



Quantitative Assessment of the Impacts of Coastal Afforestation Projects on Local Livelihoods: A Gender and Poverty Lens Approach

"Quantitative Assessment of the Impacts of Coastal Afforestation Projects on Local Livelihoods: A Gender and Poverty Lens Approach"

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EXECUTIVE SUMMARY

This comprehensive quantitative assessment investigates the nuanced impacts of coastal afforestation projects on local livelihoods, employing a gender and poverty lens approach. By scrutinizing the multifaceted effects of these initiatives on various demographic groups within coastal communities, including men, women, and individuals across different socioeconomic strata, the study offers valuable insights into the complexities of project outcomes.

Key Findings:

- Coastal afforestation projects yield both positive and negative impacts on local livelihoods, contributing to environmental conservation and resilience against climate change while also presenting challenges.
- Positive outcomes include enhanced ecological stability, increased biodiversity, and improved resilience to natural disasters, which benefit both local communities and ecosystems.
- However, challenges such as disruptions to traditional livelihood practices, unequal distribution of benefits, and potential exacerbation of gender disparities and poverty levels underscore the need for careful consideration of project design and implementation.

Recommendations:

- Integrate gender-responsive and poverty-sensitive approaches into all stages of coastal afforestation project planning and implementation, ensuring that the needs and concerns of all demographic groups are adequately addressed.
- Prioritize inclusive decision-making processes that actively involve local communities, especially women and marginalized groups, in project design, implementation, and monitoring.

- Adopt measures to promote equitable distribution of project benefits, such as providing training and capacity-building opportunities, fostering income-generating activities, and ensuring access to resources and decision-making power.

- Facilitate collaboration among government agencies, non-governmental organizations (NGOs), local communities, and academic institutions to leverage collective expertise, resources, and networks for more effective project outcomes.

By embracing a holistic approach that considers gender dynamics and poverty dynamics, coastal afforestation projects can maximize their positive impacts on local livelihoods while minimizing adverse effects. Through targeted interventions and inclusive strategies, these initiatives can contribute significantly to sustainable development, gender equality, poverty alleviation, and environmental resilience in coastal regions. It is essential to prioritize the adoption of these recommendations to ensure that coastal afforestation projects serve as catalysts for inclusive and sustainable development in coastal communities.

An aerial photograph of a coastal village, likely in Southeast Asia, showing numerous traditional wooden boats (possibly sampans) docked in the water. The village buildings are visible on the shore, and the water is dark. The image is overlaid with a dark semi-transparent layer. A vertical strip on the right side shows a clearer view of the boats and the shoreline. A yellow horizontal line is positioned below the title, and a yellow rectangular bar is at the bottom of the page.

Introduction and Methodology

INTRODUCTION

Coastal afforestation projects play a crucial role in safeguarding local coastal communities against the devastating impacts of tidal surges and cyclones by establishing a coastal greenbelt. These projects not only reclaim and stabilize newly accreted char lands but also offer a range of benefits such as timber and fuelwood production, ecotourism opportunities, carbon sequestration, and enhanced livelihood prospects for the local communities. In Bangladesh, with its extensive coastline spanning over 710 kilometers and encompassing numerous chars and offshore islands, the Bangladesh Forest Department (BFD) has been at the forefront of coastal afforestation initiatives since the early 1960s.

With a remarkable history of coastal afforestation, Bangladesh has pioneered the implementation of such projects worldwide. Since the 1980s, the BFD has been actively executing various coastal afforestation projects, focusing on mangrove restoration, char land stabilization, community-based afforestation, development of coastal greenbelts, and building adaptation and resilience measures across 19 districts of the country. Notably, specific areas of interest within these districts include Nijhum Dwip, Jahajmara Union, and Burir Char Union in the Hatia Upazila of the Noakhali district. In conjunction with the afforestation efforts, the Government of Bangladesh has also established sanctuaries for the critically important Hilsa fish and bird species in different parts of Nijhum Dwip, Jahajmara Union, and Burir Char Union. However, alarming trends have been observed in the changing landscape of these regions. A study conducted by Islam et al. (2021) reveals that in 1990, nearly 60% of the total land area of Nijhum Dwip was submerged underwater, with only 27% classified as forest land and the remaining 13% consisting of other land types, including barren lands (1.5%) and non-forest vegetation ground (8%). Disturbingly, by 2020, substantial transformations occurred, resulting in the conversion of a significant portion of water bodies (32%) and forest lands (12%) into barren lands (35%) and non-forest vegetation ground (20%). Such changes pose

severe threats to the livelihoods of local communities and undermine the objectives of the afforestation projects undertaken by the BFD.

Previous studies have primarily relied on qualitative methods, highlighting the need for a rigorous quantitative assessment to complement existing knowledge. Additionally, the differential impacts of coastal afforestation projects on men and women within local communities have been inadequately addressed, necessitating a deeper exploration of gender-specific effects and potential inequalities. Moreover, the multidimensional aspects of poverty and how these projects can either alleviate or exacerbate poverty levels within local communities have been overlooked. By examining these dimensions, the study intends to provide a more comprehensive understanding. Furthermore, the research will expand the geographical scope beyond specific regions or countries to capture diverse experiences and outcomes. The study also seeks to address the lack of long-term perspective by considering the sustainability and durability of project impacts over time. Lastly, incorporating community-based participatory approaches and engaging with local populations will ensure that the perspectives and voices of those affected by coastal afforestation projects are considered. By addressing these research gaps, this study aims to contribute to a more holistic understanding of the quantitative impacts of coastal afforestation projects on local livelihoods from a gender and poverty lens approach, particularly at three unions of Hatiya Upazilla.

