

The Interplay Between Economic Growth, Sustainability, and Environmental Challenges: A Study in Assam

Abdullah Al Mamun

Ph.D. Research Scholar

Department of Humanities & Social Sciences

Indian Institute of Technology Kharagpur

West Bengal 721 302; India

E-mail: mamunofficials@gmail.com

Sumit Ghosh

Ph.D. Research Scholar

Department of Economics

Gauhati University

Assam781014; India

E-mail: sghoshgu@gmail.com

Abstract

The contemporary landscape of Assam is at a critical juncture, grappling with the intricate interplay between economic development, sustainability, and mounting environmental concerns. As Assam experiences an uptick in economic activities, the diminishing availability of natural resources poses a significant threat to its delicate ecosystem. Such degradation amplifies environmental adversities such as droughts, acid rain, and erratic rainfall patterns, leading to devastating consequences for its residents. Furthermore, riverbank and soil erosion have rendered many inhabitants homeless, particularly those along riversides and landslide-vulnerable terrains. Tragically, displacements spurred by these hazards often lead to encroachments into forested zones, intensifying concerns about deforestation. Another emerging issue is the encroachment of desertification, mainly driven by unchecked and ill-planned urbanisation. These factors not only escalate the threats of global warming but also jeopardise the livelihoods of Assam's population, pushing many into poverty. Displaced individuals face the loss of traditional livelihoods and confront challenges related to security and identity. This research aims to shed light on the multi-faceted challenges birthed by environmental degradation in Assam, focusing on its impacts on livelihood and housing. It also endeavours to propose actionable measures to alleviate the hardships caused by environmental depletion.

Keywords: *Environment, livelihood, displacement, development, sustainability.*

Introduction

The environment, often considered a pivotal cornerstone for human societies, has garnered significant attention from modern development thinkers (Herrero et al., 2021). They emphasize its judicious utilisation to ensure the well-being and continuity of human society (Fidler, 2010). Global conversations increasingly revolve around the multifaceted negative impacts of environmental degradation (Swim et al., 2009). Such degradation leads to the physical displacement of affected communities (Warner et al., 2010) and compromises their established livelihoods (Huber-Sannwald et al., 2012). Over-extraction and imprudent use of natural resources amplify threats like floods, droughts, and famines (Sanyal, 2006).

While the northeastern region of India, including Assam, boasts an abundance of natural resources (Borah, 2019), it simultaneously stands at the forefront of areas vulnerable to natural disasters (Chawii, 2007). This vulnerability stems from factors such as the mishandling of critical rivers like Brahmaputra, Barak, Beky, Kalang, Burhidehing, and Pagladia and geographical attributes of hills and lowlands. Many discussions surrounding these challenges veer toward political dimensions (Sapru, 1998). However, underlying these debates are fundamental economic and environmental concerns (Awan, 2013). The environment, intrinsic to Assam's livelihood practices, warrants methodical examination (Dutta, 2018). Embracing environmental precautions and incorporating scientific evaluations into development initiatives can protect the traditional livelihoods of native communities (Sridhar et al., 2016). Indeed, Assam has witnessed the tension between development-driven agendas and environmental protection, as seen in opposition to projects like the Lower Suwansiri Project or the Big Dam (Baruah, 2017). Hence, formulating policies that can strike a balance and prevent environmental degradation becomes paramount (Eweje, 2006), ensuring that Assam and the northeastern region are shielded from nature-induced calamities and the associated loss of life and livelihood.

Objectives of the study:

- Investigate the correlation between environmental disturbances, displacement, and the rise in poverty.
- Delve into the relationship between environmental degradation and livelihood patterns in Assam.
- Identify strategies that foster sustainable development while maintaining environmental integrity.

Research questions:

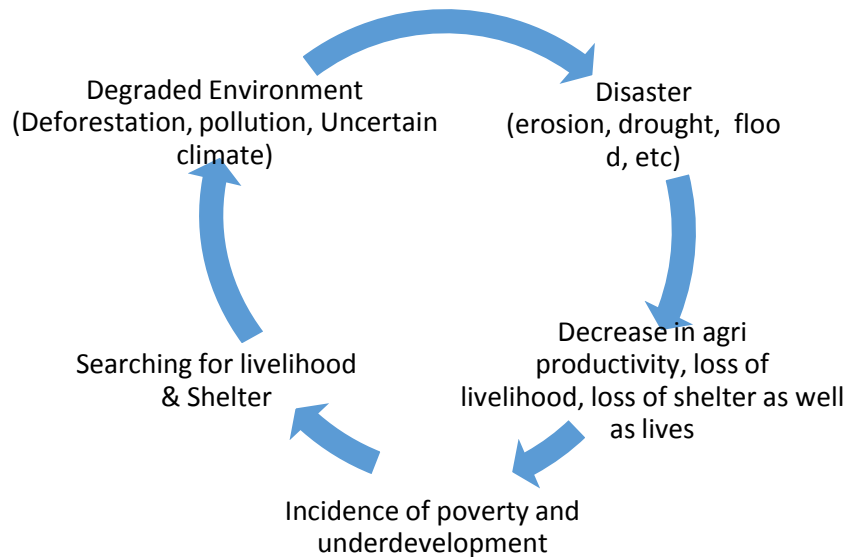
- How significantly does the environment influence shifts in people's livelihoods?
- How can we address the sustainability challenge in an environmental context?
- What strategies can be employed to ensure development policies align with environmental conservation?

Methodology and data sources:

This research primarily relies on secondary data, which will be analysed with selected economic tools. A descriptive analytical approach will form the backbone of this paper. The primary data sources will encompass scholarly articles, online resources, and pertinent reports. This version refines and organises the content, aiming for clarity and coherence.

Environmental Concerns, Livelihood Challenges, Poverty, and Displacement

Environment and poverty are intrinsically connected through the medium of livelihood. The quality of local environments profoundly influences the nature of livelihoods. Environmental shifts or climate changes can significantly impact these livelihoods (Bhattacharya, 2002). Degradation of the environment often leads to eliminating traditional occupations, pushing individuals further into poverty. This relationship is two-fold: while a thriving environment can support and nurture livelihoods, its degradation can impoverish communities. Conversely, impoverished and underdeveloped societies may inadvertently harm the environment in their quest for sustenance and shelter. Such communities often resort to excessive or improperly managed resource extraction. Environmental experts and economists widely acknowledge that the strain on natural resources can lead to pronounced environmental degradation during the early stages of development. However, as development progresses, this strain typically diminishes.



The intricate relationship between environmental quality and people's livelihood underscores the challenges and dependencies between the two. There is a compelling need to incorporate this understanding into policy frameworks for a region or country's holistic development. The connection between the environment and poverty is more complex than is often perceived.

While there is a prevailing belief that the impoverished contribute to environmental degradation through the overuse of resources, a sentiment once encapsulated by the statement 'poverty is the greatest polluter', evidence for this claim remains inconclusive. Studies suggest that while the impoverished rely heavily on natural resources, it is not definitive that they overuse or misuse them to the point of degradation.

On the contrary, the impoverished are frequently affected by environmental degradation. Unanticipated natural calamities often render them homeless or jobless, pushing them further into poverty. While some evidence indicates that an increase in poverty might exacerbate environmental challenges, a more dominant perspective is that environmental degradation amplifies adversities the impoverished face.

Interplay of Environmental Factors and Poverty: Insights from Assam

In Assam, environmental degradation manifests in unique and challenging ways, often linked to regional socio-economic metrics. According to the Economic Survey of Assam 2012-13, the state had a per capita NSDP of Rs. 20279.00 (constant price 2004-05 for 2009-10), a BPL population of 37.9%, and a high population density of 397 persons per sq. km. Alongside

these figures, deforestation reached a staggering decrease of 9.71% between 1987 and 1997, with wastelands constituting 20.29% of the area by 1988-90 (Economic Survey Assam, 2013). These numbers shed light on some of Assam's pressing environmental concerns, such as riverbank erosion leading to displacement, livelihood and shelter loss, compounded river depths exacerbating flooding, Jhoom cultivation practices triggering deforestation and landslides in hilly terrains, changing agricultural practices due to climate shifts, a concerning trend of overpopulation driving deforestation rates, and the environmental challenges posed by development projects.

Furthermore, the region sees a significant proportion of its population displaced due to riverbank erosion, underscoring the intricate relationship between environment and livelihood. Assam's residents rely on agriculture, particularly seasonal crops like weather-dependent paddy. The flat terrain of the Brahmaputra River intensifies flood threats, making it an annual menace for those living in the lowland areas of its valley. The consequences are multifaceted—agricultural produce loss, destroyed vegetation, loss of domestic animals, and, critically, many residents find themselves bereft of their land and homes. The intersection of these environmental challenges with the livelihood of Assam's residents necessitates a comprehensive exploration of the implications of environmental degradation on their lives.

