RELATING THE BIOSPHERE RESERVE TO OTHER PROTECTED AREA MANAGEMENT CATEGORIES

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ABSTRACT. The concept of the biosphere reserve is one of the major innovations in natural resources management, providing a framework to relate that management directly to the needs of people. Its bold goal is to promote a balanced relationship between people and their environment, and, thus, to serve human needs by promoting sustained, ecologically sound development. It is hoped that the biosphere reserve programme will make an important supplementary contribution to national programmes of conservation and integrated resource management and ecologically sound development.

The attempt to set up a worldwide network of biosphere reserves is a new and important initiative in the efforts to provide an assured future for mankind. If handled imaginatively it should provide an excellent opportunity of increasing understanding of the problems of the biosphere and of involving people, especially local people, in conservation and management which have a vital bearing on their own future.

1. INTRODUCTION

The concept of the biosphere reserve is one of the major innovations on natural resources management in recent decades, providing a framework to relate that management directly to the needs of people. Its bold goal is to promote a balanced relationship between people and their environment, and, thus, to serve human needs by promoting sustained, ecologically sound development.

In practice, however, the impact of the concept has been highly variable around the world, in general depending on the kind and amount of resource management work already underway when the biosphere reserve was proposed.

A review of implementation of the concept around the world suggests that its overall impact has been limited in terms of actual resource management, with only limited success in fulfilling human needs through ecologically sound development. This limited impact was to be expected because the concept was introduced into a worldwide context in which resource management efforts in general, and protected areas specifically, are facing a series of strategic problems in trying to contribute to solving human needs through supporting ecologically sound development. Those problems include: a general lack of interaction with surrounding lands, peoples and institutions, the "island mentality"; narrowly-viewed benefits with little relation to human needs; out-of-date management policies and practices; inappropriate information for the public; and a weak scientific foundation for management (Miller, 1982).

The idea of the biosphere reserve programme was to build upon existing resource management efforts to solve those problems, focusing specifically on three key issues: biological conservation; scientific management; and the relationship between natural resources and people. The biosphere reserve concept could not be expected to solve all problems by itself nor to have

immediate, strong impacts. An innovative and challenging concept requires considerable time to evolve; it needs to be applied, experimented with and improved. Likewise, some delay until practical impact is achieved can be expected with a concept intended to be applied at the global level, thus requiring breadth and a certain flexibility.

A fundamental problem, therefore, is that the biosphere reserve has not been sufficiently clearly defined and understood as a true, separate management category, complementary to the many other much better understood categories of protected areas which exist and are practiced around the world. Nor is the relationship between those other categories and the biosphere reserve sufficiently clear, particularly how all or parts of the others can be incorporated to form parts of biosphere reserves, in order to achieve mutual objectives and help fulfil the broad objectives of biosphere reserves. That problem, in turn, has been one of the key factors influencing the rather slow process of putting the concept into practice, from identification to selection, establishment, management and development.

The goal of this document is to provide a strong basis for clarifying and greatly improving those basic concepts, precisely because they have been evolving steadily.

2. A PROPOSED CONCEPTUAL FRAMEWORK FOR BIOSPHERE RESERVES

Based on considerable analysis and synthesis, IUCN has refined and modified the objectives and characteristics of biosphere reserves, considering them as a true management category (see Figure 1).

2.1. Objectives for biosphere reserves

The proposed objectives are:

-- Conserve representative samples of ecosystems, ecological zones or biomes, which are ecologically auto-sustainable to the maximum degree possible, and with adequate legal and political guarantees.

-- Promote and facilitate basic research and monitoring on those ecosystems, their elements and processes, as well as applied research and monitoring on their appropriate use and management, via the study of existing uses and experimentation.

-- Provide opportunities and facilities for education and training of the general public (all sectors), resource managers and scientists, at all levels.

-- Promote the use of the reserves' natural and cultural resources by appropriate practices, assuring sustained production and the permanence of productivity and those practices.

