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Review Article

A REVIEW ON GREEN ENERGY -A SUSTAINABLE APPROACH

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ABSTRACT

The current systems of energy supply and use are clearly not sustainable in terms of economic environment and society .So there is an urgent need for us to increase energy efficiency, reduce energy consumption, reduce harmful effects by using fossil fuels, mitigating greenhouse emissions. So it is better to adopt green energy technology/sustainable energy/clean energy to attain sustainable development. .

Present paper focuses on the green energy/renewable energy technology that can be adopted in order to achieveSustainable development. Some innovative are also mentioned in this paper

Keywords: Green energy, Innovative technology, sustainability.

INTRODUCTION

Green Energy:

Green energy is used instead of fossil fuels as it reduces the pollution up to maximum extent Examples of green energy are solar, wind, geothermal and hydro energy. Nuclear energy is also considered a green energy source because of its lower waste output relative to energy sources such as coal or oil. The main aim of green energy is to produce more energy with minimum pollution

A green energy source can be a building that is designed in a way that it keeps itself cool in the daytime and heated in the night through its architectural design rather than having air-conditioning or a heating system. The conservation of energy through architectural design becomes, itself, a green energy source.

Similarly, many sources of green energy can come directly from the area in which the energy is needed rather than from an outside source. .

One of the goals of green energy technology is to take existing fossil fuel energy technology and clean it up so it is produced more cleanly. One such case is that of clean coal technology, where scientists are trying to find ways to extract energy from coal and other fossil fuels without all of the harmful side effects. The success of such these types of green energy depends upon the ability to extract harmful by-products from fossil fuels while not only being energy efficient, but by being cost efficient as well.

Why Green Energy in India:

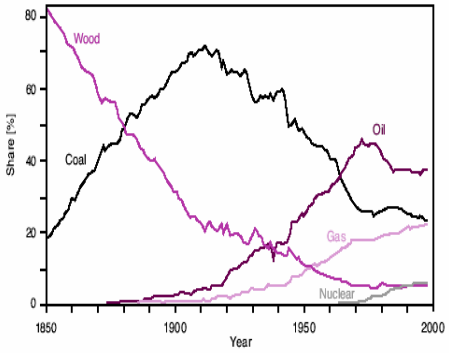
In order to meet energy demand to reduce impacts, to improve energy efficiency and to reach our estimation goal green energy is required.

Renewable Energy in India has seen decent growth in the past mainly driven by Wind Energy which accounts for almost 65% of the estimated 20 GW of Green Energy capacity installed in the country. However to meet India's 2020 Green Energy Target of 15% of power to be generated from renewable sources set by CERC, at least 40 GW more would need to be installed (that is a conservative estimate as load factors for green energy are lower).This is assuming that India meets its target of raising the power capacity to 400 GW by 2020 from around 175 GW at present. Solar Energy in India has not got off to a good start despite immense potential as the federal subsidy program JNNSM has seen irrational bidding by bit players and debt financing is difficult. Wind Power in India has seen the most growth amongst the green sources of power but it too faces hurdles as good quality wind sites have all been taken.

Biomass, Small Hydro and other sources of green power face problems of scale making the 40-80 GW of the required green energy capacity quite difficult unless the government changes its policies even more India to Add 17 GW Renewable Energy in 2012-17.

India plans to add 17,000 megawatts, or 17 giga watts, of renewable-based power generation capacity between 2012-17, requiring an investment of up to 1.5 trillion rupees ($33.8 billion), as the country attempts to bridge its energy deficit and move to cleaner energy sources, the renewable energy.

Energy consumption trends past



Green Energy technology:

The time is now. The future is here. The colour is green.

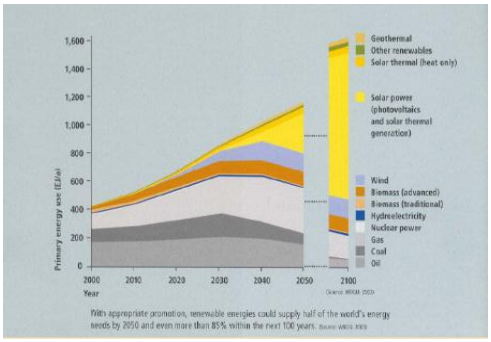
Green energy technology is energy that can be extracted, generated, and/or consumed without any significant negative impact to the environment. The planet has a natural capability to recover which means pollution that does not go beyond that capability can still be termed green.

