Reserves of India: Issues of Conservation and Conflict

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INTRODUCTION

An environment, which is rich in biological diversity, offers the broadest array of options for sustainable human welfare and for adaptation to change. Biodiversity is the totality of genes, species, ecosystems and habitats in a region. An environment which is rich in biodiversity constitutes resources upon which humanity depends to fulfill its fundamental needs. Increasing human interventions on the ecosystems have accelerated the process of biodiversity loss. It has serious economic and social costs for any country. The experiences of the past few decades have shown that as industrialization and economic development take place in the society, the patterns of production, consumption and needs change, strain and even alter ecosystems. If one traces the linkages of biodiversity, it is observed that human population and its interventions have been the major factors for enhancement in the extinction process.

Conservation and sustainable use of biodiversity, hence, are fundamental to sustainable development. The mapping of mega-diversity zones indicates that most of the mega-biodiversity zones are found in South America, Central Africa and India/ South China. An assessment of biological diversity at world level (Hannah & Lohse, 1993, Mittermeier, 1988) reveals that Asia is the most threatened continent. Perhaps, the best approach to understand biodiversity is to look at it in a hierarchical manner in which biological organisms are organized. The smallest unit starts from the diversity contained in the genetic material of individual organisms and then goes on to encompass the biological communities in which species are organized and on to the ecosystems in which they exist. Biodiversity is recognized at three levels *viz.*, genetic, species and ecosystem levels. At all three levels of biodiversity, the components are dynamic in space and time. The genetic composition of species changes over time in response to natural and human induced selection process. The ecosystems strongly respond to external dynamics and internal stresses.

Ecological systems do not exist as discrete units but represent different parts of a natural continuum in the form of landscape. Landscape can also be considered as a higher level of biological complexity, immensely useful for understanding various complex processes. While biodiversity is usually considered at the species level, maintenance of biodiversity requires

management at higher levels of organization, particularly at the landscape scale, which includes human beings also.

To preserve species diversity most effectively, management plans must preserve the habitats and landscape structures needed by the target species, rather than simply preserving the species in isolation from the larger, potentially changing environment. Management practices aimed directly at a particular species run the risk of losing ecosystem functions which might actually be crucial for the target species, but remained unknown when the management plan was created. Furthermore, maximizing benefits for one species may threaten others. The ideal is to preserve overall ecosystem health, including species diversity. It can be best accomplished by integrating it into the fabric of social, environmental and economic canvas.

This has led to the process of sustainable development where man and environment are integrated together for a better future for all the living being. These considerations led to the origin of the concept of Biosphere Reserve.The initiation of Biosphere Reserves goes back to the "Biosphere Conference" organized by UNESCO in 1968. This was the first inter-governmental conference examining as how to reconcile the conservation and use of natural resources, thereby foreshadowing the present-day notion of sustainable development. This Conference resulted in the launching of the "Man and the Biosphere" (MAB) Programme of UNESCO in 1970. It aimed to facilitate resolution of increasing conflict between the people and Protected Areas

BIOSPHERE RESERVE AS A CONCEPT:

Biosphere Reserves are areas of terrestrial and coastal ecosystems promoting solutions to reconcile the conservation of biodiversity with its sustainable use. They are internationally recognized, nominated by national governments and remain under sovereign jurisdiction of the states where they are located.

The UNESCO's framework stipulates that Biosphere Reserves (BRs) should be representative of a bio-geographic province and should have appropriate zoning system with legally constituted and minimally disturbed core zone. In addition, the site should contain unique and pristine biodiversity, ecosystems and landscape suitable to explore and demonstrate approaches to sustainable development and should be of appropriate size to serve three functions, viz., conservation, development and extension of logistic support. It is aimed to bring at least one

representative site in the country within each bio-geographic province under the network of Biosphere Reserves.

