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Traumatic Effects Due to Climate Change and Global Warming **Sriparna Mitra**

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Abstracts

The concept of climatic change assumes a progression of extreme weather and environmental changes at an unprecedented rate and scale. The extreme and some time violent weather calls for the awareness about how an extreme climate will affect the people of the different parts of the world. It is important to recognise that the severity of impact mainly the physical, mental, and economical harm caused by such events is due to not solely to extreme weather or other natural events but rather to the interaction between human systems and these events. Global climate change is likely to have significant negative effects on health and well being for example TRAUMA is an unwanted impacts are likely to be directly faced or mediated and moderated by media representations and information technologies. This article describes mainly the psychological trauma: direct (acute or traumatic effects of extreme weather events and a changed environment); indirect (threats to emotional wellbeing based on observation of impacts and concern or uncertainty about future risk). The challenge of climate change can offer valuable insights about ecological literacy, ethical responsibilities, investigations from the point of view of psychological and social adoptions and also the allocation of resources which helps us to recover this problems.

Trauma is defined by the American Psychological Association (APA) as the emotional response someone has to an extremely negative event. While trauma is a normal reaction to a horrible event, the effects can be so severe that they interfere with an individual's ability to live a normal life. In a case such as this, help may be needed to treat the stress and dysfunction caused by the traumatic event and to restore the individual to a state of emotional well-being. **So Trauma** is an emotional response to a terrible event like an accident, rape or natural disaster. Immediately after the event, shock and denial are typical. Longer term reactions include unpredictable emotions, flashbacks, strained relationships and even physical symptoms like headaches or nausea. While these feelings are normal, some people have difficulty moving on with their lives. Psychologists can help these individuals find constructive ways of managing their emotions. Mainly trauma are two types – based on physical injury physical trauma, based on emotional shock psychological trauma. Jon Allen, a psychologist at the Menninger Clinic in Houston, Texas and author of *Coping with Trauma: A Guide to Self-Understanding* (1995) reminds us that there are two components to a traumatic experience: the objective and the subjective:

“It is the subjective experience of the objective events that constitutes the trauma...The more you believe you are endangered, the more traumatized you will be...Psychologically, the bottom line of trauma is overwhelming emotion and a feeling of utter helplessness. There may or may not be

bodily injury, but psychological trauma is coupled with physiological upheaval that plays a leading role in the long-range effects”.

Psychological effects are likely to be most severe if the trauma is:

- Human caused
- Repeated
- Unpredictable
- Multifaceted
- Sadistic
- Undergone in childhood

Causes of Trauma: As traumatic as single-blow traumas are, the traumatic experiences that result in the most serious mental health problems are prolonged and repeated, sometimes extending over years of a person’s life.

Natural vs. Human Made

Prolonged stressors, deliberately inflicted by people, are far harder to bear than accidents or natural disasters. Most people who seek mental health treatment for trauma have been victims of violently inflicted wounds dealt by a person. If this was done deliberately, in the context of an ongoing relationship, the problems are increased. The worst situation is when the injury is caused deliberately in a relationship with a person on whom the victim is dependent—most specifically a parent-child relationship.

Varieties of Man-Made Violence

War/political violence – Massive in scale, severe, repeated, prolonged and unpredictable. Also multiple: witnessing, life threatening, but also doing violence to others. Embracing the identity of a killer.

Human rights abuses – kidnapping, torture, etc.

***Criminal violence* – discussed above.**

Rape – The largest group of people with posttraumatic stress disorder in this country. A national survey of 4000 women found that 1 in 8 reported being the victim of a forcible rape. Nearly half had been raped more than once. Nearly 1/3 was younger than 11 and over 60% were under 18. Diana Russell’s research showed that women with a history of incest were at significantly higher risk for rape in later life (68% incest history, 38% no incest).

Domestic Violence – recent studies show that between 21% and 34% of women will be assaulted by an intimate male partner. Deborah Rose’s study found that 20-30% of adults in the US, approved of hitting a spouse.

Child Abuse – the scope of childhood trauma is staggering. Everyday children are beaten, burned, slapped, whipped, thrown, shaken, kicked and raped. According to Dr. Bruce Perry, a conservative estimate of children at risk for PTSD exceeds 15 million.

Sexual abuse – According to Dr. Frank Putnam of NIMH, at least 40% of all psychiatric inpatients have histories of sexual abuse in childhood. Sexual abuse doesn’t occur in a vacuum: is most often accompanied by other forms of stress and trauma-generally within a family.

