

**PROTECTION, DEVELOPMENT ,MAINTENANCE AND RESEARCH**

**IN  
BIOSPHERE RESERVES  
IN  
INDIA.**

**GUIDELINES AND PROFORMAE**



सत्यमेव जयते

**GOVERNMENT OF INDIA**  
**MINISTRY OF ENVIRONMENT AND FORESTS,**  
**CGO Complex, Lodi Road, New Delhi -110003.**  
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## FOREWORD

The Man and Biosphere (MAB) Programme initiated by UNESCO in 1972 is a broad based ecological programme aimed at improvement of the relationship between man and the environment; to predict the consequences of today's actions on tomorrow's world and thereby to increase man's ability to manage the natural resources of the biosphere efficiently. The approach emphasizes research and training and seeks scientific information to find solution to problems in management and conservation.

The concept of Biosphere Reserves, especially its zonation, into **Core Area(s)** (dedicated to conservation), **Buffer Area(s)** (sustainable use) and **Transition Area(s)** (equitable sharing of benefits) were later broadly adopted under the Convention on Biological Diversity (CBD) process which entered into force on 29<sup>th</sup> December, 1993. The CBD has two principal objectives, namely, '**Conservation and Sustainable Use of Biological Diversity**' and '**Fair and Equitable sharing of benefits arising from its utilization**'. The Articles 6-20 of CBD call for in-situ and ex-situ conservation, incentives for conservation and sustainable use, research and training, awareness and education, impact assessment, regulating access to genetic resources, access and transfer of technology and provisions of financial resources. While dealing with these issues, CBD emphasizes on nationally determined priorities, capacity and needs and with full and effective participation of local communities.

Biosphere Reserves are special entities (sites) for both the people and the nature and are living examples of how human beings and nature can co-exist while respecting each other's needs. These reserves contain genetic elements evolved over millions of years that hold the key to future adaptations and survival. The high degree of diversity and endemism and associated traditional farming systems and knowledge held by the people in these reserves are the product of centuries of human innovation and experimentation. These sites have Global importance, having tremendous potential for future economic development, especially as a result of emerging new trends in Biotechnology.

I am happy to inform that the project managers of the Biosphere Reserves have successfully implemented development and conservation programmes in these sites despite several odds faced by them in these areas due to remoteness, difficult topography and sensitivity involved in dealing with local inhabitants, constitute mainly of indigenous communities

It is worth mentioning that the contribution by Indian National MAB Committee has guided and shaped the programme in India. It is now one of the most effectively managed programmes with carefully designed Action Plans for each Biosphere Reserve, supported by scientific research.

In order to implement the programme effectively, it is necessary that a comprehensive guideline is available to the Stakeholders for better understanding of the issues and problems and ensuring long term protection for sustainable use. I may record here that earlier a comprehensive guideline was issued on the subject in 1999 and made available to various stakeholders. The present guideline is an updated version, incorporating the latest status. In this regard, I wish to especially bring on record the extremely useful contribution received from the Wild Life Institute of India, Dehradun. The Institute has provided excellent maps of India on biogeographical zones and provinces and specific

locations in regard to existing and proposed Biosphere Reserves. This is gratefully acknowledged.

I am especially thankful to Ms. Meena Gupta, Secretary ( Environment & Forests ) and Shri B.S.Parsheera, Additional Secretary, Ministry of Environment & Forests, Government of India who have provided overall guidance to the National Man and Biosphere Programme and have provided valuable contributions. I would also like to place on record my thanks to my colleague, Dr. R.K.Rai, Additional Director and Member Secretary, Indian National MAB Committee for his contribution in bringing out these updated guidelines.

I sincerely hope that these guidelines will significantly contribute in educating the stakeholders, especially local communities, managers and researchers in further improving the activities under the programme.

( G. Balachandhran )  
JOINT SECRETARY TO THE GOVERNMENT OF INDIA

## **Biosphere Reserves: Indian Approach**

### **Introduction**

The idea of 'Biosphere Reserves' was initiated by UNESCO in 1973-74 under its Man and Biosphere (MAB) Programme. The MAB, launched in 1970 by UNESCO, is a broad based ecological programme aimed to develop within the natural and social sciences a basis for the rational use and conservation of the resources of the biosphere and for the improvement of the relationship between man and the environment; to predict the consequences of today's actions on tomorrow's world and thereby to increase man's ability to manage efficiently the natural resources of the biosphere. The approach emphasizes the importance of the structure and functioning of ecological systems and their mode of reaction when exposed to human intervention including impact of man on the environment and vice-versa. MAB is primarily a programme of research and training and seeks scientific information to find solution of concrete practical problems of management and conservation. MAB's field projects and Biosphere reserves constitute the main goal of the whole programme.

The Indian National Man and Biosphere (MAB) Committee identifies and recommends potential sites for designation as Biosphere Reserves, following the UNESCO's guidelines and criteria. By **25<sup>th</sup> October 2007, fourteen Biosphere reserves have been established in India** and some additional sites are under consideration. (Annexure I-A)

### **2. Definition**

Biosphere Reserve (BR) is an international designation by UNESCO for representative parts of natural and cultural landscapes extending over large area of terrestrial or coastal/marine ecosystems or a combination thereof. BRs are designated to deal with one of the most important questions of reconciling the conservation of biodiversity, the quest for economic and social development and maintenance of associated cultural values. **BRs are thus special environments for both people and the nature and are living examples of how human beings and nature can co-exist while respecting each others' needs.**

These areas are internationally recognized within the framework of UNESCO's Man and Biosphere (MAB) programme, after receiving consent of the participating country. **The world's major ecosystem types and landscapes are represented in this network.**

### **3. Characteristics of Biosphere reserve**

The characteristic features of Biosphere Reserves are:

- (1) Each Biosphere Reserves are protected areas of land and/or coastal environments wherein people are an integral component of the system. Together, they constitute a world wide network linked by International understanding for exchange of scientific information.
- (2) The network of BRs include significant examples of biomes throughout the world.
- (3) Each BR includes one or more of the following categories:-
  - (i) BRs are representative examples of natural biomes.

- (ii) BRs conserve unique communities of biodiversity or areas with unusual natural features of exceptional interest . It is recognized that these representative areas may also contain unique features of landscapes, ecosystems and genetic variations e.g. one population of a globally rare species; their representativeness and uniqueness may both be characteristics of an area.
- (iii) BRs have examples of harmonious landscapes resulting from traditional patterns of land-use.
- (iv) BRs have examples of modified or degraded ecosystems capable of being restored to more natural conditions.
- (v) BRs generally have a non-manipulative core area, in combination with areas in which baseline measurements, experimental and manipulative research, education and training is carried out. Where these areas are not contiguous, they can be associated in a cluster.

#### 4. Functions of Biosphere Reserves

##### *Conservation*

- To ensure the conservation of landscapes, ecosystems, species and genetic variations.
- To encourage the traditional resource use systems;
- To understand the patterns and processes of functioning of ecosystems;
- To monitor the natural and human-caused changes on spatial and temporal scales;

##### *Development*

- To promote, at the local level, economic development which is culturally, socially and ecologically sustainable.
- To develop the strategies leading to improvement and management of natural resources;

##### *Logistics support*

- To provide support for research, monitoring, education and information exchange related to local, national and global issues of conservation and development
- Sharing of knowledge generated by research through site specific training and education; and
- Development of community spirit in the management of natural resources.

#### 5. Beneficiaries

**Direct Beneficiaries** of the Biosphere Reserves are the local people and the ecological resources and **indirect beneficiaries** are scientists, government decision-makers and the world community.

