



INTERNATIONAL LAW
JOURNAL

**WHITE BLACK
LEGAL LAW
JOURNAL
ISSN: 2581-
8503**

Peer - Reviewed & Refereed Journal

The Law Journal strives to provide a platform for discussion of International as well as National Developments in the Field of Law.

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WHITE BLACK LEGAL is an open access, peer-reviewed and refereed journal providededicated to express views on topical legal issues, thereby generating a cross current of ideas on emerging matters. This platform shall also ignite the initiative and desire of young law students to contribute in the field of law. The erudite response of legal luminaries shall be solicited to enable readers to explore challenges that lie before law makers, lawyers and the society at large, in the event of the ever changing social, economic and technological scenario.

With this thought, we hereby present to you

HUMAN RIGHTS IMPLICATIONS OF RISING SEA LEVELS AND COASTAL EROSION

AUTHORED BY - JANVI ASHIKA G

ABSTRACT

The escalating impacts of climate change, particularly rising sea levels and coastal erosion, pose significant human rights challenges worldwide. This paper explores the complex interplay between environmental degradation and human rights, focusing on the implications for vulnerable coastal communities. Rising sea levels threaten livelihoods, displace populations, and undermine the right to adequate housing, health, and a safe environment. The analysis examines relevant international human rights frameworks, national laws, and policies that address these challenges, highlighting the necessity for a rights-based approach to climate adaptation and mitigation. It emphasizes the importance of integrating human rights considerations into environmental governance to ensure that affected populations receive protection and support. Ultimately, the paper advocates for a comprehensive response that recognizes the intrinsic link between environmental sustainability and human rights, aiming to foster resilience among communities facing the harsh realities of climate change.

KEYWORDS: Sea level rise, coastal communities, environmental protection, human rights, mitigation.

INTRODUCTION:

The phenomenon of rising sea levels and coastal erosion, driven by climate change, poses urgent challenges to human rights and environmental justice. As global temperatures rise and polar ice melts¹, coastal regions are increasingly at risk, threatening the livelihoods, homes, and cultures of millions. Vulnerable populations, particularly in low-lying areas, face displacement, loss of land, and diminished access to essential resources such as clean water and food. These impacts are not merely environmental issues; they represent significant

¹ Lorin Hancock, *Why are glaciers and sea ice melting*, World Wild Life, <https://www.worldwildlife.org/pages/why-are-glaciers-and-sea-ice-melting#:~:text=Specifically%2C%20since%20the%20industrial%20revolution,sea%20and%20retreating%20on%20land.>

violations of fundamental human rights, including the right to life, health, adequate housing, and a safe environment, which are indeed protected under **Article 25 of Universal Declaration of Human Rights (UDHR)** and **Article 11 of International Covenant on Economic, Social and Cultural Rights (ICESCR)**.

The intersection of environmental degradation and human rights highlights the need for a comprehensive approach that integrates climate action with the protection of human dignity. International legal frameworks, national policies, and community resilience strategies must address the multifaceted implications of climate change to safeguard the rights of affected individuals and groups. This exploration will delve into the specific human rights implications of rising sea levels and coastal erosion, emphasizing the necessity of prioritizing vulnerable communities in climate responses and fostering sustainable practices that uphold human rights. By understanding these complexities, we can better advocate for equitable solutions that protect both the environment and the rights of all individuals.

UNDERSTANDING RISING SEA LEVELS AND COASTAL EROSION

Rising sea levels and coastal erosion are two interconnected phenomena that significantly affect coastal regions worldwide.

