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63. International Co-ordinating Council of the Programme on Man and the Biosphere (MAB). Twelfth session. Paris, 25–29 January, 1993.
64. International Co-ordinating Council of the Programme on Man and the Biosphere (MAB). Thirteenth session. Paris 12–16 June, 1995.
65. Man and the Biosphere (MAB) Programme, International Conference on Biosphere Reserves. Seville (Spain) 20–25 March 1995
66. International Co-ordinating Council of the Programme on Man and the Biosphere (MAB). Fourteenth session. Paris 19–22 November 1996.
67. International Co-ordinating Council of the Programme on Man and the Biosphere (MAB). Fifteenth session. Paris, 7–11 December 1998.
68. International Co-ordinating Council of the Programme on Man and the Biosphere (MAB). Sixteenth session. Paris, 6–10 November 2000.

FOREWORD

In March 1995, the International Conference on Biosphere Reserves was organized by UNESCO in Seville (Spain). This Conference gave rise to the 'Seville Strategy' recommending action to be taken for the development of biosphere reserves, and the 'Statutory Framework' setting out the conditions for the functioning of the World Network of Biosphere Reserves. Both these documents were adopted under 28C/Resolution 2.4 of the UNESCO General Conference in November 1995.

In 1998, the MAB International Co-ordinating Council at its 15th session, noting the numerous activities being taken by countries all over the world in response to the 'Seville Strategy', called for a review of the first five years implementation under the title 'Seville + 5', at the occasion of the 16th session of the MAB Council in 2000.

The 'Seville + 5' International Meeting of experts on the implementation of the Seville Strategy for Biosphere Reserves was held in Pamplona, Spain, from 23 to 27 October 2000. It was generously hosted by the General Secretariat for Environment (National Parks Organization) of the Government of Spain, the Government of Navarra (Department of the Environment), and the City Council of Pamplona.

The main objective of the meeting was to take stock of the implementation of the Seville Strategy for the first five years with a view to make recommendations to the MAB International Co-ordinating Council at its 16th session (6–10 November 2000, UNESCO Headquarters, Paris).

Specific objectives were:

- identifying priorities for attention in the overall Seville Strategy;
- identifying obstacles to implementation at the international, site and national levels, and means to get around these;
- identifying emerging issues of importance for the future of the World Network of Biosphere Reserves.

The programme was based on the three levels of implementation of the Seville Strategy (international level, site level and national level). A review of the actions undertaken to implement each of the three levels was prepared by the Secretariat on the basis of a questionnaire. The results of this review were presented at the opening of the respective plenary session for each level. This was followed by introductory papers on a number of specific topics related to these actions, which were then debated in simultaneous working group sessions until mid-afternoon. The working groups were illustrated by examples highlighting the questions on hand.

The Seville + 5 meeting also provided the occasion for a meeting of the *ad hoc* task force on transboundary biosphere reserves.

The meeting was attended by 110 participants from 46 countries, invited on the basis of their experience in establishing and managing biosphere reserves. A list of participants is given at the end of this volume.

The meeting was chaired by Mr Javier Castroviejo Bolíbar, Chair of MAB Spain and Chair of the MAB International Co-ordinating Council. Mr Ignacio Ballarín Iribarren, Secretary of MAB Spain, served as Vice-Chair. The plenary sessions of the meeting for the three levels of the Seville Strategy were chaired by Mr Jesús Vozmediano Gómez, member of the Spanish MAB Committee and *Miembro del Patronato de Doñana;* Mr Emilio González-Capital Martínez, *Consejería del Medio Ambiente* of Andalucia*;* and Mr Antón Aramburú Albizuri, *Departamento del Medio Ambiente* of the Basque Government.

At the opening session of the meeting, welcoming addresses were given by Mr Javier Castroviejo, Mr Basilio Rada, Director of *Organismo Autónomo de Parques Nacionales*; Mr Miguel Sanz Sesma, President of the Government of Navarra; Mr Ignacio Elorrieta, *Director General del Medio Ambiente* of the Government of Navarra*;* Ms Yolanda Barcina Angulo, Mayor of Pamplona, and Mr Peter Bridgewater, Secretary of the MAB Programme.

Closing remarks were made by Mr Javier Marcótegui Ros*, Consejero de Medio Ambiente, Ordenación del Territorio y Vivienda* of the Government of Navarra*;* by Ms Carmen Martorell Pallas*, Secretaria General de Medio Ambiente, Ministerio de Medio Ambiente* of the Government of Spain, Mr Peter Bridgewater and Mr Javier Castroviejo.

This MAB Report Series N° 69 is a multilingual compilation of the contributions to the meeting and the resulting recommendations, including the recommendations of the task force on transboundary biosphere reserves. All these recommendations were submitted to the MAB International Co-ordinating Council at its 16th session in November 2000 (see MAB Report Series N° 68). The recommendations of 'Seville + 5' as amended by the MAB Council are available on the MAB site in English, French and Spanish (http://www.unesco.org/mab).

UNESCO would like to take this opportunity to reiterate its thanks to Mr Javier Castroviejo and the Spanish authorities for their generous support to this meeting, and also to Mr David Huertas and his team at *Horizontes Ambientales* for their assistance with the logistic arrangements.

AVANT-PROPOS

En mars 1995 l'UNESCO a organisé la Conférence internationale sur les réserves de biosphère, à Séville (Espagne). Cette conférence a donné lieu à la « Stratégie de Séville », qui recommande des actions à entreprendre pour le développement des réserves de biosphère, et au « Cadre statutaire » fixant les conditions de fonctionnement du réseau mondial des réserves de biosphère. Ces deux documents ont été respectivement approuvés et adoptés au titre de la résolution 28 C/2.4 de la Conférence générale de l'UNESCO en novembre 1995.

En 1998, le Conseil international de coordination du MAB, soulignant, lors de sa 15e session, les nombreuses activités entreprises par les pays dans le monde entier suite à la « Stratégie de Séville », a appelé à un examen des cinq premières années de mise en œuvre sous le titre « Séville + 5 » à l'occasion de la 16e session du Conseil du MAB en 2000.

La réunion internationale d'experts « Séville + 5 » relative à la mise en œuvre de la Stratégie de Séville pour les réserves de biosphère a eu lieu à Pampelune (Espagne) du 23 au 27 octobre 2000. Elle a bénéficié du généreux accueil du Secrétariat général à l'environnement (Service des Parcs nationaux) de l'Espagne, de l'administration autonome de la Navarre (Service de l'environnement) et du Conseil municipal de Pampelune.

Le principal objectif de cette rencontre était de faire le point sur la mise en œuvre de la Stratégie de Séville pendant les cinq premières années en vue d'émettre des recommandations à l'adresse du Conseil international de coordination du MAB à l'occasion de sa 16e session (du 6 au 10 novembre 2000 au Siège de l'UNESCO à Paris).

Les objectifs spécifiques en étaient les suivants :

- Cerner les thèmes prioritaires dans la Stratégie de Séville de manière globale.
- Cerner les obstacles à sa mise en œuvre sur les plans international et national ainsi qu'au niveau du site et les moyens de les surmonter.
- Cerner les questions importantes qui vont se faire jour pour l'avenir du Réseau mondial des réserves de biosphère.

Le programme était fondé sur les trois niveaux de mise en œuvre de la Stratégie de Séville (niveau international, niveau du site et niveau national). Un examen des actions entreprises pour mettre en œuvre chacun des trois niveaux a été préparé par le Secrétariat à partir d'un questionnaire. Les résultats de cet examen ont été communiqués à l'ouverture de chacune de sessions plénières correspondant à chacun des niveaux, après quoi ont été présentés des exposés préliminaires portant sur un certain nombre de sujets spécifiques en rapport avec ces actions et qui ont ensuite fait l'objet de débats en séances de groupes de travail simultanées jusqu'en milieu d'après-midi. Au sein des groupes de travail, les questions à traiter ont été illustrées et mises en relief par des exemples.

La réunion « Séville + 5 » a également été l'occasion d'une réunion de l'équipe de travail *ad hoc* sur les réserves de biosphère transfrontières.

La réunion a rassemblé 110 participants venant de 46 pays, qui ont été invités pour leur expérience dans la mise en place et la gestion des réserves de biosphère. Une liste des participants est jointe en fin de volume.

La réunion a été présidée par M. Javier Castroviejo Bolíbar, président du MAB Espagne et président du Conseil international de coordination du MAB. M. Ignacio Ballarín Iribarren, secrétaire du MAB Espagne a occupé les fonctions de vice-président. Les séances plénières de la réunion pour les trois niveaux de la Stratégie de Séville ont été présidées par M. Jesús Vozmediano Gómez, membre du Comité espagnol du MAB et membre du *Patronato de Doñana* (direction du parc naturel de Doñana), M. Emilio González-Capital Martínez, de la *Consejería del Medio Ambiente* (office de l'environnement) de la communauté autonome d'Andalousie et M. Antón Aramburú Albizuri, du *Departamento del Medio Ambiente* (office de l'environnement) de l'administration autonome du Pays basque.

Lors de la séance d'ouverture de la réunion, les allocutions de bienvenue ont été prononcées par M. Javier Castroviejo, M. Basilio Rada, directeur de l'*Organismo Autónomo de Parques Nacionales*, M. Miguel Sanz Sesma, président du gouvernement de l'administration autonome de Navarre, Mme. Yolanda Barcina Angulo, maire de Pampelune, et M. Peter Bridgewater, Secrétaire du Programme MAB.

Les observations finales ont été prononcées par M. Javier Marcótegui, conseiller à l'environnement, à l'aménagement du territoire et au logement de l'administration autonome de Navarre, Mme. Carmen Martorell Pallas, *Secrétaire générale de l'environnement au Ministère espagnol de l'environnement*, M. Peter Bridgewater et M. Javier Castroviejo.

Cette série de rapports du MAB (N° 69) est un recueil multilingue des contributions à la réunion et des recommandations qui en sont l'émanation, dont les recommandations de l'équipe de travail sur les réserves de biosphère transfrontières. Toutes ces recommandations ont été soumises au Conseil international de coordination du MAB à sa 16e session en novembre 2000 (voir la série des rapports du MAB N° 68). Les recommandations de « Séville + 5 » amendées par le Conseil du MAB sont consultables sur le site Internet du MAB en anglais, français et espagnol (http://www.unesco.org/ mab).

L'UNESCO souhaite saisir cette occasion pour exprimer de nouveau sa gratitude à M. Javier Castroviejo et aux autorités espagnoles pour le généreux soutien qu'ils ont apporté à cette réunion, ainsi qu'à M. David Huertas et à son équipe des *Horizontes Ambientales* pour leur aide en matière logistique.

PRÓLOGO

En marzo de 1995 la UNESCO organizó en Sevilla (España) la Conferencia Internacional sobre Reservas de Biosfera; ésta aprobó la «Estrategia de Sevilla », que contiene recomendaciones sobre las medidas idóneas para desarrollar las reservas de biosfera, y el «Marco Estatutario», en el que se establecen las condiciones para el funcionamiento de la Red de Reservas de Biosfera. Ambos documentos fueron aprobados por la Conferencia General de la UNESCO en noviembre de 1995 (Resolución 28 C/2.4).

En 1998, el Consejo Internacional de Coordinación del Programa MAB en su 15ª reunión, instó a que, habida cuenta de las numerosas actividades que en el mundo entero estaban emprendiendo los países en respuesta a la « Estrategia de Sevilla », se procediese a una evaluación de los primeros cinco años de aplicación que se convenía como «Sevilla + 5», y tendría lugar con motivo de la 16ª reunión del Consejo del MAB en 2000.

La reunión internacional de expertos «Sevilla + 5» se celebró en Pamplona (España) del 23 al 27 de octubre de 2000, gracias a la generosa acogida de la Secretaría General de Medio Ambiente (Organismo Autónomo de Parques Nacionales) del Gobierno de España, el Gobierno de Navarra (Departamento de Medio Ambiente) y el Consejo Municipal de Pamplona.

El principal objetivo de la reunión era hacer un balance de los primeros cinco años de la aplicación de la Estrategia de Sevilla con miras a formular recomendaciones al Consejo Internacional de Coordinación del Programa MAB en su 16ª reunión (6-10 de noviembre de 2000, Sede de la UNESCO, París).

Sus objetivos específicos eran los siguientes:

- Determinar las prioridades a que debía prestarse atención en la Estrategia de Sevilla en general.
- Definir los obstáculos con que tropieza la aplicación en los planos internacional, nacional y en cada reserva, y los medios para superarlos.
- Determinar las nuevas cuestiones que podrán revestir importancia para el futuro de la Red Mundial de Reservas de Biosfera.

El programa se constituyó en torno a los tres niveles de aplicación de la Estrategia de Sevilla (internacional, en el de cada reserva, y nacional). Basándose en un cuestionario la Secretaría preparó una recapitulación de las actividades realizadas en cada uno de los tres niveles, cuyos resultados se presentaron en la inauguración de las respectivas sesiones plenarias dedicadas a los diferentes niveles. A continuación se presentaron documentos introductorios sobre una serie de temas relacionados con esas actividades, que se debatieron en reuniones simultáneas de los grupos de trabajo hasta la media tarde. En los grupos de trabajo se presentaron ejemplos que ilustraban las cuestiones tratadas.

