

Governance matters: climate change, corruption, and livelihoods in Bangladesh

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Abstract In world climate science, Bangladesh is considered a poster child of vulnerability. The primary stressors that affect the vulnerability of the Bangladeshi population include sea-level rise, biodiversity degradation, saltwater intrusion, desertification, social exclusion, unstable political conditions, and weak governance systems. Governance is an important non-climatic stressor that has not received sufficient attention. Within this framework, this paper explores the impacts of bribery and extortion on livelihoods and adaptive capacity in the face of climate change and argues that corruption significantly reduces the ability to respond to climatic stressors. Findings draw attention to this critical issue in climate change adaptation and international development in general, particularly for developing countries.

1 Introduction

Most reports on climate change portray Bangladesh as one of the countries that is most vulnerable to the adverse impacts of global climate change (see Reid 2007; World Bank 2010, 2014; IPCC 2014; Maplecroft 2015). The country is known as “Ground Zero” for climate change and “Nature’s laboratory for disasters” (Inman 2009). It seems Bangladesh is ready to be paired with climate change in word association games due to its high vulnerability to the adverse impacts of climate change. But the causes of vulnerability are not limited to climatic factors as often is portrayed in climate change literature. Crate and Nuttall (2016) identified high levels of resource concentration, pervasive social inequity, lack of political voice and representation, social exclusion of women from public life, and embedded corruption, among others as factors of high vulnerability to the adverse impacts of climate change in Bangladesh. Hossain (2017)

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portrayed Bangladesh as an emerging leader and an example of a successful country that was able to erase its “basket case” label and moved to the development ladder with creativity and resilience. Hossain also mentioned bad governance as a challenge for Bangladesh but with little empirical evidence and its connection with climate change. Corruption is overlooked in terms of climatic change and understanding the role of corruption in the face of climate change and livelihood is not supported by adequate numbers of empirical studies (Sundstrom 2015). With empirical evidence, this study aims to trace the impact of corruption particularly bribery and extortion on livelihoods and how it reduces adaptive capacity to climate change. This study clearly helps to address a blind spot in climate change literature; how corruption undermines adaptive capacity. Using empirical data, I claim that a form of governance characterized by bribery and extortion reduces the ability of the population to adjust to the stress of climate change.

Focusing on success building resilience against climate change, Roy et al. (2016) identified poor governance, unplanned megacities, and corruption as ongoing challenges for Bangladesh. Corruption is difficult to combat without changing the social structure because corruption is embedded in the deep of the existing sociocultural system. As such, roots of the problem can be traced to the politics of confrontation, criminalization of politics, the role of money and muscle power in politics, and the rent-seeking collusion among the political parties, state machinery, and vested commercial interests. Sobhan (2004) termed this governance situation as malgovernance. Corruption has become a major challenge for Bangladesh, and the country was ranked 145th among 176 countries in the 2016 corruption perception index (Transparency International 2016).

Many global actors held rural marginalized forest-dependent population responsible for illegal logging, deforestation, and biodiversity loss that contribute significantly to climate change (Colfer 2011 p. 2147). But this study makes a very different claim and argues that Sundarban forest-dependent populations are double victims of climate change and corruption. This finding contributes to forest-related livelihoods and climate change discourse. This study has shown that malgovernance reduces the ability to adapt to changes, recover from climatic stressors and shocks, sustainable livelihoods, and resilient disaster recovery (Chambers 1987 p. 15, Joakim 2013; Parizeau 2015). People of this coastal region of Bangladesh are already struggling to adapt to the threats posed by climate change, and corruption adds an extra pressure on their livelihood as they lose a significant amount of their income. In addition to general reasons, to combat corruption (see Becker and Stigler 1974; Polinsky and Shavell 2000), this study suggests that there is an urgent need to guard the guards of the forest, who act as “sleeping police” (Keane et al. 2008) to enhance livelihood resilience (Tanner et al. 2015) of the local marginalized population instead of undermining it.

