

# Environmental Impacts of Renewable Energy

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**Abstract:** Renewable energy sources have a large potentiality to contribute to the sustainable development by furnishing them with a wide variety of socio-economic and environmental benefits. Renewable sources of energy are presently inversely and improperly exploited. Although numerous of them are abundantly available, and the real profitable potentiality considerable, renewable sources of energy make a disappointingly small beneficence. There are environmental benefits from renewables other than reduction of greenhouse gas and other air effluences. Every type of energy application for electricity generation has environmental consequences. The main consequences of burning energies and of nuclear power are well-known. Renewable energy sources (wind, solar, biomass, hydroelectric, geothermal, etc.) are generally allowed of as inoffensive, but this doesn't mean they've no environmental consequences at all. Ultimate of them have a significant aesthetic impact and want large areas of land. Some also have a significant impact on the eco-system. This paper identifies some of the crucial environmental and socio-economic impacts associated with renewable energy. The environmental impacts of renewable energy are point specific, but conceptions are still possible. Renewable energy is naturally more environmentally friendly than indispensable energy sources, especially with regard to air effluences. Environmental impacts are point-specific and there are a number of ways to minimise the possession, which are naturally small and reversible.

**Keywords** - Environmental impacts, defilements, global warming, ecosystems.

## **Introduction:**

To combat global warming and the other problems associated with fossil energies, the world must switch to renewable energy sources like sun, wind, and biomass. All renewable energy technologies aren't applicable to all operations or locales, still. As with conventional energy product, there are environmental issues to be considered. This paper identifies some of the crucial environmental impacts associated with renewable technologies.

Renewable energy sources – solar, wind, biomass, geothermal and hydro – could make important benefactions to sustainable development. presently, their exploitation in marketable requests is low, being constrained by costs and gratuitous benefits( externalities), as well as intermittent inventories and other specialized and institutional considerations.

The environmental impacts of renewable energy are point specific, but conceptions are still possible. Renewable energy is generally more environmentally friendly than indispensable energy sources,

especially with regard to air emigrations. The likely life- cycle emigrations( taking into account Energy civilization, harvesting, collection, transportation and processing, as well as power factory construction, operation and decommissioning) from main renewable energy technologies and conventional electricity generation are shown in Table. The results are purely reflective but show the variations and relative differences between the colorful energy inputs. Life- cycle emigrations from renewable energy use are small compared with those from reactionary energy shops. The studies upon which the numbers are grounded didn't examine nuclear energy. Though nuclear power creation does have a significant environmental impact, it discharges no sulphur dioxide (SO<sub>2</sub>) or nitrogen oxides (NO<sub>2</sub>) and little carbon dioxide (CO<sub>2</sub>). Its life cycle emigrations of these feasts falls within the ranges shown for non-hydroelectric renewable energy.

### **Statement of the Problem :**

The main problems of the study area were as follow :-

The emission of air pollutants from fossil fuel combustion is the major cause of urban air pollution. Burning fossil fuels is also the main contributor to the emission of greenhouse gases. Diverse water pollution problems are associated with energy usage. One problem is oil spills. The above importance and problems have promoted the investigator to select the topic.

### **Literature Survey:**

Foell, W.K., Hanson, M.E., & Green, C.W.(1993). They studied “Environmental considerations in renewable energy policy development and planning In’’: Energy investments and the terrain, Economic Development Institute.

Pimental, D., Poole, P., Bochner, A.(1983). They studied “Biomass energy environmental and social costs,” Environmental Biology Report 832, Ithaca (NY) Cornell University.

### **Objectives of the study:**

The present study is made-

- To fined out the economic development and improve energy security of renewable energy.
- To observed improve access to energy and mitigate climate change.

### **Data Based:**

The data have been collected from both sources I,e-

- Secondary which collected from different book, references, journal etc.

## **Discussion:**

### **1. Wind Energy:**

It produces no air or water pollution, involves no poisonous or dangerous substances (other than those generally set up in large machines), and poses no trouble to public safety. And yet a serious handicap facing the wind assiduity is public opposition reflecting concern over the visibility and noise of wind turbines, and their impacts on nature areas. The noise pollution from marketable wind turbines is occasionally analogous to a small spurt machine. This is fine if you live long hauls down, where you'll hardly notice the noise, but what if you live within a many hundred measures of a turbine? Wind- power generation has veritably low emigrations on a life cycle base, but has a number of environmental goods that may limit its eventuality. The most important goods on the terrain are

**Noise:** Wind turbines produce aerodynamic noise, from air end over the blades and mechanical noise from the moving corridor of the turbine, especially the gearbox. More designs have reduced noise, and exploration continues. Wind granges developed far from largely populated areas are, by description, less obnoxious.