Displacement Dilemma: The Dual Forces of Nature and Development Projects in Assam

The Brahmaputra River in Assam presents a trifecta of water-related challenges: floods, riverbank erosion, and sand casting. Nestled in the eastern Himalayas of northeast India, Assam confronts the fury of floods annually. Post the monumental earthquake of 1950, the Brahmaputra's depth has significantly diminished, a factor believed to exacerbate the yearly flooding. Sand casting, while not a recent development, has intensified in its destructive power since the mid-1990s, predominantly along the northern fringes of the eastern Brahmaputra valley. These calamities wield extensive damage on the region's terrain, community livelihoods, and infrastructure. The aftermath sees communities displaced, crops ruined, and public properties destroyed. For many victims, the resulting destitution is paired with emotional distress.

Climate change has introduced another layer of unpredictability. Droughts and floods are frequently occurring, pushing many to reconsider their traditional livelihoods. Climate experts note that the northeast region is experiencing rising temperatures, while the eastern and southern zones grapple with reduced rainfall (Partha et al., 2009). Periods resembling

drought in 2001, 2005, 2006, 2008, and 2009 further underline the shifting climate patterns (Solomon, 2007).

Rural livelihoods, intricately tied to the rhythms of nature, find themselves on the frontline of these climatic oscillations. Their direct dependency on the natural resource base makes them especially vulnerable to changing weather patterns. Those in poverty are disproportionately affected during disasters. Due to skewed land reforms and the encroachment by more influential groups, the impoverished are often forced into marginalised and precarious locations, like steep slopes or floodplains. Their existence in these zones is dangerous, and many are compelled to migrate, leaving families behind in unstable shelters. Climate change-induced calamities interrupt livelihoods and compromise these communities' health, education, and infrastructure.

An impending concern is the potential correlation between climate change and the magnified flood intensity in Assam. Some experts postulate that the Brahmaputra will receive increased water inflow as global warming accelerates the Himalayan glacier melt. The resultant floods and heightened sediment loads could obstruct the river's drainage system with silt, rocks, sand, and mining debris, posing even more significant challenges for the region.

Between May and August, the Brahmaputra River valley in northeast Assam grapples with devastating floods each year. These deluges displace countless residents, disrupt livelihoods, and, tragically, claim lives. A staggering three-fourths of Assam's districts face this annual menace. The Central Water Commission's data reveals fluctuations in flood intensity, with affected areas spanning from a massive 4.22 million hectares in 1988 to a minimal 0.19 million hectares in 1961. According to the Assam government's calculations, approximately 0.475 million hectares or about 19.1% of the Net Area Sown, is consistently susceptible to flooding. A snapshot from 2013 provides insight into the scale: 350 villages across 11 districts were submerged in June-July, impacting 1.1 lakh individuals. This flooding inundated 6000 hectares of agricultural terrain, damaging paddy crops (Dhar, 2013).

However, flooding is not the sole challenge; erosion-induced displacement compounds the problem. The region's delicate agricultural economy is further strained as inhabitants lose their land, prompting them to seek refuge in distant locations. The erratic behaviour of the river, frequently shifting its course, exacerbates flood management, bank erosion, and drainage congestion issues. This behaviour stems from the river's vast sediments and tributaries collected from steep hills and deposits downstream.

Land dependence plays a significant historical and sociological role in the region. Migration-related tensions trace back to colonial times, forming the backdrop for conflicts like Bodo-Adibasi, Bodo-Assamese, and tensions with Muslim communities. The arrival of East Pakistani refugees in 1947 and subsequent influxes from the Gangetic Valley, Nepal, and Bangladesh have further intensified land disputes. Most of them encroach upon native resources, including land, forests, and water. Though current discussions primarily spotlight Bangladeshis, research suggests that around two-thirds of these migrants originate from the Gangetic plains (Fernandes, 2003).

Ecological Impacts on Agricultural Livelihoods in Assam

Agriculture in Assam has not progressed as rapidly as in other parts of India, despite the state's considerable potential in core agricultural and allied sectors, such as horticulture, fisheries, and livestock. The dominant agricultural system in Assam revolves around rice cultivation, often complemented by fish farming and the rearing of small livestock, poultry, and pigs. While rice is the primary crop during the kharif season in many areas, the subsequent rabi season often sees land left fallow, suggesting an opportunity to cultivate secondary crops like oilseeds, pulses, or vegetables using the residual soil moisture. Besides rice, wheat, maize, sugarcane, and jute are significant crops in the state. There is an increasing trend towards summer rice cultivation with the aid of shallow tube wells. However, over the past few decades, there has been a noticeable decline in the production of oilseeds and pulses, with a clear shift towards a rice-centric agricultural model. This change in cropping patterns has seen a rise in rice cultivation, particularly during the summer and winter seasons. The frequent flooding in Assam seems to impact the autumn rice yield negatively.