## **6. International Status of Biosphere Reserves**

### **6.1 Like Minded Mega-diverse Countries of the World.**

Of the 17 like minded mega-diverse countries namely Brazil, Bolivia, China, Columbia, Democratic Republic of Congo, Ecuador, Indonesia, Kenya, Mexico, Madagascar, Malaysia, Peru, Philippines, South Africa, India, Venezuela, Zaire, which collectively constitute 60-70% of the world's biodiversity, Australia alone is considered developed. The pressure on wild lands and forests for economic development is too high in rest of the 11 countries taking priority over environmental or ecological issues. Myers (1990) identified 18 Hotspots that feature exceptional concentrations of species with high levels of endemism and that face exceptional threat of destruction. Of these, 10 Hotspots are in the Asia-Pacific region, (13% of the land area of earth) out of which, India harbours two hotspots viz., 'Eastern Himalayas' and 'Western Ghats'. Demands for economic growth are high in these regions and the rapidly increasing population – 60 million annually, i.e. 50% of the world's population exerts too much pressure on the biological resources. Unless immediate decisive steps are taken to counter the effects of deforestation, fragmentation and degradation of the remaining wilderness areas, pragmatic assumptions foretell that much of the biodiversity of Asia will be lost within a few decades.

**6.2 International Efforts :** The International Co-ordinating Council (ICC) of UNESCO in its first meeting in Paris held during 9-19 November, 1971, introduced the designation 'Biosphere Reserve' for natural areas. Future functions of BRs were given concrete shape in MAB Project area of "Conservation of natural areas and of the genetic material they contain" (UNESCO, 1972). The concept of Biosphere Reserves was refined by a Task Force of UNESCO's MAB Programme in 1974, and BR network was formally launched in 1976. During September 26 – October 2, 1983 first international Biosphere Reserve congress was convened in Minsk (Belarus) which gave rise to an 'Action Plan for BRs'. At the twelfth session of ICC held in Paris from 25 to 29 January 1993, following five priority areas were identified to enable BRs to implement results of United Nations Conference on Environment and Development (UNCED held in Rio de Janeiro in June 1992.):

- Conservation of biological diversity and ecological processes
- Development of sustainable use strategies
- Promotion of information dissemination and environmental education.
- Establishment of a training structure
- Contribution to the establishment and implementation of global environmental monitoring system.

### **The World Network**

In order to facilitate cooperation, BRs are admitted into International network by International Coordinating Council (ICC) of the Man and Biosphere (MAB) Programme of UNESCO on the request of the participating country subject to their fulfillment of prescribed criteria. The BRs remain under the sole sovereignty of the concerned country/state where it is situated, and participation in World Network is voluntary. Delisting from international

Network is done as an exception on ground of violation of obligation for conservation and sustainable development of Biosphere Reserves after consulting the concerned Government. As on 12<sup>th</sup> September, 2007 there were **507 Biosphere Reserves on World Network in 102 countries recognized by UNESCO which include Nilgiri, Sunderbans, Gulf of Mannar and Nanda Devi BRs from India.**

## **7. Biosphere Reserves : Indian approach**

### **7.1 Bio-geographical Regions in India.**

The geographical location of India between 8° 4' N and 37° 6' N provides a wide latitudinal spread and permits a wide range of variations in temperature. The topographical diversity marked by mountainous regions covering an area close to 100 million hectares, arid and semi-arid zones spreading over 30 million hectare and the long coast line over 7000 kms, coupled with varied precipitation constitute a rich landscape diversity.

#### **India consists of :**

- a) **Two 'Realms** – the Himalayan region represented by Palearctic Realm and the rest of the sub-continent represented by Malayan Realm
- b) **Five Biomes** - (i) Tropical Humid Forests (ii) Tropical Dry or Deciduous Forests (including Monsoon Forests) (iii) Warm deserts and semi-deserts (iv) Coniferous forests and (v) Alpine meadows.
- c) **Ten Bio-geographic Zones** - 1. Trans Himalayan, 2. Himalayan, 3. Indian Desert, 4. Semi-Arid, 5. Western Ghats, 6. Deccan Peninsula, 7. Gangetic Plain, 8. North-East India, 9. Islands, 10. Coasts and
- d) **Twenty five Bio-geographic provinces.**

It is this ecological diversity that makes India as one of the mega-diversity regions on the globe. Efforts are on to designate at least one Biosphere Reserve in each of the Bio-geographic Provinces.

### **7.2 National Biosphere Reserve Programme.**

India has created a network of **protected areas** in the form of 96 National Parks, 510 Wildlife Sanctuaries and 28 Tiger Reserves and 25 Elephant Reserves. The area covered under protected area network accounts for around 5% of the total geographical area of the country. **The rich biodiversity in India has given shape to variety of cultural and ethnic diversity which includes over 550 tribal communities of 227 ethnic groups spread over 5,000 forest villages.**

The national Biosphere Reserve Programme was initiated in 1986 and its aims and objectives are as follows:

### **7.3. Aims of the Scheme**

- To serve as wider base for conservation of entire range of living resources and their ecological foundations in addition to already established protected area network system
- To bring out representative ecosystems under conservation and sustainable use on a long term basis.

- To ensure participation of local inhabitants for effective management and devise means of improving livelihood of the local inhabitants through sustainable use.
- To integrate scientific research with traditional knowledge of conservation, education and training as a part of the overall management of BR.

The Core Advisory Group of Experts, constituted by Indian National MAB Committee identified and prepared a preliminary inventory of 14 potential sites for recognition as BRs in 1979. Subsequently additional BR sites were proposed by the National Committee/State Governments, Experts.

#### **7.4. Objectives**

It may be noted that BRs are not a substitute or alternative, but a re-enforcement to the existing protected areas. The objectives of the Biosphere Reserve programme, as envisaged by the Core Group of Experts, are as follows:

- To conserve the diversity and integrity of plants and animals within natural ecosystems;
- To safeguard genetic diversity of species on which their continuing evolution depends;
- To provide areas for multi-faceted research and monitoring;
- To provide facilities for education and training; and
- To ensure sustainable use of natural resources through most appropriate technology for improvement of economic well-being of the local people.

These objectives should be oriented in such a way that the BRs are the Units wherein the Biological, socio-economic and cultural dimension of conservation are integrated together into a realistic conservation strategy.

#### **7.5. Criteria**

The criteria for selection of sites for BRs as laid down by the Core Group of Experts in 1979 are listed below:

##### *Primary criteria*

- A site that must contain an effectively protected and minimally disturbed core area of value of nature conservation and should include additional land and water suitable for research and demonstration of sustainable methods of research and management.
- The core area should be typical of a biogeographical unit and large enough to sustain viable populations representing all tropic levels in the ecosystem.

##### *Secondary criteria*

- Areas having rare and endangered species
- Areas having diversity of soil and micro-climatic conditions and indigenous varieties of biota.
- Areas potential for preservation of traditional tribal or rural modes of living for harmonious use of environment.

## **7.6. Structure and Design of Biosphere Reserves**

In order to undertake complementary activities of biodiversity conservation and development of sustainable management aspects, Biosphere Reserves are demarcated into three inter-related zones. These are (i) natural or core zone (ii) manipulation or buffer zone and (iii) A transition zone outside the buffer zone.

### **The Core Zone:**

The core zone is kept absolutely undisturbed. It must contain suitable habitat for numerous plant and animal species, including higher order predators and may contain centres of endemism. Core areas often conserve the wild relatives of economic species and also represent important genetic reservoirs. The core zones also contain places of exceptional scientific interest. A core zone secures legal protection and management and research activities that do not affect natural processes and wildlife are allowed. Strict nature reserves and wilderness portions of the area are designated as core areas of BR. The core zone is to be kept free from all human pressures external to the system.

### **The Buffer Zone:**

In the Buffer Zone, which adjoins or surrounds core zone, uses and activities are managed in ways that protect the core zone. These uses and activities include restoration, demonstration sites for enhancing value addition to the resources, limited recreation, tourism, fishing and grazing, which are permitted to reduce its effect on core zone. Research and educational activities are to be encouraged. Human activities, if natural within BR, are likely to be permitted to continue if these do not adversely affect the ecological diversity.

