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Climate resilience reimagined

Integrating concepts of human and ecological security in South Asia

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South Asia's coastal regions, home to over 250 million people, are among the most climate-vulnerable in the world. Rising sea levels, intensifying cyclones, coastal erosion, and salinity intrusion, threaten livelihoods, food security, and economic stability, particularly for marginalised communities with limited adaptive capacities. Conventional adaptation strategies often prioritise infrastructure over ecosystems, failing to address the root causes of these vulnerabilities. This policy brief advocates for an integrated human and ecological security framework to enhance coastal resilience in South Asia. By linking human security—addressing socio-economic vulnerabilities—with ecological security—ensuring the health of coastal ecosystems—this approach combines climate adaptation, nature-based solutions (NbS), and sustainable development. Drawing on case studies the brief highlights the critical role of ecosystems such as mangroves, coral reefs, and seagrasses in disaster risk reduction, climate mitigation, and livelihood support. It emphasises the need for region-specific, community-driven solutions and calls for scaling up NbS, strengthening regional collaboration, and embedding ecological security into national policies to build long-term resilience.

Keywords: Integrated framework, Ecological Security, Human Security, Vulnerable Populations, Climate Change, and Coastal Resilience, South Asia

Introduction

South Asia's coastal regions are among the most climate-vulnerable in the world, facing sea-level rise, intensifying cyclones, coastal erosion, and increasing salinity intrusion. With over 250 million people living in low-lying coastal areas, these challenges pose significant risks to human security, livelihoods, food systems, and economic stability. While conventional security frameworks focus on disaster response and infrastructure-based adaptation, they often overlook the foundational role of ecosystem resilience in reducing climate vulnerabilities.

This Policy Brief advocates for a dual approach that integrates human security—addressing socio-economic and infrastructural vulnerabilities—with ecological security, ensuring the resilience of coastal ecosystems that underpin human well-being. By linking these two dimensions, South Asia can enhance coastal resilience through a holistic strategy that combines climate adaptation, nature-based solutions (NbS), and sustainable development.

Climate change has increasingly become a central issue in global security discussions, with international organisations such as the

United Nations Security Council (UNSC)[1] and the North Atlantic Treaty Organization (NATO) emphasising the urgency of the issue in their debates and discussions. The Global North, through bodies such as the European Union,[2] have formally embedded climate change within national security strategies, identifying it as a "threat multiplier". In particular, the European Union has institutionalised this recognition through key policy instruments such as the Strategic Compass for Security and Defence[3] and successive EU Council Conclusions on Climate Diplomacy[4] that explicitly link climate-related risks to security and geopolitical stability. Even though the new US administration is reconsidering its views and policies on climate, it is clear that climate is taken into consideration by security and defence analysis.

However, the securitisation of climate change often focuses on addressing symptoms—such as migration and resource scarcity—rather than tackling the root causes through mitigation and community-based adaptation.[5] This approach risks framing vulnerable populations as threats rather than victims of environmental crises, potentially leading to policies that prioritise containment over resilience-building.[6] A comprehensive security approach must assess the risks climate change poses to individuals and communities, including threats to livelihoods and coastal ecosystems. In this light, coastal resilience must be reframed as both an ecological and a human imperative—where securing the shoreline means securing the people who live along it.

The Human Security Imperative

The concept of human security, introduced by the United Nations Development Programme (UNDP) in 1994, challenges traditional state-centric notions of security by focusing on the protection and well-being of individuals and communities. It is founded on two key principles: "freedom from fear" and "freedom from want." These principles emphasise the importance of safeguarding individuals from threats to their safety and addressing the underlying conditions of poverty and vulnerability that undermine their well-being. In 2014, the Intergovernmental Panel on Climate Change (IPCC) recognised climate change as a direct and significant threat to human security, highlighting how it exacerbates vulnerabilities such as displacement, resource scarcity, and ecosystem degradation.[7]