Durante Sevilla + 5 también se reunió el grupo de trabajo especial sobre reservas de biosfera transfronterizas.

Asistieron a la reunión 110 participantes de 46 países, que habían sido invitados atendiendo a su experiencia en la creación y gestión de reservas de biosfera. La lista de participantes figura al final del presente volumen.

Presidió la reunión el Sr. Javier Castroviejo Bolívar, Presidente del Comité Nacional español para el MAB y del Consejo Internacional de Coordinación del Programa MAB. El Sr. Ignacio Ballarín Iribarren, Secretario del Comité Nacional español para el MAB, actuó como Vicepresidente. La sesiones plenarias de la reunión dedicadas a los tres niveles de la Estrategia de Sevilla fueron presididas respectivamente por el Sr. Jesús Vozmediano Gómez, miembro del Comité Nacional Español para el MAB y miembro del Patronato de Doñana, el Sr. Emilio González-Capital Martínez, de la Consejería del Medio Ambiente de Andalucía, y el Sr. Antón Aramburú Albizuri, del Departamento del Medio Ambiente del Gobierno Vasco.

Pronunciaron discursos de bienvenida en la sesión inaugural el Sr. Javier Castroviejo, el Sr. Basilio Rada, Director del Organismo Autónomo de Parques Nacionales, el Sr. Miguel Sanz Sesma, Presidente del Gobierno de Navarra, el Sr. Ignacio Elorrieta, Director General de Medio Ambiente del Gobierno de Navarra, la Sra. Yolanda Barcina Angulo, Alcaldesa de Pamplona y el Sr. Peter Bridgewater, Secretario del Programa MAB.

En la clausura de la reunión hicieron uso de la palabra el Sr. Javier Marcótegui Ros, Consejero de Medio Ambiente, Ordenación del Territorio y Vivienda del Gobierno de Navarra, la Sra. Carmen Martorell Pallas, Secretaria General de Medio Ambiente, Ministerio de Medio Ambiente del Gobierno de España, el Sr. Peter Bridgewater y el Sr. Javier Castroviejo.

Este número (69) de la Colección de Informes del MAB es una recopilación multilingüe de las ponencias presentadas a la reunión y de las recomendaciones resultantes, comprendidas las formuladas por el Grupo de trabajo sobre reservas de biosfera transfronterizas. Todas esas recomendaciones fueron presentadas al Consejo Internacional de Coordinación del Programa MAB en su 16ª reunión, celebrada en noviembre de 2000 (véase el Nº 68 de la Colección de Informes del MAB). Las recomendaciones de «Sevilla + 5» en su forma enmendada por el Consejo del MAB pueden consultarse en Internet en español, francés e inglés en la siguiente dirección: http://www.unesco.org/mab.

La UNESCO desea aprovechar esta oportunidad para reiterar su agradecimiento al Sr. Javier Castroviejo y a las autoridades de España por el generoso apoyo que brindaron a la reunión, y al Sr. David Huertas y su equipo de *Horizontes Ambientales* por la asistencia logística prestada.

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INTRODUCTION

Biosphere reserves: A personal appraisal

Michel Batisse

The organizers of the 'Seville + 5' Conference on Biosphere Reserves in Pamplona have asked me to present a key note paper expressing my personal vision of this international project, to the development of which I have indeed been closely associated from the beginning. For this very reason, it should be stressed in the first place that what follows is necessarily somewhat subjective and therefore open to debate. In this short presentation, I shall merely attempt to underline where we come from – a brief history of the project –, where I think we are, and where perhaps we are going and should do about it.

To do this now is the right moment for me since the time has come where I am rapidly loosing contacts with new developments. It is also appropriate for another reason: the first biosphere reserves were designated in 1976. 'Seville + 5' in a way constitutes a celebration of their Silver Jubilee!

THE MAJOR MILESTONES

The Biosphere Reserves project is part of the MAB Programme of UNESCO. MAB was recommended in the 1968 Biosphere Conference, organized in close co-operation with the United Nations, FAO, WHO, WMO, IUCN and ICSU, and was to a certain extent meant to be a practical problem-oriented follow-up of the International Biological Programme. The Biosphere Conference did not refer specifically to the concept of biosphere reserves. Its broad objective was to reconcile the use and the conservation of natural resources, and among the recommendations to achieve this, it called for reinforcing the conservation of biological diversity, including genetic resources, through a world system of protected areas, and it stressed the need to ensure harmonious coexistence of rural populations with the ecosystems from which they derive their subsistence and income (UNESCO, 1970).

When MAB was formally launched in 1970, the idea of 'Biosphere Reserves' – a wording which came out rather accidentally to show the relationship with the Man and the Biosphere Programme – was introduced as a means to meet these two major objectives. At the same time, since MAB was basically a research programme, some people felt that such sites would be needed as permanent field research stations and, because of my previous experience with the 'Decade stations' of the International Hydrological Decade, I was keen to see a number of sites on the ground being clearly identified with the new programme.

Thus, the idea was there, when the first session of the MAB Council met in 1971 and included

biosphere reserves as one of the themes to be implemented under this international programme. But it was still a somewhat general idea and the first serious thoughts about biosphere reserves came out of a task force organized jointly with UNEP in 1974, where indeed almost practically everything was said about the concept (UNESCO, 1974). The notions of buffer zones, of a zoning system, of restoration of ecosystems, of experimentation related to development, of a world network, were all mentioned.

Perhaps, too many such notions were mentioned in this founding effort since, when the first batch of actual biosphere reserves were designated by the MAB Council in 1976, most of them were not really in conformity with the key ideas expressed in 1974. They were essentially sites proposed by the Member Countries, considering generally of an already existing protected area (a national park in most cases) where ecological research was or would be conducted under the MAB label. But the presence of buffer zones was rarely included and the idea of co-operation with the local population conspicuously absent.

The MAB Research Programme however had to be launched all over the world and it developed fairly well without paying too much attention to the biosphere reserves component. So that between 1976 and the 'Ecology in action' Conference celebrating the 10th Anniversary of the operational launching of MAB, in 1981, new biosphere reserves were added on the list but only a limited number of them actually fulfilled their 'development' and 'co-operation' function.

Things began to change in some countries like Mexico, for instance, where attempts were made to associate local populations with the creation of new protected areas under the name of biosphere reserves (Halffter, 1984). An important step forward was the congress organized in Minsk (Belarus) in 1983, financed with roubles which UNEP could use only in the Soviet Union and which was held at a moment of extreme international tension. The congress did however take place and formulated the elements of an Action Plan for Biosphere Reserves, which could be finalized and formally adopted by UNESCO, UNEP and IUCN in 1984. The principles and objectives of this Action Plan were correct. However, they enumerated all the things that a biosphere reserve could do rather than putting emphasis on what a biosphere reserve should do to deserve that title and how to do it… At any rate, the expected financial support from UNEP for its implementation did not come and IUCN paid only lip service to a new concept which did not correspond at the time to the conventional view of protected areas. In other words, the Action Plan remained a Plan without action (UNESCO-UNEP, 1984).

One of the difficulties for the proper development of the Biosphere Reserves project was that it merely constituted one among 13 MAB themes while it could not really progress without particular attention to its operational field character and the need to constitute a world network of sites sharing a minimal amount of common characteristics. The MAB Council had little time, and indeed only partial interest to devote to such different theme in the Programme. It however eventually felt the need for a small group to focus specifically on the matter and in 1985 asked for the establishment of an *ad hoc* Scientific Advisory Panel for Biosphere Reserves. This small *ad hoc* Scientific Advisory Panel met in La Paz (Bolivia) in 1985, in Cancun (Mexico) in 1986, and had the merit, not only of being able to reassess the entire project from the beginning and to review thoroughly proposals for new biosphere reserves, but to arrive at a clear definition of the concept, with its three complementary functions (conservation, development and logistic support), which would be clear and flexible enough to be applicable everywhere in the world and thus permit the constitution of a true network.

The message, as developed by this Scientific Advisory Panel, was indeed a new message where conservation and development must be combined in and around protected areas with the support of research and training. Unfortunately, this long-awaited clarification came at a time that was not very favourable. IUCN was beginning to move in the same direction but did not support biosphere reserves, still considered as an unnecessary complication too closely associated with UNESCO. With other issues taking precedence, UNEP no longer had funds and less interest in conservation. And above all, UNESCO itself had entered into a major crisis with the withdrawal of the United States and the United Kingdom.

It certainly took much faith and idealism for the small MAB Secretariat in Paris and a few strong supporters in a number of countries – including ironically the United States – to keep the ball rolling during these years where MAB itself was losing much of its earlier impetus. But a new paradigm appeared with the Brundtland Report, which advocated 'sustainable development' and called for new 'non-conventional protected areas', with the Rio Conference moving strongly in the same direction (without unfortunately making any reference to biosphere reserves), with the IUCN World Conservation Strategy, and many related statements. As a matter of fact, sustainable development was first, advocated at intergovernmental level by the 1968 Biosphere Conference, but this historical fact has only been recognized recently. Everybody nowadays has accepted the concept of associating conservation with development in protected areas, but still generally avoids referring to biosphere reserves for a variety of overt or covert reasons. One of the overt reasons which is often heard

is simply that biosphere reserves are a nice concept, but that they do not exist in the ground! Yet, their relevance was mentioned fairly often in the negotiations leading to the adoption of the Convention on Biological Diversity in 1992, which insists on the links between protection, use and indigenous people.

The major step forwards in the implementation of the project and in the establishment of the World Network of Biosphere Reserves took place however in 1995 with the Seville Conference organized by UNESCO in co-operation with the Spanish authorities. From a conceptual viewpoint, this conference did not modified what had been the outcome of the work of the *ad hoc* Scientific Advisory Panel in the mid eighties, and indeed had already been considered in 1974. But it achieved what the Minsk Congress had only started, namely to review the world situation in the light of current developments (including the Convention on Biological Diversity), to formally confirm the definition and specificity of biosphere reserves, underline why they were needed and adopt a strategy for further action, the 'Seville Strategy', and all this through a truly representative meeting of scientists and managers from 102 countries. In addition, and perhaps most important, it formulated a Statutory Framework for the World Network, which had not so far from any legal status. This Statutory Framework was formally adopted by the UNESCO General Conference in that same year, providing the network and its individual sites with an international legitimacy, visibility and credibility which had been somewhat missing previously (UNESCO, 1996). An essential feature about credibility is the provision in the Statutory Framework of a periodic review procedure every ten years after designation as a biosphere reserve, with the possibility that those which do not correspond to the adopted criteria being removed from the World Network, after naturally every possible efforts had been made to improve them and avoid such delisting.

The Statutory Framework for the World Network of Biosphere Reserves is now the yardstick against which the project will progress. It does not carry the heavy weight of a Convention and maintains the flexibility of approach, which constitutes one of the main values of the biosphere reserves concept. But it achieves three essential functions:

- it fixes the 'rules of the game' which shall always characterize biosphere reserves;
- it emphasizes the existence and potential role of the network which they now constitute;
- it confirms the key role of a technical advisory committee, whose statutes have now been approved by the UNESCO Executive Board, to ensure the quality and progress of the entire project.

THE CURRENT STATE OF AFFAIRS

It could simply be stated in this respect that much remains to be done but that things are now working. This can be seen through the following points:

- The **Seville Strategy** has become fairly well known and constitutes a reference text explaining the project and offering a vision for its development. Its drafting could certainly be improved here and there but the main point is that it should not be forgotten by diluting it under too many new and not absolutely necessary statements which might confuse matters.
- The **Statutory Framework**, which is the result of a true international negotiation, constitutes the legal text governing the project in a 'soft law' spirit. It has been adopted by all parties concerned, which is a major achievement in international co-operation. It should not be modified but disseminated as largely as possible, not only among scientists and managers but also within administrative authorities, international, national and local, and be strictly implemented.
- The **Advisory Committee** has the proper statutes to act as key mechanism ensuring the scientific and technical legitimacy of biosphere reserves already designated as well as of examining new designations and encouraging the actual functioning of the network in accordance with the Statutory Framework. It however should be more active, have sufficient time for work before and during its sessions, use more its members for regional promotional activities and field visits and ensure a more critical participation of the World Commission on Protected Areas of IUCN.
- The **Periodic Review** is now underway. Its first years of implementation were particularly difficult since it had to deal with a large number of sites designated between 1976 and 1985, many of which do not correspond properly to the basic present criteria, as explained above. One of the consequences is that some sites have not provided their periodic review report, thus in some ways excluding themselves from the network, if they remain silent. However many sites which had not been in touch with the Secretariat for years have responded. The net result is that more than 50% of the early sites have shown interest in the periodic review, a percentage that will normally increase considerably when more recent sites are contacted. More important perhaps is the fact that a good number of countries take advantage of the periodic review to try to improve their older

sites, considering sometimes the possibility of delisting some of them as Norway already did and the United Kingdom is contemplating to do, in order to be present in the World Network with fully functioning biosphere reserves only. Equally important is the fact that a number of countries are taking steps to improve the extent, the zoning and the management of their biosphere reserves as a result of the review process.