This study further calls for serious consideration of the relationship between corruption and livelihood in the face of climate change. Bribery and extortion constrain forest dependent’s access to income, food, and work that are essential elements of their livelihoods (Chambers and Conway 1992). Findings intend to address the lack of attention to power and politics and formal and informal institution and the failure to link rural livelihoods and governance debates in development and climate change adaptation (Scoones 2009 p. 182, Agrawal and Perrin 2009; Engle and Lemos 2010). It also sheds lights on how weak governance creates space for local and trans-local powerful actors, where they can represent their interests (Yates 2012 p. 545).

2 Corruption: definition, dimensions, ambiguities, and research methods

Research on corruption is very challenging because of its multidimensionality and ambiguity. Corruption can be rooted in the structure of governance and manifested as a result of broader systemic failure. Moreover, since the victim of corruption lives within the structure and under constant pressure on keeping it secret, it is challenging to gather data on corrupt practices. Because of this hidden nature, it requires a good rapport between the researcher and respondents. So, I conducted a 9-month fieldwork in coastal Bangladesh with people who depend on Sundarbans for making their living. Administratively, my fieldwork site is located under the sub-district of Syamnagar in Khulna Division in southwest Bangladesh (for details on methods, see appendix 1) (Fig. 1)

Corruption is widely conceptualized as the abuse of public office for private gain (Bardhan 1997; World Bank 1999; Treisman 2000; Transparency International 2009; Philp 2013). This definition does not include informal institutions and anyone with “entrusted power” that plays an important role in governance particularly natural and common pool resource management. For instance, a social elite may enjoy and exercise entrusted power but his/her activities fall short of the definition. So, Transparency International (TI) revised its definition as “abuse of entrusted power for private benefit.” TI considers eight forms of corruption: bribery, extortion, wage/asset stripping, fraud, favoritism and negligence in the provisioning of services, influence peddling, and procurement irregularities. This study deals with the two most practiced forms of corruption: bribery and extortion.

Bribery is the most common form of corrupt practices. For the purpose of this study, bribery is defined as an act of paying for service that includes offering, promising, giving, accepting, or soliciting of an advantage which is illegal, unethical, or a breach of trust. (Transparency International 2009 p. 7; Georgieva 2017). This study considers both cash and kind given to public servant by forest users in order to extract resources from Sundarban. Sundarban-