Firstly, this study provides an opportunity to assess and understand the specific impacts of coastal afforestation projects on local livelihoods within these unions. By focusing on a specific geographical area, the study can capture the unique challenges, opportunities, and dynamics that exist in Hatia. This localized approach enables policymakers and practitioners to make informed decisions tailored to the needs and circumstances of the three unions. Secondly, the study's gender and poverty lens approach are particularly relevant for these unions. By examining the gender dynamics and considering the poverty dimensions, the research can shed light on any disparities or inequalities that may exist within the affected communities. Understanding the differential impacts on

men and women, as well as the effects on poverty levels, can help guide the development of more inclusive and equitable coastal afforestation projects in these unions. Lastly, by conducting a quantitative assessment, the study can provide valuable data and evidence to support decision-making processes at various levels. This information can be utilized by local government authorities, NGOs, and other stakeholders involved in coastal afforestation initiatives. The findings can inform policy formulation, project planning, and resource allocation, ultimately leading to more effective and sustainable interventions in the three unions.

In summary, this study offers a localized perspective, considers gender and poverty dimensions, and provides quantitative evidence for decision-making. By focusing on these unions, the research can contribute to the development of context-specific strategies and interventions that improve the livelihoods of local communities and foster sustainable development.

Objectives

Considering the above viewpoints, the study was conducted based on the following objectives:

- A) To quantify the benefits of different socio-economic groups from the dependency on the coastal afforestation in Hatia and ranking their importance.
- B) To assess the factors influencing the dependency on the coastal afforestation in Hatia;
and
- C) To draw a detailed policy recommendation.

METHODOLOGY

Study area: This research was conducted in three unions located in Hatia Upazila, within the Noakhali district of Bangladesh. It is full of natural beauty, but highly susceptible to natural calamities.



Figure: A photo of Hatia during spring and a photo during the Sidr, 2007

The selected unions are Nijhum Dwip, Jahajmara Union, and Burir Char Union. These specific areas play a crucial role in coastal afforestation efforts in Bangladesh and are of great importance to the local communities who rely on them for their livelihoods. Hatia, an island situated along the Bay of Bengal, covers a substantial area of 2100 km² and consists of 11 unions within the Noakhali District. Among these unions, Nijhum Dwip

stands out as a significant location. Previously known as Char Osmani, Baluar Char, or Golden Island, Nijhum Dwip emerged in the early 1950s. It spans a total area of 163.45 km², including 124.81 km² of watery areas. In 1974, the Bangladesh Forest Department (BFD) initiated an afforestation program on the island, covering nearly nine thousand acres of land, which has since developed into a thriving forest. Recognizing its ecological value, Nijhum Dwip was declared a national park on April 8, 2001. The island is home to a population of approximately thirty-four thousand people, with 18,450 males and the rest being females. The primary occupations of the local residents are agriculture and fisheries. Additionally, Nijhum Dwip is renowned for its picturesque tourist attractions and serves as a seasonal habitat for migratory birds during the winter.



Figure: A drone captured photo of Nijhum Dwip National Park

Jahajmara, the 10th union of Hatiya, is located in the southern part of the upazila. This union spans an area of around 260 km² and falls under the jurisdiction of the Bangladesh Forest Department. In 2001, an area of 16,345.25 hectares (40,390 acres) within the Jahajmara range was designated as a national park. The union has a total population of approximately 78,000, with 39,710 females and 38,290 males. Jahajmara is connected to the main Upazila by well-established road networks.



Figure: Mohammadpur Bazar in Jahazmara Union

Burir Char, another prominent union in Hatiya Upazila, covers a considerable area of about 245 km². The union is home to a population of 72,975, with 37,223 males and the remaining residents being female. Notably, the southeastern side of Burir Char features coastal forests that were initially established by the Bangladesh Forest Department and have since grown naturally.