BRs are designated to deal with important questions of reconciling the conservation of biodiversity, the quest for economic and social development and maintenance of associated cultural values. Some important aspects of Biosphere Reserves delineates conservation of landscapes, ecosystems, species and genetic variations; economic development, which is culturally, socially and ecologically sustainable and extension of logistic support for research, monitoring, education and exchange of information related to local, national and global issues.

Launched in 1970,Man and Biosphere (MAB) programme covers different ecosystem types from mountain to the sea, from rural to urban systems as well as social aspects. MAB has proposed an interdisciplinary research and capacity building aiming to improve the relationship of the people with environment. In order to achieve the stated objectives it targets biodiversity from the ecological, social and economic dimensions.

In nutshell, the Biosphere Reserve (BR) is expected to fulfill three basic functions, which are complementary and mutually reinforcing:

A. Conservation function - to contribute to the conservation of landscapes, ecosystems, species and genetic variation;
B. Development function -to foster economic and human development which is socio-culturally and ecologically sustainable;
C. Logistic function - to provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development.

Biosphere Reserve: India

The Ministry of Environment and Forest, Government of India has launched the Biosphere Reserve (BR) Programme since 1986. The specific objectives of this Programme are:

A. to conserve the diversity and integrity of plants and animals within the natural eco-system

B. safeguard the genetic diversity of species on which their continuing evolution depends,
C. to provide areas for multi-faceted research and monitoring,

D. to provide facilities for research and training, and
E. to ensure the sustainable use of natural resources through most appropriate technology for improvement of economy and living standard of local people.

Presently there are 18 biosphere reserves in India. These are:

1. Nilgiri Biosphere Reserve
2. Gulf of Mannar
3. Nanda Devi
4. Sunderban
5. Similipal
6. Pachmarhi
7. Nokrek
8. Great Nicobar
9. Manas
10. Dibru-Saikhowa
11. DehangDibang
12. Khangchendzonga
13. Agasthyamala
14. Achanakmar-Amarkantak
15. Kachchh
16. Cold Desert
17. Seshachalam
18. Panna

ISSUES LINKED WITH BIOSPHERE RESERVE DEVELOPMENT IN INDIA

The BRs of India are also the abode of many traditional societies who have always been an integral part of the ecosystem functioning there, living close to the Nature. Living in the areas rich in natural resource, traditional societies fulfill many of their livelihood requirements from the rich biodiversity around them. The ecosystems such as forest not only meets a variety of livelihood needs of the forest dwelling societies, through products such as timber and non-timber forest products, but also sustain traditional shifting cultivation and agricultural practices contributing to the food security of the people within the BRs.

In the context of India, human population living within the Biosphere Reserves has always been a matter of conflicting interests and debate. These considerations prompted UNESCO (1996) to move away from the earlier held view of concentric rings of core, buffer and transition zones, to a more flexible way of looking upon the local needs and situations. The flexibility and creativity in

the Biosphere Reserve's concept need to be seen from the point of view of both biodiversity as well as the cultural diversity. The benefits of cultural diversity at societal level are comparable to those accruing from the biodiversity. It is important to allude that while the issues of biodiversity have been addressed at length and caught attention widely, the cultural diversity has not been touched upon and left to the point of oblivion.

