

MITIGATION OF CLIMATE CHANGE RISK: THE ROLE OF PANCHAYAT RAJ INSTITUTIONS IN INDIA

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Abstract

India's economy is tied to natural resources and climate-sensitive industries including agriculture, water, and forestry. India may be in significant danger and will need to adapt to climate change. Many studies have underscored the country's susceptibility to climate change. Temperature, precipitation, and humidity variations are projected to have significant impacts on critical sectors including agriculture and rural development. Unprecedented heat waves, cyclones, floods, coastal Stalination, and consequences on agriculture, fisheries, and health are already visible. People flee the area where the issue is acute in order to locate a safer spot. Climate change issues are severe in certain parts of the country, causing internal displacement. People in these areas move permanently or temporarily. In terms of socio-economic effect, Migrants lost their jobs, property, and social network built over years of hard effort. India has one of the world's largest economic densities, and a big population of impoverished people who rely on natural resources, particularly rainfall. By 2020, India's water, air, soil, and forests would be under the most strain. Climate change will have a substantial influence on people's life in India, particularly water supplies. While water is necessary for life, it also causes devastation via floods and droughts. This research examines PRIs' involvement in climate change mitigation in Tamil Nadu.

Keywords: Climate Change, Panchayat Raj Institutions, Sustainable Development.

Introduction

Inversely, climate change has major demographic repercussions (Levy & Patz, 2015). It addresses one of humanity's key challenges today. Climate change and environmental degradation may be unprecedented this century, affecting population dispersion (McMichael, 2014). Landslides, coastal floods, and increased storm surges cause substantial coastal property damage Cities and islands are especially susceptible. These may cause corporate losses, harming human welfare. Floodwaters may infect people, plants, and animals (National Health Portal of India, 2018).

Deforestation is a result of Heat and CO₂ improve crop yields, but only if other elements like nutrient availability, soil moisture and water are balanced (Erda et al., 2005). Crop yields may fall. In hotter weather, weeds and pests grow, rendering crops susceptible to illness. Wheat is a staple crop that thrives in chilly climes. Wheat crops suffer from rising temperatures. In fact, a December 2014 Nature Climate Change study found that

every 1°C increase in global temperatures affects wheat output by 6%. Weaker wheat yields make vital foods like cereal, bread and pasta harder to get (Wang et al., 2018).

The human impact on the world has been a prominent discussion in the global climate change debate. Increasing the population has been a difficulty as death rates have fallen, medicine has improved, and advanced agricultural methods have been developed (de Sherbinin, Carr, Cassels, & Jiang, 2007). Farming and manufacturing need a lot of space. Less trees mean more CO₂, which carries the Earth. Concerns include our reliance on coal and fossil fuels, population growth, and rising consumption of fossil fuels. Large amounts of CO₂ are released into the atmosphere as a result of forest loss. Expansion of people harms ecosystems and raises CO₂, further destabilising the fragile environment (Charles, 2018).

The main environmental impact appears to be global warming. Respiration emits the most CO₂, followed by fossil fuel burning and deforestation. In any event, people raise CO₂ levels. CO₂ emissions have risen by a full degree (Perera, 2017). Melting arctic land ice and glaciers raises ocean levels and allows more water to absorb heat, melting more ice. It is tied to industrial and technical development. Climate change will affect Earth's weather patterns. Others will become bleak deserts as water drains from broad regions. Heat waves and more violent storms are forecast. Not only does it harm the ecosystem. In addition to damaging sensitive ecosystems, poor air quality and rising temperatures are boosting asthma and cancer rates. Every year, an estimated 18 million acres of trees are felled to create place for new buildings and wood products (Alina Bradford, 2018). The fact that trees create so much oxygen is not good for people, much alone forest critters. Deforestation threatens the survival of many forest-dependent species. So does it cause more global warming? It increases ozone-depleting substances. Humans must stop doing such things to survive. When people burn coal, carbon dioxide and nitrogen oxides are released into the atmosphere, where they form clouds and rain acid on the planet below. When it rains, it damages lakes and water bodies.

The ozone layer is known for its ability to absorb damaging UV light. It'd be horrible without ozone. Ozone is a protective layer of three connected oxygen molecules that floats up to the stratosphere. Main culprits in ozone depletion include chlorine and bromine, which reach the stratosphere and deplete O₃, diminishing its ability to absorb UV light. The human impact is harmful to UV-sensitive plants, especially food crops. However, it may take up to 80 years for the chemicals already released to reach the upper atmosphere, so our protective barrier will not be fully restored. To avoid sunburn, wear sunscreen (UNEP, 2012).

