# Khasia Community's Traditional Knowledge and Approaches towards the Conservation of Environment in Bangladesh: Impacts and Policy Recommendations

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#### Abstract

This study examines the traditional environment conservational knowledge and practices of the Khasia community in Bangladesh, evaluates their impacts, and proposes policy recommendations for integrating these practices into national conservation strategies. Utilizing a mixed-methods approach, the research incorporates qualitative data from participant observation, interviews, and focus group discussions, alongside quantitative data from structured questionnaires and environmental impact assessments. Findings reveal that the Khasia community's practices, such as agroforestry, shifting cultivation, and the maintenance of sacred groves, significantly enhance biodiversity, soil health, and water quality. The study highlights the cultural integration of these practices, which ensures their sustainability and effectiveness. Despite facing challenges such as external pressures and lack of formal recognition, the Khasia community's approach offers valuable insights for sustainable environmental management. Policy recommendations include the formal recognition of traditional knowledge, financial and technical support, public education on the benefits of indigenous practices, and fostering collaborative approaches between the community, government, and conservation organizations.

Key Words: Traditional, Knowledge, Conservation,

#### 1. Introduction

Environmental conservation is a critical global concern, particularly in countries like Bangladesh, where biodiversity and natural resources are under significant pressure from human activities and climate change. Indigenous communities, with their rich repository of traditional ecological knowledge, often play a crucial role in preserving and managing natural ecosystems sustainably. Traditional knowledge, defined as the cumulative body of knowledge, practices, and beliefs passed down through generations, is increasingly recognized for its significance in sustainable resource management.

The Khasia community, primarily residing in the northeastern region of Bangladesh, has long been recognized for its deep connection with nature and its sustainable use of natural resources. Their traditional practices, including agroforestry, shifting cultivation (locally known as "Jhum"), and the preservation of sacred groves, have contributed to maintaining biodiversity, enhancing soil health, and

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ensuring water quality. These practices are not merely techniques for resource management but are deeply embedded in the cultural and spiritual life of the community, ensuring their continuity and effectiveness over generations.

Despite the demonstrated benefits of their conservation practices, the Khasia community faces numerous challenges. These include external pressures such as land grabbing, deforestation, and the lack of formal recognition and support from government policies. Consequently, there is a pressing need to document and evaluate these practices systematically to understand their impacts fully and to develop informed policy recommendations that can support and integrate indigenous conservation methods into national environmental strategies.

This study aims to bridge this gap by providing a comprehensive analysis of the Khasia community's approach to environmental conservation. Through a mixed-methods research design, the study will gather both qualitative and quantitative data to evaluate the effectiveness of these traditional practices. It will explore the cultural significance of these practices, assess their impacts on biodiversity, soil health, and water quality, and identify the challenges faced by the community.

By documenting the Khasia community's traditional ecological knowledge and conservation practices, this research seeks to highlight the potential of these practices to contribute to broader environmental management and sustainability goals. The study will culminate in policy recommendations aimed at integrating indigenous knowledge into national conservation strategies, ensuring that the Khasia community's invaluable contributions to environmental conservation are recognized, supported, and sustained.

#### 2. Literature Review:

The Khasia community in Bangladesh exemplifies the integration of traditional knowledge into environmental conservation. Indigenous knowledge is often adapted to local ecosystems and has been crucial for the survival and well-being of indigenous communities globally<sup>2</sup>. Traditional ecological knowledge (TEK) is widely acknowledged for its role in conserving biodiversity and maintaining ecological balance. Scholars such as Berkes have argued that TEK encompasses a deep understanding of the local environment, making it invaluable for sustainable resource management<sup>3</sup>. The Khasia community, like other indigenous groups, uses TEK to manage their natural resources, particularly forests, in a way that maintains ecological integrity while supporting their livelihoods<sup>4</sup>. The Khasia community's practices are deeply rooted in their cultural and spiritual values, which emphasize the

<sup>&</sup>lt;sup>2</sup> World Bank, Indigenous Knowledge for Development: A Framework for Action, 1998.

