

Role Of Community In Environment Conservation: A Comparison Of North East India And Bhutan

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Abstract:

North-East India and Bhutan share a common ecological heritage in the Eastern Himalayas, but they differ significantly in size, population density, and environmental conservation approaches. Both regions are ecologically rich, with North-East India belonging to the Indo-Burma biodiversity hotspot and Bhutan being part of the fragile Himalayan ecosystem. Bhutan has achieved carbon negativity through strong holistic conservation policies. Environmental conservation strategies differ in both regions due to cultural, political, and policy variations. North-East India's conservation efforts are shaped by central and state laws, along with tribal governance systems, leading to diverse and sometimes fragmented approaches. In contrast, Bhutan follows a centralized approach, with its constitution mandating 60% forest coverage and integrating conservation into its development model through the Gross National Happiness framework. Bhutanese conservation is also deeply rooted in Buddhist principles.

While both regions value community-driven conservation, Bhutan's cohesive and constitutionally backed policies provide a more structured approach. In contrast, conservation efforts in North-East India are characterized by fragmented and almost state-specific approaches, rather than a cohesive regional strategy.

Keywords: North East India, Bhutan, community, sustainable, environment conservation.

INTRODUCTION:

The role of communities in environmental conservation is indispensable as local populations are often best positioned to protect and sustainably manage the natural resources in their regions. Active involvement of local communities in environmental conservation is increasingly recognised as essential, especially in regions where traditional knowledge and practices remain integral to daily life. Our ancestors depend heavily on nature for survival, and they often worship nature and its forces. They personify and venerate nature as deities for abundant harvest and protection from natural disasters and other calamities. This close connection with nature still exists in one form or another, even in contemporary times.

In the context of North East India and Bhutan, both areas have unique landscapes, rich biodiversity, and strong cultural values tied to nature. Adjacent to each other, North-East India and Bhutan share a common ecological heritage in the Eastern Himalayas. North-East India has an area of approximately 262,230 square kilometres, about eight per cent of the Indian territory (LBSNAA: Research Center, n.d.). The region comprises eight Indian states, viz. Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim and Tripura. It shares an international boundary stretching roughly 455 kilometres with Bhutan to the North-West (General Information NER Databank, n.d.). Its diverse landscapes and climatic variations characterise North-East India. The region has hilly terrain, valleys, and plains, with altitudes ranging from sea level to over 7,000 meters. The Brahmaputra-Barak River systems and their tributaries cover significant areas of the total size. The region shares an international border with Tibet (an autonomous region of China), Myanmar, Bangladesh, Nepal, and Bhutan. A narrow stretch of land known as The Siliguri Corridor in West Bengal connects the region to mainland India. The region is geologically dynamic; it has a diverse range of rocks spanning over 3.5 billion years, from ancient Archean formations in Meghalaya to quaternary deposits in other states like Assam (GSI: Briefing Book, p32). The climatic condition of the region is predominantly sub-tropical climate with hot and humid summers, heavy monsoons and mild winters. Mawsynram, located in Meghalaya, North East of India currently holds the record for the rainiest place of the world (Lloyd, 2023).

Conversely, Bhutan is a small landlocked independent country with an area of about 38,394 square kilometres, much smaller than the size of North-East India. Bhutan has a rough terrain and mostly mountainous (Sangay, n.d.). It is divided into three broad physiographical zones: the lower southern zone adjoining the Indian plains, the middle zone in the inner Himalayas and the northern zone within the Great Himalayas (Phuntsho, 2013). Given its topography and its big variations in altitudes, the country also has a very different climatic zone according to the physiological differences. The lower Southern zone also known as the Terai region is the Himalayan foothills with good forest coverage bordering India. The region experiences subtropical climate with hot and humid summers, heavy monsoons and mild winters. Second, the inner Himalayas is mostly valleys and forested hillsides, and this zone covers the largest part of Bhutan total area. Most of the major town and

agricultural land lie in this belt. The region enjoys temperate climatic condition, however, it sometimes recorded hot summers and extreme winters. Third, the high Himalayas comprises of alpine and perennial snow-capped mountains. The region is part of the greater Himalayan and remains inaccessible mostly throughout the year. However, in summer, between June and August, the low-lying areas of this belt usually snow and ice free, during which most of the trekking expeditions popular with tourists are undertaken (Geography of Bhutan/VisitBhutan.com, n.d.).