There are several ways to reduce the impact of climate change. It is clear that SDG 13 intends to improve education, knowledge, and institutional capacity on climate change mitigation and adaptation. SDG 13 aspires to execute UNFCCC commitments and promote mechanisms to strengthen climate change planning and management capability in countries like India and Small Island Developing States. "Climate change is an inevitable and urgent global concern with long-term implications for all nations," says the Rio+20 communiqué. The statement expresses concern about the hazards of climate change. Concerned about the effects of climate change, member states have called for global cooperation.

Global environmental issues including ozone depletion and climate change. Air, land, and oceans make up the climatic system. The Ozone Layer is above the Tropospheric Layer. Others like CO₂ and methane impact the climate system. Deflation, on the other hand, is the loss of the earth's protective stratospheric ozone layer due to industrial compounds including chlorine or bromine. Various research and publications have addressed the relationships between Ozone depletion and climate change, comparing and contrasting global regulation, for example. The human link with the biosphere is believed to be of great historical and political importance. Inversely, climate change has major demographic repercussions (Levy & Patz, 2015). It addresses one of humanity's key challenges today. Climate change and environmental degradation may be unprecedented this century, affecting population dispersion (McMichael, 2014). Landslides, coastal floods, and increased storm surges cause substantial coastal property damage. Enclosed areas, such as cities and islands, are particularly vulnerable. These may indirectly lead to company losses, affecting human prosperity. Floodwater may also carry illnesses hazardous to humans, plants, and animals (National Health Portal of India, 2018).

Climate change harms agriculture. Temperature and CO₂ increases may benefit certain crops, but only if other factors like nutrient levels, soil moisture, and water availability are balanced (Erda et al., 2005). Crop yields may also decrease. Weeds, bugs, and fungus thrive in higher temperatures, making crops more prone to disease. Wheat is an essential food crop that thrives well in cold climates. Warming temperatures harm wheat fields, reducing output. This explains why, according to a December 2014 Nature Climate Change research, every 1°C rise in global temperatures reduces wheat yield by 6%. Wheat output is declining, making it difficult to provide essential meals like cereal, bread, noodles, and pasta (Wang et al., 2018).

India's Actions to Mitigate Climate Change Issues

Economic growth and poverty reduction are now India's main priorities. Meeting these national imperatives will inevitably raise energy consumption and hence carbon emissions. Energy is required for economic progress, quality of life, and development. 600 million Indians lack access to electricity and 700 million rely on biomass for cooking. Clean energy is crucial for fostering equitable growth, achieving the MDGs, and improving India's human development index. Besides maintaining energy security, India must also build its infrastructure, increase industrial output, and cut GHG emissions from these sectors. Even with a large drop in energy intensity, India's main energy usage is anticipated to increase dramatically by 2031-32. To maintain this, a 5.8% annual rise in primary energy supply is necessary. Commercial energy supply must rise at 6.8% per year to replace non-commercial energy. But this also requires a 20% decrease in energy usage per unit of GDP over 10 years. Ideally, this expansion should be achieved while addressing climate change issues.

In order to promote development and achieve the Millennium Development Goals, India's CO emissions are expected to rise for some time. Most predictions show India's CO intensity per unit of GDP declining through 2030-2050. By global standards, India's economy is low-carbon. Recognizing the seriousness of climate change concerns, the Indian Prime Minister chaired a Council on Climate Change in June 2007 to coordinate national action for assessment, adaptation, and mitigation. NAPCC identifies methods to support India's development goals while tackling climate change efficiently. The NAPCC outlines eight national missions based on the principles of protecting the poor and vulnerable, enhancing ecological sustainability,

developing market, regulatory, and voluntary mechanisms to promote sustainable development, and participation of many stakeholders.

The action plan's eight national missions are described in Efficient Energy Use National Habitat Mission Mission Water National Himalayan Ecosystem Mission Green India Mission NMSA: National Mission for Sustainable National Climate Change Knowledge Mission 20% solar electricity by 2020 10,000 MW energy savings by 2012's 11th plan Energy efficient structures, transportation, waste management systems, energy efficiency as part of urban planning, community based disaster management, capacity development Increasing water usage efficiency by 20% via regulatory mechanisms, basin-level management initiatives, and water conservation measures Participatory management of Himalayan ecosystems and glacial monitoring To be planted on degraded land by the conclusion of the 12th Five-year plan (2017).

Assess climate change vulnerability and respond with high quality and targeted R&D National Climate Missions Five national missions concentrate on adaptation and two on mitigation. The national mission on Climate Change Strategic Knowledge is an adaptation and mitigation mission. India adopted the Kyoto Protocol in August 2002, with the goal of implementing CDM projects in line with national sustainability goals. Most private finance organisations target India because of its favourable policy climate. Investing in India is part of the financing firms' current and future fund strategies. CDM was vital in supporting mitigation measures in developing nations like India. It has funded renewable energy and energy efficiency projects three times as much than ODA (USAID, 2009). Though India has been a major receiver of CDM funds, uncertainty about the Post-Kyoto system is arguably the biggest deterrent to CDM projects.