Trauma can be caused by several factors and experiences, some more obvious than others. To fully understand and help an individual who is experiencing trauma, one must go beyond the experience and fully investigate and understand the cause(s) of an individual’s trauma. Understanding the cause or causes might provide vital clues in developing ways and tools for

working with the trauma itself, enabling a person to manage his or her symptoms of trauma, as well as bringing to the person's awareness the original causes that may result in retraumatization. This entry introduces the causes of trauma, focusing on the following areas: conceptualization of the causes of trauma, emotional and psychological trauma, spiritual trauma, and cultural trauma. Also provided is an overview of other causes of trauma that may be generally overlooked.

All causes of trauma have three aspects in common:

An external cause: It is generally believed that trauma is not inflicted on oneself by oneself. It has to be inflicted by another person or by something else. The suddenness and the unpredictability of the situation or experience are key components in experiencing something as traumatic.

Violation: This refers to the sense of experiencing something or someone as an intrusion in the individual's life. In other words, the individual may experience his or her physical, emotional, and psychological self as being invaded by an unwelcomed and unexpected person or thing that presents itself as a major source of distress.

Loss of control: Because the traumatic experience is unexpected and sudden, individuals, more often than not, are unprepared for the situation. This can then result in a sense of feeling overwhelmed and helpless, leaving the individual feeling extremely vulnerable and exposed to the cause of trauma.

The causes of trauma may differ from one individual to another—that is, what is perceived as a traumatic experience for one person may not necessarily be the same for someone else. However, it could be stated that some causes of trauma may be generalized to a larger population. These causes may be considered universal because of their tendency to affect individuals from various cultural, social, political, religious, spiritual, economic, and psychological backgrounds. The following section discusses what are believed to be universal causes or sources of trauma.

Reason of Trauma as a Interdisciplinary Perspective: Trauma studies is a unique interdisciplinary platform that has acquired a prominent place in contemporary academic studies in the context of increasing visibility of violence in various spheres of human experience. It addresses socio-political issues of immense practical importance. From the psychological point of view Traumatology is the study, development and application of psychological and counseling services for people who have experienced extreme events.

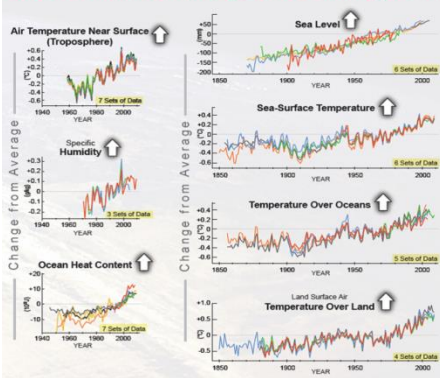
Climate Change: *Any significant change in measures of climate, such as temperature, precipitation, wind, and other weather patterns, lasting for decades or longer.*” (according to WHO) Since 1900 the global surface temperature of the Earth has risen by about 0.8 oC and since the 70s by about 0.5 oC. This temperature increase occurred during a significant atmospheric concentration increase of some greenhouse gases, especially CO₂ and CH₄, which is known to be mainly due to human emissions. According to the Anthropogenic Global Warming Theory (AGWT) humans have caused more than 90% of global warming since 1900 and virtually 100% of the global warming since 1970. The AGWT is currently advocated by the Intergovernmental Panel on Climate Change (IPCC), which is the leading body for the assessment of climate change established by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO). Many scientists believe that further emissions of greenhouse gases could endanger humanity

Signs of Climate Change

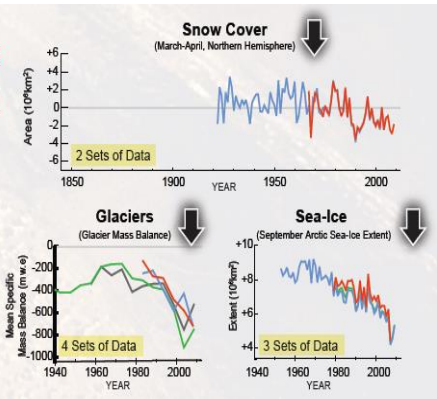
The evidence of climate change extends well beyond increases in global surface temperatures. It also includes:

- Changing precipitation patterns.
- Melting ice in the Arctic.
- Melting glaciers around the world.
- Increasing ocean temperatures.
- Rising sea level around the world.
- Acidification of the oceans due to elevated carbon dioxide in the atmosphere.
- Responses by plants and animals, such as shifting ranges.