### **The Transition Zone:**

The Transition Zone is the outermost part of a Biosphere Reserve. This is usually not delimited one and is a zone of cooperation where conservation, knowledge and management skills are applied and uses are managed in harmony with the purpose of the Biosphere Reserve. This includes settlements, crop lands, managed forests and area for intensive recreation, and other economic uses characteristic of the region.

In Buffer Zone and the Transition Zones, manipulative macro-management practices are used. Experimental research areas are used for understanding the patterns and processes in the ecosystem. Modified or degraded landscapes are included as rehabilitation areas to restore the ecology in a way that it returns to sustainable productivity.

## **7.7. Legal Framework**

Rules and regulations provide a broad planning approach to conservation and wise use of resources of BRs. These aim to ensure that:

- (1) National land and water use planning measures take full account of the functions and values of BRs, and
- (2) Conservation of their biodiversity is guaranteed for sustainable use of benefits of BRs.

The Action Plan of BRs must therefore, be developed and implemented in conformity with other relevant national policies affecting BRs, relevant sections of Plan documents, National Conservation Strategy & Policy Statement on environment and Development (1992), the National Action Plan on Biodiversity (1997), the National Forest policy (1988), the National Water Policy (1987), Coastal Regulation Zones (CRZ), Environmental Protection Act (1986), Wildlife (Protection) Act, 1972 and its amendment (1991) and other relevant acts together with the relevant planning documents.

After review of existing laws, institutions and practices, National planning related to BR is required to be reviewed. Appropriately amended economic valuation of BRs should be applied and the role of the stakeholders in the process should be ensured (so that the plan incorporates both top-down and bottom-up approaches). The corporate sector should be included and Environmental Impact Assessment (EIA) and restoration of degraded ecosystems within BRs must be integrated in to the planning process.

At present BRs are established within the framework of existing laws including Wildlife (Protection) Act, 1972. Rules and Regulations specifically for BRs can be examined by the respective State Governments, if existing laws are inadequate to deal with the requirements of the Biosphere reserves.

### **7.8 How Biosphere Reserves are different from protected areas such as National Parks (NP) and Wildlife Sanctuaries (WS)?**

It may be noted that the BR is not intended to replace existing protected areas but it widens the scope of conventional approach of protection and further strengthens the Protected Area Network. Existing legally protected areas (National Parks, Wildlife Sanctuary, Tiger Reserve and reserve/protected forests) may become part of the BR without any change in their legal status. On the other hand, inclusion of such areas in a BR will enhance their national value. It, however, does not mean that Biosphere Reserves are to be established only around the National Parks and Wildlife Sanctuaries. **However, the Biosphere Reserves differ from protected areas due to their emphasis on :**

- (i) Conservation of overall biodiversity and landscape, rather than some specific flagship species, to allow natural and evolutionary processes to continue without any hindrance.
- (ii) Different components of BRs like landscapes, habitats, and species and land races.
- (iii) Developmental activities, and resolution/mitigation of conflicts between development and conservation,
- (iv) Increase in broad-basing of stakeholders, especially local people's participation and their Training, compared to the features of scheme on Wildlife Sanctuaries and National Parks.
- (v) Sustainable environment friendly development, and sustained coordination amongst different development organizations and agencies.

- (vi) Research and Monitoring to understand the structure and functioning of ecological system and their mode of reaction when exposed to human intervention.

## **7.9. How Biosphere Reserves are designated**

At the initiative of the central/state governments, detailed study is carried out and a project report is prepared by the concerned state following the criteria adopted for designation of BRs. The land and forest being the state concerns, the respective state governments have to agree to designate the identified area as Biosphere Reserve. The Central Govt. provides financial assistance for management and research activities in these BRs. The Management of Biosphere Reserves is the responsibility of the concerned State/UT with necessary technical input and training facilities provided by the Central Government.

## **8. The Government: Role and Responsibilities**

### **8.1 The Central Government:**

At the national level the Central Govt. assumes responsibility of overall coordination at international & national level. The Central Government is responsible for the following:

- Financial assistance for implementation of the approved items of the programme.
- Technical expertise and know-how including training of personnel; and
- Detailed guidelines covering all aspects of management for implementation by the State/UTs machinery.
- Evaluation.

#### **8.1.1 The Indian National Man and Biosphere (MAB) Committee**

The Indian National Man and Biosphere Committee constituted by the Central Govt. (**Annexure-V**) identifies new sites, advises on policies and programmes, lays down guidelines, reviews progress and guidelines in the light of evaluation studies and feed back.

**The Research projects** to be taken up in existing as well as potential sites are recommended by a thematic Research Advisory Committee constituted by the Ministry which also reviews progress of Research project and provides technical inputs for use in management.

### **8.2 The State Governments/UT Administration and other Stakeholders.**

As per the constitutional framework, the States' are the proprietors and custodians of 'Land' and 'Forests'. Accordingly, the local management of the BRs is the responsibility of the concerned State Government/UT Administration.

#### **8.2.1 Other stakeholders.**

The management activities are to be implemented involving effectively the local communities, local govt. agencies, Scientists, economic interest groups, cultural groups and other stakeholders.

### **8.2.2 Policy/ Planning and Management Mechanism.**

The State Government must ensure that each BR will have effective and long term management policy or plan and an appropriate 'Authority' or 'mechanism' to implement it. The management of a BR should include:

- i) A mechanism to protect the core zone;
- ii) Appropriate facilities to undertake research and monitoring. The management Authority must ensure encouragement to research and monitoring by Research Institutions.
- iii) Adequate provision for people's participation by enlisting their cooperation. (Local and regional understanding in planning and managing the area for conservation and sustainable development is important for human benefit ).

### **8.2.3 Mechanism to oversee the programme:**

The State Govts. would constitute :

(i) **State level Steering Committee** to be headed by Chief Secretary or Additional Chief Secretary or Principal Secretary (Forests) of the State to oversee the programme. This committee would have wide representation from various line departments of the State and Central Government, Scientists with requisite expertise, representatives of designated 'Lead Centre' (Research Institution) and representative of Union Ministry of Environment & Forests. This committee should critically examine the Management Action Plans (MAPs) and make appropriate recommendations to Central Government and other financing agencies as appropriate.

(ii) **Local Level Committee** to be headed by Commissioner or Project Director (who may be sufficiently Senior IFS Officer) should co-ordinate activities of various Departments and recommend suitable management interventions for incorporation in the Management Plans.

(Note: In case a given site (BR) receives funds under various schemes such as development of National Parks and Sanctuaries, Tiger Project, Project Elephant, Wet land, mangroves and coral reefs etc., the Steering Committee of both State and Local levels should normally consider and recommend appropriate elements of management under different programme to avoid duplication. The Committee should scrupulously ensure that in the event of a given component or activity being funded from more than one source, the territorial/geographical locations should be different and clearly delineated, and stated in the proposal to avoid duplication. The responsibility for ensuring this will lie with the Field Director and his field staff).

## **9. Conservation, Development and Logistics Support.**

Development of Biosphere Reserves will have 3 components i.e. Management Action Plans for Conservation and Development, Research and Monitoring and Education and Training for work support which are generally eligible for Central Government assistance.

### **9.1 Management Action Plans (MAPs) for Conservation and Development**

Management which includes the management of the buffer zone, and in a way that ensures local community participation in conservation and utilization of the resources

in a sustainable way as well as evolve ways and means by which economic well-being of local people is secured. It also involves development of management measures that protect the core by relieving pressures on its natural resources. Since the thrust of the programme is on creation of Supplementary and Alternate livelihoods to reduce biotic and anthropogenic pressure, synergy should be developed among the employment-generating programmes of other Departments, and involvement of various line Departments such as Agriculture, Rural Development, Tribal Affairs, Irrigation, Rural and Khadi Village Industry, Soil and Water Conservation, Women and Child Development, Horticulture, Animal Husbandry, Fisheries and Tourism should be ensured. Assistance for marketing local produce should also be provided.