- **New proposals** keep being put forward at a significant rate. Thus at the time of the Pamplona meeting, 25 new proposals have been received, with generally speaking very well presented nomination files. At least two-thirds of these proposals appear to concern high quality multifunctional biosphere reserves, in close conformity with the required criteria. From now on, of course only very good sites should be added to the network.
- **Improvement of the network** is clearly taking place. Although the word 'network' was used from the beginning of the project, it only meant for a long time that the designated biosphere reserves were put on a list and on a map. The publication of the Biosphere Reserves Bulletin now constitutes the minimal liaison mechanism that a network requires and the content of the Bulletin is improving although its periodicity is still uneven. The world coverage of ecosystems is also improving with new countries taking part in the project such as South Africa and now India. Some 100 biosphere reserves relate to coastal regions (including coastal waters) and about 40 of them concern islands (including archipelagos and entire islands like Menorca and Lanzarote in Spain or Palawan in the Philippines). Besides bio-geographic coverage, the networking function has made significant progress, particularly at the regional level, with regular meetings and exchanges of experience. Regional biosphere reserve networks exist now with EuroMAB (including the United States of America and Canada), as well as in Anglophone Africa, Francophone Africa, Latin America, and Eastern Asia.
- The **biosphere reserve** concept is now accepted very widely, even in some quarters that wrongly feared that it would not be sufficiently protective of biodiversity. The link with the basic principles of the Convention on Biological Diversity appears now very clearly since it can easily be shown that biosphere reserves correspond quite well with the twelve principles of the 'Ecosystem Approach' advocated by the Convention. This was eloquently exemplified in the brochure *Solving the puzzle* prepared by the MAB Secretariat (UNESCO, 2000) and a number of key players in the IUCN Congress in Amman in 2000 did not hesitate to state that 'biosphere reserves were the best illustration of the Ecosystem Approach' which some also call a 'Bioregional Approach'.
- **Financial support** is of course essential for success, particularly in developing countries. The budgetary situation in UNESCO has always been clearly below the minimal means, which would be required merely to ensure sufficient secretariat services for such an important project. However, indirect financing has come in a number of field cases, either through bilateral projects (for instance between the Netherlands and Amboseli in Kenya), or through action of NGOs like Conservation International (for instance in the Maya Biosphere Reserve of Guatemala), or through financing of large GEF projects, either of a broad geographic scale encompassing biosphere reserves like Buenavista in Cuba, or specifically oriented towards their very establishment like the Gulf of Mannar in India, the Seaflower project in Columbia, or the Dana in Jordan.

SOME QUESTIONS FOR THE FUTURE

While the above remarks are clearly encouraging and perhaps somewhat optimistic – although without optimism from the onset there would have been no such things as biosphere reserves today –, a number of issues remain and new issues develop as the project progresses. Some of the main issues, in no particular logical order, appear to me as the following:

- **Biosphere reserves in land development**. It is striking to note that, starting with the gigantic Mata Atlântica Biosphere Reserve of Brazil, which is a long strip of 3,000 kilometres spotted with a large number of still fragile core areas, the average size of newly proposed biosphere reserves has tended to grow considerably. Clear examples include the Pantanal and the Cerrado, both also in Brazil, or Cape West Coast in South Africa or the Seaflower Biosphere Reserve in Colombia (which has very little land but covers 300,000 km^2 of water), or the Southern Oasis in Morocco. In this process, the question arises whether the biosphere reserves should be considered as elements of 'bioregions' or as bioregions *per se*. This question has a number of practical consequences and it appears at any rate that biosphere reserves have now become a significant tool in regional planning (Batisse, 1997).
- **Small biosphere reserves**. Besides the above-mentioned large biosphere reserves, a number of

small ones and even very small ones, are included in the network. This is partly due to the historical development of the project, where initially small biological reserves or national parks were listed. When such sites cannot be improved in extent, zoning and functions, the question arises as to whether they should be maintained in the network. This is the case for instance of a number of sites in the United Kingdom, which are now under review, or in the case of Bulgaria where the national network consists essentially of small biological reserves. A number of other cases could be quoted such as the Lobau Island in the Danube near Vienna or the Miramare near Trieste in Italy or the fact that two contiguous sites in France, the Mont Ventoux and the Parc Regional du Lubéron are considered as distinct biosphere reserves. Yet, each situation has its specific features, from the viewpoint of biogeography, legal protection, management patterns, stakeholders interests, etc. and therefore flexibility in approach has to be maintained. It remains that for the future, it might be preferable to favour larger size biosphere reserves, it being understood that they must in any case respond to their basic functions. In doing so, one might however recall that land fragmentation in countries with long and dense human occupation like Europe cannot offer open-spaces similar to those of the Americas, Africa or Central Asia, while the conceptual model must remain universal.

- **The question of governance** is perhaps the most difficult issue for each individual biosphere reserve fulfilling adequately its three basic functions. Very often, it has been considered that the manager of the core area would be the logical leader in the management of the entire biosphere reserve. The assumption resulted from the early development of the programme where the designated sites were little more than already legally protected areas. The present view is quite different and although the manager of the core area may well be given such a leading role in consultation with other stakeholders, he/she has generally no mandate, no authority and little practical interest in taking up this additional task. If he/she is to assume this role, he/she must be given the authority and the incentives to do so. The primary function of biosphere reserves remains the conservation of biodiversity – whether in the form of landscapes, ecosystems, species or varieties – but to achieve this, they should be seen as innovative tools for the resolution of land and water use conflicts, which implies negotiation and consent by all legitimate stakeholders, including the local populations. In this respect, many institutional arrangements have been experimented and each biosphere reserve is probably unique. But the consultative, administrative, co-ordination and legal decision-making processes involved should be thoroughly assessed so as to provide ideas and examples worldwide. Clearly, the changes in size of the biosphere reserves, whether they have one or several cores, whether corridors can be established between them or whether indigenous people have specific traditional rights, etc. will affect the *ad hoc* governance and management pattern to be followed.
- **Public lands and private lands**. Traditionally, in the 'old world', the only guarantee that a given piece of land will remain protected in the long-term is through public ownership completed by appropriate legislation. However, in the 'new world' of the Americas, but also in parts of Africa, it is sometime considered that weak administrations are less capable than the private sector, such as large land owners, enlightened groups of citizens or NGOs, to maintain protected areas and some mechanisms are even developed – such as forest conservation concessions – to apply this idea. Here again, flexibility is probably necessary although one might perhaps see here a difference between the 'Roman law' and a more 'Anglo-Saxon' liberal approach. The only important issue is to make sure that the core areas be protected in the long-term and it is also clear that they are usually surrounded by private lands, so that one comes back here to the issue of governance.
- **Transboundary biosphere reserves**. This represents a new and most interesting development, which has been greatly favoured recently by the collapse of the iron curtain in Europe and offers considerable potential in Africa and Asia and also in parts of Latin America. The interest of such bilateral sites is clear in ecological terms (particularly for protection of fauna), in management terms (larger units with compatible methods) and of course as a symbol of peace with great political visibility. The difficulties of this approach should not however be underestimated (unwanted movements of people, language barriers, etc.) but its advantages for emulation in good management practices and for exchange of experience are significant. This development should therefore be strongly encouraged.
- **Relationships with the World Heritage**. The World Heritage Convention is meant to cover both cultural and natural properties of outstanding interest and universal value. The *raison d'être* of this Convention is that such exceptional

sites constitute a kind of common heritage of humankind that all countries should help to protect. Its philosophy is therefore clearly ethical and cultural.

Because a number of biosphere reserves, particularly in the early days of the project, were in fact important national parks, they came to be listed also as World Heritage Sites. There is nothing wrong in this as long as the criteria for the two designations are clearly met. This unfortunately is not always the case and among some three such designated dual sites, some do not appear to meet the biosphere reserve criteria in so far as they have no zonation system, or no co-operation with local populations outside the property, or little or no link with environmental research. The prestige of the World Heritage List, particularly to attract tourists, may lead however to a multiplication of these dual designations. This risk is aggravated by the fact that among criteria for inscription of cultural properties on the World Heritage List, the somewhat over-encompassing concept of 'cultural landscapes' has been recently added, and that biodiversity richness is also one of the criteria.

It should be underlined however that, whereas dual nomination on both lists may well be justified in a number of cases, a clear distinction should always be maintained between them; The World Heritage List should consist of what has been called the 'jewels of the crown' otherwise it would soon lose its prestige. Biosphere reserve are designated as a tool to resolve conflicts in land use in all types of landscape in accordance with the development concerns of local populations so as to protect all forms of biodiversity, whether spectacular or not, with a scientific objective in mind. In practical terms, a very reasonable approach, which has been applied already in a number of interesting cases, is to have a prestigious national park listed as a World Heritage site and constituting at the same time the core area of a broader biosphere reserves. For instance, the Maya Biosphere Reserve of Guatemala includes the Tikal World Heritage Site, or the Southern Appalachian Biosphere Reserve in the United States includes the Great Smoky Mountains National Park. But any confusion between the two types of designation should be carefully avoided. Many national parks could indeed become core areas of biosphere reserves, but most of them do not qualify for World Heritage listing without obvious devaluation of the prestige of the Convention. Both programmes have equal importance, should receive equal international support. They must be considered as complementary each other. The fact that they are both placed under the aegis of UNESCO should be used to ensure this complementarity wherever appropriate.

- **Development of the network**. At a time when 'sustainable development' has become the *motto* for almost every human action, even today's conservationists pay at least lip service to the need to take care of local populations around protected areas. From this viewpoint, this idea, which was pioneered by biosphere reserves, has now been adopted by almost everybody and everybody attempts to follow it or claims that they do. But biosphere reserves not only have long been striving in this direction but also are meant to constitute a world representative network for research, monitoring, information exchange and training. This in a way constitutes nowadays their most original specificity. This means, as already stated, that the world coverage of biosphere reserves should be further improved, that they should be truly multi-functional, and that they actually participate in co-operative projects. Such projects may involve the entire network but, from a more practical standpoint perhaps, should focus on sub-sets of biosphere reserves selected for their ecological commonality or for thematic research of training efforts, or simply through regional grouping. The success of such projects, if properly communicated in scientific journals and in the media would guarantee the permanent success of the World Network.

  Many thematic activities could be conducted in co-operation with other research and monitoring programmes, using biosphere reserves as already well-documented and well-equipped field sites. One can think of studies on hydrology and experimental watersheds, of restoration of degraded ecosystems, of rural applications of solar energy, of development of micro-credit business, of ecotourism practices, of environmental training, etc.

  Concerning regional or continental sub-networks, considerable advantage could be taken from the shorter distances involved and from common cultural and administrative practices to develop more intensive co-operation. Care should however be taken here to avoid centrifugal effects whereby the various regional networks would move off on their own, losing perspective of the fact that the World Network has to help protect the biodiversity of our 'only one world' and that many themes have to involve biosphere reserves from various continents.

- **Secretariat**. The Secretariat of the World Network is the keystone of its continuous

functioning and development. This is a fact that should be obvious to everyone but which is sometimes considered as improper to underline. The real question is whether the Secretariat, given the very rapid development of the World Network of Biosphere Reserves, has sufficient staff and the necessary means to carry-out its task in depth. It needs to ensure adequate monitoring and support for the some 400 sites and nearly 100 countries of the network, while maintaining co-operative links with institutional partners concerned. It appears to me that the present answer to this question is clearly negative, both at Headquarters and in the main regional offices of UNESCO. It is to be hoped that, particularly though financial support from such organisms as GEF or the UN Foundation, and with the co-operation of UNEP, FAO, IUCN and other NGOs, a more satisfactory set-up for the World Network will eventually come about. In the meantime, the Secretariat has to concentrate on its primary mission of being the driving force of the entire operation. It should thus avoid heavy operations concerning individual biosphere reserves unless specific means are provided to this effect. In this respect, the Advisory Committee should make sure that only very promising new sites, clearly able to fulfil adequately the required functions, be added to the network and should make efforts to assist the Secretariat in the process of periodic review and improvement of existing sites.

I would now simply like to conclude these personal remarks in repeating that much remains to be done for biosphere reserves and the World Network, but things have begun to work after a long incubation period. The time has come to review efforts vigorously to ensure the full success of a truly innovative and useful concept, which constitutes a tangible step towards the much called for sustainable development of our planet.

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Statement by the Executive Secretary of the Secretariat of the Convention on Biological Diversity

Hamdallah Zedan

I very much welcome the convening of this expert meeting. As you know, the Seville Strategy for the World Network of Biosphere Reserves specifically promotes biosphere reserves as a means of implementing the Convention on Biological Diversity, and this is also reflected in the Statutory Framework. This workshop provides an opportunity to review the contribution of the Man and the Biosphere Programme (MAB) to the Convention, and also to consider ho the Convention can promote the wider application of best practices developed through the MAB.

The Convention on Biological Diversity has adopted an ecosystem approach as a primary framework for action under the Convention, and, at its fifth meeting held in Nairobi, in May this year, the Conference of the Parties, endorsed a description of the

ecosystem approach as well as guidance for its application. This is included in the documentation before you.

