

Energy Crisis and it's Statistics

Inamullah Haneef¹ and Faisal Hussain Memon¹

¹Department of Petroleum & Natural Gas Engineering, Mehran University of Engineering & Technology SZAB Campus Khairpur Mir's

Extended Abstract

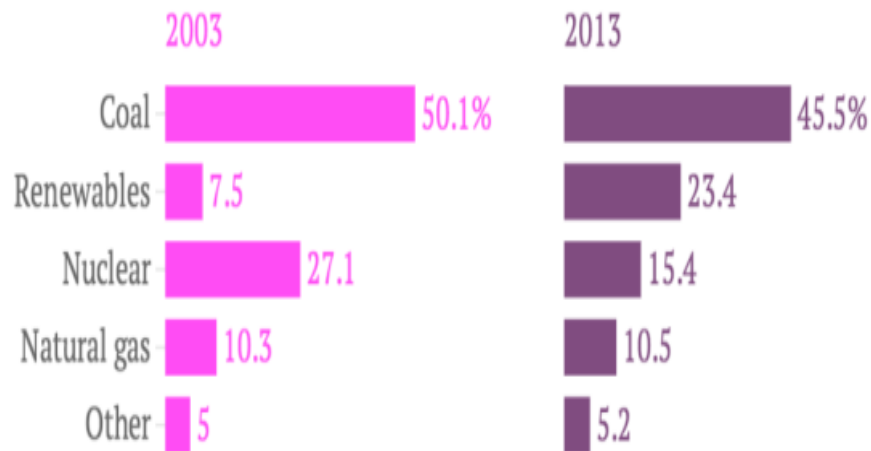
Abundant and economical energy is the life blood of modern civilizations. According to conventional wisdom, we currently suffer from a shortage of energy fuels. Energy is now the talk of every town whether traders, businessmen, students, ministers, all are the victims of the shortage of energy. Prices have been briskly escalating for the past five years, due to the rising desire and the escalating shortage of energy resources. The energy crisis are caused due to disproportionate dependence on non-renewable energy resources. The hydrocarbons coal oil and gas together constitute eighty five percent of the world's total energy supply. On the other hand, the renewable resources of energy: hydro, solar, wind, nuclear, geo-thermal, biogas and wave constitute only fifteen percent of global share of energy supply. These are also clean sources of energy. Despite their enormous benefits, the renewable sources of energy have not been exploited sufficiently. There has been an enormous increase in the demand of energy as result of industrial development and population growth, in comparison to enhancement in energy production. Supply of energy is, therefore, far less than the actual demand, resultantly crisis has emerged. They have the worst effect on education, industries, economy and agriculture. So in order to get rid of these energy crisis, there is a dire need of taking some crucial steps of energy conservation because when we save energy, we also save money. The most effective solution that has been found to overcome such crisis is the hybrid renewable energy systems (HRES) which are becoming popular for remote area power generation applications due to advancement in renewable energy technologies. A hybrid energy system usually consists of two or more renewable energy sources used together to provide increased system efficiency as well as greater balance in energy supply. In short, there is a crisis of ignorance so there should be awareness campaign for energy conservation and this paper will help in bringing a revolutionary change in the minds of the people.

Energy is simply the ability of doing any work. Energy is the basic need for development of a country. It is backbone of the economy of a state. It's the basic need of everyone. As societies advance, they will continue to need energy to power homes, businesses, industry, transportation, electricity generation and other vital services. One century ago, electricity was just emerging for general use. It's remarkable, then, that power generation today is the world's single-largest source of energy demand. Worldwide electricity use is projected to increase 75- 90 percent from 2010 to 2040, with developing countries accounting for the overwhelming majority of that increase.

The world relies heavily on coal, oil and natural gas. There are a number of myths about renewable energy that persist in our society that is simply not true. Many developing countries are now planning high shares of renewable energy that is California 33%, Germany 50% in the next twenty years, Denmark 100% in the next twenty years.

It's a myth that investment in the renewable energy will never reach high levels, not true. Investment globally today is 250 billion dollars per year in renewable energy that is more than the world invest in fossil fuels and nuclear power combined. It's just a thinking that makes the renewable energy more expensive, not the technology itself.

Electricity generation in Germany, by energy source (share of total)



Quartz | qz.com

Data: German Association of Energy and Water Industries (BDEW)

Figure-1: Generation of Electricity by Renewable Energy Source

ENERGY IN FUTURE

Renewable Energy

The future of renewable energy is fundamentally a choice, not a foregone conclusion given technology and economic trends. The consumption of fossil fuels is 88% while the consumption of renewable energy is 88%. The research shows that in upcoming days up to 2040 there will be huge difference in the production of fossil fuel from now. So, By the year 2050, there will directly be Fossil fuels vs. Renewable energy. It is predicted by considering current facts that By 2050 fossil fuel remains 25% & the rest of 75% will only be covered by Renewable Energy.

