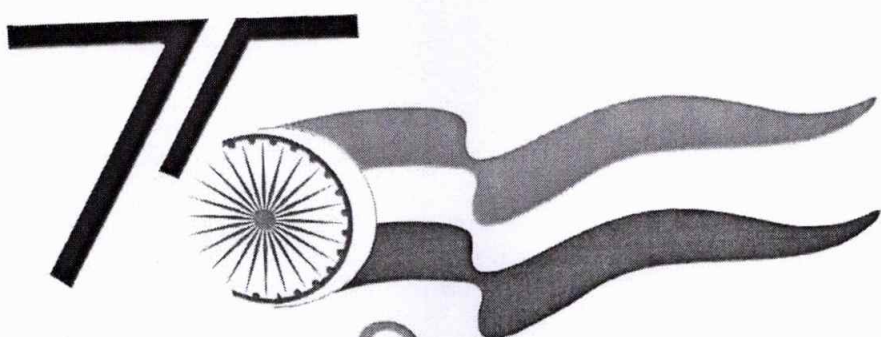


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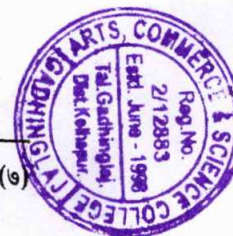


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इतिहासाचार्य विभागा. राजवाडे संशोधन मंडळ, धुळे



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Energy Sector and Its Impact on Environment

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Energy has been universally recognized as one of the most important inputs for economic growth and human development. There is a strong two-way relationship between economic development and energy consumption. On hand, growth of an economy, with its global competitiveness, hinges on the other hand, the level of economic development has been observed to be reliant on the energy demand. In an effort to meet the demands of a developing nation, the Indian energy sector has witnessed a rapid growth. Energy is one of the major drivers of a growing economy like India.

It is a fact that energy is a crucial input for both the production as well as consumption activities. But only non-traditional energy like hydroelectricity, wind energy, solar energy, tidal, geothermal energy and nuclear energy is eco-friendly and conducive for the environment. The climate change is a crucial problem the globe in general and India in particular has been facing. The evil consequences of climate change are so severe and long period that its mitigation is inevitable. This can be enabled by the energy demand supply management in the country like India. It is the situation of the world in general and developed countries in particular which are highly responsible for the climate change.

II) Statement of the Research Problem

There is a great change in climate due to traditional sources of generation of energy. High GHG emission is produced by energy sector out of total GHG emission energy sector produced

58 percent GHG emission in India. There is great impact on climate change. To control this serious problem, there is great need for energy management to facilitate decrease in global warming mitigation of climate change and to achieve sustainable growth. Hence, I have selected the topic for my research entitled, "Energy Sector and Its Impact on Climate Change."

III) Objectives of the Study

The major objectives of the present research study are as follows:

1. To study the Energy Sector and Climate Change
2. To examine Production of Primary Energy
3. To assess Total CO₂ Emission from Consumption of Energy
4. To examine Sectorial Composition of CO₂ Emission in India

IV) Research Methodology

The study is based on the secondary sources of data only. The study has collected necessary secondary data from various sources like various publications of the central, state government of energy sector various publications of foreign governments, international bodies and their subsidiary organizations, journals, books, magazines and newspapers, websites, reports and publications of various associations connected with energy sector, reports prepared by researchers etc. documents and other sources of published information about energy sector and climate change.



In this direction the period chosen for the study is from 2001-02 to 2015-16 keeping in view the objectives of the study, some appropriate statistical techniques such as compound growth rate (CGR), percentage, mean, standard deviation, coefficient of variation, have been employed for the analyzing of data.