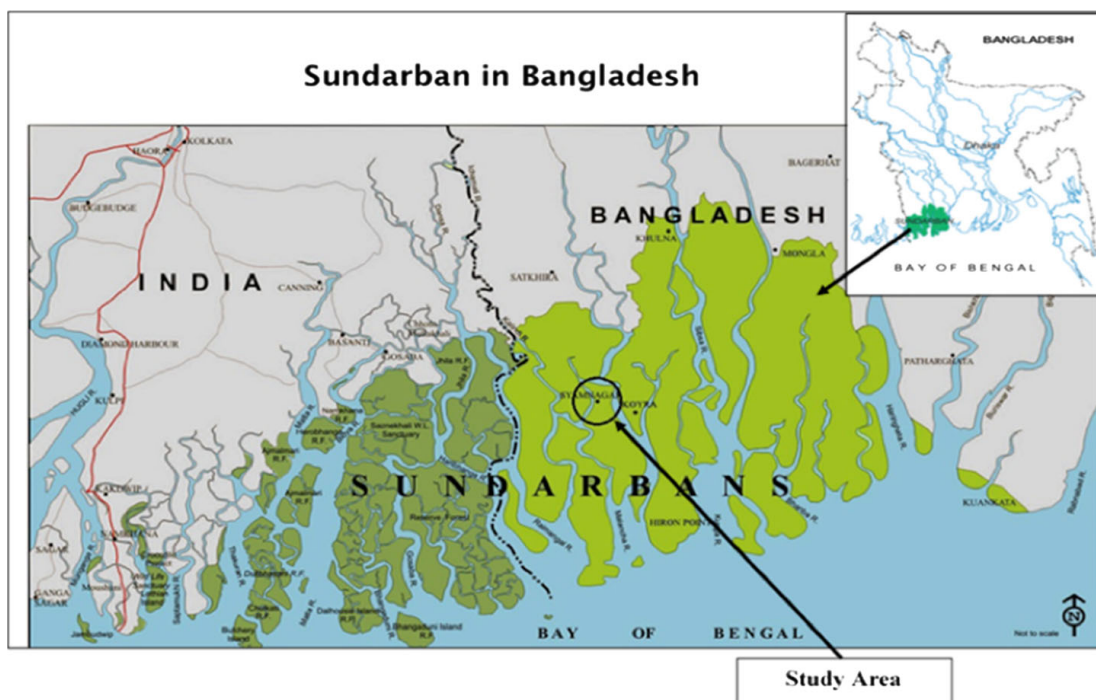


Fig. 1 Study area

dependent populations informally pay to forest officials and forest guards to get into the forest. They also sometimes share their catches to meet the demands of public servants.

I also use the TI's definition for extortion, an "act of utilizing, either directly or indirectly, one's access to a position of power or knowledge to demand unmerited cooperation or compensation as a result of coercive threats" (ibid 19). Needless to say, extortion is a "form of corruption uses the threat of violence or exposure of information to assure the cooperation of one or more individuals" (Georgieva 2017). This study, by extortion, refers the payment given to forest gangs both in cash and kind in the face of violence and threat of violence. Forest gangs share their earnings with political elites. Here, political elites abuse their entrusted power via forest gangs that shifts public wealth to private property.

3 Corruption in Bangladesh: context and extent

Bangladesh's current endemic corruption situation is deeply rooted in its recent history and the political process it has gone through. Bangladesh gained its independence in 1971 from Pakistan through 9 months of long, bloody war. Since then, civil government, military government, and the military-backed civil government have ruled the country. Most of the political regimes were characterized by violence, instability, and lack of trust among the major political parties. Conflicting situation and lack of trust among the political parties have given ways to the military governments and military-backed civil government, who ignored peoples' participation and transparency (Sobhan 2007). Since governments not directly elected by the peoples of Bangladesh ruled most of the regimes, those governments did not feel accountable to their citizens. Moreover, main political parties who ruled the country for the last four decades lack democracy and transparency internally. A patron-client relation based on personal loyalty and rent-seeking behavior dominates the recruitment of leadership process. Main political parties tend to favor people who have money and muscle power to win elections. As a result, corruption got rooted in Bangladeshi society through political parties and government both formally and informally. Moreover, the evolution of social order in Bangladesh may provide us a background to understand the development of corrupt practices. Bangladesh has gone through five major phases: partition and birth of Pakistan in 1947, military authoritarianism that leads to war and creation of Bangladesh in 1971, a failed populist authoritarianism (1971–1975) resulted in greater fragility and military coup, authoritarian clientelism (1975–1990), and competitive clientelism (1990–present) marked by electoral crises and violence (Khan 2013). The social orders that Bangladesh has gone through and currently passing through can be termed as limited access orders (LAO) and one of the salient features of LAO is that political elites divide up the control of a country's economy and each gets some share of the rents (North et al. 2007). Corruption prevails almost all sectors and levels that hamper poverty alleviation and growth in Bangladesh. For example, Bangladesh is one of the countries with low per capita GDP. In 2014, its GDP growth rate was 6.6%.¹ The World Bank (2000) estimated if Bangladesh could reduce corruption to the level prevailing in Scandinavian countries, it could add 2.1 to 2.9% to its annual per capita GDP growth.

According to the Global Corruption Barometer survey on this region in 2013 conducted by Transparency International, Bangladesh (TIB), 98% respondents identified political parties and the police department as the most corrupt institutions, followed by

¹ <http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG> accessed on October 8, 2016 at 4.47 PM EST.

judiciary, parliament, and government administration with 89, 88, and 84% corruption, respectively. Sixty percent of respondents of this survey think that corruption increased in 2013 compares to the previous 2 years (TIB 2013 p. 17). In another survey, Transparency International Bangladesh (2010) found that 72% of households were forced to pay bribes averaging US\$69 for receiving different public services from June 2009 to May 2010, which sums to a total of US\$1.4 billion for the country as a whole. Low-income households are identified as the worst victims of this corrupt practice. For instance, in 2007 low-income households lost 4.1%, middle-income households 3.6%, and high-income households 2.4% of their annual income on an average to corrupt practices (Iftekhazzaman 2005). Measured in terms of financial loss, the Forest and Environment Department of Bangladesh is one of the most corrupt sectors, where 90% government officers are involved with corruption (TIB 2006). The sector this study addresses fall under the department of forest and environment.