The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. It requires adaptive management to deal with the complex and dynamic nature of ecosystems and the absence of complete knowledge or understanding of their functioning. 'Ecosystem managers', in this context, include farmers, pastoralists, fisherfolk, forest dwellers and other stakeholders who manage ecosystems in order to generate particular goods and services. Therefore, ecosystem management implies the recognition of a diversity of social and cultural factors affecting natural-resource use.

It is obvious from this description, that the Man and the Biosphere Programme is fully consistent with the ecosystem approach. While the MAB Programme pre-dates the Convention by some 20 years, it anticipated many important elements of the ecosystem approach, that is:

- The integration of conservation and use,
- Recognition of the range of goods and services provided by ecosystems; and
- Putting people at the centre of protected areas management.

The ecosystem approach includes a set of principles that can be applied in all the thematic programme under the Convention: in forest ecosystems, agroecosystems, inland water, dry and sub-humid lands, and marine and coastal environments. The Man and the Biosphere Programme – specifically its network of biosphere reserves, has the potential to offer to the Convention concrete cases of the ecosystem approach in practice, including lessons learned from its experience – both successes and limitations. This contributes directly to the request of the COP in Nairobi to identify case-studies, to implement pilot projects, and to organize workshops to enhance awareness, share experiences, and strengthen regional, national and local capacities on the ecosystem approach.

Further, the MAB experience can contribute to the in-depth consideration of protected areas by the Conference of the Parties at the seventh meeting in 2004. This would be in line with decision IV/15 of the Conference of the Parties which encourages the CBD Secretariat to develop relationships with other processes with a view to fostering good management practices in areas such as:

- Methods and approaches to deal with protected areas;
- Ecosystem and bioregional approaches to protected area management and the sustainable sue of biological diversity;
- Mechanisms to enhance stakeholder involvement;
- Methods of developing biodiversity considerations into sectoral strategies and action plans; and
- Transboundary protected areas.

In preparation for the consideration of protected areas by the Conference of the Parties, the Convention's Subsidiary Body on Scientific, Technical and Technological Advice will consider the subject at its eighth and/or ninth meetings in 2003. At the same time, it will review the application of the ecosystem approach and develop guidance and principles on sustainable use of biological diversity, in the light of practical case-studies.

Consideration of these issues together offers an unprecedented opportunity to modernize strategies for the management of protected areas and their integration into wider area management, in line with the ecosystem approach, also making use of incentive measures and other tools to promote sustainable use.

For the Man and the Biosphere Programme, there is an opportunity to foster the development of appropriate tools such as standards, criteria and guidelines and the wider application of better practices beyond the MAB reserves, as well as to promote the development of true systems of protected areas, as envisaged in Article 8 of the Convention.

This is a particularly important opportunity given that, according to the national reports submitted, many Parties consider protected areas to be the major component of their strategies for biodiversity conservation. Since the entry into force of the Convention, protected area management, in one form or another, has received nearly US$400 million through the Convention's financial mechanism operated by the Global Environment Facility.

Briefly, before closing, I would like to underline the importance of raising public awareness as to the importance of biological diversity and full range of goods and services that it provides. With this in mind, UNESCO and the CBD have recently launched a Global Initiative on Biological Diversity Education and Public Awareness. In this respect, I would draw your attention to the report of the first meeting of the consultative working group for this initiative, which is available to you, here.

As you review your progress since Seville, I invite you to explore how the MAB network can contribute further to the implementation of the Convention, and how the Convention can promote its aims.

I wish you all a successful meeting.
Thank you very much.

Overview of five years' implementation of the Seville Strategy at the international level

This document was prepared by the MAB Secretariat to provide information on activities undertaken at the international level since the Seville Conference. It follows the goals and objectives of the Seville Strategy and served as a background document for the debates at the international level during the Seville + 5 meeting.

GOAL I: USE BIOSPHERE RESERVES TO CONSERVE NATURAL AND CULTURAL DIVERSITY

Objective I.1: Improve the coverage of natural and cultural biodiversity by means of the World Network of Biosphere Reserves

At the international levels, one recommendation deals with the implementation of the Convention on Biological Diversity

UNESCO, mainly through the MAB programme, continues collaborating with the Parties to the Convention on Biological Diversity (CBD) and its Secretariat in the implementation of specific provisions related to the Convention and its programme of work. The role of biosphere reserves in the implementation of the Convention on Biological Diversity was the theme of a one day workshop organized by the Slovak MAB National Committee and the Slovak Academy of Sciences in Bratislava (Slovak Republic) on 1st May 1998, just before the 4th Conference of Parties to the Convention on Biological Diversity. General presentations on the convention and biosphere reserves highlighted how the biosphere reserve concept could address the three concerns of the Convention, i.e. conservation of biological diversity (a core area function), the sustainable use of biological resources (a role particularly for the buffer zone) and the sharing of benefits (through the transition area at the site level and through the Network). The workshop concluded that the biosphere reserve concept was tailor-made to contribute to achieving the objectives of the Convention on Biological Diversity. CBD Conference participants were informed of the outcomes of the workshop in the intervention of a Delegate who attended the workshop. The proceedings have been widely distributed to MAB National Committees.

The main area in which MAB currently provides assistance to the Convention is the implementation of the cross-cutting theme 'ecosystem approach'. The ecosystem approach is a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Application of the ecosystem approach will help to reach a balance of the three objectives of the Convention. This strategy is based on the application of appropriate scientific methodologies focused on levels of biological organization that encompass the essential processes, functions and interactions among organisms and their environment. It recognizes that humans, with their cultural diversity, are an integral component of ecosystems.

The Biosphere Reserve concept is consistent with the Ecosystem Approach concept. Recently, the MAB Secretariat has produced a study in the form of a booklet entitled *Solving the Puzzle: The Ecosystem Approach and Biosphere Reserves*. The Conference of the Parties to the CBD has been actively discussing the ecosystem approach since its fourth meeting in Bratislava, May 1998. In May 2000, at its fifth meeting, COP adopted a set of 12 principles and operational points for the application of the ecosystem approach, to which the MAB Secretariat contributed by organizing and hosting the meeting of the Liaison Group on the Ecosystem Approach (Paris, September 1999), as part of the preparations for the Nairobi meeting. MAB is presently testing the applicability of such principles and operational guidance in selected biosphere reserves around the world, using a regional approach. To this end, UNESCO and the Commission on Ecosystem Management of the World Conservation Union (IUCN) have organized, in the second half of 2000, three regional workshops on the theme: 'The Ecosystem Approach under the CBD: From Concept to Action'. Reports on the lessons drawn for the practical implementation of the ecosystem approach in Southern Africa, Latin America and South-East Asia have been prepared, and a global analysis report is envisaged for production by the end of the current year. Based on experiences in selected sites, many of which are part of the World Network of Biosphere Reserves, it will be possible to review the operational modalities of the ecosystem approach, which, as described by the Conference of the Parties to the CBD, is the primary framework for action under the Convention.

Other areas in which MAB currently provides a means of implementing the goals of the CBD are the use of biosphere reserves for the CBD global initiative on education and awareness (see III.3) and the

development of measures to counteract invasive alien species (through the provision of case studies to the Secretariat), which is related to the issue of 'emerging ecosystems'; the assistance in the implementation of the Global Taxonomic Initiative, and specific inputs to the CBD thematic programmes of work, namely the programmes of work on marine and coastal, mountain, forests, arid and sub-humid ecosystems.

A second recommendation aims at improving the coverage of natural and cultural diversity by means of the World Network of Biosphere Reserves, and promotes a comprehensive approach to a biogeographical classification system that takes into account such ideas as vulnerability analysis, in order to develop a system encompassing socio-ecological factors.

Global biogeographical coverage was inherent in the original biosphere reserve concept: the idea was to create at least one biosphere reserve representative of each of the 193 biogeographical provinces identified in the Udvardy biogeographical classification system of 1975. However, this system is now somewhat outdated, and focuses essentially on the conservation dimension of biosphere reserves.

Since the Seville Conference 48 new biosphere reserves have been designated of which 9 are in 'new' countries (Israel, Niger, Cambodia, Guinea Bissau, Latvia, Jordan, Morocco, South Africa, Vietnam), bringing the total to 368 in 91 countries. Several of these help to improve representation of arid lands (e.g. Dana, Jordan; Uvs Nuur Basin, Mongolia; Arganeraie, Morocco; Aïr and Ténéré, Niger, and Ubsunorskaya Kotlovina, Russian Federation) freshwater wetlands (e.g. Tonle Sap in Cambodia) and coastal zones and islands (Nanji Islands, China; Balomas Bijagos, Guinea Bissau; El Hierro, Spain; Ranong, Thailand; Can Gio, Vietnam).

However, if one looks at the map of the World Network of Biosphere Reserves, one can see that there are still 'gaps' in the following regions: Amazon, Arab region, Southern Africa, Indian sub-continent, Central Asia, as well as for coral reef systems in general. It is to be noted that this year, there are new biosphere reserve nominations from some of the countries concerned, notably from Brazil, Morocco, Malawi (first nomination), Tanzania and South Africa, and, for the first time, India. However, much remains to be done.

As concerns a comprehensive approach to biogeographical classification, going beyond the conservation function of biosphere reserves, in early 2000, UNESCO has suggested the organization of a small workshop under the aegis of Ecosystem Conservation Group (ECG) on the general theme of biomes, hotspots and charismatic ecosystems. This ECG is an inter-agency co-ordination mechanism for UNEP (and UNEP-WCMC), FAO, UNESCO, UNDP, the World Bank, the World Conservation Union and WRI. It can therefore bring in the experience of these entities and, if indeed such a workshop is organized, could be a complement to the 'Millennium Assessment' of ecosystems which is currently being launched.

Objective I.2: Biosphere reserves into conservation planning

At the international level, the recommendation deals with the establishment of transboundary biosphere reserves.

As of October 2000, five Transboundary Biosphere Reserves (TBR) have officially been designated as such, three of them since the adoption of the Seville Strategy. They are the following:

- Tatra, Poland and Slovakia (1992);
- Krkokonose/Karkonosze , Czech Republic and Poland (1992);
- Vosges du Nord/Pfälzerwald, France and Germany (1998);
- The Danube Delta, Romania and Ukraine (1998); and
- The Eastern Carpathians, the first and only trilateral Biosphere Reserve, Poland, Slovakia and Ukraine (1998).

These official TBR are all located in Europe, but many initiatives are taking place in other regions. The *ad hoc* task force on the issue which is organized during the Pamplona meeting will provide, for the first time, an opportunity to exchange experience among regions and to discuss recommendations for the establishment and functioning of such TBR. It is very interesting to note that, during the last five year, at least 25 sites have been identified around the world as potential TBR for which projects are been developed.

For instance, the Afrimab technical working group on TBR set up at the Dakar meeting for French speaking countries identified some 15 sites as potential TBR: among them, one can mention Niokolo Koba/Badiar, in Senegal and Guinea, Mont Nimba, in Guinea, Côte d'Ivoire and Liberia, the Delta du Saloum/Niumi in Senegal and Gambia, or the 'W', in Niger, Benin, and Burkina Faso. More recently, the AfriMAB meeting held in Nairobi for lusophone and anglophone countries identified sites such as Serengeti/Masai Mara in Tanzania and Kenya.

At its 5th meeting in Mongolia (1997) the EABRN developed a procedure for establishing transboundary biosphere reserves in order to facilitate the designation of TBR. Several sites with potential for TBR exist in the region, including the Altai Mountains in Russia, China, Kazakhstan and Mongolia, Great Gobi in China and Mongolia, Xilingol/Nornod in China and Mongolia, Uvs Nuur Basin/Ubsunorkaya Kotlovina, in Mongolia in Russia. The China/

Mongolia/Russia Daurian International Protected Area should also be mentioned for its potential to become a tri-national biosphere reserve in the region.

In Latin America, several co-operation efforts are under way, linking sites together and developing biological corridors, such as the Meso-American corridor. Bilateral co-operation has developed for a long time, such as in La Amistad between Costa Rica and Panama, or is being developed, with a view to establish a TBR: this is for example the case in Argentina, Bolivia, Brazil and Paraguay in the Chaco, or in Argentina and Chile in Los Pehuenes, or in Bolivia and Peru in Tambopata-Madidi. One can also mention the tri-national constitution of the Maya Forest Coalition between Guatemala, Mexico and Belize, in which the Maya Biosphere Reserve of Guatemala and Calakmul and Montes Azules Biosphere Reserves in Mexico are involved.

In Europe, potential TBR have also been identified within EuroMAB and one can mention, for example: Aggtelek and the Slovensky Kras Biosphere Reserves, in Hungary and Slovakia and Lake Fertö and Neusiedler See in Hungary and Austria. A meeting was organized to explore the possibilities of enhancing co-operation in the Alps of the Gran Paradisio in Italy and the Mercantour in France, including the possible establishment of a joint biosphere reserve. A recent booklet published by the MAB Poland with the support of UNESCO presents the existing TBR and some promising co-operation for the future.