Human security extends beyond physical threats, encompassing socio-economic and environmental dimensions that profoundly affect individual lives. It is unevenly distributed, with disparities seen across regions, countries, cities, and households, often linked to varying dependencies on natural resources and ecosystem services, as well as the influence of social power in economic, political, and cultural contexts.[8]

Human security is understood as the ability of individuals and communities to mitigate or adapt to climate-related threats affecting their well-being, environmental rights, and social stability.[9]

1 United Nations Security Council. "Security Council Holds First-Ever Debate on Impact of Climate Change on Peace, Security, Hearing over 50 Speakers.". 2007.
See also: United Nations Security Council. "Security Council Fails to Adopt Draft Resolution on Integrating Climate-Related Security Risk into Conflict Prevention Due to Veto by Russian Federation.". 2021.

2 European Commission. "Delivering the European Green Deal". 2021.

3 European Union External Action Service. "A Strategic Compass for Security and Defence". EEAS. 2022.

4 Council of the European Union, "Council Conclusions on Climate Diplomacy" Council of the EU. 2015.

5 Dalby, Simon. "The Geopolitics of Climate Change." Political Geography, 37: 38-47. 2013.

6 Floyd, R. & R. A. Matthew. "Environmental Security: Approaches and Issues". Routledge. 2013.

7 Intergovernmental Panel on Climate Change (IPCC). "Climate Change 2014: Impacts, Adaptation, and Vulnerability. Part A: Global and Sectoral Aspects. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change". Cambridge University Press. 2014.

8 Matthew, R. Sustainable livelihoods, environmental security and conflict mitigation: Four cases in South Asia. Poverty, Equity and Rights in Conservation Working Paper Series. Geneva: IUCN. 2005. http://www.iucn.org/themes/spg/Files/IUED/Case%20Study%20South%20Asia.pdf.

9 Barnett, Jon, et al. "Human Security and Climate Change." UNDP Human Development Report. United Nations Development Programme, 2010.

Coastal communities, when lacking adequate options to avoid or adapt to environmental changes—such as relocating, rebuilding, or sustaining livelihoods—become environmentally insecure. Such vulnerabilities not only intensify direct threats to human security but also elevate the risk of social instability and conflict, particularly in regions with weak governance and limited adaptive capacities.[10]

Human security is achieved when individuals and communities possess the necessary options to prevent, mitigate, or adapt to threats, the ability and freedom to act, and capacity to participate in decision-making.[11] In other words, human security is a dynamic state where people and communities can effectively manage stresses to their needs, rights, and values.[12] When they lack sufficient options to avoid or adapt to environmental changes, and their rights and needs are at risk, they become environmentally insecure. This approach advocates urgent mitigation efforts to avert the most severe consequences of climate change, while also working to reduce the risks that the most vulnerable communities face.

Coastal Vulnerabilities and Human Insecurity in South Asia:

South Asia's coastal regions, which are some of the most densely populated and ecologically significant areas in the world, are facing immense threats from climate change. The region is home to 135 million people living in Low-Elevation Coastal Zones (LECZ), making them highly vulnerable to sea-level rise, extreme weather events, and ecosystem degradation. The region has witnessed devastating impacts on human security, particularly among marginalised communities. Moreover, extreme climatic events have devastated coastal states in South Asia. For example:

Bangladesh: Cyclone *Amphan* impacted 2.6 million people in Bangladesh, damaging 205,368 homes and destroying 55,767. It affected infrastructure, including 40,894 latrines, 18,235 water points, and 440 kilometres of roads.[13] In the aftermath, the lack of sustainable repairs to embankments resulted in further flooding in August 2021, particularly in Khulna and Satkhira. This secondary impact displaced 50,000 people and damaged shrimp farms and farmlands, exacerbating the devastation for the affected communities.[14]

India: Cyclone *Fani*, a Category 4 storm that made landfall in Odisha on May 3rd, 2019, impacted over 28 million people across 24 districts in Odisha, Andhra Pradesh, and West Bengal.[15] Odisha experienced the greatest repercussions with more than 16 million individuals affected. In Puri alone, over 189,000 houses were damaged, and agriculture, including summer crops and plantations, was devastated. Over 4.8 million children were impacted, many in areas lacking basic necessities, with critical services disrupted for weeks.[16] The cyclone caused an estimated US$1.81 billion in damages both in India and Bangladesh.[17]