These indicators all increase in a warming world



These indicators all decrease in a warming world

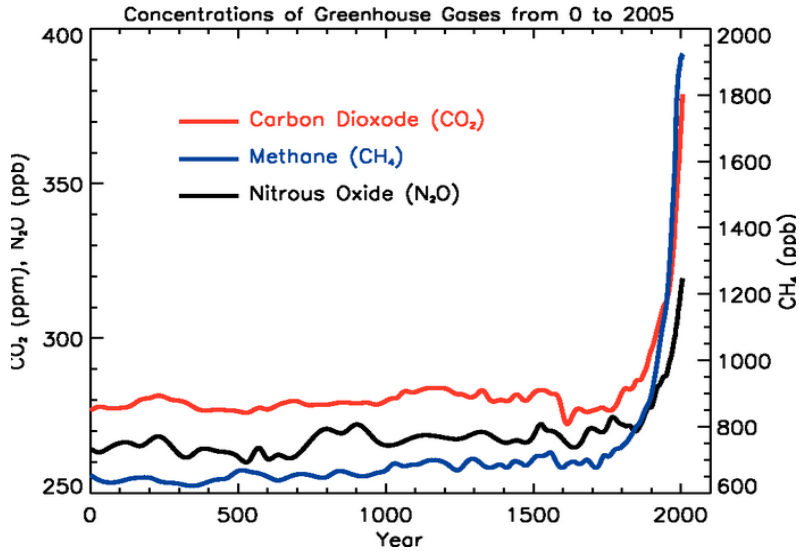


Causes of Climate Change: Climate change is a term that refers to major changes in temperature, rainfall, snow, or wind patterns lasting for decades or longer. Both human-made and natural factors contribute to climate change-

- Human causes include burning fossil fuels, cutting down forests, and developing land for farms, cities, and roads. These activities all release greenhouse gases into the atmosphere.
- Natural causes include changes in the Earth’s orbit, the sun’s intensity, the circulation of the ocean and the atmosphere, and volcanic activity.

Although the Earth’s climate has changed many times throughout its history, the rapid warming seen today cannot be explained by natural processes alone.

Human activities are increasing the amount of greenhouse gases in the atmosphere. Some amount of greenhouse gases is necessary for life to exist on Earth—they trap heat in the atmosphere, keeping the planet warm and in a state of equilibrium. But this natural greenhouse effect is being strengthened as human activities (such as the combustion of fossil fuels) add more of these gases to the atmosphere, resulting in a shift in the Earth’s equilibrium.



The climatic meaning of Mann's Hockey Stick temperature graph. Let us clarify the issue from a historical perspective. In 1998 and 1999 Mann published the first reconstruction of global temperature over the last 1000 years. This paleoclimatic temperature reconstruction is known as the Hockey Stick. This graph suggests that before 1900 the temperature of the planet was almost constant and since 1900 an abnormal warming has occurred. From the Medieval Warm Period (1000-1300) and the Little Ice Age (1500-1750) this reconstruction predicts a cooling of less than 0.2 °C. This graph surprised many, including historians and geologists who have consistently argued that the early centuries of the millennium were quite warm (the Medieval Warm Period) while the period from 1500 to 1800 was quite cold (the Little Ice Age).

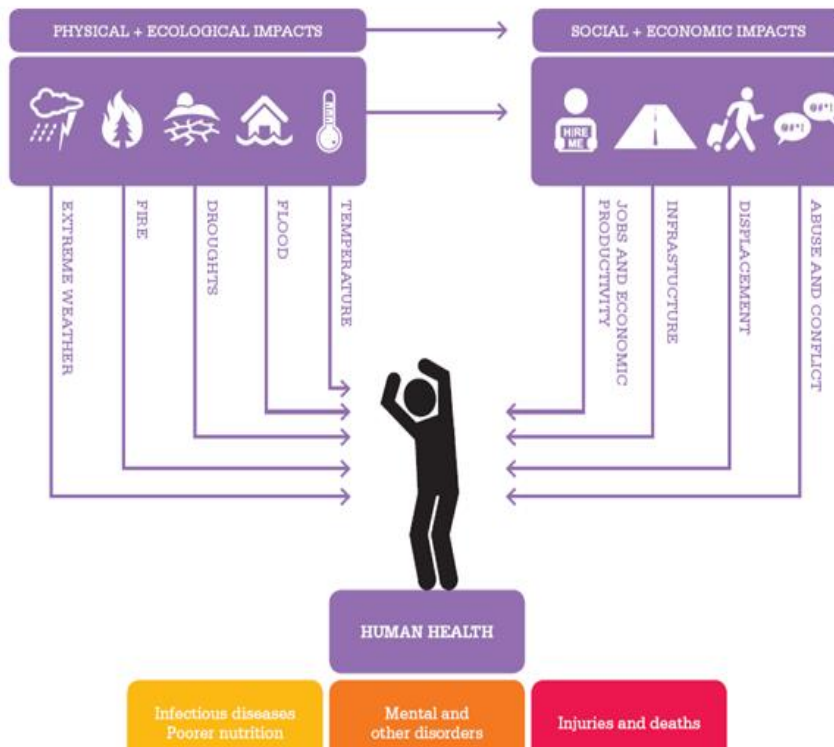
Climate Risk

- Stronger, longer heat waves
- More frequent/heavy precipitation events
- More frequent/severe droughts
- More frequent severe weather events
- Sea level rise/coastal flooding

Climate Change and Health: There is consideration worldwide on the potential health impacts from global climate change.








