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Climate Change and its effect on Environment: A Serious Concern for National Security

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We are the first generation to be able to end poverty, and the last generation that can take steps to avoid the worst impact of climate change. Future generations will judge us harshly if we fail to uphold our moral and historical responsibilities.

The global climate is changing rapidly in recent human history. The risk of climate change and extreme events such as drought and food has substantial impacts on our economic condition and also on Nature. Agriculture, livestock, and water resources are the most vulnerable systems. Rapid development in science and technology impact more on our environment. We have benefited and life becomes more comfortable on one hand and on other hands we facing challenges like environmental degradation, disruption of biological diversity, air pollution, water pollution and global warming. This situation is created by human itself by careless behavior to Nature.

Climate change is also related to our security such as human security, environmental security its. It affects our societal health condition, the economy as well as politics too. By understanding this IPCC get an award of Noble Peace Prize for 2007. So we have to take a serious concern to tackle.

Introduction

This global warming issue now became a threat to earth due to mainly wrong human activities. Global warming is happened due to the greenhouse effect and is mainly related to human activities. Till now not a single country is there for which we can say that this country is far from Climate Change effect.

Now we need to address seriously to tackle this situation. Mitigation methods are fuel switching to the renewable source like solar, nuclear, wind and biomass for energy generation. Climate change is a topmost global concern. It is a threat as well as a risk also. A threat is a short-term event but the risk is the long-term potential threat. It is also a concern for National Security also because environment shall drastically affect our security.

According to 4rth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) of 2007, global temperature will rise to 1.1-2.9 Degree Centigrade in the 21st century.

About Climate Change

Climate is the usual weather of a place for a specific period of time, it can be varied for deferent seasons. Climate refers to the average of the weather conditions over a longer period of time. Weather changes quickly, maybe within a day or week but climate changes imperceptivity and may be noted after 50 years or even more. The Climate change refers to a statistically significant variation in either the mean state of the climate or in its variability, persisting for an extended period. Climate change is a change in the usual weather found in a place. Like changing in how much rain at a place usually gets in a month or year. Anthropogenic climate change which is also be called Global Warming.

How Climate Change Related to National Security?

A stable Climate is required a stable life of the society as well as a Nation-State. When any obstacle is there the growth and well being of the society is slow down. When scarcity of natural resources occur the stability of life of the society become unstable, their economy becomes vulnerable and security problem created. Some Strategic thinkers have given their views on security. By this, we have more clarity about the relation of Climate Change and National Security. By 'Security is any objective sense, measures the absence of threats to acquire values, in a subjective sense, the absence of fear that such values will be attacked.' Here we can see the situation of absence of threat called security. Also, we can see another definition of Walter Lipmann about National Security as, 'A nation is to secure to the extent to which it is not in danger having to sacrifice core values if it wishes to avoid war, and is able, if challenged, to maintain them by victory in such a war.' Thus a Nation has security when he tackles the threat anyhow a condition is there. When we discuss security, we can see security has two types, Traditional Security and Non-Traditional Security.

Traditional Security

In traditional security, we can see these variables-

- During the proxy war security from attack by technology or by military capability.
- The state-centric concept of security. And
- Security of state territory.

As we see traditional security inculcate security from traditional threats more often militarily related.

Non-Traditional Security

Non-Traditional security means security from non-traditional threats like-

- Security from the threat to survival and development of a sovereign state and mankind.
- Security from the threats arising in different forms like- terrorism, illegal drug trade, severe transmitted diseases, piracy, illegal migration, environment security, economic and human security.

Human security is an emerging paradigm for understanding global vulnerabilities whose proponents challenge the traditional notion of national security by arguing that the proper referent for security should be the individual rather than the state. The term human security is first introduced by United Nations Development Program in 1994. Under the UNDP Report has given a Concept of human development and stated that the development should be people-centric. Brundtland Commission stated that if we want survival of mankind, we need to protect the environment and after this sustainable development possible.

Human security has seven dimensions.