Our planet's natural resources including air, water, land, plants and wildlife are dwindling. Large-scale growth and negligent construction of enterprises have unintentionally harmed our natural resources, negatively affecting people's lives and health. Several attempts have been launched to reduce industrial energy use, which must be expanded. The Bureau of Energy Efficiency's (BEE) "star labelling" scheme for appliances and promotion of compact fluorescent lighting are two examples (CFL). In transportation, it means obligatory fuel economy standards. In heavy industry, it entails trending reductions. Energy intensive businesses are predicted to emit up to 1.7 tonnes Bacons by 2030. (McKinney, 2009). Certain industrial growth projects need not only the installation of pollution control equipment but also the identification of suitable locations. Also, while changing present industrial practises, the industrial strategy should embrace environmental conservation and protection ideals. The March 2003 Moe charter on "Corporate Responsibility for Environmental Protection (CREP)" is a start in that direction. The charter directs the industry to seek beyond regulatory compliance for pollution prevention and management via methods such waste reduction, in-plant process control, and clean technology adoption. It has established objectives for water, energy, chemical recovery, pollution reduction, hazardous pollutant elimination, process and residue management, assuring environmental awareness (NATCOM -1).

Adaptation to Climate Change

Anticipating negative effects of climate change and taking required effort to minimise or reduce damage is adaptation. Early intervention saves money and lives. As in river basins, the EU's involvement is appropriate when the repercussions of climate change are cross-national in nature. It can assist disadvantaged and climate-change-affected regions adapt. Several adaptation efforts can mitigate climate change impacts: Safer locations and facilities Restoration and replanting of natural areas Preparing for natural calamities via varied farming Climate change adaptation and mitigation research and development. The seasons, the global average temperature, and other climate change impacts are already shifting (Thornton, Ericksen, Herrero, & Challinor, 2014). Adaptation may become more difficult and expensive as we wait for climate change to happen. Ecosystems, social and economic systems adjust to actual or expected climate changes. Climate change mitigation or profit-making techniques, approaches, and structures. En a nutshell, governments and communities must adapt to present and future climate change impacts. Options for adaptation differ by community, business, country, or region. Water-resistant crops and flood-proofing infrastructure are some examples of adaptation. Communication networks, business processes and government laws may also need to be changed. Building risk-resilient communities and economies is presently a major priority for many governments and cities. In addition to governments, effective adaptation involves active and ongoing engagement of stakeholders from the public and private sectors as well as civil society organisations.

Geo-, industry-, and level-adaptation to climate change is possible. Participants to the UNFCCC and its Paris Agreement acknowledge global adaptation problems. It's part of a long-term worldwide reaction to global warming. Tradition, indigenous, and local knowledge systems should be used to lead adaptation activity together with the greatest available research.

Climate Change Mitigation: Role of Panchayat Raj Institutions

Rural Development and Panchayat Raj Department implements numerous rural welfare initiatives and helps Panchayat Raj Institutions perform their obligations as efficient Local Self Government institutions. With the aim of ensuring a successful rural Tamil Nadu, this Government is dedicated to providing all essential services in rural regions. This agency also maintains minor irrigation tanks around the state. The plan of the agency is to establish better services at the village, panchayat, block and district levels with the participation of communities and other stakeholders. Village disaster management teams have been formed, and residents are being trained in basic first aid, rescue, and evacuation. From 2002-07, the initiative would be conducted in six districts of Tamil Nadu: Tiruvallur, Cuddalore, Kanyakumari, Nagapattinam, and Nilgiris. Villupuram, Tiruvarur, Thanjavur, Pudukottai, Ramanathapuram, Tuticorin, and Tirunelveli are the remaining seven coastal districts covered by DRM in phase two. To adapt and manage climate change risks, the panchayat raj institutions are responsible. Apart from drafting and executing Village-level Development Plans, the Panchayati Raj Department has formed partnerships and cooperation arrangements with Gram Panchayats to enable them build participatory and gender-just local action plans on adaptation (LAPAs) at the Panchayat level.

Conclusion

Climate change is one of the most difficult issues facing developing nations. Climate change is already affecting the economic performance of nations and the lives and livelihoods of millions of underprivileged people. One study found that by 2050, climate change might cost India 2.8% of its GDP and reduce living standards for almost half of its people. Over the next three decades, the average yearly temperature is anticipated to climb 1-2%. Changes in rainfall patterns, increased drought frequency, and subsequent groundwater stress and shortage. Regional activities are critical to reducing the hazards of climate change. Panchayat raj institutions' efforts are crucial in this respect.

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