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Gender specific implications of climate change

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ABSTRACT

Mankind is confronted with a twofold challenge: The global energy demand has to be met, while at the same time the climate change has to be prevented, before it becomes uncontrollable. Climate change is the defining human development issue of our generation. It threatens to erode human freedom, limits choice and further underscores the gender inequality which intersects with climate risks and vulnerabilities. This inequality is seen in both survival of women and sustenance of a girl child at birth especially in rural sectors. The impact of Climate change is gender specific not only in humans but also in animals. In humans it is more of vulnerability of women to the climate change due to the Women's limited access to resources especially in rural areas, where as in animals the change in climate will determine the sex of the animals. The best studied example is that of sea turtles. The majority of the world's turtles have Environmental Sex Determination (ESD). This means the sex of sea turtle hatchlings is temperature dependent, with warmer temperatures increasing the number of female sea turtles at the expense of males. The point of this paper is not to provoke a polemical debate on the power relationships between men and women but to discuss vulnerability and resilience to the potential impacts of climate change, and place women among these vulnerable groups. While the scientific analyses remain crucial, social imperatives must be taken into account. Although there are no obvious direct linkages between climate change and women, its potential impacts in terms of socio-economic vulnerability and adaptation place women in a key position. Integrating the gender approach is also helpful in designing and implementing policies, programmes and projects that lead to greater equity and equality. The ultimate goal of this study is to ensure the inclusion of gender as a scientific variable and a criterion for evaluating the effect of climate change.

INTRODUCTION

Climate change is real. The science is compelling and the longer we wait, the harder the problem will be to solve- Senator John Kerry

Climate change refers to the variation in the Earth's greenhouse or regional climates over time. It describes changes in the variability or average state of the atmosphere - or average weather - over time ranging from decades to millions of years. In recent usage, especially in the context of environmental policy, the term "climate change" is often used to refer only to the ongoing changes in modern climate, including the average rise in surface temperature known as global warming.

The climate change problem is related to changes in the concentration of the greenhouse gases (water vapor, CO_2, CH_4, N_2O and CFCs), which trap infrared radiation from the Earth's surface and thus cause the greenhouse effect. This effect is a natural phenomenon, which helps maintain a stable temperature and climate on Earth. Human activities, such as fossil fuel combustion, deforestation, and some industrial pro-

cesses have led to an increase in greenhouse gases concentration. Consequently, more infrared radiation has been captured in the atmosphere, which causes changes in the air temperature, precipitation patterns, sea-level rise, and melting of glaciers.

Our planet is unique in its ability to support life. However, within the limitations of our understanding of the terms evolution and progress, we humans have contributed to a number of disastrous climate change triggers. Some of them are:

- Increased carbon dioxide emissions.
- Increase in greenhouse gas levels.
- Increase in land, water and air pollution levels.

Causes of climate change

The effect of climate change on the planet and various life forms that inhabit it manifests over an extended period of time. Some of the major causes of climate change are:

Solar variation

There are a number of variations in solar activity that have been observed through the study of sunspots and beryllium isotopes. The sun provides the Earth with heat energy, an integral part of our climate. Solar variation has triggered a phenomenon called global warming[1].

Orbital variation

The elliptical path taken by the Earth around the sun plays a significant role in the distribution and amount of sunlight that reaches the Earth's surface. The eccentricity, precession and axial tilt of the Earth, along the elliptical path, creates changes in seasons.

Plate tectonics

The landmass on the planet is made up of plate tectonics that shift, rub against one another and even drift apart. This results in the repositioning of continents, wear and tear of the mountains, large-scale carbon storage and increased glaciations.

Volcanic action

In the course of volcanism, material from the Earth's core and mantle is brought to the surface, as a result of the heat and pressure generated within. Phenomenon like volcanic eruptions and geysers release particulates into the Earth's atmosphere that affect climate.

Thermohaline circulation

Climate changes also result from the atmosphere-ocean relationship.

Human influences

There are a number of anthropogenic factors that are responsible for change in the Earth's environment. The result of human influence on the climate is not only direct, but also unambiguous. Increase in carbon dioxide levels arising from fossil fuel combustion, release of aerosols or particulate matter, extensive land use and deforestation have resulted in severe climatic change.

Impacts of climate change

Climate change is already beginning to transform life on Earth**.** Around the globe, seasons are shifting, temperatures are climbing and sea levels are rising. If we don't act now, climate change will permanently alter the lands and waters we all depend upon for survival[2].

Some of the most dangerous consequences of climate change are listed here

- Decreased Food Security
- Impact on Livelihoods
- Water Resources: shortage and access
- Increased burden of care giving
- Lower Agricultural Production
- Sea Level Rise
- Extreme Events
- Effect on animal and human health.
- The Costs of Changing Energy Strategy
- Gender specific impact of Climate change.

The impact of climate change is huge on food security, water resources, health of humans and animals. Lot of study is being carried out to analyze the impact of climate change and measures are being taken to minimize these effects. But the measures taken are general and are not gender specific, whereas the response to climate change is gender sensitive.

Gender specific impact of climate change

Climate change is a global phenomenon and its impact is on humans, animals and plants. The impact of climate change is gender specific not only in humans but also in animals.

Gender sensitive response of animals to climate change

Climate variability and change affects birdlife and animals in a number of ways; birds lay eggs earlier in the year than usual, plants bloom earlier and mammals are come out of hibernation sooner. Distribution of animals is

also affected; with many species moving closer to the poles as a response to the rise in global temperatures.

