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9. Climate Change-Global Warming-Indian Scenario

Dr. Rajabhuvaneswari Ariyamuthu

Sri Sairam Institute of Technology,
West Tambaram, Chennai.

9.1 Introduction:

Climate change caused by human-caused greenhouse gas emissions is having and will continue to have a substantial influence on people and the environment for years to come. The increase in average global temperatures caused by increased greenhouse gases in the atmosphere is one component of climate change. Sea level rise, changes in precipitation and humidity patterns, increased extreme weather events, and greater climate variability are all effects of rising global temperatures on the Earth. All of these changes are referred to as "climate change."

Climate change is already influencing the future and putting the planet in hazardous situations. Cities are becoming increasingly accustomed to more regular and severe extreme weather occurrences, such as superstorms and heatwaves. More deadly wildfires are already raging, and people are fleeing flooded houses or migrating to avoid rising sea levels. As international governments and corporations work to reduce global greenhouse gas emissions, policies and economies are changing as well. The way energy is generated is also changing, from fossil fuels to carbon-free renewables like solar and wind power. As potential answers, new technologies are being developed, ranging from next-generation nuclear energy to devices that trap carbon from the atmosphere.

Climate is generally roughly defined as the average weather in a certain location, taking into account factors such as temperature, precipitation, humidity, and windiness. Climate, according to a more specific definition, is the average condition and variability of these features throughout time. Both definitions accept that the weather is always changing due to atmospheric instability. And, just as the weather fluctuates from day to day, so does climate, from daily day-night cycles to geologic periods spanning hundreds of millions of years. Climate variation is, in a sense, a redundant expression in—climate is continually changing. There are no two years that are exactly alike, nor are any two decades, centuries, or millennia.

Other aspects of Earth, such as oceans, glaciers and sea ice, land surfaces, and flora, influence and are linked to the atmosphere. They form an interconnected Earth system, in which all components interact and impact one another in a variety of ways.

Climate influences the distribution of vegetation on Earth's surface, but vegetation influences climate by reflecting radiant energy into the atmosphere, transferring water from soil to the atmosphere, and influencing horizontal air movement across the land surface.

Earth scientists and atmospheric scientists are still working to fully comprehend the complex feedbacks and interactions that exist among the Earth system's numerous components. The emergence of an interdisciplinary field known as Earth system science is assisting this endeavor.

Given the huge importance of climate change for people and the environment, university students must have a thorough understanding of climate change subjects, such as causes and effects, mitigation and adaptation, tool and technology use, and effective communication. Because it covers learning issues relating to the physical sciences, biological sciences, environmental science, social science, agriculture, forestry, health and medicine, communications, and public services, understanding climate change is relevant for students across many disciplines. Climate is a statistical description of important quantities in terms of their mean and variability over timescales ranging from months to thousands or millions of years. The classical period is 30 years, and surface variables such as temperature, precipitation, and wind are most commonly used. The status of the climatic system, including a statistical description, is referred to as climate in a broader meaning.

9.2 What Is Climate Change and Why Does It Matter?

Climate change refers to the periodic alteration of Earth's climate caused by changes in the atmosphere, as well as interactions between the atmosphere and several other geological, chemical, biological, and geographical variables within the Earth's system.

