

Climate Change & Sustainability

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Abstract:

'Climate change entered the international political arena in 1988, when the United Nations & Environment Program and the world meteorological office jointly set up the inter-governmental panel on climate change:

In 1969, the first, iconic photos of the Earth from outer space touched the hearts of humanity with its simplicity and beauty. Seeing for the first time this "big blue marble" in an immense galaxy brought home to many that we live on One Earth—a fragile, interdependent ecosystem. And our responsibility to protect the health and well-being of that ecosystem began to dawn on the collective consciousness of the world. Human causes

The Industrial Revolution in the 19th century saw the large-scale use of fossil fuels for industrial activities. The industrialization created jobs and over the years, people moved from rural areas to the cities. This trend of migration for education and jobs is continuing even today. More and more need for housing made the stone desert on the earth and ended the ecological diversity. Natural resources are being used comprehensively for construction, industries, transportation, and consumption. All this has contributed to a rise in greenhouse gases in the atmosphere. Fossil fuels such as oil, coal and natural gas supply most of the energy needed to run vehicles generate electricity for industries, households, etc. The energy sector is responsible for about ¾ of the carbon dioxide emissions, 1/5 of the methane emissions and a large quantity of nitrous oxide. It also produces nitrogen oxides (NO₂) and carbon monoxide (CO) which are not greenhouse gases but do have an influence on the chemical cycles in the atmosphere that produce pollution in the atmosphere.

Key Words: Fossil Fuels, green house gases, industrialization, urbanization, World Bank, IMF and WTO.

I. INTRODUCTION

A. Greenhouse gases and their sources

Carbon dioxide is undoubtedly, the most important greenhouse gas in the atmosphere. Changes in land use pattern, deforestation, land clearing, agriculture, and other activities of the industrialization, urbanization, speedy growth of uses of vehicle have all led to a rise in the emission of carbon dioxide and other green house gases like methane, nitrous oxide and water vapor.

Methane is another important greenhouse gas in the atmosphere. About ¼ of all methane emissions are said to come from domesticated animals such as dairy cows, goats, pigs, buffaloes, camels, horses, and sheep. These animals produce methane during the cud-chewing process. Methane is also released from rice or paddy fields that are flooded during the sowing and maturing periods. Nearly 90% of the paddy-growing area in the world is found in Asia, as rice is the staple food there. China and India, between them, have 80-90% of the world's rice-growing areas.

Methane is also emitted from landfills and other waste dumps. If the waste is put into an incinerator or burnt in the open, carbon dioxide is emitted. Methane is also emitted during the process of oil drilling, coal mining and also from leaking gas pipelines (due to accidents and poor maintenance of sites).

A large amount of nitrous oxide emission has been attributed to fertilizer application. This in turn depends on the type of fertilizer that is used, how and when it is used and the methods of tilling that are followed. Contributions are also made by leguminous plants, such as beans and pulses that add nitrogen to the soil.

Human activities contribute every day in polluting the environment.

Electricity is the main source of power in urban areas. All our gadgets run on electricity generated mainly from thermal power plants. These thermal power plants are run on fossil fuels (mostly coal) and are responsible for the emission of huge amounts of greenhouse gases and other pollutants. Cars, buses, and trucks are the principal ways by which goods and people are transported in most of our cities. These are run mainly on petrol or diesel, both fossil fuels.

We generate large quantities of waste in the form of plastics that remain in the environment for many years and cause damage. Timber is used in large quantities for construction of houses, which means that large areas of forest have to be cut down. A growing population has meant more and more mouths to feed. Because the land area available for agriculture is limited. However, such high-yielding varieties of crops require large quantities of fertilizers; and more fertilizer

means more emissions of nitrous oxide, both from the field into which it is put and the fertilizer industry that makes it. Pollution also results from the run-off of fertilizer into water bodies.

Global warming would lead to an increase in summer deaths due to heat stress, but these would be offset by a reduced death toll from winter cold. Much more significant than either of these effects, however, would be the spread of tropical diseases. Including diseases carried by insects that need warmth to survive. The spread of diseases like Malaria and dengue, but finds that the research methodology is, at this state inadequate to provide good estimates of the numbers likely to be affected.