Environmental factors play a role in these shifting agricultural trends. Crops like oilseeds and pulses thrive in riverbank regions rather than hilly terrains. However, due to persistent erosion and recurring floods, inhabitants of these riverine areas are relocating, leading to a departure from their traditional agricultural practices. Modernisation, combined with increasing populations in hilly regions, has also seen a decline in the practice of Jhum or shifting cultivation by tribal communities. The scarcity of alternative land in these areas prompts practised Jhum cultivation to explore other farming techniques or livelihood options.

Development Initiatives and the Resulting Displacement in Assam

Development initiatives frequently result in displacement issues. In the North East region, these projects have predominantly impacted the economically disadvantaged in both upland and lowland areas. The lack of a comprehensive resettlement and rehabilitation strategy for those displaced has intensified their poverty, marginalization, and vulnerability. The South Asian Solidarity for Rivers and Peoples (SARP) posits that the 72 hydroelectric projects proposed for the NE region will mainly benefit contractors and suppliers of materials like cement and iron, rather than the general population. These projects might enhance the lifestyles of the affluent, but they could rob poorer and marginalised communities of their means of sustenance.

Notably, in the 2005-06 fiscal year, there was a significant increase in central funding for NE projects, with 80 new projects approved for the region. The adverse impacts of large dams on local communities are now widely recognised. However, the central government continues to endorse new schemes that overlook the region's delicate ecology. It is becoming evident to locals that such ventures threaten their homes and deep-rooted connection with the natural world. The community is increasingly aware that dams and other large-scale initiatives could jeopardize their sustainable lifestyles and complicate their existence.

Key Insights and Recommendations:

- Assam grapples with flooding, one of its most severe natural disasters. The state, being among the world's rainiest and highly susceptible to floods, ranks 14th and contributes to 1.7% of India's total emissions. Given Assam's heightened vulnerability to climate change, its development vision must prioritise this factor.
- Shifts in environmental quality have significantly influenced livelihood choices. Many who previously owned vast expanses of land now face a dearth of arable areas. This scarcity results partly from family growth and, more pressingly, from land erosion.
- Individuals displaced by environmental catastrophes increasingly migrate to cities, transitioning from farming to daily wage jobs.
- There is a noticeable reduction in the diversity of crops, leaning primarily towards summer and winter rice cultivation. If strategically planned, government interventions can rejuvenate this diversity, which is crucial for sustaining soil fertility.
- Poverty and environmental deterioration share a reciprocal relationship. While many argue that poverty intensifies environmental degradation, it is equally evident that

environmental challenges exacerbate poverty by eliminating livelihood sources and displacing communities.

- Although the Brahmaputra's ruinous floods are largely deemed natural rather than anthropogenic, targeted human interventions could mitigate these recurrent threats. Rather than solely relying on embankments, considering excavation might be a more effective flood and erosion control strategy.

Conclusion

The former is a foundational pillar in the intricate interplay between the environment and economic systems. It offers raw materials fuelling economic activities and ensures life's vitality through indispensable services such as oxygen provision. Furthermore, the environment plays a crucial role in mitigating the impact of human-generated waste, thereby maintaining an ecological equilibrium crucial for our survival. When this balance is compromised, the repercussions are manifold: rising living costs, disturbances in livelihoods dependent on natural resources, and challenges to human existence. For regions like Assam and the broader Northeast, the implications of environmental degradation are even more profound. A significant portion of the population in these areas relies on nature-centric livelihoods. The unsettling unpredictability of residing near riverbanks, primarily due to erosion threats, has forced urban migration. This migration not only congests urban areas but also amplifies the vulnerability of those residing in char regions, who recurrently face habitat losses. Consequently, many who once thrived on agriculture now seek alternate employment avenues, leading to a decline in agricultural productivity and, by extension, diminishing the contribution of the primary sector to the state's GDP. Regrettably, policy and planning often overshadow the intricate relationship between environmental health and economic prosperity. The prevailing data underscores a pervasive sense of deprivation, predominantly resulting from overlooking environmental significance in developmental initiatives, especially concerning the marginalised. Recognising and rectifying this oversight is not just a matter of ecological responsibility but also of socio-economic urgency. Proactive measures, thorough strategizing, and a determined course of action are imperative to counteract foreseeable natural calamities, ensuring not just ecological well-being and a thriving state economy.