The Secretariat has been requested, by the different regional networks, to prepare guidelines to help countries in the establishment and functioning of TBR. An in-depth study on the 5 existing TBR in Europe is being carried out by UNESCO, with a view to identify the main issues at stake in the establishment and functioning of TBR. In the same time, the *ad hoc* task force which will meet in Pamplona will build the foundation for such guidelines. Experience of each region will be of particular relevance to the definition of the content of these guidelines.

GOAL II: UTILIZE BIOSPHERE RESERVES AS MODELS OF LAND MANAGEMENT AND OF APPROACHES TO SUSTAINABLE DEVELOPMENT

Objective II.1 Secure the support and involvement of local people

At the international level, it is recommended 'to prepare guidelines for key aspects of biosphere reserves management'.

Since the adoption of the Seville Strategy, biosphere reserve management has been one of the major issues discussed by the regional networks. Focus has been on exchanges of experience within specific regions with similar problems and contexts. For example, a meeting was organized in Spain in June 1999 to compare the planning tools used in biosphere reserves and the role of biosphere reserves in regional planning and the ways of involving local communities.

At the request of the EuroMAB Network, a *Guide to biosphere reserve management* (MAB Digest N° 19) has been published in English and French by the MAB Secretariat, in co-operation with MAB France. Based on the French experience, this guide aims at providing a methodology for BR management, which can used by co-ordinators of biosphere reserves in all regions, as appropriate.

GOAL III: USE BIOSPHERE RESERVES FOR RESEARCH, MONITORING, EDUCATION AND TRAINING

Objective III.1: Improve knowledge of the interactions between humans and the biosphere

In recent years, the principle focus for co-operative research has been through the various Regional MAB Networks:

- **AfriMAB** was created by the 'Regional Conference for Forging Co-operation on Africa's Biosphere Reserves for Biodiversity Conservation and Sustainable Development' which took place in Dakar (Senegal) in 1996. The network aims at promoting regional co-operation in the fields of biodiversity conservation and sustainable development through transborder projects, which are primarily based in biosphere reserves. To increase efficiency, four task forces were established at the technical workshop held in Dakar in September 1999 for francophone AfriMAB countries on the following themes: institutional arrangements, local participation and sharing of benefits, research and capacity building, transboundary biosphere reserves. They were expanded to anglophone and lusophone AfriMAB countries at the technical workshop held in Nairobi in September 2000. Work will continue for 2/3 years, mostly by e-mail consultations. An evaluation session for all AfriMAB is envisaged for 2003 in conjunction with the Work Parks Congress/IUCN in Durban, South Africa. A web site for AfriMAB is under preparation.
- The **ArabMAB** Network was officially launched at a regional meeting of the Arab MAB countries

in Amman (Jordan) in 1997. The ArabMAB Network has a Bureau and a Secretariat which is currently hosted at the premises of the Egyptian UNESCO National Commission. Within the framework of this network, several meetings have taken place such as in Sudan (1998), in Tunisia (1998) and in Morocco (1999). Training courses on GIS application and information technologies for BR management have been conducted within ArabMAB. A web site has been set up for the network: http: //www.arabmab.net:8080/.

- **East Asian Biosphere Reserve Network:** EABRN consists of biosphere reserves in China, the Democratic People's Republic of Korea, Japan, Mongolia, the Republic of Korea and the Russian Federation. This network, initiated in 1994, has three subjects as priority for co-operation: ecotourism, conservation policy and transboundary conservation. It also serves as a mechanism to facilitate information exchange, training and site-to-site co-operation. One particular feature of this network is the way in which meetings take place in different biosphere reserves, giving the opportunity for the EABRN specialists to meet and exchange experience with the local team. This synergistic arrangement has proved valuable for advising on biosphere reserve improvement in line with the Seville Strategy. The network has also set up its own web site: http://www.unesco.org/mab/eabrn/eabrn/htm.
- The **EuroMAB network**, founded in 1987, is operating in the European and North American countries. In 1998, the third meeting of the Biosphere Reserve Co-ordinators of the European region took place in the Finnish biosphere reserves (North Karelia and Archipelago Sea). The latest meeting of EuroMAB took place in Cambridge (UK) in April 2000. It was designed to combine a meeting of the co-ordinators of biosphere reserves of the EuroMAB region with a meeting of the MAB National Committees. The objectives of the meeting were to consolidate the EuroMAB network of biosphere reserves and to promote regional co-operation on scientific themes of common interest. Such themes include: ethno-cultural interactions; conflict resolution; relations of biosphere reserves managers with government decision-making; labelling of biosphere reserve products. A web site for EuroMAB is managed by MAB UK (current chair): http://www.mabnet.org/euromab/home/html.

  In the Northern high latitude zones, the International Tundra Experiment (ITEX) was initiated in 1990 within the framework of the MAB Northern Sciences Network (http://www.dpc.dk/About_us/NSN/NSN.html), as a co-ordinated international programme designated to observe and measure responses of selected arctic plants to changing environmental conditions. In recent years, ITEX has branched out from an earlier focus on data collection and analysis at individual sites to an increasing emphasis on synthesis and interpretation of information on a multi-sites basis. Results has been brought together in two 'meta-analysis' publications in 1997 (*Global Change Biology*) and 1999 (*Ecological monographs*).
- **IberoMAB**: this Latin American Biosphere Reserves Network aims to strengthen the MAB Programme in Latin American countries, Spain and Portugal, notably by consolidating their MAB National Committees and co-operative links, and promoting the creation of new biosphere reserves. This latter objective has been largely successful as in 2000, new biosphere reserves nominations were received from Argentina (2), Brazil (1 + one extension), Colombia (2), Ecuador (1) and, for the first time, Paraguay (1). The Ibero MAB web site is http://www.iberomab.com/pagina_n.html.

  A thematic network on biosphere reserves was established in the larger framework of CYTED (Ibero-American Programme for the Development of Science and Technology). The network meets every year and has produced publications on biodiversity of the Latin American region.
- **Redbios** (Réseau Est Atlantique de Réserves de Biosphère) comprises biosphere reserves in Canary Islands, Spain, Cap Vert, Morocco and Senegal. The network fulfils an interregional mandate in enabling countries from different regions of the world to co-operate and exchange experience.
- In addition to these geographical networks, the **South-South co-operation programme** provides a framework for collaboration between biosphere reserves in the humid tropics on such subjects as the rehabilitation of degraded forest areas.

Objective III.2: Improve monitoring activities

At the international level, the recommendation deal with the use of the World Networks as priority long term monitoring sites.

The ultimate goal of research and monitoring activities should be to provide a basis for informed policy decisions, thus assisting society in identifying a way to a more sustainable future. MAB, therefore, because of the very nature of the Biosphere Reserve concept, is faced with the unique challenge to develop

activities broader than simply scientific research and monitoring programmes.

This is likely to be the future role of Biosphere Reserve Integrated Monitoring (BRIM), that is, to provide an agreed framework and set of methodologies to carry out repeated measurements in both the natural and social science fields. As concluded by the First Joint EuroMAB Conference for Biosphere Reserve Co-ordinators and MAB National Committees (Cambridge, UK, 10–14 April 2000), the word 'integrated' in BRIM should reflect the specificity of biosphere reserves on people and their environment. This is the value added by BRIM to other monitoring initiatives presently being carried out or being developed..

At its fifteenth session (Paris, December 1998), the International Co-ordinating Council (ICC) of MAB stressed the importance of BRIM and welcomed the decision by the State Department and MAB Committee of the United States of America to transfer the management of this programme with a financial package to the MAB Secretariat at UNESCO to strengthen its international scope and to provide it with an integrated monitoring dimension. Several representatives wished to be closely associated with the UNESCO Secretariat in the design and planning of BRIM. To that end, the Council recommended that the Secretariat set up an *ad hoc* working group as soon as possible.

Since then, efforts in the context of BRIM have mostly focused on inventorying of species, mainly through the MABFlora and MABFauna programmes. Once the data sets have been compiled, this will be an important component of BRIM, since individual species may provide useful information on the dynamics of ecosystems of which they are part.

At the occasion of the Cambridge EuroMAB conference, there was a call to re-orient current work on BRIM to reflect the specificity of biosphere reserves on people and their environment and towards real monitoring. The Conference welcomed the invitation of MAB Ukraine to host a conference on BRIM in Kiev, April 2001, which will serve as a mechanism to meet the recommendation of the ICC on the further design and planning of the programme. This conference will be an important step towards meeting Objective III.1 of the Seville Strategy, as its goals will be to identify and set the strategy (including regional strategies) for the effective implementation of the next phase of BRIM, operational objectives, activities, time-limitations, and ways and means for implementing those activities, as well as an evaluation component for the programme.

In the period post-Seville, the World Network of Biosphere Reserves has continued to provide a ground for *research* activities. Information concerning these activities has been organized and made available through the MAB Bulletin and MABNet. In particular, the latter provides an important vehicle to provide information on: available data formats, site maps, and the nature of data owned by individual biosphere reserves. A special effort has been made to catalogue the ongoing research topics and main monitoring activities on the MABnet, to encourage researchers from different countries to contact and possibly collaborate with research teams in biosphere reserves on subjects of common interest. As envisaged in the Seville Strategy, MABNet would ultimately provide a clearing-house mechanism (information and data gateway, as well as a metadata facility) for MAB. A search engine (under development) will facilitate to seek out the information and data.

In the period following Seville, the MAB Secretariat has reinforced and established new synergies with related global research and monitoring programmes. Based on the Strategy, the MAB Secretariat has established programmatic links with, inter alia: the Global Terrestrial Observing System (GTOS); the Global Ocean Observing System (GOOS); the United States of America National Aeronautics and Space Administration (NASA) (NASA will provide data – images, related analysis and interpretation whenever available and as feasible) relative to sites encompassing/ overlapping biosphere reserves); the Millennium Ecosystem Assessment; and *Diversitas*: An International programme of Biodiversity Science.

In terms of concrete fields activities, individual biosphere reserves are taking part in pilot monitoring schemes, such as those within GTOS, on net primary productivity (NPP) and on terrestrial carbon, and within ROSELT in the Sahara-Sahelian region. But much remains to be done for selective long-term research sites within the World Network to contribute to co-ordinating monitoring efforts at the global scale.

Objective III.3: Improve education, public awareness and involvement

At the international level, this recommendation addresses the exchange of experience and information between biosphere reserves and the development of communication systems for diffusing information on biosphere reserves at the field level.

It is foreseen to utilize biosphere reserves to launch a series of pilot projects for the implementation of the joint CBD-UNESCO Global Initiative on Biological Diversity Education and Public Awareness. UNESCO has recently hosted the first meeting of the CBD-UNESCO Consultative Working Group of Experts on Biological Diversity Education and Public Awareness (Paris, July 2000), which was also attended by experts involved in biosphere reserves. The Group formulated a global strategy for biodiversity informal education and public awareness, including guidelines

in the formulation of related activities. Future work of the Group will focus on the identification of pilot projects, including the production of education and public awareness material. It is expected that biosphere reserves be fully involved in these activities.

Communications and information exchange are an integral part of almost any networking process and this is certainly so for the World Network of Biosphere Reserves. The Seville Strategy itself identifies a series of actions for facilitating information flow at various levels: international (including regional and sub-regional) as well as national and individual reserve. Some progress has been made since the Seville Conference of March 1995 in terms of improving the communication and information component of work on biosphere reserves. But much remains to be done to take advantage of the new opportunities offered by modern communications and information technologies.

At the international and regional levels, the major responsibility for providing or encouraging mechanisms for information exchange falls on UNESCO and its Field Offices in different parts of the world and collaborating international organizations, together with the regional networks that have been set up by various groups of countries.

Information on biosphere reserves forms a central part of the website for the Man and the Biosphere Programme (http://www.unesco.org/mab). Information on the World Network of Biosphere Reserves includes a list of all the sites contributing to the World Network (currently 368 sites in 91 countries). More particularly the UNESCO Biosphere Reserve Directory includes date of approval, information on location and site characteristics, national and field contacts, and research and monitoring activities for each biosphere reserve, organized on a region-by-region, and country-by-country basis. Additional information is provided on biosphere reserves which are wholly or partially inscribed on the World Heritage and Ramsar Lists, with eight Frequently Asked Questions (FAQ) on Biosphere Reserves. Also accessible through the website are the Seville Strategy for Biosphere Reserves, the Statutory Framework of the World Network of Biosphere Reserves, and the Biosphere Reserves Nomination Form in different languages. Hypertext links are also provided to some of the regional networks. Examples include the ArabMAB Network (which is currently hosted by the Egypt National Commission for UNESCO) and the East Asian Biosphere Reserve Network (maintained by the UNESCO Office in Jakarta). The web page for EuroMAB, prepared by the MAB UK, host of the EuroMAB 2000 meeting, is also linked to the BRIM (Biosphere Reserve Integrated Monitoring) initiative, whose information products include the *Access* directory of contacts, environmental databases and scientific infrastructures on biosphere reserves in the region as well as lists of MABFauna and MABFlora.

In addition, a number of paper-based publications and multi-media materials provide entries to information on the World Network of Biosphere Reserves and on contributing activities and sites.

