

Role of community in conservation of biotic resources: A case study of Siang Basin.

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Abstract : *Biotic resources or biodiversity refer to all the plants, animals, both domestic and wild, including birds and fishes. The state of Arunachal Pradesh, being in the tropical belt and due to presence of Himalaya in the north, receives abundant rainfall from the moisture that come from Bay of Bengal. The warm and moist climate has favour for luxuriant growth of tropical forest. The area falls in one of the Biodiversity hotspots of India. Until few decades back, the forests were decked with numerous wild lives and valued trees. The indigenous people enjoyed these resources and never perceived that one day resources would be exhausted. Today, the forest and rivers being proximal to settlement area are devoid of such resources. The large sized mammals and valued tree are hard to find. Large population of wild animals have been eliminated and valued trees are being felled. Gradually, people are realizing the missteps done to nature. The destructive attitude to the nature and the absence of biotic resources results in human sufferings. The hardships they face has compelled them to formulation of strategies to combat this. Religious beliefs also play very important role in conserving bio-diversity. Factors such as changes in belief system, commercialization of natural resources, urbanization and industrialization have resulted in neglect of conservation of nature. As a result, there has come up Community Based Organizations (CBOs), Non-governmental Organizations (NGOs), Students' Organizations (SOs) and other elite groups that are involved in the restoration mission. This paper is an attempt to study the conservative attempts and activities of the different communities in the Siang River Basin of Arunachal Pradesh, India.*

Keywords: *Role, Community, Belief System, Conservation, Biotic Resources, Siang Basin.*

1. INTRODUCTION :

The community forests in Siang belts, inhabited by Adi Tribes, have been managed by traditional local institutions from time immemorial and these institutions are functional even today. For centuries, humans have depended on forest resources for their livelihoods, and have treated them as integral part of their culture and system, both spiritual and social. Intervention of government in management of forest and its ownership alienated the local or real owner from the forests leading to massive deforestation primarily for converting forest to other land uses (Shulte, 2000).

Traditional people have accumulated vast amount of ecological knowledge in their long history of managing the environment. Such knowledge is embodied in dialects and languages. However, as language becomes extinct, so associated traditional ecological knowledge gets lost. This happens because, in most traditional cultures, knowledge is not recorded but passed on orally to next generation (Tiwari, B.K. et al, 2013). Local people in several districts of Arunachal Pradesh have taken initiatives to protect and manage their forest resources. They have formulated rules and regulations based on the socio-political and economic environment of their village. Under customary law, the forests are classified into different types depending on their intended use. The pattern of ownership of community forest is also very complex and diverse (Tiwari et al 2010).

In the state of Arunachal Pradesh till early seventies, the tribal community enjoyed the bounty of natural resources till population was less and when people used traditional tools in hunting and fishing and collection of forest raw materials. But in due course of time, tribal population increased mainly due to improvement in health care, fall in death rate, some patches along the river banks and gentle slope with provision of irrigation have been converted to terrace cultivation where forest is cleared permanently.

After 1980s, there was large scale destruction to biotic resources especially after commercial logging started in state. Logging had numerous associated destructive effects. Loggers used *Shaktiman* truck and elephants, to haul the log from interior forest scaring wild animals. During construction of roads logging track forests were destroyed. Small streams and rivers were also used as logging track killing the aquatic lives. It also polluted water.

The use of gun is not a new thing. People used gun in 1950s but numbers of guns were very much limited; issued for protection of crops in *jhum* field. But after 1980s the users of gun increased especially among the people who were in government job as they could afford to buy gun. Such guns were kept in the village with sufficient gun bullets. The kills are shared among them.

The long run consequences are, today, tribal people are finding difficult in getting basic resources. Some of the animals such as mountain goat, pangolin, otter, tiger, weisal, stag, shrew, flying squirrel, wild buffalo and wild mithun, are hardly seen.