Pakistan: The 2022 floods, described as the worst in the country's history, affected over 32 million people, destroyed crops, and displaced millions, causing damage estimated at around $10 billion.[18] The floods exacerbated existing vulnerabilities,

10 Dalby, Simon. "Security and Environmental Change". Business and Economics. 2009.

11 Matthew, Richard A., Jon Barnett, Bryan McDonald, and Karen L. O'Brien, eds. "Global Environmental Change and Human Security". Cambridge: MIT Press, 2010.

12 O'Brien, Karen. "Are we Missing the Point? Global Environmental Change as an Issue of Human Security". Global Environmental Change, 16:1-3. 2006.

13 UNICEF. "Bangladesh Situation Report: Cyclone Amphan". 2020.

14 Crawford, N., Rahman, S., Nazia, T., Sennan, D., Mattar, D., and Kalu, U. "I was poor before, but Cyclone Amphan left me destitute': Disaster displacement and support in Bangladesh.". Taylor and Francis Inc. 2021.

15 UNICEF. "India: Cyclone Fani – Apr 2019". OCHA. 2019.

16 Indian Red Cross Society. "Cyclone Fani Damage Assessment Report." May 20, 2019. https://reliefweb.int/report/india/unicef-india-cyclone-fani-situation-report-2-national.

17 International Federation of Red Cross and Red Crescent Societies (IFRC). "Cyclone Fani: A Joint Rapid Needs Assessment." July 8, 2019. https://reliefweb.int/disaster/tc-2019-000041-ind.

18 Faseeh Mangi. "Damage from Pakistan Floods Is Far Greater Than $10 Billion." Bloomberg. 2022.

particularly in rural areas where access to healthcare and education was already limited.[19]

Sri Lanka is experiencing severe water insecurity, worsened by climate change, with frequent droughts, floods, and extreme weather events. The 2016-2017 El Niño Southern Oscillation impacted over 2 million people, damaging agriculture and depleting water resources.[20] Currently, with 90.8% of its renewable freshwater resources being utilised, the country faces concerns over both water quantity and quality. Additionally, catastrophic floods cause significant loss of life and property damage.[21]

The Maldives, a low-lying island nation with 1,192 islands scattered across 90,000 sq.km in the Indian Ocean, faces an existential crisis driven by climate change. With 75 per cent of its land barely a meter above sea level, even a minor rise in sea levels pose an immense threat.[22] Beyond the rising waters, climate change is intensifying storm frequency and severity, which disrupts tourism— the country's economic backbone— and damages critical infrastructure.[23] Moreover, fisheries, another key sector, are negatively affected by warming waters and changing ocean currents. This cascade of impacts threatens livelihoods, exacerbates unemployment, and casts a shadow over the future of local communities.

Across South Asia, climate change is reshaping the contours of economic stability, human development, and social resilience. To highlight the links between climate hazards and socio-economic vulnerability in coastal South Asia, Table 1 provides a comparative overview. It synthesises data on population exposure in low-elevation coastal zones (LECZ), dependence on coastal ecosystems, economic losses, and sectoral vulnerabilities, illustrating how sea-level rise, extreme weather, infrastructure fragility, and ecosystem degradation are converging to create systemic risks.

As Table 1 indicates, climate change is having widespread and multidimensional impacts across South Asia, particularly in coastal zones. In agriculture, saltwater intrusion, extreme weather, and changing ocean conditions are reducing crop yields and fish stocks— jeopardising food security and rural incomes. Coastal regions, including Sri Lanka and the Maldives, are especially at risk due to marine biodiversity loss, which affects livelihoods tied to fisheries and tourism. Infrastructure systems across India, Bangladesh, and the Maldives face escalating risks, as rising seas and intensified storms damage roads, ports, energy grids, and housing, leading to widespread displacement and service disruption. Public health is also under pressure from waterborne diseases, salinisation, and chronic illness linked to environmental stress, while climate-related disasters impact education by damaging schools and limiting access, especially for children in marginalised communities.

