

Renewable Energy Sources: Fuels For the Future and Alternative in Current Aspect Also

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ABSTRACT

The generation of energy in our modern industrialized society is still mainly based on a very limited resource: petroleum. Renewable sources can sidestep this problem by using energy sources that either will last longer than the human race or can be regenerated through agriculture. Most renewable energy sources are also environmentally friendly, fight global warming by reducing carbon emissions, and allow economies to reduce their dependencies on politically turbulent nations. In the next few years it is expected that millions of households in the world will be using solar energy as the trends in USA and Japan show. In India too, the Indian Renewable Energy Development Agency and the Ministry of Non-Conventional Energy Sources are formulating a programme in the next few years. However, the people's initiative is essential if the programme is to be successful.

KEYWORDS: Renewable energy, Fuels, Environmental friendly, Development, Legislative support.

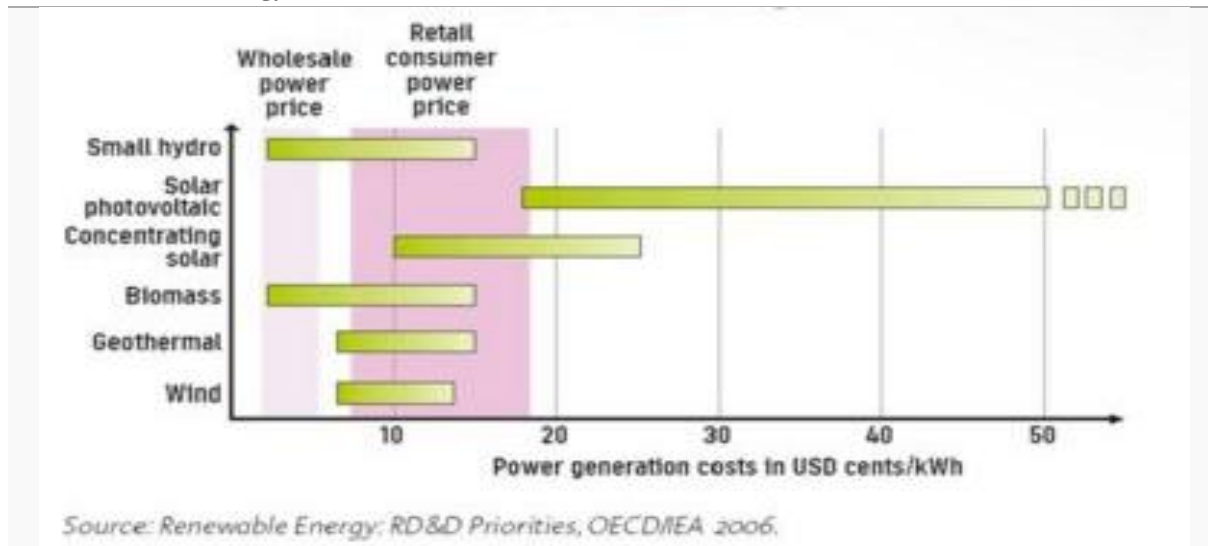
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I. INTRODUCTION

Oil, natural gas, uranium, water etc. are used as power sources; all have the potential to run out during the course of human development, possibly in the far future. This will create the big fuel problem to the world. Renewable energy sources can overcome this problem. The important renewable energy sources are Biofuel, Biomass, Geothermal, Hydroelectricity, Solar, Tidal, Wave, Wind Power etc. Wind energy is the most established of the renewables, constituting 1% of global energy production. It can also be the most cost-efficient, especially when large installations using large turbines can take advantage of economies of scale. Renewables are quickly catching on in progressive regions like Europe and the market for clean energy is expected to grow in there as well.

1.1.1 Renewable Energy Breakdown



1.1.2 Geothermal

Geothermal energy uses hot water deep within the earth's crust to spin turbines and produce power 24 hours a day, seven days a week. It produces few carbon emissions and can re-inject used water back into the earth to be used again, making it fully sustainable.

1.1.3 Solar

Solar power is energy from the sun and without its presence all life on earth would end. Solar energy has been looked upon as a serious source of energy for many years because of the vast amounts of energy that are made freely available, if harnessed by modern technology. Solar energy is the most readily available source of energy. It does not belong to anybody and is, therefore, free. It is also the most important of the non-conventional sources of energy because it is non-polluting and, therefore, helps in lessening the greenhouse effect.

1.1.4 Wind

Wind is caused by different parts of the earth heating at different rates to different temperatures, creating pressure gradients and leading air molecules to move from areas of higher pressure (density) to areas of lower pressure (density). Wind turbines have the lowest installation costs of any of the renewables, and with large wind installations taking advantage of economies of scale to reach lows of \$800 per kilowatt installed, today it rivals natural gas as a form of cheap, base-load energy.

