



ENVIRONMENTAL IMPACT OF CLIMATE CHANGE AND RENEWABLE ENERGY OPTIONS FOR SUSTAINABLE DEVELOPMENT

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ABSTRACT

There is a need to work to secure a stable global climate. We are already seeing changing weather patterns impacting food production and species migration. Fresh water scarcity risks and flooding are increasingly threatening our coastal communities and have direct impact on hundreds of thousands of people each year. Conflicts are increasing over strained ecosystems and local communities are being forced from their homes. Protecting the earth's ecosystems amidst other solutions can yield immediate, cost-effective climate change solutions. This paper reports the global effects of climate change and modern solution strategies to be employed in militating against climate change.

Keywords: Climate Change, Renewable energy, Anthropogenic factors, Environment, Global warming.

INTRODUCTION

Climate change is one of the greatest environmental issues of our time ^{2,9}. It is a long-term change in the statistical distribution of weather patterns over periods ranging from decades to millions of years.^{2,3} The United Nations Framework Convention on climate change in 1994 defines climate change directly or indirectly to human activity that alters the composition of the global atmosphere and which is an addition to natural climate variability observed over comparable time periods. In this context, climate change is synonymous with anthropogenic global warming.

Climate change reflects a change in the energy balance of the climate system caused by forcing mechanisms. Forcing mechanisms can either be internal or external. Internal forcing mechanisms are the natural processes within the climate systems such as the meridional turnover, while the external forcing mechanisms can be either natural such as changes in solar radiation output or anthropogenic such as increased greenhouse gases emission. Therefore, the climate system can be either intensifying or reducing a warming or cooling trend^{11,12}

This paper enumerates the major causes of climate change, their effects on our environment and possible solutions arising from the usage of renewable energies.

CAUSES OF CLIMATE CHANGE

The understanding of the current and potential impact that climate change is having on people and the environment today and in the coming decades is crucial because it will enable decision makers to seek ways of curbing or combating this challenge facing the nations and the world.

Several scientific researches and documentations have proved the world's climate is changing and that these changes are largely caused by human activities (anthropogenic factors).¹⁶

Of these anthropogenic factors that is human activities which affects climate are the increase in emission of greenhouse gases for example carbon IV oxide gas, nitrogen II oxide etc. which arise from combustion of fossil fuels, followed by aerosols (particulate matter in the atmosphere), cement manufacture, land use, ozone depletion, animal agriculture and deforestation^{(3),(4)}. Another important factor known to have caused climate change is solar intensity variations arising from sun's ageing and evolution^{14, 15}.

Research findings have shown that climate is influenced by the sum of all effects of solar variation, anthropogenic radiative forcing and so on.¹⁵

EFFECTS OF CLIMATE CHANGE

Climate change is beginning to transform life on earth. All over the world, seasons are shifting, temperatures are climbing and sea levels are rising⁷. Increasing temperatures is already affecting the world's physical and biological system.

Increasing temperatures is leading to decrease in the amount of water stored as ice in most of the world's glaciers, ice sheets and sea ice, also decreasing snow cover and earlier snow melt and changes in rainfall patterns which in turn result in challenges encountered in agriculture, food security, rural economies, water security due to drought or flood as the case may be.

It has been predicted that with rapid climate change one fourth of Earth's species could be headed for extinction by 2050⁽⁸⁾. Climate change could result in the following:

- Higher Temperatures
- Rising seas
- Placing wildlife at risk
- Increasing risk of drought, fire and floods
- Stronger storms and increased storm damage
- More heat related illnesses and diseases e.g. Typhoid fever, Malaria fever, meningitis etc.
- Economic losses
- Spoilage of food items such as fruits, nuts etc¹⁷.

Climate change will have important ramifications for security and the global balance of power. These changes will eventually result in increasing pressure on our resources and industries and possibly on our social system and health.

COMBATING CLIMATE CHANGE

Renewable sources of energy today make an insignificant contribution to total energy use compared to that of non-renewable which are major contributors to climate changes. Climate Change can be averted by increased reliance on renewable energy.¹² Developing countries' governments should make policies to support the creation of small and micro-businesses in renewable energy technology in order to break policy and institutional barriers.¹³

According to Stephen Singer (2011), the world could be fuelled 100 percent by renewables such as bioenergy, solar energy, geothermal, hydropower, ocean energy and wind by 2050. Deep reduction in the use of fossil fuels will keep temperatures from rising more than 3.8⁰F or 2⁰F above industrial level which could trigger catastrophic climate impacts.

Governments need to spend more money to introduce policies that will integrate renewables into existing power grids and promote their benefits in terms of reducing air pollution and public health hazards.¹⁴

Governments should introduce policies with public awareness to encourage tree planting and fight against deforestation. Our land usage should be such that will preserve our natural ecosystems.

CONCLUSION

Climate change can be averted by increased reliance on renewable energy. We and our government therefore need to act fast in changing our energy policies so as to expand renewable energy development over the coming decade.

Without changes in energy policies, fossil fuels will account for more than 75 percent of the overall energy use, and that will further increase global warming and worsen the climate condition.

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