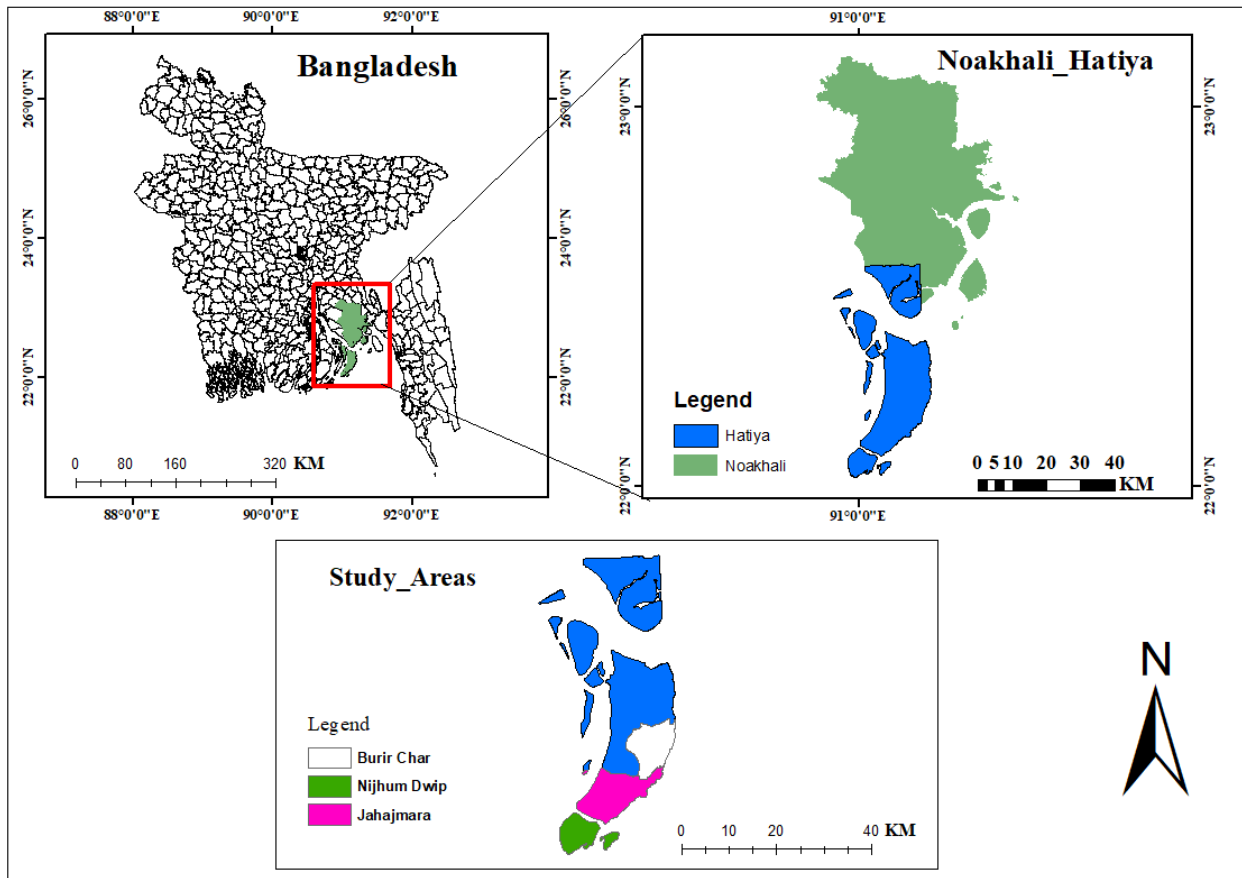


Figure: Map of Hatia

DATA COLLECTION AND ANALYSES

This study utilized both primary and secondary data. The collection of primary data employed a multistage sampling method. In the initial stage, three specific Unions within Hatia Upazila were purposively selected due to their significant relevance.

Subsequently, households were chosen from three distinct socioeconomic groups, namely co-management committee (CMC) members, dependent women, and other local individuals who directly or indirectly depended on coastal afforestation. In the final stage, a total of 90 respondents were randomly selected from each Union, resulting in a cumulative sample size of 270 respondents across the three Unions.

Primary data collection was conducted through surveys administered by trained and proficient interviewers. These surveys were complemented by semi-structured questionnaires, which constituted the primary sources of empirical data. For the selection of respondents among other local individuals, household heads or members aged at least 18 years were chosen. The Union Parishad office provided the list of local individuals, while the BFD supplied the lists of CMC members and dependent women.

The collected data encompassed socio-economic and demographic information regarding the respondents. Additional data was gathered on variables such as duration of residence, employment, or visits to coastal afforestation areas, among others. Furthermore, data was obtained on livelihood activities and the income derived from engagements in the coastal afforestation areas. Detailed information regarding forest resource collection patterns, the benefits accrued from the forest, and perceptions of the forest were also recorded. To ensure smooth data collection, an experienced local guide/key informant was selected from each Union prior to conducting the surveys.

Secondary data was acquired from diverse published and unpublished sources, including journals, books, and thesis papers. A preliminary survey was carried out before the final data collection phase, involving interviews with experts and officials from relevant institutions such as the BFD, NGOs, and others.

Data entry and analysis were performed using Microsoft Excel and IBM SPSS software. Descriptive statistics, such as tables, frequencies, percentages, and figures, were

employed to describe the socio-economic characteristics of the respondents, their dependence on coastal afforestation, the benefits derived from it, and its associated impacts. Coastal afforestation dependency was quantified as the percentage of coastal afforestation income in relation to the total household income. Multiple linear regression modeling was employed to examine the factors influencing coastal afforestation, employing the following equation:

$$Y = \beta_1X_1 + \beta_2X_2 + \dots + \beta_nX_n + E$$

Here, Y represents coastal afforestation dependency as the dependent variable. α denotes the intercept or constant term, while β represents the regression coefficients indicating the magnitude of change in the dependent variable corresponding to alterations in the independent variables denoted by X. The independent variables in this study included age, dependency ratio (defined as the ratio of dependent household members below 15 years or above 60 years to those aged between 15 and 60 years) (Fatoki et al., 2021), income, farm size, gender (with a binary variable: Male = 1, Female = 0), distance from home to the nearest coastal afforestation area (in kilometers), access to credit (with a binary variable: Access = 1, No access = 0), household size, years of formal education, and marital status (with a binary variable: Married = 1, Otherwise = 0). The term E represents the error component, indicating the discrepancy between actual and predicted values in the regression model.

Chapter Two

Coastal Afforestation Projects

Major discussion points:

- List of the projects
- Aims and Objectives in brief

COASTAL AFFORESTATION PROJECTS IN BANGLADESH

Coastal afforestation projects in Bangladesh are vital initiatives aimed at combating the detrimental effects of climate change and safeguarding coastal communities. These projects primarily focus on planting and nurturing trees and other vegetation along the coastline to counter coastal erosion, saline intrusion, and habitat degradation. Notably,

mangrove reforestation efforts, such as those in the Sundarbans, the world's largest mangrove forest, are central to these endeavors, given the crucial role mangroves play in protecting against cyclones and tidal waves. Additionally, community engagement is emphasized, with local populations actively involved in planting and managing coastal forests, thereby enhancing project effectiveness and fostering economic opportunities. Through the conservation of biodiversity, promotion of climate resilience, and collaboration between the government, international organizations, NGOs, and local stakeholders, these projects contribute significantly to sustainable development and the preservation of coastal ecosystems in Bangladesh.

Coastal afforestation projects in Hatia Island, Bangladesh, are multifaceted initiatives aimed at addressing various environmental, social, and economic challenges. These projects primarily focus on stabilizing soil and preventing erosion along the vulnerable coastline, where tidal action and natural factors threaten land integrity. Additionally, afforestation endeavors seek to mitigate the intrusion of saline water into freshwater sources, safeguarding agricultural lands and ensuring sustainable water supplies for local communities. By planting a diverse range of native trees and vegetation, these projects also aim to restore and conserve biodiversity in coastal ecosystems, supporting the recovery of habitats crucial for local livelihoods and ecosystems. Moreover, coastal afforestation contributes to climate change adaptation efforts by sequestering carbon dioxide, mitigating sea-level rise impacts, and enhancing resilience to extreme weather events. Community participation is integral to these projects, offering alternative livelihood options, empowering locals to engage in conservation efforts, and promoting sustainable land use practices. Ultimately, coastal afforestation in Hatia Island represents a holistic approach to sustainable development, benefiting both the environment and the well-being of its inhabitants.