Moreover, projected losses from climate change in GDP per capita for South Asian countries are already higher than the global average of about 7 per cent with India and Pakistan expected to experience losses of 10 per cent by 2100.[24] These patterns illustrate how climate change undermines human security by threatening livelihoods, displacing communities, and exacerbating poverty and inequality – particularly for marginalised groups such as women, children, and low-income populations, who often lack the resources to adapt or recover.

19 Ministry of Planning Development & Special Initiatives. "Pakistan Floods 2022: Post-Disaster Needs Assessment (PDNA)". The World Bank. 2022.

20 UNDP Sri Lanka. "Integrated Water Resources Development: The Way Forward for Sri Lanka to tackle the Climate Crisis". United Nations Development Program in Sri Lanka, 2017.

21 United Nations Framework Convention on Climate Change (UNFCCC). "Third National Communication of Climate Change in Sri Lanka". Sri Lanka Ministry of Environment. 2018.

22 UN Department of Global Communications. "Paradise Prepares: Maldives Pioneers Climate Resilience with Early Warning Systems." United Nations, 2020.

23 Nyassi, Ya Awa. "Sustaining a Tourist Paradise in Maldives Amid the Changing Climate." Southeast Asia Program, Chiang Mai University. 2022.

24 International Monetary Fund (IMF). "Long-Term Macroeconomic Effects of Climate Change: A Cross-Country Analysis". 2019.

Table 1 Country-Specific Vulnerabilities: Cross-Cutting Climate Challenges

Country	Population in LECZ (in Millions)	Population Dependent on Coastal Ecosystems (in Millions)	Key Vulnerabilities to Climate Hazard	Economic Losses (AAL) (in Billions, % of GDP)	Sectoral Impacts[25]
Bangladesh	65.5	30	Floods, cyclones, sea-level rise, salt-water intrusion	$11.4 billion (6.4% GDP)	43% social sectors (education, health, housing), 38% productive sectors (agriculture)
India	63.2	120	Cyclones, floods, sea-level rise, high exposure in GBM basin, Odisha, Kerala, Tamil Nadu	$87.6 billion (3.34% GDP)	High losses in agriculture, infrastructure, and social sectors
Pakistan	4.2	12	Cyclones, floods, sea-level rise, high exposure in Sindh and Balochistan	$16.0 billion (6.77% GDP)	Significant impacts on agriculture, health, and housing
Sri Lanka	2.2	7	Floods, landslides, sea-level rise, high exposure in south-western coastal towns	$1.7 billion (2.06% GDP)	High impacts on housing, health, and education
Maldives	0.5	0.4	Sea-level rise, storm surges, coastal erosion, coral reef degradation	$0.2 billion (1.5% GDP)	Severe impact on tourism, fisheries, and infrastructure

Source: Author Compiled

The Need for a Shift in Security Frameworks

Traditionally, national security has been the domain of states, military institutions, and law enforcement agencies. However, if security continues to be conceived primarily in terms of state sovereignty and geopolitical stability, the response to climate change may remain narrow, neglecting its diverse and far reaching impacts on populations – particularly the most vulnerable ones. Climate change is already undermining human security and is diminishing access to and the quality of essential natural resources such as clean water, food,[26] and weakening state capacity to provide essential services and economic opportunities.[27] Weak governance, coupled with environmental stress, heightens social and economic inequalities, thereby undermining resilience and adaptation efforts. This, in turn, negatively impacts the economic well-being of South Asia.

Human security, as a concept, underscores the idea that individuals, rather than states, are the ultimate referent objects of security. As such, human security approaches should go beyond securitised responses that frame displaced populations as threats and focus on building the resilience and adaptive capacity of vulnerable communities. These communities, particularly in South Asia, contribute minimally to global greenhouse gas emissions —often with some of the lowest per capita emissions—

25 United Nations, Economic and Social Commission for Asia and the Pacific (ESCAP). "The Disaster Riskscape across South and South-West Asia: Key Takeaways for Stakeholders". ST/ESCAP/2879, 2020.