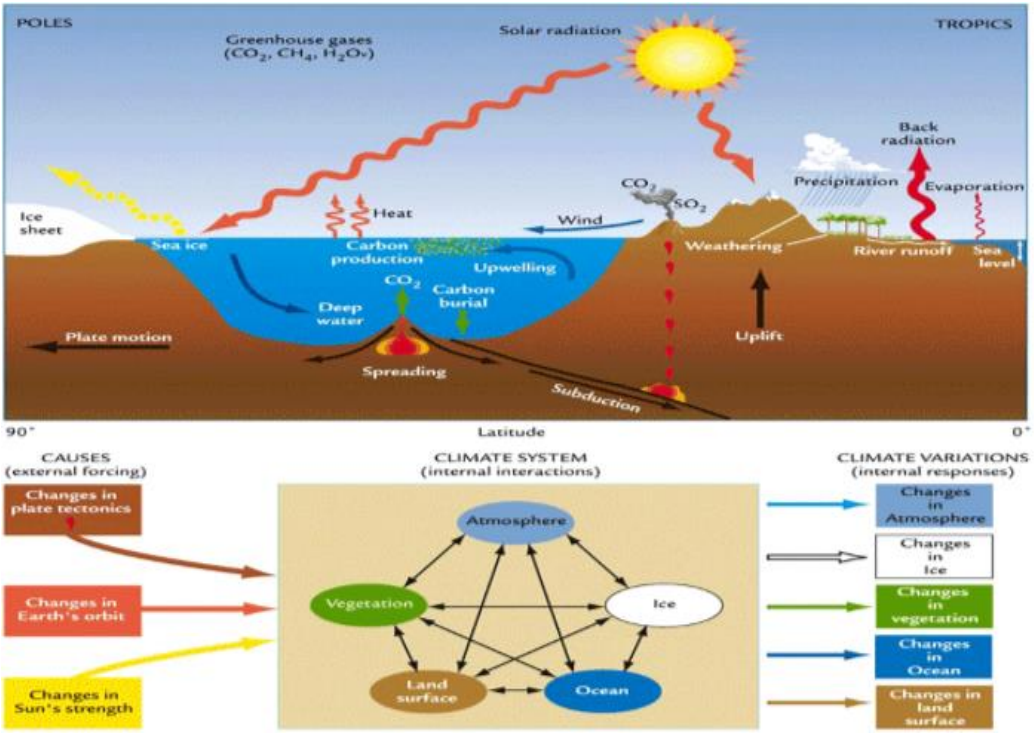

Figure 9.a: Greenhouse Gases and Climate Change

Climate change is defined as the change in the climate of the Earth as a whole or specific climatic pattern in different parts of the world as a result of many reasons. There are various components to climate change analysis. There are worldwide investigations that look at the process of climate change over millions of years, as well as more focused research and monitoring that looks at climatic differences within the last several decades. The differences in ordinary weather parameters and the frequency of extreme weather occurrences are the most important markers of climate change.

Climate change on Earth is caused by multiple basic elements, the most important of which are dynamic processes on the planet, exterior forces such as increases or decreases in solar radiation, and lastly human activities.

Climate change is currently understood as the most recent alteration in the planet's climate the global warming process. The weather is the state of the atmosphere on a given day. The climate is the typical weather condition and is predictable, whereas the weather is a chaotic and dynamic system. The average temperature, precipitation, number of sunny days, pressure, wind speed, air humidity, and other factors all contribute to the climate. Changes in the relief and position of the continents on the planet; changes in the quantity of sunshine; variations in Earth's orbit; changes in the structure of the atmosphere; and the concentration of greenhouse gases are the main variables that influence climate change.

Climate change has become a pressing issue in recent years, as the planet's average temperature has been steadily rising, resulting in a slew of severe consequences. The student who is researching climate change should understand the problem's significance, the variables that influence it, and broaden his knowledge of the subject in general. To analyze a case involving climate change, a student must read extensively and gather sufficient data for the research.

9.2.1 Changes in the Global Climate:

The worldwide climate has shifted dramatically in recent years. The observed change is due to the earth's heating, or an increase in the planet's temperature. Many hypotheses have been made about the causes of earth's temperature variations, with some blaming human beings as the primary source of temperature variation on the planet. Other sources, on the other hand, contradict the claim that humans are the primary cause of global climate change by debunking the arguments provided by those who argue that humans are the primary cause of global climate change. For example, the increase in greenhouse gases and water vapor in the atmosphere are the primary causes of global climate change.

In addition, the usage of aerosols and the domestication of animals have been accused of causing climate change on the planet. Those who disagree with the above-mentioned assumptions argue that a greenhouse gas like carbon dioxide is not a pollutant because it is used by plants for growth. Furthermore, opponents have debunked the notion that climate change is a worldwide phenomenon.

They point out that climate change is regional, and it has a history of rapidly changing, which explains why it will continue to change in the future. Because of the human actions

mentioned, it can be deduced that the investigated process is man-made based on the above-given factors. As a result, this essay investigates why global climate change is caused by humans. Human-caused global climate change is a result of their activity.

This is primarily accomplished through two major activities: factory manufacturing and agricultural operations. Notably, the greenhouse impact is boosted by the two pointed production methods. Because greenhouse gases like carbon dioxide, water vapor, and other gases in the atmosphere are not impermeable to the sun, this has a significant impact on the planet.

