

*Role of Institutions in Natural Resource Management
(NRM): The Nexus Between Natural Resources and
Conflict*

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Background:

Natural resources are most important for a country. There are many states which are straightly dependent on natural resources. Bangladesh is a developing country and the area is small. We have also some natural resources some are renewable and some are non-renewable.

Natural resources are classified into two types 1. Renewable and 2. Non-renewable. Renewable Natural Resources are Energy, Water, Fish, Forest, etc. And Non-renewable Natural Resources are Gas & Oil, Coal, Rock, Sand, etc.

Water is the renewable natural resource of Bangladesh. Bangladesh is gifted with plenty of surface and groundwater resources. The surface water resources comprise water available from rivers and static water bodies as ponds, bells, and haors. Mineral Resources reserves plus all other deposits that may eventually become available either known deposits that are not economically or technologically recoverable at present or unknown deposits that may be inferred to exist but have not yet been discovered. The assignment discusses the major natural resource management issues concerning land, forests, and water in Bangladesh. It shows how government policies and programs in one sector may affect other sectors. A lack of land use and forest policies can be responsible for the degradation of agricultural land and

deforestation. Also, this assignment argues that better management of natural resources can only be achieved by an integrated approach covering all the sectors of development.

In Bangladesh, not only those are natural resources but also some other elements are known as natural resources but those are the most common and significant natural resources.

1. Natural Resources:

Natural resources are useful raw materials that we get from the Earth. They occur naturally, which means that humans cannot make natural resources. Instead, we use and modify natural resources in ways that are beneficial to us. The materials used in human-made objects are natural resources. According to the ecological approach, natural resources can be defined as all those things that have not been created by humans with which people come into contact and that can be used to perform any useful function. The natural resource is those things that are not created by the human but can be used for useful functioning when it contacts with human (Camp and Heath-Camp, 2015). There are several ways to classify natural resources, including where they come from and if they are renewable or not. If natural resources come from living things or organic materials, then they are considered biotic resources (For example plants, animals, and fossil fuels). On the other hand, abiotic resources originate from nonliving and inorganic materials (For example air, sunlight, water, and Minerals).

1.1 Natural Resource Management (NRM):

Natural resource management is the management of all activities that use, develop and/or conserve our air, water, land, plants, animals, and microorganisms, and the systems they form. Natural resources are shared by all users, it is non-exclusive, depletable and if one person's misuse then it will affect all the resource users. This is why understanding the characteristics of natural resources is important to understand what is the role of institutions in natural resource management. Natural Resource Management (NRM) has been defined by Altieri (2012) as a "Responsible and broad-based management of land, water, forest and biological resource base needed to sustain agricultural productivity and avert degradation of potential productivity." While this definition is closely related to the use of resources for human consumption, Altieri (2002) further develops the definition by stating that methods used in NRM, mainly scientific in nature, should include a set of actions that take into account all interactions between humans and natural resources. Not focusing on the use of science, NRM can then be defined as management of interactions between people and natural landscapes, "(...)" which brings together land use planning, water management, biodiversity conservation, and

the future sustainability of industries like agriculture, mining, tourism, fisheries, and forestry. The main concept under which NRM will be analyzed is Community-based NRM (CBNRM), where it is assumed that local populations have a bigger interest than the state in ensuring that resources remain available in the long term. The main assumption from NGOs will be that local communities are not beneficiaries of the project/program but rather signatories. The beneficiary is the natural resource that is managed by the local community.

As natural resource management has gained currency in the last few decades a series of theories are developed focusing on the management of natural resources, such as the tragedy of the commons and Elinor Ostrom's framework for natural resource management. Based on these two theory roles of institutions for natural resource management describe in the next section.

1.2 Institutions in Natural Resource Management:

'Institutions' include both formal and informal interactions between individuals and groups in society. This definition encompasses organizations such as water user associations and village forestry committees, but also institutions that are more simply normative, for example, property institutions such as common property. Institutions are formal or informal rules about making decisions that are permitted and payoff that will be assigned to an individual (Mowo et al., 2013). The primary emphasis of natural resource management was on the formal institutions, Elinor Ostrom changed that view and emphasis on the informal institutions and community-based management of natural resources that has been a recognized procedure of managing natural resources historically as most of the case government initiatives result in the ineffective management system.