List of coastal afforestation projects

Sl. no.	Name of the project	Starting year	Completion year
1.	Afforestation in the coastal belt and offshore islands	1960-61 1965-66	1964-65 1969-70
2.	Afforestation Project in the coastal regions of Chittagong, Noakhali, Barishal and Potuakhali	1974-75	1979-80
3.	Mangrove Afforestation Project	1980-81	1984-85
4.	Second Forestry Project	1985-86	1991-92
5.	Forest Resources Management Project-FRMP	1992-93	2001-2002
6.	Extended Forest Resources Management Project	2002-03	2003-04
7.	Coastal Embankment Rehabilitation Project (CERP)	1997	2003
8.	Coastal Green Belt Project-CGP	1995-96	2001-02
9.	Forestry Sector Project	1997-98	2005-06
10.	Sundarbans Biodiversity Conservation Project (SBCP)	1999-2000	2004-05
11.	Char Development and Settlement Project (CDSP)	2000-05	2005-10
12.	Coastal Char Land Afforestation Project	2005-06	2009-10
13.	Management Support Project for Sundarban Reserve Forest	2005-06	2009-10
14.	Plantation of BWDB's Embankment in the Coastal Belt and its adjacent Char Areas	2009-10	2011-12
15.	Afforestation in the Coastal Areas to Mitigate Adverse Effect of Climate Change Project	Nov.2010	June 2013
16.	Community Based Adaptation to Climate Change Through Coastal Afforestation Project in Bangladesh	July-2009	June-2014

An aerial photograph of a coastal community, likely in Southeast Asia, showing numerous traditional wooden boats (jukung) on the water. The boats are densely packed in some areas, particularly near the shore. The background shows a dense forest of trees. The image is overlaid with a dark, semi-transparent layer, and the title text is in a bright yellow color. A horizontal yellow line is positioned below the title, and a vertical yellow bar is on the right side of the image.

Demographics of the Dependent Community on Ecosystem

OVERALL DEMOGRAPHY OF THE RESPONDENTS

In the surveyed areas, average households typically comprise four to six members, with occasional exceptions having smaller families consisting of two to three members. Due to challenging economic conditions, large families often split to form smaller ones, particularly when managing a larger family becomes difficult under financial constraints. Sons usually establish separate households after marriage due to inadequate government support as expressed by a resident in Burirchar:

"We receive fifteen hundred BDT every three months as widows from the government, which is insufficient. This amount doesn't even cover a week's expenses."

In these communities, most people reside in tin or semi-paved houses, with 10 to 15 percent living in bamboo structures. The primary occupation involves fishing and farming, while women focus on raising poultry and livestock for family consumption. During the rainy season, ninety percent of the population earns their livelihood through fishing, engaging in other activities like agriculture (commercial spice production), shopkeeping, small business during the rest of the year. However, in Nijhum Dwip, the tourism industry has flourished, attracting tourists interested in enjoying the scenic beauty of Nijhum Dwip. Individuals work in various roles such as boatmen, cleaners, and cooks in tourist boats and resorts. Some also find employment in garment factories.



The earnings of families in these areas are meager, with the majority earning monthly between BDT 6000 to 9000 on average. In terms of physical assets, community members have limited resources, with the average size of a family's homestead land ranging from 3 to 5 decimals, including their house. Only ten to twenty percent of people have more than 5 decimals of land. Only a few families have fruit trees like mango and jackfruit and grow vegetables in their homesteads.



To address financial challenges, community members can seek financial assistance from various non-governmental organizations (NGOs) such as ASHA and BRAC. Despite a strong desire to benefit from safety net programs, only a small proportion can access this support. Community members are aware of different types of safety net programs, including old age allowances (approximately fifteen to twenty people), allowances for widows, deserted and destitute women, allowances for financially insolvent disabled individuals, and development programs for distressed and neglected women and children. In adverse weather conditions, community members sometimes engage in group fishing.



- Family sizes: typically ranging from 6 to 7 members.
- Smaller family sizes: (2 to 3 members) found in all the areas.



- Average household land area: Less than 5 decimals.
- Most of the houses are made with tin.



- Only 30 to 40 percent people own arable land.
- Ownership of fish cultivation ponds is very low.



Wetland Areas

- Timber species: Teak, Akashmoni.
- Horticulture species: Mango, Jackfruit,



- Energy sources for cooking: dry timber or wood-based fuelwood from nearby hilly areas.

An aerial photograph of a coastal village, likely in Southeast Asia, showing numerous traditional wooden boats (jukung) on the water. The village is built on a sandy beach with several buildings, including a prominent one with a blue roof. The image is dark, with a yellow horizontal line and a yellow bar at the bottom. The text 'Stakeholder Mapping' is overlaid in yellow.

Stakeholder Mapping

STAKEHOLDER MAPPING

In Hatia Island, Bangladesh, a myriad of stakeholders are engaged in comprehensive conservation efforts aimed at preserving the island's diverse ecosystems. At the forefront of these endeavors is the Bangladesh Forest Department (BFD), which assumes a multifaceted role in overseeing the protection and preservation of these vital natural resources. The BFD's responsibilities extend to field-level monitoring, law enforcement, and the establishment of conservation regulations to mitigate environmental degradation and promote sustainable management practices.

Central to the success of conservation efforts are the partnerships forged with various stakeholders, including the Co-Management Committee (CMC) and Community Patrolling Groups (CPGs). These collaborations enable the BFD to effectively enforce conservation laws, conduct monitoring activities, and address emerging challenges such as illegal logging, poaching, and encroachment on protected areas. The CMC, in particular, serves as a community-based organization actively involved in co-managing natural resources, including forests, in alignment with the regulations outlined by the Protected Area Rule of 2017.