They allow the sun to penetrate the atmosphere, absorbing heat from the planet that would otherwise be lost to space, if greenhouse gases were not emitted in large quantities into the earth's atmosphere, there would be no harmful climatic impacts. Alternatively, it should be recognized that, in limited quantities, greenhouse gases in the earth's atmosphere are preferable to a complete lack of them; thus, this could result in a reduction in the atmosphere, rendering the planet uninhabitable.

Thus, transportation and agricultural activities are primarily to blame for the increase of such gases in the environment. Humans continue to advance their modes of transportation from time to time, and pollutant emissions have filled the gaseous envelope that surrounds our globe, resulting in the liberation of road and air transport.

Carbon is released into the atmosphere through these systems. Nitrous oxide, methane, hydrofluorocarbons, sulfur hexafluoride, and perfluorocarbons are among the other greenhouse gases that contribute to global climate change.

It's important to remember that coal-fired power plants are the primary source of these greenhouse gases. Land usage and livestock are two further factors that contribute to global warming. These are human activities that contribute to climate change in several ways. The combustion of fossil fuels, which is a human activity, was the source of the increase in dangerous CO_2 emissions.

Furthermore, due to the shift in land use, these greenhouse gases increased in the atmosphere. Human-caused land-use changes are dominated by deforestation. Because the quantity of carbon dioxide that trees in deforested areas could have absorbed is reduced, this adds to global warming. As a result, the number of greenhouse gases produced in such places doubles. These changes in land use are largely driven by humans, and so make a considerable contribution to global climate change.

It was also interesting in the reasons for climatic changes around the world, and he recognized that the process of human domestication contributes significantly to global warming. The rise in the number of cattle that humans have tamed over time has an impact on this. According to research data, animals occupy over 71 percent of agricultural land, human livestock activities lead to the release of 9 percent carbon dioxide, 37 percent methane, and 63 percent nitrous oxide into the atmosphere as a result of fertilizer use. The usage of aerosols is being blamed for yet another man-made cause of global climate change.

The usage of aerosols is being blamed for yet another man-made cause of global climate change. Because it necessitates the burning of biomass, which begins with deforestation, their usage by humans results in the suspension of droplets or particles in the atmosphere, resulting in a cooling impact.

Aerosols have an impact on industrial pollutants, particularly when soot, ammonium, airborne sulfates, and nitrates are produced. Finally, dust produced by desertification adds to global climate change. However, it is also vital to investigate the arguments made by opponents of global warming caused by people. In contrast, some people believe that carbon dioxide is not a factor in global climate change. This stems from the fact that carbon plays an important function in the atmosphere and has existed throughout human history. Because this chemical element has existed in both large and small concentrations, it supports the idea that it has a minor impact on the environment because plants use it as well.

They believe that change takes a long period and that the fact that humans are blamed for speeding up the process is untrue. Climate change, in their opinion, is a regional issue rather than a global one. This stems from the fact that regional climate changes have been documented to be deteriorating in the past, and this is a trend that will continue in the future.

Human activities have been blamed for the majority of the observed events. Desertification, livestock husbandry, industry, transportation, and the usage of aerosols are all examples of man-made contributions to changes in global climatic conditions. However, not everyone agreed that global climate change is completely a result of human activity. As a result, opponents argue that climatic changes have existed since the dawn of time and that they usually occur regionally rather than globally. This is because the gas has been present on Earth since ancient times, and plants utilize it for growth, refuting the argument that the gas is a substantial contributor to the greenhouse effect and global warming.

These are simply projections, but if nothing is done to alter the tragic trend of climate change, they could happen eventually. Global warming, for example, will boost global temperatures to the point where places currently covered in ice will remain buried in pools of water. This would not only limit people's mobility, but it will also spread several waterborne diseases over the world. Furthermore, changes in the patterns of warm and cold ocean currents may cause catastrophic meteorological events.

