

PROTECTION OF BIODIVERSITY IN INDIA AND BANGLADESH: A LEGAL PERSPECTIVE

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Abstract

Biological diversity means heterogeneity in many ways of life. It includes the overall aggregation of ecosystem where genetic diversity and species diversity play a crucial aspect in nourishing ecological balance. The scope and extent of biodiversity is wide enough and its quantification is difficult to realize. Protection of biodiversity in India and Bangladesh is quite challenging with the passage of time as both countries have highly enriched with traditional and indigenous resources. The most challenging situation is of rights indigenous people living in a particular area, their respective right of benefit sharing, specific prior-informed consent. It is important to understand to introspect the obligation of local administration in protecting biodiversity and how so far they are successful in managing the proper commercial utilization of indigenous resources by providing proportionate monetary right to indigenous people.

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I Introduction

BIOLOGICAL DIVERSITY means heterogeneity in many aspects of life. It include congregation of ecosystem where genetic diversity and species diversity play a major role in maintaining ecological balance. Enrichment of natural resources that exist in water, air and land are part of biological diversity. The word diversity itself means variability in every dimension. The scope of biodiversity is very wide in such a way where its quantification is difficult to assess. The assessment also becomes difficult due to complexity in ascertaining productivity and functions of natural resources. Human beings can’t survive without biodiversity because of total dependence. They use resources directly or indirectly for their daily basis necessity. They need it for food consumption, medicinal purposes and biological control over pest reduction for better agricultural yield. Biodiversity is something, which is cherished and priceless.

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To ascertain its elemental value, it is important to understand how it is useful in food preservation, health issues, aquatic and land based utility. Utility also vary according to necessities of local communities in a particular area and geographical conditions and country based particular sector, which become a major part of gross domestic product. For example, agricultural biodiversity and fisheries sector including aquatic resources play a major part of biodiversity in Bangladesh, where agro-biodiversity, poultry farming & livestock are substantial part of biodiversity in India. Both countries are undoubtedly highly enriched with culture and traditions since time immemorial.

Repository knowledge related to biological resources including plants, animals has token, symbolic and cultural value. Both countries has prosperous and antique heritage of medicinal community knowledge based on medicinal plants. It has been used by generation to generation as their productive value is highly enriched. Biodiversity has a very holistic approach toward ecosystem. Living things are very much interconnected with environment. This linkage shows how important it is to maintain ecological balance in the society. Efficiency of ecosystem depends on viable use of natural resources. Deterioration of ecosystem will definitely rise with ineffective application of biological resources.

Now the challenging task is to have viable utility of biodiversity especially when human beings are adversely affected by poverty and environmental degradation. Every benefit goes along with burden, similarly rapid growth also pay heavy price towards conservation of biodiversity. It become important to introspect & analyze the conflicting interest between indigenous communities and big corporates whose sole business is to maximum profit at any cost. Attainment of sustainable development is crucial for management & salvation of biodiversity.

With the geometric growth of human population in India and Bangladesh, unprecedented necessity for consumption is also increasing for stimulating growth and productivity. But human encroachment for the purpose of monetary profit and exploitation has resulted into shrinkage in the abundance & variety of biodiversity. It resulted into various dimension of hazards. Misuse, over-exploitation and non-assessment of ecological decadence put biodiversity in consistent depletion. Habitat drastic transition, climate reversal and pollution in various kinds are visibly reasons for degeneration of biodiversity as result of which impediment will arise in the overall mechanism of sustainable development.

Historical background of convention on biological diversity

The progressive stage of biodiversity regime went through consistent phase where many negotiation and consultation occurred in many sessions of *ad hoc* working group of experts on biological diversity, which include coterie of experts of different discipline with specialized knowledge.¹ It was realized the need for a convention related to biodiversity because of environment degradation and illegitimate utilization of indigenous resources. Finally, convention on biological diversity was put forward in the year 1992 with the support of various countries as contracting parties.

The bigger question is whether biodiversity loss is the only reason for the evolution of convention of biological diversity in 1992 and related legislation in different countries? Does it look like that exploitation of biodiversity is contemplated as purely business without healthy competition? Does it seem that if any legislation related to protection of biodiversity wouldn't have been introduced, it would enlarge process of free trade by completely violating economic interests of local communities?

