also increased, due to which the demand for energy also increased, various types of energy sources have been used for this, which are as follows:

**Sources of Energy:** There are commercial and non-commercial sources of energy. Commercial sources include coal, petrol, and electricity as they are bought and sold. They account for over 50 per cent of all energy sources consumed in India. Non-commercial sources of energy include firewood, agricultural waste, and dry dung. These are non-commercial, because we find them in nature/forests. Usually commercial sources of energy (except hydropower) are exhausted while non-commercial sources can be recycled. More than 60 per

cent of Indian households depend on conventional sources of energy for their regular food and heating needs.

**Non-Conventional Sources of Energy:** There are three more sources of energy that we usually call non-conventional sources, they are solar energy, wind energy and tidal energy. Being a tropical region, India has unlimited possibilities of producing these three types of energy. This will be possible only if an existing cheaper technology is used or a cheaper technology is developed.

**Causes of the energy crisis:** In the modern era, economic progress is taking place rapidly and the demand for energy is increasing tremendously, due to which energy crisis has arisen worldwide. With the invention of the steam engine, the demand for coal started increasing and in the 19th century, 90% of the world's energy was obtained from coal, but now many reserves of coal have been exhausted and petroleum, natural gas, hydropower and nuclear energy are being used more. As a result, the relative importance of coal has diminished and it now provides only 55% of the world's energy. In areas where coal has been used on a large scale, the coal reserves are almost exhausted or are about to be exhausted. On the other hand, petroleum also started to be used when oil production started in 1859 AD in Tittsville, United States. Soon, oil was produced in the Appalachian and other regions of the United States, and the importance of oil as a

source of energy increased. Now, a large number of oil reserves in this country have been used. Oil reserves were discovered in the Middle East in the early stages of the 20th century and became the world's most important producing region after the First World War. Over time, oil became an important source of energy and the importance of the Middle East countries in the political activities of the world became very high. The situation now is that mineral oil in the hands of the Arab nations is an astonishing geopolitical weapon by which they demonstrate power. These countries voluntarily fix the price of oil by increasing or decreasing the production of oil and affect the world economy. In terms of oil supply, even a powerful country like the United States has to bow to these countries. These countries can create an energy crisis for any country by stopping selling oil to that country.

In 1973, the Organization of the Petroleum Exporting Countries raised the price of oil from 51.5 per barrel to 57 per barrel. The reason given is that the prices of other commodities have gone up and these countries want to make maximum profit till the limited stocks are exhausted. This led to energy crisis in many countries of the world and developing countries like India had to spend three-fourths of their total imports on oil imports. In 1981, the oil price was 20 per barrel, but before that it had gone up to 34. In 1991, the oil prices again went up and in July, 2008, the oil prices reached their peak of 147 per barrel. This led to an economic crisis caused by energy crisis around the world as many developing countries did not have enough foreign exchange to buy expensive oil. This led to a decrease in oil sales. Stockpiles of saleable oil with producing countries fell to 37 per barrel in 2009. It is clear from the above description that energy crisis often arises due to changes in the supply and prices of oil in the world.

### Ways to avoid the energy crisis

#### The following measures have been taken to overcome the energy crisis:

- Most of the world's energy is now derived from coal. The use of coal causes environmental pollution and continuous use leads to depletion of coal reserves. Therefore, before coal is used, it should be refined and the technology using coal should be improved.
- A lot of coal is destroyed by fires in coal mines. There is a need to prevent and reduce such accidents.
- The importance of mineral oil and natural gas as sources of energy is increasing continuously. Their reserves are also limited. At the rate at which the use of oil is increasing, the world's oil reserves will be depleted in the next 50 years. Therefore, the need to conserve oil is very high.
- The sources of nuclear energy are also limited, although their future is bright. It requires high-end technology and often leads to fatal accidents. Therefore, its production requires high quality technology which is quite expensive.
- The use of non-conventional sources (solar energy, wind energy, tidal energy, geothermal energy, etc.) should be encouraged in place of conventional sources of energy (coal, oil, gas). These are incalculable resources of energy and do not pollute the environment. But cheap and useful technology could not be developed to use these resources. If there is progress in this direction, the energy crisis can be overcome to a great extent.
- Developed countries should provide financial and technical assistance to developing countries rich in natural resources

for efficient use of energy resources. This will lead to judicious use of natural resources, reduce energy crisis and help in removing regional imbalances.