Moreover, local community leaders play instrumental roles as intermediaries between the BFD and the broader community, advocating for community interests, voicing concerns, and facilitating dialogue among stakeholders. Through their close relationships with community members and engagement with governmental and non-governmental organizations (NGOs), these leaders ensure that community perspectives are effectively communicated and integrated into conservation initiatives. Additionally, community-based organizations serve as platforms for community members to actively participate in conservation activities, contributing to efforts such as patrolling, wildlife protection, and habitat restoration.

However, despite collaborative efforts, challenges persist. False member selection for VCFs and occasional conflicts in priorities or resource allocation between stakeholders can hinder the effectiveness of conservation initiatives. Regular communication channels, participatory decision-making processes, and conflict resolution mechanisms are crucial in addressing these challenges and fostering harmonious collaboration among stakeholders.

In addition to local stakeholders, various government entities, including the Ministry of Environment, Forest and Climate Change, are actively involved in wetland conservation efforts on Hatia Island. These entities establish policies, enforce regulations, and coordinate with local governments, NGOs, and communities to develop and implement wetland management plans. Despite challenges, stakeholders remain committed to the preservation of Hatia Island's ecosystems, recognizing the importance of collective action in ensuring the long-term sustainability and resilience of these invaluable natural resources.

An aerial photograph of a coastal community, likely in Southeast Asia, showing numerous small wooden boats docked in a shallow bay. The buildings are clustered together, and the surrounding area is lush with greenery. The image is darkened to make the text stand out.

Community Dependency on Ecosystem resources

COMMUNITY'S DEPENDENCY ON ECOSYSTEM RESOURCES

The primary focus of the survey was to gauge the perspectives of the local population regarding the benefits derived from the forest, with a specific emphasis on provisioning, regulating, cultural, and supporting services. The provisioning services provided by the forests in the surveyed areas reveal interesting insights. The supply of firewood and irrigation water is considered abundant and essential, meeting the basic needs of the local communities. However, the availability of construction materials and bush meat is limited, suggesting potential challenges in these areas. Despite limitations, these provisioning services are deemed important by the respondents. Moving on to regulating services, the forests demonstrate a robust capacity in flood control, provision of cool breeze, and acting as effective windbreaks. Moreover, the forests play a vital role in purifying the air and stabilizing the microclimate. The abundance of these regulating services is acknowledged and highly valued by the local population. Cultural services provided by the forests contribute significantly to the well-being and recreational activities of the communities. The forests are described as providing an attractive landscape, supporting recreation, and facilitating ecotourism. The abundance of shade for both animals and humans is also recognized as a valuable cultural service. In terms of supporting services, the forests in Jahajmara, Nijhum Dwip, and Burirchar play a crucial role in supporting biodiversity, maintaining wildlife habitat, and protecting endangered species. Additionally, they serve as a robust barrier against wind erosion. These supporting services are perceived as abundant and hold substantial importance for the ecological balance of the regions.

While certain provisioning services face limitations, the regulating, cultural, and supporting services provided by the forests are widely acknowledged as abundant and essential. Understanding and integrating these local perspectives into forest management policies will be crucial for fostering sustainable practices and ensuring the well-being of both the communities and the ecosystems.

An aerial photograph of a coastal village, likely in Southeast Asia, showing numerous traditional wooden boats (jukung) on the water. The village is built on a sandy beach with some buildings and trees. The image is dark, with a yellow horizontal bar at the bottom and a yellow vertical bar on the right side. The text 'Human Ecosystem Interactions' is overlaid in yellow.

Human Ecosystem Interactions

HUMAN-ECOSYSTEM INTERACTION

Human-ecosystem interaction refers to the relationship between human activities and the natural environment. It encompasses the various ways in which humans interact with and influence ecosystems, including the use of natural resources, land management practices, and the impacts of human activities on biodiversity and ecosystem services. From a stakeholder perspective, several noteworthy changes in the ecosystem and natural resource settings have been observed or experienced in recent years. The contributory factors causing these changes in ecosystems and biodiversity can be diverse. Habitat destruction and fragmentation, pollution, climate change, and overexploitation are among the common factors responsible. Human activities such as clearing forests for agriculture or urbanization, discharge of pollutants into ecosystems, and unsustainable harvesting of species can disrupt ecological processes, degrade habitats, and negatively impact biodiversity. The changes in ecosystems and biodiversity also have direct impacts on livelihoods. Communities may experience changes in resource availability, such as decreased fish stocks affecting fishing communities. Loss of ecosystem services, such as clean water, pollination, and climate regulation, can adversely affect agricultural productivity and increase vulnerability to natural disasters. Environmental changes can also lead to displacement and migration of communities, disrupting social structures, cultural practices, and overall well-being. Overall, human-ecosystem interaction can lead to interconnected changes in species composition, ecosystem structure and functioning, water and air quality, and cultural practices. These changes can have short-term and long-term implications for the health of ecosystems, biodiversity, and human well-being. Effective management and conservation measures are crucial to mitigate negative impacts and promote sustainable human-ecosystem.

An aerial photograph of a coastal community, likely in Southeast Asia, showing numerous traditional wooden boats (possibly sampans) in the water. The community is built on a sandy beach with several buildings. The image is dark, with a yellow horizontal line and a yellow bar at the bottom. The text 'Community Dependency on Ecosystem resources' is overlaid in yellow.

Community Dependency on Ecosystem resources

COMMUNITY DEPENDANCY ON ECOSYSTEMS

Household dependence on forests is a complex phenomenon influenced by various factors, including the sources of income. This analysis delves into the different sources of income and their average monthly earnings for households both dependent and non-dependent on forests.

Sources of Income and Average Monthly Income:

1. Forest Dependence:

a. Farming: Many households reliant on forests derive a significant portion of their income from farming, with average monthly earnings ranging between 2000 and 3000 Bangladeshi Taka (BDT).

b. Hunting: While hunting is not a source of income for forest-dependent households, it is essential to note its absence as a factor compared to non-forest-dependent households.

c. Lumbering: Some households engaged in lumbering activities within forests generate income ranging from 500 to 1500 BDT per month.

d. Firewood: While collecting firewood from forests is a common practice, it does not directly contribute to income for forest-dependent households.

e. Tourism: Tourism, such as ecotourism, often tied to forests, may not be a significant income source for the households in Burirchar and Jahajmara. But in Nijhum Dwip, a good number of people are associated with tourism activities such as resort, restaurants business, boat service etc which contribute to a good portion of their total income.