They have no other way of obtaining the water needed for growing their crops. In general less reliable rainfall patterns will cause immense hardship among the large proportion of the world's population who must grow their own food if they want to eat. The consequences for non-human animals and for biodiversity will also be severe. In some regions plant and animal communities will gradually move farther from the equator, or to higher altitudes, following climate patterns, elsewhere that option will not be available. A small change in average global temperatures could over the next millennium, lead to the melting of the Greenland ice cap which, added to the partial melting of the West Antarctic ice sheet, could increase sea levels by 6 meters, or nearly 20 feet. Now the twin problems of the ozone hole and of climate change have revealed bizarre new ways of killing people. Environmentally, India is quite rich, while the rich countries, by removing their green cover, uprooting their trees and polluting their environment, have reduced themselves to countries with low standing in environmental terms.

During the WTO Seattle Ministerial conference at Seattle, a substantial number of protesters were environmentalists of all shades, coming from all over the world. While most were genuinely concerned about the future of life on this planet, and believed that industrialization and further trade Expansion were environment degrading, a section among them was sponsored by industrial interest in rich countries to use 'environment' as an argument to keep third world exports away. It can be argued that, the so-called export orientation, so strongly advocated by the global trinity of the World Bank, the IMF and WTO does enormous and irreversible harm to the global environment. The forests of Thailand have been reduced by half in two decades, and its drive towards industrialization has taken a heavy toll in terms of pollution the level of hazardous waste reaching a level of 1.9 million tons a

year. Thus, while the environment industry is making money by producing gadgets and developing processes that save the environment from degradation, the theology of the global trinity-structural adjustment, stabilization and globalization is busy creating a situation where in this industry would never be short of clients.

The Marrakesh Agreement permits the government and 'human, animal or plant life or health' under the Agreement on the Technical Barriers to Trade. Mother agreement on the Application of sanitary and Phytosanitary Measures, allows the importing country to take action in order to protect human or animal life within the territory of the importing country. These provisions could have been used by poor countries like India to protect their own plant and animal varieties. But have not been so deployed. On the other hand, by now, the rich countries have made ample use of these measures to keep poor country exports out of their markets.

One argument that is being used to justify global environment standard on foreign products that are seeking entry to their markets, as the standards would be determined, monitored and implemented unilaterally and multilaterally. Judging by the unwillingness of the United States to withdraw unilateral 'Super 301' of the US trade legislation despite the introduction of a dispute settlement machinery under the WTO since 1995, such assurances cannot be taken at their face value.

The tendency among the multinationals, to transfer the polluting industries to those territories where environmental legislation is nonexistent or not properly implemented, cannot be effectively countered without those measures and their strict monitoring. Poaching of plant and animals on the verge of extinction, or of activities that prejudice their sustenance, are quite widespread and necessitate speedy actions. There can also be no justification for unhygienic conditions in which great deals of our economic activities are conducted, in slums or cottages or factories. For all these reasons a legitimate opposition to the use of the environment as a trade barrier by the rich countries, at the international level, should not be construed as an argument for inaction at the national level, should not be construed as an argument for inaction at the national level. In 1995, Kyoto conference decided that more binding target & was needed. The result after two years of negotiations was the 1997 Kyoto Protocol which set largest for 39 developed nations a level at least 5% below 1990 levels. The national targets vary, however, with the European Union nations and the United States having

targets of 8% and 7%, respectively below 1990 levels, and other nations such as Australia. Being allowed to go over their 1990 levels. These targets were arrived at through negotiations with government leaders, and they were not based on any general principals of fairness, nor much else that can be defended on any terms other than the need to get agreement. This was necessary since under prevailing conception of national sovereignty, countries cannot be bound to meet their targets unless they decide to sign the treaty that commits them to do so. To assist countries in reaching their targets, the Kyoto Protocol accepted the principle of "emissions trading" by which one country can buy emission credits from another country that can reach its target with something to spare.