- The problem of energy crisis can also be solved to a great extent by establishing an imbalance in economic development and population growth.

### Influence

The widespread impact of the energy crisis is seen on a global scale, affecting economic, social, environmental and geopolitical aspects. Its major effects are as follows:

- **Economic Impact:** Due to the increase in energy prices, the cost of production increases, which leads to inflation, decline in industrial production and economic instability.
- **Social Impact:** Lack of energy reduces employment opportunities, affects the standard of living, and increases inequality in society.
- **3.impact:** Over-exploitation of conventional energy sources (coal, petrol, diesel) leads to pollution, climate change and loss of natural resources.
- **Political and Geopolitical Impacts:** The competition for energy resources increases the likelihood of tensions and conflicts between countries, affecting global peace and stability.

To deal with the energy crisis, energy security, development of renewable energy sources, energy conservation and implementation of effective policies are essential to ensure sustainable development and global stability.

**Energy problem in India:** At the international level, including in India, it is a matter of serious concern as to what should be the current energy substitute. Our alternative resources must be such that they are eternal, renewable and do not leave in between, like coal and petrol. The cost of installation and maintenance should be reduced, foreign exchange spent on conventional energy sources should be saved, which can strengthen the national economy. Science and the modern economy cannot give us the means to fulfill so many conditions at the same time. For this, we have to go to nature. Nevertheless, the sun, the wind, the water, the mother earth and the fire element have to be respected, they will have to be circumambulated, they will have to be received, then the twenty-first century, let alone the coming hundreds of centuries, will be free from energy crisis.

The first thing to look at in this series of options is the Sun, which is an infinite reservoir of energy. About 90% of the sun's energy is wasted while reaching the earth from the sun. It is self-evident that sunlight is pollution-free and is equally accessible to all. India is fortunate that we get plenty of sunshine for 250 to 320 days in a year. India is fortunate in terms of solar energy. Surya Dev is pleased to give us 20 thousand times more energy than the energy we need. While the reality is that only 10% of the sun's energy comes to Earth, 90% remains in the atmosphere.

**Solar energy:** Today, solar energy is affecting every sphere of life. All kinds of food can be prepared in solar stoves, whether it is Amish or vegetarian, there is no avoiding cooking to the Sun. About 50% of the total energy consumed in the country is used at home. Whether it is keeping houses cool or warm, drying crops, irrigating water pumps, lighting up remote

villages with electric lights, turning on TV and radio, heating water or desalinating it, solar energy can be helpful in all these tasks. For this, we need solar photovoltaic cells. Solar cells are small pieces of circular and flat-shaped blue of pure silicon, which can directly convert the sun's rays into energy. The electricity generated from it requires no modern powerhouses, no iron or cement poles or copper wires. There is no question of coal. Keeping in mind the paradigm of reducing electricity consumption and keeping the environment clean, Japan, Israel and America have installed 20 lakh, 6 lakh and 80 thousand solar water heaters respectively in their respective countries, which are a source of inspiration for us. A solar power station has been set up at Gwal Pahari near Delhi where research, development, testing and certification work is done. Solar Photovoltaic Centres have been opened at many places in the country. They produce electricity from 1 kW to 2.5 kilowatts. Homes, factories, hotels and hospitals have water heating plants that can heat 100 litres to 125,000 litres of tested water. Solar stoves – A normal family can save at least two kilos of wood. In India, if 24.4 crore households are considered, 4.7 lakh tonnes of wood can be saved every day.

As far as farming is concerned, scientists have proved that if pollution is to be avoided due to spraying chemical fertilizers, polythene bags should be laid in the fields. The heat received from the sun's rays will not go back to the atmosphere due to the effect of the greenhouse and this heat will be able to replenish the energy of chemical fertilizers. We need to develop aptitude and aptitude for the use of solar energy to overcome the potential dangers in the future.

**Windmills:** Fast windmills are proving that wind is the cheapest way to generate electricity and lift water. In the United States alone, 1500 MW of electricity is being generated rapidly from wind energy. In India, it has a capacity of up to 20,000 MW. There is a small village in New Mexico called Clytoton. Where 15% of electrical energy is obtained from windmills only. Be it pumping system, electricity generators, irrigation work, water harvesting from wells, power generation or construction of windmills, wind is helpful everywhere. Asia's largest power project has been commissioned at a place called Lamba in Gujarat, in which 50 wind turbines generate 200 KW of electricity. None of these activities cause any harm to the environment. At present, there are five wind farms in the country with a capacity of 3.63 MW and generating 4.5 million units.