Effects of global warming on sea turtles

The effects of global warming will have enormous impacts on sea turtles and other wildlife. The rate of global warming far exceeds the abilities of animals to adapt naturally to such dramatic environmental changes. These changes are predicted to cause the extinction of many species over the next few decades.

The Marine turtles are generally viewed as vulnerable to climate change because of the role that temperature plays in the sex determination of embryos, their long life history, long age-to-maturity and their highly migratory nature[4].

The majority of the world's turtles have environmental sex determination (ESD) which was not discovered until the early 1970's. This means the sex of sea turtle hatchlings is temperature dependent, with warmer temperatures increasing the number of female sea turtles at the expense of males. When the sea turtles deposit eggs on the beach, the eggs are subject to changes in beach conditions; temperature, moisture, and oxygen availability. With ESD, the incubation temperature of the eggs during the first trimester of development determines the sex of the hatchling. It has been found that eggs incubated above a pivotal temperature of about 30°C (86°F) develop into females and those below about 30°C develop into males[5].

In terms of climate change and sea turtles, and as the atmospheric temperature increases, so will that of the sand surrounding the eggs. Due to the incubation temperature determining the sex of sea turtle hatchlings, the more the beach temperatures rises, a greater number of females will be produced. Studies have also shown that too much exposure to temperatures over 34°C (93°F) can be lethal to some turtle embryos[6].

The idea of environmental sex determination is in contrast to most of the animals we are familiar with. Generally we think of animals having genetic sex determination in which the sex of the offspring is determined by the genetic contribution of the father. For instance, offspring receiving an X chromosome from the father develop into female embryos, and offspring receiving a Y chromosome from the father develop into male embryos. The sex ratios of human babies tend to be 1:1, because the probability of receiving either chromosome is equal at conception. This might appear a bit strange to humans, but it is not uncommon in the animal world. For instance, the sex of alligators and crocodiles are similarly affected by incubation temperature (although males are produced at warm temperatures).

Some scientists are now suggesting that global climate change has the potential to eliminate the production of male turtle offspring if mean global temperatures increase 4°C, (7.2°F) and increases of less than 2°C (3.6°F) may dramatically skew the male-female sex ratios.

Impact of climate change on crocodiles

The sex of the American crocodile (*Crocodylus acutus*) is determined by temperature during egg incubation, with males hatching in warmer temperatures. Scientists say that climate change and deforestation are raising temperatures enough to create a sex imbalance. A greater number of males will be produced and the female population might disappear eventually.

Turtles and crocodiles appear a good environmental indicator for the impacts of global climate change. You might consider the scenario of climate change and sea turtle extinctions a bit far-fetched, but other scientists believe that the disappearance of dinosaurs may be linked to environmental sex determination and rapid climate.

The impact of climate change is not only on animals but humans and particularly women are victims of climate change; there are many underlying reasons to support this:

Gender specific impact of climate change on women

Women and children are 14 times more likely to die than men during a disaster. Gender differences in deaths from natural disasters are directly linked to women's economic and social rights.

Gender-sensitive response to climate change

Climate change is a global phenomenon, with impacts that are already being experienced on a human level. It is recognized that it is those who are already the most vulnerable and marginalized, experience the greatest impacts (IPCC 2007), and are in the greatest need of adaptation strategies in the face of shifts in weather patterns and resulting environmental phenomena. At the same time, it is the vulnerable and marginalized who have the least capacity or opportunity to prepare for the impacts of a changing climate or to participate in negotiations on mitigation. As

women constitute the largest percentage of the world's poorest people, they are most affected by these changes. Children and youth – especially girls, and elderly women, are often the most vulnerable. Even where there is a lack of hard evidence, it is commonly recognized that climate change exacerbates existing inequalities in the key dimensions that are not only the building blocks of livelihoods, but are also crucial for coping with change, including: wealth; access to and understanding of technologies; education; access to information; and access to resources.

Impact of climate change on women

- Socio-economic vulnerability – economic sectors and women as primary victims[8].
- Gendered dimensions of poverty

It is a widely held view that assisting women in their fight against poverty is essential for economic development. Climate change is predicated to accentuate the gaps between the world's rich and poor, and women are among the poorest and most disadvantaged.

Gender equality opportunities in climate change policy and programming

Interventions that create greater awareness and understanding of the complex links between gender equality and the environment can help to build the capacity of the poor, especially poor women, to adapt to the impacts of, and take action on climate change[9]. Policy and programming considerations include:

- promoting cleaner-burning fuel for household use, which will help to reduce air pollution and harmful emissions, and will benefit women by cutting their annual cooking costs by 25 percent;
- incorporating both women and men into the decision-making framework on climate change mitigation and adaptation initiatives;
- supporting vulnerability-reduction measures that target women's needs;
- making use of technologies that are accessible, beneficial, and acceptable to both male and female stakeholders;
- facilitating extension studies, particularly for women, to improve the accessibility and use of new technology;
- supporting the provision of tools, including vulnerability assessments, that build on local and indigenous knowledge, held by women and men, of measures to adapt to, or mitigate the impacts of, climate change and
- integrating gender analysis and gender equality indicators into programs and projects to identify where specific vulnerabilities to climate change lie, and where opportunities for mitigating and adapting to climate change can be found.

CONCLUSION

Measures need to be taken today to ensure that the effects of climate change do not further impoverish women and further plunge those into a poverty and dependency abyss and also to make sure that the animals with Environmental Sex Determination do not become extinct due to the impacts of climate change.

Nothing is impossible to achieve because the world itself says I am possible. So let us make this world a better place to live by preventing further damage and take measures to safeguard our mother earth.

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