**Electromagnetic interference:** Wind turbines may scatter electromagnetic signals causing hindrance to communication systems. Applicable siting (avoiding military zones or airfields) can minimise this impact.

**Bird safety:** Birds get killed when they collide with the rotating blades of a turbine. Migrant species are at advanced threat than resident species. Siting the turbines down from migrant routes reduces the impact.

**Visual Effects:** Wind turbines must be in exposed areas and are thus largely visible. They are considered uncomely by some people, and enterprises have increased with the larger size of new generation turbines.

Large- scale generation of electricity through windmills can reduce wind- pets and beget stress to ecosystems. Lakes that are downwind from the windmills might come warmer because of reduced evaporation from their face. Soil humidity might also increase. nonetheless, these impacts may not be of great consequence except in certain sensitive areas. Other is facets of wind power is its operation of land. utmost studies assume that wind turbines will be spaced a certain distance piecemeal and that all of the land in between should be regarded as enthralled.

### **2. Solar Energy:**

Since solar power systems induce no air pollution during operation, the primary environmental, health, and safety issues involve how they're manufactured, installed, and eventually disposed off.

Accoutrements used in some solar systems can produce health and safety hazards for workers and anyone differently coming into contact with them. In particular, the manufacturing of photovoltaic cells frequently requires dangerous accoutrements similar as arsenic and cadmium. Indeed fairly inert silicon, a

major material used in solar cells, can be dangerous to workers if it's breathed in as dust. It's also estimated that central photovoltaic- grounded systems bear fantastic inputs, some of which- similar as cadmium sulphide- are poisonous and explosive. According to this report both types of solar energy systems would induce significant attention of problematic water adulterants, including antifreeze agents, rust impediments, and heavy essence percolated from the system. There shall also be circular generation of water adulterants via the use of dressings to discourage inordinate foliage growth around the collectors. Some other adverse impacts of central solar systems are endless use of a large land area; no recovery until the factory is decommissioned; generation of non-recyclables during decommissioning fiberglass, glass, coolant, aloneness; in PV- grounded systems, fresh disposal problems would be caused by cadmium and arsenic; hazard to sight from mirrors, hazard from manures in coolant fluids; soil corrosion and contraction; wind diversion; implicit drop in evaporation rate from soil.

There's an fresh- presumably veritably small- peril that dangerous smothers released from photovoltaic modules attached to burning homes or structures could injure fire fighters.

### **3. Geothermal Energy:**

Geothermal energy is heat contained below the earth's face. The only type of geothermal energy that has been extensively developed is hydrothermal energy, which consists of trapped hot water or brume. still, new technologies are being developed to exploit briskly dry gemstone (penetrated by drilling deep into gemstone), geopressured coffer (pressurized Neptune mixed with methane), and magma.

The likely adverse environmental goods of geothermal energy sources are face disturbances, physical goods( similar as land subsidence) caused by fluid pullout, noise, thermal pollution, and release of obnoxious chemicals. The colorful geothermal resource types differ in numerous felicitations, but they raise a common set of environmental issues. Air and water pollution are two leading enterprises, along with the safe disposal of dangerous waste and land subsidence.

Essence, minerals, unpredictable species of boron, arsenic and mercury and feasts strain out into the geothermal brume or hot water as it passes through the jewels. The large quantities of chemicals released when geothermal fields are tapped for marketable product can be dangerous or reprehensible to people living and working hard.

Utmost geothermal power shops will bear a large quantum of water for cooling or other purposes. In places where water is in short force, this need could raise conflicts with other druggies for water coffer.

At The Geysers, the largest geothermal development, brume vented at the face contains hydrogen sulfide (H<sub>2</sub>S)- account for the area's "rotten egg" smell- as well as ammonia, methane, and carbon dioxide.