According to the Worldometers data (2024) on demography, Bhutan is a sparsely populated land with a population density of just 21 people per square kilometre compared to 173 (2011 Census) for North-East India. In the following essay, we will analyse and compare the role of communities in each region.

North-East India and Bhutan are ecologically significant assets endowed with diverse topography and rich biodiversity. Of the 36 biodiversity hotspots worldwide, North East India belongs to the Indo-Burma biodiversity hotspots, home to many endemic flora and fauna species is the largest among them all (Vibhav, 2024). It has many established National Parks and Wildlife Sanctuaries for ecological conservation within the region. On the other hand, Bhutan is part of the fragile Himalayan ecosystem, mostly vulnerable to soil erosion because of the steep terrain coupled with the usually heavy monsoon rain (Bhutan Media and Communications Institute (BMCI), 2016). Nevertheless, Bhutan successfully achieved carbon negativity through its tireless efforts and commitment to ecological conservation. The country offsets four times more carbon than it produces (Tzung, 2022).

However, measures adopted for environmental conservation in both regions differ significantly due to cultural, political and policy differences. They also face different challenges and have varied approaches to community-led conservation efforts. Following is a comparative overview of the role of communities in environment conservation of North East India and Bhutan on two broad themes:

On Cultural and Religious Influences:

North East India: With its diverse landscapes and vibrant communities, Northeast India is deeply rooted in cultural and spiritual connections to nature. The region is home to various indigenous tribes, each with their own traditions, rituals, and beliefs that have a deep bond with the environment that surrounds them. This unique relationship is reflected in their customs, oral traditions, festivals, and sustainable practices. There are many tribal communities in Northeast India that still practices animism, but in their own reformed way to match other organised religions (Subba, 2022). The practice of animistic traditions fosters a sense of reverence and respect toward the environment as it believes every element of nature - trees, stones, rivers, mountains, animals, and forests possesses a spirit or soul. For instance, the Khasi and Jaintia tribes in Meghalaya, sacred groves are maintained since time immemorial much before the coming of Christianity in the region. These sacred groves are untouched, virgin forests protected by local communities due to cultural and religious beliefs. They serve as a critical conservation site and a sanctuary for a vast array of endemic, endangered, rare plant and animal species. They are integral to the identity and traditions of Meghalaya's indigenous tribes. They also play a crucial role in water conservation, soil fertility, and carbon sequestration. In contrast to other areas, Meghalaya's sacred groves are safeguarded by law and they provide a sanctuary for at least 50 plant species that are rare, endangered, or endemic to the region (Tiwari et al., 1998). In Arunachal Pradesh, the Apatani tribe are widely famous for their wet rice cultivation. Unique to this tribe is their practice of integrated cultivation of rice in waterlogged terraces with fish farming in the fertile Ziro Valley (Vikas Choudhary et al., 2024). It promotes ecological balance and provides dual income sources. It also creates environmental sustainability by reducing dependency on chemical fertilizers and pesticides. It helps conserves water and biodiversity. The tribe also revere mountains and rivers as sacred entities. They often perform rituals to appease these natural spirits for prosperity and protection (Apatani Cultural Landscape, 2014). Moreover, traditional agricultural practices widely adopted in Northeast India like Jhum cultivation involves rotating agricultural fields to allow the soil to regenerate naturally. This method, despite criticism, is considered sustainable when managed traditionally, as it fosters biodiversity and soil health. Nagaland has the highest area under Jhum cultivation among all North Eastern states of India (Kalyan et al., 2020). In Nagaland, Alder-Based Jhum cultivation is practiced in Khonoma Village as an innovative practice. Here, the Alder trees have huge ecological role in enhancing the nitrogen levels in the soil while also promoting carbon sequestration in biomass and soil organic matter (FOCUS Nagaland, 2023). As Alder trees thrive in low-fertility soils, it is ideal for rejuvenating jhum fields and wastelands areas. Additionally, the trees also provide a sustainable source of fuel wood through regular pollarding, and there is also a case of an alder tree growing more than 200 years in some farming areas (Murry, 2023). This innovative practice can be one example of recognising indigenous practices in developing effective and sustainable climate change solutions for the region (Bondita et al., 2024). In Mizoram, the people practice modified shifting cultivation, including contour farming to prevent