Bribery and extortion are the two commonest forms of corruption which take place in citizens' interactions with the state services in Bangladesh (Wickberg 2012). This paper deals with these two commonest forms of corruption: bribery and extortion.

4 Climate change and livelihoods in southwest coastal Bangladesh

In Bangladesh, the magnitude of climate change impacts, especially for coastal populations, is devastating. The coastal region covers 32% of Bangladesh where 35 million people live. A study conducted by the Soil Resource Development Institute, Bangladesh, indicates that the salinity-affected area has increased from 8330 km² in 1973 to 10,560 km² in 2009 (Soil Resource Development Institute 2010). Furthermore, salinity intrusion from cyclones and storm surges has been a cause of major damage to rice crops and drinking water supply systems in many villages of the southwest coastal districts of Bangladesh. The Bangladesh Center for Advanced Study (BCAS) found that 81% of households already experienced high levels of salinity in rice paddies compared to 2% of households a decade ago. As a result, about 80% of the households faced a severe food crisis ten times or more during the last 10 years (Rabbani et al. 2013 p. 6). Besides agriculture, fishing livelihoods are threatened due to salinity changes in freshwater breeding grounds, and the fragile Sundarbans mangrove forests with their unique biodiversity are in danger of disappearing altogether (Ahmed et al. 1999; Ali 1999). Traditional paddy farmers adapted to this stress by cultivating saline-tolerant rice varieties until two catastrophic cyclones hit Bangladesh: Cyclone Sidr in 2007 and Cyclone Ayla in 2009. Cyclone Sidr killed 3000 people, affected 5 million families, and destroyed crops covering about 700,000 hectares. The Bangladesh government estimated the damage at \$1.6 billion (DMB 2010). Due to saltwater intrusion, traditional paddy farmers are forced to abandon their age-old livelihood and rent their land to local elites and absentee shrimp farmers.

There are four main livelihoods that exploit Sundarbans resources: (1) woodcutters (Bawali); (2) honey collectors (Mouali); (3) palm leaf collectors (Golpata collectors), and (4) fishermen (Jele).

Woodcutters of Sundarban are engaged in various livelihood activities but their main livelihood sources are cutting, gathering, and selling firewood to the local market. Though woodcutting is legally prohibited, they do it regularly by managing forest

guards. Sometimes, woodcutters go to the forest by using permit for fishing or collecting palm leaves but cut trees and bring it out of the forest by escaping forest guards' eyes. Since local population mainly depends on Sundarban for their firewood, the demand for firewood is on the rise in the local market. All the woodcutter respondents of this study heavily depend on selling firewood for making their living. Most of the woodcutters are too poor to do forest neutral livelihoods, for example, small business.

Honey collection is one of the oldest occupations in this region of Bangladesh. This is the livelihood activity that cannot be performed individually. Forest-dependent people do make a small group of five–ten people and get into the forest for 2 weeks to collect honey. Forest department sell permits for honey collection only for 3 months in a year, from March to May. Honey collection is one of the most profitable livelihood activities in Sundarban. Honey collectors are also the most vulnerable to tiger attacks, as honey collection requires access to the deep forest where Bengal tigers live. Due to their access to the deep forest, they also face forest gangs and forced to pay extortion.

Nipa palm leaves are the material local people use for roofing. Palm leaf collectors sell their harvest in the local market as well as export to nearby districts. They are one of the most marginalized groups in Sundarban because they mainly depend on the natural resources to make their living. They also sometimes collect firewood hiding under the palm leaves from Sundarban. Though they are involved in other livelihood activities, they heavily depend on palm leaf collection to make their living.