#### 4. Biomass:

Biomass power, deduced from the burning of factory matter, raises more serious environmental issues than any other renewable resource except hydropower. Combustion of biomass and biomass- deduced energies produces air pollution; beyond this, there are enterprises about the impacts of using land to grow energy crops. How serious these impacts are will depend on how precisely the resource is managed. The picture is further complicated because there's no single biomass technology, but rather a wide variety of product and conversion styles, each with different environmental impacts.

The stress such a massive colony would beget on soil humidity, through uptake as well as evapotranspiration of precious water, has not been estimated but would obviously be relatively great. There would be other concussions of a big magnitude- on soil productivity, microclimate, wildlife- some of which would be catastrophic to the ecology of the zone.

From Submarine weed granges, It would be delicate to help percolation of sewage from similar large ponds to the underground aquifers and the troubles of groundwater impurity would be veritably real. There would be similar other problems to contend with as mosquito imminence and propagation of pathogens. Further, disposal of spent water hyacinth, after energy is uprooted from it, would be a major problem.

The junking of biomass from land and water for energy product programmes may increase soil and water declination, flooding, and junking of nutrients. It might so affect wildlife and the congenital biota. These and other pitfalls to the terrain from the product of biomass don't feel to have been extensively understood.

Biomass energy product systems can complicate soil corrosion problems Soil corrosion contributes significantly in speeding water run- o, therefore, braking ground- water recharge; the nutrient-rich run- o can harm the quality of entering gutters, lakes or arms by causing eutrophication. Significant nutrient loss will be incurred by the harvesting of crop remainders for biomass energy.

Conversion of natural ecosystems into energy- crop colonies will change both the niche and food sources of wildlife and other biota. revision of timbers and washes will reduce numerous preferred territories and lovemaking areas of some mammals, catcalls, and other biota.

Bioenergy shops have lower emigrations of SO<sub>2</sub> than do coal and oil painting shops, but they may produce further particulate matter.

## 5. Hydropower:

The development of hydropower has come increasingly problematic. The construction of large heads has nearly desisted because utmost suitable uninhabited spots are under environmental protection. To some extent, the slack has been taken up by a reanimation of small scale development.

Large hydroelectric systems beget major adverse environmental impacts, especially on water quality, and large hydel may be the most ecologically damaging. Large- scale systems may disturb original ecosystems, reduce natural diversity or modify water quality. They may also beget socio profitable damage by displacing original populations. A number of systems in developing countries have been stalled or gauged down for these reasons; carrying loans from transnational lending institutions and banks for major systems has come more delicate.

Hydro- power emits some hothouse feasts on a life- cycle base (especially methane generated by decaying bioenergy in budgets), but in utmost cases far less than the burning of fossil energies.

## 6. Ocean Thermal Energy:

Ocean thermal energy conversion (OTEC) power shops have the eventuality to beget major adverse impacts on the ocean water quality. similar shops would bear entraining and discharging enormous amounts of seawater. Marine biota may be crashed on the defenses covering the warm and cold water inputs of an OTEC factory. Small fishes and crustaceans may be detained through the system, where they will witness rapid-fire changes of temperature, saltness, pressure, turbidity, and dissolved oxygen. A major change being in the cold water pipe is the depressurization of over to 107 Pascal in water coming from a depth of 1000 m to the face.

Sea face temperatures in the vicinity of an OTEC factory could be lowered by the discharge of effluent from the cold water pipe. This will have concussions on organisms and microclimate. The pumping of large volumes of cold water from depths of the ocean to the face will release dissolved feasts similar as carbon dioxide, oxygen, and nitrogen to the atmosphere. This would impact water pH and DO status, causing stress to marine life.

### Actions Programme

- Study of the rates of junking of dangerous accoutrements from atmospheric agents .
- Development of dependable indigenous models for the atmospheric dissipation and dry and wet settling of particulates generated from solar modules .
- Contingent analysis to identify the locales suitable for the construction of wind turbine halls .
- Optimise the product of electricity, energies and chemicals in integrated biorefineries.

## Conclusion :

Are we, also, championing that renewables be discarded? No, because such a view would be as illogical as the bone which we've questioned in this write- up; the bone which proclaims renewable energy sources as a completely safe and feasible answer to the pollution- generating non renewables. A quantitative analysis of the overall environmental impact of the energy design has not been carried out in detail yet. A number of conduct have been linked for addition in a comprehensive environmental feasibility study.

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