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STATUS OF FOREST GOVERNANCE IN BANGLADESH: A CASE STUDY ON BHAWAL NATIONAL PARK

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ABSTRACT

The present study assessed the status of forest governance of Bhawal National Park (BNP) in Bangladesh. The research employs both qualitative and quantitative methods to identify and analyze data. The study identified that the BNP authority adhered to well-defined and coherent forest policies and laws of forest governance, having highest score (i.e., about 4.27) in five-points rating scale. However, the enforcement of forest laws and regulations by the jurisdictional authority is hindered due to insufficient resources, including budgetary constraints, shortage of forest officials and staff, inadequate tools and technology, and delayed implementation resulting less effective influence on the forest governance. The involvement of stakeholders in decision-making processes and access to information is limited. Additionally, there is not always a high enough level of transparency and accountability, sometimes leading to misconduct and corruption among forest officials, secured the lowest score of forest governance (i.e., 1.15). Overall, the composite score is nearly 1.90 represents less significant influence of forest governance for BNP resulting in one-third of the park is completely under encroachment. The findings of this study are crucial for policymakers to determine the priority areas within the various components and pillars of forest governance.

Keywords: Bhawal national park, forest policies, governance, implementation

Introduction

Over the last few decades, the pressure on global forests has intensified due to the conflicting and growing needs of societies for food, timber production, bio-energy, and environmental services, particularly in the context of climate change (Ziegler *et al.* 2012, IPCC 2014). Therefore, forest resources have been decreasing at a constant rate and nearly one-third of population of the world is affected by forest degradation due to poor forest governance (UNEP 2007). However, governance of forest resource carry essence since its economic, ecological and social values. Forest governance is the regulatory structures (i.e., institutional rules, norms, principles and decision-making procedures) developed by government and civil society for the conservation and utilization of forests (Giessen and Buttoud 2014). Forest governance encompasses rules (e.g., formal and informal), organizations and processes, which binds the decisions about the management, use and conservation of forest resources (Davis *et al.* 2013). It comprises the processes, norms, instruments and organizations that regulate the way people act together with forests (Kishor and Robenbaum 2012). The emergence of concept of forest governance is also explained by Arts (2014) by using the term 'Triple G' which includes government (state forestry), governance (participatory forestry) and governs mentality (state to the market and to society). Governance through decentralization is always significance for forest resource management (Agrawal *et al.* 2008). It can be considered as an operational way to govern forest management. This strategy has led to reduce the fast degradation and decline of forests in many developing countries (Balooni *et al.* 2008). Good governance could lead to achieve sustainability of forest resources in many aspects of operations and procedures (FAO 2012). However, industrialization, encroachment, overexploitation, illegal logging, corruption, and various crimes debilitate the governance of forests.

Bangladesh is losing its forests at an alarming rate. For instance, the country lost approximately 2600 ha of forest land annually from 1990 to 2015 because of poor forest governance (Begum 2022). Currently, Bangladesh has only 9.5% (17.4 % in Department of Forest's record)

forest land (Reddy *et al.* 2016, BFD and IUCN 2023). Despite its environmental and livelihood significance, Bangladesh has low per capita area of forest land (i.e., 0.009 ha per person) compared to Asia (i.e., 0.145 ha per person) and the world (0.597 ha per person) (Sarker and Rodrigo 2014, Nath *et al.* 2016, Giessen *et al.* 2016). The annual rate of deforestation in Bangladesh is around 0.77% from 2006 to 2014 (Reddy *et al.* 2016). This results in deforestation, biodiversity loss as well as reduction of environmental services. Therefore, it is crucial to safeguard the remaining forests and increasing forest coverage in the country through forest governance since, governance is the keystone of sound environmental resource management especially forest resources. The perspective plan of Bangladesh (2010-2021) and Bangladesh Vision 2021 have proposed good governance as one of the strategic pillars of economic development in Bangladesh (GoB 2012). Further, forest policy of 2016 in Bangladesh has already been set an agenda of good governance in policy statement (Mollick *et al.* 2018).