Three kinds of health impacts that is 3E have been identified [World Health Organisation (WHO). 2003.]:

- Environmental effects-relatively direct impacts, usually caused by weather extremes
- Ecological effects-Consequences of environmental change and ecological disruption in response to climatic change
- Economical effects-Consequences that occur when populations are demoralised and displaced by the following climate change induced factors:
 - economic dislocation,
 - environmental decline and conflict situations including traumatic, infectious, nutritional, psychological and other health consequences.



Disasters carry the potential for immediate and severe psychological trauma from personal injury, death of a loved one, damage to or loss of personal property (e.g., home and pets), and disruption in or loss of livelihood (Neria & Shultz, 2012; Terpstra, 2011; Simpson, Weissbecker, & Sephton, 2011). Impacts of climate change have generally focused on physical impacts, like more extreme storms, rising sea levels, and increasingly severe droughts. Psychological impacts, on the other hand, have received comparatively little attention. The goal of this article is to summarize these and other impacts on human well-being, and provide climate communicators, planners, policymakers, public health officials, and other leaders the tools they need to both respond to these impacts and bolster public engagement around climate change.

Peoples are Mostly Affected

Populations vulnerable to the health impacts of climate change	Factors that may increase their vulnerability
<p>Remote Indigenous communities</p> 	<ul style="list-style-type: none"> › Isolation and remoteness › Poor access to healthcare services and poor existing health › Poor living conditions (especially sanitation and hygiene), as well as inadequate shelter from climate extremes due to homelessness and poor quality housing › Disruption of traditional connections to land and country through loss of cultural practices and history
<p>People with low incomes</p> 	<ul style="list-style-type: none"> › Poor access to healthcare services and poor existing health › Limited social support networks › Limited financial resources to respond to food price rises › Less access to public health information and warnings › Limited ability to take action in response to public health advice and warnings
<p>Elderly</p> 	<ul style="list-style-type: none"> › Physical and social isolation, limited support networks › Diminished physical and mental abilities (especially ability to regulate body temperature, and existing acute and chronic disease) › Less able to care for themselves during adverse weather › Prescription medication use can mask early symptoms of heat stress and exacerbate effects › Less able to take appropriate action in response to public health warnings
<p>Children</p> 	<ul style="list-style-type: none"> › Immature physical responses, and reduced capacity to cope with adverse weather and air pollutants › Behaviours that can lead to increased exposure to adverse weather, for example, spending a lot of time outdoors playing, not recognising signs of thirst and exhaustion › Increased rest requirements (compared to adults) – lack of sleep during hot nights may be particularly harmful › Experiencing extreme events can lead to increased mental health and post-traumatic stress issues in later life
<p>Physical workers (especially outdoor workers)</p> 	<ul style="list-style-type: none"> › Physically demanding activities during hot weather become dangerous to health – in particular, outdoors or in poorly ventilated indoor environments › Reduced productivity under increasingly difficult and dangerous conditions › Lack of rest periods, and lack of cool resting places, during working hours, and/or working longer hours to make up for lost productivity during hot periods › Multiple extreme weather events, especially those in close succession, may contribute to mental health issues among emergency responders, medical staff
<p>Those with existing medical conditions</p> 	<ul style="list-style-type: none"> › Poor existing health › Decreased physiological function and response to stressors › Responses may be further complicated by prescription medication use, for example, diminished thirst signals can heighten risk of dehydration
<p>Rural communities</p> 	<ul style="list-style-type: none"> › Poorer access to healthcare services, and poorer infrastructure for health-promoting activity (shade, sporting clubs) › Close dependence on environment for livelihood and lifestyle › Higher proportion of occupations with a direct relationship with climate and higher proportion of businesses in regional cities and towns directly or indirectly dependent on a supportive climate
<p>Tourists (including domestic tourists)</p> 	<ul style="list-style-type: none"> › Lack of familiarity with Australian climate and how to cope (for example, sun protection, higher fluid intake) › Lack of familiarity with public health warnings › Language barrier preventing understanding of how to respond appropriately to warnings (for example, daily reports of UV index, pollen count) › Lack of familiarity with local resources and procedures at times of need (for example, emergency evacuation routes, bushfire safety)

Source: Modified from Bennett et al., 2011

Environmental Effects

Impacts Due to Increasing Rate of Temperature

The world temperature continuously increases which creates negative impact in our environment.

