

Green Entrepreneurship - prospects in Renewable Energy

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Abstract

This paper reveals the concept and the brief perception of Green Entrepreneurship. The green Entrepreneurship is benefited to the country, Society & for people and Individuals. In many aspects working of Green Entrepreneurship relates the field of Engineering and use of new technologies. In recent years lots of engineers have preferred the path of green Entrepreneurship. In India traditional resources have constraints, so it is essential to work on new renewable resources through advance technologies. I would like to explore an area of working in solar energy, wind energy and some other nonconventional energy resources. The study is based on the data available from various resources such as indian government policies, magazines of renewable resource, websites on this issue. The basic aim of the paper is to Analysing the Opportunities for entrepreneurs in green entrepreneurship with special referance in renewable resource energy. It tries to bring a novel study which can be applied in current market scenario.

Keyword

Green Entrepreneurship, Renewable energy, Renewable resources, solar energy, Wind energy, Biomass energy

Introduction

Change is a very natural phenomenon of nature and same is applicable for the human. when we take a look towards consumers, we find that their needs, wants, demands, test and preferences are also changing. There may be several reasons for that such as increasing consumer household income, change in life style and increasing consumer awareness etc. Among these changes market also need to adopt some changes for its survival and for that there is a need of new product development concept, product redesign, process design, changes in marketing policies etc. A successful business organization always focuses on these changes and implements it into its operations within time[4].

In present market scenario, the studies show that peoples are now health and environment conscious. Possibly this is the motive, that the concept of green products are taking place slowly

and steadily in the market. It can be also a prospect for those companies and peoples who believe in innovation and redesigning their products and services in environmental manner. It is a perfect time for those entrepreneurs who want to come and be a part of this emerging green market[3].

Green Entrepreneurship

The main environmental issues facing our planet are population, global warming, climate change, loss of biodiversity, water, pollution, ozone layer depletion, ocean acidification, land degradation etc. Excessive use of natural resources and dependency on non-renewable energy are the major challenges in front of the society and human kind. Government and various other agencies are continuously working to provide a better shield to the natural environment and activities are going on to save our natural resources for meeting the present and future needs[1].

Our country has vast potential in the renewable energy sector which can help country's growth and development in enormous way. India has one of the largest programs in the world for deploying renewable energy products and systems. Our country has an exclusive ministry for renewable energy development the Ministry of Non-Conventional Energy Sources.

We observe that very often the terms “green entrepreneurship”, “eco entrepreneurship” and “sustainable entrepreneurship” is used interchangeably. Green entrepreneurship can visible itself in either of these ways: 1. Softer forms of ecological modernization which keep the current economic structures and mechanisms, but a higher level of ecological effectiveness is achieved through better technologies 2. Introducing new business that belongs to develop environmental friendly products and services or to use renewable resources or for the benefit of the environment [4].



Fig:1 Composition of Green Entrepreneurship

Basic features of Green Entrepreneurship are[6]

- Green Entrepreneurship is the process to open a new project for developing sustainable energy resources and to provide products and Services which are environment friendly.
- Green Entrepreneurship provides prospects for skilled engineers to identify those techniques which are more helpful to create or to provide services related to solar energy, wind energy, hydro energy etc.
- Green entrepreneurship has risk included with the potential of Green environment. Risk is related to accepting new product or services, investment related problems, marketing problems, technological problems etc

Energy sector has great opportunity to create more sustainable technology as we are facing electric crisis and grid failure. These areas are more related to the technology so people who have knowledge of technology in these fields has great potential to move into Green Entrepreneurship. Emerging renewable energy can help India to increase its energy security, reduce the adverse impacts on the local environment, lower its carbon intensity, and contribute to more balanced regional development[5].

