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Problem of Energy Resource Management System and Necessity of Education for Properly Energy uses in India

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Abstract: ***Education is necessary for properly energy uses.An educated person always tries to save energy. Energy like electricity is very important for our running days. Misuse energy is harmful for our country like India. So it is not desarible.Educational knowledge makes understand the people about the importance of energy resources in our life and its suitable uses. Moreover, getting proper education people acquire the knowledge of actual uses of energy resources. Energy plays a crucial role in economic development. Rapid growth of GDP needs to be supported by an increase in energy consumption. In India there are huge numbers of resources which are mainly use for energy generation. High energy encourages more production and raises the national income of the country. It also reduces the dependence on trade for importing materials for energy creation like crude oil. So this paper tries to pick up the importance of education for proper utilization of energy resources and its management problems.***

Keywords: Education, electricity, solar cooker, Renewable energy, Non-renewable energy, hydroelectricity, power generation.

I. INTRODUCTION

Education plays a crucial role in energy sector. People get knowledge about the definition of renewable & nonrenewable sources of energy and came to know how energies are created from natural resources. Educational knowledge is also helpful for reducing cost of production of energy and efficient management of energy producing sector.

Nonrenewable energy like sunrays, air, biogas, seatide, gobar gas also can create electricity at lowest cost in easy way. Solar cookers are used for cooking by using sunrays. Solar electricity is used in home and other important sector where electricity cost is very low. Moreover; electricity is also produced from air which is mostly situated in Rajasthan, Gujrat and Madhya Pradesh state respectively.

For producing water electricity technology and engineering knowledge are necessary because with the help of dionamo, by rolling the wheel of turbine, electricity is produced from flow of water stream. For making tall & high quality river dam with lock gate through which water is flow, heavy engineering technology should need to implement. For all these education is important. An educated person understands nothing and always misuses energy.

The main sources of energy in India are petroleum, gas, coal and hydroelectricity etc. Energy sources are mainly two types like renewable and non-renewable energy.

Some energy requirements are also met by nuclear energy and renewable sources of energy. For industrial production, irregular supply of energy hampers the total production process. So to make country's economy strong and to improve the country's infrastructure, importance should be given for more energy generation. Although domestic production of energy will continue at a high level.

The main area of import will be crude oil where nearly 78% of the demand will have to be met from imports by the end of twelfth plan and the import dependence is expected to rise from 18% in 2011-12 to 21% in 2016-17 and further to 25% in 2020-21.If the projected domestic production levels of coal, petroleum, and natural gas is not achieved then the level of import dependence would increase further if the projected GDP growth rates are to be maintained. But in recent years our country, India is suffering from major energy crises.

More energy crises are seen in case of crude oil. Although the government in this country has undertaken certain measures to take it, yet the problem remains and calls for serious attention. Therefore, this research paper tries to highlight the necessity of education for energy uses and the problems of energy resource management system. This paper also tries to find out the ways for solving the problems.

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II. OBJECTIVES OF THE STUDY

The objectives of the study are

1) To study about the necessacity and role of energy in economic development and to know about Indian available energy resources.
2) To know about the problems of energy crises and to suggest the measures for solving the problems.
3) To know about the government undertaken measures for removing the problems.
4) To give the actual picture of energy generation.
5) To put forward an ideal model for improving energy generation system and compare it with total energy generation in India.
6) To put forward the recommendations for removing energy crisis problem and developing energy generation process.

III. METHODOLOGY OF THE STUDY

The paper is based on both primary and secondary data sources have been collected through extensive survey in different energy plants and factories. The primary data have been collected mostly by direct contact method form the different energy generating organizations and workers & employees of energy plants & factories and also in various villages and urban areas who are consuming energy in India. The questionnaires and interview schedules have been taken to carry out the whole investigation. The secondary information have been collected from different literatures like magazines, newspaper, journals, books, reports published by government authority, websites, university libraries, planning commission, govt. publications (central and state), state and district wise statistical office and energy supply office, various energy sector developing committees etc.Most popular energy plant and factories are repeatedly visited and various information's were documented time to time.