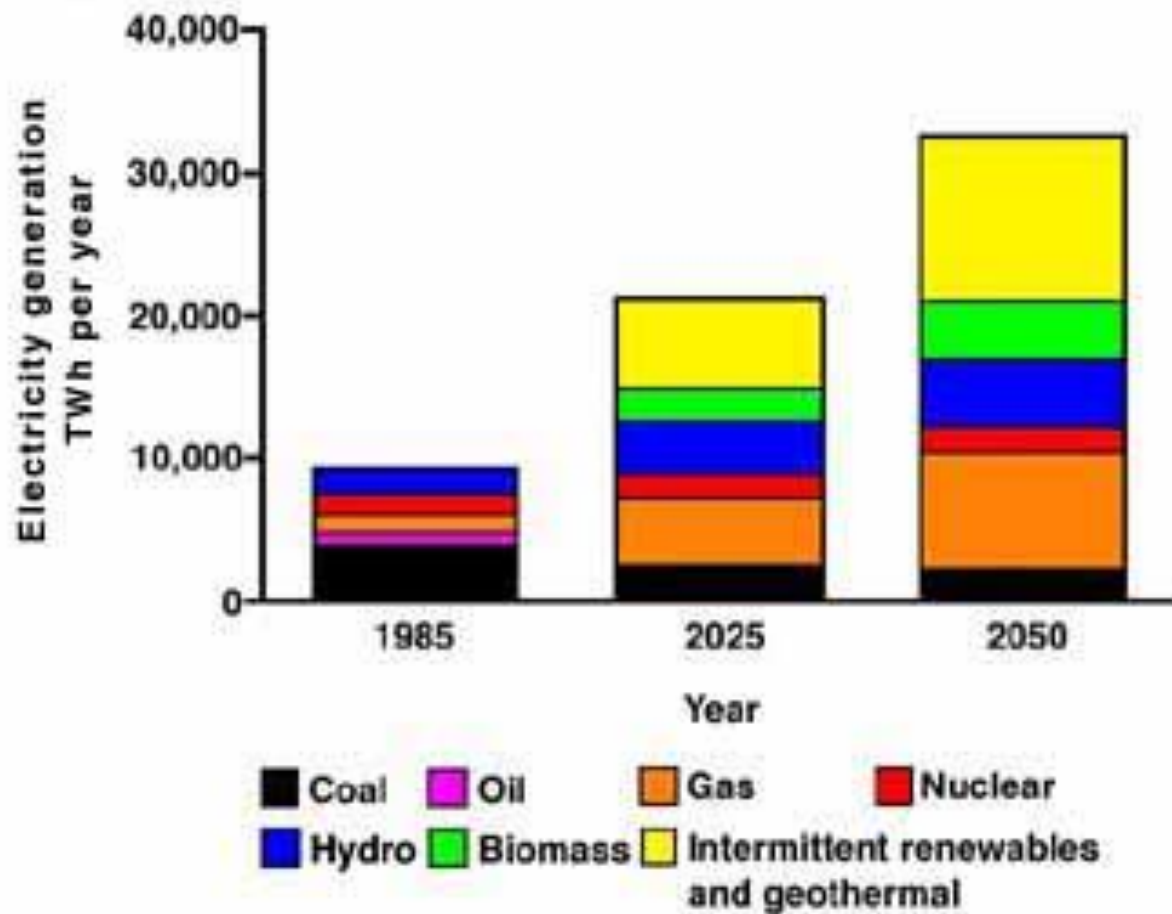


Figure-2: Renewable Energy Till 2050

It is also analyzed that By the year 2030, the jobs in this sector will be ten to twelve million & the investment in renewable energy will grow 83%

Benefits:

- Strengthen trade.
- Renewable and free

- Upraise living standards.
- Long operating life
- Reduction in pollution and change in climate.
- Strengthen trade.
- Stabilize population growth and reduce world hunger.
- Land can be used for other purposes
- Now almost competitive with hydro and fossil fuels

Hybrid power systems combine two or more energy conversion mechanisms, or two or more fuels for the same mechanism, that when integrated, overcome limitations inherent in either. Hybrid systems provide a high level of energy security and reliability through the integrated mix of complementary generation methods, and often will incorporate a storage system (battery, fuel cell) or fossil-fueled power generation to ensure consistent supply.

The most effective solution that has been found to overcome energy crisis is the hybrid renewable energy systems (HRES) which are becoming popular for remote area power generation applications due to advancement in renewable energy technologies. A hybrid energy system usually consists of two or more renewable energy sources used together to provide increased system efficiency as well as greater balance in energy supply.

