

The Requirement of Green Energy Sources

Smit Anjana¹ , Mitali Joshi²

Assistant Professor, Sardar Patel College of Engineering, Bakrol ,Gujarat

Abstract:

The population is expanding, which implies that energy needs are expanding as well. These days, energy's immenseness is undeniable. It is necessary in all spheres of life. The two main categories of energy sources are non-renewable and renewable. The significance of renewable sources cannot be overstated, given the terrible reality that nonrenewable resources will inevitably run out. Their influence on the environment is the most crucial factor to consider while using them. The significance of renewable energy sources is briefly discussed in this paper in light of the fossil fuel conundrum. The application of alternative energy technology is emphasized heavily. Future energy and other applications of renewable resources are also covered.

Key Words : *Energy, renewable, non-renewable, alternative energy technology, fossil fuel.*

Introduction

Energy from an endless source is referred to as renewable energy. The efficient use of energy resources is a topic of much discussion these days. Making the decision on which energy source to utilize and why is crucial. The majority of issues need to be considered, including stability, cost, cleanliness, efficiency, and environmental consequences. The fact that a lot of sectors worldwide still rely on fossil fuels to generate power is a sad reality. These fuels are undoubtedly quite successful in terms of the quality of power production, but they are not beneficial in the long run. Industries need to switch as quickly as possible to renewable sources since fossil fuels will eventually run out. Furthermore, these fossil fuels are the source of several ecological risks and represent a serious threat to the equilibrium of the ecosystem.

Dilemma Over Fossil Fuel

Fundamentally, fossil fuels are mixtures of hydrocarbons, which include natural gas, coal, and oil. The primary problem with fossil fuels is not their use per se, but rather the negative consequences associated with them. The use of fossil fuels cannot continue. It implies that they will ultimately run out. They release a lot of toxic gasses when they burn, carbon dioxide being the most notable of them. The main contributor to global warming is this gas. The planet's temperature is rising and the lives of its species are in jeopardy due to the ongoing harmful effects of global warming.

In addition, the ongoing melting of ice in the Arctic and Antarctica brought on by these high temperatures is raising sea levels above average. Floods may result from this, which would negatively impact fishing and farming.

Many other nations rely on the Middle Eastern countries for a consistent supply of energy due to their vast deposits of coal, oil, and natural gas. Twelve nations make up the Organization of the Petroleum Exporting Countries (OPEC), which also includes Middle Eastern nations including Iran, Iraq, Kuwait, Qatar, Saudi Arabia, and the United Arab Emirates, as well as Algeria, Angola, Ecuador, Libya, Nigeria, and Venezuela. These contain the majority of the world's oil reserves and account for around 40% of global oil output, according to the Energy Information Administration (EIA). Fossil fuel prices fluctuate dramatically globally as a result of this monopoly [1].

Carbon monoxide, nitrogen dioxide, sulfur dioxide, and nitrogen monoxide are the byproducts of burning fossil fuels. These harmful gasses directly contribute to air pollution, which deteriorates plant and human health and results in smog. Sulfur dioxide is the primary source of acid rain, which is especially destructive to crops and marble monuments. The region has become desolate and lifeless due to coal extraction.

Because of this negative side effect, crops cannot be cultivated on a number of different types of terrain. In the past, coal mining has tragically resulted in several fatalities. For example, in 1942, 1549 workers were murdered in a single day in an explosion at the Benxihu Colliery in China. Ecosystems have been completely devastated by oil spills. Fossil fuel leaks frequently, mainly when it's being carried by water. These fuels will mix with the saltwater that drowns marine life when the ship carrying them sinks. There have been instances like this in the past. The Ixtoc I oil disaster in Mexico is the biggest oil spill to date. 162 miles of US beaches were contaminated after 500,000 tons of crude oil spilled into the Gulf of Mexico as a result of this event. A few years ago, an oil warehouse in Jaipur, India, experienced a fire that resulted in five fatalities and over two hundred injuries. In a similar vein, natural gas is known to produce disagreeable smells and cause transportation issues. 55 individuals lost their lives in the Sinopec pipeline explosion that occurred in China's Shandong Province in 2013. Although they are restricted, the coal, oil, and natural gas firms are fully aware of these grave forms of coercion. Until renewable energy sources become more viable as significant energy sources, they are powerless [2], [3].