2. Role of Institutions in Natural Resource Management:

For Ostrom and other institutional analysts, institutions are essentially seen as the "rules of the game" that facilitate, guide, and constrain the conduct of individuals and organizations. "Institutions may be seen as commonly understood codes of behavior that potentially reduce uncertainty, mediate self-interest, and facilitate collective action" (Ostrom and Cox 2010:4-5). The "tragedy of the commons", namely the overexploitation and degradation of the commons, was seen by Garret Hardin (1968) and other scholars as to the inevitable consequence of the conflict between the human propensity for the pursuit of self-interest and the need to sustain the benefits derived from the preservation of the commons for local and other communities. Over a period of more than fifty years until her untimely death in 2012, Elinor Ostrom greatly

advanced our understanding of the role and importance of institutions of all kinds in examining and managing the relationships between human beings and the biophysical world that sustains us. Her research program and analytical framework indicated that the conventional wisdom of either enclosure through private ownership or government intervention through state ownership and state-enforced laws and regulations are inadequate to deal with the “tragedy of the commons”.

To achieve an efficient NRM, it is important to identify a natural resource as a good, and according to Perman, et al. (2003), any given resource can be Excludable or Non-Excludable and Rivalrous or Non-Rivalrous (Table 1). This lead to four types of goods: private goods (rivalrous and excludable), club goods (excludable and non-rivalrous), common goods (rivalrous and non-excludable), and public goods (non-rivalrous and nonexcludable). Natural Resources are considered to be common goods (Perman, et al., 2003). Perman et al (2003) argue that Common Goods have to be managed by an authority to ensure that they are used fairly. This is the case for natural resources such as fisheries, forests, and land. Without clearly defined property rights, such resources can be depleted if not properly managed. ‘Institutions’ include both formal and informal interactions between individuals and groups in society. In this section, both of these institutions’ (Formal and Informal) roles are described briefly in the next page.

	Rivalrous	Non-rivalrous
Excludable	Private goods (<i>example: a laptop</i>)	Club goods (<i>example: wilderness area</i>)
Non-excludable	<i>Common goods (examples: ocean fishery, forest, land)</i>	<i>Public goods (example: lake)</i>

Table 1: Characteristics of private and public goods (Perman, et al., 2003)

2.1 Role of Formal Institution in Natural Resource Management:

Imperial (1999) discusses formal institutions to include laws, policies, regulations (rules and prescriptions) that forbid and permit together with the expected outcomes and sanctions associated with deviation. According to the institutionalist school of thought, formal institutions are closely related to the corridors of the state, its agencies, officials, and state-sanctioned activities (Boussard, 2000; Tsai, 2002). Formal institutions as used in the context of natural resources governance are therefore characterized by:

- a. national and federal constitutions, statutes, laws, directives, and local government laws regarding natural resources.
- b. the activities, procedures, and operations sanctioned by state agencies and officials e.g. forest agencies and officials.
- c. rules that are authoritatively passed (with public or state power) to govern a particular resource and to shape the relationship between stakeholders and the resources.
- d. rules that are generally binding with prescribed enforcement complementarities.
- e. adequate certainty of outcomes when one deviates from such rules and generally not borne out of discretion.

2.1.1 Elinor Ostrom’s Assumption about Formal Institution:

To know a clear idea about the role of the formal institutions for NRM a quick review of the theory of natural resource management is very important. Based on this theory appropriate action will take institution. In 1968, Garret Hardin introduced his theory “tragedy of the commons” and in his theory, he described what happens when many people share a limited resource such as grazing land or fishing area. According to him when many people share a common resource then that resource is overexploited and diminished and it is a must happen phenomenon in the absence of privatization and government intervention through state ownership (Hoffman and Ireland, 2013).

Ostrom and her colleagues realized that the tragedy of the commons could be avoided and in fact, was being avoided through multiple institutional and governance instruments, and that the dichotomy of either enclosure through private ownership or government intervention through state ownership and state-enforced laws, regulations, and rules was neither helpful nor appropriate. She emphasizes community-based natural resource management through the informal institution as local citizens, resource users, and local communities know a better way to manage their resources than the governments (Hoffman and Ireland, 2013). Elinor Ostrom criticized the government for its focus on centralized formal institutions rather than focusing on local and decentralized community-based natural resource management through engaging informal institutions.