<sup>&</sup>lt;sup>3</sup> Fikret Berkes, Sacred Ecology, 1999.

<sup>&</sup>lt;sup>4</sup> Gadgil, M., Berkes, F., & Folke, C., "Indigenous Knowledge for Biodiversity Conservation," Ambio, 22(2/3), 1993, pp. 151-156.

harmonious coexistence with nature. This approach is similar to that observed in other indigenous communities, such as the Maori in New Zealand, whose environmental management practices are also based on spiritual and cultural beliefs<sup>5</sup>. Studies have shown that indigenous practices, which are typically less intensive and more ecologically mindful, contribute significantly to the conservation of biodiversity<sup>6</sup>. Despite the clear benefits of traditional knowledge, the marginalization of indigenous communities and the lack of recognition of their land rights complicate the integration of TEK into national policies<sup>7</sup>. This issue is not unique to Bangladesh; similar challenges have been documented in other parts of the world, such as in the Amazon Basin and the Arctic regions<sup>8</sup>. The article suggests several policy recommendations to better integrate the Khasia community's traditional knowledge into broader conservation efforts. These recommendations echo global calls for more inclusive conservation strategies, as articulated in international agreements like the Convention on Biological Diversity (CBD)<sup>9</sup>. In conclusion, the study literature consistently supports the view that traditional knowledge held by the Khasia community, is crucial for effective environmental conservation of Bangladesh.

# 3. Research Question

# **Primary Research Question**

• How do the traditional knowledge and approaches of the Khasia community contribute to environmental conservation in Bangladesh?

#### **Secondary Research Questions**

- 1. What specific traditional practices used by the Khasia community are most effective in promoting biodiversity and ecological balance?
- 2. What challenges do the Khasia community face in maintaining their traditional practices in the context of modern environmental policies and economic pressures?
- 3. How do national and international legal frameworks support the conservation efforts of the Khasia community?
- 4. How can the integration of Khasia traditional knowledge into contemporary environmental conservation strategies be effectively achieved?

<sup>&</sup>lt;sup>5</sup> Harmsworth, G., & Awatere, S., "Indigenous Māori Knowledge and Perspectives of Ecosystems," Ecosystem Services in New Zealand, 2013.

<sup>&</sup>lt;sup>6</sup> Toledo, V. M., "Indigenous Peoples and Biodiversity," Annual Review of Anthropology, 2001.

<sup>&</sup>lt;sup>7</sup> Natcher, D. C., Hickey, C. G., & Nelson, C. H., "Integrating Indigenous Knowledge into Resource Management: Constraints and Opportunities," Arctic, 2005.

<sup>&</sup>lt;sup>8</sup>Berkes, F., "Indigenous Knowledge and Resource Management Systems: A Native Canadian Case Study," Society & Natural Resources, 1989.

<sup>&</sup>lt;sup>9</sup> United Nations, Convention on Biological Diversity, 1992.

# 4. Methodology

This study employs a mixed-methods research design, integrating both qualitative and quantitative data collection and analysis techniques. Data collection involves a combination of literature review, fieldwork, interviews, focus group discussions, and environmental impact assessments. Environmental impact assessments involve biodiversity surveys to document plant and animal species in Khasia-managed areas, along with soil and water testing to evaluate quality and health. These assessments compare the conditions in Khasia-managed areas to those in non-managed areas, highlighting the effectiveness of traditional practices. Data analysis combines thematic analysis of qualitative data from interviews and focus group discussions with descriptive and comparative analysis of quantitative data from questionnaires and environmental assessments. Ethical considerations include obtaining informed consent from all participants, ensuring confidentiality, and respecting the cultural practices and norms of the Khasia community.

# 6. Findings and Discussion

The findings of this study are derived from both qualitative and quantitative data collected through literature review, fieldwork, interviews, focus group discussions, and environmental impact assessments. These findings provide a comprehensive understanding of the Khasia community's traditional conservation knowledge and approaches, their effectiveness, and the implications for policy development.