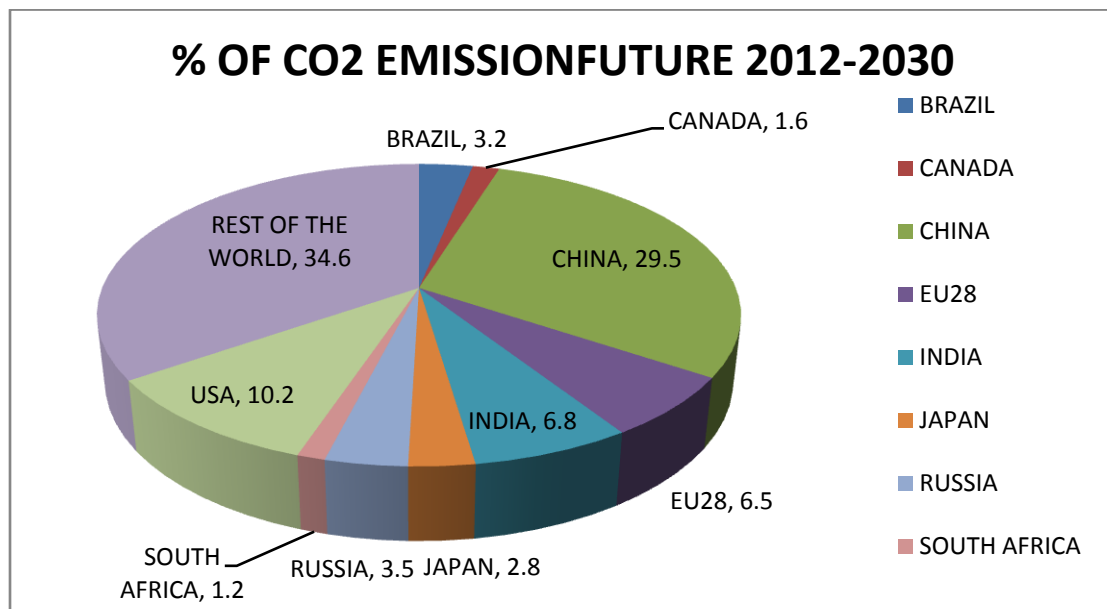
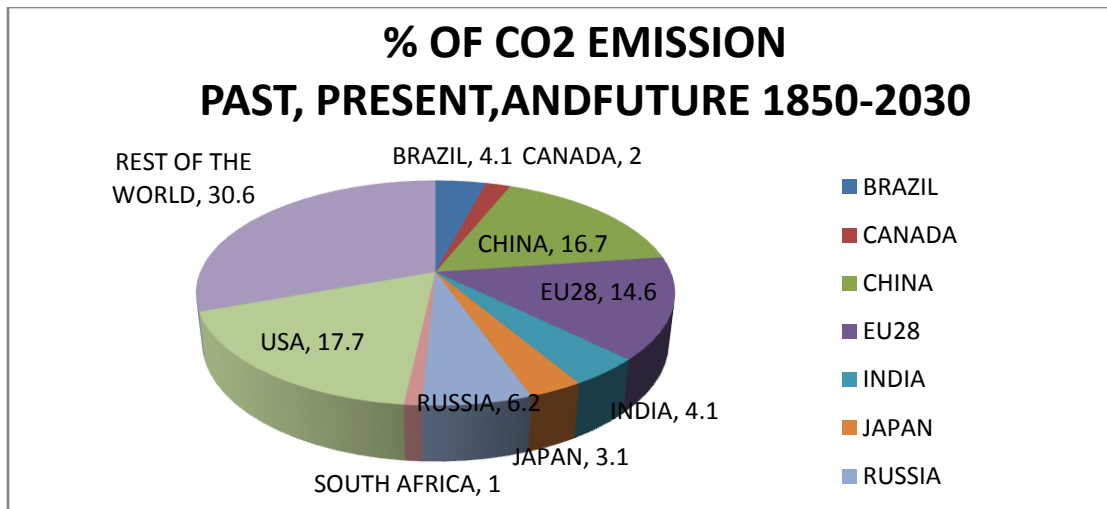
It is important to see Kyoto not as the solution to the problem of climate change, but as the first step. It is reasonable to raise questions about whether the relatively minor delay in global warming that Kyoto would bring about is worth the cost. But if we see Kyoto as a necessary step for persuading the developing countries that they too should reduce green house gas emissions, we can see why we should support it. Kyoto provides a platform from which a more far reaching and also more equitable agreement can be reached. Now we need to ask what that agreement would need to be like to satisfy the requirement of equity or fairness.

Meeting in Rio de Janeiro, in 1992, the "Earth Summit", as it came to be known, adopted its "Agenda 21", a blueprint for the protection of our planet and its sustainable development. The Earth Summit also led to the adoption of the UN Convention on Biological Diversity (1992) and the UN Convention to Combat Desertification in Countries Experiencing Serious Drought and/or Desertification, Particularly in Africa (1994). In 1994, a Global Conference on the Sustainable Development of Small Island Developing States, held in Barbados, adopted a Programme of Action that set forth policies, actions and measures at all levels to promote sustainable development for these states. In 2002, the World Summit on Sustainable Development was held in Johannesburg, South Africa, from 26 August to 4 September 2002, to take stock of

achievements, challenges and new issues arising since the 1992 Earth Summit. It was an "implementation" Summit, designed to turn the goals, promises and commitments of Agenda 21 into concrete, tangible actions. In January 2005, the international community met at Mauritius to conduct a 10-year United Nations review of the Barbados Programmers, approving a wide-ranging set of specific recommendations for its further implementation. The Mauritius Strategy addresses such issues as climate change and rising sea levels; natural and environmental disasters; management of wastes; coastal, marine, freshwater, land, energy, tourism and biodiversity resources; transportation and communication; science and technology; globalization and trade liberalization; sustainable production and consumption, capacity development, and education for sustainable development; health; culture; knowledge management and information for decision-making.