Fishing is the most common and everyday livelihood activity in Sundarban. This activity occurs in the rivers and creeks of the forest all over the year. Forest department sells permits regularly to the local population for fishing and there is no restriction on what kind of fishes can be caught. Fishermen collect shrimp fries or baby fish and catch both adult and baby crab and other kinds of fishes. Though there are some restrictions on how much fishes can be caught in a certain period, it is not enforced strictly by the forest department. Rural marginalized women have access to adjacent rivers without a permit from forest departments. They do collect shrimp fry during the high tide of the day. This access is informal because by law, everyone requires paying revenue to the forest department to get access to the resources of Sundarban.

Non-forest livelihoods include small business, shrimp farming, day laborer, and skilled and unskilled laborers who also indirectly depend on the forest. Climatic stressors such as saltwater intrusion not only force local populations to abandon farming and turn to the Sundarban for their survival but also contribute to social unrest. Most of the shrimp cultivators are absentee farmers who are equipped with money and strongly connected with local political elites and administration. This process results in conflict between the local people and the hoodlums who work for elites, known as the *mastaan*.²

5 Bribery, extortion, and livelihoods

Bribery and extortion are the two most common forms of corruption in Bangladesh as well as in this coastal region of Bangladesh. Populations of this region are also hardest hit by global warming induced climate change.

² *Mastaan* is a Bengali word that refers to the rule of thugs backed by political elites. For details, please see Rahman (2015).

5.1 Bribery payments

Empirical data analysis shows that 77 respondents out of a total of 108 interviewed (71.3%) pay bribes. People who depend directly on the mangrove forest for making their living are the worst victims of these corrupt practices. These are honey collectors, wood gatherers, fishermen, and palm leaf collectors. On average, every respondent pays \$60 but forest-dependent people pay more than double this amount, at \$125 per annum.

It should be noted that this is one of the most impoverished regions in Bangladesh and a vast majority of the coastal inhabitants live on less than a dollar a day. A Bangladesh poverty map produced jointly by the Bangladesh Bureau of Statistics, World Food Program, and World Bank shows this sub-district where one third of the population lives under the extreme poverty line (World Bank 2010 p. 7). The extreme poverty line applies to households whose expenditures are equal to the food poverty line using the cost of basic needs. Since most of the forest-dependent people do not know how to read and write, some of them are not even aware of this corrupt practice. A majority of forest users buy the permit through middlemen who are familiar and connected to the government forest officials. Those who recognize the process as bribery resign themselves fatalistically to the fact that bribery is a “cost of doing business” in the Sundarbans.

Most of the 28% who did not pay bribes do not depend directly on Sundarbans for their livelihood. They are skilled laborers, household domestic workers, and small businessmen. Their interaction with the government civil servants is very minimal, although some small businessmen pay bribes to government civil servants to use electricity illegally. For instance, a small restaurant owner uses electricity in his restaurant paying the lower domestic rate. Instead of paying a higher price for using electricity in his business, he pays off the meter reader.

The forest department sells the permit for a defined period to extract a fixed amount of resources from the Sundarbans. But those who pay bribes stay longer inside the forest; as a result, they extract more resources than they are supposed to harvest. For example, the official forest permit allows someone to harvest for a week but paying bribes they harvest for 8 to 10 days. The most profitable season is the honey collection season when Mouali or honey collectors harvest and sell the honey to local buyers who then export it mostly to European markets. The best and most highly sought honey is locally known as Khailsha, which appears at the beginning of the season. During the high-activity period, the forest officers demand higher bribes. People who have the ability to negotiate and pay higher amounts get the permission to collect honey during this peak time of the year. Sometimes, forest guards allow honey gatherers to get into the forest before the official harvesting season begins. In this case, the government loses revenue that is captured by corrupt forest officials. On the other hand, this practice deprives marginalized poor forest users of their rights to this common pool resource. Another form of corruption is buying stolen forest resource informally from the forest officials. Sometimes, if someone extracts prohibited woods, forest officers seize the resource and sell it at auction. People who are connected to the forest department as well as local administration and political elites take advantage of this and buy the resource cheaper than the market price from the public servants. This practice may contribute to increase deforestation as well as government revenue loss (Zaman and Khuda 2011).