The preamble of convention on biological diversity precisely emphasised on crucial demand for propagating general awareness about biodiversity and how it has potential to stimulate scientific and economic growth.² The issue of bio-piracy is emerged in such a systematic manner where a kind of oligopolistic or monopolistic culture will arise by multi-national companies. Companies used indigenous resources for their business by utilising the same for research in their respective countries. But, the matter of grave concern is that companies generally exploit it without taking permission from authorized bodies and indigenous communities or in some cases undue benefit was provided to communities. As a consequence of it, companies applied for patent as invention. This kind of unlawful assignment & unjust earmarking has become a source of disrobing socio-economic interest of indigenous communities and national sovereignty, thus creating monopoly rights for bio-pirates.

Socio-economic interest of indigenous people gets affected especially when their livelihood is at uncertainty stage and local economy of indigenous society is getting crashed. So, indigenous knowledge of farmers, forest dwellers has become

¹History of the Convention, Convention on Biological Diversity, *available at*: <https://www.cbd.int/history/> (last visited on Jan. 10, 2016).

² Convention on Biological Diversity, 1992. See, 'Preamble', *available at*: <https://www.cbd.int/convention/articles/default.shtml?a=cbd-00> (last visited on Dec. 15, 2015).

subject matter of artifice and abuse. Ultimately, good title over indigenous resources will not remain in existence *i.e.*, *bona-fide* custodians of indigenous resources will lose their right of ownership.

Constitutional backdrop of biodiversity conservation in India and Bangladesh

While introspecting the basis of legislation related to protection of biodiversity in India and Bangladesh, it is important to comprehend and contemplate specific articles in the constitution of India and Bangladesh to know the background how so far they are correlated to biodiversity conservation & protection of rightful custodians. According to Indian Constitution, state has certain obligation to maintain social order by saving the social, economic interest of citizens of India.³ Indian Constitution also provides that state has to maintain equitable balance to protect common good. It is obligatory on the part of the State to safeguard the interest of community by shielding ownership & control of material resources.⁴ Similarly, Bangladesh Constitution has explicitly put obligatory responsibility on state shall act against maltreatment and anything, which is detrimental against interest of any man to maintain non-partisan affair in the society.⁵ Safety for environment, biodiversity and forests gives a sense of responsibility for the state to maintain sustainable development.⁶

II Important features of legislation related to biodiversity conservation in India and Bangladesh

India's stand on Biodiversity Conservation

India ratified Convention on Biological Diversity on February 18, 1994. Ministry of Environment and Forest prepared a draft accordingly. Suggestions and comments from public, non-governmental organizations were called for improving the draft to make it just compatible to efficient ecosystem. So it took eight years to have a legislation related to biological diversity, which came into existence in the year 2002.

³ Constitution of India, art.38, *available at*: <http://lawmin.nic.in/coi/coiason29july08.pdf> (last visited on Dec. 17, 2015).

⁴ Constitution of India, art. 39(b), *available at*: <http://lawmin.nic.in/coi/coiason29july08.pdf> (Jan. 10, 2016).

⁵ The Constitution of the People's Republic of Bangladesh, s.10 see, 'Socialism and Freedom from exploitation', *available at*: http://bdlaws.minlaw.gov.bd/sections_detail.php?id=367§ions_id=24558 (last visited on Nov.22, 2015).

⁶ The Constitution of the People's Republic of Bangladesh, s.18A see, 'Protection and Improvement of environment and biodiversity', *available at*: http://bdlaws.minlaw.gov.bd/sections_detail.php?id=367§ions_id=41505 (last visited on Jan. 10, 2016).

The act came into existence with purpose to preserve and conserve biodiversity. It is important to have a bulwark against consistent misuse of biological resources. The legislation was framed in such manner to provide a platform for indigenous people to collect traditional knowledge systematically.