At present the MAP for each BR is prepared by the concerned State Government. In general, the responsibility to manage Biosphere Reserves is given to the Forest Departments. This has resulted in inadequate participation of other relevant departments. It is therefore desirable that a **Biosphere Reserve Management Authority** is established as an autonomous body for effective coordination, management and development of BRs on a scientific basis involving various stakeholders which is expected to include officers and staff from Forest Departments and other line Departments as mentioned above. **The staff handling this subject in respective Departments can be pooled to constitute the proposed body.** This is necessary to facilitate more effective participation of various stakeholders in the programme.

Depending on local socio-economic features, involvement of Eco-Development Committees (EDCs), Panchayats, Forest Protection Committees (FPCs), Self Help Groups (SHGs), Biodiversity Management Committees (BMCs), Joint Forest Management Committees (JFMCs) could be ensured in various management interventions which may not only facilitate people's participation, but also lead to greater transparency.

Although items of intervention shall differ in each Biosphere Reserve, generally the following components are eligible for financial assistance:

**a) *Value addition activities***

Formulation of comprehensive resource inventory and augmentation of required expertise and prioritization of activities with reference to additional income-generating activities will be given priority. These include popularization of energy alternatives, range land and grassland management, habitat improvement, animal husbandry, aquaculture, apiculture and encouragement for continuance of traditional crops including wild relatives of cultivated species for agro-biodiversity conservation, adoption of technologies that make resource utilization sustainable, and cottage industries based on local raw material with eco-friendly processing and production process.

***b) Setting up of Pilot plots***

Among other preferred activities are ecologically appropriate forestry, production of biomass, cultivation of medicinal plants, traditional agriculture and horticulture, facilities for ex-situ conservation measures and development of practices for sustainable use of threatened economically important species.

***c) Rehabilitation of landscapes of threatened species and ecosystems***

**Pockets within BR harboring threatened species should be demarcated for special attention.**

***d) Socio-economic upliftment of local communities***

Creation of facilities for improved health care such as immunization, supply of drinking water, establishment of schools and development of small-scale household industries for manufacturing crafts based on local resources. The agencies such as Khadi Gram Udyog, SIDBI, KVIC, NABARD etc. may be involved to promote activities such as pisci-culture, apiary, mushroom cultivation, duckery, poultry, medicinal plants cultivation among other cottage industries.

***e) Facilitating and Associating Conservation of Critical habitats in Buffer Zones. Acquiring critical habitats.***

There are many Critical habitats in buffer zones which are sometimes privately owned but important for long term survival of the eco-system. These habitats should be given special appropriate attention.

***f) Maintenance and protection of corridor areas***

To augment continuity of ecological processes and regulate movement of wild animal population from one habitat to the other in search of water, food and shelter, corridor areas in buffer zones should be critically monitored. Appropriate viable livelihoods provided to residents in the vicinity of the corridor areas.

***g) Development of communication system and Networking***

Development of viable linkages between various Biosphere Reserves, stakeholders and government & non-government agencies operating in the region to facilitate protection measures and exchange of information.

***h) Development of Eco-tourism***

The thrust of the management is to augment appreciation of people for nature, generate income through eco-tourism, provide means for the people who live and work within and around BR, to attain a balanced relationship with the natural world and to show a more sustainable future while contributing towards the needs of the society. Local community participation in planning and management of BR must be ensured.

Development of management practices that ensure the maintenance of high species diversity, establishment of research, education and training units should be given priority so as to create research facilities for undertaking research by concerned experts/organizations.

**Note :** *The State/UT Govts implement a number of schemes under various Departments. There are some special schemes for tribal areas. While formulating MAP, it must be ensured that schemes of various Central and State Govt. departments are implemented keeping in view the ecological concerns sought to be as required to be addressed under the scheme. While formulating MAP it be ensured that only those items are posed for Central Government funding which are not adequately covered under other Central/State Govt. schemes. Proposals must be submitted as per proforma at Annexure II.*

## **9.2 Research and Monitoring**

Interface with research institutions involved in research activities in the BR area and designated lead institution should be ensured to incorporate relevant research-based recommendations in Management Action Plans. Research and monitoring in existing Biosphere Reserves and Potential sites not only crucial but constitutes the very basis of designing development strategies and solutions for Management of relevant problems. Infact research is very crucial to understand impact of the management practices on ecosystem health. The universities, colleges, research institutions, non-governmental organizations, etc. are encouraged to formulate and implement research projects in BRs. Such proposals are considered by the Central Government for funding. Various relevant organizations are encouraged to develop innovative, inter-disciplinary research proposals for BRs, including modeling system for integrating social, economic and ecological data. The Central Government has designated lead/ co-coordinating research institutions for each existing BR. These institutions are entrusted with a responsibility to collate and disseminate research based information and identify gap areas in research and will serve as focal point for formulation of research projects. These centers will also advise BR Managers on research inputs to be incorporated in management plans.

The Project Investigators shall interact with Lead Centers and Project Managers while formulating research proposals.

### **9.2.1 Thrust Areas for Research and Monitoring**

The thrust area fro research are provided in the ‘Guidelines for support to Environmental Research’ 2006 issued by the Ministry of Environment and Forests. The thrust areas are given in Annexure-III and can be also in browse on web-site <http://envfor.ni.in> . The R&D inputs should primarily aim at filling the gaps between R&D outputs and their practical application at user level. Innovations on the use of locally available resources or technologies which ensure easy application through maximizing cost benefit ratios will be encouraged.

The following thrust areas are recognized for research and monitoring in BRs:

- a. The design of BR requires integrated knowledge on eco-geographical aspects, socio-economic aspects of local communities, magnitude of biodiversity, political and economic factors and categories of people who use the Reserve.
- b. Determination of monitoring regimes which include the identification of indicators, the frequency at which monitoring should be done is an important component of the management of BR.

- c. The role of species in the maintenance of ecosystem health and their response to natural and man-made disturbance regime are critical inputs for management of BRs.
- d. Ecological rehabilitation of degraded habitats is of prime importance in the maintenance of biodiversity as well as in the sustainable use of landscapes and species for economic benefit of the local communities. Research in the area of ecological restoration should be given priority. This may also include propagation technique for rare endemic species.
- e. Valuing of biodiversity may provide the basis for the economic management of the BRs. Consequently, natural resource accounting form an important component of research and development.
- f. Identification of appropriate technologies compatible with the goals of conservation and evaluation of environmental and socio-economic efficiency of the identified technologies.
- g. Applied researches for increasing the efficiency of food crops, animal husbandry and other domestic sectors that bring down the local pressure on forests.
- h. Identification of factors that lead to environmental degradation and unsustainable use of biological resources.
- i. Development of alternative means of livelihood for local populations when existing activities are limited or prohibited within the Biosphere Reserve.
- j. Identification of institutional mechanisms that ensure equitable sharing of benefits from resources available in buffer zone.
- k. A Matrix giving priority areas for Supporting Research may be seen at **Annexure –III and proforma for submission of proposal at Annexure IV**

### **9.2.2 Education and Training**

Education and training among the local communities, public and visitors is an essential component of the management of Biosphere Reserves. Audio-visuals depicting the role of Biosphere Reserves in protecting life-supporting systems and the need to caring for earth through sustainable use of resources should be given priority. Attempt should be made to present to our people the true value of our plant and animal diversity and make them accept its relevance in their own life. Training to the local youth in skills that enable them to undertake participation roles in the management of BRs is also crucial for the long-term maintenance of BRs. Designing of training package is also a priority area and imparting training is an aspect of management. Development and demonstration of integrated resource management with people's participation in buffer zone villages is also a part of the training. In addition, training and education of the personnel responsible for management of BRs may also be assured in order to assimilate modern concept and understanding about conservation and sustainable use of Biological resources.