Climate Change and Global Warming:

The meaning of 'climate change' is fairly straightforward—a clear, sustained change in the components of climate, such as temperature, precipitation, atmospheric pressure, or winds. Such changes must constitute a clear trend, and be clearly distinguished from the small random variation in these parameters that takes place all the time. Climate may change in a single region or across the whole planet. Throughout the earth's history, climates have changed. The causes are various. Change can be brought about by a variety of factors. These include natural external factors, such as changes in solar emission or slow changes in the earth's orbit; or natural internal processes of the climate or earth system such as volcanic activity; or, as has occurred recently, human-induced (anthropogenic) factors.

Global warming refers to an increase in the average temperature at the surface of the earth or the lower part of the atmosphere. Most climatologists consider that the global warming that we are now experiencing is mainly the result of human actions changing the composition of the atmosphere. However, global warming and cooling have occurred naturally throughout the history of the earth, as a result of natural climate variability. Such changes in the past were usually much slower than the rate of warming that has occurred in the last few decades. The increase in global temperatures measured over recent decades, if it continues, has the potential to seriously disrupt many of the environmental, economic, and urban structures upon which human society depends. Whilst it is possible that some of this warming may have a natural cause, there is mounting evidence that human activity is responsible for most of the measured warming.

The principal contributor to the present phase of global warming is considered to be the enhancement of the natural greenhouse effect. Global surface warming is just one consequence of the changes to the climate being caused by human activity. The various components of the climate and earth system are inextricably linked through complex feedback mechanisms, and a change in one component such as temperature will induce changes and adjustments in other components. Other changes that have either already been observed or are projected to occur as a result of human activity include sea-level rise; changes in rainfall patterns; increases in extreme weather events; decreases in ice mass of glaciers, ice sheets, and sea ice; ocean warming and acidification; changes in ocean circulation; and drying of the land.

Climate Change Influencing Factors: Natural factors have a long-term impact on the climate, ranging from hundreds to millions of years.

Continental Drift: developed millions of years ago when plate dislocation caused the landmass to drift apart. Changes in the physical features and position of the landmass, as well as changes in the position of water bodies, such as changes in the flow of ocean currents and winds, have an impact on climate change.

Volcanic eruptions release gases and dust particles that remain for a long time, causing a partial blockage of the Sun's rays, causing the weather to cool and weather patterns to change.

Changes in Earth's Orbit: A small change in the Earth's orbit affects the seasonal distribution of sunlight reaching the earth's surface around the world. Variations in Earth's eccentricity, fluctuations in the tilt angle of the Earth's axis of rotation, and precession of the Earth's axis are the three forms of orbital variations. Milankovitch cycles, which have a large impact on climate and are well-known for their connection to glacial and interglacial eras, can result from the combination of these factors.

Anthropogenic Factors: It is mostly an increase in global surface temperature caused by humans.

Greenhouse Gases (GHG) absorb heat energy from the sun, rising global temperatures. GHGs absorb most of the infrared released by the Earth's surface rather than solar radiation.

The greenhouse effect, which is created by the interaction of incoming solar radiation with the Earth's atmosphere, is the starting point for global warming.

Aerosols: in the atmosphere can deflect and absorb solar and infrared light. Solar radiation scatters and cools the globe, whereas aerosols absorb sunlight and raise the temperature of the air instead of allowing it to be absorbed by the Earth's surface. Aerosols have a direct impact on climate change through solar radiation absorption and reflection. It can have an indirect effect by changing the formation and properties of clouds. It can even be transported thousands of kilometers through the atmosphere's winds and circulations.

Land-use pattern shift: Crops, land grazing, or industrial or commercial use have mostly replaced forests and land coverings. The amount of moisture evaporated into the atmosphere and the amount of solar energy absorbed increase as forest cover is cleared.

The lower the reflective power the more sunlight is absorbed by the planet, and temperatures rise. If the albedo is higher and the Earth is more reflective, more radiation is reflected into space, causing the planet to cool.

Global Temperature Rise: Since the late 1800s, the planet's average surface temperature has risen by around 1.62 degrees Fahrenheit, owing mostly to rising carbon dioxide and other human-made emissions into the atmosphere. The majority of the warming took transpired in the last 35 years, with the five warmest years on record occurring since 2010.

Ocean Warming: The oceans have absorbed much of the extra heat, with temperatures rising by more than 0.4 degrees Fahrenheit in the top 700 meters, since 1969. The mass of the Greenland and Antarctic ice sheets has shrunk. Greenland lost an average of 286 billion tonnes of ice per year between 1993 and 2016, according to NASA's Gravity Recovery and Climate Experiment, while Antarctica lost roughly 127 billion tonnes of ice per year during the same period. In the last decade, the pace of ice mass loss in Antarctica has tripled.