Forest-dependent people without the capital to purchase boats or other necessary equipment for harvesting work as day laborers for others who have the means of production and connections with the local elites and forest officials. In the formal process, owners of means of productions are invisible but bulk of the harvest goes to these elites. For instance, honey

collectors purchase forest pass and harvest honey but most of them work for the elites who provide the capital. These day laborers are the worst victims of corruption, and they constitute one third of the total number of bribe payers. Within this group, more than 63% pay bribes. One of the reasons for their vulnerability to bribery is their marginal position in the community reduces their ability to negotiate with the public servants who collect forest revenues. Moreover, they are under pressure from their employer to harvest more resources in an assigned timeframe. For about a third of this group, the employer paid the bribes in 2012–2013, which is usually the case when the employer takes a group of day laborers into the forest. Some non-forest-dependent occupations reported paying no bribes, while rickshaw van drivers are systematically compelled to pay bribes to local policemen. In the case of van drivers, they pay a monthly part of their subsistence income to an association that pays off on behalf of all van drivers.

Women, who work as household domestic workers, also work for government-financed projects “Food For Work”³ during the dry season when the unemployment rate goes high. To get this work, 75% of them pay a part of their earnings to the local project directors or the staff workers who control the project. Those who do not pay bribes in monetary terms pay in other ways to get work. An old lady who did not get work for the last 2 years in “Food for work” projects said with anger and frustration,

“Why would they provide me work? What do I have in my possession to satisfy them? I have neither money nor Shorir (body). I have nothing. They demand not only work but also Rong tamasha.”

By body, she means her young age and beauty. She uses Rong Tamasha, a Bengali term, which means recreation involving physical contact, inferring sexual activity. When she utters this word, her neighbor, a young lady covers her face as she feels shame and embarrassment, because she became so angry and frustrated that she reacted to using language normally taboo in everyday conversation in rural Bangladesh.

5.2 Extortion payments

In bribery, a government official is always involved. But in extortion, no public officials are involved (Olken and Barron 2007); rather, an informal controller of the forest is the receiver of the benefit. In this case, forest gang members not only bar them from getting access to the forest but also threaten the forest users with physical harm or even death. 56.5% of respondents are the victims of extortion and all most all of them are forest-dependent.

This study suggests that every wood gatherer who gets into the Sundarban pays extortion to forest thugs or robbers. Fifty percent of honey collectors pay extortion. The percentage is comparatively low because there are local and national NGOs who provide capital, boat, and all other necessary equipment to collect honey. By the leadership of NGO staffs, they provide training and negotiate to forest robbers not to pay extortion. NGO supported boats carrying the respective organization’s flag recognizable by forest robbers so that they do not collect extortion and do not kidnap the honey collectors. Since NGOs are well connected with the local and national administration and law-enforcing agencies, robbers do not want to clash

³ Food for Work is a government-sponsored project in order to generate supplementary wage employment. The program started after the 1974 famine to support rural poor people. Government builds and maintain rural infrastructure through this project.

with them. For instance, a national NGO owns half of a dozen boats and teams who collect honey for them and sell their collected honey to the local branch of the NGO. All the boats belonging to this NGO carry their special flags visible by forest gangs and it gives them safety against forest gangs. Robbers are scared of them because a high-ranked police officer's wife works for the NGO in their head office in the capital city, Dhaka. If robbers try to collect extortion from the boats of this NGO, they know they will be in trouble with law-enforcing agencies. So, forest robbers always maintain a safe distance from the honey collectors of that NGO. 94.4% of fishermen pay extortion to forest gangs regardless of the amount they earn.

On top of paying extortion in monetary terms, sometimes, they are forced to share their catch with the forest gangs. Furthermore, fishermen are forced to cook for gang members. If anyone refuses to pay extortion, dacoits kidnap them and keep as hostage until his relatives pay on behalf of him. During the hostage, robbers physically torture their captives and do not give food and water for a long time.

Forest gangs, who collect extortion use, force to gain control over the Sundarban mangrove forest and their criminal activities are insured by local political elites who further connect to national politics and political leaders, who enjoy "entrusted power."