## **10. Lead (Research) Institutions.**

The Central Government designates Lead Institutions for each Biosphere Reserve for performing following functions:

1. Collection, Synthesis and dissemination of research based information in respect of respective BR from all sources;
2. Interaction with regional research organizations for development of suitable research projects;
3. Undertake research and develop data bank;
4. Maintain regular Interface with BR managers to assess the research needs and crucial areas requiring research efforts and providing research inputs for inclusion in Management Action Plans.
5. Publication of a compendium of up to date information and bringing bi-annual publications aimed at educating stakeholders.
6. Preparation of project document for designation of new Biosphere Reserves in coordination with concerned State Government(s).
7. Formulation of project proposals for designation of Indian Biosphere Reserves on World Network of BRs recognized by UNESCO.
8. Any other assignment which may be entrusted by Central/ State Govt. to achieve the larger objectives of the scheme.

**A) List of Biosphere reserve, their area, date of Notification and location**

S.No.	Name of the Biosphere Reserve & total geographical area (km <sup>2</sup> )	Date of Notification	Location (State)
1.	<b>Nilgiri (5520)</b>	1.8.86	Part of Wynad, Nagarhole, Bandipur and Madumalai, Nilambur, Silent Valley and Siruvani hills (Tamil Nadu, Kerala and Karnataka)
2.	<b>Nanda Devi (5860.69)</b>	18.1.88	Part of Chamoli, Pithoragarh & Almora Districts (Uttaranchal)
3.	Nokrek (820)	1.9.88	Part of Garo Hills (Meghalaya)
4.	Manas (2837)	14.3.89	Part of Kokrajhar, Bongaigaon, Barpeta, Nalbari, Kamrup and Darang Districts (Assam)
5.	<b>Sunderbans (9630)</b>	29.3.89	Part of delta of Ganges & Brahmaputra river system (West Bengal)
6.	<b>Gulf of Mannar (10500)</b>	18.2.89	Indian part of Gulf of Mannar between India and Sri Lanka (Tamil Nadu)
7.	Great Nicobar (885)	6.1.89	Southern most islands of Andaman and Nicobar (A&N Islands)
8.	Similipal (4374)	21.6.94	Part of Mayurbhanj district (Orissa)
9.	Dibru-Saikhowa (765)	28.7.97	Part of Dibrugarh and Tinsukia districts (Assam)
10	Dehang Debang (5111.5)	02.09.98	Part of Siang and Debang valley in Arunachal Pradesh
11	Kanchanjunga (2619.92)	07.02.2000	Parts of North and West Sikkim.
12.	Pachmari (4926.28)	03.03.99	Parts of Betur, Hoshangabad and Chindwara, Distt. of Madhya Pradesh.
13.	Agasthyamalai (3500.36)	12.11.2001 ( area expanded on 30.3.2005)	Parts of Thirunelveli and Kanya Kumari Districts in Tamil Nadu and Thiruvanthapuram, Kollam and Pathanamthitta in Kerala.
14	Achanakmar Amarkantak	30.3.05	Parts of Anuppur and Dindori Distt. of M.P. and Bilaspur Distt. of Chattisgarh.

- Sites with bold letter have been recognized by UNESCO on World Network of Biosphere Reserves and proposals in respect of S.No. 4,8,11 and 12 are under consideration.

**B. Potential sites yet to be designated as BR.**

1.	Namdapha	Arunachal Pradesh
2.	Thar desert	Rajasthan
4.	Little Rann of Kutch	Gujarat
5.	Kaziranga	Assam
6.	Kanha	Madhya Pradesh
7.	North islands of Andaman	Andaman & Nicobar
8.	Abujmarh	Madhya Pradesh
10.	Cold desert	Jammu & Kashmir, Himachal Pradesh
11.	Seshachalam	Andhra Pradesh
12.	Chintapalli	Andhra Pradesh
13.	Lakshadweep islands	Lakshadweep
14	Singbhum,	Jharkhand



**STATE WISE LIST OF MANAGERS OF BIOSPHERE RESERVES AND NODAL SCIENTISTS FOR LEAD (RESEARCH) INSTITUTION AND THEIR CONTACT NUMBERS & Email.**

Name of State	Name of Biosphere	Name and Email Address	Telephone No	Lead Institution	Contact No. & Email of Lead Institutions
Uttaranchal	<b>Nanda Devi</b>	Mr.S.K.Chandola CWLW <a href="mailto:S_chandola2002@yahoo.com">S_chandola2002@yahoo.com</a> <a href="mailto:cwlwua@yahoo.co.in">cwlwua@yahoo.co.in</a>	0135- 2644691 9412054439 (M)	G.B. Pant Institute of Himalayan Environment and Development (GBPHID)	05961-241015 <a href="mailto:psdir@gbpihed.nic.in">psdir@gbpihed.nic.in</a>
Tamil Nadu	<b>Nilgiri (part)</b> <b>Gulf of Mannar</b> <b>Augasthiyamalai (part)</b>	Dr.Sukhdev CWLW Dr. V.N.Singh, CF  <a href="mailto:sukhdevthakur@yahoo.com">sukhdevthakur@yahoo.com</a>	044- 24321738 FAX: 044- 24321884 3931799(M)	Tropical Botanical Garden and Research Institute (TBGRI)	Dr. A.G.Pandurangan 0472-2869226, 2869626 <a href="mailto:agpandurangan@mail.com">agpandurangan@mail.com</a>
West Bengal	<b>Sunderbans</b>	Mr. Pradeep Shukla  <a href="mailto:cfsouth@vsnl.net">cfsouth@vsnl.net</a>	033 - 23211529	Botanical Survey of India (BSI)	Dr. Debnath, 033-23215631 23344963
Karnataka	<b>Nilgiri (part)</b>	Mr.I B Srivastav, CWLW	080 – 23341993, 23345846, 23346389(F)	TBGRI Palode, Thiruvananthapuram	Dr. A.G.Pandurangan 0472-2869226, 2869626 <a href="mailto:agpandurangan@mail.com">agpandurangan@mail.com</a> 0472-2869226, 2869626
Kerala	<b>Nilgiri (part)</b> <b>Augasthiyamalai (Part)</b>	Mr. V.S.Vergheese, CWLW <a href="mailto:ccfwl@keralaforest.org">ccfwl@keralaforest.org</a>	Telefax. 0471 – 2322217	TBGRI, Palode, Thiruvananthapuram	Dr. A.G.Pandurangan 0472-2869226, 2869626 <a href="mailto:agpandurangan@mail.com">agpandurangan@mail.com</a>
Andaman & Nicobar	<b>Great Nicobar</b>	Mr. Khazan Singh, CWLW	03192-233270	Zoological Survey of India (ZSI)	<a href="mailto:dirzsi@wb.nic.in">dirzsi@wb.nic.in</a> 033-24006893 24003383
Orissa	<b>Similipal</b>	Mr. S.C.Mohanty, CWLW <a href="mailto:cwlbbsr@ori.nic.in">cwlbbsr@ori.nic.in</a> <a href="mailto:wildlife.orissa@gmail.com">wildlife.orissa@gmail.com</a>	0674 - 2564587 0674 - 2565019	Regional Plant Resource Centre, Bhubneshwar	Dr.J.D.Sharma <a href="mailto:rpcbb@ori.nic.in">rpcbb@ori.nic.in</a> 0674-2553845 2557976