2.1.2 Formal Institution’s Role in NRM:

The role of formal institutions in natural resource management varies according to their approach to managing natural resources and some variables such as equity, inclusiveness, public participation, and good governance. Formal institutions can be government institutions, private institutions, NGOs, etc. In this study, government institutions are taken into account as

a representative of formal institutions.

A Government is an institution entrusted with making and enforcing the rules of a society as well as with regulating relations with other societies. To be considered a government, a ruling body must be recognized as such by the people it purports to govern. A person or group that considers itself the leading body of a society has no power if the members of the society do not recognize the person or group as such. At the same way formal or government, institution plays a dynamic role in natural resource management such as government institution try to manage the natural resources through imposing rules and regulations, privatization, public tenure, leasing, and community-based management through their initiative to manage natural resource through rules and regulations are ineffective most of the time because of corruption and power of elites but their recent initiative to managing natural resources through community involvement is appreciable were a public and community interface is creating and people are getting access to resources.

In most cases, Government institutions fail to achieve the target NRM. As NRM is a local scale problem, formal institutions cannot reach at this stage to manage the natural resources. But this is not true for all countries.

In the context of Bangladesh, the formal institution is not appropriate in the case of NRM as the main focus of natural resources management is to impose rules and regulations rather than community-based management and considering the informal institution in the mainstream. Corruption is the main impedance in this institution. Because of more emphasis on rules, regulations, and privatization, most of the resources are captured by the elite, and poor people are being excluded from access to resources.

But it does not mean that formal institutions are not played role in NRM. Some other case government institution also proved their responsibility, for example, a formal institution in Bangladesh plays an important role in Hilsa fish conservation and conservation of trees of the Sundarbans. The successful management of CPRs at all spatial scales throughout the world has often involved what Ostrom and her colleagues call polycentric governance systems, which encompass multiple decision-makers operating at different geographic scales, with different structures, functions, norms, values, and interests. The formal institution plays its roles on a broad scale that's why this institution has great value for all kinds of organizations who play their role on small scale. Indirectly this institution did their own responsibility.

2.2 Role of Informal Institution in Natural Resource Management:

The mention of 'informal institutions' may connote different meanings at a particular time. This suggests that informal institutions may elicit more than one meaning depending on the

context. Helmke and Levitsky (2004) define informal institutions as the socially shared rules, usually unwritten, that are created, communicated, and enforced outside of officially sanctioned channels. The informal institution is mainly based on culture and unwritten forms of doing things that are guided by social norms, values, tradition, taboos, and sanctions. From the above definition and its context, the conceptualization of informal institutions has some indicators for Natural Resource Management. Those are given below:

1. social and cultural beliefs and norms,
2. mostly not codified,
3. non-state sanctioned regulations,
4. systems enforced by actors (local people) themselves and
5. Rarely, could mean clandestine activities such as bribery and corruption

2.2.1 Informal institutions as traditional-cultural systems and norms:

Informal institutions have been discussed to involve the traditional governance arrangements including chieftaincy and traditional priesthood systems and cultural belief systems. This is mostly seen in the developing world where traditional systems continue to wield influence. The informal institution exists in every community and where the social norms, values, and traditions guide the management of the natural resources. Informal institutions originated from local culture and have a strong root from the past. In NRM traditional-cultural systems and norms have great influence.

2.2.2 Informal institutions as outside proper sphere of official space:

The idea is that acceptable behavior, actions, and groups organize their interactions within the formal space, adopt proper channels of communication and procedure. Consequently, any acts, actions, behaviors, or activities developed outside of formal law or formal space, and channel are usually viewed as ‘informal sectors’ or ‘informal institutions’. This task is very important for NRM at the community level.

According to the Elinor Ostrom, informal institution plays an important role in NRM. Almost every community has some common resources such as rivers, forests, grassland, etc. These resources are managed by their culture, norms, and tradition. If anyone tries to break the community’s norms and values then he is punished and excluded from society or he is fined to disobey those norms and values and forced to manage the resource properly and this

is how the sustainable use of natural resources is ensured through informal institution within a community.