Bhawal National Park (BNP) is one of the most endangered ecosystems in Bangladesh which has been degrading constantly through the process of industrialization, establishment of settlement, encroachment, overexploitation, agricultural expansion, plantation with invasive species, pollution, pasturing of domestic cattle, illegal cut down of trees, fragmentation of forest land by road construction as well as existing population pressure (Islam and Sato 2012). Moreover, a significant number of visitors come to BNP for pleasure trip during the winter season (Alauddin *et al.* 2020). Therefore, more than two-thirds of forest habitat has been spoiled during the last 50 years (Chowdhury 2013). Besides, around 2284 ha. area of the forest has been depleted from 2005 to 2020 only because of new settlements in privately owned lands within the BNP jurisdiction (Rahman *et al.* 2022).

Some studies have been conducted on different aspects of forest resources in Bangladesh. For instance, the study by Rahman and Miah (2017) highlighted the implementation of REDD (Reducing Emissions from Deforestation and Forest Degradation) in the protected forest area of Bangladesh. Moreover, the study by Jashimuddin *et al.* (2021) emphasized the local level forest governance in a co-managed protected area of Bangladesh. Both the studies considered the wildlife sanctuary in their assessments. The study by Khan *et al.* (2021) conducted on the dynamics of forest governance considering policy and institutional dimensions. Mollick *et al*. (2018) evaluated good governance in a forest area by using three indicators that includes participation, transparency and efficiency. The existing literature did not cover all the relevant dimension, pillars and variables in assessing forest governance in a precise and in-depth manner. However, present study evaluated the status of forest governance in BNP of Bangladesh. This study would be helpful for the policy and decision makers in the forest sectors, environmental managers, researchers as well as for the academicians.

Materials and Methods

Study Area: The study selected Bhawal National Park (BNP) as a case to assess the status of sustainable forest governance in Bangladesh (Figure 1). It covers an area of 5022 ha. in Sreepur upazila of Gazipur district. The selected forest area is the Tropical Moist Deciduous Forests where Sal is the main tree species. The BNP is the largest belt of Sal Forest in Bangladesh (Masum *et al.* 2015). The park was full with flora as well as fauna. However, the biodiversity of the park is continuously degraded very rapidly due to human invasion through setting up of settlements, and industries (Rahman *et al.* 2009, Masum *et al.* 2015).

Study design: The present study identified a range of variables by reviewing relevant literature (Kishor and Rosenbaum 2012, Satpathy *et al.* 2013, FAO 2011). The study takes into account the framework for assessing and scaling-up the existing status of forest governance of BNP proposed by Food and Agriculture Organization (FAO 2011). The framework of FAO identified three (03) pillars and thirteen (13) different components of forest governance. Finally, the present study adopted twenty-two (22) variables under six (06) components and three pillars (Table 1) from the FAO framework by conducting a reconnaissance survey with the stakeholders of the area and taking experts' opinion.

To identify the potential variables that illustrate the governance of forest, a reconnaissance survey was conducted with 10 respondents in BNP. Several on-

