

## Chapter 20

# Harmful Effects of Ecosystem Impairment on Human Health

**Suruchi Singh**

*Banaras Hindu University, India*

**Shashi Bhushan Agrawal**

*Banaras Hindu University, India*

**Madhoolika Agrawal**

*Banaras Hindu University, India*

### ABSTRACT

*Growing global population has caused environment degradation through ecosystem impairment and over exploitation. Although, people have made great moves for improving life style, and enjoy a drastically improved quality of life but such improvements have been made at the cost of environment degradation. Climate change will force humans to adjust with changing environment and find ways to deal with short term protection and long term health consequences. The range of potential threats to human health caused by climate change is increasing and at the same time is not clear. So, owing to the potential magnitude and universality of such an issue, we have a moral obligation for developing proper tools and make informed choices that ultimately result in better lives for the humans.*

### INTRODUCTION

Current and futuristic pattern of global climate change are a major concern and is a major threat for plant and animal health. Climate change is a result from emission of greenhouse gases i.e. CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O, etc. Greenhouse gases released by human activities, change Earth's energy balance and thus its climate. Humans also affect climate by altering the nature of land surfaces and through the emission of pollutants that affect the atmospheric chemistry. The atmospheric concentrations of carbon dioxide, methane and nitrous oxide have increased significantly since the beginning of Industrial Revolution. Since pre-industrial times, the atmospheric concentration of carbon dioxide has increased by 40%, methane has increased by 150% and nitrous oxide has increased approximately by 20%. IPCC (2007) comprises

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an update on the state of knowledge of the associations between weather/climatic factors and public health. Direct impact of climate change comprises of changing weather patterns like:

- Increasing temperatures,
- More precipitation,
- Rising sea level and more frequent extreme events,

while indirect impact comprises changes in:

- Water, air and food quality,
- Vector ecology, and
- Changes in ecosystems, agriculture, industry and settlements.

Additional indirect impact may result from social and economic disruption. Climate change and general anthropogenic reasons together alter both the man-made and the natural landscapes and in the process impact the health of animals in multiple ways. Agriculture is both sensitive to global warming but it also contributes to climate change. Looking into a complex nexus between so many variables, we have aimed to bring forth the updated information on the dynamics of climate change and associated human health hazards mainly through ecosystem impairment.

## **KEY DRIVERS FOR CLIMATE CHANGE**

Today human activities have led to alterations of the Earth's climate. Changes in climate, influence the functioning of many ecosystems. There are three features characterizing a healthy ecosystem:

- Vigor,
- Elasticity and
- Organization.

A sustainable ecosystem is the one which has the ability to maintain its structure and function through time and can resist external stresses (Mageau et al., 1995). Healthy ecosystem provides support to the human community in the form of food, shelter, and the capacity to assimilate and recycle wastes, clean air and water. Two specific areas reflect the key challenges of understanding the complex influence of population dynamics on the environment, including

- Land use patterns and
- Global climate change.

One of the most harmful consequences of human activities is the emissions of greenhouse gases leading to global warming which is because of an uncontrollable emission of energy-trapping gases, such as carbon dioxide, methane, nitrous oxide and various human-made halocarbons. Changes in the atmospheric concentrations of greenhouse gases (GHGs) and aerosols, land covers and solar radiation alter the energy balance of the climate system and are thus drivers for climate change. They affect the

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