-- Promote appropriate, integrated development in the biome, ecosystem, or ecological zone, via the study, conservation and promotion of resource use practices appropriate to that ecological region.

2.2. Characteristics of biosphere reserves

The proposed characteristics which biosphere reserves should have are:

-- contain representative samples of one or more ecosystems, ecological zones or biomes, which are self-sustainable to the maximum degree possible, and with an adequate legal and political base.

-- Offer opportunities for basic and applied research and monitoring, particularly that directed toward and supporting management and appropriate use of resources, combining human needs and ecological principles.

-- Offer opportunities (and eventually facilities) for education and training, for all sectors and levels of society.

-- Contain types of resource uses and practices which are appropriate and which can be demonstrated, maintained, improved and promoted.

-- Offer opportunities for promoting ecologically sound development in the region which they represent, i.e. serve as a model for such development.

-- Where possible, allow for rehabilitative or restorative programmes for environments totally or partially altered by inappropriate use or other phenomena.

-- Large enough to constitute an effective conservation unit and to accommodate different uses without conflict.

-- In most cases, incorporate one or more existing or proposed protected areas.

It should be clearly understood that this modified conceptual framework combines elements which reflect current thinking after 10 years of experimentation and evolution of the concept. Those elements -- ecological representation, research and monitoring, education and training, appropriate exploitation and protection, restoration and development -- are combind so as to define the biosphere reserve as an effective tool (management category) in the planning, administration and management of resources of a country, through the combination of conservation and ecologically sound development.

The modified conceptual framework also provides a much improved base for clarifying the structure (zoning) of the biosphere reserve and the relationship between management categories of other protected areas and the biosphere reserve.

Finally, the biosphere reserve concept must maintain reasonable flexibility, without leaving it so totally open to interpretation that in managerial terms it would be confusing and inoperable.

3. THE SPECIAL FOCUS OF BIOSPHERE RESERVES

Almost every country in the world has its own series of protected areas set up for various purposes and given names (e.g. National Parks, National Forest, Forest Reserve, Cultural Monument, Multiple Use Area) whose exact definition varies from country to country. What then is the special focus of the biosphere reserve that distinguishes it from other management categories, while being complementary to those others?

There are six special features:

1. The emphasis in selection is on representative samples of major ecosystems rather than on those that are exceptional.

2. An international network is formed in which the international character is ensured by an exchange of information and personnel through MAB Committees and MAB Technical Notes.

3. Biosphere reserves provide for applied and manipulative research and monitoring on the appropriate use and management of the ecosystem's resources, in portions of the reserve.

4. They combine conservation of ecosystems, research and monitoring, education and training, development of appropriate direct uses of resources and improvement of production systems, and promotion of ecologically sound, integrated development, all as major objectives.

5. They play an integrative role with local populations whose knowledge and social and economic activities comprise a significant management input, and who should benefit directly from the reserve.

6. They focus their efforts on the relationship between man and the biosphere.

These features give a different character and emphasis to the biosphere reserve, which justifies a special term of international validity.

4. RELATIONSHIP OF BIOSPHERE RESERVES TO OTHER PROTECTED AREAS

4.1. General relationship

In some instances biosphere reserves will be established specifically for the purposes of the MAB programme in places where there have previously been no protected areas. But, most often a biosphere reserve is likely to profit from existing protected areas and include a part or the whole of those within its boundaries. As there will normally be no special legal category of biosphere reserve this can be done without any change in the administrative responsibility for managing the area.

Figure 2 shows how the different protected areas, or parts of them can contribute to the various zones of biosphere reserve. The former are listed on the left (rows of the table), the latter above (columns). All biosphere reserves should ideally include the Core Zone, Multiple Functions Zone (Buffer) and Cultural Zone.

For example the Core Zone could be provided by all or part of a Strict Natural Reserve, Park, Natural Monument, Managed Nature Reserve or the wilderness zone of a Multiple Use Management Area. The Cultural Zone of a biosphere reserve would usually be provided by a Protected Landscape or Seascape or part of a Multiple Use Management Area or Anthropological Reserve. Multiple Function (Buffer Zones) and degraded areas can similarly be derived from suitable parts of existing protected areas.