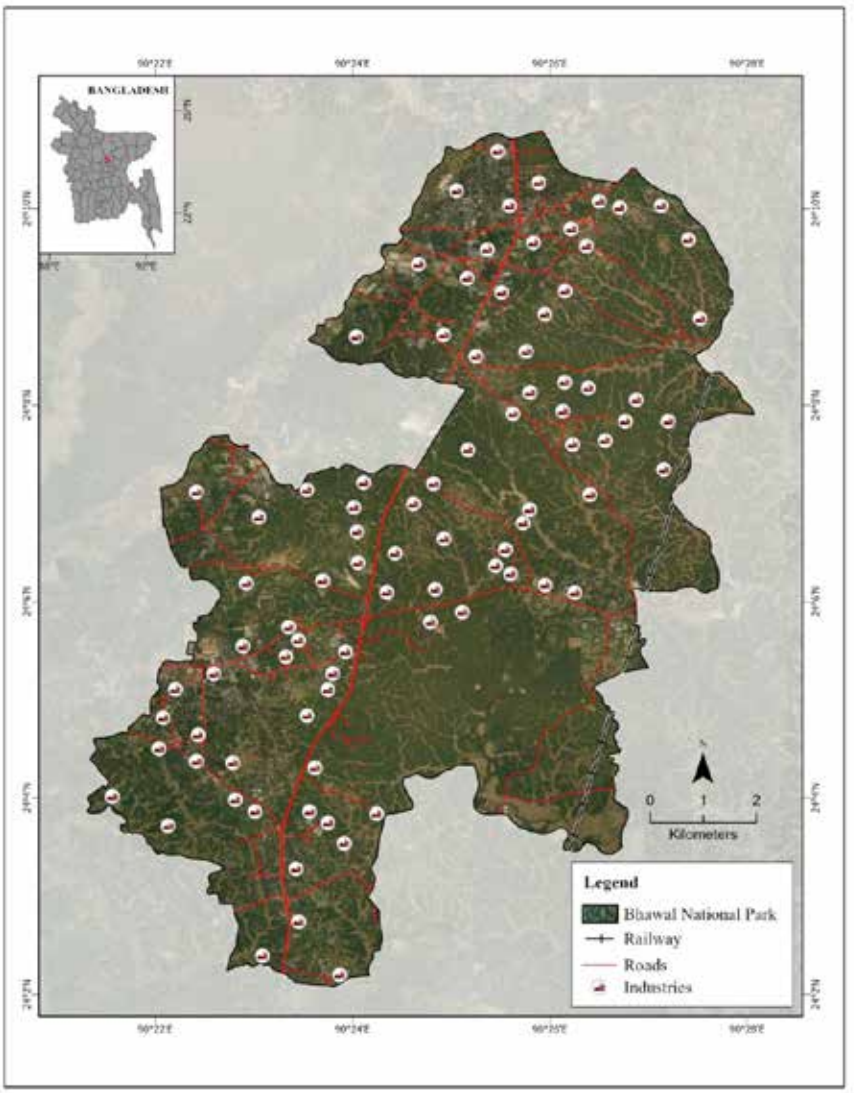


Figure 1. Map of Bhawal National Park of Bangladesh (Source: The Authors 2023)

site visits were conducted during the study to observe first hand the real-world conditions associated with the variables identified by the participants. Since then, common variables were identified for assessing the actual scenario of BNP's governance. This study followed quantitative approach of collecting and analyzing data. The data were collected through structured questionnaire following a structured interview using a purposive sampling technique. The questionnaire used five points rating scales whereas every question were ranked from 1 to 5 (whereas 1= very low, 2= low, 3= moderate, 4= high and 5= very high forest governance in the scale) to measure the components of forest governance.

Secondary data such as, laws of forest including the forest act 1927, the Bangladesh wildlife preservation (amendment) act 1974, and wildlife conservation and safety act 2012 were collected from Bangladesh Forest Department (BFD). Besides, different article, book chapter and unpublished thesis were used. These relevant literatures were collected through Google scholars. Moreover, Landsat satellite images were used to prepare Land Use and Land Cover (LULC) maps of BNP using ArcGIS (version 10.5). Ethical considerations took precedence in this study, with participants providing verbal consent.

Table 1. Pillars, components and associated variables of forest governance used for the present study

Pillars	Components	Variables
Policy, legal, institutional and regulatory framework	Forest-related policies and laws	Coherence
		Clarity
		Applicable
	Institutional framework	Organizational resources
		Financial mechanisms
		Availability of information
		Adequacy of modern technology
		Public awareness
		Participation of civil society, indigenous peoples and forest officials
Planning and decision-making processes	Stakeholder participation	Opportunity in decision making process
		Access to justice through effective resolution of conflict and grievance
		Performance based rewards and penalties
	Transparency and accountability	Accessibility to information
		Obligation to disclose information
Implementation, enforcement and compliance	Forest law enforcement	Appropriateness and consistency in the implementation of laws
		Penalties for breaking of laws
		Jurisdictional authority
		Capacity of law enforcement
	Measures to address corruption	Conducts of stakeholders
		Effective role of private sector
		Function of courts and arbitrators
		Follow-up action

