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ENHANCING ECONOMIC GROWTH AND SUSTAINABLE DEVELOPMENT IN INDIA

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ABSTRACT

Inadequacy of energy supply would obviously affect very adversely on the quality of service in the fields of education, health and in fact, even food security which is a vital and essential requirement of any society. Sustainability is the move towards the growth and development of India. Solar Energy is one of the renowned sectors to support the sustainability of India. Solar energy has giant potential in India due to its position in tropical belt. This paper deals with the innovative applications of solar energy for sustainable development of India viz. Solar application in transportation, architecture, car parking, restaurants, lighting, mobile charging, vehicles charging etc. are described for sustainable development. The paper includes the existing applications of solar energy, the current status of solar energy in India, challenges in the progress of solar energy and concludes with some solutions to promote solar energy.

Keywords: Solar Power Energy, Sustainable Development, Applications, India.

INTRODUCTION

Sustainable development is the development that meets the needs of the present without compromising the ability of future generations to meet their own needs. From the concern of climate change, global warming and to ensure sustainable future sustainable energies are gaining importance. Sustainable energy is the sustainable stipulation of energy that is clean and long lasting with very less emission of polluting gases i.e. solar energy, wind energy, biomass energy, geothermal energy, etc. and are also often called alternative sources of energy. Amongst all the clean technologies, solar energy is an efficient renewable energy source to alleviate the emission of greenhouse gas and helps to trim down global warming. India receives

India's strategy towards energy development and energy security plays a vital role in economic development. There are causal factors which influence energy crisis in terms of supply and demand factors viz. supply shortage with respect to demand; transmission bottlenecks; natural factors; defects in deregulation; imperfect market; financial concerns, geopolitical pressures and the global energy landscape. The choices we as a whole make today whether they include putting resources into a multibillion dollar oil task or obtaining the family vehicle may have long haul suggestions pertaining to energy. It is important that we face the challenges and embrace the opportunities because energy both its production and its use in an environmentally safe manner is a platform for broader discussion.

The increasing demand of electricity, the high price of oil and the growing concerns for our environment are some of several factors that forcing us to enhance the uses of alternative energy sources. Among a variety of renewable energy sources, solar energy is a sustainable alternative option that can be utilized in various ways and can be used for many applications. Solar power is produced by collecting sunlight and converting into electricity, heat and

lighting. This is done by using solar panels to convert sunlight into electricity, and using solar thermal collectors to absorb solar energy for heating water.

IMPORTANCE OF ENERGY CONSUMPTION IN INDIA

Energy is one of the main components for the economic, social, and sustainable development of any country; in case of the developing countries, the energy sector assumes a critical importance in view of increasing energy growth essentials requiring high investments to meet them. In the country, energy 'Self-Sufficiency' was recognized as the main driver for new and renewable energy in the wake of the two oil shocks of the 1970s. Renewable energy is obtained from sources, which include - Wind, Solar, Hydro-electricity, Geothermal, Ocean, Municipal solid waste and Biomass etc. The non-renewable energy is generated from the fossil fuels are - Coal, Oil and Gas, which are likely to deplete. The global oil and gas reserves are projected to be available for 45 years and 65 years respectively. Coal is likely to last a little over 200 years. To give the importance of energy for country's growth and development; the data for the period 2002-14 (Data source: World Bank).

ENERGY AND SUSTAINABLE DEVELOPMENT IN INDIA

India's energy and economic development has a cause and effect relationship. With India being a growing economy, there is external resistance for sacrificing economic growth for the sake of protecting environment in the future. India needs to keep up the pace of monetary development to guarantee the benefit to its masses. Its underlying multilayer designs generally centered around the urban improvement because of which there has been no evenhanded dissemination of riches over the urban and country or over the rich and poor people. India needs monetary development and improvement to free itself from the detestable grips of destitution and appetite. To guarantee the ideal rate of development of the economy it additionally needs satisfactory vitality either indigenously or by methods for import. This involves so as keeping up the required monetary development India would need to abuse the characteristic assets as coal, hydro, gas, atomic and wind. Majority of Indians still use traditional fuels such as cow dung, agricultural wastes, and firewood as cooking fuel. India's Integrated Energy Policy Report 2008 lays stress on the energy security aspects as well as the diversification of its fuel mix coupled with indigenous use of resources to address its difficulties related to the energy and its endeavors to raise its dimension of human improvement. India faces impressive difficulties in meeting its vitality needs and in giving satisfactory vitality of wanted quality in different structures in a maintainable way at aggressive costs. India needs to continue an 8% to 10% financial development rate, over next 25 years, in the event that it is to destroy neediness and meet its human improvement objectives.