soil erosion. The Mizo indigenous calendar is mainly influenced by the community's agricultural practices, reflecting their traditional knowledge of weather patterns, climate cycles, and the surrounding environment. Following the traditional practice of slash and burn, the local community observes the "Chapchar Kut" festival in March, marking the onset of the sowing season. Generally, Jhum system in Mizoram follows mixed subsistence cropping, with paddy being the principal crop and other 15-20 different crops in a single farming plot (Soni et al., 2019). In Manipur, the conservation of Umang Lai (sacred groves) is associated with local deities. The Meitei community of Manipur has traditionally revered a sacred abode for Umang Lai, the Forest God, where the surrounding flora and fauna are considered sacred and have been conserved for generations. This practice reflects a deep connection between humans, nature, and the spiritual realm. Sacred groves serve not only as a link to the community's historical and mythological heritage but also as a treasure trove of traditional knowledge, preserving ancient wisdom about medicinal plants and herbs (Singh, n.d.). And for its largest natural freshwater lake in North East India, the Loktak wetland conservation is a joint effort of the government of Manipur, various non-governmental organisations and local communities. The role of local communities like that of the Champu Khangpok floating village in Loktak lake is commendable and prudent for the life and health of the wetland ecosystem (Rajesh, 2023).

Bhutan: Bhutan's culture is deeply intertwined with environmental conservation, influenced by Buddhist philosophy, which emphasises respect for all forms of life. Communities in Bhutan engage in conservation with strong spiritual motivations, often considering environmental protection as part of their religious duty. This reverence for nature has not only helped Bhutan maintain its rich biodiversity but also inspired a unique model of sustainable development that balances cultural preservation, spiritual values, and environmental conservation. The inclusion of environmental conservation as one of the four pillars of its guiding national policy, the Gross National Happiness (GNH) reflected Bhutan's commitment in environment conservation (Allison, 2024).

Buddhism has greatly influence environmental ethics in Bhutan (Yeshey et al., 2023). As Buddhism considers all living beings are interconnected, harming any part of nature is considered harmful to oneself. This belief inculcates a deep respect for nature, where animals, trees, mountains, rivers, and even the smallest insects are seen as sentient beings deserving of compassion. This helped Bhutan maintain its rich biodiversity and inspired a unique model of sustainable development that balances cultural preservation, spiritual values, and environmental conservation. In Bhutan, mountains and lakes are considered sacred and the abodes of protective local deities. Mountaineering is forbidden, as they think it would disturb the residing spirits. Gangkhar Puensum, with the height of 7,570 meters, remains the world's highest unclimbed mountain, untouched and unscaled to this day (Sacred Religious Sites and Its Role in Conservation of Environment, n.d.). Similarly, lakes are considered spiritual realms of local deities, and visitors are strictly advised against swimming, bringing meat, or leaving trash nearby. This respect for sacred landscapes helps protect these areas from human exploitation. Moreover, monasteries and religious places are usually surrounded by sacred forests. Cutting trees or hunting in these areas is strictly prohibited. As a result, these consecrated sites have become instrumental sanctuaries for preserving biodiversity, safeguarding rare and unique plant and animal species that might otherwise be lost (Sacred Religious Sites and Its Role in Conservation of Environment, n.d.).

On Governmental and Policy Support:

North East India: The Northeast region of India, rich in biodiversity and having unique cultural heritage is not only home to vast forests, rivers, and unique ecosystems but also hosts indigenous communities that depend on these natural resources for their livelihoods. Given its ecological significance, the Indian government, in collaboration with state authorities and international organizations, has implemented various policies and initiatives to ensure sustainable environmental management for the community. Some key governmental policies and measures involving local communities that aimed at conserving the environment in Northeast India are: Forest Rights Act 2006, officially known as the Scheduled Tribes and Other Traditional Forest Dwellers (Recognition of Forest Rights) Act, 2006, is a landmark legislation in India that aims to rectify the alienation and marginalization caused by colonial-era forest laws and post-independence policies that excluded local communities. It recognizes and grant forest rights to Scheduled Tribes (STs) and other traditional forest dwellers (OTFDs) who have historically depended on forests for their livelihood and survival. It ensures environmental sustainability while empowering communities to manage and protect (Samvaad, n.d.); North East Rural Livelihoods Project funded by the World Bank was implemented in few selected Northeastern states like Mizoram, Nagaland, Sikkim and Tripura. It was initiated in 2012 and concluded in 2019. It aims to improve rural livelihoods through capacity building, skill development, and the promotion of sustainable practices. The project targets economically disadvantaged and marginalized sections of rural communities by strengthening