Assam	<b>Dibru Saikhowa</b>	Mr. M.C. Malakar, CWLW 9864066350 <a href="mailto:mc_malakar@yahoo.co.in">mc_malakar@yahoo.co.in</a>	0361- 2517064	(GBPHIED)	05961-241015
Assam	<b>Manas</b>	Mr. A Swargiary, Director	03666- 261413,266288 ®	(GBPHIED)	05961-241015
Meghalaya	<b>Nokrek</b>	Mr. Sunil kumar, CWLW	0364-2227332	Botanical Survey of India (BSI)	033-23215631 23344963
Sikkim	<b>Khanchenjunga</b>	Mr.Gut Lepcha 9434000999 <a href="mailto:gutlepcha@yahoo.com">gutlepcha@yahoo.com</a>	03592 – 281778 FAX 03592 – 281385	(GBPHIED)	05961-241015
Arunachal Pradesh	<b>Dehang Debang</b>	Mr. P. Ringu, DCF 9436044807 <a href="mailto:Ringustar@hotmail.com">Ringustar@hotmail.com</a>	0360-2211209 Fax: 0360-2212006 2212243	(GBPHIED)	05961-241015
Madhya Pradesh	<b>Pachmarhi Achanakmar Amarkantak (Part)</b>	Dr. R.P. Singh, Coordinator 9425300521 <a href="mailto:rps/br@rediffmail.com">rps/br@rediffmail.com</a>	0755 -2461381 0466970 ,	Environmental Planning and Coordination Organization (EPCO)	0755-2466859, 2464318, 2466970
Chhatisgarh	<b>Achanakmarh- Amarkantak (part)</b>	R. N. Mishra, CWLW	0771-2552228 0771-2331111	Tropical Forest Research Institute, Jabalpur	Dr. A.K.Mandal <a href="mailto:Dir_tfri@yahoo.com">Dir_tfri@yahoo.com</a> 080-23602122

CWLW : Chief Wildlife Warden

Lead Institution: Lead Institutions are designated to assimilate and disseminate research based data/information from all sources in respect of Biosphere Reserves for appropriate use in Management and conservation of the BRs.

Proforma

**Proforma for submission of Management Action Plan for Biosphere Reserves**  
(to be used by respective State / UT governments)

1. Name of the Biosphere Reserve
2. Name, Address with Pin code, Phone/ Fax and E-mail of Director, Biosphere Reserve and Chief Wildlife Warden.
3. Critical issues requiring management intervention and their justification
4. Brief background of overall physical/ financial achievements indicating envisaged of management intervention;
5. Brief summary of the outcome of the meetings of the Steering Committee and local committee constituted by the State/ UT and how these outcomes and issues at S.No3 above have been reflected in the management plan  
**(Note : Minutes of the meetings of these committees must be enclosed with MAP without which MAP will not be considered)**
6. Physical / Financial achievements during previous year (please indicate reasons for shortfall if any) indicating specific location/unit if an ongoing project
- 7.. Details of Management activities with physical and financial targets proposed during current year along with justification and details of methodology, etc., proposed to be followed. Exact locations where activities are proposed to be carried out along with units, rates, etc must be mentioned.
8. A copy of utilisation certificate in respect of previous year in Form GFR-19-A duly signed by competent authority may be enclosed, if due.
9. A detailed map showing progressively the activities implemented so far and its positive impacts in both qualitative and quantitative terms be enclosed.
10. Results of evaluation/monitoring carried out to assess the performance in the past, if any.
11. Indicate the interface with Lead Centre and other Research agencies, and extent to which Research findings made use of and incorporated in MAP.

## Thrust areas for research support

Priority	Category of Research	Sub-category	Thrust Areas
1	Policy Research	Supporting policy making	Afforestation Strategies.
1	Policy Research	Supporting policy making	Wildlife population estimation and management.
1	Policy Research	Supporting policy making	Environmental Cost Benefit analysis
1	Policy Research	Supporting policy making	Economic valuation of Environmental resources
1	Policy Research	Supporting policy making	Economic instruments for environmental regulation
1	Policy Research	Supporting policy making	Access and benefit sharing of genetic resources and traditional knowledge
1	Policy Research	Supporting policy making	Supporting negotiations on multilateral environmental agreements.
1	Policy Research	Technology evaluation	Economic utilization of waste control of pollution
1	Policy Research	Modeling/validation of models	Climate change and pollution models
1	Policy Research	Modeling/validation of models	Natural resources management
1	Policy Research	Survey & Analysis, hypothesis testing	Health and toxicology
1	Policy Research	Survey & Analysis, modeling	Inventory of Pollution Sources, Monitoring and analysis of environmental quality
1	Policy Research	Supporting Policy Making	Animal Welfare Issues
2	Applied Research	R&D of Technologies	Pollution control technologies and Clean production technologies.
2	Applied Research	Survey & analysis	Natural Resource inventories and mapping.
2	Applied Research	Methodologies	Restoration of Degraded Ecosystems
2	Applied Research	Methodologies	Conservation and management of various Ecosystems.
2	Applied Research	Technology evaluation, hypothesis testing and modeling.	Sustainable Development & Environmental Impact studies.
2	Applied Research	Risk Analysis	Dose response curves; impacts of pollution on natural ecosystems.
2	Applied Research	Veterinary Techniques	Wildlife Management Animal Welfare
3	Applied Research	Taxonomy	Identification Classification, Cataloguing flora and fauna.
3.	Basic Research	Taxonomy	Inventorizing ethno biology knowledge



## Annexure IV

### Proforma for Application for Grant for Research Projects under BR Programme ( to be used by Principal Investigators)

1. Title of the Project :
2. Name & Designation of the Principal Investigator :
3. Name & Designation of the Co-Investigator :
4. Postal Address of the Principal Investigator & Co-Investigator :
5. Name of the Institute/Organisation in which the project will be carried out :
6. Name of other Institution(s) Organization(s) involved in the project :
7. Duration of the Project :
8. Total amount of assistance required :
9. Enumerate mechanism and methodology for interface with Mangers/Users for
  - (a) Identification of gaps in research areas.
  - (b) Incorporation of Research findings in MAPs
10. The Following documents are enclosed:
  - i) Statement I – An abstract, not exceeding one page, describing the background, objectives, methodology and figures of year wise budget.
  - ii) Statement II – should contain the following:
    - a) State of Art of the subject including work done in India and elsewhere;
    - b) Detailed literature survey;
    - c) Objectives
    - d) Detailed methodology
    - e) Quarter-wise work-plan
    - f) PERT – Chart
    - g) Practical relevance/utility of the project for Management of the Biosphere Reserve
    - h) Agencies which can utilize the results of the project.
  - iii) Statement III – giving brief background of the Investigator who will carry out the project including papers published in the area of proposed research project.
  - iv) Statement IV – indicating facilities (Equipment/instrument) available at Institution / Organization for carrying out the project.
  - v) Statement V – Project budget in the prescribed format.

Contd..

## PROJECT BUDGET

A.	*Salaries & Wages:	I year	II year	III year	Total
1.	Investigator				
2.	Research Associate				
3.	SRF/JRF/SPF/JPF				
4.	Supporting technical staff or other personnel, if any				

Total: \_\_\_\_\_

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B. \*\* Permanent Equipment  
(Please also give a list of Equipments already available).

C. Expendables (Chemical & Glassware)

D. Travel

E. Interface with Users/Managers

I. Other Project Costs,  
if any (please specify)

F. Contingencies

G. Institutional Charges  
(20% of 'A'-'F' above)

Grand Total \_\_\_\_\_

\* Please specify the rate of salary and wages per month for each category and also rates of HRA and medical reimbursement as prescribed under rules of the host institution. .

\*\* Please specify individual items of equipment along with the cost and justification under the project.

Note : The proposal must be forwarded by the head of the organization with following certificates : i) that necessary infrastructural facilities will be provided for the project and (ii) The permanent equipments sought under the project are not available with the institution.

Submission of Proposal : The proposals may be addressed to the Adviser, Research, Ministry of Environment & Forests, Paryavaran Bhavan, CGO Complex, Lodhi Road, New Delhi – 110 003. with a copy to Additional Director ( Biosphere Reserve), Conservation Division I, Paryavaran Bhavan, CGO Complex, Lodhi Road, New Delhi.