Building upon the Traditional Knowledge System

The forest-linked activities of the traditional societies are mediated through a rich traditional ecological knowledge (TEK). TEK has economical, ecological and socio-cultural dimensions. A participatory approach involving stakeholders will prove very effective in the management of natural resources and ecosystem conservation in BR. Such an approach must imply traditional knowledge and traditional conflict prevention strategies in the management of BR resources. For example, in certain parts of North Sikkim, close to the BR, local communities have a system known as *zumsha* concerned with the social, developmental and environmental issues of local significance (Kumar, 2013).The local governance system of Lachen valley is unique. This system is called the *Dzumsa* system. The literal meaning of this is 'gathering of people'. It is the traditional institution entrusted with task of administering and organising activities within a given territory. The general council of the *Dzumsa* is compose of household heads. The head of the Zumsa is known as *Pipon*. This system of self-governance was initially established during the first half of the 19th century in order to provide structure and cohesion to the societies and the activities of the people and was operative in Lachen and Lachung blocks of the Sikkim. In the year 1970s, when the Indian Government initiated the reorganisation of the Sikkim's administration and introduced the *Panchyatiraj* system, the *Dzumsa* was officially recognised as system of self-governance in place of *Panchyatiraj*. This system continues to function even today in Lachen and Lachung. The *zumsha* system prescribes and regulates activities such as grazing, tree felling and of medicinal plants and herbs, taking of full account of traditional ecological knowledge and imposing penalties for violations. Grazing is permitted only when complete care is taken to retain the regeneration capacity of rangeland.

This includes allotment of a particular piece of land for grazing, determination of the number of the cattle allowed to graze, guidelines about the correct season, and suggestions concerning the

times when cattle should be left in and brought out of the forests. Granting by the *zumsha* the right to fell the trees and collect medicinal plants and herbs, with the recommendation of Pipon, is also based on traditional ecological knowledge with the little danger of over exploitation. Such factors as socioeconomic status of household and systematic allotment of area for collection, considering the capacity for ecological regeneration, are also taken into account in the granting of rights concerning quantity, species, etc. Other form of local traditional knowledge can also be integrated with the BR management to make it more efficient. Another example is the restriction of grazing in the Nanda Devi BR (valley of Flower) has led to the undesirable spread of *Polygonal sp.*

Since Brs are home to many traditional societies which are at various stages in their evolution, building upon TEK is crucial for addressing the issues pertaining to management of BRs with concern for their sustainable livelihood needs.

Provisions of Alternative Livelihood

Human population living close to BR is highly dependent on forests in the buffer zones, be it for timber and non-timber forest products. Imposition of Biosphere principals in terms of conservation entails certain restriction on the use of biosphere reserve's resources and it translates in to some costs, which people have to bear. The studies have shown that the people are willing to accept as well as pay for the sake of the conservation if their economic concerns are properly addressed. The studied carried out in various BRs of India (Mandal, 2007; Singh &Patil, 2007; Chandra et al., 2013) through light on the fact that conflicts are likely to crop up only when the real pressure of conservation restrictions begins to affect socioeconomic conditions of people living in fringe area settlements, in the absence of viable alternative to their traditional dependence on BR resources.

An effective conservation policy requires a strategy based on provision of alternative livelihood options and additional resources, to defray the pressure and dependence in the BR resources is also important for the efficient management and conflict prevention. This can be achieved by capacity building in local communities to enhance the productivity, thereby reducing dependence on biosphere resources that are likely to be subject to restrictions.

For the success of BR programmes it is sine-qua-non that local communities must derive direct and indirect benefits in the implementation of overall BR concepts. Provision of alternative livelihood options and additional resources, to defray the pressure and dependence in the BR resources is also important for the efficient management and conflict prevention. This can be achieved by capacity building in local communities to enhance the productivity, thereby reducing dependence on biosphere resources that are likely to be subject to restrictions. In summary, the most important initiative to be implemented concurrently for effective conflict prevention necessitate that for ecosystem protection has to be based on participatory approach wherein community is given responsibility for effective monitoring and exercise of traditional rights and forks of resource use.

Sacred Landscape and Conservation

Many traditional forest dwelling societies treat their habitat as sacred. People venerate and propitiate their deities of local pantheon and regional level. The sacredness begins from species level and extends up to landscape level. It is true in case of the Lepcha and the Bhutis communities of Khangchendzonga, the Shompen of Great Nicobar BRs.