Physical Trauma

Direct impacts to health:

Heat cramps – muscular pains and spasms

Heat exhaustion – body fluids are lost through heavy sweating

Heat stroke – is life threatening.

Range of areas that can potentially be affected with gradual and extreme temperature increases

Includes impacts on ecosystems, water, food, disease-carrying vectors, lifestyle, community resilience.



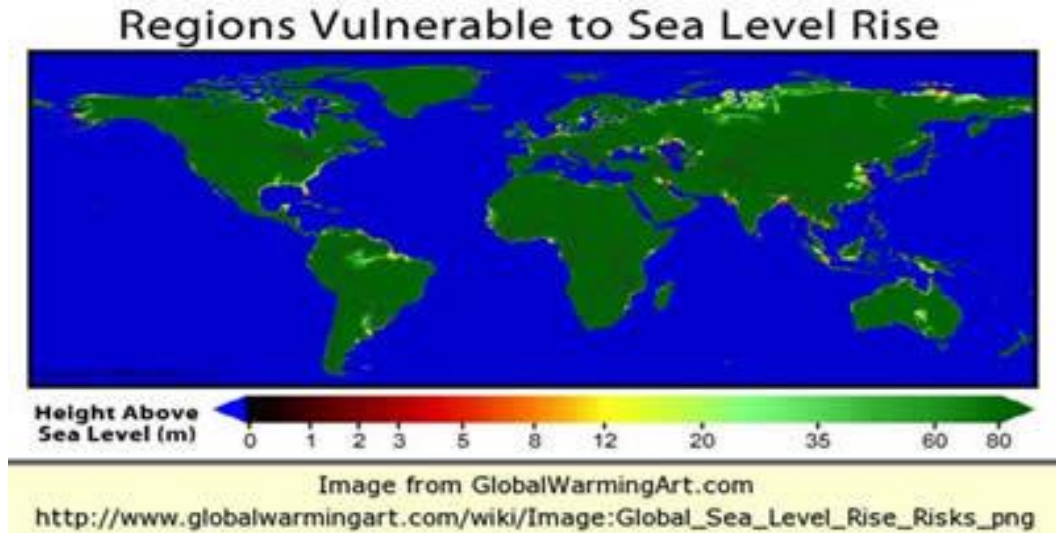
A fire in a tropical peat forest on Sumatra in Indonesia



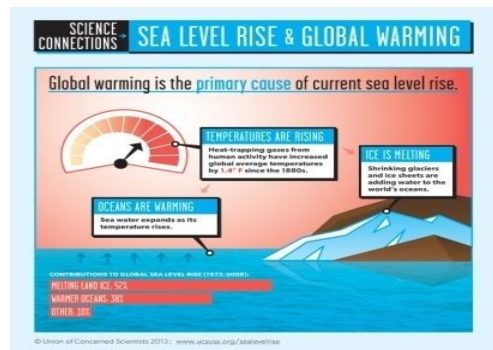
REUTERS

Psychological Trauma: Climate change is likely to lead to increases in stress-related problems such as substance abuse, anxiety disorders and depression (Neria & Shultz). There is evidence that increases in mean temperature are associated with increased use of emergency mental health services. This is true not only in regions with warm climates like Israel, Australia, and parts of the U.S., but also in relatively cooler countries such as France and Canada (Vida, Durocher, Ouarda, & Gosselin, 2012). Higher temperatures seem to provide an additional source of stress that can overwhelm coping ability for people who are already psychologically fragile.

Sea Level Rise: The so-called greenhouse effect or global warming may cause a Sea Level Rise, which will have a great impact on the long-term coastal morphology. The possible and gradual Sea Level Rise will cause a general shoreline retreat and an increased flooding risk and has to be handled according to the local conditions.



There is strong evidence that global sea level is now rising at an increased rate and will continue to rise during this century. While studies show that sea levels changed little from AD 0 until 1900, sea levels began to climb in the 20th century. The two major causes of global sea-level rise are thermal expansion caused by the warming of the oceans (since water expands as it warms) and the loss of land-based ice (such as glaciers) due to increased melting. Records and research show that sea level has been steadily rising at a rate of 0.04 to 0.1 inches per year since 1900. This rate may be increasing. Since 1992, new methods of satellite altimetry (the measurement of elevation or altitude) indicate a rate of rise of 0.12 inches per year.