When we talk of biotic resources, it includes all the life form in the forest and rivers which are useful to man and fulfil their necessities. For these people, non-living items like rock, sand and minerals are less valued as these items were hardly used. Hunting and fishing are part of tribal culture and eating animals and fish is their traditional food habits. But, the excessive killings for commercial purposes and sports hunting by so called educated people have led to faster depletion of biotic life.

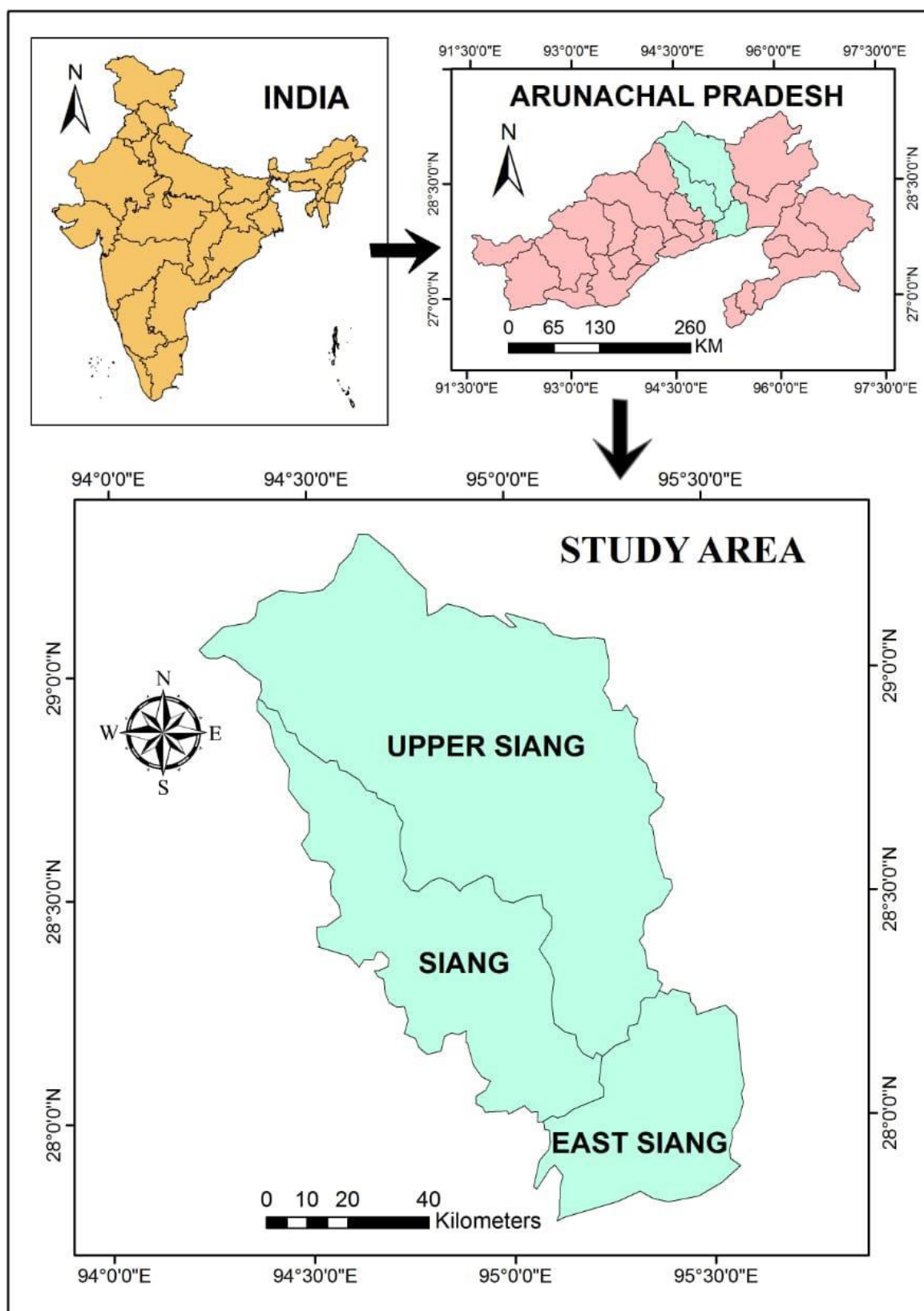
The seasonal birds, behaviour of animals, insects and the flowering of different plants tell the farmers the time of cultivation and advent of many other annual activities. Hunting and fishing, and collection of raw materials for various constructional purposes and designing of numerous crafts items are not done throughout the year; they avoid the collecting of raw materials during summer season and moonlight days.