1. Rising Sea Levels

Between 1901 and 1971, the average annual sea level rise was 1.3 (0.6–2.1) mm, rising to 1.9 (0.8–2.9) mm between 1971 and 2006, and then to 3.7 (3.2–4.2) mm between 2016 and 2018 as per Intergovernmental Panel on Climate Change (IPCC)² and now it is noted that in between 2022 and 2023, the average sea height increased by 0.3 inches globally, which is considered a significant increase in sea level.³

Sea level along the Indian coast is currently believed to be rising at an average rate of roughly 1.7 mm/year, in accordance with this global trend and based on studies published in scientific literature as well as the study conducted by the Indian National Centre for Ocean Information

² Special Report: *Special Report on the Ocean and Cryosphere in a Changing Climate*, Ch 04, Sea Level Rise and Implications for Low-Lying Islands, Coasts and Communities, <https://www.ipcc.ch/srocc/chapter/chapter-4-sea-level-rise-and-implications-for-low-lying-islands-coasts-and-communities/> (last visited 15 October 2024)

³ Tripathi, Sibum Kumar. *Sea level rose 0.3 inches from 2022 to 2023. Scientists warn 'it's a large jump'*, India Today, 2024, <https://www.indiatoday.in/environment/story/sea-level-rose-03-inches-from-2022-to-2023-scientists-warn-its-a-large-jump-2518054-2024-03-22>

Services (INCOIS)⁴. Along the Indian coast, it has been noted that the sea levels are changing at various rates. This rise poses significant risks, particularly for low-lying coastal areas.

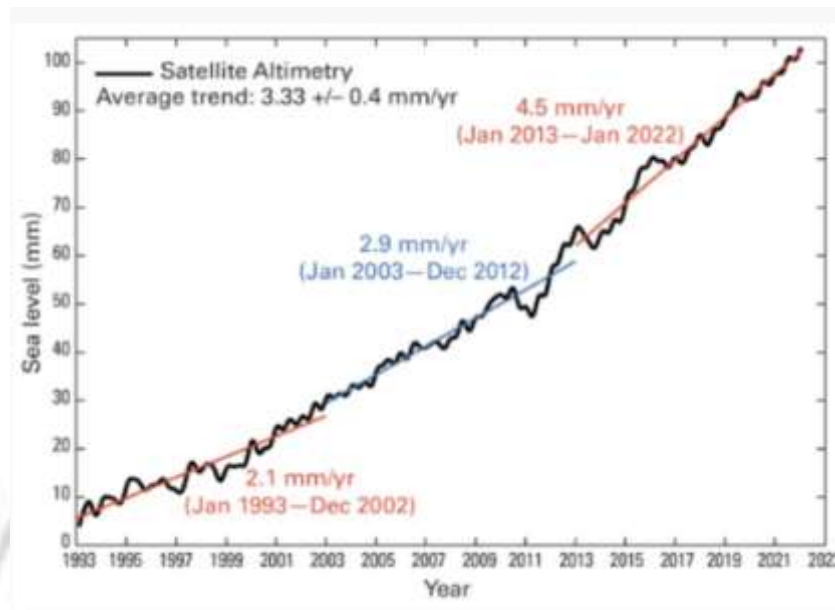


Figure 1: Satellite Altimetry of Sea Level Rise.⁵

Rising sea levels are primarily attributed to two factors related to climate change:

- **Thermal Expansion:** As global temperatures increase, ocean water warms and expands, contributing to higher sea levels.
- **Melting Ice Caps and Glaciers:** The accelerated melting of ice sheets in Greenland and Antarctica, along with the retreat of glaciers, adds substantial freshwater to the oceans.

According to the Intergovernmental Panel on Climate Change (IPCC), global sea levels have risen by approximately 20 centimetres since the late 19th century, with projections suggesting further increases in the coming decades. The combination of seawater's thermal expansion as it heats and the melting of ice sheets and glaciers is mostly to blame for the rising water level. Global mean sea level reached its highest yearly average in the satellite record in 2023, rising 101.4 millimeters (3.99 inches) above 1993 levels (1993-present).⁶

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⁵ Suja Mary James, *India among nations facing highest threat from sea-level rise: WMO*, Climate Fact Checks, 23 February 2023, <https://climatefactchecks.org/india-among-nations-facing-highest-threat-from-sea-level-rise-wmo/>

⁶ Rebecca Linsey, *Climate Change: Global Sea Level*, climate.gov, 2023, [https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level#:~:text=Global%20average%20sea%20level%20has,3.99%20inches\)%20above%201993%20levels.](https://www.climate.gov/news-features/understanding-climate/climate-change-global-sea-level#:~:text=Global%20average%20sea%20level%20has,3.99%20inches)%20above%201993%20levels.)