2. Non-Forest Dependence:

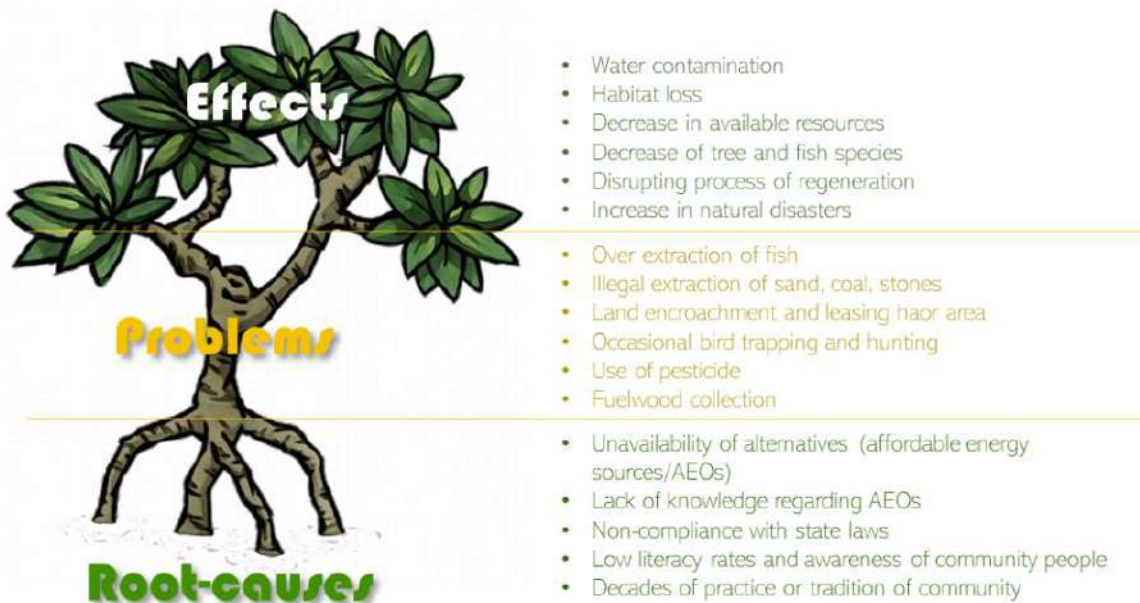
a. Farming: Non-forest-dependent households relying on farming tend to earn higher average monthly incomes, ranging between 4000 and 6000 BDT.

b. Agro-processing, Trading, and Hospitality: Diversified sources such as agro-processing, trading, and hospitality contribute an average monthly income of 1500 BDT.

c. Artisanship and Crafts: Unlike forest-dependent households, those not reliant on forests do not derive income from artisanal activities and crafts.

d. Wage Employment: Non-forest-dependent households engaged in wage employment earn an average monthly income ranging from 2000 to 2500 BDT.

e. Others: Like the forest-dependent category, miscellaneous sources of income not specified in the provided categories may exist for non-forest-dependent households.



Understanding the factors influencing household dependence on forests involves a comprehensive analysis of income sources. While farming remains a common income source for both categories, non-forest-dependent households exhibit higher average incomes across various sectors. The absence of hunting income and lower earnings from lumbering in forest-dependent households underscores the need for sustainable forest management practices that balance livelihoods with conservation.

In our three study areas, the division of household activities and decision-making between males and females is intricately woven into the fabric of traditional norms and economic necessities. Historically, men in these regions have been primarily engaged in physically demanding occupations such as fishing and agriculture. These activities often require strength and endurance, relegating women to the domestic sphere where they traditionally manage household chores and childcare responsibilities.

In terms of decision-making, the traditional narrative has seen men taking the lead in significant matters such as finances, children's education, and healthcare. This patriarchal structure has been deeply ingrained in the societal framework, reflecting broader cultural norms. However, women have historically played a vital role in day-to-day decision-making related to household management, including tasks like food preparation, budgeting, and resource allocation.

The coastal areas of Bangladesh face unique challenges, notably the impact of climate change. Rising sea levels and increased salinity pose threats to traditional livelihoods, necessitating a reevaluation of occupational roles. Both men and women may find themselves compelled to explore alternative livelihoods or adapt their current activities in response to these environmental challenges.

Education and awareness initiatives have begun to catalyze a shift in gender roles. As communities become more educated, women, in particular, are gaining empowerment

and actively participating in decision-making processes. This shift is not only within the household but extends to broader community engagement, challenging traditional norms and fostering a more equitable division of responsibilities.

Economic considerations further contribute to the evolving landscape of work division. Economic pressures often drive households to diversify their sources of income. This has led to both men and women engaging in a variety of economic activities, breaking down traditional gender barriers and contributing to a more fluid distribution of responsibilities within households.

Government and non-governmental organizations have recognized the need for targeted interventions in study areas. Women's empowerment programs, focused on skill development, education, and awareness campaigns, aim to enhance the role of women in decision-making processes. These initiatives provide opportunities for women to engage in income-generating activities, fostering independence and challenging traditional gender roles.

The work division between males and females in the coastal areas of Bangladesh is a dynamic interplay of tradition, economic dynamics, and external interventions. As the region grapples with environmental challenges and undergoes socio-economic transformations, there is a discernible shift towards a more equitable distribution of household activities and decision-making, marking a pivotal moment in the evolution of gender roles in these communities.

An aerial photograph of a coastal village, likely in Southeast Asia, showing numerous traditional wooden boats (jukung) on the water. The village is built on a sandy beach with several buildings, including a prominent one with a blue roof. The image is dark and has a yellow horizontal line and a yellow bar at the bottom.