Sample size determination: The study followed purposive sampling technique whereas questionnaire was structured in nature. The research used the following equation (Equation 1) to determine the sample size from the unknown population.

$$n = \frac{z^2pq}{d^2} \qquad (1)$$

Where, z denotes the normal variant

p is the target proportion. In this case, the study assumed p= 0.50

p + q = 1, therefore, q= 0.50

d is the desired error which is 0.1

Based on this equation, different possibilities could be explored to determine the suitable sample size. The study considered 90% confidence level where the value of normal variant (z) is 1.65 and 10% maximum error (d) where the value is 0.1. Hence, the value of n calculated as:

$$n = \frac{(1.65)^2 \times 0.50 \times 0.50}{(0.1)^2} = \frac{0.6806}{0.01} \quad n = 68$$

A total number of 75 respondents (i.e., the local people whose livelihood depends on forest) were selected for the survey. However, at the end, present study considered about 68 respondents due to some exclusion criteria such as inadequate data, misleading information during the survey etc. Moreover, the study found approximately 15 forest officials including managers and staffs through purposive sampling using a checklist. The responses were cross-checked with local people and forest officials to ensure validity of information. This research did not consider socio-demographic information such as age,

income, gender, or religion when choosing participants. Instead, the selection process focused on the respondents' level of knowledge and maturity regarding forest resources and their governance issues.

Validation and assignment of weights to ratings: To assign ratings for each variable, respondents were tasked to assign weights to individual variables, components, and pillars using the same rating scale (i.e., 1 to 5). The study incorporated these weights to ensure that the indicators accurately reflected local conditions. The assigned weights for variables were determined based on perceived influences of variables on governance to forest resources in the study site, particularly under the components (e.g., forest related policies and laws, institutional framework etc.) using a five-point rating scale. The researchers' observations were also taken into account during the final weighting of the indicators. However, the final calculations for the indicators employed a methodology involving the weighted mean index and aggregate weighted index, analogous to the approach adopted by Gupta and Shaw in 2015. Equations 2, 3, and 4 outline the procedures for calculating the weighted scores of individual variables, components, and composite governance scores in the study. Initially, to compute the weighted scores for individual variables, this study applied Equation 2.

$$\text{Score}_{\text{Forest-related policies and laws}} = \frac{W_1V_1 + W_2V_2 + \ldots\ldots\ldots\ldots\ldots + WnVn}{W_1 + W_2 + \ldots\ldots\ldots\ldots\ldots\ldots\ldots + Wn} \quad (2)$$

Where,

Wn= the assigned weights for each variable

Vn= the scores of the variables

Subsequently, the study determined the weighted mean scores for each of the three pillars using Equation 3.

$$\text{Weighted Mean Score}_{\text{Policy, legal, institutional and regulatory framework}} = \frac{W_1c_{\text{Forest-related policies and laws}} + W_2c_{\text{Institutional framework}}}{W_1 + W_2} \quad (3)$$

Where,

Cn= the scores of components obtained from Equation 2

Wn= the assigned weights for each component

The composite governance scores for the study area were then calculated using Equation 4.

$$\text{Composite Governance Score} = \frac{W_1p_{\text{Policy, legal, institutional and regulatory framework}} + W_2p_{\text{Planning and decision-making processes}} + W_3p_{\text{Implementation, enforcement and compliance}}}{W_1 + W_2 + W_3} \quad (4)$$

Where,

Pn= the weighted mean scores of each of the three pillars

Wn= the assigned weights for each pillar

Besides gathering quantitative survey data, three Focus Group Discussions (FGDs) were conducted across the study site to qualitatively validate the ratings and weighting of the indicators. Each FGD consists of five (05) respondents including male and female. Additionally, five (05) Key Informants Interviews (KIIs) were conducted during the qualitative data collection phase. To depict the impact of variables on forest governance, the mean weightages were grouped into five categories: very less effective (0.00-1.00), less effective (1.01-2.00), moderate effective (2.01-3.00), high effective (3.01-4.00), and very high effective (4.01-5.00).