Meaning of Climate Change:

a) The Inter-Governmental Panel on Climate Change (IPCC) :

"Climate change is 'a change in the state of the climate that can be identified (e.g., using statistical tests) by changes in the mean and/or variability of its properties, and that persists for an extended period, typically decades or longer. It refers to any change in climate over time, whether due to natural variability or as a result of human activity". (IPCC-5, 2014).

b) UNFCCC :

The definition provided by UNFCCC is slightly different, as it emphasizes on 'a change that is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and that is in addition to natural climate variability observed over comparable time periods'.

Factors Influencing Climate Change :

The important factors, which are responsible for climate change and are causally contributed by human civilization on earth, are listed below:

- Greenhouse Gases
- Deforestation
- Land-use Change
- Vehicular Usage
- Energy Usage

VI) Energy Sector and Climate Change :

Climate change, and more specifically the carbon emissions from energy production and use, is one of the more vexing problems facing society today.



The energy sector particularly closely associated with climate change because energy is central both to the problem and to its resolution. Energy-related emissions (including energy used in transportation) account for over two thirds of anthropogenic greenhouse gas (GHG) emissions and contribute well over 80% of worldwide emissions of CO₂, the main GHG, as a direct result of fossil fuel combustion. Energy also accounts for around one third of the global emissions of methane, the second largest source of GHGs, in fugitive emissions, mainly from natural gas production; transportation; and coal production. In addition, energy contributes a small share of global emissions of N₂O, the third largest source, principally from biomass burning.

Coal, Gas and Diesel being the major sources of power in World, the emissions of GHGs are also on the rise. The GHG emission level estimation, however, depends on utilization of installed capacity. (World Energy Outlook, 2013, p. 15)

The detailed analysis of energy sector and its contribution to global warming and climate change is endeavored below

Production of Primary Energy :

The share of Non OECD countries in the primary energy production was greater than that of OECD countries. It appears that the primary energy production in China is greater than that of India. In the year 2000, the share of China in primary energy production was 9.53%, it increased to 18.94% in the year 2012. During the same period the share of India in primary energy production was 2.48% and 2.95% respectively. It clearly suggests that there has been progress in primary energy production of India.

Total CO₂ Emission from Consumption of Energy :

It is a well-discovered fact that the energy sector in general, and thermal energy in particular





is a prominent contributor to CO₂ emissions and thereby to the global warming as well as climate change. It is observed that it is Asia & Oceania is a dominant contributor in Total CO₂ emission from energy consumption in the world with 31% in 2000 and 45% in 2012. It is followed by the North America and Europe group of countries.

The countrywise analysis reveals that China was dominant with 13% and 25% shares during 2000 and 2012. The contribution of India in CO₂ emission from energy is rising from 4% to 7% during the same period, is no doubt a considerable thing.

Sectorial Composition of CO₂ Emission in India :

Even though, comparatively the CO₂ emission of India is after the China. When its contribution in the world taking into account the level of development is considered, it is no doubt a thing of concern. Hence, its sectoral distribution is very much necessary to be studied.

It is revealed that the energy sector is dominant with more than 50% share in total CO₂ emissions in India. It is followed by industry sector. Likewise,

the contribution of transport in CO₂ emission is also considerable, and not negligible.

IX) Conclusion:

There are only few countries, which are dominant producers of the primary energy. They consist of United States, Russia, China and India. The relative share of India is lower, but no doubt, it is considerable. The USA is a dominant country in the world in the production of primary energy. Comparatively, UK, Japan, France, Canada, Germany, Brazil are meagre producers of primary energy. North America and Asia & Oceania group of countries were with 29%, 27% shares in world CO₂ emission in 2000, which stood at 24% and 32% in 2012. It is followed by the Europe with 21% and 16% respectively. The country wise analysis reveals that the contribution of China is

significant and increasing, which rose from 6.32% to 11.31% respectively during the same period. India contributed with 3% and 4% respectively, is no doubt, is a thing of concern. Energy sector is dominant with more than 50% share in total CO₂ emissions in India. It is followed by industry sector. Likewise, the contribution of transport in CO₂ emission is also considerable, and not negligible.

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