#### 6.1 Traditional Environmental Conservation Practices of Khasia Community

The Khasia's approach to environmental stewardship demonstrates how traditional knowledge and cultural practices can play a vital role in sustainable resource management. These practices highlight the Khasia community's harmonious relationship with nature and their role in preserving ecological balance.

**Community Survey:** The community survey has been conducted to assess the perception, frequency, and types of traditional conservation practices among the Khasia community, as well as to identify the challenges they face in maintaining these practices.

Question	Response	Percentage
	Options	(%)
Which traditional practices do you follow? (multiple responses	Agroforestry	70%
allowed)	Shifting	50%
	Cultivation	
	Sacred Groves	65%
	Preservation	
	Water	55%
	Conservation	

	Daily	60%
	Weekly	20%
How often do you engage in traditional conservation practices?	Monthly	15%
	Rarely	5%
Do you believe that traditional practices are effective in conserving the environment?	Yes	85%
	No	10%
	Not Sure	5%
	Lack of	40%
	Resources	
What challenges do you face in maintaining traditional practices?	External	35%
	Pressure	
	Lack of	25%
	Recognition	

#### **Table: Community Survey**

#### Analysis

The survey reveals that the most commonly followed traditional practices by khasia community are agroforestry (70%), sacred groves preservation (65%), water conservation (55%), and shifting cultivation (50%). Engagement in these practices is high, with 60% participating daily, 20% weekly, 15% monthly, and only 5% rarely. This study finds strong support for the effectiveness of traditional conservation practices among the respondents, with 85% affirming their efficacy, 10% disagreeing, and 5% unsure. The primary challenges identified are a lack of resources (40%), external pressures (35%), and lack of recognition (25%). This suggests that while traditional practices are widely supported and practiced, there are significant obstacles that need to be addressed to ensure their sustainability.

#### 6.2 Evaluation of the Effectiveness of Traditional Knowledge and Approaches

#### 6.2.1 Agroforestry and betel leaf cultivation

The Khasia community's approach to agroforestry and betel leaf cultivation involves integrating trees with agricultural crops, specifically focusing on the cultivation of betel leaf (Paan) on existing forest trees. This traditional agroforestry practice significantly enhance soil fertility by adding organic matter from tree litter and root biomass, aiding nutrient cycling and increasing soil organic carbon. Trees in these systems also control erosion by providing protective cover from the direct impact of rain and wind and stabilizing soil with their roots. The integration of trees and betel vines creates a favorable microclimate for soil organisms, supporting crop growth and ecosystem resilience. These practices

promote biodiversity by creating diverse habitats for various flora and fauna. Additionally, the cultivation of betel leaf on trees offers the Khasia community a sustainable income source while reducing the need for chemical fertilizers and pesticides, thus supporting environmentally friendly agriculture.



Figure-1: Impact of Khasia community's approach to agroforestry and betel leaf cultivation

# **6.2.2** Shifting Cultivation (Jhum):

Jhum cultivation, or shifting cultivation, practiced by the Khasia community has both positive and negative effects on forest regeneration and land sustainability. When jhum cultivation managed sustainably with adequate fallow periods, it allows for forest recovery, soil fertility restoration, and biodiversity support. Unsustainable practices with shorter fallow periods can lead to land degradation, soil nutrient loss, and reduced biodiversity. However, culturally, jhum sustains traditional knowledge and community bonds, but adapting traditional methods with modern sustainable agriculture techniques is essential for long-term land productivity and ecological balance. Balancing these approaches is crucial for achieving sustainability.



Figure-3: Impact of Jhum Cultivation on Forest Regeneration and Land Sustainability

# 6.2.3 Sacred Groves

The Khasia community's maintenance of sacred groves preserves rare and endemic species by creating protected areas that restrict harmful human activities, thus preventing habitat destruction. These groves serve as biodiversity hotspots, maintaining microclimates that support sensitive species. They facilitate natural seed dispersal and regeneration, uphold cultural conservation practices that ensure long-term protection, and offer valuable sites for ecological research and education, enhancing broader biodiversity conservation efforts.