The major stronghold of the act is that restriction imposed in case of economic use of biological resources,⁷ any kind of analysis over collection of biological resource and shifting outcome of fact-finding related to indigenous resources outside country unless due process has not been adopted *i.e.*, prior sanction and approval of national biodiversity authority.⁸

There is another grey area that the legislation didn't afford to leave *i.e.*, those person who wish to apply for intellectual property right over invention came out from indigenous & natural resources, need to take procedural sanction from national biodiversity authority. Accordingly, national biodiversity authority will charge fee or sharing of benefit emerging from commercial application of such rights.⁹

There is another special feature, which specifically highlight on the commercial usage of biological resources and indigenous plants. The act provide that Indian national or any Indian corporate body can go for commercial application of such resources by giving specific information to state biodiversity board in this regard whereas local communities can exploit indigenous plants without any restriction and formal encumbrance. Though the concept of local bodies is defined in the act but there is no specific definition of local communities mentioned in the act. It seems to be just and equitable because the local communities are indigenous in nature, their cultural & historical identity is deeply connected with local area and they are the real custodians of indigenous resources in that area.¹⁰

The concept of prior-informed consent is specifically defined in Biological Diversity Act, 2002 (hereinafter the Act, 2002). But, how it should be interpreted is matter of introspection. As per Act, 2002 and Biological Diversity Rules, 2004, prior-informed consent is a formal arrangement where explicit official endorsement given

⁷ The Biological Diversity Act, 2002, s.3 see, 'Certain persons not to undertake Biodiversity related activities without approval of National Biodiversity Authority'.

⁸ *Ibid.*, s. 4, 'Results of research not to be transferred to certain persons without approval of National Biodiversity Authority'.

⁹ *Ibid.* S.6 Application for intellectual property rights not to be made without approval of National Biodiversity Authority.

¹⁰ *Ibid.* S.7, Prior intimation to State Biodiversity Board for obtaining biological resource for certain purposes.

by competent authority to user/applicant to access natural resources by applying legal mechanism. Since it is mentioned that with respect to final determination and agreement, national biodiversity authority and state biodiversity authority shall consult biodiversity management committee.¹¹

Access and benefit sharing mechanism is one of the important features in the whole process of commercial exploitation of biological resources. Though India ratified the Nagoya Protocol on Access and Benefit-sharing in 2014,¹² but it is already mentioned in section 20 of the Act, 2002 and Rule 20 of Biological Diversity Rules, 2004. The concept of access and benefit sharing is not defined appropriately in the legislation. Access to resources means a formal way of availing the resources for research & development, business. Equitable benefit sharing is a concept that is based upon harmonious blend of practicing trade in satisfaction of other party. It is a reciprocal arrangement enforced by law in which a user has to return something to the holder of resources. It may something related to pecuniary or non-pecuniary benefits. It should be equally distributed among everyone. National Biodiversity Authority played an efficient role by utilising the obligatory function under the Act, 2002 to formulate new guidelines on access to biological resources, traditional knowledge and benefit sharing mechanism to bring more transparency in the functioning the formal process of benefit sharing.¹³

Earlier, there is no clarity on what grounds benefit sharing will be initiated and proportionately allocated to holders of biological resources. National Biodiversity Authority's guidelines try to reflect upon certain crucial factors to ascertain process of benefit sharing which like economic usage of biological resources, phases of research, promising merchandise of result of research, quantum of financial contribution on research, type of innovative technology used, different dimensions of risks inherent in the bio-prospecting process and risk management.¹⁴

The legislation also put an obligation on the central & state government to formulate comprehensive blueprint for the maintenance and augmentation of

¹¹*Ibid.* S.41 (2), Constitution of biodiversity management committee.

¹² India-Overview, Country Profile, Convention on Biological Diversity, 2002, *available at*: <https://www.cbd.int/countries/?country=in> (last visited on Dec. 20, 2015).

¹³ Biological Diversity Act, 2002, s.64.

¹⁴ Guidelines on Access to Biological Resources and Associated Knowledge and Benefits Sharing Regulations, 2014, art.14 'Determination of benefit sharing'.

biodiversity for its enrichment.¹⁵ The government should introspect functioning of projects and in case any phase or final outcome of project give any adverse repercussion, Government in consonance with national biodiversity authority should take immediate appropriate action not only to put stoppage or controlling damage/loss, but to improve cohesive interrelation between biodiversity, ecosystem and rights of indigenous communities. Since, legislators had realised that the major drawback or impediment in effective implantation is lack of inclusive education regarding the value of biological resources. So, it becomes a sincere responsibility for the government to enhance awareness among indigenous communities related to local resources.