- Economic Security
- Food Security
- Health Security
- Environment Security
- Personal Security
- Community Security
- Political Security

Therefore environment security is part of human security and human security is an essential dimension of National Security. That's why we need to protect the environment by which we can stabilize our national security. If our environment affected than our national security is obviously affected.

Behind the changing our climate many factors are there. Natural as well as human factors are more important to them.

Factors behind Climate Change

Climate affected by both internal as well as externally oriented sources.

- External Factors

Radiative forcing arises from changes in the atmospheric composition, alteration of surface reflectance by land use, and variation in the output of the sun. Volcanic events, variations in the earth's orbit around the sun, Changes in the tilt of the earth's axis, changes in the shape of earth's orbit and the shifting of the equinoxes play major roles in determining variations in the amount of sun's energy reaching the earth and hence lead to variations in the earth's climate.

- Internal Factors

Internal Factors related to these causes that arise from the earth, these includes-

Human Activity. Humans are also responsible for changing the climate and causing the earth's temperature increase. Scientists in the United States and the world have reached an overwhelming consensus that climate change is real and caused primarily by human activity. Respected scientific organizations such as the National Academy of Science, the Intergovernmental Panel on Climate Change (IPCC) and World Meteorological Association (WMO) have all identified climate change as an urgent threat caused by humans that must be addressed.

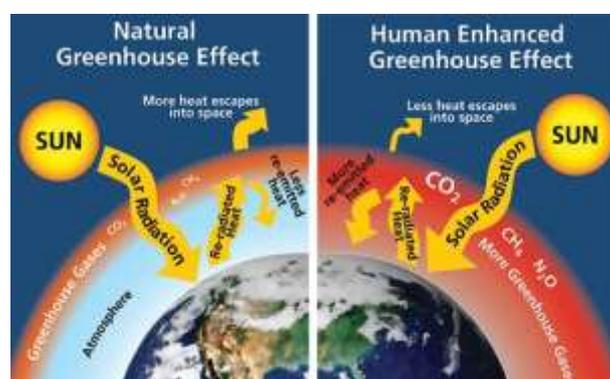
Increase in greenhouse gasses in the environment, burning coal like fossil fuel is a major reason to increase in carbon dioxide gas in the atmosphere. Rapid growth in industry causes more carbon dioxide emission and resulted in effect, warming earth temperature more comparing previous centuries.

Deforestation. Deforestation is a major anthropogenic activity that causes carbon dioxide in the air. When vegetation is removed or burned, the stored carbon dioxide in it releases in the environment. Reasons behind deforestation are the agricultural expansion, to increase the demand our forests are being converted in the pure agricultural land. Another cause is livestock ranching, illegal logging like timber and other trees, infrastructure expansion like highways etc. Overpopulation also causes deforestation due to house needs for shelter.

Fossil Fuel. Smoke produced by factories, industries, burning of fossil fuel and plastic created harmful gasses that directly affect life on earth and indirectly these gases deposit in ozone layer causing depletion to it called global warming. With the burning of fossil fuel and plastic, fine carbon particles also generated make the net cooling effect. These fine particles absorb the sunlight and make environment more heaters.

Green House Effect and Global Warming. Greenhouse gasses like CO₂, N₂O, and CH₄ generated from traffic, burning coal, fossil fuel, industrial smoke makes environment more heater by absorbing heat liberated from earth surface. By this atmosphere become more heater and called as the greenhouse effect.

Figure 1. Greenhouse Effect



Source: Greenhouse Effect, <http://climatechange.lta.org>

Greater concentrations of greenhouse gases mean more solar radiation is trapped in the Earth's atmosphere, making temperatures rise.

The greenhouse effect is a natural process where atmospheric gases trap heat, making conditions on planet Earth conducive to life as we know it. Without greenhouse gases, in our atmosphere, the global average temperature would be much colder - about 0°F. Earth's climatic system has been relatively balanced, with CO₂ concentrations of about 289 parts per million (ppm) for thousands of years. Since the Industrial Revolution, however, carbon emissions began to rise quickly due to combustion of fossil fuels and accelerated land use changed.