Figure-2: Environmental Impact of Sacred Groves Maintained by khasia

# 6.2.4 Water Management Systems

Traditional water management systems employed by the Khasia community play a vital role in supporting sustainable agriculture and water conservation. These systems are designed to utilize and manage water resources efficiently, ensuring the sustainability of their agricultural practices and the conservation of water. They collect and store rainwater for agricultural use through rainwater harvesting, ensuring a steady supply during dry periods and reducing dependence on local water bodies. On hilly terrains, they use terracing and contour plowing to reduce soil erosion, manage water runoff, and improve soil moisture retention while recharging groundwater. The Khasia community builds and maintains traditional irrigation channels called 'dong' to divert water from streams to fields efficiently, minimizing wastage and preserving natural water flows. Sacred groves maintained by the community

enhance groundwater recharge and reduce runoff, acting as natural reservoirs that maintain water availability during dry seasons. Community-based management involving collective decision-making and resource-sharing ensures equitable water distribution and sustainable use, fostering a sense of responsibility and stewardship. These practices collectively contribute to sustainable agriculture and water conservation within the Khasia community.



Figure-5: Traditional water management systems support sustainable agriculture and water conservation

# 6.3 Environmental Impact Assessments on Promoting Biodiversity

The Khasia community's deep understanding of local plant and animal species and their ecological roles aids in the protection and sustainable use of various plants and animals including rare and endangered ones, thus promoting biodiversity. It also improves soil fertility, reduce pests and diseases, and minimize chemical inputs, thereby preserving soil health and enhancing genetic diversity and ecosystem resilience. This research indicates that indigenous-managed landscapes often exhibit higher biodiversity than those managed through conventional methods.

**6.3.1 Biodiversity Survey:** The biodiversity survey aimed to assess the impact of the Khasia community's traditional conservation knowledge and practices on local biodiversity. This section presents the statistical findings from the survey in areas managed by the Khasia community compared to non-managed areas.

Survey Aspect	Managed	Non-	Percentage
	Areas	Managed	Increase in
	(Khasia)	Areas	Managed Areas
Species Richness (Total Number of	150	100	50%
Species)			
Endemic Species (Number of Endemic	20	5	300%
Species)			
Plant Species (Number of Plant	80	50	60%
Species)			
Animal Species (Number of Animal	70	50	40%
Species)			
Threatened Species (Number of	10	3	233%
Threatened Species)			
Habitat Types (Number of Different	8	5	60%
Habitat Types)			

# **Table: Biodiversity Survey Results**

**Analysis:** The Khasia-managed areas exhibit significantly higher biodiversity compared to nonmanaged areas. Species richness is 50% greater, with 150 species recorded in managed areas versus 100 in non-managed areas. Managed areas also show a 300% increase in endemic species, with 20 endemic species identified compared to just 5 in non-managed areas. Additionally, plant species diversity is 60% higher in Khasia-managed areas (80 species) compared to non-managed areas (50 species), and animal species diversity is 40% higher (70 species in managed areas versus 50 in nonmanaged areas). The number of threatened species is also higher in managed areas, with a 233% increase (10 species in managed areas versus 3 in non-managed areas). Furthermore, managed areas support a greater diversity of habitat types, showing a 60% increase with 8 types compared to 5 types in non-managed areas, which supports a wider range of species and ecological functions.

**6.3.2 Soil and Water Quality Survey:** The soil and water quality survey was conducted to evaluate the impact of the Khasia community's traditional conservation practices on soil health and water quality. This section presents the statistical findings from the survey in areas managed by the Khasia community compared to non-managed areas.