Glacier retreat is occurring in practically every part of the planet, including the Alps, Himalayas, Andes, Rockies, Alaska, and Africa. Satellite studies show that the amount of spring snow cover in the Northern Hemisphere has reduced during the last five decades, and the snow is melting earlier.

Sea Level Rise: Over the previous century, the global sea level has risen by around 8 inches. However, in the recent two decades, the rate has roughly doubled that of the previous century, and it is increasing slightly each year.

Arctic Sea Ice is melting: The extent and thickness of Arctic Sea ice have been dramatically decreasing over the last several decades.

Extreme Events: Since 1950, the number of record high-temperature events has increased in the United States, while the number of record low-temperature events has decreased. In addition, the United States has seen an increase in the number of severe rainfall events.

Ocean Acidification: The acidity of surface ocean waters has grown by around 30% since the beginning of the Industrial Revolution. This rise is due to humans putting more carbon dioxide into the atmosphere, which is then absorbed by the oceans in greater amounts. The amount of carbon dioxide absorbed by the ocean's upper layer is increasing at a rate of roughly 2 billion tonnes per year.

9.3 Climate Change's Potential Impacts in India:

Extreme Heat:

India's climate has already begun to overheat. Unusual and unexpected hot weather spells are predicted to occur more frequently and across a broader area. Under a 4°C rise, the west coast and southern India are expected to change to new, high-temperature climatic regimes, posing serious agricultural challenges.

Changing Rainfall Patterns:

Since the 1950s, there has been a decrease in monsoon rainfall. The summer monsoon in India will become exceedingly unpredictable if global average temperatures climb by 2°C. An extraordinarily rainy monsoon, which now has a chance of occurring only once every 100 years, is expected to occur every 10 years by the end of the century if global temperatures rise by 4°C. Dry years will be dryer, and wet years will be wetter.

Droughts:

Evidence suggests that portions of South Asia have been drier, with an increase in the number of droughts, since the 1970s. Droughts have significant ramifications. Droughts afflicted more than half of India's crop area in 1987 and 2002-2003, resulting in a massive drop in crop production. Droughts are projected to become increasingly common in several parts of India, particularly in Jharkhand, Orissa, and Chhattisgarh. Crop yields are anticipated to plummet by the 2040s as a result of excessive heat.

Groundwater:

Even without climate change, India's groundwater resources are overexploited to the tune of 15%. Water tables are predicted to continue to fall as a result of increased demand for water from a growing population, more affluent lifestyles, and the services and manufacturing sectors.

Glacier Melt:

Over the last century, most Himalayan glaciers have retreated. Melting glaciers and the loss of snow cover over the Himalayas are predicted to endanger the stability and reliability of northern India's largely glacier-fed rivers if global temperatures rise by 2.5 degrees Celsius. Changes in the Indus, Ganges, and Brahmaputra rivers' flows might have a substantial impact on irrigation, altering the amount of food that can be produced in their basins as well as millions of people's lives.

Sea level rise:

Because India is so close to the equator, sea level rises on the subcontinent would be significantly higher than at higher latitudes. Because the cholera bacterium survives longer in saline water, sea-level rise and storm surges would cause saltwater intrusion in coastal areas, affecting agriculture, degrading groundwater quality, contaminating drinking water, and possibly causing an increase in diarrhea cases and cholera outbreaks. Sea-level rise, tropical cyclones, and riverine floods are all threats to Kolkata and Mumbai, which are both heavily populated cities.

Figure 9.b: Glacier Melt and Sea-Level Rise

9.4 Risks of Climate Crumbliness in India:

Independent research commissioned by members of the G7, "A New Climate for Peace: Taking Action on Climate and Fragility Hazards," lists seven compound climate-fragility risks that pose substantial dangers to the security of states and communities in the decades ahead.

Local resource competition: As the demand for natural resources grows, competition can lead to instability and even violence if appropriate dispute resolution is not in place.

Insecurity of livelihood and migration: Climate change would exacerbate the human insecurity of people who rely on natural resources for a living, potentially forcing them to migrate or turn to unlawful sources of revenue.