Direct Impacts: Over 600 million people live in coastal areas that are less than 10 meters above sea level, and two-thirds of the world’s cities that have populations over five million are located in these at-risk areas . With sea level projected to rise at an accelerated rate for at least several centuries, very large numbers of people in vulnerable locations are going to be forced to relocate. If relocation is delayed or populations do not evacuate during times when the areas are inundated by storm surges, very large numbers of environmental refugees are likely to result.

According to the IPCC, even the best-case scenarios indicate that a rising sea level would have a wide range of impacts on coastal environments and infrastructure. Effects are likely to include coastal erosion, wetland and coastal plain flooding, salinization of aquifers and soils, and a loss of habitats for fish, birds, and other wildlife and plants . The Environmental Protection Agency

estimates that 26,000 square kilometers of land would be lost should sea level rise by 0.66 meters, while the IPCC notes that as much as 33% of coastal land and wetland habitats are likely to be lost in the next hundred years if the level of the ocean continues to rise at its present rate. Even more land would be lost if the increase is significantly greater, and this is quite possible . As a result, very large numbers of wetland and swamp species are likely at serious risk. In addition, species that rely upon the existence of sea ice to survive are likely to be especially impacted as the retreat accelerates, posing the threat of extinction for polar bears, seals, and some breeds of penguins.

Unfortunately, many of the nations that are most vulnerable to sea level rise do not have the resources to prepare for it. Low-lying coastal regions in developing countries such as Bangladesh, Vietnam, India, and China have especially large populations living in at-risk coastal areas such as deltas, where river systems enter the ocean. Both large island nations such as the Philippines and Indonesia and small ones such as Tuvalu and Vanuatu are at severe risk because they do not have enough land at higher elevations to support displaced coastal populations. Another possibility for some island nations is the danger of losing their fresh-water supplies as sea level rise pushes saltwater into their aquifers. For these reasons, those living on several small island nations (including the Maldives in the Indian Ocean and the Marshall Islands in the Pacific) could be forced to evacuate over the 21st century .

Impacts of Flood

Immediate deaths and injuries

Infectious diseases – Malaria, Dengu, leptospirosis, hepatitis, diarrhoeal, respiratory, and vector-borne diseases

Exposure to toxic substances

Increased demands on health systems



Psychological Trauma: Members of the community, who all reported a strong attachment to the land, said they had noticed changes in the local climate and that these changes were having negative effects. Rising sea levels or changing local climate conditions may render certain locations uninhabitable or undesirable, leading to a process that has been described as an ecomigration with resulting environmental refugees. Climate change may increase violence and aggression through one of several mechanisms. First, violence and aggression may increase when competition for scarce natural resources increases, or when ecomigration brings formerly separate communities into contact and induces competition for resources like jobs and land. when existing social networks are disrupted as communities dissolve, restraints on crime weaken, thus increasing the probability of criminal behavior. For example, when government resources are devoted to bolstering infrastructure to respond to natural disasters, they may be diverted away from criminal justice systems, mental health agencies, and educational institutions, all of which tend to help mitigate crime.

Loss of Personal Identity -Losing treasured objects when a home is damaged or destroyed is one way in which climate change can significantly impair an individual's sense of self and identity. This is because objects help afford us a continuing sense of self- definition, particularly those objects that represent important moments in life (e.g. journals), relationships (e.g. gifts or photo- graphs), or personal/family history (e.g. family heirlooms) (Dittmar, 2011). Interviewees in a study by Carroll, Morbey, Balogh, and Araoz (2009) indicated that victims were particularly troubled by the loss of personal possessions, such as things they had made them- selves or special things they had spent time and effort to procure or maintain.

As Simpson, Weissbecker and Sephton (2011) point out, a disaster event is likely to precipitate a set of further stressors that can produce strains on social relation- ships. For example, families whose homes are severely damaged or destroyed by a storm, or wildfire must be relocated, some- times multiple times, before settling permanently. They may have to be separated from one another and from their systems of social support. Children may have to attend a new school or miss school altogether. Parents may themselves less able to be effective caregivers. Family relationships may suffer. In addition, those who are able to remain in their own home may still suffer the stress of losing a sense of their home as a safe and secure environment (Tap- sell & Tunstall, 2008). This can have implications for interpersonal connections, as a home provides the context for social relationships (Carroll, Morbey, Balogh, & Araoz, 2009). When the physical home is damaged, it changes the dynamic of the social relationships, most often negatively.

Drought: Drought is an insidious hazard of nature. It is often referred to as a "creeping phenomenon" and its impacts vary from region to region. Drought can therefore be difficult for people to understand. It is equally difficult to define, because what may be considered a drought in, say, Bali (six days without rain) would certainly not be considered a drought in Libya (annual rainfall less than 180 mm). In the most general sense, drought originates from a deficiency of precipitation over an extended period of time--usually a season or more--resulting in a water shortage for some activity, group, or environmental sector. Its impacts result from the interplay between the natural event (less precipitation than expected) and the demand people place on water supply, and human activities can exacerbate the impacts of drought. Because drought cannot be viewed solely as a physical phenomenon, it is usually defined both conceptually and operationally.