Importance of Renewable Energy

The large amount of renewable energy is its most important characteristic. It has no limits. When compared to traditional fossil energy technology, renewable energy sources are more environmentally friendly and have fewer negative effects on the environment. Rather of paying for expensive energy imports, the majority of investments in renewable energy go toward building and maintaining the facilities with staff and materials.

The benefits of burning fossil fuels have come to the attention of people thanks to technical developments in mass communication. We urgently need renewable energy. Its sustainable and pure character has forced humans to give it careful thought. Globally, scientists and engineers are always researching and working in this field. They are coming up with innovative ways to efficiently employ various energy sources. The combustion of coal, oil, and natural gas is the primary driver of global warming, which poses a serious risk. It is extremely detrimental to the earth and all living things on it. Furthermore, as previously said, fossil fuels have been the source of several regrettable accidents in the past. We need to turn to renewable resources to stop this apocalyptic situation. This is because they don't release any toxic or dangerous fumes, making them cleaner. Fossil fuels are also limited. They will undoubtedly come to an end. Therefore, before the critical time arrives, professionals in the energy field ought to have a positive outlook on this matter and make every effort to switch from fossil fuels to renewable energy sources as the primary means of producing power.

If this technology and its current infrastructure are improved, renewable energy is abundant, dependable, and has the potential to be extremely inexpensive. Solar, wind, biomass, geothermal, hydropower, and tidal energy are the main sources of renewable energy. Non-renewable energy sources like coal, natural gas, and oil are more expensive to produce as supplies decline and demand for energy rises because they necessitate expensive exploration as well as potentially hazardous mining and drilling. Because renewable energy emits very little carbon dioxide, it contributes to the fight against climate change brought on by the combustion of fossil fuels.

The renewable energy industry is relatively young in most countries and has the potential to draw in a large number of investors. The jobless may be able to find new employment as a result. As a result, renewable energy has the potential to significantly reduce unemployment in many nations, particularly emerging nations. Their economy will thereafter be significantly impacted by this. Stable power rates may be achieved through renewable energy. This is so because they don't have to worry about the erratic prices of coal, oil, or natural gas; instead, their expenses are solely based on the original capital invested.

The daily cost of oil is determined by a number of variables, one of which is the degree of political stability around the globe. Political disagreements have historically led to serious energy crises. Since renewable energy may be produced locally, it is not susceptible to political unrest that occurs far away. Renewable energy eliminates many of the safety issues around fossil fuels, such as explosions on oil rigs and collapsing coal mines.

There are limited and hidden supplies of coal, natural gas, and oil. Each resource is submerged in the water or far below the surface in an unquantifiable and insufficient amount. Finding new sources will get harder and more expensive as more of these deposits are extracted, and using them will also become more difficult and occasionally dangerous. Big volumes of natural gas must be used in order to convert trivial deposits, such as oil sands, into usable oil. Exploration under the ocean's surface may result in disastrous mishaps, as the well-known British Petroleum Oil Spill in 2010. Conversely, finding renewable energy is just as simple as finding sunlight or wind.

Fossil fuels are far dirtier than renewable energy. Solid hazardous wastes containing heavy metals like lead and mercury are produced throughout the coal mining and petroleum exploration processes. When coal is used to create power, a lot of water is needed, which frequently leaks lead and arsenic compounds into surface waterways as well as sulfur dioxide, nitrogen oxides, carbon dioxide, and mercury into the atmosphere. Similar pollution is caused by gasoline and other petroleum-based goods. These pollutants generate acid rain, which ruins structures and delicate ecosystems, and cause respiratory ailments and even death in people. They also promote global warming, which lowers the ozone layer [4].

The Use of Recyclable Energy

"On-grid" and "off-grid" applications of renewable energy are the two main categories. In essence, a grid is a system that integrates the generation, transmission, and distribution of electricity to multiple users. The words "off-grid" and "on-grid" refer to different delivery methods of power. On-grid is the domain of electricity plants, such as solar panels and wind farms, that are directly linked to grids. Typically, off-grid applications cater to a single load, such as a tiny residence or a village cottage. Photovoltaic (PV) modules for a single village home to centralized windmills to power a village water pump or a business battery charging station are just a few examples of off-grid uses. The majority of these off-grid applications are found in isolated or rural areas. Mass production of power is a significant on-grid use case [5].