- The *Biosphere Reserve Bulletin* is a newsletter normally prepared on a twice-yearly basis, which groups information items under such headings as international, regional, countries and sites, publications, meetings calendar. The bulletin is published in English and French versions by UNESCO-Paris and in Spanish by UNESCO-Montevideo.
- A revised version of the folding poster-map of the World Network of Biosphere Reserves has been published in a large number of copies. Following publication of English, French and Spanish versions in the first half of 2000, other language versions (Arabic, Chinese, German, Portuguese and Russian) are due to be published before the end of the year. Individual countries can also publish their own language version, e.g. in Afrikaans, Basque, Dutch. One side of the poster answers questions such as *What is a biosphere reserve? Who benefits?* and *Who is participating?*, with texts based on the Seville Strategy and illustrated by a number of sites around the world. On the other side is a map showing the world's biomes and the location of biosphere reserves with a list of their names.
- As indicated above, the ecosystem approach has been adopted by the Conference of the Parties of the Convention on Biological Diversity (CBD) as the primary framework for action under the Convention, and has many shared concerns with the biosphere reserve concept: to illustrate these similarities, a 32-page, A-4 size booklet *(Solving the Puzzle: The Ecosystem Approach and Biosphere Reserves)* has been prepared by UNESCO, in English, French, and Spanish versions. It seeks to illustrate the twelve criteria of the ecosystem approach with examples from the World Network of Biosphere Reserves. The booklet was made available to the fifth meeting of the parties to the CBD, which took place in Nairobi in May 2000, and was in June distributed widely within the MAB network.
- The use of permanent forest plots in biosphere reserves and analogous sites for the study and monitoring of biological diversity, is among the topics treated in volumes in the Man and the Biosphere Series, a co-publication of Parthenon Publishing and UNESCO. Another volume in the series provides insights to MAB work in mountain regions of Europe, including research

in upland biosphere reserves. Among the pipeline titles in the series is a new synthesis of information on Trebon Basin Biosphere Reserve in the Czech Republic.

- Articles on the biosphere reserves have been included in the UNESCO quarterly periodical *Nature & Resources*. For example, during the five-year period 1995–1999, articles addressed such topics as the links between biosphere reserves and regional planning and reviews of research at such sites as Taï (Côte d'Ivoire), Sierra del Rosario (Cuba), Wadi Allaqi (Egypt), 'W' region (Niger), Doñana (Spain) and Beaver Creek (United States of America).
- *Ambiente, Ambio, Ecodecision, Interciencias, Environment, Environmental Conservation* and *Parks* are among the other environmental magazines that have carried articles on biosphere reserves in recent years.
- CD-ROMs and other sound-vision programmes produced or co-produced by UNESCO have addressed work undertaken in specific biosphere reserves (such as Mananara-Nord in Madagascar) or groups of biosphere reserves (such as a 25 minute video documentary on *Biosphere Reserves in Tropical America* produced by Conservation International).
- A set of eleven wallcharts on Biodiversity in Questions addresses such issues as the importance of biodiversity and approaches to the management of biodiversity (including the role of biosphere reserves in its conservation and use).

Objective III.4: Improve training for specialists and managers

Since its inception in 1989, the MAB Young Scientists Award Scheme has proved to be a welcome feature of the MAB Programme. In the period 1989–2000, more than 150 young scientists from 70 countries, primarily in the South, have been given the opportunity to contribute to and learn from the MAB approach and the Biosphere Reserve concept. A large number of Award winners carry-out their research in Biosphere Reserves. Among the 10 Awards distributed for year 2000, the following Biosphere Reserves will be subject for study: Tianmushan Biosphere Reserve (China); Galapagos Biosphere Reserve (Ecuador); Bia Biosphere Reserve (Ghana); Mt. Sorak Biosphere Reserve (Rep. of Korea); Danube Delta Biosphere Reserve (Romania); Sakaerat Biosphere Reserve (Thailand) and Queen Elizabeth Biosphere Reserve (Uganda).

ERAIFT (École régionale post-universitaire d'aménagement et de gestion intégrés des forêts tropicales, Regional School on Integrated Tropical Forest Management), has been established, with the support of UNDP, at Kinshasa University, Democratic Republic of Congo. This project includes all the francophone countries in Africa. The aim is to educate some thirty African specialists each year in the area of integrated management of tropical forests, including using the biosphere reserve concept and the World Network of Biosphere Reserves. Other important aspects are to collaborate with local communities, improve the conditions for the local population and work for a sustainable development.

GOAL IV: IMPLEMENT THE BIOSPHERE RESERVE CONCEPT

Objective IV.2: Strengthen the World Biosphere Reserve Network

At the international level, it is recommended to facilitate provision of adequate resources for implementation of the Statutory Framework of the World Network of Biosphere Reserves, and, wherever possible, advocate the inclusion of biosphere reserves in projects financed by bilateral and multilateral aid organizations.

Sustainable financing remains a key challenge for most sites on the World Network of Biosphere Reserves. While both the benefits of investments in nature conservation and Biosphere Reserve management, as well as the cost of in-action and a business as usual scenario tend to take time before they become visible, the financial costs for making such investments are a heavy immediate burden for the public sector. In a time when the trends being in favour of reduced public spending, such investments will therefore likely not increase substantially in the future. Many Biosphere Reserves will subsequently have to seek to re-enforce, or to develop new partnerships with the private sector, for example concerning the development of income opportunities within the reserves for key social groups, such as youth and women.

This being said, the MAB Secretariat is keen to assist the World Network of Biosphere Reserves with access to funding from a number of sources, including the GEF, UNDP, foundations (such as the UN Foundation) and bilateral development agencies. Several positive examples can be given on recent successful project proposals submitted to such bodies in favour of Biosphere Reserves: Mananara-Nord BR (with support from UNDP and now the Netherlands) and Mata Atlântica BR (support from UN Foundation). However, as in the case with the GEF, success is critically linked to the active participation in developing the proposals on behalf of the Biosphere Reserve and the host country or group of countries.

Furthermore, by streamlining proposals so that they meet not only the immediate needs of the Biosphere Reserves, but also those of international conventions, such as the CBD and the Climate Change Conventions, it is possible that more substantive financing can be mobilized. However, in the future, in order to attract external financing, it will be increasingly important that Biosphere Reserves are equipped with administrative structures to effectively handle funds and donations. The MAB Secretariat is therefore investigating how it best can promote the development of such structures, as appropriate.

It is also recommended to 'Facilitate the periodic review by each country of its biosphere reserve, as required in the Statutory Framework'.

In order to facilitate the production of periodic review reports by the concerned authorities, as foreseen in article 9 of the Statutory Framework, the Secretariat has produced a detailed form, with the aim of collecting data and providing elements for evaluation of the functioning of the biosphere reserves designated for more than 10 years ago. Among the 262 biosphere reserves concerned, 108 periodic reports have been sent to the Secretariat from 43 countries. These reports were examined by the Advisory Committee and its recommendations further transmitted to the States concerned. Some measures, but indeed not enough yet, have been taken to follow these recommendations.

It should also be mentioned that the process has had some very positive impacts such as national reviews of all sites to improve their compliance to the criteria (Argentina, UK) or extension of existing sites (Egypt, France, Switzerland). In total, 135 sites have either responded or have taken steps to improve their functioning, as a direct follow-up to the periodic review. In percentage terms, it may therefore be estimated that the response rate for the exercise is 51%, and in terms of participating countries, 62% (43 countries out of 69). This result may be regarded as relatively satisfactory, bearing in mind the difficulty of the exercise. Nevertheless, it shows that improvements are needed, particularly since there is some evidence of a decline in the response rate.

Countries which have still not replied are the following: Algeria; Bolivia; Bulgaria; Cameroon; Central African Republic; Colombia; Congo; Costa Rica; Denmark; Germany; Guinea; Honduras; Hungary; Iran; Ireland; Kenya; Kyrgyzstan; Netherlands; Philippines; Portugal; Rwanda; Sudan; Tanzania; Turkmenistan; United States of America; and Uruguay.

Discussions during the Pamplona meeting should provide elements for evaluating the process. It can already be stressed that the periodic review has had some importance from the political point of view insofar as it is based on the production of reports by the States concerned, it encourages them to look into the functioning of their biosphere reserves, to undertake a process of reflection on the implementation of the principles defined in the Seville Strategy and to evaluate their sites in regard to the criteria they accepted there.

Another important political element is the impact of the process with regard to UNESCO's external partners: this endeavour is seen as reflecting a determination to improve the quality and credibility of the World Network.

Another of the merits of this exercise which should be pointed out is the fact that it re-establishes contact between those responsible for biosphere reserves and the Secretariat, both at Headquarters and in Regional Offices. These contacts have often been neglected, and although much remains to be done in this field, in particular as regards following up the recommendations resulting from the periodic review, it is an important first step.

The exercise does, however, have its limits. These are linked to the highly uneven quality of the reports submitted. Some are of a very high standard, others on the contrary do not contain enough information to enable a serious evaluation to be made of the status and functioning of the biosphere reserves concerned. Sometimes there is a certain lack of interest in the process on the part of the authorities concerned, due either to a failure to realize what is at stake, or to insufficient motivation to apply the concept.

The replies make it clear that lack of resources often seriously hampers the design and implementation of effective management plans. Since the Secretariat is not able to provide these resources, it is clearly in a difficult position when making recommendations that imply extra resources will have to be found.

In any event, the periodic review has, in a little under three years, given an overall view of almost one third of the Network. The following general conclusions may be drawn at this stage.

Many of the sites reviewed, which were designated at a time when the criteria were considerably less precise than they are now, are still perceived as traditional protected areas rather than as biosphere reserves. Thus, the sites can be carrying out the conservation function, and often the research function, perfectly well, but the development function is much less successful, and there are often nor buffer zones neither transition area. However, efforts to remedy this situation can be noted in a number of cases, in particular in those countries that participate in regional activities.

A third recommendation concerns the functioning of the Advisory Committee for Biosphere reserves.

The Advisory Committee for Biosphere Reserves was established by the 26th UNESCO General Conference in 1991 and its Statutes were approved by the UNESCO Executive Board in the same year. The origin of this Advisory Committee can be found in the general evolution of the MAB Programme: following the adoption of the 'Minsk Action Plan for Biosphere Reserves' in 1994, the MAB Council set up a 'Scientific Advisory Panel for Biosphere Reserves' which met in 1995 and 1996. This Panel served to further refine the biosphere reserve concept, and its recommendations were endorsed by the MAB Council. In 1990, the MAB Council and Bureau urged the UNESCO Secretariat to arrange for an evaluation of the MAB Prgramme as a whole. This evaluation recognized that biosphere reserves were 'the single most important element of MAB' and should be continued and strengthened. One means of doing this was to set up a formal UNESCO Advisory Committee reporting directly to the UNESCO Director General, who is then responsible for informing the Executive Board and the MAB Council of the results of the Advisory Committee's proceedings.

The Statutes of the Advisory Committee stipulate that it 'shall advise the Director-General on scientific and technical matters concerning the designation, evaluation and management of biosphere reserves as well as the development, operation and monitoring of the international network which they constitute'. The Advisory Committee is composed of twelve members, serving in their personal capacity, appointed by the Director-General. The term of office is four years, renewable on a two-year rotational basis. Individual members are appointed on the basis of their scientific qualifications and the experience in promoting and implementing the biosphere reserve concept, taking account of geographical representation and the biogeographical diversity of the world. These members serve as 'ambassadors' for biosphere reserves during their office and are often key participants in the regional networks.

According to the Statutes, the Director-General normally convenes the Advisory Committee once a year. This has indeed been the case in 1992, 1993, 1996, 1997, 1998 and 1999. In 1994, members of the Advisory Committee formed, with additional specialists, a Programme Committee, which prepared the 1995 Seville Conference. In the other years, the Advisory Committee has met and made recommendations on many aspects of the working of the World Network, regional networks (which emerged strongly after the Seville Conference) and the functioning at the site level. Since the Statutory Framework foresees that the Advisory Committee is responsible for the evaluation of new biosphere reserve proposals and the consideration of periodic review reports for biosphere reserves designated over ten years, its work since 1995 has focussed on these two tasks. This year (2000), the Advisory Committee will meet to undertake this work just prior to the Seville + 5 meeting.

The Advisory Committee mechanism may be heavy and relatively costly, but modern e-mail communications are increasingly used to facilitate its work and reduce the actual time need for members to meet and agree on recommendations. It has certainly served to provide the technical evaluations and guidance as a basis for the intergovernmental MAB Council and Bureau to fulfil its responsibility in directing the evolution of the MAB programme as a whole.

FROM THE SURVEY: SOME AVENUES FOR THE FUTURE

The questionnaire that has been sent to MAB National Committees or equivalent focal points in countries having biosphere reserves contained, among other, two questions which are directly relevant to the international implementation of the Seville Strategy, aiming at identifying priorities for the future priorities. These are:

- Question 10 (c): 'Could you please describe what you think should be the priorities for the coming years at the international level?'
- Question 11: 'What would you like to see the MAB secretariat do over the next 5 years?'

A summary of the replies received to date (29 countries) to these two questions is presented below.