community institutions such as self-help groups (SHGs) and producer groups. It aims to achieve inclusive development by focusing on women, youth, and other vulnerable groups to achieve holistic development (Rappa, n.d.); Special Category Status given to all eight Northeastern states that provides them with preferential treatment in terms of financial assistance and tailored made schemes from the central government to help with their development due to their geographical and socio-economic disadvantages (Reddy Kotha et al., 2015); National Bamboo Mission seeks to promote bamboo plantations on non-forest government and private lands, and to supplement income for farmers while contributing to climate change mitigation and adaptation. This initiative also ensures a sustainable supply of high-quality raw materials for various industries (National Bamboo Mission, 2022); National Parks and Wildlife Sanctuaries to protect flora and fauna in their natural habitats, and to safeguard critical ecosystems. Its objectives include conserving biodiversity and ecosystems, protecting endangered and threatened species, maintaining ecological balance, supporting sustainable development and eco-tourism and to educate and raise awareness about conservation (MoEF&CC (Comp.), 2021) (National Parks/Wildlife Institute of India, an Autonomous Institute of MoEF, Govt. Of India, n.d.).

Article 48-A of the Indian Constitution states that, "The State shall endeavour to protect and improve the environment and to safeguard the forests and wildlife of the country." This inclusion reflects India's commitment to environmental protection and sustainable development. It places a duty on the State (at both Central and State levels) to take proactive measures to protect and improve the environment. Although not enforceable in court, it has served as a powerful tool for environmental advocacy, policymaking, and judicial interpretation. By prioritizing forests, wildlife, and the broader environment, it contributes to the vision of a sustainable and ecologically balanced India.

Bhutan: Bhutan has emerged as a global leader in environmental conservation, driven by an optimal blend of Buddhist spiritual values, sustainable development principles, and a strong governmental commitment to protecting nature with a constitutional mandate requiring at least 60% forest cover in perpetuity, in the paragraph 3 of Article 5 of its constitution (FAOLEX, n.d.). The constitution of Bhutan writes, "Every Bhutanese is a trustee of the Kingdom's natural resources and environment for the benefit of the present and future generations." This shows the commitment of Bhutan for the conservation of natural resources and environment. In sync with the commitment, Bhutan set up Community Forest Management groups, under Community Forestry Program introduced in late 1990s to protect local forests, and these groups receive technical and financial support from the government. It empowers local communities to manage and benefit from forest resources while promoting conservation and ensuring equitable resource distribution. Communities earn revenue from the sustainable harvesting and sale of timber, firewood, and non-timber forest products (NTFPs) like mushrooms, medicinal plants, and bamboo. Key objectives of the program are decentralized forest management (to shift forest management responsibilities from central authorities to local communities), livelihood support (to provide rural communities with sustainable sources of income and resources), forest conservation (maintaining Bhutan's rich biodiversity and meet its constitutional mandate of keeping 60% of the country under forest cover), cultural and social inclusion (to align forest management practices with traditional knowledge and cultural values). The program is a cornerstone of the country's approach to sustainable forest management and rural development. The involvement of local communities in governance related to forest management indeed improved livelihood security and better environmental management. This approach has led to a high degree of environmental awareness and active participation in conservation efforts, contributing to Bhutan's conservation success (Tshering, C., Social Forestry Division, Participatory Forest Management Project, & Bhutan-German Sustainable Resources' Development Project. 2006).

On Challenges and Difficulties:

North East India: Communities in Northeast India play a vital role in environmental conservation due to their traditional knowledge and deep-rooted cultural connection with nature. However, they face significant challenges and difficulties in fulfilling this role effectively. Summarisation of these challenges can be done as follow. First, many communities depend on natural resources for their livelihoods, such as agriculture, hunting, and forest products, this livelihoods dependence on forest products may lead to over-exploitation of resources. Another traditional practice in Northeast India, shifting cultivation has led to deforestation and soil degradation in some areas due to shorter fallow periods caused by increasing population pressure and it can cause habitat fragmentation if not managed sustainably. Third, resource conflicts over land ownership, inter community conflicts, encroachments and legal battles are also creating hurdles and barriers to cooperative conservation efforts. Fourth, access to conservation technologies and tools that can help monitor and conserve biodiversity effectively is limited. While traditional knowledge is valuable, communities often lack awareness of modern, science-based conservation methods. Fifth, implementation of government policies and Acts are often weak due

to bureaucratic delays and lack of awareness among the people. Sixth, large-scale deforestation for various reasons, coal mining and quarrying degrade ecosystems, undermining community conservation efforts. Seventh, development projects, such as dam construction and road expansion, often lead to habitat destruction and displacement of communities. Eighth, unpredictable weather patterns and frequent occurrence of natural disasters in the region damage ecosystems and hinder long-term conservation planning. Ninth, adoption of modern lifestyles has increased waste generation and pollution in ever increasing urban areas, further straining natural resources. And as younger generations migrate to cities, traditional conservation practices are at risk of being forgotten.