Prospects in Renewable Energy

Renewable Energy is a natural energy which does not have a limited supply. Renewable Energy can be used again and again, and will never run out. India has the fifth largest power generation portfolio in the world and its current renewable energy contribution stands at 46.4 GW which includes 28.3 GW of Wind power and 8.7 GW of Solar power installed capacity in the country. (As on 31.10.2016). Renewable energy contributes 15% of the total installed capacity in the country as on 31.10.2016. Ambitious target of 175 GW of renewable power by 2022 which will include 100 GW of Solar power, 60 GW from wind power, 10 GW from biomass power and 5 GW from small hydro power[7]

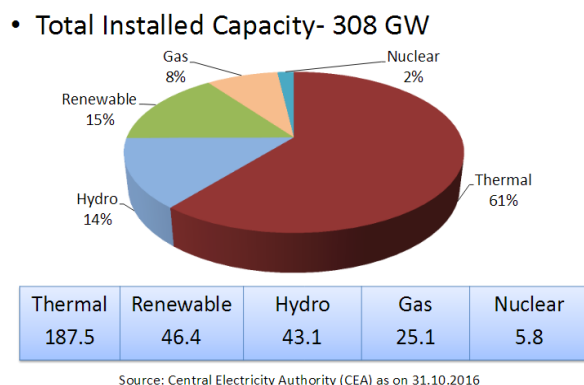


Fig 2 Indian power sector

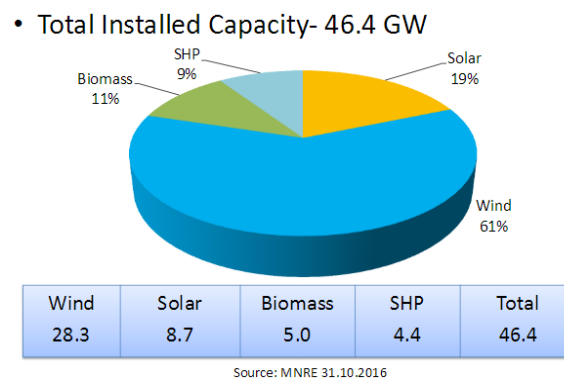


Fig 3 Indian Renewable power sector

India is the fourth largest importer of oil and the 15th largest importer of petroleum products and Liquefied Natural Gas (LNG) globally. The increased use of indigenous renewable resources is expected to reduce India's dependence on expensive imported fossil fuels. Renewable energy is becoming increasingly cost-competitive as compared to fossil fuel-based generation, like the prices of solar modules have declined by almost 80% since 2008[8].

The government of India through Ministry of New and Renewable Energy (MNRE) is playing a proactive role in promoting the adoption of renewable energy resources by offering various incentives such as generation-based incentives (GBIs), capital and interest subsidies, concessional finance, fiscal incentives etc.

Reserve Bank of India (RBI) has revised the guidelines for all scheduled commercial banks including renewable energy in the categories priority sector, in addition to existing categories making significant inroads for renewable energy in the priority sector lending, also bank loans for solar rooftop systems to be treated as a part of home loan/ home improvement loan with subsequent tax benefits.

The MNRE is providing central financial assistance to set up small hydro projects both in the public and private sectors. Support is also given to state governments for the identification of new potential sites, including surveys, the preparation of detailed project reports and the renovation and modernization of old projects.

So, there is enough reason for entrepreneurs to be a focus towards the Energy sector and to give their innovative Exploration to the energy resources. Green Entrepreneurship is related to doing new innovative businesses in the energy sector, developing new technologies for better use of the resources. Today Engineers are choosing very difficult path of Entrepreneurship because of huge opportunities in the Green Sector.

Solar Energy

Solar energy is the most abundant & cleanest energy resource on earth. Solar energy can be used mainly in three ways one is direct conversion of sunlight into electricity through PV cells, the two others being concentrating solar power (CSP) and solar thermal collectors for heating and cooling (SHC). India is endowed with abundant solar energy, which is capable of producing 5,000 trillion kilowatts of clean energy[8]. Country is blessed with around 300 sunny days in a year. If this energy is harnessed efficiently, it can easily reduce our energy deficit scenario and that to with no carbon emission. To promote decentralized solar power generation and use of

solar power for heating and cooling purposes, MNRE started the programme on “Off-grid and Decentralized Solar Applications”. Solar energy projects can be installed in areas having appropriate levels of solar radiation. . Solar energy can be used to making the various housing appliances, rural electrifications, agricultural support, solar panel making and solar water heater etc. For the energy entrepreneur solar energy business is top most choice. They have opportunities like install solar panel on their land and consume or sell electricity, make and sell solar products, distributorship, consultancy, solar appliances maintenance etc. If you find fulfillment in empowering poor communities and bringing them electricity, or with environmental causes such as reducing fossil fuel emissions to mitigate global warming, then you can start your own non-profit organization.

