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Research Paper Environment

Non- Conventional Energy : Sources And Scope

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ABSTRACT

The energy crisis which began in 1973 caused petroleum supplies to decrease and prices to rise exorbitantly. This crisis forced developing countries to reduce or postpone important development programs, so they could purchase petroleum to keep their economies operating. It created the urgent necessity to find and develop alternative energy sources, such as other fossil fuels (coal, gas), nuclear energy, and renewable energy resources. There is a very long belief in the mind of people that the earth can provide unlimited supply of resources for exclusive human use, but people should realize that the earth has a limited supply or resource that has to be used by all species. Sustainable development is a concept. It underscores that rate of consumption are use of natural resources should approximate the rate at which these resources can be substituted or replaced. It further requires that a nation or society is able to satisfy its requirements- social, economic and others- with out jeopardizing the interest of future generations.

Keywords : Non conventional, Renewable, Fossil, Rresource, Power, Sustainable, Energy

Introduction

It is believed that developed countries use too many of natural resources and such practice cannot continue long. Nature has been offering its resources and services and also serving as a receptacle for observing wastes for too long a time. Realization must come to the minds of people that nature today is fragile. Nature is finite. The experts have evidence to prove that we have almost reached a critical threshold beyond which ecological decline would lead to disaster. But these experts do not always have a say in policy matters. They may advocate "limits to growth" Philosophy, but they are standing against those who believe that modern economy, with market regulation and backed by technological innovations, will be panacea for ecological situation. Renewable energy is a natural resource which continuously regenerated. It cannot be exhausted. Example: soil fertility, bio products of land and water, solar energy, wind energy, gobar gas, bio fuels, biomass, hydro power, tidal power, wave power. These energy resources called as Non- conventional energy resources also

Sustainable Development

Environmental management concerns life support system and is closely linked with development and economic growth. At times, the economic development and environmental development become irreconcilable. Today, we stand at the cross roads in choosing between environment and development. The industrial countries have achieved high level of development and descend standard of living at cost of environment and depletion of natural resources. The question is how long this kind of development will be sustainable. The developing countries, on the other hand are still struggling to attain a minimum standard of living though they are also contributing to environmental damage.

Thus both the industrialized countries and under developed or developing countries damage, deplete and pollute the environment. The developing countries need growth to fulfill the basic needs of their people, but should they repeat the mistakes of the industrial countries. It is a fact that both the consumption and life style of people have relevance to environment al problems; therefore living habits attitudinal and ethical questions have now entered in to the environmental management area.

Developing the concept of sustainable development further, we must include in its ambit what is called the principle of justice and equity (equal distribution) between the peoples of north and south. This mean that both the national leaders and international institutions have responsibility for sound developmental, economic and environment al issues, keeping in view the principle of equity and those principles that determine the international inequities.

Energy Issues

Energy crisis is familiar to every one. It was a great shock, especially to developed nations like USA when Arab countries, in response to their war with Israel, cut off supplies of oil, an important fossil fuel, to United States. This in early 1970s. Developed countries are energy consuming nations and had to face a situation that never occurred before; there were long lines at petrol stations, some thing like what was experienced for CNG vehicles in Delhi in 2002. Whether or not the non OPEC (organization of petroleum exporting countries) realizes that their energy resources are controlled by others is an important question to probe. Whatever the answer the perceptions about energy have changed since 1970s. In fact, not only perception, but very foundation of industrial society is being questioned. Although very important, the other problem about the consequences of too much of utilization of energy, namely the emissions in the form of green house gases was not addressed in 1970s the problem of solution and global warming.

Non Conventional Energy Resources

Renewable energy resources are solar, wind, bio mass (especially wood) and hydro power. The developed countries are interested to use and explore the possibility of increase in non conventional resources especially for environmental reasons. The developing countries do so for economic reasons.

Among non conventional resources hydro power is the largest. Hydro power projects are in operation both in developed and in developing countries notable among the later are china, India and Brazil. Hydro power potential is huge and at present only 15 % of the potential in the developing world is being utilized.

Wind power has also a great potential. Wind mills and sails have been in use since ancient times. It is a fast growing resource. In 1980s wind energy generation of the world was 10 MW. In the year 2000, it was 14,000 MW. According to world watch reports, wind turbines installed in 1999 where worth over 3 billion US dollars all over the world and it supported 86000 jobs. Germany dominated wind installations in 1999 providing in the reasons up to 10 % of country's electricity. Green peace international estimates that if the present trend continues, wind power could supply 10% of world's electricity by 2020.

The use of solar energy is through photo voltaic cells. The voltaic news reported that world's photo voltaic production claimed from 0.1 MW to 200 MW in 1999. Exports to increase the use of solar power in developing countries are being made by the governments helped by international agencies.

The bio mass resources are various types of cultivated or UN cultivated vegetations. Wood farms the chief resource and is the primary fuel for the poor people in Africa and Asia. Excessive use of wood has led to depletion of forests; harvesting is exceeding the annual growth.

Renewable Energy Resources or Non-conventional Energy Resources: Renewable energy resources are those resources, which can be regenerated.