26 IPCC. "Climate Change: Impacts, Adaptation, and Vulnerability". Cambridge University Press. 2014.

27 Barnett, J., & Adger, W.N. "Climate change, human security and violent conflict". Political Geography, 26(6), 639–655. 2007.

but bear the brunt of its impacts. Their voices and developmental needs, including capacity building, ecosystem restoration, and sustainable adaptation measures, must be prioritised over militarised responses such as border controls and resource disputes.

Ecological Security: A Transformative Approach to Climate Change and Human Well-Being

Ecological security provides a transformative approach to addressing the interconnected challenges of climate change, human security, and environmental sustainability. By positioning ecosystems as the cornerstone of security, this approach integrates ecological health with human well-being, providing long-term, sustainable solutions.[28] This paradigm shift is especially crucial in South Asia, a region deeply vulnerable to climate impacts and heavily dependent on coastal ecosystems for livelihoods, food security, and disaster resilience.

The Interdependence of Human and Ecological Security

Ecological security and human security are intrinsically linked. Healthy ecosystems provide critical services—such as food, water, disaster protection, and climate regulation—which are essential for human survival.[29] Coastal ecosystems, including mangroves, coral reefs, and seagrasses, provide critical benefits for disaster management, climate change mitigation, and supporting livelihoods.[30]

Mangroves absorb 70-90 per cent of wave energy, reducing tsunami and storm surge impacts,[31] while also trapping sediments to prevent coastal erosion and storing significant amounts of CO_2.[32]

Coral reefs play a significant role in mitigating these risks, offering protection by reducing wave energy by as much as 97 per cent with reef crests alone dissipating around 86 per cent of this energy.[33] Coral reefs can be as effective as artificial defences like breakwaters, and their resilience can be enhanced cost-effectively. Coral reefs also support around 500 million people worldwide through fisheries and tourism.[34]

Seagrasses stabilise seabeds, reduce wave energy, and absorb CO_2 from oceans, further contributing to shoreline protection[35] and carbon sequestration.[36] Together, these ecosystems provide billions of dollars in economic benefits, including coastal protection, fisheries support, and climate resilience, making their conservation essential for sustainable development and disaster risk reduction.

28 McDonald, Matt. "Ecological Security: Climate Change and the Construction of Security." In Ecological Security, 167–192. Cambridge University Press, 2021.

29 Barbier, Edward B., Sally D. Hacker, Chris Kennedy, Evamaria W. Koch, Adrian C. Stier, and Brian R. Silliman. "The Value of Estuarine and Coastal Ecosystem Services." Ecological Monographs 81, no. 2 (May): 169–193. 2011.

30 Das, Saudamini, and Jeffrey R. Vincent. "Mangroves Protected Villages and Reduced Death Toll During the Indian Ocean Tsunami." Proceedings of the National Academy of Sciences 106, no. 18 (May): 7357–7360. 2009. See also: Barbier, Edward B., Sally D. Hacker, Chris Kennedy, Evamaria W. Koch, Adrian C. Stier, and Brian R. Silliman. "The Value of Estuarine and Coastal Ecosystem Services." Ecological Monographs 81, no. 2 (May): 169–193. 2011.

31 Yanagisawa, H., S. Koshimura, T. Miyagi, and F. Imamura. "Tsunami Damage Reduction Performance of a Mangrove Forest in Banda Aceh, Indonesia Inferred from Field Data and a Numerical Model." Journal of Geophysical Research: Oceans 115, no. C6: C06018. 2010.

32 UNISDR/UNDP. Review Paper – Status of Coastal and Marine Ecosystem Management in South Asia. Inputs of the South Asian Consultative Workshop on "Integration of Disaster Risk Reduction and Climate Change Adaptation into Biodiversity and Ecosystem Management of Coastal and Marine Areas in South Asia" held in New Delhi on 6 and 7 March 2012. New Delhi: UNDP, 2012.