For example, let us consider a load of 100% power supply and there is no renewable system to fulfill this need, so two or more renewable energy systems can be combined. For example, 60% from a biomass system, 20% from a wind energy system and the remainder from fuel cells. Thus combining all these renewable energy systems may provide 100% of the power and energy requirements for the load, such as a home or business.

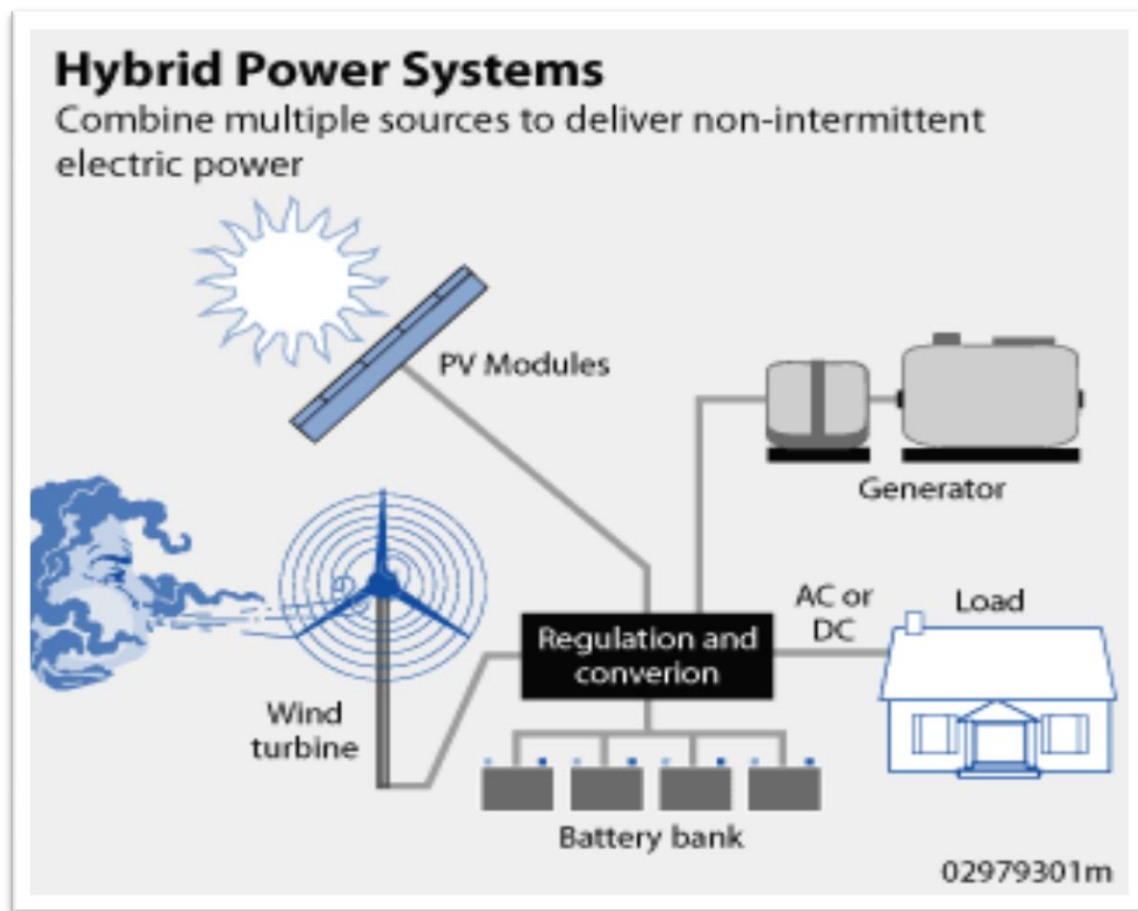


Figure-3 Hybrid Power System

Based on the above provided information, we feel that in the short term energy conservation is a much better method for resolving the energy crisis. Today, solar power provides less than 0.1% of total energy produced in the United States. Given current trends, renewable energy is projected to more than double in the next 25 years, going from 8% to 17%. Even if solar energy accounted for half of this increase, a very unlikely proposition, solar power would still account for under 5% of total energy produced in the United States. The tremendous overhead of initiating such a dramatic shift to solar power should also be kept in mind. Extraction of shale gas reservoirs will contribute to increase in production rate. 7,795 Tcf shale gas reserve are producible in the world, it can also be used for Power generation. 1 Tcf of natural gas is enough to heat 15 million homes or fuel 12 million vehicles for 1 year. Similarly Pakistan is also full with the shale reserve of 105 Tcf, which will defeat the gas short fall and light up Pakistan.