Bhutan: Bhutan is globally recognized for its strong environmental conservation practices and commitment to sustainable development. Communities in Bhutan play a significant role in preserving the environment, however several challenges and difficulties hinder their efforts. First, socio-economic pressures like poverty and over dependence on natural resources. Poverty remains a concern in rural areas, and it may force some to prioritize short-term survival over long-term conservation and to over-exploitation of resources. Second, urbanisation triggers migration from rural areas. This might lead to weakening of traditional conservation practices and creating new environmental pressures in cities. Third, as a country with over half of its land designated as protected areas and majority of its population relying on agriculture and livestock, human-wildlife conflict is also a pressing issue. Fourth, Bhutan is highly vulnerable to climate change impacts like unpredictable weather patterns and Glacial Lake Outburst Floods (GLOFs) caused by melting glaciers, which pose significant risks to communities and ecosystems. Fifth, communities in remote areas may not fully understand national conservation policies or their rights under programs like community forestry. Also, while Bhutan's government is deeply committed to conservation, some policies may not adequately involve or address the specific needs of local communities. Like, the restrictions on forest use can conflict with community needs for livelihood resources. Sixth, development projects like hydropower dams and roads sometimes disrupt ecosystems and displace local communities and wildlife movements. Seventh, communities face generational challenges and balancing tradition with modernity as younger generations adopt modern lifestyles. Eighth, Bhutan's high-value, low-impact tourism policy is effective, but poorly managed tourism activities can lead to waste and ecosystem degradation in certain areas. Also, over-reliance on international funding for conservation projects may limit long-term sustainability and local ownership (AFoCO-Eml, 2022).

To overcome these difficulties, there is a need for - promoting alternative livelihoods like eco-tourism, organic farming, and value-added forest products to reduce dependence on forests; encouraging eco-tourism as a sustainable income source, enhancing education and awareness about conservation and climate change; equipping communities with modern conservation knowledge while preserving traditional practices; providing technical and financial support to grassroots initiatives; ensuring active community participation in policy-making and enforcement; improving waste management systems by investing in robust waste disposal and recycling infrastructure in populated urban areas, mitigating human-wildlife conflicts by introducing better compensation schemes and innovative solutions like solar fencing and wildlife corridors; and implementing a sustainable climate-resilient agriculture and water management systems to help communities cope with changing environmental conditions.

Common to both regions, the imperative environmental education and awareness programs are gradually being introduced in schools to raise awareness about conservation. In Bhutan, Environmental Science is introduced in schools as an optional subject for IX to XII to empower youth with knowledge, values, and skills for environmental protection, sustainable resource use, and promoting Gross National Happiness (Mongar, 2022). India also stands out as one of the countries where environmental education is mandated across all levels of formal education (Compulsory Environmental Education in India | Global Environmental Education Partnership (GEEP), n.d.). NGOs and local government agencies work on initiatives to teach sustainable practices, often combining traditional knowledge with modern conservation science. Environmental education and awareness are critical tools in addressing ecological challenges and achieving sustainable development. By equipping individuals and communities with knowledge and inspiring collective action, it ensures that the environment remains a shared responsibility and a priority for present and future generations. Environmental awareness involves fostering a sense of urgency to address environmental problems and encouraging individuals and communities to adopt eco-friendly practices. Thus, inculcating environmental education and awareness to an individual since at initial stage of life will go a long way in the process of environment conservation.

To summarise, both North East India and Bhutan exemplify the critical role of communities in environmental conservation, blending traditional wisdom with modern governance. North East India's diverse tribal practices and Bhutan's holistic, Buddhist-inspired policies underline the importance of cultural context in shaping

conservation efforts. Despite existing challenges, there are significant opportunities for enhanced collaboration, knowledge exchange, and flexibility to embrace innovative approaches for sustainable development strategies which can further bolster the efforts of communities in the regions.

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