ANNEXURE-V

F.No.9/9/2006- CS/BR  
Government of India  
Ministry of Environment & Forests  
CS Division

Paryavaran Bhavan, CGO Complex,  
Lodi Road, New Delhi-110003  
Dated 10<sup>th</sup> October,2006

### ORDER

**Subject :- Reconstitution of the Indian National Man and Biosphere (MAB) Committee.**

It has been decided to reconstitute the Indian National MAB Committee with following composition:

Sl.	Name, Designation and Address	Position in the Committee.
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No.		
	<b>OFFICIALS ( MOEF)</b>	
1.	Ms. Meena Gupta, Secretary Union Ministry of Environment and Forests, CGO Complex, Lodi Road, New Delhi-110003 Tele: 24360721	Chairperson
2.	Additional DG( WL), MoEF Ministry of Environment and Forests, New Delhi-110003	Member
3.	DG, ICFRE or his nominee FRI and Colleges, Dehradun (Uttaranchal)	Member
4.	Joint Secretary & Financial Adviser Ministry of Environment and Forests, New Delhi-110003	Member
5.	Shri G. Balachandhran Joint Secretary, Ministry of Environment and Forests, New Delhi-110003	Member
6.	Dr Sukhdev Thakur, CWLW,, 6 D, Forest Department, Panagal Building, No. 1, Jennis Road, Saidapet, <b>Tamil Nadu.</b>	Member
7.	Dr. S.C. Mohanty PCCF (Wild Life), Forest Department, Govt. of Orissa, Secretariat, <b>Bhubneshwar, Orissa.</b>	Member
8.	Sh. M.C.Malakar PCCF (Wild Life), Forest Department, <b>Assam</b>	Member
9.	Shri S.N.Doley, PCCF (Wild Life), <b>Arunachal Pradesh</b> ,Forest Dept., Itanagar	Member
10.	Shri Sunil Kumar PCCF (Wild Life) <b>Mizoram</b>	Member
11.	Shri R.N. Mishra , PCCF (Wild Life), Govt.of Chhattisgarh Aranya Bhavan, Jail Road, Raipur	Member
	<b>Non-Officials</b>	
12.	Prof. P.S.Ramakrishnan, School of Environmental Sciences, Jawahar Lal Nehru University, New Delhi -110067	Member
13.	Dr. V.B. Mathur, Wild Life Institute of India, Chandrabani, Dehradun.	Member
14.	Prof. K. Muthuchelian, Director, Centre of Biodiversity and Forest studies, Madurai, Kamraj University, Madurai.	Member
15.	Prof. M. Rohinikumar Singh, Director, Institute of Bioresources and Sustainable Development, Imphal, Manipur	Member
16.	Dr. N.V.Sharda, Director, Central Soil and Water Conservation Research Institute, Kaula Garh Road, Dehradun, Uttaranchal	Member
17.	Dr. R.K.Rai, Additional Director& Member Secretary, Indian National MAB Committee, Ministry of Environment & Forests, CGO Complex, Lodi Road, New Delhi-110003. Tele: 24367669 (O) 26250928 ( R) Email: ramakrai@yahoo.com	Member Secretary

## 2. Mandate /TOR of the committee:

- Advice on policy and programme formulation for “Biosphere Reserves Programme”.
- Lay down guidelines for preparation of Management Action Plan for Biosphere Reserves.
- Review the progress of programme implementation in Biosphere Reserves.
- Suggest priority areas for management and research;
- Approval of proposals for setting up of new BRs.
- Carry out any other function/activity which may be necessary from time to time under the Indian National MAB Programme.

## 3. The MAB committee will be guided by the following conditions:-

- The Chairman of the Committee may co-opt experts, whenever considered necessary.
- The Committee will meet at the venue decided by the Chairman.
- TA/DA including sitting charges @ 1000/day to the non-official members will be borne by the Ministry as per rules.

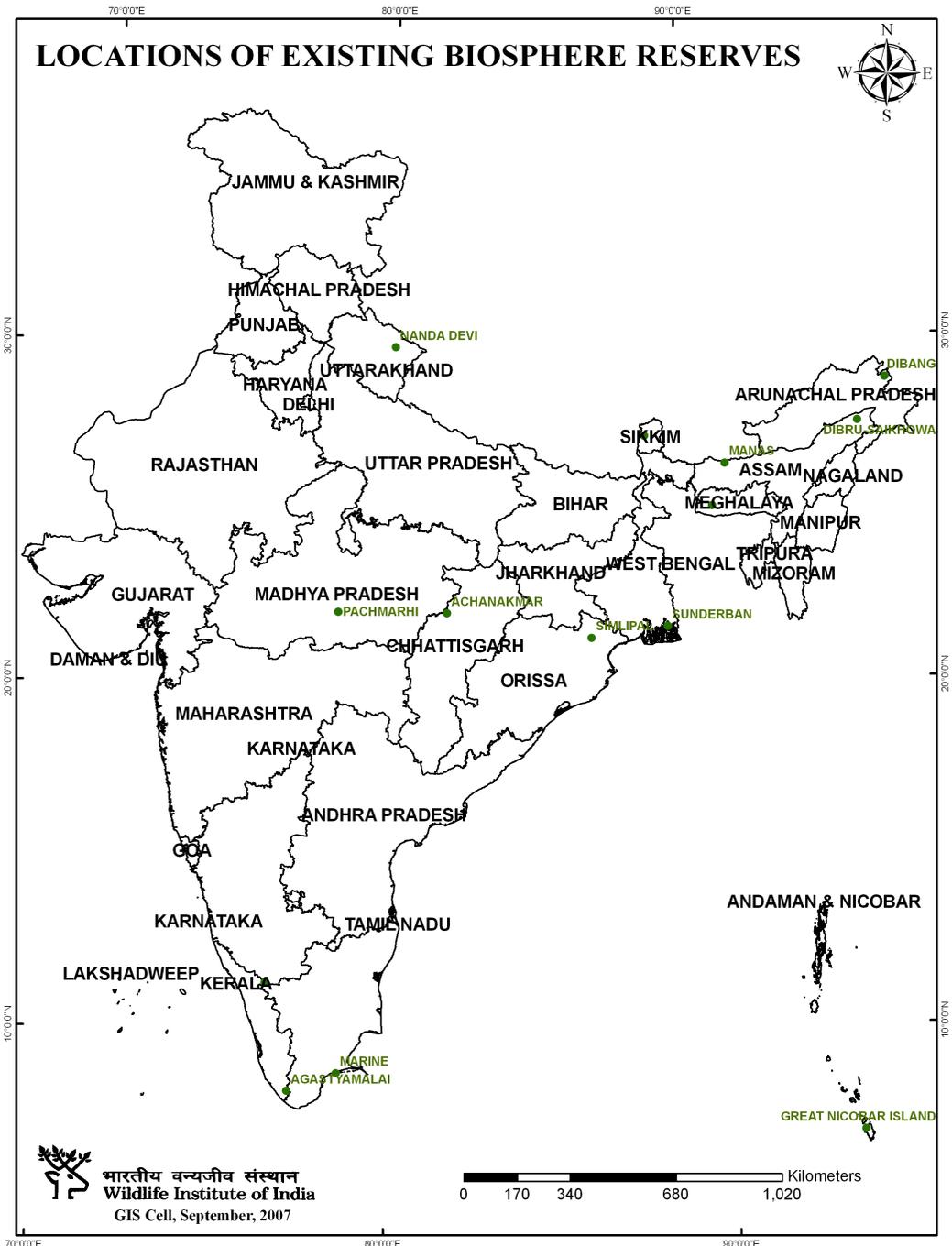
The duration of the above committee will be for 3 years from date of Notification, or till reconstitution, whichever is earlier.