Policy Analysis

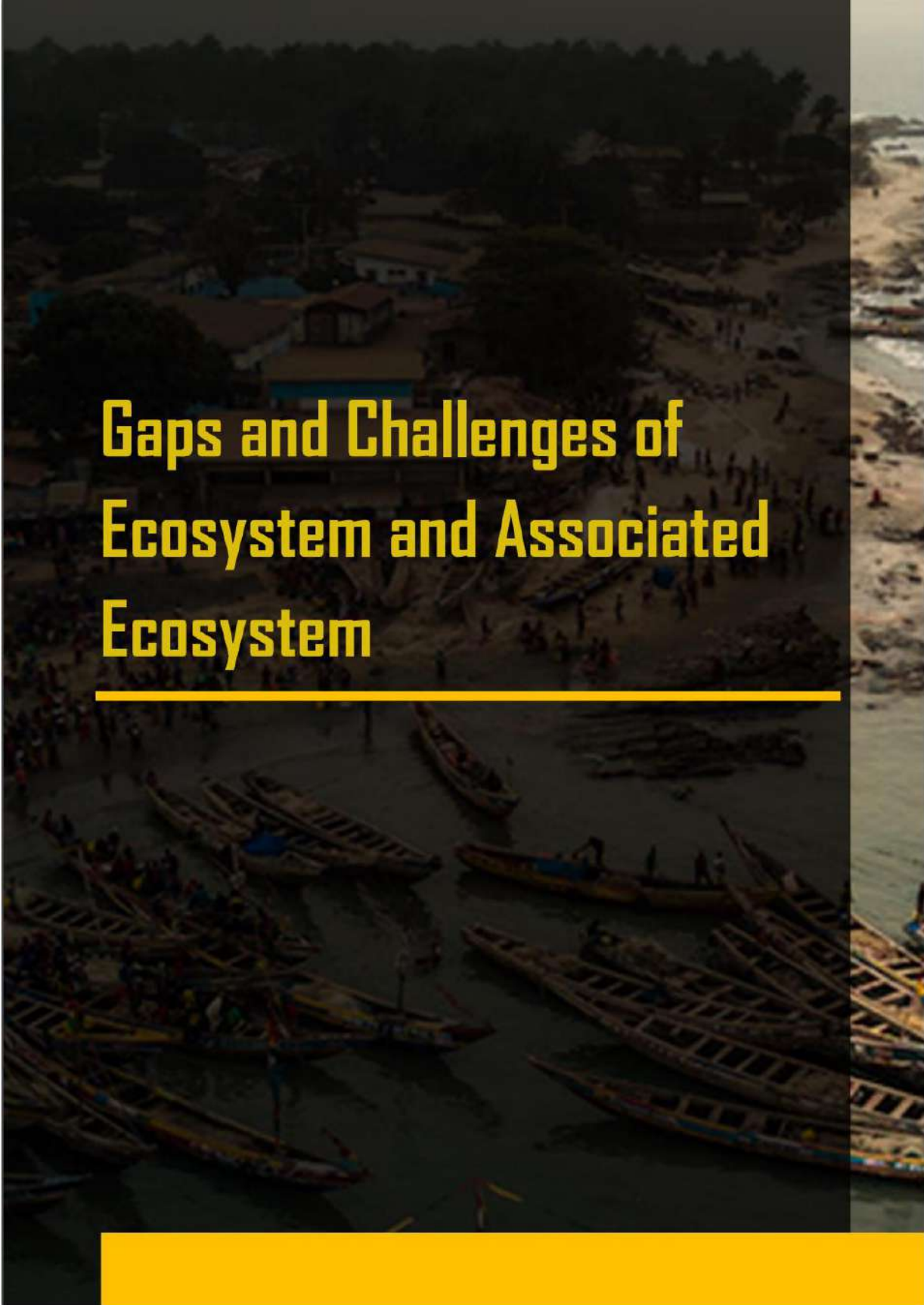
POLICY ANALYSIS

In 1989, a pivotal decision marked a significant milestone in the conservation efforts of Hatia Island's forest areas. This decision entailed imposing a comprehensive ban on all forms of resource extraction, a crucial measure aimed at safeguarding biodiversity and preserving the fragile ecosystems inherent to the region. Consequently, designated protected areas were established, encompassing all hill forest areas and a significant portion of the Sundarbans, offering vital protection to these invaluable ecological treasures.

Special attention was directed towards the Nijhum Dwip, renowned for its breathtaking beauty and diverse wildlife. Within its boundaries, a wildlife sanctuary was established, emphasizing a dedicated commitment to the preservation of these majestic creatures and their habitats. Furthermore, recognizing the necessity of maintaining ecological balance, fishing activities were strictly prohibited for specific time of the year.

To address the degradation observed within the coasts, various measures were implemented, including assisted natural regeneration and enrichment plantation initiatives. These interventions aimed to restore and rejuvenate areas afflicted by environmental degradation, thereby contributing to the overall health and vitality of this artificial mangrove forest ecosystem.

In 2010, an innovative co-management system for the mangrove forests was introduced in the Hatia, involving active participation from local communities and stakeholders. This collaborative approach aimed to ensure the sustainable use and conservation of this invaluable natural resource, fostering a sense of shared responsibility among all stakeholders involved in the management of Hatia Island's forests.

An aerial photograph of a coastal village, likely in Southeast Asia, showing numerous traditional wooden boats (possibly sampans) docked in the water. The village buildings are visible on the shore, and the water is filled with people and boats. The image is darkened to serve as a background for the text.

Gaps and Challenges of Ecosystem and Associated Ecosystem

CHALLENGES FROM THE COMMUNITY'S STANDPOINT

Access and Utilization Restrictions:

The community encounters obstacles hindering their access to and effective utilization of resources. These hurdles often come in the form of bureaucratic red tape, permits, or regulations that restrict their entry into certain areas or limit resource usage. Such restrictions impede economic activities and prevent the community from maximizing the benefits derived from resource extraction.