Main priorities:

- Use biosphere reserves to implement international agreements (Rep. of Korea) and in particular the Convention on Biological Diversity (CBD) and Agenda 21 (Germany);
- Participation in international research and monitoring programmes (Germany, Burkina Faso, Slovakia);
- Reinforcing regional co-operation (Argentina, Cuba, France, Guinea, Senegal, Thailand);
- Reinforcing international co-operation (Cambodia, Cuba, Egypt), in particular exchange of experiences (Burkina Faso, Italy, Ukraine, Vietnam);
- Promotion of scientific exchanges (Burkina Faso, Guinea, Vietnam);
- Search for external funding sources (Benin, Mali) including from private sector (United Kingdom, Slovakia);
- Promotion of twinning (Cuba);
- Reinforcing training, including MAB young scientists awards (Guinea);
- Use of standards and common methodologies for research within the Network (Slovakia), and

development of communication and data bases (Thailand);
- Review of existing biosphere reserves (Sri Lanka).

The support expected from the Secretariat should, according to the responses received, focus on:
- Support to regional and thematic networks including the organization of more thematic meetings (Germany, Italy, Republic of Korea, France, Ukraine);
- Improve co-operation with other international programmes within and outside UNESCO (Germany, Slovakia, Vietnam);
- Provide technical or financial support to countries (Cambodia, Chine, Germany, Guinea, Mali, Senegal) and help in the search for funding (Argentina, Guinea);
- Increase visibility of biosphere reserves (Australia, Cuba, Republic of Korea, Slovakia, Sweden, Thailand);
- Facilitate conflict resolution (Egypt);
- Improve the MABnet and communication through Internet (Egypt, France, United States of America, Sweden);
- Improve outreach information, publications and distribution (Italy, Republic of Korea, Sri Lanka, United States of America, France);
- Provide guidance on management issues by exchanges and meetings (Egypt), publication of good examples of management and institutional arrangements (Cambodia, Sweden, China);
- Reinforce periodic review (Thailand, Sri Lanka), including field evaluations where appropriate (China);
- Reinforce co-operation with research institutions in order to enhance research activities (Côte d'Ivoire, Thailand);
- Increase focus on human component (Cuba);
- Enhance training of specialists (Slovakia, Sri Lanka).
- Develop standards and common methodologies for data collection and exchange (Slovakia).

Survey on the implementation of the Seville Strategy for biosphere reserves: Analysis of the results at the national level

This document has been prepared by the MAB Secretariat and presents the replies to the questionnaire relating to the national level.

RESULTS OF THE SURVEY CONCERNING THE MAIN GOALS AND OBJECTIVES OF THE SEVILLE STRATEGY

A total number of 25 MAB National Committees has replied to the questionnaire. The results are presented per goal and objective addressed.

Goal I: Use biosphere reserves to conserve natural and cultural diversity

Objective I.1. Improve the coverage of natural and cultural biodiversity by means of the World Network of Biosphere Reserves

All but three of the 25 committees that replied indicated that their committees had studied the need for new or extended biosphere reserves.

Objective I.2. Integrate biosphere reserves into conservation planning

The majority of the committees that replied (72%) stated that the biosphere reserves in their countries have been included in national strategies relating to the Convention on Biological Diversity or other conventions.

Goal II: Utilize biosphere reserves as models of land management and of approaches to sustainable development

Seventy-two percent of the committees indicated that the biosphere reserves are included in regional development plans and programmes.

Examples of such plans and programmes include:
- In Argentina the Mendoza Provincial System of Protected Areas has adopted the MAB approach for its planning and management exercises. Argentina's Secretariat of Sustainable Develop-

ment and Environmental Policy is promoting the establishment of a National System of Protected Areas that will integrate both MAB's principles and biosphere reserves;
- National Strategy of Wetland Management and Conservation, Cambodia;
- Sub-regional project for forest ecosystem conservation (sub-region from Guinea to Ghana); *Projet sous-régional de conservation de l'écosystème forestier de la Haute-Guinée;*
- Programme for decentralized, participative management of natural resources and communal development of Mali; *Le programme de gestion décentralisée et participative des ressources naturelles et de développement communal*, Mali;
- Regional Programme on Primary Environmental Tasks 'Ecology-2005', Ukraine;
- Virginia Nature Conservancy, Barren River Area Development District; the Everglades Biosphere Reserve and the USMAB research project were central to establishing the current federal, state and municipal regional development policies and programmes (United States of America).

Goal III: Use biosphere reserves for research, monitoring, education and training

All but two of the committees that replied indicate that their countries' biosphere reserves are subjected to national research and monitoring programmes.

Goal IV: Implement the biosphere reserve concept

Objective IV.2: Strengthen the World Network of Biosphere Reserves

Nearly a fifth of the committees replied that there is no national co-ordination network for the biosphere reserves in their countries. The replies of countries that have only one biosphere reserve were not counted here.

Those who replied that a co-ordination mechanism does exist provided the following description of its activities:
- Information exchanges (Argentina, Australia, France, Slovakia, Ukraine, Vietnam);
- Publications for the network (France, Slovakia) and to create public awareness (France, China);
- Development of a web-site (Argentina);
- Annual meetings (Australia) where field surveys and field reviews are discussed (China);
- Biennial meetings of a permanent working group and the creation of sub-working groups that deal with issues like sustainable development and monitoring respectively (Germany);
- Regular meetings of the network (Cuba, Italy, Slovakia, Vietnam);
- Implementation of several training programmes, e.g. on GIS application, development of tourism and policy issues (China);
- Promotion of research projects (Slovakia);
- Co-ordination of methodologies and joint programmes (France).

REPORTED SUCCESSES AND MAIN OBSTACLES TO THE IMPLEMENTATION OF THE SEVILLE STRATEGY

MAB National Committees and focal points were asked what they considered to be the most important successes resulting from the implementation of the Seville Strategy. Many replies addressed the human dimension of the biosphere concept:
- A more open approach that is better adjusted to the human aspects (Burkina Faso, Italy, Slovakia), involvement of the population (Côte d'Ivoire, Sri Lanka, Thailand, Vietnam) and the resolution of conflicts (Egypt, Mali), in short: a new approach to conservation (China).

Other successes mentioned are:
- Improvements in terms of conservation (Ecuador, Egypt and Thailand);
- More attention from policy makers (Cuba) and different governmental departments and organizations (Thailand);
- Progress in terms of management (France, Mali);
- The use of clear concepts that are easy to communicate (Germany);
- Updating and comparison of data thanks to the periodic review (Argentina);
- The development of a regional centre for biodiversity (Benin);
- Reinforcement of research activities, monitoring and rehabilitation (Egypt);
- Improvement of training (Guinea);
- The establishment of two transboundary biosphere reserves (Ukraine).

The most important obstacles encountered according to the MAB National Committees can be categorized under three overarching themes:
1. Budgetary problems,
2. Government policies and management problems, and
3. Communication, information, training and research.

Ad 1:
- A large number of committees cite budgetary

problems as a main obstacle to the implementation of the Strategy. This problem is also cited by some committees of relative well-off member states.

Ad 2:

- Conflicts of authority between different institutions (Ecuador, Thailand);
- A lack of official policy or a co-ordinating mechanism for biosphere reserves (China, Slovakia);
- A lack of a specific legal status for biosphere reserves (Burkina Faso).

Other related obstacles cited are:

- A lack of management mechanisms for transboundary biosphere reserves;
- Conflicts over land use (Italy), especially when precious resources, e.g. oil, are discovered in biosphere reserves (Ecuador).

Ad 3:

- Difficulties of organizing and conducting interdisciplinary research (Argentina);
- Lack of knowledge and sensitization concerning the biosphere reserve concept (Cote d'Ivoire, Egypt, United Kingdom, Slovakia) or understanding of the concept (Australia);
- Communication problems (lack of equipment) and information (Mali, Sri Lanka);
- More need for training (Egypt, Thailand, Slovakia, Sri Lanka).

PRIORITIES FOR THE FUTURE

The MAB national committees and focal points were asked to specify priorities for the future at two levels, the national and the international level.

Priorities given for the **national** level coincided with the goals and objectives of the Seville Strategy, specifically goals II, III and IV. Though the respondents felt progress had been made concerning the implementation of the strategy, these issues apparently deserve continued emphasis according to many committees and focal points.

Goal II: Utilize biosphere reserves as models of land management and of approaches to sustainable development

Management, legislation and national policies:

- Using the biosphere reserves for the implementation of the Convention on Biodiversity (Germany);
- Using the biosphere reserves as models for sustainable development (Germany, United States of America);
- Improvement of management systems for biosphere reserves (Egypt, France, Mali) and the implementation of a co-ordination structure for management (Cambodia);
- Promoting biosphere reserves in national policies (Cuba, France, Senegal, Slovakia);
- Promoting the establishment of specific legislation for biosphere reserves (Mali).

Goal III: Use biosphere reserves for research, monitoring, education and training

- Updating communication strategies to sensitize the public (Australia, Senegal, United Kingdom) and attract funding;
- Using the biosphere reserves for monitoring and research programmes (France, Germany, Slovakia).

Goal IV: Implement the biosphere reserve concept

- Implement the periodic reviews (Australia);
- Establishing or strengthening national networks (Ecuador, Côte d'Ivoire, Guinea, Italy, Vietnam);
- Establishing transboundary biosphere reserves;
- Establishing more biosphere reserves, specifically in coastal zones (Egypt).

Other recommendations:

- Developing a biosphere reserve label for its products (France).

A summary of the replies concerning the priorities at the **international** level is presented in the document SC-00/CONF 607/2, 'Overview of 5 years of implementation of the Seville Strategy at the international level'. The main priorities cited in that document refer to:

- Strengthening relations with international conventions. More specifically stated: use biosphere reserves to implement international agreements, in particular the Convention on Biological Diversity (CBD) and Agenda 21.
- Strengthen regional and international co-operation with specific emphasis on exchange of experiences, search for external funding sources (including from private sector) and the promotion of twinning.
- Research, monitoring and evaluation returns as an important theme. Many committees stress the importance of participation in international research and monitoring programmes and the promotion of scientific exchanges. Training, especially of young scientists, is deemed impor-

tant as well as the development standards and common methodologies for research. Lastly, a review of the existing biosphere reserves is recommended.

PERIOD REVIEWS AND THEIR REPORTED IMPACT

The National Committees and focal points were asked for their opinions on the period reviews. Fifteen National Committees indicate that the biosphere reserves in their countries have undergone periodic reviews. All but three of those indicate that preparing the review had positive influences on the organization and functioning of the biosphere reserves in question. Only half, however, state that the implementation of the Advisory Committee's Committee has had positive consequences. The reason for this less enthusiastic response is that many of the reserves that have undergone a periodic review seem not to have yet received the recommendations, which were sent to the National Committees and focal points through the official channels of the permanent delegations to UNESCO.

EXPECTATIONS CONCERNING THE ROLE AND FUNCTIONS OF THE MAB SECRETARIAT

Finally, the MAB National Committees and focal points were asked to indicate what they expected from the Secretariat for the next five years. The replies to this question were equally presented in document SC-00/CONF 607/2, 'Overview of 5 years of implementation of the Seville Strategy at the international level'. To summarize the results it can be said that they refer to the following subjects:

1) Fostering international co-operation, more specifically: improve co-operation with other international programmes within and outside UNESCO, and reinforce co-operation with research institutions;

2) Increasing the visibility of biosphere reserves and the MAB programme by improving outreach information, publications and the distribution of those publications;

3) Reinforce the principles underlying the MAB programme by increasing the focus on the human components of the programme;

4) Provide technical support, more specifically: provide guidance on management issues, assist in the search for external funding, reinforce the periodic review, and facilitate conflict resolution.

5) Facilitate training and research through promoting the training of specialists, and developing standards and common methodologies for data collection and exchange.

6) Support the networks through the organization of thematic meetings, the improvement of MABnet and communication through the Internet.

CONCLUSION

Due to the rather limited response – only 27% of the MAB National Committees or equivalent focal points have sent in replies – the results are not very representative. Nevertheless, some interesting trends can be distilled from the reactions that the MAB Secretariat has received.

First of all, judging the reactions, it seems that the new, or rather re-newed approach, with its emphasis on the human dimensions and implication of local communities and other stakeholders is generally accepted and appreciated. That this approach is not easy is witnessed by the many remarks stressing difficulties concerning the management of biosphere reserves and the demands for technical support in this domain. Conflicts over resource use are important obstacles, but at the same time a number of National Committees stress the importance of biosphere reserves as means of conflict resolution, which is quite positive.

Despite the progress that according the respondents has been made in the implementation of the Seville Strategy, a majority seems to be of the opinion that the goals and objectives are still valid and need a continued emphasis. This applies specifically to those related to the relations with international conventions, and to research, monitoring, awareness raising and education.

Lastly, it should be noted that there is a strong demand for facilitation of international co-operation and an increasing visibility of the networks as well as the biosphere reserves, also in order to obtain the necessary funding to continue the implementation of the Seville Strategy.