In January 2015, the concentration of CO₂ in Earth's atmosphere exceeded 400 ppm. With higher CO₂ concentrations come expectations of a stronger greenhouse effect and therefore warmer global temperatures.

The Ocean currents. Oceans are the key source of moisture in the air through interactions with the atmosphere. Oceans also store heat efficiently, transporting it thousands of miles thus redistributing heat in time and space. The oceans and marine life also consume huge amounts of carbon dioxide. These ocean-based processes exert tremendous influence on global climate and account for the variations.

Water Cycle. Higher air temperatures can increase water evaporation and melt of ice. And while water vapor is the most potent greenhouse gas, clouds also affect evaporation, creating a cooling effect.

Rapid Population Growth. With the rapid growth of population, many problems are created

Effects of Climate Change

Changing in climate is seen very clearly surround us as a negative impact on the environment. Intergovernmental Panel on Climate Change stated that 'Taken as a whole, the range of published evidence indicates that the net damage costs of climate change are likely to be significant and to increase over time.' Some of the long-term future effects of climate change are predicted by the Third National Climate Assessment Report of the United State as-

- Climate Change will continue through this century and beyond
- Temperature will continue to rise
- Frost-free season will lengthen

Changes in precipitation patterns

- Hurricanes will become stronger and more intense
- Sea level will rise 1-4 feet by 2100
- The Arctic likely to become ice-free

But those are future effects than predicted, at present, we can observe climate change effects as-

Glaciers and polar ice are melting,

Sea levels are rising, faster,

Ramped up droughts, floods, and other extreme weather,

Climate change ecosystem and extinction threats, climate change causing widespread harm to polar life, coral reefs and other unique and vulnerable ecosystems. Extinctions will ramp up unless we act.

Air pollution is worse with climate change, is a serious and silent killer.

Climate Change and Freshwater- Climate change is having serious impacts on the world's water systems through more flooding and droughts. Warmer air can hold a higher water content, which makes rainfall patterns more extreme.

Rivers and lakes supply drinking water for people and animals and are a vital resource for farming and industry. Freshwater environments around the world are already under excessive pressure from drainage, dredging, damming, pollution, extraction, silting and invasive species.

Climate Change and Wildlife- Global warming is likely to be the greatest cause of species extinctions this century. The Intergovernmental Panel on Climate Change says a 1.5°C average rise may put 20-30% of species at risk of extinction. If the planet warms by more than 3°C, most ecosystems will struggle.

Tackling the Climate Change

Every problem has solutions, only have to recognize them at right time and take proper action regarding this. There are many efforts are being made. At the international level, by the global institution, by country level and by individual level too.

International level

Many institutions are formed to discuss and take step towards the preventing climate change. Major world organizations are-

- United Nations Environment Programme
- World Meteorological Organization
- United Nations Framework Convention on Climate Change
- Independent Alliance of Latin America and the Caribbean
- Greenpeace
- Indigenous Peoples Climate Change Assessment Initiative
- INFORSE-Europe
- Inter-American Institute for Global Change Research
- Intergovernmental Panel on Climate Change
- International Climate Change Partnership
- International Council on Clean Transportation
- International Indigenous Peoples Forum on Climate Change
- Office of Oceanic and Atmospheric Research
- G8 Climate Change Roundtable

Conventions and Treaties related to climate change

Hear some major conventions on climate change-

United Nations Framework Convention on Climate Change (UNFCCC) Signed 4 June 1992 to stabilize their greenhouse gas emission. This framework ratified by 197 countries.

Kyoto Protocol- In the mid-1990s, the UNFCCC signatories realized that stronger provisions were needed to reduce emissions. In 1997, they agreed to the Kyoto Protocol, which introduced legally binding emission reduction targets for developed countries.

The second commitment period of the Kyoto Protocol began on 1 January 2013 and will end in 2020. This second period is covered by the Doha amendment, under which participating countries have committed to reducing emissions by at least 18% below 1990 levels.