Direct Effects: Hunger and famine Drought often provide too little water to support food crops, through either natural precipitation or irrigation using reserve water supplies. The same problem affects grass and grain used to feed livestock and poultry. When drought undermines or destroys food sources, people go hungry. When the drought is severe and continues over a long period, famine may occur.

Thirst all living things must have water to survive. People can live for weeks without food, but only a few days without water.

Disease Drought often creates a lack of clean water for drinking, public sanitation and personal hygiene, which can lead to a wide range of life-threatening diseases.

Wildfires The low moisture and precipitation that often characterize droughts can quickly create hazardous conditions in forests and across range lands, setting the stage for wildfires that may cause injuries or deaths as well as extensive damage to property and already shrinking food supplies.

Psychological Trauma: Drought is a special case in the category of climate change related disasters. Unlike other acute disasters, the onset of drought is difficult to determine several dry years may or may not be the beginnings of a long and significant drought phase. While some people may initially be resilient to the impacts of drought, over time drought conditions lead to significant psychological distress (Carnie, Berry, Blinkhorn, & Hart, 2011). Rural farming communities are particularly prone to the effects of drought, which not only impacts daily life, but also threatens community viability and individual livelihoods in the long term. Drought has been linked to increased incidence of suicide among male farmers (Hanigan, Butler, Kokic, & Hutchinson, 2012).

In a study of young people in a drought-affected area, Carnie, Berry, Blinkhorn, and Hart (2011) found that young people felt high levels of distress and reported being concerned about their families, overwhelmed, isolated, and worried about the future. People living in a drought-affected area who had also recently experienced some other adverse life event were more likely to express a high degree of worry about the ongoing drought conditions.

Social conflict and war—When a precious commodity like water is in short supply due to drought, and the lack of water creates a corresponding lack of food, people will compete—and eventually fight and kill—to secure enough water to survive.

Migration or relocation—Faced with the other impacts of drought, many people will flee a drought-stricken area in search of a new home with a better supply of water, enough food, and without the disease and conflict that were present in the place they are leaving.

In some cases, the psychological trauma of a disaster can lead to more severe conditions, such as major depressive disorder (MDD), or post-traumatic stress disorder (PTSD). PTSD has been studied in survivors of several recent natural disasters (e.g., Mason, Andrews, & Upton, 2010; Alderman, Turner, & Tong, 2012). PTSD is often linked to higher levels of suicide seen among male farmers in Australia during periods of prolonged drought (Hanigan, Butler, Kokic, & Hutchinson, 2012). PTSD can also increase the likelihood of substance abuse, depression and anxiety, violence and aggression, interpersonal difficulties, and job-related difficulties (Simpson, Weissbecker, & Sephton, 2011). Individuals who experience multiple acute events such as more than one disaster, or multiple years of drought are likely to experience even more severe trauma and may be even more susceptible to PTSD and other types of psychiatric symptoms (e.g., Edwards & Wiseman, 2011; Hobfoll, 2007). For example, a study of refugees exposed to multiple traumatic events showed a higher rate of immediate and lifetime PTSD and lower probability of remission than those refugees who had experienced few traumatic events (Kolassa et al., 2010). In addition, the likelihood of

suicide is higher among those who have been exposed to more severe disasters (Norris, Friedman, & Watson, 2002).

Occupational Identity-Loss of identity caused by climate change may be attributable to the effect of climate change on some types of work. Loss of identity has been observed in farmers in Australia suffering from drought (Stain et al., 2011). This is likely due to the tight relationship between identity and place-based occupations like farming and shing (Devine-Wright, 2013). Climate change may threaten or destroy these place-bound occupations by significantly altering the natural environment.

Ecological Effects

Impacts Of Drinking Water Supply

Drying climate causes:

Changes to land cover and run-off patterns (erosion)

Increased bushfire risk

Increased sediment, nutrient and debris.

Flooding can also affect drinking water supplies:

Coastal intrusion

Contamination.