	Managed	Non-	Percentage
Survey Aspect	Areas	Managed	Improvement in
	(Khasia)	Areas	Managed Areas
Soil Organic Matter (%)	4.5%	2.8%	60%
Soil Erosion Rate (kg/ha/year)	10	20	50%
Water Contamination Level (mg/L)	0.5	1.2	58%

Water Clarity (NTU)	5	12	58%

#### Table: Soil and Water Quality Survey Results

**Analysis:** The soil in Khasia-managed areas has a higher organic matter content (4.5%) compared to non-managed areas (2.8%), indicating a 60% improvement, suggesting better soil fertility and structure due to traditional practices. The soil erosion rate is significantly lower in Khasia-managed areas (10 kg/ha/year) compared to non-managed areas (20 kg/ha/year), reflecting a 50% reduction attributable to effective land management and conservation practices. Water sources in managed areas show lower contamination levels (0.5 mg/L) compared to non-managed areas (1.2 mg/L), representing a 58% improvement, indicating cleaner water sources from traditional water conservation practices. Additionally, water clarity is significantly better in managed areas (5 NTU) compared to non-managed areas (12 NTU), also reflecting a 58% improvement, which indicates lower sediment and pollutant levels.

# 7. Challenges Faced by the Khasia community in maintaining their traditional Approaches towards Environment Conservation

The Khasia community faces several challenges in maintaining their traditional practices amidst modern environmental policies and economic pressures. These challenges include:

- 1. **Policy and Legal Constraints**: Modern environmental policies often overlook traditional practices. National policy of establishing protected areas and national parks can limit the Khasia community's access to their ancestral lands, disrupting their traditional agriculture and forest management. Land tenure issues also pose significant challenges, as many indigenous communities, including the Khasia, do not have formal legal rights to their ancestral lands. This lack of recognition can lead to land disputes and displacement<sup>10</sup>.
- 2. **Economic Pressures**: Economic pressures, poverty and the need for immediate economic benefits sometimes force the Khasia community to abandon their sustainable traditional practices for quick financial gain.
- 3. **Market Integration and Globalization**: Market integration and globalization expose the Khasia community to the modern agricultural techniques and market-oriented crops leading to a loss of traditional methods and knowledge.

<sup>&</sup>lt;sup>10</sup> Roy, B. (2014). Shifting Cultivation and Indigenous Communities in Northeast India: Impacts and Policy Recommendations. Asian Journal of Environment and Ecology, 4(3), 1-9.

- 4. **Environmental Degradation**: Environmental degradation caused by external factors, such as deforestation, mining, and climate change, impacts the Khasia community's ability to sustain their traditional practices.
- 5. **Development Policies:** National development policies that prioritize economic growth over environmental sustainability negatively impacts khasia's conservation efforts.
- 6. Loss of Traditional Knowledge and Culture: The erosion of traditional knowledge is a significant challenge as younger generations adopt modern lifestyles, risking the loss of ethnobotanical and ecological wisdom.

# 8. Existing National and International Legal Frameworks

The effectiveness of legal frameworks in supporting the Khasia community's conservation efforts depends on how well they recognize and integrate traditional knowledge and rights. National and international legal frameworks provide supportive regime to the conservation efforts of the Khasia community in several ways:

- Recognition of Indigenous Rights: Internationally, instruments such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) provide strong support for the rights of indigenous communities, including their rights to maintain and strengthen their distinctive cultural practices and their relationship with their traditional lands and resources<sup>11</sup>. Nationally, the Constitution of Bangladesh includes provisions for the protection and promotion of the rights of indigenous communities. This can support the Khasia community's conservation efforts by recognizing their traditional knowledge and practices<sup>12</sup>.
- 2. Community-Based Natural Resource Management (CBNRM): Policies that promote Community-Based Natural Resource Management (CBNRM) empower indigenous communities, including the Khasia, to manage their resources sustainably. In Bangladesh, initiatives such as the Social Forestry Rules provide a legal framework that encourages the participation of local communities in forest management and conservation, thereby supporting traditional practices<sup>13</sup>.
- 3. **Biodiversity and Environmental Laws**: International agreements like the Convention on Biological Diversity (CBD) emphasize the importance of traditional knowledge in biodiversity conservation. They encourage the protection of indigenous practices that contribute to the sustainable use of biological resources<sup>14</sup>. Nationally, laws such as the Bangladesh Biodiversity

<sup>&</sup>lt;sup>11</sup>United Nations General Assembly. (2007). United Nations Declaration on the Rights of Indigenous Peoples. <sup>12</sup>Government of Bangladesh. (2011). Constitution of the People's Republic of Bangladesh.