This uneven power relation between forest users and gangs and their patrons limits local populations' access to natural resources of the forest. As a result of this limited access, forest users' livelihood activities are constrained but livelihood is a vital part of adaptive capacity. Limitation of access to livelihood sources increases vulnerability to climate change (Cannon 2015) by decreasing income. This uneven power relation is embedded in the governance structure and leads to different allocations of risk to climate change impacts because local populations are forced to act against their will that reduces their options to adapt to environmental stressors (IFRC 2014).

5.3 Loans

Local people borrow money both from formal and informal sources. They borrow money during economic hardship to meet different needs, for instance, agricultural investment, to start a small business, to cover the loss created by climatic disasters and governance issues particularly for paying extortion.

The analysis suggests that most of the respondents borrow money to pay to the forest gangs for freeing their family members made hostage inside the deep forest. In this case, they need to borrow a big amount of money within a day or two on a very high interest to protect the hostages from torture and even life threat. Data shows that only 1.1% of respondents borrowed money to cover the loss from climatic disasters in 2012–2013 but 32.2% borrowed money due to governance reason, more specifically for paying extortion.

If bribery and extortion are considered jointly, 89 respondents out of 108 pay either bribe or extortion that is 82.4%. Only 17.6% pay neither bribe nor extortion and most of them do not depend on the forest for their livelihoods and some of them are connected to local NGOs who further connected to high-ranking law-enforcing agencies.

5.4 Perception of bribery

The analysis suggests that bribery is seen negatively by most of the informants in general, but respondents who had formal education and are comparatively richer than most of the forest-dependents tend to sympathize with forest guards due to their low salary, long duty hour, and

poor infrastructure facilities in the workstation. But no one shows sympathy toward officials who work in the office but receive bribery. This finding echoes the findings of Hunt and Laszlo (2012) in Peru and Uganda. They also found some clients who are sympathetic to corrupted officials. But the difference is no respondent of this study is sympathetic to officials who work in the office room but receive a bribe. Sympathy goes to low-salaried forest guards who work inside the forest in a difficult and life-threatening condition. Foresters use government institutional arrangements to enforce corrupt practices for their private gain and allow resource users for longer duration that increases the likelihood of overharvesting (Sundstrom 2015). Overharvesting further contribute to deforestation and biodiversity degradation of this mangrove forest, a heaven for a spectacular array of species, including the highly-endangered Bengal tiger.

6 Corruption and climate change vulnerability

Drivers of adaptive capacity to these forest-dependent populations are regular and adequate income provided by rich flora and fauna of the Sundarban. But bribery and extortion practices force them to over-extract the resources that contribute to biodiversity degradation that further shrinks their livelihood sources and contribute to increased vulnerability. Findings suggest that bribery and extortion do not contribute to decreasing the number of forest users hence resource extraction because they do not have dependable forest neutral livelihood sources. For instance, Sundarban is the habitat of Bengal tigers, an endangered cat species in the world. The higher number of tigers indicates the richness of biodiversity. Because of fear of tigers' attack, forest users limit their resource extraction. This is one of the reasons Bengal tiger is known as the guardian of Sundarban. A recent survey discovered that only 100 Bengal tigers roam in the Bangladesh part of Sundarban. This number represents a sudden drop from the 440 figures included in the last tiger census conducted in 2004.⁴

In the face of climatic disaster, local populations need cash money to respond to the sudden emergencies but bribery and extortion reduce their capacity to respond to emergency situations because forest users' saving capacity is seriously undermined by payment of bribery and extortion. Since forest users pay a significant portion of their income to these corrupt practices, it pushes them to cross the threshold. As a result, they fall down in relation to their capacity to adjust to the climatic stressors. For instance, 56% respondents of this study are forced to pay bribes, which means 56% populations lost a significant amount of their income to corrupt practices that could be used to respond to the climatic stressors. Not only these; every forest user pays \$125 per annum as bribes that could be used to gain access to health care, education, food, and shelter that could further increase their adaptive capacity to the adverse effects of climatic change. For example, saltwater intrusion damages fertility of their arable lands and increases local populations' dependency on the mangrove forest. But extortion takes a huge toll on their income that is earned by extracting natural resources, which means extortion adds an extra layer to the existing vulnerability factors by reducing their income. Even local populations are forced to borrow money on high-interest rate to pay extortion that reduces their "livelihood resilience" (Tanner et al. 2015) significantly.