Extreme weather and disasters: Extreme weather and disasters worsen fragility concerns and can raise people's vulnerability and grievances, particularly in conflict-affected areas.

Food prices and availability are anticipated to be volatile as a result of climate change, which will likely affect food production in many places, raising prices and market volatility while also increasing the danger of riots, rioting, and civil unrest.

Transboundary water management: Transboundary waters are frequently a cause of contention; as demand rises and climate change affects water supply and quality, competition over water usage will likely put further strain on existing governance systems.

Sea-level rise and coastal degradation: Even before low-lying communities are flooded, rising sea levels will undermine their viability, resulting in social disruption, displacement, and migration, as well as increased tensions over maritime boundaries and ocean resources.

Climate policies' unintended consequences: As climate adaptation and mitigation strategies become more widely implemented, the likelihood of unintended negative consequences particularly in unstable contexts will rise.

The need for adaptation: The major impacts and threats of global warming are widespread. Increasing ocean temperatures cause thermal expansion of the oceans and in combination with meltwater from land-based ice, this is causing sea-level rise. Sea levels rose during the 20th century by 0.17 meters. By 2100, the sea level is expected to rise between 0.18 and 0.59 meters.

There are uncertainties in this estimate mostly due to uncertainty about how much water will be lost from ice sheets, for example, Greenland is showing a rising loss of mass in recent years. Increased melting of sea ice and freshwater influx from melting glaciers and ice sheets also has the potential to influence global patterns of ocean circulation.

As a result of global warming, the type, frequency, and intensity of extreme events, such as tropical cyclones, floods, droughts, and heavy precipitation events, are expected to rise even with relatively small average temperature increases.

Adaptation is a process through which societies make themselves better able to cope with an uncertain future. Adapting to climate change entails taking the right measures to reduce the negative effects of climate change by making the appropriate adjustments and changes. There are many options and opportunities to adapt.

These range from technological options such as increased sea defenses or flood-proof houses on stilts, to behavior change at the individual level, such as reducing water use in times of drought and using insecticide-sprayed mosquito nets. Other strategies include early warning systems for extreme events, better water management, and improved risk management, various insurance options, and biodiversity conservation.

Because of the speed at which change is happening due to global temperature rise, it is urgent that the vulnerability of developing countries to climate change is reduced and their capacity to adapt is increased and national adaptation plans are implemented.

Future vulnerability depends not only on climate change but also on the type of development path that is pursued. Thus, adaptation should be implemented in the context of national and global sustainable development efforts. The international community is identifying resources, tools, and approaches to support this effort.

9.5 India's Climate Change Response:

The National Action Plan on Climate Change (NAPCC) outlines current and future climate mitigation and adaptation policies and strategies. Solar Energy; Enhanced Energy Efficiency; Sustainable Habitat; Water; Sustaining the Himalayan Ecosystem; Green India; Sustainable Agriculture; and Strategic Knowledge for Climate Change are the eight-core "national missions" identified in the Action Plan, which will continue until 2017. The majority of these missions have significant modification requirements.

The National Renewable Energy Fund (NCEF) was established by the Indian government in 2010 to finance and promote clean energy programs as well as to fund clean energy research in the country. The fund's corpus is built by levying a cess of INR 50 for every tone of coal produced locally or imported.

India has agreed to three commitments as part of the Paris Agreement. By 2030, India's greenhouse gas emission intensity as a percentage of GDP would be decreased by 33-35 percent compared to 2005 levels. In addition, non-fossil fuel sources would account for 40% of India's power capacity.

The International Solar Alliance (ISA) was launched by India and France at the United Nations Climate Change Conference in Paris on November 30, 2015, in the presence of Mr. Ban Ki Moon, former UN Secretary-General.

Emission Standards for the Bharat Stage (BS): Vehicle emissions are one of the leading causes of air pollution, prompting the government to implement the BS 2000 (Bharat Stage 1) vehicle emission standards in April 2000, followed by BS-II in 2005. In 2010, BS-III was rolled out across the country.

However, in 2016, the government opted to follow worldwide best practices and bypass BS V completely, opting for BS-VI instead.