2. Coastal Erosion

India's vast 7,500-kilometer coastline is both a centre of commercial activity and a wildlife treasure trove. It does, however, face the urgent problem of coastline erosion. Because of its substantial effects on coastal ecosystems, businesses, and communities, coastal erosion is gaining more and more attention worldwide, not only in India. It was found that 39.6% of the Indian coastline was stable, 26.9% was accreting (expanding), and 33.6% was susceptible to erosion.⁷

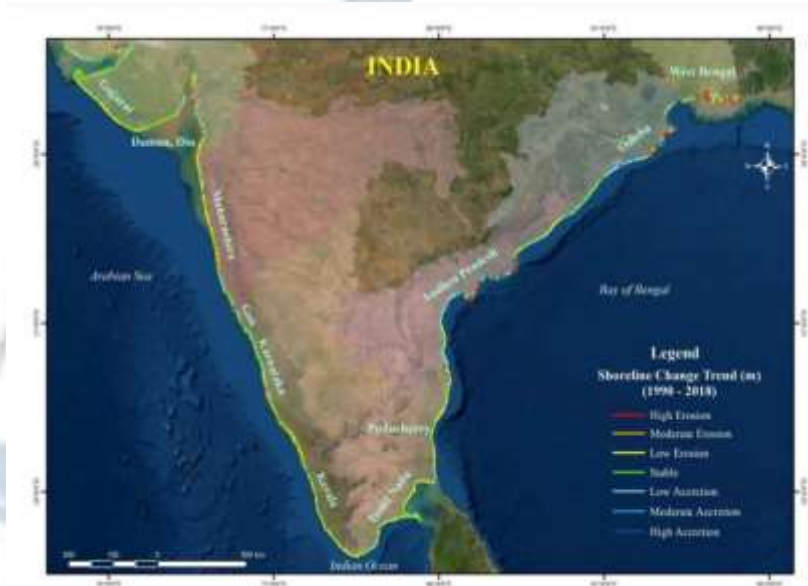


Figure 2: shoreline change map along Indian coast (1990-2018)⁸

The process by which local sea level rise, powerful waves, currents, and tides, exacerbated by human activities and climate change and coastal flooding wear down or remove rocks, soils, and/or sands from the coast is known as coastal erosion. However, anthropogenic or human activities have accelerated erosion rates in many coastal areas. Human activities such as infrastructure development near coastlines, extensive sand extraction for construction, mining, and alteration of natural coastline disrupt the natural flow of sediment, compromising the stability of coastlines and accelerating the process of erosion. Its rate and extent vary from place to place. It is a critical environmental issue that affects ecosystems, human settlements, and economic activities. Key factors include:

⁷ COASTAL EROSION <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1982315> (last visited 16 October 2024)

⁸ Suja Mary James, *India among nations facing highest threat from sea-level rise: WMO*, Climate Fact Checks, 23 February 2023, <https://climatefactchecks.org/india-among-nations-facing-highest-threat-from-sea-level-rise-wmo/>

- **Increased Wave Energy:** Higher sea levels can lead to more powerful waves that erode coastlines.
- **Storm Surges:** Intense storms can inundate coastal areas, causing rapid erosion and habitat loss.
- **Human Activities:** Development along coastlines, such as construction and deforestation, often disrupt natural barriers and exacerbate erosion.

On India's east coast, Tamil Nadu is one of the states most severely impacted as the Bay of Bengal continues to engulf vast tracts of land that were previously coastline and immaculate beaches. It has "permanently" lost 1,802 hectares of inland land to the enormous sea waves at 22 areas known as "erosion hotspots." Scientists estimate that Kancheepuram lost about 186 hectares of land to erosion between 1990 and 2018.⁹

IMPACTS ON LIVELIHOODS AND DISPLACEMENT OF COASTAL COMMUNITIES

Sea level rise is mostly caused by climate change, which is brought on by an increase in the atmospheric concentration of greenhouse gases. This causes global warming by escalating the greenhouse effect. Ocean water levels rise as a result of the melting of ice caps and glaciers brought on by rising temperatures. Thermal expansion is the process by which seawater expands in response to warmer temperatures. The whole rise in sea levels is mostly caused by this expansion.