1.1.5 Wave Power

Wave power uses the kinetic energy from ocean waves to generate electricity. Most wave energy producers are private labs and emerging companies, but Ocean Power Technologies has emerged as the first publicly-traded wave power producer in the U.S.

1.1.6 Biofuels

Biofuels are sources of energy that are renewable in the truest sense of the word. They are made from plant matter; since plants can be regrown, the energy source can be renewed. Major biofuels include biodiesel, ethanol, and cellulosic ethanol, though there are currently private companies working on refining biogasoline.

1.1.7 Biomass

Biomass energy, or bio-energy, is the energy stored in non-fossil organic materials such as wood, straw, vegetable oils and wastes from the forest, agricultural and industrial sectors. Biomass is organic material derived from a wide variety of plant matter that can be converted into electricity in an environmental friendly and sustainable manner.

1.2 Renewable Energy Funds

Power shares Wilderhill Clean Energy ETF - stock symbol "PBW", along with a slew of other renewable funds, offers broad exposure to the sector. Given the plethora of IPO's in renewable energy and clean technology that occurred in 2006, 2007, and 2008, a broad exposure to the clean energy market through an ETF is a good bet for beginning green investors -- like the Internet boom.

An alternative one might consider is Market Vectors Global Alternative Energy ETF - stock symbol "GEX" which has a has invested more than half its assets outside the U.S. and includes a Danish company, Vestas Wind Systems which is the fund's top holding at nearly 11%. Rounding out the top three holdings are a Spanish company -- Gamesa, a specialist in wind turbine and wind farms -- at roughly 8% of holdings, and Norwegian solar energy company Renewable Energy, which accounts for roughly 7% of assets.

1.3 Falling Oil and Gas Prices Limit Demand for Renewable Energy

Fossil fuels and coal are not renewable because there is a limited quantity of both resources on the earth, and the replenishment of these resources takes hundreds of thousands of years. As oil becomes rarer, prices increase and new energy sources become increasingly feasible from a financial perspective.

Oil and gas prices have fluctuated heavily over the past few years, but the most recent trend has been a significant decline in prices. The price of crude oil fell from a record high of nearly \$150 a barrel in July 2008 to around \$50 a barrel in the first quarter of 2009. As falling oil and gas prices lead to more affordable commercial electricity, consumers limit their demand for new, often expensive sources of renewable power.

Energy Sources	Cost (cents/kWh)
Coal	5.5
Natural gas	5.2
Nuclear	0.57
Wind	5.0
Geothermal	3.6

Declines in the Price of Carbon Emissions Trading on European Markets Reduces Incentives for Renewable Investment: From the summer of 2008 to February 2009, the right to emit one ton of carbon fell from €30 on the EU carbon market to €11.80. Research has suggested that carbon needs to trade at around €25 in order to have a significant effect on green investment. With the price of carbon allowances so low, incentives for clean energy production in Europe have dramatically decreased.

1.4 Legislative Support

Legislative support for clean energy investment in the form of tax breaks, subsidies, and energy mandates has driven growth in the sector over the past few years. Because most renewables aren't as cost-efficient as traditional fossil fuels, such government support is necessary to make clean energy appealing.

In March 2009, Senator Harry Reid drafted legislation that would make it easier for the government to approve the installation of transmissions lines from remote renewable energy generators to major population centers; the legislation would also set aside enough government land for 4-25 GW of solar energy generators. Whether the bill passes remains to be seen.

In July 2009, the government of the UK released a white paper documenting a plan to reduce carbon emissions to 22% below 1990 levels by 2012, 34% below 1990 levels by 2020, and 80% below 1990 levels by 2050. These goals are expected to be pursued through the use of wind power and nuclear energy, though many are skeptical about the government's ability to meet the 2020 goal.

1.5 Cost of substitutes

Demand for renewable energy is driven largely by the price of the alternatives, namely coal and natural gas (for electricity generation) and oil (for liquid fuel). All the factors that drive rising oil prices or fears of peak oil, therefore also drive demand for renewable energy. On the demand side of the equation, clearly rising worldwide energy demand also plays a large role.

1.6 Cost of inputs

Though its energy inputs are typically renewable, generating renewable energy is not costless, and like all booming industries, renewable energy faces bottlenecks and supply shortages for its key inputs. In the case of wind energy, the cost of turbines has climbed, as manufacturers typically put customers on 18-month waiting lists and even then struggle to source gearboxes and other key parts for the finished products. Solar cell manufacturers face shortages in polysilicon, while biofuels producers face rising prices for their feedstocks, especially corn and sugarcane.

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II. CONCLUSION

Renewable energy sources can improve the quality of life in the rural areas. Transportation of biomass and the growth harvesting provide opportunity for employment and biomass energy cropping will also generate. Additional income for rural areas retarding migration to the cities. However, progress in this field shouldn't stop at a few companies showing interest and a few governmental projects to showcase ministerial achievements.

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