4.2. Possible relation to sites included on the World Heritage List

Sites which will be included in the World Heritage List are rather different from the other categories of protected areas considered above, because these sites will be recognized under international law -- the Convention concerning the Protection of the World Cultural and Natural Heritage (Paris, 1972). The

site will be approved by the World Heritage Committee, set up under the Convention, according to criteria which have been established by the Committee. These criteria lay emphasis on the unique, outstanding character of the World Heritage Sites in contrast to biosphere reserves which conserve representative samples of terrestrial and aquatic ecosystems.

It will be seen from the criteria that it would be possible for certain outstanding biosphere reserves to conform also to the criteria for World Heritage Sites. There are already a number of cases in which biosphere reserves have been approved as World Heritage Sites: e.g. Rio Platano Biosphere Reserve, Honduras and Darien National Park/WHS/BR, Panama.

5. SOME SUGGESTIONS FOR FUTURE PRIORITY ACTIVITIES

A number of key strategic and priority activities are needed over the next decade of the MAB Programme if biosphere reserves are going to begin to meet their potential:

1. Evaluate existing biosphere reserves to determine if they are fulfilling all the objectives of the management category, as a guide for future prioritized action. Miller (1982) has suggested a number of key aspects which need to be considered.

2. Establish strong support for biosphere reserves at international, national and local level.

3. Establish and implement a series of key strategic actions to promote the value and use of both MAB and biosphere reserves, but in terms of real implementation, not just conceptually.

6. SUMMARY AND CONCLUSIONS

1. The biosphere reserve is set up for a special combination of purposes which are not duplicated by any other category of protected areas.

2. Part of the whole of protected areas of other categories may be included in a biosphere reserve provided that they meet the criteria for inclusion.

3. This need not lead to any change in the legal status of such areas. For example, if they are within a national park or strict nature reserve, they can continue to be so.

4. It is hoped, on the other hand, that the biosphere reserve programme will make an important supplementary contribution to national programmes of conservation and integrated resource management and ecologically sound development.

5. It is not to be expected that the biosphere reserve network will ever meet all the needs of biological conservation, nationally, regionally or internationally. They should be supplemented by other more detailed programmes.

The attempt to set up a worldwide network of biosphere reserves is a new and important initiative in our efforts to provide an assured future for mankind. The emphasis of the programme is on the relation between man and nature. To be successful it must preserve areas of undisturbed nature as genetic reservoirs and as standards against which change outside can be measured and

judged. It must equally include man and his works. If handled imaginatively it should provide an excellent opportunity of increasing understanding of the problems of the biosphere and of involving people, especially local people, in conservation and management having a vital bearing on their own future.

A series of key strategic activities are needed over the next decade if the MAB Programme and biosphere reserves are to fulfil their truly great potential.

REFERENCES

Miller, K. 1982. Biosphere Reserves in concept and practice. Presented in the Workshop: Towards the Biosphere Reserves, Exploring Relationships between Parks and Adjacent Lands, Kalispell, Montana, 22-24 June 1982. 26 pp.