It is important to have a stronghold with respect to consistent conservation & sustainability of biological resources, but there is need for strong financial support from local level to national level for its maintenance and rehabilitate economic position of local communities when they are affected by misuse of indigenous resources. That is why legislators included the provision for establishment of biodiversity funds to be used at specific platform either at national level or state level or local level throughout the country.¹⁶

Though the act signifies the importance of national biodiversity authority, so, it was established in the year 2003.¹⁷ The biological diversity act 2002 is artistically made three bodies at national level, state level and local/regional level namely as national biodiversity authority, state biodiversity board at state level and biodiversity management committee at local level. It is important to manage & supervise commercial endeavor of biodiversity, which can be completely possible with regional cooperation & collaboration with biodiversity management committee.

So, it is clear that biodiversity management committee plays a very important and fundamental role comparatively in conserving and maintaining biological resources. It signifies from the word management used in the legislation, which reflects the idea of being substantial by strategic actions with concerted planning. The act does not define biodiversity management committee specifically but its character and composition were mentioned as, how local body will establish biodiversity

¹⁵ Biological Diversity Act, 2002, s.36, Central Government to develop National strategies plans etc., for conservation etc., of biological diversity.

¹⁶ *Ibid.* See, ss. 27, 32, 43.

¹⁷ Introduction, Welcome to National Biodiversity Authority, available at: <http://nbaindia.org/content/16/14/1/introduction.html> (last visited on Dec. 21, 2015).

management committee. The whole members of the management committee have to work in a harmonious manner in collaborating with expert group represented by state biodiversity board. With the main target of providing cushion and bolstering biodiversity and ecosystem, formation of people's biodiversity register is main task of biodiversity management committee.¹⁸

Preparation of people's biodiversity register is not easy way out process; in fact it requires correlative cooperation among people from different discipline and profession. Teamwork can only be managed when the dissemination of information related to objective and operation of the register can take place it requires proper assessment to identify specific sectors and sub-sectors of biological resources that can attract for bio-prospecting for trade and research. Documentation of traditional knowledge and other related resources could be initiated through conglomeration of datas. Technical support group can channelize selective compilation of datas in different categories at local level research.¹⁹

Bangladesh's stand on biodiversity conservation

Bangladesh is a progressive zone of highly enriched biological other natural resources. It is because of obvious reasons like climatic attributes and topographical conditions. There is availability of diversity in this region where conservation is important for further augmentation and amelioration. The rich history of being an agrarian society since immemorial is major source of productivity and raises hope for further innovation through modern techniques. Apart from agricultural, indigenous resources from forests and fishery are major sector where livelihood of humans and non-humans are crucially dependent. Though affected by natural calamities, climate change, poverty, *etc.*, has been important reasons for misbalance in ecosystem and thus become an impediment in whole mechanism of sustainable development. There other reasons for degradation and consistent deprivation in mechanism of biodiversity like environmental pollution, uniform shrinkage and abrasion of genetic resources, over-exploitation of indigenous resources, inequitable distribution of resources, rise of conflicting interest due to improper coordination between policies and action at every level.

¹⁸Biological Diversity Rules, 2004. See r. 22.

¹⁹ People's Biodiversity Register, Revised PBR Guidelines, 2013, National Biodiversity Authority, India, *available at*: <http://nbaindia.org/uploaded/pdf/PBR%20Format%202013.pdf> (last visited on Jan. 10, 2016).

Bangladesh becomes contracting party to convention on biological diversity in year 1994.²⁰ With the passage of time, Bangladesh ratified many international convention related to conservation of environment and biodiversity. An attempt was made in year 1995 where Environment Conservation Act, 1995 was passed with specific objective to provide sustenance & proper management of environment. Viable and efficient utility of biodiversity is also one of important target of the legislation. Due to lack sufficient provision, the legislation fails to implement in the environmental society for the purpose of conservation. Lack of transparency is another factor, which adversely effect on coordination at national and district level. Accordingly, it was realised that there is need to adopt an appropriate assessment standard to introspect and identify the shortcomings, consequently, environment conservation rules came into existence in 1997 which highlighted on importance of environmental clearance certificate to check regular violation of environmental quality standard and take other precautionary measures.²¹

National committee on plant genetic resources proposed& came up with a particular legislation for protection of biodiversity known as Biodiversity and Community Knowledge Protection Act of Bangladesh in the year 1998.²²

The preamble of the proposed legislation has given wide emphasis on the public interest of indigenous resources and indigenous communities in such a way to stimulate inclusive growth of ecosystem through viability of natural resources so as to avoid degeneration and decadence. The proposed legislation's real purpose is to achieve social, economic, scientific, cultural standard of welfare especially to improve efficacy in utilizing innovative biological mechanism. The proposed legislation highlighted active involvement and engagement of indigenous communities along with National Biodiversity Authority in the process of giving final settlement in crucial issue related to benefit sharing mechanism.²³

²⁰ Bangladesh-Overview, Country Profiles, Convention on biological diversity, *available at*: <https://www.cbd.int/countries/?country=bd>(last visited on Dec. 15, 2015).