4.1 Solar Energy

1. The sun is a clean source, as it doesn't add CO2 Smog, soot, or poisonous gases to our atmosphere.
2. Earth receives about 7.5 * 1014 KW of energy from sun every day.
3. Solar energy can be converted into mechanical, chemical or electrical energy and can be used directly for heating and cooking purposes.
4. Solar cells can convert solar rays directly into electricity.

4.2 Wind Energy

1. Wind power gives cheap , clean, and exhaustible energy.
2. The main drawback is irregular supply.
3. Wind Energy can be converted into mechanical and electrical energy.
4. Wind mills are also used for drawing water from deep wells (in Rajasthan).

4.3 Hydro-electric power

1. Kinetic energy of water moving downwards drives turbines and generates electricity.
2. A large amount of water flows to sea without being used.
3. This water can be stored in dams. It can be released slowly to generate electricity.
4. Hydro-electricity is a cheap, clean and renewable source.

4.4 Tidal Energy

1. The sea level rises during high tide. It can be diverted to inshore reservoirs, driving the turbines during its entry.
2. The stored water may be gradually released. It drives the turbines again during the time of low tide.

4.5 Energy of Waves

1. Floating propellers in shallow waters are driven by sea waves.
2. Their kinetic energy is used to drive the turbines.
3. This gives a clean , cheap and inexhaustible source of energy.

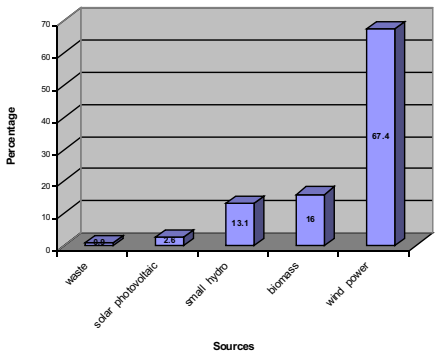
4.6 Biogas

1. Cow-dung is allowed to decay in digesters to collect methane.
2. Methane is a pollution-free, clean and cheap source of energy.

The Potential of renewable energy in India is estimated at 100,000 MW. These has been a steady increase in power generation based on renewable sources and as of December 1999, 1600 MW, representing a little over 1.5% of the total grid capacity was based on renewable sources. These include solar, wind, biomass and small hydro sources.

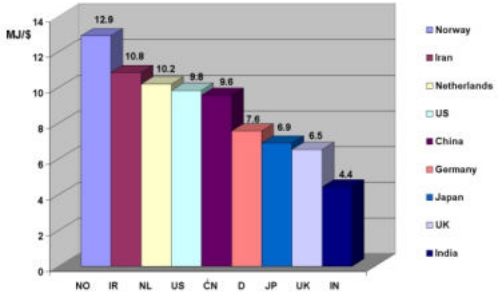
Biomass includes large quantities of cattle dung and human excreta, agricultural residues, biogases and other by-products of agro-based industries such as paper mills, etc. of the 1600 MW of installed generating capacity contributed by renewable sources so far, energy from waste accounts for 0.9%; solar photovoltaic 2.6%; small hydro 13.1%; biomass 16%, and wind power 67.4%. India has the fifth largest wind power capacity in the world.

Renewable Energy production



Renewable Energy In Developing Countries

Renewable energy can be particularly suitable for developing countries. In rural and remote areas, transmission and distribution of energy generated from fossil fuels can be difficult and expensive. Producing renewable energy locally can offer a viable alternative.



Renewable energy projects in many developing countries have demonstrated that renewable energy can directly contribute to poverty alleviation by providing the energy needed for creating businesses and employment. Renewable energy technologies can also make indirect contributions to alleviating poverty by providing energy for cooking, space heating, and lighting. Renewable energy can also contribute to education, by providing electricity to schools.

Kenya is the world leader in the number of solar power systems installed per capita (but not the number of watts added). More than 30,000 very small solar panels, each producing 12 to 30 watts, are sold in Kenya annually. For an investment of as little as $100 for the panel and wiring, the PV system can be used to charge a car battery, which can then provide power to run a fluorescent lamp or a small television for a few hours a day. More Kenyans adopt solar power every year than make connections to the country's electric grid.

Potential Future Utilization

Present renewable energy sources supply about 18% of current energy use and there is much potential that could be exploited in the future. As the table below illustrates, the technical potential of renewable energy sources is more than 18 times current global primary energy use and furthermore several times higher than projected energy use in 2100.

Table 1 : The Renewable Energy Resource Base (Exajoules per year)

	Current use (2008)	Technical potential	Theoretical potential
Hydropower	9	50	147
Biomass energy	50	>276	2,900
Wind energy	0.12	640	6,000
Solar energy	0.1	>1,575	3,900,000
Geothermal energy	0.6	--	--
Ocean energy	not estimated	not estimated	7,400
Total	60	>1,800	>4,000,000

Current use is in primary energy equivalent. For comparison, the global primary energy use was 402 EJ per year in 2001.
Source: World Energy Assessment 2008.7.

Conclusion

Energy resources available in nature is enormous. It is in renewable and non renewable form. By the increase of the world population, civilization and technological development made the consumption of natural resources in the high volume. Research data shows that, the availability of non renewable resources becomes scarce, to over come this and to meet the energy requirements for the future, development in technology should be made to extract more energy from renewable energy resources, which will never get exhausted.

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