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10. ENERGY RESOURCES AND ITS PRESENT USE IN INDIA

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ABSTRACT

Energy is an essential ingredient for human life on earth. It is used in all activities of society, for preparing meals, making cloth, building house, industries and other activities. Human beings require energy at an increasing rate for their sustenance and well-being. The present study is an attempt to understand the details with types of energy use in India. The largest energy source is coal, followed by petroleum and traditional biomass. According to the 2011 Census, the household-level data indicates that only 55.3 per cent of rural homes used electricity as the primary source for lighting. Energy access, with about one fourth of the population lacking access to electricity and energy security, with the country relying on imports for a considerable amount of its energy use, particularly for crude petroleum are key challenges that the country faces with respect to energy. Wide disparity in energy use pattern between the haves and have-nots, urban and rural are also a cause of concern.

KEYWORDS: Energy, Human being, Sources of Energy, Uses of Energy.

INTRODUCTION

Energy is required for every aspect of our daily life. The requirement of energy has gone up in the last few years and would touch unimaginable proportions because of population explosion and improved living standards in our country. In rural India, people once used cow dung and wood for their energy needs. With better economic conditions, more and more people are using cleaner and more convenient forms of energy viz. electricity and gas for home usage. The availability of both these forms of energy is limited. The shortage results in frequent power breakdowns, disrupts daily life, causes manpower loss in offices and adversely affects the industrial production and thereby the economy.

Energy is the capacity to do work and overcome resistance. Its unit is Joule. Heat, light and electricity possess the capacity to do work. They provide what are called heat energy, light energy and electric energy. Mechanical energy, heat energy, light energy, sound energy, electrical energy, chemical energy and atomic energy are different forms of energy. Mechanical energy can be classified as potential energy and kinetic energy.

Energy is an essential input and a basic requirement for oiling the wheels of production and has manifold applications in domestic, social and economic activities. As Schumacher says, "There is no substitute for energy; the whole edifice of modern life is built upon it. Although energy can be bought and sold like any other commodity, it is not 'just another commodity', but the pre-condition of all commodities, a basic factor that is equal to water and earth". Energy is an important input in all sectors of the economy of any country. The standard of living of a given country can be directly related to per capita energy consumption. Presently, energy crisis has become the major concern all over the world because of two reasons. The first, the population of the world has increased rapidly and the second, the standard of living of human beings has increased. The per capita energy consumption is a measure of the prosperity of the nation.

OBJECTIVES OF THE STUDY

- 1.To understand the present pattern energy use in India.
- 2.To identify the production of commercial sources of energy.
- 3.To know the availability of energy resources in India.

METHODOLOGY

This study is based on secondary data which is collected from the Directorate of Economics and Statistics, published reports of news paper, journals, websites, etc.

PRESENT STATUS OF ENERGY RESOURCES USE IN INDIA

In India, of the 121 crore Indians, 83.3 crore live in rural areas while 37.7 crore stay in urban areas. Energy availability, access and affordability are vital if our country is to keep its pace of development. As on 30.11.2017, electrification in 3,269 census villages has been reported as unelectrified. Among them, 1,052 villages have been reported un-inhabited. Remaining 2,217 villages are expected to be electrified by 1st May 2018. These 2217 villages are located in the State of Arunachal Pradesh (1069), Assam (214), Bihar (111), Chhattisgarh (176), J&K (99), Jharkhand (176), Karnataka (8), Madhya Pradesh (34), Manipur (54), Meghalaya (50), Mizoram (11), Odisha (182) and Uttarakhand (33) 21% of our villages and about 50% of rural households are as yet not

electrified. It is targeted to achieve universal household electrification in the country by 31st March 2019.

During 2015-16, the per capita energy consumption in India is 1075 kilowatt-hour (Kwh). According to the official data the total installed capacity of the country stood at 315426.32 MW, as on February 28, 2017. Thermal power plants constitute 68.2 % of the installed capacity and hydropower about 14. There are 21 nuclear power reactors in the country with a total installed capacity of 5780 MW.

The peak power deficit was 1.6 % during 2016-2017 as against 3.2% last year. As on March 2017, 99.20 percentages of villages (ie. 5, 92,972) were electrified. India's per capita electricity consumption is 1075 kWh in 2015-16.

There is a wide disparity in the per capita energy consumption pattern between rural and urban areas. As per NSSO 68th round data, 67.3% of rural households depend on firewood for cooking and about 15% on LPG as against 14% of urban households depend on firewood for cooking and about 68.4% on LPG. Similarly for home lighting, while 26.5% of rural households depend on kerosene and 72.7% depend on electricity, 96.1% of urban households depend on electricity and 3.2% on kerosene. However, the number of LPG connections in the country has been increasing and as on 1.11. 2017, the LPG penetration in the country stands at 78.3%.