²¹ National Biodiversity Strategy and Action Plan for Bangladesh, Ministry of Environment and Forests, Government of the people's Republic of Bangladesh, August, 2004, *available at*: <http://www.indiaenvironmentportal.org.in/files/file/NBSAP%20bangladesh.pdf> (last visited on

²² Biodiversity and Community Knowledge Protection Act of Bangladesh, Sep. 29 of 1998, National Committee on Plant Genetic Resources, *available at*: www.icimod.org/resource/2215(last visited on Nov.25, 2015).

²³Biodiversity and community knowledge protection act of Bangladesh, 1998. See, Objectives, art. 2(f)-(j).

In comparison to Indian legislation related to biodiversity conservation, the concept of local/indigenous community is well explained in the proposed legislation where, it is mentioned that community can vary with respect to geographical region, culture, their level of dependence over indigenous resources, their way of occupation, *etc.* There are other distinct features like their unity of strength, collective responsibility in preserving resources since immemorial, their deeply connected cultural practices, involvement in social configuration in developing their traditional life. It can be an association which is directly involved and engaged with political and administrative affairs.²⁴

Another important issue came into existence with the composition of National Biodiversity Authority. In contrast to Indian legislation in this regard, representative of local communities are included in the whole composition, which is quite equitable in such a way that all possible kind of over-dominance and over-exploitation will be mitigated.²⁵

In the year 2004, biodiversity action plan of Bangladesh was formulated and came into existence for a particular short-term and long term target. It was realized that due to inefficient and informal process of biodiversity conservation, consistent degradation of ecosystem put adverse effect on other important aspects of life. It was realized that strategic and concerted plan is required to tackle the fast growing problem of poverty, over-commercialization of natural resources resulted into illegal trade. Proper coordination with biodiversity authorities and educational awareness seems to be effective path for resuscitating biological conservation.²⁶

Now, Bangladesh biological diversity act which was redrafted again after many consultations and discussions at different level especially after when Bangladesh signed the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization in principle on September 6, 2011.²⁷ Cabinet finally approved the legislation in 2013.²⁸ The

²⁴ *Ibid.* See, Definitions, art.4.

²⁵ *Ibid.*, art.11.

²⁶ National biodiversity strategy and action plan for Bangladesh, Ministry of environment & forests, Government of the people's republic of Bangladesh, August 2004, available at: <http://www.indiaenvironmentportal.org.in/files/file/NBSAP%20bangladesh.pdf> (last visited on Dec. 20, 2015).

²⁷ Convention on Biological Diversity, 2002 see, 'Signatories, Parties to Nagoya Protocol, Access & Benefit-sharing', available at: <https://www.cbd.int/abs/nagoya-protocol/signatories/default.shtml> (last visited on Jan. 3, 2016).

legislation systematically covers equitable procedural aspects of prior informed consent and benefit sharing. It is important that these crucial stages, which belong to mechanism of commercial usage of biological resources, should be applicable without leaving any ambiguity and in a transparent and unbiased manner.

The legislation's main emphasis on providing augmentation to community entitlement and empowerment and which is possible by strong regional/local cooperation providing to national biodiversity authority with active assistance at every level.

III Conclusion and Suggestions

It is obligatory on the countries, which ratified convention on biological diversity that commercial usage of indigenous resources should be done with the permission and active engagement of holders of such knowledge in the process of such reciprocal agreement.²⁹ Two important point of deliberation arise in this regard, namely; (i) who is holder as mentioned in the article 8(j) of Convention of Biological Diversity, 1992? (ii) What can be construed from the word consultation with biological management committee by national biodiversity authority and state biodiversity boards mentioned in section 41(2) the Act, 2002 of India?