A. Statement Of The Problem Of Energy Crises

The important aspects of the energy crisis are

1) *Oil Prices and The Inflationary Pressure:* The energy crisis in India began with the hike of oil prises in 1973.In this year; the OPEC (Organization of petroleum Exporting Countries) had raised oil prices by more than four times. Since then the oil prices have been increased several times by the OPEC.This has often contributed to the inflationary pressure which even otherwise has shown no signs of abating. Mineral oil is presently the major source of energy for transport, industry and agriculture. It is also used as household fuel. Therefore the policy of the OPEC to continuously raise the prices of petroleum products pushed the economics of oil importing countries into the dark –era of cost-push inflation. India due to its considerable dependence on the Gulf oil suffers from energy crisis.
2) *Growing Oil Imports Bill:* Beginning from 1973-74 India's oil imports has recorded a substantial increase. In 1973-74 India had imported oil and other petroleum products amounting to RS 1100 crore.Since then oil bill has swollen rapidly. Prior to the hike in the oil prices, oil imports were not a major burden as they were merely 12-13% of Indian's exports. They rose to 44% of the country's exports in 1973-74 and further to 44.4% in 2014-15.Nearly a little less than half of total export earnings were used up just to meet oil import requirements in 2014-15.
3) *Demand-Supply Imbalance In Commercial Energy:* There is huge demand-supply gap in commercial energy with the result that there is high dependence on imports. The total energy requirement is expected to touch 752.60 million tons of oil equivalents while domestic production is projected to rise to 484.84 mtoe.Thus as much about 36% demand is expected to be met through imports. This continued heavy dependence on energy imports is a serious cause of concern and calls for an appropriate energy strategy in the future.
4) *Energy Resources and Their Exploitation:* In terms do domestic availability, coal is the most important source of commercial energy in India. The total reserves of coal are 301.6 billion tones. The recoverable oil reserves in the country are limited. The reserves of gas are about 1,120 billion cubic metres.Hydro-electric potential is estimated at 1, 45,320 MW.However, only about one-fourth of this potential has been developed till date. The main causes for slow development of hydro-power include difficult and inaccessible potential sites, difficulties in land acquisition, rehabilitation, environmental and forest-related issues. Uranium and thorium are the two minerals used for generating nuclear energy. Uranium reserves in India are about 34000 tones of which a little less than half are economically exploitable. Thorium deposits are placed at about 3, 63,000 tonnes.But India's position is very unsatisfactory comparing with other country in respect India's per capita reserves. While India has reserves of 71 tons of coal per person, the USA has 13,747 tonnes.India's per capita oil reserves are very small 0.81 tones as against 16.32 tons in the USA.Over the past several years, shortage of energy has been a major constraint on industrial development.Further, the skyrocketing prices of oil have swollen the import bill creating a difficult balance of payments position. So a faster

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exploitation of domestic energy resources is required in the years ahead. Coal is the only fossil fuel in which this country is relatively better endowed and it is treated as the main source of commercial energy. The problems standing in the way of sustained increase in its production, though formidable, should be overcome. The exploratory effort to discover new resources will have to be intensified if the road transport system is not to be allowed to collapse under the pressure of soaring oil prices. Hydro-power is to be developed with a sense of urgency. The task is difficult indeed as a substantial proportion of the potential exists in the sub-Himalayan regions of northern and north-eastern India which are not easily accessible.