Results and Discussion

The study identified that the policies and laws related to forest governance is very clear, coherence as well as applicable and secured the highest scores (i.e., 4.27) among the components of forest governance (Table 2).

There are a number of forest related policies and laws adopted for forest governance in the country. For instance, no one is allowed to enter into the forest area without the permission of forest authority. Besides, building any settlement is prohibited inside the forest (The Forest Act 1927, Section 30; The Bangladesh Wildlife (Preservation) (Amendment) Act 1974, Section 23, Sub-section 3). In accordance with law, no one is allowed to hunt, kill or seize any kinds of wild animal inside national park and within the radius of 1 mile outside of its territory. Moreover, no one is allowed to kill native birds or migratory birds. Laws of forest do not allow anyone to cut down or remove or destroy trees or collect any parts of trees from the forest without the permission of forest authority. Moreover, no one has right to fell, tape, and burn, destroy or remove trees from the national park (The Forest Act 1927, Section 30 and Section 32; The Bangladesh Wildlife (Preservation) (Amendment) Act 1974, Section 23, Sub-section 3; Wild life Conservation and Safety Act 2012, Section 6, Sub-section 1). The study revealed that the authority of BNP knows all the mentioned policies and laws.

Institutional framework holds second highest score (i.e., 1.96) of forest governance of BNP in five points rating scale (Table 2). It involves different elements including organizational resources (i.e., human and technical resources) and financial mechanism (e.g., budget and finance), information, technology, public awareness and education etc. However, there is a lack of adequacy and stability of financial funds, logistics support as well as manpower. On an average per range office has more or less 41 manpower and all of them are male. About 50% of total manpower (i.e., 21 out of 41) are used for patrolling the forest resource of range area.

The study found at the time of filed survey that a range office uses only one car and six motor cycles for patrolling forest. Therefore, they do not patrol forest regularly as the shortage of forest officers and staffs and technical resources. Sometimes they are patrolling the forest and the forest resources on foot due to scarcity of vehicles. On an average, a range office has 3 short guns, and 17 Chinese Rifle use if necessary, during patrolling the forest. The field survey identified that there is a need of permanent boundary to protect the forest area. Forest authority only use pillar (Forest department pillar) to mark forest area. As a result, private land holders are grabbing the forest lands day by day. Further, appropriate tools and modern technology are seldom available. Consequently, the concern authority does not have adequate and timely information of the different issues of the forest such as, harvesting, conservation measures, illegal activities etc. On the other hand, nearby residents are not getting training on awareness and education regarding management of forest and conservation forest resources. Among the three pillars used to assess forest governance, the policy, legal, institutional and regulatory framework secured the maximum scores (i.e., 3.12) (Table 3).

Stakeholder participation influences less on the forest governance which secured a score of 1.41 in five points rating scale (Table 2). It is identified that at present no environmental organization is working actively with the authority of BNP for the betterment of the forest and its environment. On the other hand, civil society including local people is the active agent for the sustainable use of resources. However, the participation of public from civil society and indigenous community for the sake of forest management is not sufficient. Recently, Bhawal National Park management authorities are trying to increase public engagement in forest management through social forestry. Forest range officer organized weekly and monthly meeting for discussions with the people of social forestry program. It is also identified that people often have limited access in decision-making process for forest management and access to justice by the effective resolution of the existing conflict and grievance.