Hydro Energy

A Small Hydro Project (SHP) is the development of hydroelectric power which harnesses energy from flowing or falling water from rivers, rivulets, artificially created storage dams or canal drops for generation of electricity. The capacity of SHP lies between 2 MW to 25 MW. Ministry of New & Renewable Energy (MNRE) has identified potential sites for small hydro projects. MNRE has also created a database of potential sites of small hydro wherein nearly 5,415 potential sites for projects up to 25 MW capacity have been identified. Moreover, database for potential sites of SHP are also maintained by State Nodal Agencies (SNA). Normally Hydro Power Projects are constructed in combination with water utilisation or irrigation purposes. Hydro Power plants may be connected to conventional electrical distribution networks as a source of low-cost renewable energy. Small Hydro projects are on Hill Streams or on Canal Falls / Dam Toe.

Bio energy

The different types of Bio energy may be useful as Biomass Power Cogeneration, Waste to Energy or Bio Fuel. Biomass being a product of natural resources viz. land, water, air and sun's energy, gives much hope as an alternative, reliable and renewable source of energy. Biomass is an organic matter produced by plants, both terrestrial and aquatic and their derivatives. India is a tropical country blessed with sunshine and rains and thus offers an ideal environment for Biomass production. Further, the vast agricultural potential, also makes available huge agro-residues to meet the energy needs. With an estimated production of about 460 million tonnes of

agricultural waste every year, Biomass is capable of supplementing the coal to the tune of about 260 million tonnes. Although biomass is a renewable energy, this should not be mistaken for a clean energy source. Although biomass is significantly cleaner than most fossil fuels such as coal and oil, it still produces sulphur dioxide during electricity production.

Biomass materials used for power generation include cow dung, press mud, poultry litter, rice husk, straw, cotton stalk, coconut shells, soya husk, de-oiled cakes, coffee waste, jute wastes, and groundnut shells, saw dust etc.

Bio-fuels(Ethanol and Bio-diesel) are renewable liquid fuels derived from biological materials by a number of chemical / biological processes.

Wind Energy

The Windfarms can be installed at MNRE identified potential sites, where it has a mean annual wind power density of 200 W/m² or more at 50m above ground level. The highest share in renewable power generation is of wind power energy. Currently, it is possible for wind power producers to sell electricity to the grid, use it for captive consumption or sell it to third parties. With the emergence of independent power exchanges and with the likely liberalization and streamlining of power distribution across states, the opportunities to trade in power are likely to increase and become more profitable[7].

Fuel Cell

A fuel cell is a device that uses hydrogen (or hydrogen-rich fuel) and oxygen to create electricity by an electrochemical process. Fuel cells are a unique technology that can fit into a range of categories primary, backup, or off grid power generation scaled to fit any need (ranging from kilowatts to megawatts), as well as power for motive operations such as material handling equipment and provide a wide range of benefits. Fuel cells are being developed to power passenger vehicles, commercial buildings, homes, and even small devices such as laptop computers. Although the potential benefits of fuel cells are significant, many challenges, technical and otherwise, must be overcome before fuel cells will be a successful, competitive alternative for consumers. These include cost, durability, fuel storage and delivery issues, and public acceptance.

Conclusion

Papers clearly suggest that there are enormous prospects for Entrepreneurs in Green Areas and in renewable energy. They are supported by government schemes, subsidies and the incentives. As far as the technology is concerned engineers have a remarkable opportunity in making green housing projects. . Entrepreneurs with their skilled work potential are coming forward to take advantages of opportunities in renewable energy.

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