Paris Agreement took place on 30 Nov. to 11 Dec. 2015. Hear parties reached an agreement to limit global warming below 2°C.

Bali Action Plan Adopted in 2007, all developed countries have agreed to quantified emission limitation and reduction.

Copenhagen Accord and Cancun agreement in 2009. The Accord states that global warming should be limited to below 2.0 °C.

National level

Countries like United States of America, Russia, China, India etc. also have their own institution for tackling the issue of climate change. The government of India also setup plan for tackling the climate change issue. Government of India launches National Action Plan on Climate Change

India's investment in climate change appears to be ramping up domestically as well. Last month, the Ministry of Environment and Forests released a report listing 20 initiatives that the country is undertaking to address climate change at home. These steps come as part of India's larger National Action Plan on Climate Change.

- National Action Plan has 8 point-
- National Solar Mission,
- National Mission on Enhanced Energy Efficiency,
- National Mission on Sustainable Habitat,
- National Water Mission,
- National Mission for Sustaining Himalayan Ecosystem,
- National Mission for Green India,
- National Mission for Sustainable Agriculture, and
- National Mission on Strategic Knowledge for Climate Change.

National Solar Mission

Make solar energy competitive with fossil-based energy options.

Launch an R&D program facilitating international co-operation to enable the creation of affordable, more convenient solar energy systems.

Promote innovations for sustained, long-term storage and use of solar power.

National Mission for Enhanced Energy Efficiency

The Energy Conservation Act of 2001 provides a legal mandate for the implementation of energy efficiency measures through the mechanisms of The Bureau of Energy Efficiency (BEE) in the designated agencies in the country.

A number of schemes and programmes have been initiated which aim to save about 10,000 MW by the end of the 11th Five-Year Plan in 2012.

National Mission on Sustainable Habitats

Make habitats sustainable through improvements in energy efficiency in buildings, management of solid waste and a modal shift to public transport.

Promote energy efficiency as an integral component of urban planning and urban renewal through its initiatives.

National Water Mission

Conserving water, minimizing wastage, and ensuring more equitable distribution and management of water resources.

Optimizing water use efficiency by 20% by developing a framework of regulatory mechanisms.

National Mission for Sustaining the Himalayan Ecosystem

Empowering local communities especially Panchayats to play a greater role in managing ecological resources. Reaffirm the measures mentioned in the National Environment Policy, 2006.

National Mission for Green India

To increase ecosystem services including carbon sinks.

To increase forest and tree cover in India to 33% from current 23%.

National Mission for Sustainable Agriculture

Make Indian agriculture more resilient to climate change by identifying new varieties of crops (example: thermally resistant crops) and alternative cropping patterns.

Make suggestions for safeguarding farmers from climate change like introducing new credit and insurance mechanisms and greater access to information.

National Mission on Strategic Knowledge on Climate Change

Work with the global community in research and technology development by collaboration through different mechanisms. It also has its own research agenda supported by climate change-related institutions and a

Climate Research Fund.

Encourage initiatives from the private sector for developing innovative technologies for mitigation and adaptation.

Soon this mission becomes 12 point plan by adding 4 new points. These are-

National Mission for Wind Energy-

- Modeled on National Solar Mission
- To be serviced by Ministry of New and Renewable Energy
- To produce 50,000-60,000 MW of power by 2022

National Mission for Human Health-

- Assess impact of climate change on human health
- Build up capacities to respond to these
- Being looked after by Health Ministry

National Mission for Coastal Resources-

- Prepare integrated coastal resource management plan
- Map vulnerabilities along the entire shoreline
- Environment Ministry to look after the mission

National Mission for West to Energy

- Incentivize efforts towards harnessing energy from waste
- Lower dependence on coal, oil, gas
- Make power production a more earth-friendly process

Way Ahead

Governments are working towards preventing climate change and not to increase the greenhouse effect. As international climate negotiations progress this week in Bangkok, Thailand, India has shown signs of more proactive engagement on climate change issues both internationally and at home. Of all the most polluting nations – US, China, Russia, Japan and the EU bloc – only India's carbon emissions are rising: they rose almost 5% in 2016. No one questions India's right to develop, or the fact that its current emissions per person are tiny. But when building the new India for its 1.3 billion people, whether it relies on coal and oil or clean, green energy will be a major factor in whether global warming can be tamed.