Extreme marine flooding, coastal erosion, and saltwater intrusion in coastal aquifers are all predicted to worsen due to sea level rise. The dynamic response of coastal systems is still quite unclear for each type of impact. As a result, several research have been conducted on shoreline evolution and its possible causes, including sea level rise. The combined effects of rising sea levels and coastal erosion threaten the very existence of many communities¹⁰. Key impacts include:

- **Displacement:** Coastal communities are forced to deal with the prospect of migration and displacement due to rising sea levels. People who live in coastal areas that are susceptible, such as marginalized groups and fishing communities, run the risk of losing their homes and means of subsistence. As land becomes uninhabitable, populations may

⁹ NATIONAL ASSESSMENT OF SHORELINE CHANGES ALONG INDIAN COAST: STATUS REPORT FOR 26 YEARS, <https://www.nccr.gov.in/sites/default/files/schangenew.pdf> (last visited 16 October 2024)

¹⁰ Bruun P, Sea Level Rise as a Cause of Shore Erosion, J. Waterways Harbors Div., 1962.

be forced to relocate, leading to loss of cultural heritage and social cohesion. Some nations are already planning to relocate those who have been displaced by sea level rise. For instance, Kiribati has acquired land in Fiji as a possible new residence¹¹, and New Zealand is preparing to welcome some of the former inhabitants of Pacific islands that have been swamped.¹²

Displaced individuals may lose their homes and land due to flooding or erosion, raising questions about ownership rights and compensation. They may face challenges in accessing legal systems to assert their rights, including financial constraints, lack of legal knowledge, and limited legal representation. More social, economic, and humanitarian problems may result from this. Displaced individuals may face legal challenges in securing new housing or land, particularly if property rights are not clear. Vulnerable populations, such as Indigenous communities, may struggle to protect their rights amid displacement. This can violate the right to adequate housing, livelihood under **Article 21** and **Article 39 of Constitution of India**¹³ as individuals may struggle to find safe and affordable housing post-displacement.

- **Economic Losses:** Coastal economies reliant on fishing, tourism, and agriculture may suffer, impacting livelihoods and increasing poverty. Communities may face systemic economic challenges due to job losses in affected sectors.¹⁴ Legal frameworks may not adequately address the social safety nets needed to support displaced workers. Rising sea levels pose a threat to important infrastructure along India's coastlines, such as ports, airports, power plants, and highways. Infrastructure disruption or damage can result in financial losses, hinder development, and impact coastal industries like shipping and tourism.

As coastal areas become increasingly vulnerable to flooding and erosion, property values may decline. Homeowners may seek legal recourse for compensation based on loss of property value. Homeowners and businesses facing damage due to sea level rise may file insurance claims. Legal disputes may arise over the adequacy of coverage or denial of claims, especially if policies exclude certain types of climate-related damage.

As India is bound by **Paris Agreement**¹⁵ to mitigate climate impacts, failure to meet

¹¹ Samantha Goins, *Sea-Level Rise and Climate Migration: The Story of Kiribati*, Environment Law Institute, 2018, <https://www.eli.org/vibrant-environment-blog/sea-level-rise-and-climate-migration-story-kiribati>

¹² *Climate change transforms Pacific Islands*, World Meteorological Organisation Press Release, 2024, <https://wmo.int/news/media-centre/climate-change-transforms-pacific-islands>

¹³ INDIAN CONSTI. art 21 & 39.

¹⁴ World Economic Forum, *The Global Risks Report 2019 14th Edition*, Technical Report, 2019.

¹⁵ UNFCCC, <https://unfccc.int/process-and-meetings/the-paris-agreement> (last visited on 20 October 2024)

commitments can lead to legal challenges or demands for reparations from affected communities.