The wind turbine is the most significant use of wind energy. The wind energy may be transformed by the wind turbine into mechanical power, which can then be used to power a generator to produce a lot of electricity. You may use this power to pump water or charge batteries. Wind-powered automobiles are another application for wind energy. This can result in significant fuel savings as well as improved effectiveness and performance. Similar to this, photovoltaic panels may run on solar energy. These panels are a great method to generate tiny amounts of electricity, particularly in rural and isolated regions that are inaccessible to transmission lines. They are perfect for usage in remote and isolated locations since they require no upkeep and are very reliable. Glass photovoltaic panels are a dependable source of power for offices.

Solar lights, solar water heaters, and solar calculators are other devices that make extensive use of solar energy. Their operation is based on the idea of harvesting solar energy during the day and using it at night. The majority of people who use geothermal energy are farmers. They cultivate a variety of fruits and vegetables all year round by using this energy to heat their greenhouses. Some nations use the heat generated by this energy to warm bike lanes and walkways for pedestrians in order to keep them from freezing during extremely cold winters. Incinerators may be used to burn solid biomass to create heat and steam, which can then be utilized to generate power. For use in transportation, biomass may also be processed to create biofuels like ethanol. A compressor is one common place where hydropower is employed. Governor valves and turbine blades can be adjusted using specially designed compressors. In order to remove the weight when beginning, they can also be employed to blow away the water [6], [7].

The Future of Energy

Using energy resources wisely is essential to meeting demand for energy. The consensus among experts worldwide is that renewable energy sources should be used to generate power. The days of cheap fuel and power corporations using fossil fuels to fulfill demand for energy are long gone. Utilizing renewable energy sources like wind, hydropower, geothermal, solar, and biomass is greatly encouraged by their sustainability. Additionally, homeowners can address their own load demands by installing modest solar panels over their dwellings. Since these energy sources don't involve any drilling or mining and almost little pollution is produced, they pose no environmental risks. Above all, they are far more cost-effective than fossil fuels and do not result in unfavorable events.

The ultimate goal of energy is conservation and the use of renewable resources. Gasoline, a fossil fuel, powers a lot of cars. The car industry will eventually run out of gasoline, therefore it will need to find alternative sources of energy, like hybrid systems, to stay in business. There are several strategies to preserve energy. We frequently take the fact that the lights are on for granted. It is not necessary to turn on the lights when leaving the room. This habit will undoubtedly result in significant energy bill savings. Compact fluorescent lamps (CFLs) can be used in place of incandescent bulbs. With the same amount of current, they produce far brighter light with far less power consumption. This preserves energy for future use in addition to saving money. In many nations, air cooling and heating account up a significant portion of power expenses. Try lowering the temperature on the heater and air conditioner by a few degrees while keeping the room comfortable. For instance, if the air conditioner usually set to 73 degrees in the peak summer, adjust it to 75 degrees. Similarly, if the heater is normally set at 71 degrees in the peak winter, set it to, say, 69. A little adjustment of a few degrees can result in a significant reduction in the quantity of energy used and a lower power bill.

The Remedy

Without a doubt, the necessity for adopting renewable energy sources is becoming more and more apparent to the public, but there is still much work to be done in this area. For example, local scientists and engineers need to initiate awareness campaigns in different areas to help people understand the value of alternative energy technology. Given that fossil fuels have clear negative effects on the environment and other living things, they should also dissuade people from using them. Enforcing students to take courses on renewable sources at the school, college, and university levels is necessary to help them understand their importance and broaden their knowledge in this area. To address the energy issue and fully use renewable energy sources, governments need update their power rules.

To address the energy crisis, professionals in the industry need to provide creative solutions. Developed nations must start technology exchange initiatives to assist poorer nations in establishing, expanding, and strengthening their renewable energy sectors.

Conclusion

There is no going back to other energy sources. They now form a crucial component of the energy portfolio. Reducing the negative environmental consequences of non-renewable energy sources like coal, oil, and natural gas is the goal of employing renewable energy sources. Long-term cost reductions are only one benefit of using renewable energy; it also helps shield the environment from the dangers posed by emissions from fossil fuels. Governments need to start running energy conservation awareness programs to raise public understanding of the value of energy conservation. Power firms should also progressively turn to renewable resources because they are abundant and will never run out. Social media may be very helpful in this by informing people about various energy sources and how to use them. Energy use and conservation should be taught as a required subject in colleges and universities. This is the unquestionable future of energy, and if these stages are followed precisely, there will come a day when power generation on a global scale will only come from renewable sources.

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