The fats of many animals are used to massage joint pains. The bile of bear is highly valued as medicine. The teeth of wild boar are decorated in hat. Feathers and claws of birds, teeth, horn, skull, fur and skins of animals are highly valued.

Thus, the traditions and culture of people are very much dependent on forest. The loss of these factors would lead to loss of traditions and culture of the people. Therefore, its preservation is very much necessary to preserve the age-old eco-friendly culture of the people.

The traditional religion of the people is animism in nature. For them, nature is the supreme with hidden powers. In the past, any major activity related to forest was accompanied with certain forms of rituals, either as a form of seeking permission for safety during execution or a form of gratitude (Tripathy, 2004). But today, young generations being away from villages are not aware of these man-nature relationships. Tribal who are converted to Christianity do not believe such ideas and they do not wish to offer such rituals due to their religious belief.

The role of community and its belief system in conservation of biotic resources is not a new thing. But it was mostly confined to individual level. Forests and rivers have been traditionally owned either by individual family, clan or village community in Adi community in Siang basin. Unauthorised large-scale collections of forests items and fishing have always been prohibited. But there was no restriction on individual in their own forest and rivers.



2. Study Area: The conservative activities of local bodies about their biotic life are almost similar to all the hill dwellers with minor variation among different tribes. The state of Arunachal Pradesh is inhabited by 26 major tribes of different groups. In some districts, more than one tribal group live together sharing the same ecosystem. For present study three

districts have been selected, i.e., East Siang district, Siang District and Upper Siang District located in either bank of Siang River.

The geographical extension of the study area is 27°30' N - 29°15'N and 93°30'E to 95°37'E, covering total area of 10972 sq.km. Its altitude ranges from 133 meter at foothill adjacent to Assam in the south to 5,248 meters at North near the Mc Mohan line between India and Tibet. The study area is inhabited by six major tribes namely (Adi, Memba, Kamba, Galo, Mishing, Idu) and around many sub-tribes namely- Minyong, Padam, Pasi, Shimong, Panggi, Milang, Panggi, Komkar, Karko, Bori, Bokar, Ramo, Pailibo, Ashing, and Tangam. According to 2011 Census the total population of the area was 1,49,122 persons with average density of 14 persons per sq.km. The density of population sharply decreases from south to north. The maximum part of the area, say 94% is mountainous. Thus, the carrying capacity of the area is very low. The physiographic density and agricultural density would be slightly higher as the arable land is very less.

The area receives heavy rainfall (250-300 cm per annum) during monsoon. Sometimes it also comes under the Western disturbances during winter season. The temperature is 30°C and above in the South during summer season. But weather is severe during winter in the north.

The warm and humid climate is suitable for luxuriant growth of vegetation, which ranges from tropical evergreen forest in the south to sub-tropical and to temperate forest in the north. In the northern fringe, the area has alpine forest.

Agriculture is the main occupation of the people along with other allied activities like hunting and fishing. Hunting has reduced much due to exhaustion and restrictions put by government and local communities. Shifting cultivation is more prevalent in northern and mountain slopes. Terrace paddy cultivation is more prevalent in southern gentle slopes and river banks.

In the study area, people are very much aware of the depletion of biotic resources, especially large animals and fish in small rivers. Attempts are made at local level to protect this biotic life. In the study area, there are Mouling National Park and Daying Ering Wild life Sanctuary.