Reduction in flows to dams and groundwater aquifers

Increased evaporation from surface water storages

Salt water intrusion into coastal aquifers

Acidification of susceptible inland aquifers

Increased risk from the:

Concentration of nutrient and chemical contaminants

Formation of toxic algal bloom

Impacts of Air Quality: Weather has a major role in the development, transport, dispersion and deposition of air pollutants

Air pollution episodes are often associated with stationary or slowly moving air masses

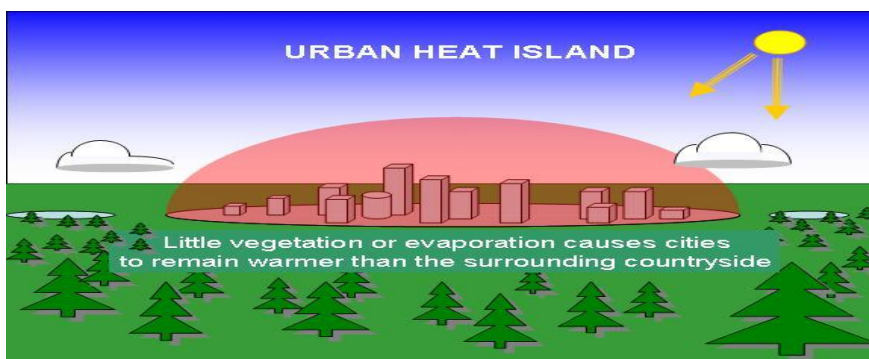
Air pollutants and fine particulate matter may change in response to climate change.

Airflow on edges of a high-pressure system can transport ozone precursors. Ozone levels are increasing in many areas

An increase in fire events will mean increased toxic gases and particulates

Changes in wind pattern may increase long-range transport of air pollutants

Weather patterns can enhance urban “heat islands” which can lead to elevated pollution levels.



Ozone – pneumonia, COPD, asthma, allergic rhinitis and others – premature mortality

Particulate matter (PM) – known to affect morbidity and mortality

Toxic gases and PM from fires contribute to acute and chronic respiratory illness. Evidence from 1997 Indonesia fires – transboundary impacts

Windblown dust (respirable particles, trace elements) from desert regions can affect populations in remote areas. Evidence that mortality is increased in the days after a dust storm.

Economical Effects

Food Insecurity: Food insecurity is limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways. (Definitions are from the Life Sciences Research Office, S.A. Andersen, ed., "Core Indicators of Nutritional State for Difficult to Sample Populations," *The Journal of Nutrition* 120:1557S-1600S, 1990.)

Food insecurity exists when people lack sustainable physical or economic access to enough safe, nutritious, and socially acceptable food for a healthy and productive life. Food insecurity may be chronic, seasonal, or temporary. Nutritional consequences of insufficient food or undernutrition include protein energy malnutrition, anemia, vitamin A deficiency, iodine deficiency, and iron deficiency.

Direct Effects: the impact of climate change has been particularly devastating on people's ability to grow, access and deliver food supplies. The World Bank report on climate change estimates that increase flows into Bangladesh's three main river could cause a 10 percent rise in flood areas by 2050. The agricultural industry will be affected the most with a reduction in rice production, the main crop in Bangladesh, and a decline in one crop in each region, causing a loss of \$26 billion in agricultural GDP between 2005-2050.

Psychological Trauma: Food scarcity, with its dangers for survival and serious physical and psychological discomfort. Hunger is a physiological condition that an individual may experience as a result from food insecurity or an involuntary lack of food. The definition of hunger is a discomforting sensation that may result in weakness, illness, and/or pain. The current USDA food insecurity measure provides a context for the situations that may lead to or affect the experience of hunger.

Economic impacts may be as follows:

Loss of income and/or assets

Reduction of goods and services

Higher costs of insurance, food, water and energy

Financial strain for Governments and others

Impacts on provision of health services.

The adverse impact we can summarise easily in this way :

Events	Direct impact	Psychological trauma
Increase temp.	Desertification Melting of ice Heat stroke	Stress related problems Disorder & depression
Sea level rise	Loss of land, property, agricultural field	Loss of personal identity
Flood	Immediate death Infectious diseases Such as Dengu.	Loss of personal identity Migration
Drought	Hunger Famine Wild fire	Social conflict Migration and relocation Loss of occupational identity
Scarcity of drinking water supply	Contamination	
Air quality	Construct urban heat island	headache
Food insecurity	Hunger Mal nutrition	Problems of existence
Economic dislocation	Loss of income No job vacancy	Depression Suicide

Social Impact

Some of the key impacts of climate change on community health include:

- Decreased community cohesion
- Disrupted sense of continuity and belonging
- Increased violence and crime
- Increased social instability
- Increased interpersonal aggression and domestic abuse

Now the think is that how we control this problem? We are searching oxygen in Moon and water in Mars and at the same time we contaminating air and water in our Earth. What should we do with this technological advancement? But where we stands in now a days we can't say in the language by Tagore- “dao fire se aranya”. So we need mass awareness about pollution, global warming ,and also climate change with the more adaptability with this new climatic condition.



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