B. The Government Undertaken Measures For Eliminating Energy Crisis Problems

1) *Energy Conservation And Management Of Oil Demand:* There is considerable wastage of energy in India due to inefficient transmission and distribution system of electricity and uneconomic unit size and obsolete technologies in some industries. Recently the planning commission has advocated increasing the load density by demand management because it would reduce consumption of energy in its transmission and distribution. Apart from saving the energy in distribution process, all possibilities of conserving energy in industries are also required to be explored. With making the choice of techniques energy efficiency should be adopted as one of the criteria. Scope for energy conservation exists in agriculture also in case of electric pumpsets.
2) *The Energy Strategy:* In India where reserves of oil are limited, the policy of a high degree of oil dependence could have disastrous effect on growth efforts. At the time when OPEC drastically increased the oil prices that some rethinking was done and a new energy strategy was evolved. The heavy dependence for oil import policy create heavy strain on the country's balance of payments, even the physical availability of oil in the international markets will pose a problem in the years to come. This means that if India's plans of economic growth are not to be hampered by inadequacies of energy supply, reduced dependence on imported oil has to be a key element in our development strategy. The objectives of new energy strategy are as follows-i) accelerated exploitation of domestic conventional energy resources-oil, natural gas, hydro and nuclear power ii) management of oil demand and substitution of natural gas for oil products.iii) energy conservation and exploitation of new renewable sources of energy like solar, wind power and bio-gas iv) intensification of research and development in emerging energy technologies.
3) *Energy Strategy For The Future:* To remove energy crisis importance should be given to long-term policy imperatives in energy planning. Several expert bodies such as Energy Survey of India Committee (1965), the Fuel Policy Committee (1974), the Working Group on Energy Policy (1979) had stressed the need for long-term energy planning. Beside this in earlier plans more emphasis had been given on the supply side of the energy sector rather than the use of energy through conservation. But the Eight Plan firstly gave importance to long-term integrated planning with emphasis on both efficient strategy of long run energy supply and energy end-use. The planning commission spelt out three aspects of this strategy's) It should ensure gradual shift from non-renewable energy resources to renewable ones.ii) there has to be increasing emphasis on demand management and conservation of energy and efficient utilization of energy resources.iii) a high priority has to be accorded to meeting the basic energy needs of the rural and the urban poor in the immediate future. In Ninth Plan energy challenges need to be tackled in such a way that social, economic, environmental and security problems are not aggravated. This would require adoption of measures that reduce energy intensity of the economy. To implement long term integrated policy the Government of India drafted and released the Integrated Energy Policy in 2006 which provides a set of guidelines for envisioning the country's energy future. Its objective was to substitute one energy source with another for consumption and production purposes. It provided an overview of the energy supply and demand situation in the country and defined policy interventions in the areas of regulation, pricing, taxation and institutions.
4) *New And Renewable Sources Of Energy:* To meet increasing power requirement renewable energy sources are being used for distributed generation, lighting, pumping and motive power requirement in remote and inaccessible areas. It includes the potential from solar, wind, small hydro; biomass power etc.India is graduating from Megawatts to Gigawatts in the generation of clean renewable energy. The target from various renewable energy sources has been increased to 175 GW by the year 2022.The major contributions are expected to be 100GW from solar energy and 60GW from wind energy. Over the period April-December 2015, 3029.89 MW of grid-connected power generation capacity from renewable energy sources like solar and wind was added in the country. In the field of solar energy the government has been adopted many policies like Solar rooftop, solar parks, solar projects under the NSM, solar pumps, solar cities, surya mitra scheme etc.
5) *Other Initiatives:* Announcement of the National Offshore Wind Energy Policy 2015 to exploit the vast 7,600 Km coastline for development of offshore wind energy in the Indian Exclusive Economic Zone.ii)Inclusion of renewable energy in the priority sector and bank loans up to Rs 15 core limit for purposes like solar-based power generators, biomass-based power generators,

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windmills, micro-hydel plants and for non-conventional energy-based public utilities like street lighting system And remote village electrification and for individual households. iii)Investments in renewable energy by giving automatic approval up to 74% foreign equity participation in a joint venture and 100% foreign investment with approval of the Foreign Investment Promotion Board(FIPB) iv)Approval to the amendments in the National Tariff Policy 2005 for enhancing the use of renewable energy.

IV. RECOMMENDATIONS

A. The government should include energy resource education in school syllabus and give the knowledge to the school students about utility of energy resources and its management problems.

B. The government should also organize social awareness programme in remote villages and town areas for giving the knowledge of properly energy uses and it's convineances.

C. The number of educational institution should increase for giving energy knowledge and there, engineering knowledge should also give which is essential for energy generation. This responsibility have to take the government.

D. The government should also apply strict law for energy losses and declare reward system like any form such as subsidy for energy saving people especially in electricity sector. The person who misuse energy should also be punishable.

E. To save energy, demand management of energy should be made through greater conservation of energy, optimum fuel mix and structural changes in the economy.

F. The people have to shift to less-energy-intensive modes of transport.

G. Greater emphasis should be given on exploration of hydroelectric power, particularly for meeting peak-demand.

H. Greater attention should be paid to research, development, transfer and use of energy-efficient technologies and practices in the supply as well as end-use sectors.