Classical utilitarian would not support any of the principles of fairness discussed so far. They would ask what proposal would lead to the greatest net happiness for all affected net happiness being what you have left when you deduct the suffering caused from the happiness brought about.

Paris Summit , World leaders met in Paris on November 30, 2015 and over 12 days , try to hammer out a deal to limit global green house gas emission to a level that restricts worldwide temperature rise to 2°C by the end of the century. This year (2015) is likely to be the hottest year on record, with ocean surface temperatures at the highest level since measurement began. Based on WMO (World Meteorological Organization) said global average surface temperature for 2015 so far was around 0.73°C above the 1961-1990 average of 14°C. (TOI-28.11.15 TIMES GLOBAL) By the end of the summit on December 11, the countries hope to reach a global agreement based on commitments by all to reduce emission of green house gases that's causing the earth to heat up. Developed nations take responsibility by cutting carbon emission in a big way and helping poor and developing countries with finance and technologies.



The stakes are high. In Paris the very terms of the agreement will change. Instead of requiring countries to cut emission based on their contribution to creating the problem each country can decide how much it will cut. Furthermore all countries are needed to take action, not just the countries which are responsible for the bulk of emission in the atmosphere. According to the Intergovernmental Panel on climate change, to keep the world below 2°C, with a 66% probability, the budget is some 2,900 billion tones of carbon dioxide. Industrialized nations have emitted the bulk of the 1,900 billion tones of carbon dioxide in the atmosphere.

II. THE MAIN CONSEQUENCES OF THE GLOBAL WARMING

Extreme Heat, Changing Rainfall Patterns, Droughts, Groundwater, Glacier Melt, Sea level rise, Agriculture and food security, Water Security, Energy Security, Health, Migration and conflict are the main impact of the global warming. Which we can see the changes on the earth as well as in India like- A 2°C rise in the world's average temperatures will make India's summer monsoon highly unpredictable. At 4°C warming, an extremely wet monsoon that currently has a chance of occurring only once in 100 years is projected to occur every 10 years by the end of the century.

An abrupt change in the monsoon could precipitate a major crisis, triggering more frequent droughts as well as greater flooding in large parts of India.

India's northwest coast to the south eastern coastal region could see higher than average rainfall.

Dry years are expected to be drier and wet years wetter.

Droughts are expected to be more frequent in some areas, especially in north-western India, Jharkhand, Orissa and Chhattisgarh.

Crop yields are expected to fall significantly because of extreme heat by the 2040s.

At 2.5°C warming, melting glaciers and the loss of snow cover over the Himalayas are expected to threaten the stability and reliability of northern India's primarily glacier-fed rivers, particularly the Indus and the Brahmaputra. The Ganges will be less dependent on melt water due to high annual rainfall downstream during the monsoon season.

The Indus and Brahmaputra are expected to see increased flows in spring when the snows melt, with flows reducing subsequently in late spring and summer. Although it is difficult to predict future ground water levels, falling water tables can be expected to reduce further on account of increasing demand for water from a growing population, more affluent life styles, as well as from the services sector and industry.

Alterations in the flows of the Indus, Ganges, and Brahmaputra rivers could significantly impact irrigation, affecting the amount of food that can be produced in their basins as well as the livelihoods of millions of people (209 million in the Indus basin, 478 million in the Ganges basin, and 62 million in the Brahmaputra basin in the year 2005).

With India close to the equator, the sub-continent would see much higher rises in sea levels than higher latitudes.

Sea-level rise and storm surges would lead to saltwater intrusion in the coastal areas, impacting agriculture, degrading groundwater quality, contaminating drinking water, and possibly causing a rise in diarrhea cases and cholera outbreaks, as the cholera bacterium survives longer in saline water.

Kolkata and Mumbai, both densely populated cities, are particularly vulnerable to the impacts of sea-level rise, tropical cyclones, and reverie flooding.

Seasonal water scarcity, rising temperatures, and intrusion of sea water would threaten crop yields, jeopardizing the country's food security.

Should current trends persist, substantial yield reductions in both rice and wheat can be expected in the near and medium term.