References

- Awan, A. G. (2013). Relationship between environment and sustainable economic development: A theoretical approach to environmental problems. *International Journal of Asian Social Science*, 3(3), 741–761.
- Baruah, S. (2017). Whose river is it, anyway?: The political economy of hydropower in the Eastern Himalayas 1. In *Water conflicts in northeast India* (pp. 116–144). Routledge India.
- Bhattacharya, R. N. (2002). *Environmental Economics: An Indian Perspective*. Oxford University Press.
- Borah, P. (2019). A brief study on the entrepreneurship in North East India special reference to Assam. *Journal of Critiparticuliariews*, 6(1), 118–127.
- Chawii, L. (2007). Natural resource-based income and livelihood improvement initiatives in Northeast India. Background Paper, 14.
- Dhar, S. (2013). Trend and Performancp. e of Major Food Grain Production (A Study of Central Brahmaputra Valley Zone of Assam during 1971-2010). *The Echo*, 1(4).
- Dutta, A. (2018). No way out of the woods: Political ecology of extraction, Livelihoods and conservation in Assam [PhD Thesis]. Ghent University.
- Economic Survey Assam. (2012-13). - Google Search. (n.d.). Retrieved August 19, 2023, from
- Eweje, G. (2006). Environmental costs and responsibilities resulting from oil exploitation in developing countries: The case of the Niger Delta of Nigeria. *Journal of Business Ethics*, 69, 27–56.
- Fernandes, W. (2003). Development Environment and the Livelihood of the Poor in the Northeast. *SOCIAL ACTION-NEW DELHI-*, 53(3), 242–255.

- Fidler, C. (2010). Increasing the sustainability of a resource development: Aboriginal engagement and negotiated agreements. *Environment, Development and Sustainability*, 12, 233–244.
- Herrero, M., Thornton, P. pp. K., Mason-D’Croze, D., Palmer, J., Bodirsky, B. L., Pradhan, P., Barrett, C. B., Benton, T. G., Hall, A., & Pikaar, I. (2021). Articulating the effect of food systems innovation on the Sustainable Development Goals. *The Lancet Planetary Health*, 5(1), e50–e62.
- Huber-Sannwald, E., Ribeiro Palacios, M., Arredondo Moreno, J. T., Braasch, M., Martinez Pena, R. M., de Alba Verduzco, J. G., & Monzalvo Santos, K. (2012). Navigating challenges and opportunities of land degradation and sustainable livelihood development in dryland social–ecological systems: A case social–ecological. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 367(1606), 3158–3177.
- Partha, D., Dadul, C., & Nirupam, H. (2009). Adjusting to floods on the Brahmaputra Plains, Assam, India. *Adjusting to Floods on the Brahmaputra Plains, Assam, India*.
- Sanyal, N. (2006). Political ecology of environmental crises in Bangladesh [PhD Thesis]. Durham University.
- Sapru, R. K. (1998). Environmental policy and politics in India. Ed. Uday Desai, *Ecological Policy and Politics in Developing Countries*, 153–182.
- Solomon, S. (2007). IPCC (2007): Climate change the physical science basis. *Agu Fall Meeting Abstracts, 2007, U43D-01*.
- Sridhar, R., Sachithanandam, V., Mageswaran, T., Purvaja, R., Ramesh, R., Senthil Vel, A., & Thirunavukkarasu, E. (2016). A Political, Economic, Social, Technological, Legal and Environmental (PESTLE) approach for assessment of coastal zone management practice in India. *International Review of Public Administration*, 21(3), 216–232.

Swim, J., Clayton, S., Doherty, T., Gifford, R., Howard, G., Reser, J., Stern, P., & Weber, E.

(2009). Psychology and global climate change: Addressing a multi-faceted phenomenon and set of challenges. A report by the American Psychological Association's task force on the interface between psychology and global climate change. American Psychological Association, Washington.

Warner, K., Hamza, M., Oliver-Smith, A., Renaud, F., & Julca, A. (2010). Climate change, environmental degradation and migration. *Natural Hazards*, pp. 55, 689–715.