- **Loss of Biodiversity:** Ecosystems such as mangroves¹⁶ and wetlands, which provide critical protection against erosion and habitat for diverse species, are increasingly at risk. Mangroves, coral reefs, and estuaries are examples of coastal ecosystems in India that offer vital homes for a variety of marine animals. These habitats are under risk due to rising sea levels. As a result, fisheries diminish, biodiversity is lost, and the natural equilibrium of coastal ecosystems is upset. **The Wildlife Protection Act, 1972**¹⁷ act aims to protect endangered species and their habitats. As sea levels rise and habitats are lost, legal challenges may arise regarding the protection of vulnerable species and the enforcement of conservation measures. **The National Biodiversity Act, 2002**¹⁸ act aims to conserve biological diversity and ensure its sustainable use. Communities and NGOs can invoke this act to challenge governmental or corporate actions that threaten biodiversity, particularly in light of the impacts of climate change and sea level rise.

Understanding the dynamics of rising sea levels and coastal erosion is essential for addressing their human rights implications. As these phenomena threaten both the environment and the rights of affected populations, it becomes imperative to develop integrated strategies that promote resilience and protect human dignity in the face of climate change.

LEGAL FRAMEWORKS ADDRESSING CLIMATE CHANGE AND HUMAN RIGHTS

In India, the legal provisions addressing the climate change and human rights implications of rising sea levels and coastal erosion can be found in various statutes, constitutional provisions, and policies.

The **United Nations Framework Convention on Climate Change (UNFCCC)** is a key international treaty aimed at addressing climate change and its impacts. India ratified the UNFCCC on November 1, 1993, affirming its commitment to addressing global climate change. The ratification led to the development of national policies focused on climate change,

¹⁶ Ellison c, et al., *Mangrove Ecosystem Collapse with Predicted Sea Level Rise: Holocene Analogues and Implications*, J. Coastal Res., 1991.

¹⁷ Wildlife Protection Act, 1972, No. 53, Act of Parliament, 1972 (India).

¹⁸ National Biodiversity Act, 2002, No. 18, Act of Parliament, 2003 (India).

including the National Action Plan on Climate Change (NAPCC)¹⁹ and various state-level action plans. India plays a significant role in the UNFCCC framework, both as a developing country and as one of the largest emitters of greenhouse gases.

The **Paris Agreement** was adopted on December 12, 2015, at **COP21** in Paris, aiming to limit global temperature rise to well below 2 degrees Celsius above pre-industrial levels, with efforts to limit the increase to 1.5 degrees Celsius. India submitted its **Nationally Determined Contributions** (NDCs)²⁰ on October 2, 2015. Key commitments include:

- Reducing greenhouse gas emissions intensity by 33-35% from 2005 levels by 2030.
- Increasing the share of non-fossil fuel-based power generation to 50% of total installed capacity by 2030.
- Creating an additional carbon sink of 2.5 to 3 billion tons of CO₂ equivalent through forest and tree cover.

At the 26th **UN Climate Change Conference** (COP26)²¹ in Glasgow, India announced a net-zero target by 2070 and emphasized the need for enhanced climate action and financial support from developed nations.

The **Constitution of India** provides a robust framework for protecting human rights, which is particularly relevant in the context of climate change. **Article 21** of Constitution of India protects the right to life and personal liberty, which can be interpreted to include the right to a healthy environment as said in **M.C. Mehta v. Union of India (1987)**²². **Article 39(a)** directs the state to ensure that citizens have the right to an adequate means of livelihood. Protecting livelihoods affected by environmental changes is essential for fulfilling this directive.

Also, **Article 48A** of the constitution which directs the state to protect and improve the environment and safeguard the forests and wildlife. **Article 51A (g)** places a fundamental duty on citizens to protect and improve the natural environment, including forests, lakes, rivers, and wildlife.

¹⁹ Press Information Bureau, <https://static.pib.gov.in/WriteReadData/specificdocs/documents/2021/dec/doc202112101.pdf> (last visited on 21 October 2024)

²⁰ UNFCCC, <https://unfccc.int/sites/default/files/NDC/2022-08/India%20Updated%20First%20Nationally%20Determined%20Contrib.pdf> (last visited on 21 October 2024)

²¹ PIB, <https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1882840> (last visited on 21 October 2024)

²² M.C. Mehta v. Union of India 1987 AIR 1086, 1987 SCR (1) 819, 1987 SCC (1) 395.