Under 2°C warming by the 2050s, the country may need to import more than twice the amount of food-grain than would be required without climate change.

The increasing variability and long-term decreases in river flows can pose a major challenge to hydropower plants and increase the risk of physical damage from landslides, flash floods, glacial lake outbursts, and other climate-related natural disasters.

Decreases in the availability of water and increases in temperature will pose major risk factors to thermal power generation. An increase in variability of monsoon rainfall is expected to increase water shortages in some areas.

Studies have found that the threat to water security is very high over central India, along the mountain ranges of the Western Ghats, and in India's northeastern states.

Health systems will need to be strengthened in identified hotspots.

Climate change impacts on agriculture and livelihoods can increase the number of climate refugees.

It is true that there are some circumstances in which we are justified in refusing to contribute if others are not doing their share. If we eat communally and take turns cooking, then I can justifiably feel resentment if there are some who eat but never cook or carry out equivalent tasks for the good of the entire group. But that is not the situation with climate change. In which the behavior of the industrialized nations has been more like that of a person who has left the kitchen tap running but refuses either to turn it off, or to mop up the resulting flood until you — who spilt an insignificant half glass of water on to the floor promise not to spill any more water. Now the other industrialized nations have agreed to turn off the tap, leaving the United States, the biggest culprit, alone in its refusal to commit itself to reducing emission.

There have been several occasions on which the United Nations has used sanctions against countries that have been seen as doing something gravely wrong. Is it inconceivable that one a reformed and strengthened United Nations will invoke sanctions against countries that do not play their part in global measures for the protection of the environment?

III. CONCLUSION

Let us consider the implication of this situation a little further. According to the The Indira Gandhi Institute of Development Research, if the process of global warming continues to increase, resulting climatic disasters would cause a decrease in India's GDP to decline by about 9%, with a decrease by 40% of the production of the major crops. A temperature increase of 2 ° C in India is projected to displace seven million people, with a submersion of the major cities of India like Mumbai and Chennai. Today the overwhelming majority of nations in the world are waited in

the view that greenhouse gas emissions should be significantly reduced, and all the major industrial nations but one have committed themselves to do something about this. That one nation, which happens to be the largest emitter of them all, has refused to commit itself to reducing its emissions. The only way now to operationalize equity is to make sure that all countries are required to take action to reduce emission based on the fair share of the carbon budget.

In spite of the steps taken by the Indian government, global warming continues to increase, and the resulting climatic disasters ravage the country in an unabated manner. This can be attributed to the lack of resources, and access to technology. To cope up with the climate change-disasters-security nexus, the country needs to have a better technical understanding, capacity building, networking and expansive consultation processes spanning every section of the society. The committees and organizations working to counteract against the climatic disasters work independently from each other. The ongoing climatic changes, with an increase in a possibility of more disasters impose imperatives for a unity among all these bodies, resulting in an integrated risk management framework, creating a common platform for the committees to work on. India has a distinctive vulnerability profile as the poor are the most affected. Tremendous weather events take place more frequently and are becoming more ruthless. Therefore the previous attempts of just rescuing the affected will not be enough now, instead, meticulous steps to prevent these disasters are required like- With built-up urban areas rapidly becoming “heat-islands”, urban planners will need to adopt measures to counteract this effect.

Improvements in hydro-meteorological systems for weather forecasting and the installation of flood warning systems can help people move out of harm’s way before a weather-related disaster strikes. Building codes will need to be enforced to ensure that homes and infrastructure are not at risk. Investments in R&D for the development of drought-resistant crops can help reduce some of the negative impacts. The efficient use of ground water resources will need to be incentivized.

Major investments in water storage capacity would be needed to benefit from increased river flows in spring and compensate for lower flows later on. Building codes will need to be strictly enforced and urban planning will need to prepare for climate-related disasters.

Coastal embankments will need to be built where necessary and Coastal Regulation Zone codes enforced strictly.

Crop diversification, more efficient water use, and improved soil management practices, together with the development of drought-resistant crops can help reduce some of the negative impacts.

Projects will need to be planned taking into account climatic risks.

Improvements in irrigation systems, water harvesting techniques, and more-efficient agricultural water management can offset some of these risks.

Improvements in hydro-meteorological systems for weather forecasting and the installation of flood warning systems can help people move out of harm’s way before a weather-related disaster strikes.

Building codes will need to be enforced to ensure that homes and infrastructure are not at risk.. This can only be met if the strategies and

Policies can cope with climate change, requiring the active participation of the government and the people.

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