Irregularities in the System and Distrust:

Anomalies within the system exacerbate the challenges faced by the community. Corruption within governing bodies undermines the equitable distribution of resources and fosters distrust among community members. This lack of faith in authorities hampers cooperation and collaboration, making it challenging to address common issues and find mutually beneficial solutions.

Wildlife Attacks:

Proximity to natural habitats exposes the community to wildlife attacks, posing threats to their safety and livelihoods. Animals such as big cats, monkeys, and foxes can damage property, destroy crops, or even endanger lives. Protecting themselves and their resources from such attacks becomes an ongoing concern for the community.

Conflicts with Forest Department (BFD) and Co-Management and Community Patrolling Group (CPG):

Disputes may arise between the community and the Forest Department or the Co-Management and Community Patrolling Group due to conflicting priorities, interpretations of regulations, or resource allocation decisions. These conflicts impede progress, delay decision-making, and strain relations between the community and these governing bodies.

Low Prices in the Local Market:

Community members often face the challenge of low prices when selling their extracted resources in the local market. Oversupply, market competition, lack of market information, or exploitation by middlemen contribute to this issue, limiting the community's economic growth and development.

Lack of Capital:

Limited access to capital presents a significant obstacle for the community, hindering investment in infrastructure, equipment upgrades, or business expansion. Without adequate capital, modernization efforts, efficiency improvements, and market exploration become unfeasible, hampering productivity and competitiveness.

Influence of Elites:

Power and influence may be concentrated among a few elites within the community, leading to resource monopolization and marginalization of vulnerable members. This imbalance perpetuates socioeconomic disparities, restricting access to resources and opportunities for certain groups.

High-Interest Loans:

Community members often resort to high-interest loans to support business ventures or resource extraction activities. However, the burden of repayment can impede economic progress and perpetuate financial instability, hindering reinvestment in businesses and perpetuating cycles of debt.

Climatic Hazards:

The community is susceptible to various climatic hazards, such as floods, droughts, storms, and shifting environmental conditions. These events directly impact livelihoods, disrupt resource extraction activities, and increase vulnerability to environmental challenges, such as crop failures, property damage, or displacement.

CHALLENGES WITH LIVELIHOOD

Alternative Livelihood Activities:

Hatia Island's community grapples with finding alternative activities to sustain their livelihoods during times of scarce natural resources. However, these alternatives present challenges of their own. For instance, agriculture, which could serve as an alternative income source, faces obstacles such as salinity and overuse of chemical fertilizers, resulting in unproductive land and limited crop yields in mangrove areas. While activities like day labor or honey collection offer temporary relief, they fail to provide stable or sufficient income in the long term.

Lack of Employment and Income Opportunities:

Scarce employment opportunities compound the challenges faced by Hatia Island's community in sustaining their livelihoods. Limited access to alternative income sources further exacerbates this issue. Additionally, the community's low levels of education, knowledge, and skills constrain their ability to secure stable and well-paying jobs, trapping them in a cycle of poverty.

Coping with Prohibition:

Hatia Island's community struggles to cope with prohibitions on resource extraction, transportation, storage, and sales. These restrictions impede their access to essential resources and disrupt their established means of sustenance. Reliance on these activities for generations makes sudden prohibitions particularly challenging, compelling the community to seek alternative solutions.

Insufficient Capital:

The community faces challenges due to insufficient human, physical, and financial capital. Limited education opportunities result in constrained human capital, while

inadequate infrastructure and equipment hinder productivity. Additionally, a lack of financial resources limits the community's capacity to overcome livelihood obstacles and invest in income-generating opportunities.

Unproductive Land in Mangrove:

Salinity renders much of Hatia Island's land unproductive for agriculture, reducing crop growth and agricultural yields. This further complicates the community's efforts to find sustainable sources of income and ensure food security.

Natural Disasters and Property Risks:

Hatia Island's community is vulnerable to natural disasters such as storms, floods, and cyclones, which can cause significant damage to their properties and livelihoods. These disasters disrupt daily lives and exacerbate financial challenges, making recovery and livelihood rebuilding more difficult.

Lack of Basic Amenities:

The community faces a lack of essential amenities, including energy, electricity, fuels, drinking water, and sanitation. The absence of these services complicates daily life and impedes productive activities. Limited access to modern tools and technologies hampers productivity and income potential.

Addressing these challenges requires comprehensive efforts, including providing access to resources, creating employment opportunities, improving education and skills training, investing in infrastructure, and ensuring the availability of basic amenities. Collaborative initiatives involving government agencies, local communities, NGOs, and other stakeholders are crucial for ensuring the long-term sustainability of livelihoods and the overall well-being of Hatia Island's community.



Conclusion

CONCLUSION

The quantitative assessment of the impacts of coastal afforestation projects, analyzed through the gender and poverty lens, offers valuable insights into their multifaceted effects on local livelihoods. By considering the intersecting factors of gender and poverty, this approach provides a comprehensive understanding of how these projects influence different segments of coastal communities. Through this analysis, it becomes evident that coastal afforestation initiatives have both positive and negative repercussions on livelihoods, with varying implications for men and women and individuals across different socioeconomic strata.

While these projects contribute to environmental conservation and resilience against climate change, they also present challenges such as disruptions to traditional livelihood practices, unequal distribution of benefits, and potential exacerbation of gender disparities and poverty levels. Therefore, it is imperative to develop holistic strategies that address these challenges and maximize positive impacts. Such strategies should prioritize inclusive decision-making processes, equitable distribution of resources, and targeted support for vulnerable groups, including women and those living in poverty.

Moving forward, efforts should be directed towards integrating gender-responsive and poverty-sensitive approaches into the planning, implementation, and monitoring of coastal afforestation projects. By doing so, we can ensure that these initiatives effectively contribute to sustainable livelihoods, gender equality, poverty alleviation, and environmental resilience in coastal communities. Collaboration among stakeholders, including government agencies, NGOs, local communities, and researchers, is crucial for achieving these goals and fostering inclusive and sustainable development in coastal regions.

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FIELD PHOTOS