Statutes includes **Environment Protection Act, 1986**²³ which provides a framework for the protection and improvement of the environment, including measures to address issues related to coastal erosion and rising sea levels. **Coastal Regulation Zone (CRZ)**²⁴ Notification regulates activities in coastal areas to protect coastal ecosystems, which are critical in mitigating the impacts of climate change. The **Disaster Management Act, 2005**²⁵ establishes a framework for disaster management, including the implications of natural disasters linked to climate change, like coastal flooding and erosion.

The **National Policy on Disaster Management** addresses the need for preparedness and response to disasters that may arise from environmental degradation and climate change. The **National Action Plan on Climate Change (NAPCC)** addresses the impacts of climate change, including coastal areas, and promotes adaptation strategies that align with human rights considerations.

RELATED CASE LAWS

Several legal cases in India have addressed the impacts of environmental issues such as sea level rise and soil erosion, particularly focusing on the rights of affected communities. Here are some significant cases:

The Indian judiciary has recognized the right to a clean and healthy environment as a part of the right to life under **Article 21** in the case of **M.C. Mehta v. Union of India (1987)**, influencing policy decisions regarding environmental protection and climate change. In this public interest litigation, the Supreme Court ruled in favour of the right to a clean and healthy environment as part of Article 21. The court emphasized that displacement caused by pollution and environmental damage must consider the livelihoods of affected communities, ensuring they receive adequate compensation and rehabilitation.

In the case of **Olga Tellis v. Bombay Municipal Corporation (1985)**²⁶, the Supreme Court recognized the right to livelihood as an integral part of the right to life under Article 21. The court held that eviction of pavement dwellers without a reasonable alternative would violate their right to livelihood. The ruling emphasized that the state must consider the impact of

²³ Environment Protection Act, 1986, No.29, Act of Parliament, 1986 (India).

²⁴ PARIVESH, https://environmentclearance.nic.in/report/CRZ_Notifications.aspx (last visited on 21 October 2024)

²⁵ Disaster Management Act, 2005, NO. 53, Act of Parliament, 2005 (India).

²⁶ Olga Tellis v. Bombay Municipal Corporation, (1986) AIR 180, 1985 SCR Supl. (2) 51.

displacement on individuals' ability to earn a living.

In the case of **Environmental Law Foundation v. Union of India (2008)**²⁷ the Supreme Court highlighted the relationship between environmental degradation and displacement. The Court ruled that environmental protections must consider the rights of communities reliant on natural resources for their livelihoods. The court mandated that any development project should include assessments of its impact on local populations and their economic well-being.

In **Laxmi v. Union of India (2014)**²⁸ case, the Supreme Court addressed the issue of unauthorized encroachments and the rights of the displaced. The court reinforced that the right to housing is part of the right to life under Article 21. It directed authorities to ensure that evictions are carried out in a humane manner, providing alternative accommodation and support for affected individuals.

Kochi Water Metro Project Case (2020)²⁹ the Kerala High Court addressed the need for environmental clearance and assessments for the proposed water metro project in Kochi, considering its potential impact on coastal ecosystems. This case highlights the importance of safeguarding coastal areas against projects that could exacerbate sea level rise and erosion, impacting local livelihoods.

India's legal framework regarding the human rights implications in the context of rising sea levels and coastal erosion is evolving, incorporating constitutional mandates, environmental laws, and disaster management policies. There is a growing recognition of the need for integrated approaches that consider both environmental sustainability and human rights protection.

KEY RECOMMENDATIONS AND MITIGATION

The two main categories of responses to climate change are adaptation and mitigation. The goal of mitigation is to stabilize the climate system by lowering greenhouse gas emissions and storing them in forests, etc. Since mitigation seeks to limit climate change to a level that both

²⁷ Environmental Law Foundation v. Union of India, (2008) 3 SCC 245.

²⁸ Laxmi v. Union of India, (2014) 4 SCC 427.