Holders of indigenous knowledge and resources are local communities and they must be interpreted as real custodians of indigenous resources because such resources are protected and utilized for livelihood purpose from generation to generation. It is the job of state biodiversity board to help in establishing the composition of biodiversity management committee by local body.³⁰ But the responsibility of biodiversity management committee is limited to the affairs of people's biodiversity register as per the Biological Diversity Rules, 2004, whereas their objective is to stimulate the growth of biodiversity and supervise their viable use and documentation process as mentioned in the Act, 2002.³¹ With respect to the word consultation used in the act, it give ambiguous explanation because it seems to be a kind of informaldialogue or

²⁸Marina Nazeen Senior Assistant Secretary, *Formulation on Bangladesh Biological Diversity Act, Bangladesh's Position on Nagoya Protocol, Access and Benefit Sharing under CBD and Nagoya Protocol: Bangladesh Perspective*, Ministry of Environment and Forest, Bangladesh, *available at*: http://sawtee.org/presentations/26-27-Aug-2015_3.pdf (last visited on Dec. 19, 2015).

²⁹Convention on Biological Diversity, 1992, art.8 (j).

³⁰Constitution of Biodiversity Management Committees, Biological Diversity Rules, 2004, Rule 22.

³¹*Ibid.* S.41 (1).

passive involvement that national biodiversity authority or state biodiversity authority will take first initiative and it can be misused at the same time.

There is another kind of apprehension which can be perceived from certain provisions related to the composition of National Biodiversity Authority as well as state biodiversity board *i.e.*, absence of any kind representative of indigenous or local communities. Centralisation can become an impediment in bringing the whole mechanism transparent in nature. Inclusion of representatives of indigenous communities in the composition can bring appropriate use of prior informed consent mechanism and it can also help them in getting their right of benefit sharing in full satisfaction because, there is no clarity in the whole mechanism of benefit sharing even after national biodiversity authority's regulation came into existence in 2014.

Right of benefit sharing is grey area where situation is very vulnerable. There was no clarity with respect to general criteria of benefit sharing till 2004 when rules were formulated by national biodiversity authority. But regulation related to benefit sharing made by national biodiversity authority has given a new direction on deciding into appropriate settlement. The extent of appropriateness has to be introspected whether it just and proportionate enough or not, as it is mentioned that benefit sharing will continue to exist unchanged even if there is commercial usage of more than one biological resources.³² Another grey area of concern is when origin and derivation of biological resources is from jurisdiction or zone of two or more state biodiversity boards, benefit sharing will be distributed proportionately as decided by national biodiversity authority or state biodiversity board, but there is no specific need to consult biodiversity management committees of those respective zones.³³

The distributed amount from benefit received is not necessarily justified and equitable in nature per as quantity and important factors related to biological resources in all cases. It can also vary with respect to other diversified factors like nature of biological resources, extent of dependence by benefit claimer, nationality of stakeholder in this regard, existence or non existence of biodiversity management committees in local areas, level of competence and decision making power of persons

³² Guidelines on access to biological resources and associated knowledge and benefits sharing regulation, 2014, see, reg. 14(3), 'Determination of benefit sharing'.

³³ *Ibid.* Reg. 14(4).

holding position in biodiversity management committee and state biodiversity boards, *etc.*

Since there is no specific definition of benefit mentioned either in the legislation or rule framed by national biodiversity authority or latest regulation, which was introduced in 2014. Whenever the claim of benefit sharing arise in any kind of trade including bio-prospecting, benefit should be considered on monetary and/or non-monetary basis as perceived from regulation related to benefit sharing.³⁴ With the passage of time and fast driven economy, time is ripe now that any kind of non-monetary benefit should be included compulsorily in any agreement related to commercial utilization of biodiversity, otherwise the whole purpose of benefit will not be fruitful & prosperous in the long term so as to conserve biodiversity for sustainable development.

It is important to understand a real fact that protection of environment and biodiversity is not the sole task of one specific authority established under a specific legislation in both countries. Having such a huge responsibility for preserving ecosystem, time has come to realize the importance of proper coordination and collaboration between authorizes established under forest law, environment protection law and law related to conservation of biodiversity. Maintenance of ecosystem can only be possible when transparent way of functioning will be implemented form ground level to avoid all possible kinds of conflicting interest.

³⁴ *Ibid.* Ann. 1, 'Non-monetary benefits options, Fair and equitable benefit sharing options'.