Government launches many plans concerning this. But this effort cannot stay at the only government level. It should become at the individual level too. India's population growth is very rapid, if we cannot the step to control this that day is not far when we become number one in the world as the population in the concern. Resources are limited and demand is so high. So we have to take care of this. We have to use biofuels in our vehicles. Individually we have to do for environment protection what we can.

Here are some step to be taken to security of our environment as individual-

- Become a vegetarian, The share of greenhouse gas emissions from animal agriculture is usually pegged at 14.5 percent to 18 percent.
- Eat wisely buy organic and locally grown food, because it is grown without synthetic fertilizers. Avoid processed items. Grow some of your own food.
- Live in the climate. The biggest residential demand on our dirty energy system is climate control—home heating and cooling.
- Use solar tools, as we can. Install a renewable heating and cooling system like solar light, solar water heater, and solar water pump.
- Be energy efficient. You already switch off lights- what's next? Change light bulbs to compact fluorescents or LEDs.

- Green your commute, transportation causes about 25 percent of India's greenhouse gas emissions too, so walk, cycle or take transit whenever you can and skip the Airport as possible.
- Trim your waste, garbage buried in landfills produces methane, a potent greenhouse gas. Keep stuff out of landfills by composting kitchen scraps and garden trimmings, and recycling paper, plastic, metal, and glass.

Conclusion

Climate change is really a serious matter of concern. Governments at world level, as well as country level, doing good for this, but they have to take the step more efficiently at all level as soon as possible. At the Major Economies Forum on Energy and Climate in Italy in July, India joined 16 other countries in declaring that the increase in global average temperature above pre-industrial levels should not exceed 2 degrees Celsius.

Let polluters pay, carbon taxes make polluting activities more expensive and green solutions more affordable, allowing energy-efficient businesses and households to save money. We cannot only blame out authority or government for pollution or climate change, we are also responsible for this situation stands before us. So we need to help our authority, our government to tackle this big problem of climate change. We have to remember that, no any problem in this world that cannot be solved. Only we need to Unite for this cause with our authorities as well as individual level. We have to use renewable sources.

If our climate is secure, we are secure. We make the nation together, thus the security of our nation would make sure. We can strengthen our National Security by securing our environment, our climate and we can do it.

We can hope positive than our generations will praise our efforts toward this, if we not able to do that they will not forgive us, they will call us bad, would we want to hear it. The decision is in our hands.