Green power is a subset of renewable energy and represents those renewable energy resources and technologies that provide the highest environmental benefit. The U.S. Environmental Protection

Agencydefines green power as electricity produced from solar, wind, geothermal, biogas, biomass, and low-impact small hydroelectric sources. Customers often buy green power for avoided environmental impacts and its greenhouse gas reduction benefits

India has a vast supply of green energy resources, and has a significant program for deploying these resources. The Renewable Energy market in India is pegged at US$600 million, growing at 15% per annum. The Government's renewable energy target by 2030 is 200 gigawatts, estimated to require US$200 billion in capital investment. Currently, 3.5% of installed capacity is in the renewable sector, producing 3700 MW. Renewable energy is projected to produce 10,000 MW by 2012.

USING RENEWABLE ENERGY RESOURCES HELPS TO REDUCE ENERGY CONSUMPTION AND INCREASE ENERGY EFFICIENCY. BRIGHT FUTURE FOR RENEWABLES



Renewable Energy Technologies:

All renewable energy sources, such as hydroelectricity, solar energy, wind energy, wave power, geothermal energy, bioenergy, and tidal power. It usually also includes technologies that improve energy efficiency

First- and second-generation technologies have entered the markets, and third-generation technologies heavily depend on long term research and development commitments, where the public sector has a role to play.

Renewable energy technologies are essential contributors to sustainable energy as they generally contribute to world energy security, reducing dependence on fossil fuel resources,[] and providing

opportunities for mitigating greenhouse gases. The International Energy Agency states that:

Conceptually, one can define three generations of renewable technologies, reaching back more than 100 years.

(A) FIRSTGENERATION TECHNOLOGIES:

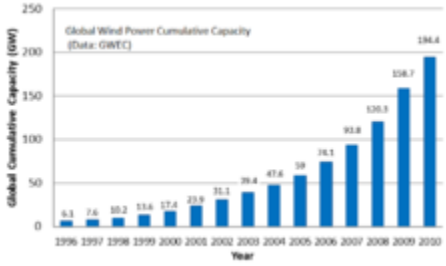
First generation technology emerged from the industrial revolution technology at the end of 19 century and includes hydropower, Biomass combustion, geothermal power and heat.

Geothermal Energy **Hydel Energy**

Geothermal power plant can operate 24 hrs per day providing base loud capacity and the potential capacity for geothermal power estimated85Gw over the next 30yrs.

(B)SECONDGENERATIONTECHNOLOGIS:

Second-generation technologies include solar heating and cooling, wind power, modern forms of bio energy, and solar photovoltaic.



SOLAR ENERGYpower from the sun , local green energy system

Reduces local air pollution, Offsets greenhouse gases, Conserves energy, Reduces the need for dry-cell battery

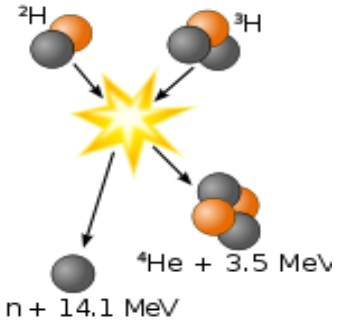
disposal, Reduces the need for dry-cell,Baterydisposal.

Windenergy

(C)THIRDGENERATIONTECHNOLOGIES:

These are still under development and include advanced biomass gasification, bio refinery technologies, concentrating solar thermal power, hot dry rock geothermal energy, and ocean energy. Advances in nanotechnology may also play a major role.

Solar house **Geothermal energy**



Nuclear energy

The deuterium-tritium (D-T) reaction is one of the more promising for producing fusion power.

Nuclear power has the potential to be a sustainable energy source, such as by the use of breeder reactors.

Green Building is the practice of increasing the efficiency of buildings and their use of energy, water and materials and reducing building impacts on human health and the environment through better citing, design, construction, operation, maintenance and removal - the complete building life cycle.

Welcome to Building Your Green Home!

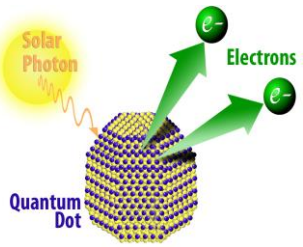
BIOENERGY:

According to the International Energy Agency, new bio energy (bio-fuel) technologies being developed today, notably cellulosic ethanol bio-refineries, could allow bio-fuels to play a much bigger role in the future than previously thought. Cellulosic ethanol can be made from plant matter composed primarily of inedible cellulose fibers that form the stems and branches of most plants. Crop residues (such as corn stalks, wheat straw and rice straw), wood waste, and municipal solid waste are potential sources of cellulosic biomass. Dedicated energy crops, such as switch grass, are also promising cellulose sources that can be sustainably produced in many regions of the United States.