The traditional religion of the people is animism. The shift of belief system, commercialization of forest items, sports hunting and fishing with better and effectively tools are responsible for faster erosion of biotic resources. Now villagers themselves are finding difficult to meet their daily basic requirements. Among them, the traditional food habits have affected much. Many of the forest based traditional food habits are very much affected today. This has led to realization among the people of study area. There are many initiatives initiated by respective communities at village, circle and district level to restore the biotic life.

3. Objective :

The basic objective of present investigation is to know the role of community and belief system of Adi community in conservation of biotic resources of Siang Basin of Arunachal Pradesh.

4. Method :

Religious and traditional beliefs, cultural mores, and practices play a crucial role in the conservation of environment and biodiversity tribal peoples of Siang Basin. The present study is primarily based on authors personal observations: and important research work conducted by few researchers which helped as secondary data source. This study is interdisciplinary in nature which covers study like biotic resources, community and conservation. There is no recorded data regarding depletion of biotic resources. People themselves do not have recorded data. Even the traditional conservative methods are not in the form of records. Many decisions of conservative meeting are also not recorded. Thus, this work is qualitative and descriptive as it is based on observation and narration in the field. The bulk of its information is come from field study, filling village schedule and from individual experts.

Hunters and expert fishers form important sources of information regarding the status of biotic life especially about animals, birds and fish. Elder's memory and the comparative narration of past and present also form a valuable source of evaluating the past and present.

Thus, primary data is gathered from the field during the course of author's Ph.D. research work. There are 244 villages in the study area. More than 100 villages were covered during field work. From the sample villages data/information

were collected from Gaon Buras, village youth leaders, selective hunters, fisherman, woman who were engaged in food gathering. Respondents were interviewed personally. The reason for covering large number of villages were done with the simple reason that the conservative activities of different villages are not being similar. At the circle level and district level organization doing biotic conservation. At circle level and district level, organizations doing biotic conservative work were interviewed.

Secondary data regarding population and climate were collected from the concerned from departments of statistics and weather stations. The departments of forest, fisheries, NGOs, CBOs, and department of Police, were also visited to collect data regarding forest laws, data regarding offenders such as poaching, timber smuggling, etc.

The study is primarily based on personal observations of the author, being a community member of the study area as well as extensive field study conducted by researchers (e.g. Riba, 1997. 2010 and 2013).

5. Results and Discussions :

Among Adi Community of Siang basin, hunting of big animals, rodents and birds were traditions where they used only the tradition traps, bows and arrows whose accuracy was less. But today, people use even sophisticated guns. Airgun is widely used for hunting of birds and squirrels. The use of modern equipment and increase in the size festivals have led to a sort of competition in killing of birds and rats. In an average, during festival an expert hunter kills 50-100 of birds and rats.

The situation has not remained the same. Big animals are hardly seen in the forest near to settlement. Now, people are finding difficulties in meeting the requirement of wild animals for their festivals. It has become very costly in the market. For example, cost of a smoked rat in Pasighat market is Rs. 50 which was Rs. 5 or 10 only before 1990s. These are the author's observation as a community member as well as field study conducted in the area in question (Riba, 2010)

To supplement the observations made above it is important to add that now, the community is realising the adversities related to falling in number of biotic lives. Forests have become charmless and rivers have become lifeless. The meat of animals, birds and fish are not only used as food items but has many value in social and cultural life of people. Hunting and fishing is done for certain traditional important purposes. For example, huge quantity of rats, mouse, squirrel, birds and fish are required during traditional festival like *Unying-Aran*, where fresh rodents and birds are offered to grave yard in the first death anniversaries. In case of rodents the tail with fur should remain intact. During *Unying-Aran* festivals, brothers present fresh rodents, birds and fish to sisters. In return they would also offer food and drinks. It is also item of exchange during marriage, especially from groom's side. Large quantity of dry meat and fish are to be offered to girl's parents and relatives. These items are also offered during ritual performance in the agriculture for successful growth of crops. With the offer, the goddess of plenty is prayed for bumper harvest. In this way peoples use forest resources as per their social and cultural needs. This way they maintain ecological balance of environment by not killing animals beyond the festive seasons.