Table 2. Components-wise weighted governance scores in a five-points rating scale

Components	Scores
Forest-related policies and laws	4.27
Institutional framework	1.96
Stakeholder participation	1.41
Transparency and accountability	1.15
Forest law enforcement	1.33
Measures to address corruption	1.26

Source: The Authors 2023

Transparency and accountability component achieved the lowest score (i.e., around 1.15) among the all components of forest governance (Table 2). It is identified that there is not always a high enough level of transparency within the forest officials. However, forest authority suspends corrupted officers, cutoff their 2 or 3 increments and stop their salary as well. On the other hand, accountability of forest officials and staffs are not in a satisfactory level. For instance, the forest manager and his employees are not successful in informing the public about their conducts by giving various types of information about annual budget, revenue collection, expenditure of used resources, accounting etc. Moreover, forest officials seldom provide information of administrative policy, legal action etc. to the general people who live in and around the forest. However, accountability from the individual level to institutional level is effective within the different wings of forest authority. Forest officials submit monthly report and annual report to the higher authority of forest on the usage of resources. Besides, they must be accountable to concern authority for failing to meet performances. Consequently, the pillar (i.e., Planning and decision-making processes) has obtained low score (i.e., 1.28) on the forest governance (Table 3).

The study identified a weak enforcement of laws for the forest governance. The component obtained only 1.33 scores of forest governance in five points rating scale (Table 2). The typical land use of BNP is rapidly changed due to lack of appropriateness and consistency in the implementation of forest laws and regulations (Figure 2). There is an irregularity in the application of penalties for the violation of forest laws. However, the authority of BNP struggled to execute the forest laws regulations because of insufficiency of resources including budget, forest officials and staffs, tools and technology. Consequently, Bhawal National Park is occupied with permanent settlements, agricultural land and industries (Table 4, Figure 1 and Figure 2).

There are a number of human settlements and other infrastructures including grocery shops, auto repair garages and hair cutting salons are present inside the park area. Moreover, the settlements and man-made structures are also increasing day by day. Presently, about 20% forest area is covered by settlements and man-made structures (Table 4). Besides, it is found that several trees of forest have cut down by the grabbers. Therefore, number of Sal trees is decreasing constantly which is currently occupied by only 23% of the forest area (Table 4).

Different measures for the prevention of corruption are not adequate in the BNP which scored only 1.26 in five points rating scale. Officials of forest department struggled to manage the people who live inside the forests. Forest authority would like to take help from the courts and arbitrators. However, in most of the cases, courts and arbitrators do not work in a timely manner. For instance, last fiscal year 2019-20 Sreepur Range office filed 137 cases against the offenders. About 32,078 cases were pending in the courts until June 2015 (Sreepur Range Office 2020). Though 90 days are fixed for completing each case but completing a case need more than four years. There are some reasons for this delay such as, improper prosecution submissions, absence of plaintiffs and witnesses, non-submission of evidence, and weak arguments. It is also noticed that, effective follow up action on corruption, revenue collection, expenditure, budgeting and audit are not in optimum level. The study identified that the implementation, enforcement and compliance pillar secured score roughly 1.30 in five points rating scale (Table 3). The composite score is 1.90 in five points rating scale that indicates less effective governance of Bhawal

Table 3. Pillar-wise weighted governance scores for the study area in a five-points rating scale

Pillars	Scores
Policy, legal, institutional and regulatory frameworks	3.12
Planning and decision-making processes	1.28
Implementation, enforcement and compliance	1.30
Composite Governance Score	1.90