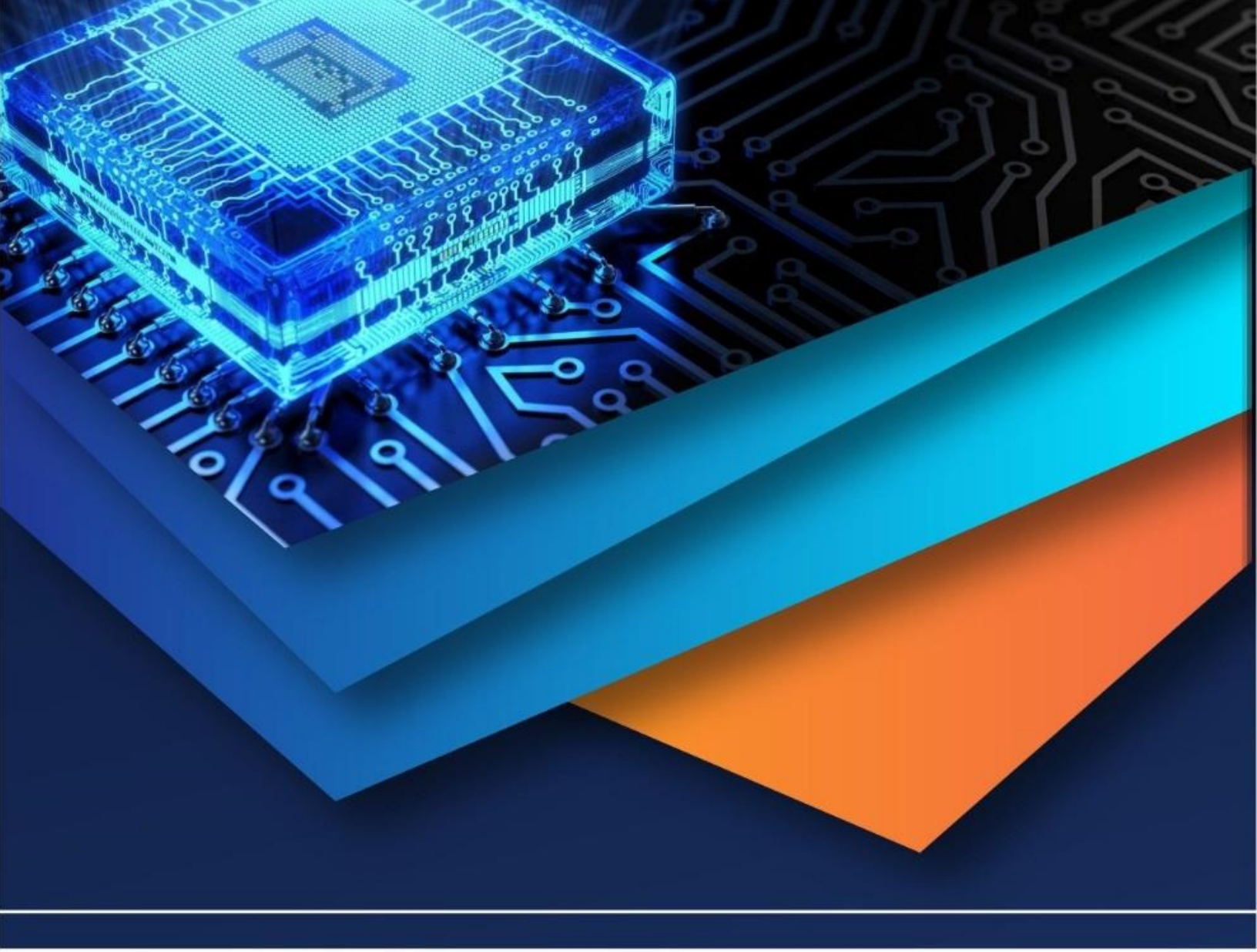
V. CONCLUSION

India's natural environment is quite good than other countries and it has many resources which are not utilized properly. Natural resources are used as sources of energy. Renewable energy as well as non-Renewable energy is used for increasing energy consumption and for maintaining the balance of energy. Renewable energies are those energies which will finish in the future and cannot be made further. They are limited amount such as coal, petroleum etc. which are valuable in the market. But non-renewable energy can be made further in future and its storages will not finish anytime. So we can use them freely like solar,wind,hydro and bio-mass etc.As energy is essential for country's development ,so the government should give importance on energy saving, energy conservation and energy generation. For this the government should increase investment on this sector and also establish new plants for energy creation. The strict rule should be passed by the governments for energy conservation. Not only this, social people's helping and awareness is also necessary for energy conservation.

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