Traditional belief system of Adi people of Siang basin believes that reckless exploitation of forest and rivers would give bad omen to the family. There are many segments of landscape containing trees and other forms of life and geographical features that are delimited and protected by the Adi peoples of Siang basin which are believed to be sacred. Therefore, time to time, they offer rituals to the unseen forest owner (spirit) of the forest as giving gratitude and taking permission. This way belief system also play a very important role in preserving and protecting certain patches of forest and water in the study area.

The shift of belief system, commercialization of forest items, sports hunting and fishing with better and effective tools are responsible for faster erosion of biotic resources. Now villagers themselves are finding difficult to meet their daily basic requirements. Among them, it has affected much the traditional food habits. Many of the forest based traditional food habits are very much affected today as observed during field study (Riba, 2013). This situation has led to the realization among the people. There are many steps initiated by respective communities at village, circle and district level to restore the biotic life.

The study area is not exceptional to fast depletion of biotic resources. Small rivers near to settlements are lifeless due to excessive fishing with the use of non-traditional tools like gill nets, use of chemicals in place of herbs, blasting and current. For example, in 1990s- Sibokorong (Small River near J.N. College, Pasighat) was clear and rich with fish. But today, the river is filled with polythene bags, rags and broken glasses. The water is dirty for human consumption.

In the forest, large animals are hardly seen. Many animals have almost disappeared from the site and so many of them have been declared as endanger species by WWF. In the evening, it was common, the barking deer used to be heard in the forest around the present Jawaharlal Nehru College, Pasighat. Squirrels were seen running across the roads on the way to upper campus of the college.

Today, realisation is gradually coming up among the people. They also know that hunting is illegal as per law. But such prohibition from government is never adhered. There are also instances where law keepers themselves do illegal hunting and fishing. This realisation at community level is more effective than the government law.

The traditions and cultural practices of people are very much dependent on forest. The loss of these items will lead to loss of traditions and culture of the people. Therefore, its preservation is very much necessary to preserve the age-old eco-friendly culture of the people.

Forests and rivers have been traditionally owned either by individual family, clan or village community. Unauthorised large-scale collections of forest items and fishing have always been prohibited. But, there was no restriction on individual in their own forest and rivers. But individual owner never recklessly exploited their forest and rivers. Despite lacking formal government protections, locally developed and enforced social norms, regulations, or taboos conserve sacred groves and animals from competing land uses. For example, a fear of supernatural or divine retribution, like sickness or death, can prevent resource users from harvesting resources and killing within a sacred grove or from encroaching upon its boundaries (Riba, 1997).

But today situation has changed. The united realisation at village level, community level and joint community level at circle and district level have initiated the conservative efforts for restoration of biotic community. For example; Simang River, a tributary of Siang district, was rich in fresh river fish. When Boleng township developed, the commercial and sports fishing increased leading to fast depletion of fish. This led to deprivation of traditional food items of nearby villagers. When the threshold of scarcity reached, the people of the villagers near to Simang River banned all sort of fishings except one traditional system, *PORANG* (traditional tools for catching fish) whose accuracy is less.

The other glaring examples is Komkar village; a sub-tribe of Adi community in Upper Siang District. In this village excessive hunting and fishing activities led to falling in the number of animals and birds. A Committee known as Komkar Bane Lamkang Party (group of active members of different clans) was formed to check the excessive hunting and fishing in the territory of Komkar Village. The committee have also restricted the collection of forest resources like cane, wood, leaves, bamboo and bamboo shoot, herbs, etc. Carrying of guns, airgun, SBBL 12 Bore and .22 Rifles, etc. are strictly banned even if person is not going for hunting. The committee has fixed hunting and fishing for 5 days in a year for festive season of *Uyning-Aran* in the month of February or March. During the banned period no one is allowed to do hunting and fishing. Violators of the rules and regulation are fined with Rs. 10,000/- (ten thousand only). Normal angling and *PORANG* (traditional tools for catching fish) are permitted for catching fish. However, use of chemical, electric current, etc. are strictly banned in the villages.