3. Role of Institutions in Natural Resource Management & Sustainability:

Institutions have a great role in Natural Resource Management, here figure 1 shows how Institute plays a role to manage our natural resources. Both of the institutes have their own responsibility to manage natural resources. When the formal and informal institute works transparently to manage the resources then the main goal of sustainability will be achieved.

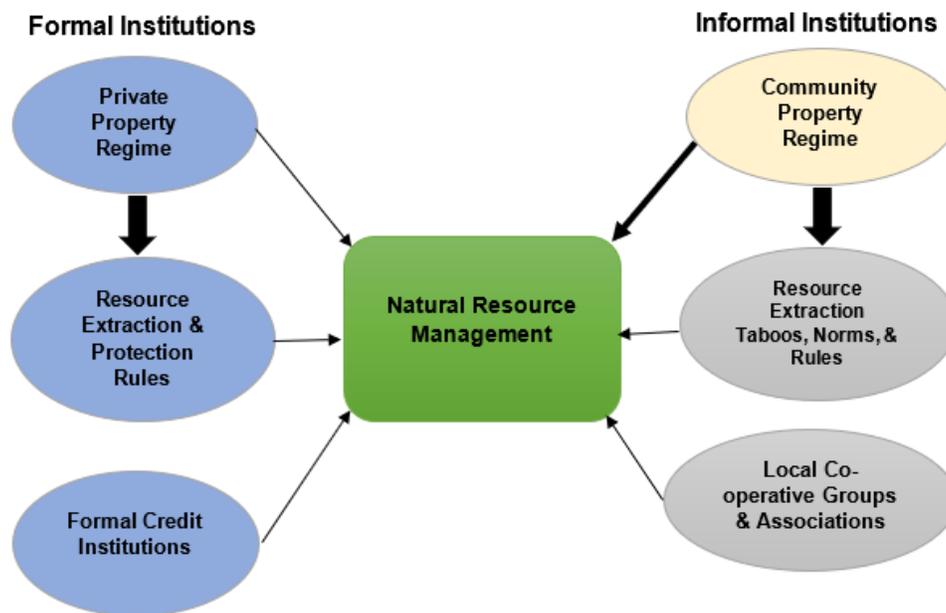


Figure 1: Role of Institutions in Natural Resource Management

3.1 CBNRM for Poverty Reduction, Resource Conservation, and Good Governance:

Community-based natural resource management (CBNRM) can be considered a management strategy aiming to reduce poverty, conserve natural resources and promote good governance and decentralization, in a single process. That means sustainable Use/position is created for the CBNRM. Figure 2 is illustrated clearly how to achieve CBNRM or Sustainability.

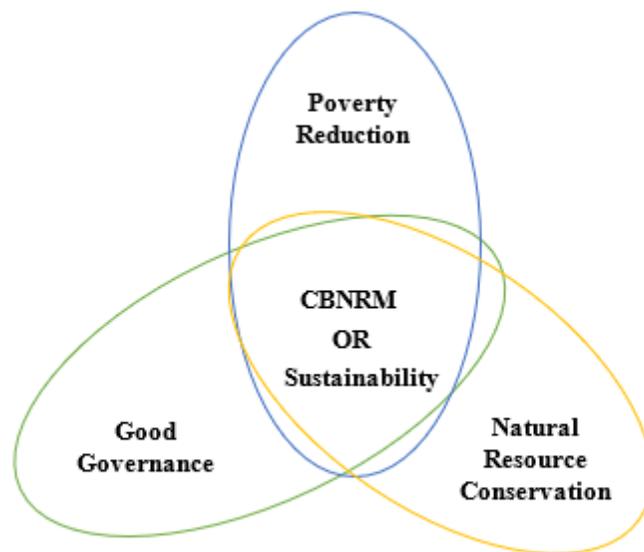


Figure 2: CBNRM and its linkages to Make Sustainable Situation

4. Conclusion:

The informal institution is more appropriate for NRM in developing countries like Bangladesh. Specifically, CBNRM is more useful to conduct local-level resources management. The formal institution plays a vital role for every informal institution. Formal institutions Indirectly support informal institutions. But in some cases, informal institutions can not manage all responsibilities, at that time formal institutions can manage easily. So, it is clear that both of these two institutions are needed for Natural Resource Management (NRM).

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