So, to convey a supported development of 8 per cent through 2031, India would at any rate need to develop its essential vitality supply by 3 to multiple times while the power supply needs to develop at the rate of 5 to multiple times the present utilization. In real sense of the Indian context, the issue of sustainability is larger compared to OECD (Organization for Economic Co-operation and Development) countries because as a nation have to address the basic needs of teeming millions both today as well as tomorrow. Environmental taxes, green taxes, carbon taxes, and subsidies etc. needs to be levied so as to affect choices of end users. India can have differential taxes if they can appropriately reflect environmental externalities. "A consistent application of the polluter pays principle or consumer pays principle should be made to attain environmental objectives at least cost where prescribed environmental norms are either not applied consistently or it has adhered to". Industries are energy intensive and

increasing the energy efficiency by use of technology is important for ensuring its energy security and abatement of pollution.

METHODOLOGY

The study is based on secondary data.

Secondary data were collected from various reports of Central Government and State Governments i.e., World Bank-Data Bank, International Energy Agency, The Energy and Resources Institute (TERI), Ministry of New and Renewable Energy (MNRE), Karnataka Renewable Energy Development Limited (KREDL) and Directorate of Economics and Statistics (Government of Karnataka).

ENERGY POLICIES IN INDIA

A few advisory groups have been set up in India for prescribing energy arrangements for Indian financial conditions since the late fifties. The Energy Survey Committee (Report 1965), has been the first of its sort to take an exhaustive perspective of India's vitality issues and make projections of vitality request and supply for the period 1965-89. As utilization continued in a way conflicting with the gift of assets, a Fuel Policy Committee (FPC) was set up in 1970, (Pande 1980). Thinking about the energy blessings and the expenses at which these assets could be misused, the board of trustees suggested that coal ought to be the essential business wellspring of vitality in India. It underlined the requirement for the substitution of oil by coal and distinguished the strategy to be received for completing the change. To beat these deficiencies, a Working Group on Energy Policy (1979), was set up amid 1977-79. The real proposals of this gathering in addition to other things relate to the bigger and expanded utilization of sustainable sources, to enhance the effectiveness of vitality transformation frameworks, to diminish to oil utilization and to lessen vitality power in the mechanical area. Later the Committee on Power 1978-80 brought out comparative proposals. The Advisory Board on Energy set up in 1983 and also proposed developing vitality strategies to the Government of India (ABE; 1987). The Board prompts the Government emphatically to urge individuals to rehearse energy preservation in a purposeful way; to audit basically high vitality escalated regions; to enhance the working of warm and hydel control framework; to decide on the expanded use of non-customary vitality sources and; to create strategies for viable usage of agro deposits.

PRESENT APPLICATION OF SOLAR ENERGY FOR SUSTAINABLE DEVELOPMENT

Application of solar energy for sustainable development is possible mainly in two ways; Passive and Active. Passive solar energy application collects the energy without converting the heat or light into other forms. On the other hand, in active solar energy application the solar energy is stored or converted for diversified applications. This in turn can be classified as two different groups – Photovoltaic (PV) and Solar Thermal. Photovoltaic technology converts the solar radiation into electrical energy when it incident upon a semiconductor material. In Solar thermal technology solar heat is used for thermal or heating application and for electricity generation. It is subdivided into two categories as – Solar thermal non-electric and, solar thermal electric. The applications of solar thermal non-electric technology are solar water heaters, solar air heaters, solar cooking systems, solar cooling systems, etc. While solar thermal electric technology refers the use of solar heat to produce the steam for electricity generation.

CONCLUSION

It is important to conquer these challenges for rapid growth and mass acceptance of the technology. To promote solar energy research and development capacity have to be built in the private sector and in educational institutions. Millions of productive jobs will be created in the process of development of the infrastructure required for the new industries resulting from massive solar projects. Publicizing job creation, in addition to environmental and energy access reimbursement, will strengthen the economic case for clean energy policies and build public support for these initiatives. If these initiatives work as intended, it is only a matter before India becomes one of the world leaders in Solar Energy.

The Government of India has released its roadmap to achieve 175 GW capacities in renewable energy by 2022, which includes 100 GW of solar power and 60 GW of wind power. The Union Government of India is preparing a 'rent a roof' policy for supporting its target of generating 40 gigawatts (GW) of power through solar rooftop projects by 2022. Coal-based power generation capacity in India, which currently stands at 190.29 GW is expected to reach 330-441 GW by 2040. India could become the world's first country to use LEDs for all lighting needs by 2019, thereby saving Rs 40,000 crore (US$ 6.23 billion) on an annual basis. All the states and union territories of India are on board to fulfill the Government of India's vision of ensuring 24x7 affordable and quality power for all by March 2019, as per the Ministry of Power and New & Renewable Energy, Government of India.

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