Source: The Authors 2023

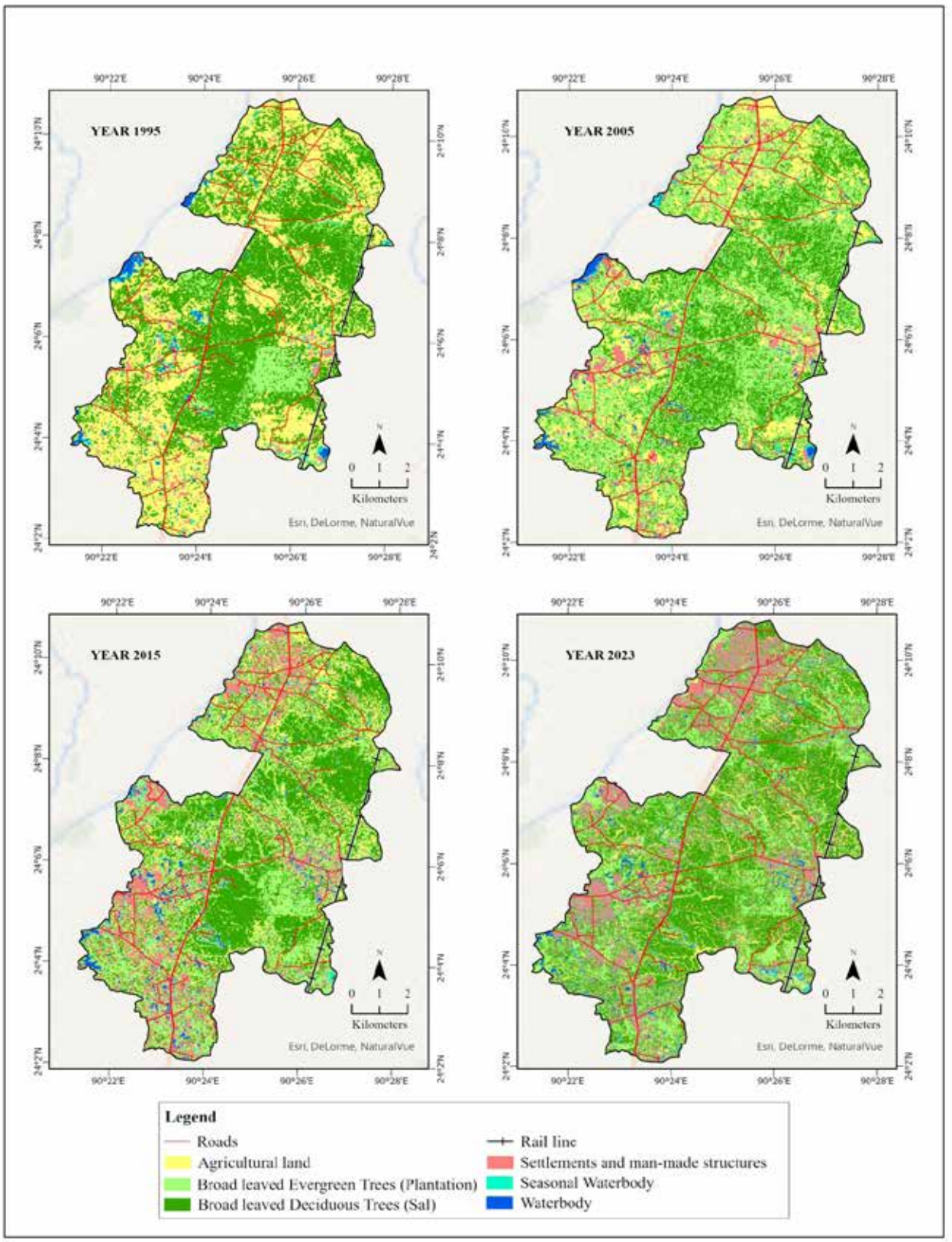


Figure 2. The trend of land use change inside the BNP (Source: The Authors 2023)

Table 4. The trend of land use change inside the BNP

Year	1995		2005		2015		2023	
Class	Area (ha)	Percent	Area (ha)	Percent	Area (ha)	Percent	Area (ha)	Percent
Agricultural land	4229.17	44.39	1910.18	20.05	1342.92	14.09	1078.61	11.32
Settlements and man-made structures	212.27	2.23	711.852	7.47	1618.89	16.99	1858.56	19.50
Broad leaved Deciduous Trees (Sal)	4193.9	44.02	2765.23	29.02	2798.52	29.36	2148.46	22.54
Broad leaved Evergreen Trees (Plantation)	560.62	5.88	3899.41	40.92	3349.16	35.14	3831.68	40.20
Seasonal Water body	219.61	2.30	116.25	1.22	154.41	1.62	374.44	3.93
Water body	112.08	1.18	125.77	1.32	267.17	2.80	239.78	2.52

Source: The Authors 2023

National Park (BNP).