It can be explained through an example. Sikkim is known as '*Demazong*' which means "hidden valley full of treasure, fruits and flowers". It is land of hydraulic culture where almost every water body, be it small or big, is treated as sacred. In fact the sacredness begins at species level and reaches up to the landscape level with the Mountain Khangchendzonga acting as guardian deity (Chandra et al., 2013)

The local deities are related with nature and its components. There are some festivals and rituals to be observed during the year.In the month of August, 'Panglhabsol' festival is celebrated and Buddhist lamas perform rituals and offer prayers in the name of the Mount Khangchendzonga. The monk and devotees go up to Dzongri 'Dhaplha gang' to offer prayers and rituals to Mount Khangchendzonga for deities for good harvest and to make the whole region free from diseases and any king of natural disaster. There are altogether 109 known existing large and small lakes in Sikkim regarded as sacred by the people. Besides all rivers a and springs are also regarded as sacred. People dare not pollute these water bodies. In fact the people of Sikkim even apprise the outsiders also about the sanctity of these water bodies and the kind of the nature's wrath they might face if they pollute the water bodies. Of these 109 lakes, seven lakes are considered holy

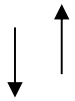
and believed to be having power to fulfil the wish of the people. Therefore, they are also called as wishing lakes. These seven holy lakes are Khecheoparli, Kathok Tso, Bar Cho Marpu, Phu Cho Karpu, Ka Bur La Tso and Dafuk Yum Tso. These lakes are considered as seven offering bowls to the MountKhangchendzonga. Besides, there are four holy caves in the four directions of Sikkim, viz, Lhari Nying Phu in the North, Dechen Phu in the west, Khandu Sang Phu in the south and Bas Phu in the east directions. These caves are religiously protected and people do not disturb the flora and fauna of these areas.

Fig.1

ORGANIC RELATION BETWEEN MAN AND NATURE

Sacred diffused Cultural Landscape

Sacred Mountain System



Sacred River

Sacred lakes

Sacred Places

Sacred Plant & Sacred Stone

Even at meso and micro level, every landscape be it high land or low land, every streams and big trees and caves are believed to be the abode of a guardian deity which (*Yulha, Zibda*) are worshipped with great devotion by the local monastery in the morning rituals.

Every human habitation and places which have the footprints of human being are decorated with wheel of life, eight lucky signs, prayer flags, chorten etc. The prayer flags can be seen almost every where in Sikkim- on hills, along the water bodies, beneath a big trees and on building tops. It seems that the sanctity to sacredness flow from the religious rituals. The religion is not an external element to the people but has brought together both the man and nature to interact on day-to-day basis. Consequently it has led to emergence and operationalisation of organic relationship between man and the nature (Fig.1). This relation is world apart from the Newtonian reductionist approach which put emphasis on the importance of parts. It is, on the contrary, a holistic relation where man interacts with nature with respect and treats it as a living entity.

CONCLUSION

Presently the management efforts has largely been centered around protection of natural resources within BRs from the outside impacts, but at the same time restricting the use of these resources by the local communities residing in the BR. The concept of sustainable use of resources yet has not taken due to lack of location specific understanding on how the resources should be managed. Of late emphasis is laid on the aspect that the eco-development should also combat problems of community participation in forest eco-system management/rehabilitation directly. What more is required for the management of natural resources is linkage with reinforcement of traditional system of land-based activities based on the traditional value system of local communities.

The BR management, therefore, necessitates not only understanding of ecological issues but also the socio-economic and cultural issues linked with the former. Understanding societal perceptions of natural resources as a cultural resource – often seen through the conceptual framework of sacred species, sacred groves, sacred water bodies, sacred landscape or even sacred mountain system- and integrate it in the management strategy is the necessary for the success of the Biosphere Reserve programme. In order to achieve this, conservation-linked development strategy has to be based on a value system that people can understand, appreciate and accept. It, in turn, requires appropriate institutional arrangements for peoples' participation, through a 'bottom-up approach', ensuring that each household takes part in the decision making process at the lowest level in the hierarchy keeping into consideration the gender sensitivities.

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