Women spend up to four hours of their productive time of a day in fetching fuel wood and cooking. Children too are involved in collection of fuel wood. A significant amount of rural energy used is derived from biomass. This puts heavy pressure on the already declining vegetation in villages. Use of inefficient chulhas often increases the drudgery of women and children who are involved in collection of fuel wood. Moreover, the smoke generated during indoor cooking from these chulhas affects the respiratory health of women and children to a great extent.

Increased energy conservation, improved energy efficiency and enhanced energy production from renewable sources can definitely lead India in general and rural areas in particular to become self sustainable communities.

PRODUCTION OF COMMERCIAL SOURCES OF ENERGY

Production of Coal, lignite, crude petroleum, natural gas & electricity:

- Coal production in the country during the year 2015-16 was 639.23 million tones

(MTs) as compared to 609.18 MTs during 2014-15, registering a growth of 4.93%.

- The Lignite production during 2015-16 was 43.84 million tones which is 9.18% lower than the production during 2014-15 (48.27 million tons).

- Considering the trend of production from 2006-07 to 2015-16, it is observed that coal production in India was about 430.83 MTs during 2006-07, which increased to 639.23 MTs during 2015-16 with a CAGR of 4.02%.

- During the same period, the CAGR of Lignite was about 3.43% with production increasing from 31.29 MTs in 2006-07 to 43.84 MTs in 2015-16.

- Production of crude petroleum increased from 33.99 MTs during 2006-07 to 36.95 MTs during 2015-16, a CAGR of about 0.84%.

- The CAGRs for natural gas and electricity were 0.16% and 4.68% respectively for the period 2006-07 to 2015-16. Electricity has experienced the highest CAGR i.e. 4.68% among all the commercial sources of energy since 2006-07 to 2015-16.

AVAILABILITY OF ENERGY RESOURCES IN INDIA

I) Availability of Coal and Lignite

→ The total availability of raw coal in India in 2015-16 stood at 843.27 MTs and that of lignite at 45.47 MTs.

→ The availability of coal in the year 2015-16 increased by 1.60% compared to 2014-15. The availability of lignite decreased by 8.27% during the same period.

→ The availability of coal has increased at a CAGR of about 5.74% during the period from 2006-07 to 2015-16. This increased availability might be attributed to the increase in the coal production (482.37 MTs during 2006-07 to 843.27 MTs during 2015-16) supplemented by imports.

→ The availability of lignite has increased at a CAGR of about 3.65% during the period from 2006-07 to 2015-16.

II) Availability of Natural Gas

→ The production of natural gas has steadily increased from a mere 37.60 BCM during 2006-07 to 48.83 BCMs during 2015-16, registering a CAGR of 2.65%. Most of this increase in the indigenous production is due to discovery of new reserves.

III) Availability of Crude Oil and Petroleum Products

→ The availability of crude oil in the country increased from 145.49 MTs in 2006-07 to 239.80 MTs during 2015-16.

→ During this period, crude oil production

increased from 33.99 MTs to 36.95 MTs² and the net import increased from 111.50 MTs to 202.85 MTs between 2006-07 and 2015-16. There was increase of 5.69% in availability of crude oil during 2015- 16 over 2014-15.

IV) **Availability of Electricity**

→ Electricity available for supply increased from 6, 39,008 kwh in 2006-07 to 11, 04,228 kwh in 2015-16, thus recording a CAGR of 5.62% during this period. The availability of electricity increased at 4.73% in 2015-16 over its value in 2014- 15.

CONCLUSION

This study reveals to know about the uses of energy, Production of commercial sources of energy and availability of energy resources in India.

- Energy is the capacity to do work. Energy comes in various forms, such as motion, heat, light, electrical, chemical, nuclear energy, and gravitational. Total energy is the sum of all forms of the energy a system possesses.
- The internal energy of a system is made up of sensible, latent, chemical and nuclear energies. The sensible internal energy is due to translational, rotational, and vibration effects of atoms and molecules.
- Coals are sedimentary rocks containing combustible and incombustible matters as well as water. Coal has impurities like sulfur and nitrogen and when it burns the released impurities can combine with water vapor in the air to form droplets that fall to earth as weak forms of sulfuric and nitric acid as acid rain.
- Petroleum oil is a naturally occurring flammable liquid consisting of a complex mixture of hydrocarbons of various molecular weights, which define its physical and chemical properties, like heating value, color, and viscosity.
- Natural gas is a naturally occurring mixture, consisting mainly of methane.

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