**Hydro Energy:** It is difficult to estimate how much power there is in water. Bhakra Nangal, Damodar Mahi, Hirakud and Chambal Valley projects have changed the map of development of the country. Stopping the flow of water by building dams and generating electricity at a high speed – this is a mouth-watering success that we have got to face the challenges of the energy crisis.

**Energy through Biogas:** You may ridicule someone by calling it 'Gobar Ganesh', but today cow dung has proved that if its potential i.e. biogas is fully exploited, then prosperity can come in the country. Instead of using the highly useful cow dung for fertilizer, farmers make their cakes and cook food by burning the stove. If cow dung is used as biogas, 13 crore tonnes of wood can be saved every year. Poor families have neither kerosene nor cooking gas, the grass of their stoves has been made of wood from the forest.

This hunger for the stove cleared thousands of square kilometers of forests. As a result, fertile soil was washed away and frozen in the river beds, crops were destroyed, rain clouds were ruined, and the environment was spoiled. If biogas is harnessed, agricultural production will increase, foreign exchange worth crores of rupees will be saved, forests will be conserved and oil imports will be reduced. Fortunately, India has 200 million tonnes of biogas. This much gas can yield 105 million tonnes of fireborne fuel, equivalent to 275 million barrels of oil. Biogas plants can simultaneously contribute to work like cooking gas, fertilizer for farm and electricity for homes. Now these plants are being set up in every village. Gas lamps give milky light at night. This saves a lot of electricity. Whether it is drawing water from wells or running flour mills, operating a kutti machine or thresher or generating electricity with the help of gas powered diesel engines, all this is possible with biogas.

In 1981-82, the 'National Project for Biogas Development' was established in the country. In 1983, the Government of India launched a campaign for improved cookstoves, and the effect was that an improved stove started saving 700 kg of wood per year, saving energy, eliminating smoke from the kitchen forever, increasing employment opportunities in rural areas and bringing science to every household. An upgraded stove means saving 10 trees from being cut. The fertilizer that is available through biogas. With this, we can avoid the dangers of chemical fertilizers. Animal excreta contaminates the environment, but if it is used to make cow dung gas, then the question of pollution does not arise. Along with cow dung, vegetable leaves, hyacinths and other waste materials are also helpful in producing gas. If gas is produced from cow dung instead of cow dung, then several lakh liters of kerosene can be saved every year and air pollution caused by kerosene can also be stopped. Gobar gas contains 55-88% methane gas, which is not poisonous. Today, about 20 lakh gober gas plants are operational in the country, which are proving helpful in cooking, fertilizer supply and maintaining a pollution-free environment.

**Non-Conventional Energy Sources of Government of India:** The Ministry of Non-Conventional Energy Sources, Government of India, is also providing subsidy to non-conventional energy sources such as solar, lanterns, SPV street lights, SPV water pumps, solar water heaters, community biogas plants and individual biogas plants through various state governments of the country.

It is our responsibility to get rid of the monster of pollution by using these cheap non-conventional energy sources and prove to be helpful in meeting the needs of the world and national economy.

The whole point is that those non-conventional sources of energy are free from pollution in every way. If we use them, there can be no accidents like the Bhopal gas tragedy or tragedies like Chernobille.

Disasters caused by oil spills in the sea can be averted, the destruction of forests can be stopped, the climate can be purified, water can be saved from factory waste and the future of mankind can be easily secured.

Today, there is a need for us to adopt more and more alternative sources of energy. If this happens, we will not face

a problem like energy crisis for thousands of years and nature will also remain pollution-free.

## CONCLUSION

The energy crisis has been and is still being considered as a set of discrete economic and technological problems facing the economic and political leadership of individual countries. Forecasts of the development of these problems are generally limited to a time frame of two decades or more, usually by the end of the century.

In this address, it has been argued that this approach is very short-sighted and too narrow. It is necessary to look far into the future, as the policies and choices adopted now will affect the generations ahead.

## REFERENCES

1. Growth of Indian Economy
2. Arihant Publications Books (India) Limited
3. <https://www.wikipedia.org>
4. <https://www.testbook.com>
5. ChatGPT

\*\*\*\*\*