²⁹ Kochi Water Metro Limited v. Kerala Coastal Zone Management Authority, WP(C) No. 14633 of 2020 (Kerala High Court)

the ecosystem and human society can adapt to, it may be seen as a way to prevent a major climate change from creating an "unmanageable situation."

In turn, adaptation aims to lessen the adverse effects of climate change through a variety of strategies, including lowering the risk of disasters and boosting the resilience of freshwater and food production. Climate change including sea level rise will continue to progress to some degree, resulting in certain consequences on sectors and regions, even if mitigation is successful in reaching the stabilization goal. Adaptation is therefore regarded as a "measure to prepare for an unavoidable impact." It is critical to plan for and carry out adaptation, especially for developing nations, as their low adaptive capacity and insufficient infrastructure will cause them to be more severely affected. The significance of adaptation is growing in light of the ambiguity surrounding international mitigation agreements.

- It is recommended that the CRZ regulations are strictly enforced and updated to reflect current scientific understanding of climate change impacts. Incorporate provisions that explicitly recognize the rights of communities affected by rising sea levels and coastal erosion.
- Regularly assess the vulnerability of coastal communities to rising sea levels and erosion, focusing on socio-economic factors and identifying at-risk populations. Engage local communities in vulnerability assessments to gather indigenous knowledge and ensure their concerns are addressed.
- Develop and implement adaptation strategies that support sustainable livelihoods for communities affected by climate impacts, including alternative income sources. Provide training and resources to communities to enhance their resilience and adaptability to changing environmental conditions.
- Establish robust early warning systems for coastal communities to prepare for extreme weather events linked to climate change. Ensure that emergency response plans are inclusive and consider the needs of vulnerable populations, including women, children, and the elderly.
- Provide legal aid to communities facing displacement or loss of livelihood due to coastal erosion and rising sea levels, enabling them to claim their rights effectively. Conduct awareness campaigns to inform communities about their rights related to climate change and available legal protections.
- Engage with international frameworks and organizations focused on climate change adaptation and human rights, ensuring that national policies align with global standards.

- Develop systems to monitor the implementation of policies and laws related to climate change, ensuring accountability for protecting human rights. Require government bodies to regularly report on the status of coastal communities affected by climate change and the effectiveness of adaptation measures.
- Fund research on the human rights implications of climate change impacts, focusing on case studies of affected communities. Establish a centralized database for information related to rising sea levels, erosion, and their effects on communities to inform policy decisions.

India has already established several coastline protection policies and infrastructure, but climate change would bring in storm surges, waves, and floods that are higher than the current protective limits. Now it is the time we need to speed up the investigation of how to integrate these concerns into enhanced structural design standards and more robust policies for coastal protection. By implementing these recommendations, governments and stakeholders can better protect vulnerable communities and ensure that their rights are upheld in the face of climate change.

CONCLUSION

The human rights implications of rising sea levels and coastal erosion are profound and far-reaching, affecting millions of individuals, particularly those in vulnerable coastal communities. As climate change continues to intensify, it poses significant threats to livelihoods, housing, and the very existence of these communities. The interplay between environmental degradation and human rights highlights the urgent need for a comprehensive and integrated approach to address these challenges.

It is essential for governments, policymakers, and stakeholders to recognize that the impacts of climate change are not merely environmental issues but also fundamental human rights concerns. Upholding the rights to life, livelihood, and a healthy environment must be central to any climate action framework. By adopting and enforcing robust legal protections, fostering community engagement, and promoting sustainable adaptation strategies, we can mitigate the adverse effects of rising sea levels and coastal erosion.

Moreover, international cooperation and funding are critical to support affected communities,

especially in developing nations where resources may be limited. Through proactive measures, ongoing research, and the establishment of accountability mechanisms, we can ensure that human rights are protected in the face of climate change.

Ultimately, addressing the human rights implications of rising sea levels and coastal erosion is not only a moral imperative but also essential for fostering resilience and promoting sustainable development. By prioritizing the rights and needs of affected communities, we can work towards a more equitable and sustainable future for all.