Picture for Bio Energy

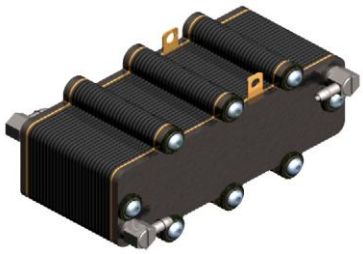
Innovative:

(A) Solar Energy: Nano materials for Photovoltaic



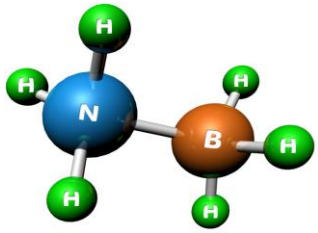
Unlike conventional solar panels, solar cells based on nano-sized "quantum dots" can generate multiple electrons per photon, greatly increasing efficiency.

(B) Fuel Cells and Hydrogen Storage



If we are to replace gasoline-powered vehicles with clean hydrogen-powered fuel cell vehicles, we must find a way to store enough hydrogen on board to provide an acceptable driving range. Los Alamos leads the DOE Chemical Hydrogen Storage Centre of Excellence, a partnership of 13 research and industrial institutions working to store hydrogen in chemical bonds that can then be reacted to release hydrogen on-board.

(c) Energy Storage: An Emerging Los Alamos Initiative



Ammonia-Borane could be the key to storing enough hydrogen on board to power fuel cell vehicles.

(D) Grinding & Drying Technology:

The KDS Micronexsystem efficiently and economically converts virtually any organic material into homogenous, fine, dry powders ideal for use in renewable energy production, biomass pellets, bio-based products manufacture, fertilizer, and animal feed.

Bio-Fuel

Technology innovative Bio-Fuel Technology

The innovative and patented KDS biomass fuel preparation system facilitates the immediate replacement of solid fossil fuels in existing industrial and utility boilers with biomass fuel.

Powder burning to create energyKDS Micronex

Sample of biomass powder fuelquare y, Suite 421, Holyoke, MA 01040 Telephone: 413-552-3688

Fax: 413-552-3330.

(E)Solar energy Innovatives:

Sun power has become one of today's lowest cost renewable energy technologies. Solar Panels are becoming a more common sight in the world.

Solar electric **solar panel**

Solar pool heater **solar air conditioner**

(F) Sequestration of atmospheric carbon using Vetiver Grass *in September 2009 by Tony Cisse*es.

Fast growing vetiver grasses with penetrating deep root system would facilitate long-term locking of atmospheric carbon below plough layer with reduced chances of being recycled to atmosphere and

recuperate soil carbon sink.

Vetiver Grass

(G) CDM project of Diesel Tree Plantation (*JatrophaCurcus*) in Viet Nam

The oilseeds of*JatrophaCurcus* helps to produce biological diesel.

(H)Alternative Fuels (CNG & LNG) in Refuse Collection Fleets

WIH Resource Group, Inc. (WIH) was retained by the City of Boise Idaho and City of Tucson to perform two separate feasibility studies by conducting industry research and analysis of the current use of Compressed Natural Gas.

(CNG) in refuse (municipal solid waste – MSW) collection vehicle

(I)**CO2 - Ionic Exchange for Climate Change - CO2 Converter**

Greenhouse Gas Converter - Reducing CO2 emissions A recent technological innovation, which has met the requirements of patentability, consists of a CO2 Converter; this device automotive applies to vehicles those using gasoline and also those using alternative fuels. While the European Union implements mechanisms to reduce CO2 emissions from new cars.

CONCLUSION

Green energy technology helps to solve many problems. It is the key element for achieving all the MDGS-Poverty hunger, education health communicable diseases and environmental sustainability. So let us hope still more many innovative and renewable technologies should develop in order to achieve sustainability in future.

Moving towards energy sustainability will require changes not only in the way energy is supplied, but in the way it is used, and reducing the amount of energy required to deliver various goods or services is

essential.

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