Another example is the Karko Village in the right bank of Siang River in Upper Siang District of Arunachal Pradesh. This small village has started conservation efforts since many years. Recently, the elderly people, Gaon Buras, Youth of the village formed a committee called 'Karko Village Welfare Society' to look after all the socio-economic and developmental affairs of the village. The Society with the advice of Gaon Buras formed a committee called Karko Village Action Committee (*Magro*- volunteers of active youth group). The purpose of this committee is to execute or check hunting, fishing and collection of forest raw materials within the territory of Karko areas. Netting, poisoning, current (generator, inverter), diversion of rivers or streams are strictly banned in the village now. Only during Aran festival, temporary relaxation of hunting and fishing is given for 4 days. Even during the big festivals like Solung, Mopin, Christmas and other Hindu festivals, organisers have to get permission from the committee and Head Gaon Bura for collections of firewood and leaves (*ekkam patta*). Violators of village's rules and regulations would be imposed a fine of Rs. 10,000/- (ten thousand). *Magro* inspects the area from time to time to deny illegal hunting, fishing and collection of forest resources. Those who do not obey the rules and regulations and deny the fine imposed on him will face legal action in accordance to Wildlife Protection Act-1972.

One more interesting example is at Runne- a small village under East Siang District, comprising of just 48 households. It came up with an appreciable step on November 2019. The villagers from Runne Village handed over more than 12 airguns to Divisional Forest Officer, Wildlife Division, Pasighat in a small but impressive occasion held at Runne Dere (Community Hall). The programme was initiated by *Adi Bane Kebang* (Traditional Apex, Appellate and Supreme Council of Adis). *Adi Bane Kebang* (ABK) in its various programmes and conferences advocate for conservations of wildlife resources by discouraging the modern systems of hunting and fishing to balance ecological management. According to reports from the villagers of Runne Village, within a year after the ban imposed on hunting activities, birds and squirrels' population has increased many times.

Many of the biotic resources are protected due to belief system of community. For example, the Simang river, one of the tributaries of Siang River, was rich with aquatic life up to 1980s. With the development of Boleng Township near to river, the demand for river fish increased and some people took up fishing as a business. With few years, the fish of the river was depleted. The villages near river themselves were deprived of the fish which used to be their regular food item in their diet. Today due to efforts of the villagers, the fish of the rivers has been restored. There are many such villages who are also actively engaged in conservative efforts of the biotic resources in their localities.

6. Recommendations and Concluding Remarks

Role of Community, their participation and involvement in the management and conservation of biotic resources are vital instruments in natural resources management. The rate at which forest and wildlife resources are gradually going into extinction calls for more proactive measures to be taken to curb this ugly trend of resources destruction. The involvement of community members in conservation of resources becomes the best alternative. To do those traditional institutions are to be actively involved in the conservation and management of the forest in these predominantly tribal inhabited areas of Adi Community. Traditional belief system plays very important role in restoration and preservation of biotic resources. Rapid modernization of traditional tribal institution could result in loss of their ecological knowledge and management. Modernization of traditional institution must, therefore, be carefully monitored and efforts should be made to ensure that forest related knowledge is not lost during modernization. Based on findings the following recommendations are inherent in this study:

1. Community members should be involved in planning and conservation of natural resources.
2. Empowerment programmes to provide alternative means of livelihood are to be made available for the local people to reduce over dependence on environmental resources.
3. Government should create incentives to boost resources conservation and management.
4. Government should encourage old age traditional religious culture for managing, conserving and protecting biotic resources in the region.

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