Bhawal National Park is a protected forest area and hence, is strictly accessible area (The Forest Act 1927, Section 30 and Section 33, Sub-section 1A; The Bangladesh Wildlife Preservation (Amendment) Act 1974, Section 23, Sub-section 3). However, number of permanent settlements and industries are present inside the core area of the park avoiding laws of the forest. Considering the situation, the Ministry of Environment and Forest, Bangladesh had imposed a ban on the construction of any kinds of infrastructure (e.g., industries) at the Bhawal National Park under the environmental law of 1999. However, the gazette of notification was published after 7 years (i.e., 2006). As a result of delayed enforcement, local people had taken advantages. Thus, lands of the park grabbed by the local people and industries that are posing a great threat to the forest ecosystem. Therefore, about 66% forest areas were covered by vegetation in 1985, which is reduced to 45% in 2009 (Rahman *et al.* 2009). On the other hand, approximately 26.44% lands of the park are now under total encroachment (Masum *et al.* 2015) due to the lack of proper implementation of the forest laws.

In 2008, the government issued environmental clearance certificates for industries on privately owned lands within the park (Masum *et al.* 2015). Therefore, more or less 354 industries have been legalized and the clearance certificates have opened the door of the park for future industrial setup on privately owned lands inside the park. Consequently, 255.3 ha of forest land have already grabbed and 0.72 ha/industry are grabbed every year (Masum *et al.* 2015). Besides, in 2009, government withdrew the gazette notification of banning industrialization in and around the BNP (Roy 2010 cited in Masum *et al.* 2015). Hence, industrialists and puissant people started building industries in the park on a regular basis. On the other hand, private land within the park is causing a great threat to the ecosystem of the forest.

Coordination among local people and forest officials is essential for the development and management of forest resources of BNP. Moreover, increasing participation and satisfaction of participants are both relevant in forest resource governance (Thompson *et al.* 2005). Accountability and transparency are some of the important values for the individuals and these are obvious to ensure forest governance. Local people expect from officers to govern the forest resources properly and contributing to suitable environment. According to Nath and Inoue (2008) forest governance of Bangladesh has been obstructed by low level of accountability and transparency in decision-making and access to information. Similarly, Bhawal National Park governance needs to increase accountability and transparency.

It is important to have enough institutional arrangement and resources including physical, financial and human resources for the governance of forest resources. However, the Forest Department of Bangladesh lacks enough physical, financial and human resources to give full safeguard to the forests (Mitchel *et al.* 2004, BFD and IUCN 2023). Very often forest resource users (e.g., local

people and forest authority) are involved with conflict. There are various reasons including rejections of cultural values and attachment to tradition (Thondhalana *et al*. 2016), policy intervention (Agrawal and Redford 2007), inadequate livelihood support for resource users, partiality in benefit sharing and top-down nature of participatory forest programs are responsible for forest dispute (Nath and Inoue 2010; Islam and Sato 2013). Forest court adjudicates legal disputes between forest authority and offender including forest land grabber, thief of the forest trees etc. (Hasan and Bahauddin 2014). However, conflicts among local people and forest officials can be solved by the community management approach.

Conclusions

The present study identified that forest related policies and laws such as the forest act (1927), the Bangladesh wildlife preservation (amendment) act (1974), wildlife conservation and safety act (2012) are very clear, coherence and applicable. However, the process of implementation was found as weak due to lack of sufficient and skill manpower in the BNP and insufficient financial support from the forest authority. Besides, inappropriate demarcation of the forest boundaries has made the situation worse, resulting less effective influence of forest governance for BNP. The situation might be largely responsible for the encroachment of one-third area of the park. Moreover, the access of general people to information, decision making and justice needs to be widen. Additionally, conflict between forest user arise because of in inequitable benefit sharing by the actors, imposing new practices or development activities, introducing new rules and regulations that restrict the subsistence activities of the inhabitants. However, to safeguard the BNP with proper governance, forest authority needs to implement the existing forest policies and laws very strongly. The authority should provide sufficient and skill manpower and sufficient financial support to every beat office of the BNP. Moreover, to save the forest from the land grabbers it is urgent to make permanent boundary on the border of the area.

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