9.6 Concerns in India Regarding Climate Changes:

India has questioned the UN's haste to declare climate change an international security concern, potentially granting the Security Council the authority to act on it, and has highlighted the approach's flaws. According to India, a "simple Council resolution" to take over climate change enforcement would jeopardize the Paris Agreement and multilateral attempts to develop solutions.

Climate change is a global security hazard in the twenty-first century. To reduce future threats to the planet we share and the peace we seek, we must act now.

9.6.1 How Can India Deal with The Repercussions of Climate Change?

The way to go is to take an 'adaptation' strategy. The interconnection of rivers and the usage of GM crops must be prioritized in this regard. Globally, climate action has been mitigation-centric,' with the majority of programs geared at reducing future global warming. 'Mitigation' is more necessary in wealthy countries, but for developing countries like India, the focus should be on 'adaptation,' or methods to deal with the unavoidable effects of climate change that have already occurred, such as severe storms, floods, and droughts.

Adaptation' is akin to shielding yourself from an impending punch. India has likewise been focused on mitigation; now is the time to shift the focus to "adaptation." And for adaption, two essential measures have to be taken,

The first is to give a major boost to a 150-year-old concept: river interconnection (ILRs). With floods and droughts likely to strike different sections of the country at the same time, there is no choice but to implement ILR as soon as possible. The Himalayan and Peninsular, with 14 and 16 links, respectively, are two parts of it.

The plan is to construct a dam on one river so that the water level rises at the canal's head, allowing water to flow to the next river by gravity. India now has 5,100 major dams with walls at least 15 meters high; ILR will require an additional 3,000. The project will also include the construction of 15,000 kilometers of new canals. I realized, ILR will bring 35 million hectares of new land under agriculture, more than twice the area of Andhra Pradesh, as well as 34,000 MW of additional hydroelectricity.

Genetically modified crops are the other adaptive measure. Climate-smart agriculture relies heavily on GM technologies. Drought-resistant crops and crops that produce more on the same piece of land would be required to reduce climate-damaging 'land usage.' India has been a vocal opponent of genetically modified foods. GM technology, on the other hand, has been in use for more than two decades, and millions of people have eaten GM foods for years.

9.6.2 Policy Analysis: The Need for a Comprehensive Plan:

Climate change mitigation is the most effective strategy to reduce the threat posed by these climate-fragility hazards. However, because climate change is already occurring, we must act now to control and mitigate these dangers. We need to address significant policy and institutional gaps in three areas to break down sectoral barriers that stymie attempts to address climate-fragility risks:

Climate change adaptation: programs assist governments in anticipating the negative effects of climate change and taking steps to prevent, mitigate, and respond to those effects.

Development and humanitarian assistance programs assist states and communities in strengthening their economic, governance, and social capacities, as well as improving their shock resistance.

By decreasing tensions and fostering an atmosphere conducive to long-term peace, peace-building and conflict prevention programs address the causes and impacts of fragility and conflict.

9.6.3 Climate Change in the Future:

Climate change has had a profound impact on the global economy and population health in a variety of ways.

Climate change, according to meteorologists, will have a considerable impact in the next decades, particularly on the sustainability of water supplies. For example, because of the consequences of global warming, more than 1,100 counties in the United States are at risk of experiencing water shortages in the next thirty years. This implies disaster for a variety of industries that rely on water sustainability. The industrial sector, for example, is expected to be the hardest damaged. This is because practically all of their operations rely on water. The machinery that drives the manufacturing process must be kept cool so that it does not catch fire.

Furthermore, practically all of the items being manufactured are handled in liquid form, with water as the solvent. The agricultural industry, on the other hand, may come to a halt. Although irrigation has always been a viable option for raising crops, the anticipated water limitations may mean that the available water will be insufficient to support effective irrigation. As a result, agricultural enterprises may be forced to close since there will be nothing to process. In essence, such a situation could result in humanity's extinction. Water is such an essential component of life that no human can go three days without it.

It claims one of the world's largest densities of economic activity, as well as a big number of poor people who rely on the natural resource base for their survival, with a high reliance on rainfall. By 2020, India's water, air, soil, and forests are likely to be under the most strain anywhere on the planet. Water resources will be one of the most major ways that climate change will affect people's lives in India. While water is necessary for life, it is also capable of wreaking havoc in the form of disastrous floods and droughts. These shocks will only be exacerbated by a changing climate.

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