⁴ <http://time.com/3972820/bangladesh-tiger-100-sundarbans-survey/> accessed on July 28, 2015–07-28 at 3.48 am.

In short, bribery and extortion, two dominant forms of corruption in southwest coastal Bangladesh, increases coastal population's vulnerability significantly.

Findings suggest that by taking tolls on livelihood system, corruption undermines local populations' adaptive capacity to the adverse impacts of climate change by adding an extra layer to the existing vulnerability drivers of climate change. Not only this, corruption also contributes to biodiversity degradation of the mangrove forest including illegal logging. As a result, the forest is losing its capability to sink carbon that further hampers the mitigation process. Corruption works as a double-edged sword that reduces the adaptive capacity of the local population as well as negatively affects the mitigation process. On the contrary, data analysis does not suggest any framework that provides elements of stability and protection or "grease the wheel" in the face of climate change.

Sundarban works as a bio-shield against cyclones and storm surges for southwest Bangladeshi coastal population. Sundarban contributed to minimizing the impact of climatic disaster by acting as a natural shield particularly in 2007 and 2009 against Cyclones Sidr and Ayla. Undermining this capacity, corruption poses a serious threat to building climate resilience.

Like many other countries in the world, Bangladesh follows revenue-oriented rather than conservation-oriented forest policy. This policy shapes forest management staffs, political elites, and their clients' mind toward the same policy; the forest is the source of making money. As a result, foresters become motivated to use this common pool resource for private gain. They are also under constant pressure to collect the targeted revenue. The end result of these activities is forest degradation that increases people's vulnerability to climate change by reducing ecosystem services necessary to support livelihood and respond to climate change-induced disasters.

Extortion is highly practiced by the gangs, who informally control the forest. This informal institution linked to mastaanocracy, the rule of thugs patronized by the political elites. These political elites abuse the entrusted power given by the local population for their personal gain. The research findings underline the importance of curbing corruption by addressing the structural root of corruption to increase local people's adaptive capacity to climate change-induced problems.

7 Conclusion

This study indicates that corruption plays a significant role to increase vulnerability to the adverse impacts of climate change. But the problem is not created by itself; rather, corruption is rooted in the broader governance system that developed through the malgovernance of the last four decades in Bangladesh. As I mentioned above, the military, military-backed civil governments, and government with little support by its citizens dominated the last four decades of the country's rule. As a result, corrupt practices become salient features of the governance system that is unable to help people to respond to stressors like climate change. Social forces of poor governance combining with the natural sources of climate stress increase the vulnerability of the coastal populations. Moreover, this kind of governance system cannot be replaced overnight by a new adaptive governance system. To address this structural problem to better equip for responding to climate change impacts, we need to consider long-term development solution. We may consider structural transformations of society that can help us to ensure sound-adaptive governance.

It may take a long time to address the structural roots of corruption but the example of well-connected NGO model, discussed above, can be considered to protect local people from these corrupt practices. NGOs can organize forest users into small groups and provide necessary financial and administrative support to avoid the “extra tax” that they are paying currently. NGO support has to be intended for enhancing local vulnerable populations’ well-being to minimize the informal toll that they are currently paying. This measure may help local marginalized forest users to enhance their livelihood resilience by decreasing vulnerability in the face of climate change.

Findings of this study draw our attention to a less visible, sometimes invisible, vulnerability factor, which matters a lot to the respective community. We may spend a lot to increase adaptive capacity to climatic change but may not achieve our goal if we do not pay adequate attention to governance issue, which is so critical to increase adaptive capacity.

This study covers two main forms of corruption: bribery and extortion. This study recommends further research on the impact of other forms of corruption: negligence to provide services, influence peddling, and procurement irregularities and their role regarding livelihood under the stress of climate change. Further researches on the other forms of corruption and their roles in response to climate change may help us to get a complete picture of corruption and its impact on livelihood in the face of climate change.

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