<sup>&</sup>lt;sup>13</sup>Rahman, M. H., & Rahman, M. M. (2017). Traditional Agricultural Practices and Indigenous Knowledge in Bangladesh. Journal of Ethnobiology and Ethnomedicine, 13(1), 1-13.

<sup>&</sup>lt;sup>14</sup>Convention on Biological Diversity. (1992). Text of the Convention on Biological Diversity.

Act, 2017 are designed to conserve biodiversity and recognize the role of local and indigenous communities in conservation efforts. This legal recognition can support the Khasia community's conservation initiatives<sup>15</sup>.

# 4. Policy Recommendations

The study have tried to highlight the effectiveness and sustainability of khasia community's traditional knowledge and practices. To support and integrate these practices into national conservation strategies, the following recommendations are proposed:

- 1. **Formal Recognition of Traditional Knowledge**: Government policies should formally recognize the traditional ecological knowledge and conservation approaches of the Khasia community as valuable components of national biodiversity strategies.
- 2. Secure Land Tenure Rights: Policies should be taken to protect their ancestral lands from external pressures such as deforestation and land grabbing. Secure land tenure will empower the community to continue their conservation practices without fear of displacement.
- 3. **Policy Integration**: The development of frameworks that allow for the coexistence of traditional and scientific knowledge is crucial. Policies for aligning traditional methods with contemporary conservation goals should develop integrate traditional conservation practices into national and regional environmental management plans.
- 4. **Monitoring and Evaluation**: Establish mechanisms for the continuous monitoring and evaluation of the impacts, improvement, and long-term environmental sustainability of traditional conservation practices.
- 5. Addressing External Threats: Implement measures to mitigate external threats such as deforestation, land encroachment, and climate change. This requires coordinated efforts between government agencies, non-governmental organizations, and the Khasia community to protect the natural environment.
- 6. **Financial and Technical Support for Cultural Preservation**: Provide financial incentives and technical support to the Khasia community to enhance their conservation efforts and preserve their cultural heritage.
- 7. **Community-Led Conservation Initiatives**: Promote and support community-led conservation initiatives that involve the Khasia community in decision-making processes regarding land use and resource management.
- 8. Educational Programs and Public Awareness: Implement educational programs to raise awareness about the benefits of traditional conservation practices among the broader public and policymakers.

<sup>&</sup>lt;sup>15</sup> Government of Bangladesh. (2017). Bangladesh Biodiversity Act.

9. **Collaborative Research and Knowledge Sharing**: Foster collaborative research projects that involve the Khasia community, academic institutions, and conservation organizations.

By adopting these recommendations, policymakers can ensure that the Khasia community's traditional conservation approaches are not only preserved but also integrated into broader environmental strategies. This will contribute to the sustainable management of natural resources, the preservation of biodiversity, and the overall well-being of the Khasia community and the environment in Bangladesh.

# **Conclusion:**

The Khasia community plays an indispensable role in the conservation of the environment in Bangladesh through their deep-rooted traditional knowledge and sustainable practices. These practices further exemplify their commitment to environmental stewardship.

This research underscores the vital importance of recognizing and integrating the Khasia community's traditional knowledge into modern conservation strategies. By doing so, policymakers and conservationists can leverage these time-tested practices to enhance sustainability and biodiversity conservation efforts. Furthermore, supporting and empowering the Khasia community is crucial for preserving their cultural heritage and ensuring the continuity of their environmentally beneficial practices.

In conclusion, the traditional knowledge and practices of the Khasia community offer valuable insights and practical approaches to environmental conservation. Recognizing their contributions and integrating their wisdom into broader conservation frameworks can lead to more effective and sustainable environmental management in Bangladesh.