References

1. Ban Ki-moon, former Secretary-General United Nations
2. Climate Change and Sustainable Development: Ethical Perspectives on Land Use and Food Production, European Society for Agricultural and Food Ethics. Congress, Potthast, Thomas, and Meisch, Simon (eds.), Wageningen Academic Pub, 2012, pp. 17
3. Arnold Wolfers, Define Security, <https://theawesomest.wordpress.com/tag/define-security/>
4. Walter Lipmann, Ibid.
5. Cherian, Anilla, Energy and Global Climate Change: Bridging the Sustainable Development Divide, John Wiley & Sons Publication, 2015, pp. 2
6. Human security, https://en.wikipedia.org/wiki/Human_security
7. Many external factors force climate change, <https://www.greenfacts.org/en/climate-change-ar3/toolboxes/figspm-3s-bis.htm>
8. Natural and human causes of climate change, <http://www.vironbusiness.com/cchangemain/causes>
9. Effects of Climate Change, World Wide Fund <https://www.worldwildlife.org/threats/effects-of-climate-change>
10. Climate Change and Sustainable Development: Ethical Perspectives on Land Use and Food Production, European Society for Agricultural and Food Ethics. Congress, Potthast, Thomas, and Meisch, Simon (eds.), Wageningen Academic Pub, 2012, pp. 101
11. Greenhouse Effect, <http://climatechange.lta.org/wp-content/uploads/cct/2015/02/Greenhouse-effect.jpg>
12. Carbon Dioxide, Methane, Nitrous Oxide, and the Greenhouse Effect, <http://climatechange.lta.org/get-started/learn/co2-methane-greenhouse-effect/>
13. Natural and human causes of climate change, <http://www.vironbusiness.com/cchangemain/causes>
14. Ibid.
15. IPCC 2007, Summary for Policymakers, in Climate Change 2007: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Cambridge University Press, Cambridge, UK, p. 17., <https://climate.nasa.gov/effects/>
16. The consequences of climate change, <https://climate.nasa.gov/effects/>
17. Negative effects of climate change, <http://www.greenpeace.org/international/en/campaigns/climate-change/impacts/>
18. International Agencies Climate Change, Society of Environmental Journalists, <http://www.sej.org/initiatives/international-agencies/international-agencies>
19. International agreements on climate action, European Council, Council of the European Union, <http://www.consilium.europa.eu/en/policies/climate-change/international-agreements-climate-action/>
20. Ibid.
21. United Nations Framework Convention on Climate Change, https://en.wikipedia.org/wiki/United_Nations_Framework_Convention_on_Climate_Change
22. Climate change plan to get new missions, The Hindu, <http://www.thehindu.com/news/national/Climate-change-plan-to-get-new-missions/article17090498.ece>, 25 January 2017
23. India Steps Up Climate Change Efforts, Worldwatch Institute Vision for Sustainable World, <http://www.worldwatch.org/node/6278>
24. National Action Plan on Climate Change Report, Ministry of Environment, Forest and Climate Change, Government of India, <http://www.moef.nic.in/downloads/home/Pg01-52.pdf>
25. India's National Action Plan on Climate Change, US National Library of Medicine, National Institutes of Health, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2822162>
26. National Action Plan on Climate Change, IAS Point, <https://academy.gktoday.in/article/national-action-plan-on-climate-change/>
27. Four new missions to boost response to climate change, The Indian Express, <http://indianexpress.com/article/india/india-others/four-new-missions-to-boost-response-to-climate-change/>, 03 January 2015
28. India Steps Up Climate Change Efforts, Worldwatch Institute Vision for Sustainable World, <http://www.worldwatch.org/node/6278>

29. How India's battle with climate change could determine all of our fates, The Guardian, <https://www.theguardian.com/environment/2017/nov/06/how-indias-battle-with-climate-change-could-determine-all-of-our-fates>, 06 November 2017
30. Rahim, Mohamed and Salih, Abdel M. (eds.), *Climate Change and Sustainable Development: New Challenges for Poverty Reduction*, Edward Elgar Publishing, 2009, pp. 12
31. Things You Can Do About Climate Change, <https://www.forbes.com/sites/jeffmcmahon/2017/01/23/nine-things-you-can-do-about-climate-change/#66daa0db680c>, 23 January 2017
32. Individual action: what you can do about climate change, Greenpeace, <http://www.greenpeace.org/international/en/campaigns/climate-change/Solutions/What-you-can-do/>, 01 July 2016
33. ways you can stop climate change, <https://david Suzuki.org/what-you-can-do/top-10-ways-can-stop-climate-change/>, 05 October 2017
34. Ibid.
35. ways you can stop climate change, <https://david Suzuki.org/what-you-can-do/top-10-ways-can-stop-climate-change/>, 05 October 2017
36. Reference [25] Ibid.
37. ways you can stop climate change, <https://david Suzuki.org/what-you-can-do/top-10-ways-can-stop-climate-change/>, 05 October 2017
38.]Markandya, Anil and Halsnaes, Kirsten (eds.), *Climate Change and Sustainable Development: Prospects for Developing Countries*, Earthscan Publication, UK, 2002, pp. 20