33 Ferrario, Filippo, Michael W. Beck, Curt D. Storlazzi, Fiorenza Micheli, Christine C. Shepard, and Laura Airoldi. 2014. "The Effectiveness of Coral Reefs for Coastal Hazard Risk Reduction and Adaptation." Nature Communications 5: 3794. 2014.

34 Wilkinson, Clive, ed. "Status of Coral Reefs of the World: 2004, Volume 1". Global Coral Reef Monitoring Network (GCRMN) and Australian Institute of Marine Science, 2004.

35 Ondiviela, Barbara, et al. "The Role of Seagrasses in Coastal Protection in a Changing Climate." Coastal Engineering 87: 158-168. 2014.

36 Miyajima, Toshihiro, and Masami Hamaguchi. "Carbon Sequestration in Sediment as an Ecosystem Function of Seagrass Meadows." In Blue Carbon in Shallow Coastal Ecosystems, 33–71. 2018.

Table 2

Ecosystem	Current Status	Key Benefits	Major Threats
Mangroves	6.8% of global mangroves; India has lost 85% of its cover	Fish nurseries, shoreline protection, carbon storage	Shrimp farming, sea-level rise, reduced freshwater inflow
Coral Reefs	Over 6% of the world's coral reefs are located in South Asia	Fisheries support, coastal protection, tourism	Coral bleaching, overfishing, pollution
Seagrass	Found in southern India, Sri Lanka, and the Maldives	Supports fisheries, absorbs CO_2, stabilises seabeds	Trawling, pollution, over-harvesting
Sand Dunes	Present in Sri Lanka, the Maldives, and southeast India	Protection from erosion, tsunamis, saltwater intrusion	Sand mining, tourism, coastal development
Coastal Wetlands	Includes estuaries, lagoons, and mudflats	Habitat for migratory birds, flood control	Pollution, habitat destruction, sedimentation
Beaches	Extensive across Sri Lanka, the Maldives, and India	Tourism, storm surge mitigation	Erosion, pollution, human settlements
Cliffs & Rocky Shores	Found along India's coasts	Wave Energy dissipation, habitat provision	Quarrying, infrastructure development

Source: Compiled by the Author from South Asia Co-operative Environment Programme (SACEP), 2019[37]

However, when these ecosystems are degraded, their capacity to provide these services diminishes, increasing human vulnerabilities and undermining climate resilience. For example, the loss of mangroves in the Sundarbans has left coastal communities in Bangladesh and India more exposed to cyclones and storm surges. Similarly, coral bleaching in the Maldives and Sri Lanka has weakened coastal protection and threatened fisheries, impacting local economies and their food security.[38]

A Broader Ethical Framework for Ecological Security

A security framework rooted in ecological resilience extends beyond the immediate needs of human populations to include the rights of non-human life and future generations. This perspective expands moral and policy considerations to include species and ecosystems that lack a direct political constituency.[39] Recognising the uncertainties of ecosystem functions, potential tipping points, and governance challenges, this approach could drive urgent and systemic action to address the climate crisis.

Coastal Ecosystem Status and Threats in South Asia

South Asia's coastal ecosystems are increasingly threatened by natural and anthropogenic pressures.[40] Table 2 outlines the status, importance, and threats facing key ecosystems.

The Integrated Human-Ecological Security Framework

To effectively address the pressing challenges of climate change and environmental degradation, South Asian coastal regions require a unified strategy that seamlessly integrates both human and ecological security. Human security focuses on safeguarding infrastructure, livelihoods, and disaster preparedness, while ecological security is dedicated to protecting coastal ecosystems and ensuring sustainable resource management. Achieving this balance is essential for long-term resilience in the region. The following key policy interventions are necessary to promote coastal resilience:

37 South Asia Co-operative Environment Programme (SACEP). "Marine and Coastal Biodiversity Strategy for the South Asian Seas Region". 2019.