FIGURE 1: BIOSPHERE RESERVES: IMPROVED AND CLARIFIED CONCEPTUAL FRAMEWORK

OBJECTIVES		CHARACTERISTICS		STRUCTURE (zoning)	
Existing (a)	Proposed	Existing (a)	Proposed	Existing (a)	Proposed
1) Conservation of ecosystems and their genetic resources	1) Conserve representative samples of ecosystems, ecological zones or biomes, which are ecologically sustainable to the maximum degree possible and with adequate legal and political guarantees	1) Protected areas of land or coastal environments. Together will constitute a worldwide network	1) Contain representative samples of one or more ecosystems, ecological zones or biomes, which are self-sustainable to the minimum degree possible and with adequate legal and political base	1) Natural or Core Zone -Baseline for the ecological region -Non-manipulative, baseline research and monitoring -Limited/controlled education and training	1) Complete Protection Zone SAME
2) Provision of areas for ecological and environmental research, particularly baseline studies, and on adjacent areas	2) Promote and facilitate basic research and monitoring on these ecosystems, their elements and processes, as well as applied research and monitoring on their appropriate use and management, via study of existing uses and experimentation	2) Network will include significant examples of biomes throughout the world	2) Offer opportunities for basic and applied research and monitoring, particularly that directed toward and supporting management and appropriate use of resources, combining human needs and ecological principles	2) Manipulative, Experimental or Buffer Zone -Manipulative methods and techniques permitted for research, monitoring, education and training. Traditional practices (hunting, fishing, timber production, etc.) permitted in controlled manner	2) Multiple Function Zone (Buffer Zone) -Basic and applied research, manipulative and non-manipulative -Research and monitoring of environment, but also social, economic, cultural parameters -Education and training at all levels -Appropriate uses of resources experimented with, permitted, improved, promoted and demonstrated (fisheries, tourism, hunting, grazing, forestry production, agriculture, etc.) -May have human settlements
3) Provision of facilities for education and training	3) Provide opportunities and facilities for education and training of the general public (all sectors), resource managers and scientists, at all levels	3) Each B.R. will include 1 or more of the following categories: (i) representative examples of natural biomes (ii) unique communities or areas (iii) examples of harmonious landscapes resulting from traditional patterns of human land use (iv) examples of modified or degraded ecosystems capable of being restored	3) Offer opportunities (and eventually facilities) for education and training, for all sectors and levels of society	3) Reclamation or Restoration Zone Managed to study restoration of damaged resources (human-caused or natural)	3) Cultural Zone SAME as 4
	4) Promote the use of the reserves' natural and cultural resources by appropriate practices, assuring sustained production and the permanence of productivity and those practices	Each B.R. will have a non-manipulative core in combination with one or more other zones where other functions can be carried out	4) Contain types of resource uses and practices which are appropriate and which can be demonstrated, maintained, improved and promoted	4) Stable Cultural Zone Protection and study of ongoing culture and resource use practices which are harmonious with the environment	4) Restoration Zone SAME as 3
	5) Promote appropriate, integrated development in the biome (ecosystem, ecological zone), via the study, conservation and promotion of resource use practices appropriate to that ecological region	4) Each B.R. should be large enough to be an effective conservation unit and to accomodate different uses without conflict	5) Offer opportunities for promoting ecologically sound development in the region which they represent (=model)		
		5) Should provide opportunities for ecological research, training and education	6) Where possible allow for rehabilitative or restorative programs for environments totally or partially altered by inappropriate use or other phenomena		
		6) Must have adequate long-term legal protection	7) Should be large enough to constitute an effective conservation unit and to accomodate the different uses without conflict		
		7) In some cases will coincide with or incorporate existing or proposed protected areas	8) In most cases will incorporate one or more existing or proposed protected areas		

(a) Sources: MAB (1974), IUCN (1979).

FIGURE 2: PROTECTED AREAS AS COMPONENTS OF BIOSPHERE RESERVES

CATEGORIES OF PROTECTED AREA	BIOSPHERE RESERVE ZONES			
	Complete Protection (Core)	Multiple Functions (Buffer)	Cultural	Restoration or Reclamation (Degraded)
1. Scientific Reserve/Strict Nature Reserve	X			
2. National Park (or Provincial or State)	X			
3. Natural Monument/Natural Landscape	X			
4. Managed Nature Reserve/Wildlife Sanctuary	X	X		X
5. Protected Landscape or Seascape		X	X	X
6. Resource Reserve		(X)		
7. Natural Biotic Area/Anthropological Reserve		X	X	
8. Multiple Use Management Area/Managed Resource Area	(X)	X	X	X
9. World Heritage Site	X	X	X	

X = all or part of the protected area could definitely contribute to the zone

(X)= facultative (may be possible in some cases)