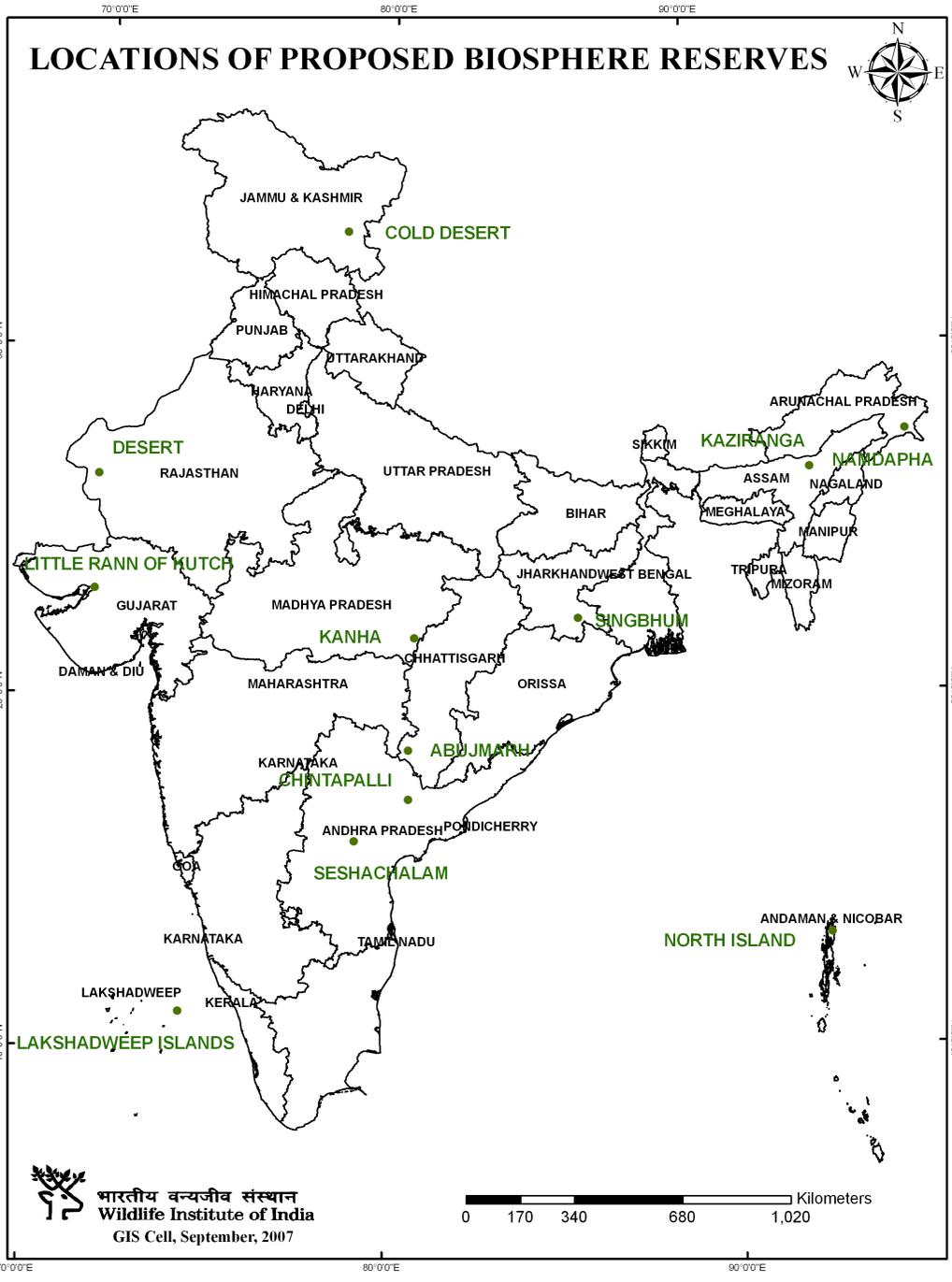
**( DR .R.K.RAI)**  
**Additional Director to the Govt. of India**

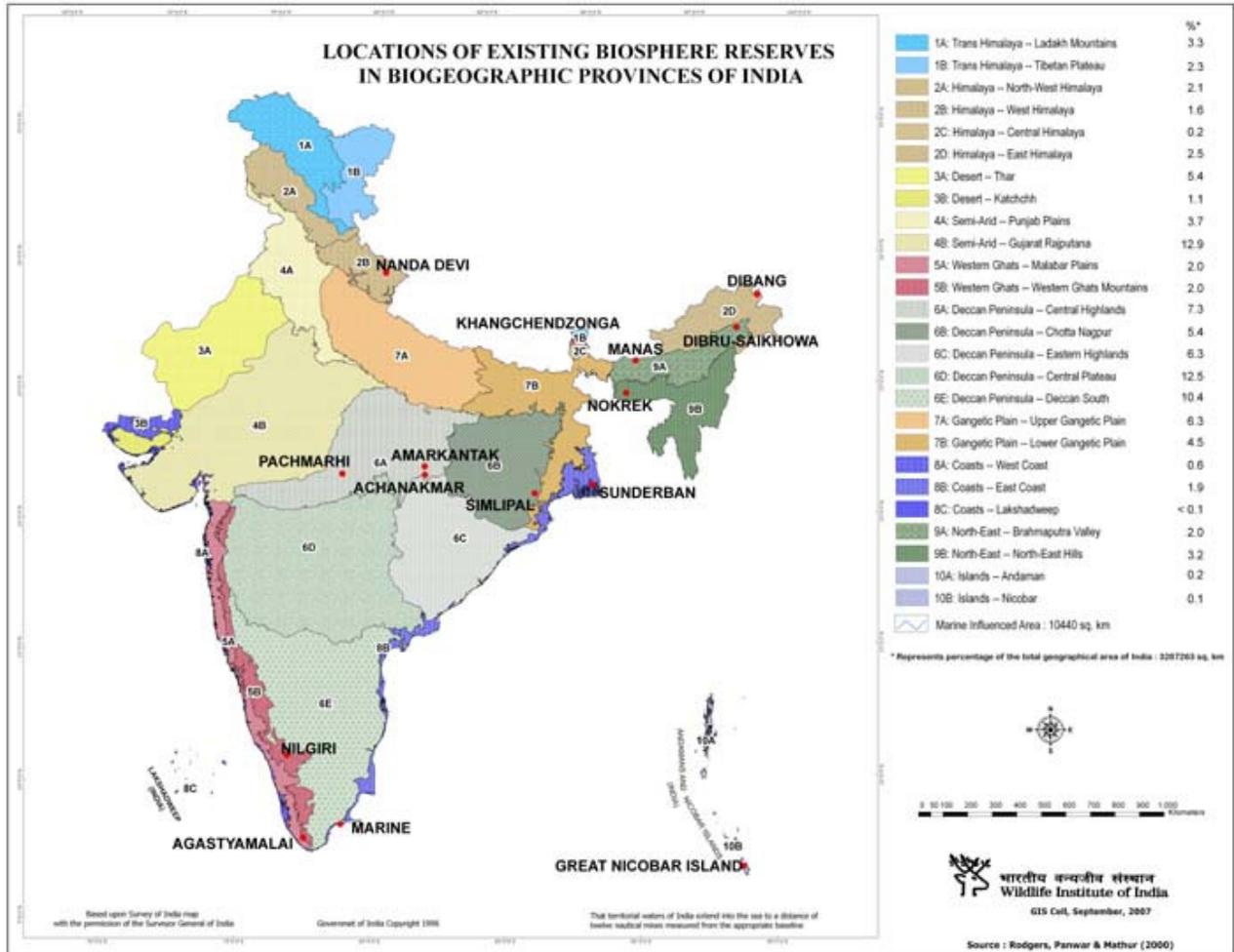
Distribution:

- 1.All member of the committee
- 2.PS to MEF,MOS Secretary (E&F), Adl Secretary (Cons),Guard file

**( DR .R.K.RAI)**  
**Additional Director to the Govt. of India**







### LOCATIONS OF EXISTING BIOSPHERE RESERVES IN BIOGEOGRAPHIC ZONES OF INDIA