38 Hughes, Terry P., Michele L. Barnes, David R. Bellwood, Joshua E. Cinner, Graeme S. Cumming, Jeremy B. C. Jackson, Joanie Kleypas, et al. 2017. "Coral Reefs in the Anthropocene." Nature 546, no. 7656 (June): 82–90.

39 McDonald, Matt. "Ecological Security: Climate Change and the Construction of Security." In Ecological Security, 167–192. Cambridge University Press, 2021.

40 World Bank. "The Adaptation Principles: A Guide for Designing Strategies for Climate Change Adaptation and Resilience". Washington, DC: World Bank, 2020.

1. **Strengthen Ecosystem-Based Adaptation through Nature-Based Solutions (NbS):** Adopting and scaling up NbS is essential to restoring and protecting vital ecosystems such as mangroves, wetlands, and coral reefs. Initiatives like India's efforts in the Sundarbans and Maharashtra, and Bangladesh's Coastal Greenbelt Project, demonstrate large-scale restoration. Navies are emerging as partners in these efforts—India's Navy has supported mangrove drives in Andhra Pradesh and Maharashtra, while Sri Lanka's Navy aids in coastal clean-up and reforestation. Though still limited, expanding naval roles in countries like Bangladesh and Pakistan could bolster Nature-based Solutions through logistics and disaster response, aligning ecological restoration efforts with national security.
2. **Enhance Regional Collaboration:** Strengthening South Asia's engagement in regional climate and ocean governance mechanisms, such as the Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC), is essential for fostering collective action. This collaboration enables coordinated responses to shared environmental challenges like sea-level rise and extreme weather events, thus enhancing regional resilience.
3. **Integrate Ecological Security into National Policies:** Embed ecological security into national climate action plans, economic policies, and disaster risk reduction strategies. This cross-sectoral integration ensures that development plans prioritise ecological health, contributing to both environmental sustainability and societal resilience. Such integration strengthens the capacity to address environmental risks while promoting human well-being.
4. **Promote Community-Based Approaches:** Engage local communities in ecosystem restoration and sustainable coastal management efforts. By empowering communities through knowledge-sharing and active participation, solutions are better tailored to local contexts and ensure equitable outcomes. This community-driven approach is vital for effective conservation and long-term resilience.
5. **Develop a Transboundary Collaborative Framework for Ecosystem Health:** Establish a collaborative framework for assessing and managing ecosystem health across borders. This framework should involve local communities and stakeholders in co-producing knowledge, fostering research, and supporting large-scale restoration initiatives. Such cooperation will mitigate biodiversity loss, enhance ecosystem services, and strengthen resilience at the regional level.
6. **Invest in Nature-Based Infrastructure:** Increase investments in coastal green infrastructure, such as living shorelines and bio shields, to protect vulnerable coastal areas from erosion and storm surges. These nature-based solutions provide cost-effective, sustainable alternatives to traditional engineering methods, offering long-term protection while supporting biodiversity.

Conclusion

This integrated approach effectively addresses key concerns regarding prioritising security and addressing vulnerabilities, ensuring that human and ecological security are balanced. By advocating for NbS, such as mangrove restoration and blue carbon initiatives, it highlights the importance of safeguarding ecosystems and human well-being. These measures align the resilience of coastal ecosystems with the needs of vulnerable populations, offering sustainable protection against climate risks.

Moreover, community-based approaches are fundamental to promoting equity by incorporating local knowledge and ensuring that marginalised groups are included in decision-making processes. This inclusive approach fosters ownership and long-term ecological and social resilience. The framework also addresses immediate climate challenges while preparing for future risks, ensuring that future generations inherit a more resilient environment. By integrating ecological restoration and sustainable development practices, this approach contributes to lasting, equitable resilience for both communities and ecosystems, strengthening the foundation for future sustainability and security.

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About the Planetary Security Initiative
The Planetary Security Initiative sets out best practice, strategic entry points and new approaches to reducing climate-related risks to conflict and stability, thus promoting sustainable peace in a changing climate. The PSI is operated by the Clingendael Institute. planetarysecurityinitiative.org.

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