Survey on the implementation of the Seville Strategy for biosphere reserves: Analysis of the results at the site level

This document has been prepared by the MAB Secretariat and presents the replies to the questionnaire relating to the site level. After a presentation of the general response to the questionnaires, the results will be presented by major goal of the Seville Strategy.

GENERAL RESPONSE TO THE QUESTIONNAIRES

Almost a third of the 368 officially recognized biosphere reserves have sent in a reply to the questionnaire, the MAB secretariat has received 108 filled in questionnaires. More replies are still coming in, and these will be analyzed later.

The replies are not evenly distributed among the regions; some are better represented than others. In Asia and the Pacific, for instance, nearly half the biosphere reserves replied. Europe and North America are also reasonably represented. Presented below is Table 1 with the replies per region.

TABLE 1. Replies to the survey per region

		BRs that replied to the questionnaire		
Region	*No. of biosphere reserves in the region*	*Number*	*Percentage of total*	*No. of BRs established after the adoption of the Seville Strategy*
Africa	38	10	28.6	0
Asia and Pacific	67	32	47.7	8
Europe and North America	197	49	33.3	8
TBRs Europe	5	5 (4 TBRs)	100	3
Latin America and Caribbean	54	10	18.5	2
Arab States	12	2	16.7	1
Total	368	108	29.3	21

Goal I of the Seville Strategy: Use biosphere reserves to conserve natural and cultural diversity

A majority (66%) of the respondents indicated that since the adoption of the Seville Strategy added attention has been paid to *in situ* conservation. About 44% of the respondents indicate that their biosphere reserve is used for the rehabilitation or the reintroduction of a species. Other strategies applied for enhancing the conservation function of the biosphere reserves are:

- Breeding and cultivation programmes (mentioned by 24% of those who state that they have paid added attention to conservation);
- Control of invasive species (16%);
- Increased research activities (16%);
- Changes in the zonation of the biosphere reserve (9%);
- Changes in the legislation covering the core zone (7%);
- Involvement of local communities in conservation (4%);
- Regional and international co-operation (4%).

One of the recommendations of the Seville Strategy concerning conservation entails the linking up of biosphere reserves with each other or with protected areas. At the moment five transboundary biosphere reserves have been established and nominated. Respondents suggested another 17 possibilities, including three transboundary initiatives in Africa that are currently underway.

Goal II: Utilize biosphere reserves as models of land management and of approaches to sustainable development

Analysis of factors leading to unsustainable development

The first question posed relating to Goal II was whether analyses had been made of factors leading to unsustainable development. Just over half (57%) of the respondents indicated that such an analysis had taken place. Sixty percent of those who replied positively stated that an analysis had been conducted

before the adoption of the Seville Strategy and 90% of the sites had an analysis done after the adoption.

Stakeholder involvement

Quite a number of questions in the questionnaire addressed the issue of stakeholder involvement in the biosphere reserves. Table 2 and 3 are presented below with the main results.

The administrative structures and mechanisms allowing for the participation of local communities and other stakeholders can be categorized as follows:

- Representation of stakeholders in the management team itself: 6% (of those who replied that structures and mechanisms are available, mainly in Europe and Australia);
- Board membership: 14% (mainly Europe, Australia and Canada);
- Advisory committees or boards: 30% (mainly in Europe, Australia and the United States of America);
- Through local government structures responsible for at least part of the territory of the biosphere reserve: 22%;
- Village/community management committees or councils: 18%;
- Professional or business associations: 6%
- Community surveillance committees (limited to implementing policies only): 3%;
- Through representation specific (development) projects: 6%;
- NGOs: 4%;
- Participative research/appraisal: 3%.

Many respondents provided more than one example of existing mechanisms. Except where indicated otherwise, the examples can be found throughout the world network.

All respondents who have stated that local communities are involved in planning and managing the biosphere reserve report that they regularly organize formal meetings with their representatives. Informal meetings are mentioned as a means of consultation by all but one. Hearings are organized in 39% of the cases and inquiries are mentioned by 46%. Some respondents (5%) mention that consultation takes place at the request of local communities. Consultations through traditional structures and at tradi

tional festivals are mentioned by another 5% of the respondents.

Sixty-six percent of the respondents indicate that a mediation structure is put in place in case of conflicts with or between stakeholders. In 28% of the cases mediation is said to be done by the same structure that allows for stakeholder participation in management and planning. Many respondents also cite local government structures and authorities like Mayors and District Councils (23%). Other structures reported are:

- Department of Parks and Wildlife (or its equivalent) (Australia, France and Italy);
- Staff of the biosphere reserve itself (Germany; Senegal);
- NGOs (local and international) (Germany, Senegal, United Kingdom);
- Researchers (Senegal and Ecuador);
- Commission of wise men (Senegal);
- Specially designated hearing officers (United States of America);
- Police (Cambodia).

TABLE 2. Analyses made of stakeholders interests, needs, roles, etc.

Question	*Percentage of Yes-replies*	*Percentage of No-replies*	*Percentage missing*
Survey done	76%	18%	6%
Before 1995	46%	28%	26%
After 1995	58%	25%	17%

TABLE 3. Stakeholder involvement

Question	*Percentage of Yes-replies*	*Percentage of No-replies*	*Percentage missing*
Local community involved in planning and managing BR	91%	8%	1%
Permanent structures for involvement stakeholders	80%	9%	11%
Mediation mechanism available in case of conflicts	66%	24%	10%
Representatives of the interest groups identified	82%	6%	12%

The development of quality economies

The third set of questions under Goal II is related to the role of biosphere reserves in local development. Respondents were asked whether studies had been made of the services and products of their biosphere reserves and whether their reserves are engaged in promoting environmentally sound and economically sustainable activities. Over half (59%) of the respondents state that studies have been conducted. Two-thirds indicate that their biosphere reserves are engaged in promoting sustainable activities. Promotion strategies can be classified as followed:

- Promote sustainable harvesting methods (37%);
- Promote eco-tourism (25%);
- Promotion of new economic activities (28%);
- Capacity building (for new activities) (3%);
- Credit schemes for new activities (3%);
- Marketing/marketing research (20%);
- Research to identify new activities (2%);
- Negotiating with enterprises about new activities or about the consequences of their activities in/near biosphere reserves (2%);
- Improve or consolidate (the management of) existing activities (12%).

Sixteen biosphere reserves (of those who replied) have developed or are in the process of developing quality labels for their products. Half of these are German biosphere reserves. Other countries include: Australia, France, Italy and Senegal. A large majority of respondents (79%) is interested in developing a quality label.

Respondents were asked to indicate what the incentives are for people in around their biosphere reserves to use resources in a sustainable way. Just over half (59%) replied that there are such incentives. Their further specifications were the following:

- It is in people's own interest to use resources wisely: mentioned by 28% of those who replied positively;
- Pride: 4%;
- Project subsidies: 13% (especially in Africa);
- Government subsidies: 15% (especially in Europe);
- Permission to use biosphere reserve label: 4%;
- Awarding of contracts: 4%;
- Disincentives in the form of fines in case of unsustainable use: 6%.

A vast majority of respondents (93%) states that their biosphere reserves have created jobs for members of the local communities. The biosphere reserves themselves and tourism are the most important job providers:

- Staff of BR: 58% of the respondents mention this opportunity;
- Tourism: 45%;
- Research: 32%;
- Work on infrastructure: 8%.

Seventy-three percent of the respondents indicate that the local populations gain direct benefits from the biosphere reserves. These benefits can be categorized as follows:

- Sharing of entrance fees: 12% of the respondents mention this benefit;
- Sharing of taxes on the use of services and goods or tax exemptions: 11%;
- Sale of crafts and other goods: 30%;
- Use of local construction techniques and labour: 42%;
- Use of natural resources in the biosphere reserve: 15%;
- Providing tourist accommodation: 26%,
- Attraction of other economic activities by the biosphere reserve: 5%;
- Recreation possibilities: 6%
- Community projects organized by the biosphere reserve: 3%;
- Subsidies to promote sustainable use: 2%.

Sharing of benefits from the utilization of genetic resources, basic material for biotechnology and patents is not mentioned once by the respondents.

Seventy-eight percent of the respondents state that their biosphere reserve is engaged in the promotion, the development or introduction of environmental friendly policies and practices. These include:

- Promotion of cleaner technologies: mentioned by 25% of the respondents;
- Promotion of sustainable agriculture: 28%;
- Promotion of other forms of sustainable resource use: 24%;
- Promotion of recycling of water and waste: 6%;
- Awareness raising in general: 11%;
- Development of diagnostic tools for enterprises: 1%;
- Research: 1%
- Controlling/patrolling: 2%;
- Promotions of eco-tourism: 6%.

Integration in regional planning

Another objective under Goal II is the integration of biosphere reserves in regional planning. A number of questions addressed this issue asking whether biosphere reserves have influenced regional planning and whether they in turn have been influenced by regional planning or other regional influences.

Less than half of the respondents (47%) feel that the example of designating buffer and transition zones in their biosphere reserves has influenced regional land-use planning and development policies. Examples provided were few but included:

- More emphasis on the involvement of local population in management of natural resources;
- More emphasis on conservation in the surrounding areas;
- More emphasis on development in surrounding protected areas;
- Establishment of buffer and transition zones in protected areas.

Six percent of the respondents considered that the question was not applicable to their biosphere

reserve since it does not contain any buffer or transition zones.

More than two-thirds of the respondents (67%) stated that their biosphere reserve has been included in a national or regional land-use plan or project. According to 68% of the respondents management of the biosphere reserves has been able to influence planning or development decisions in their countries or regions. Examples include:

- Representation of biosphere reserves in local government structures;
- Biosphere reserve management assigned an advisory role in local government or other planning bodies;
- Influence on legislation;
- Biosphere reserves providing information and research data on the environment that is taken into account in policy making;
- Biosphere reserves claiming more land;
- Resource use in the biosphere reserve is affecting resource use in other parts of the country (e.g. wise use of water sources).

As to the influence of external influences on the biosphere reserves: over half of the respondents (59%) indicate that their biosphere reserve has been influenced by national or regional planning and development decisions. Examples include:

- Positive influences from national land-use and development planning;
- Negative influence from land-use and development planning meaning that emphasis is mainly on development and not on conservation;
- Positive impact of tourism, e.g. tourism drawing attention to the values of the biosphere reserve;
- Influence from new legislation;
- Influence trough national and international NGOs.

Less than half but still a considerable percentage (46%) stated that global trends have been taken into account in the planning and management of their biosphere reserves. Examples include:

- Research and monitoring on global warming;
- Establishment of corridors;
- International agreements like the CBD.

GOAL III: USE BIOSPHERE RESERVES FOR RESEARCH, MONITORING, EDUCATION AND TRAINING

Research and monitoring

The research function of the biosphere reserves seems to be well fulfilled; nearly all respondents (96%) stated that research and monitoring activities are taking place in their biosphere reserves.[1] In line with the Seville Strategy recommendations on research and monitoring, mapping of the different biosphere reserves is an important topic of research, mentioned by 70% of the respondents. Just over half of the research activities (52%) are reportedly part of international research and monitoring endeavours.[2]

Less than half of the respondents (48%) indicated that their biosphere reserves have contributed to development of research or monitoring methodologies. The identification of sustainability indicators seems to be an even more difficult task, only 26% of the respondents stated that they have been able to identify those.

Mechanisms for data and information management and exchange, however, have reportedly been developed by two-thirds of the biosphere reserves that replied.

Training, education and public awareness

In line with the Seville Strategy recommendations, the question whether any training, education or public awareness activities are organized in the biosphere reserves has received overwhelmingly positive answers: 91% of the respondents replied affirmative. The groups that were addressed are the following:

TABLE 4. **Groups addressed by public awareness, education or training activities**

Groups	*Percentage of respondents indicating a certain group has been addressed*
Visitors	79%
Local schools	85%
Schools in general	61%
Local adult population	71%
Local/national administrators	42%
Managers of protected areas	46%
Local staff	46%
Scientists	47%
University graduates, post-graduates	52%
Others	11%

1. A detailed list of the subjects of research is being prepared by the MAB Secretariat
2. The responses to the open-ended question concerning the global BRIM system are currently being analyzed.

Half the respondents stated that an ecology educational field centre has been developed in their biosphere reserve, and over half (58%) indicate that their biosphere reserve is used as demonstration site.

Nearly all biosphere reserves (91%) have developed information and promotional materials for their biosphere reserves. The public addressed is as follows:

TABLE 5. **Specific groups for which information and promotional materials have been published**

Groups	*Percentage of respondents indicating a certain group has been addressed*
Visitors	88%
Local adult population	72%
Local schools	70%
Schools in general	54%
Local staff	57%
Others	22%

In addition to leaflets and brochures, 48% of the biosphere reserves that replied have developed their own websites. A majority (78%) can also be contacted by e-mail.

GOAL IV: IMPLEMENT THE BIOSPHERE RESERVE CONCEPT

Twinning

One of the recommendations related to Goal IV is that twinning of biosphere reserves should be promoted. Seventeen of the biosphere reserves that replied are twinned with other sites, they represent 15% of the sample. Of these twinned sites, 77% indicate that the twinning has made a difference to the funding or management of the sites.

Changes in zonation and management regimes

Quite a number of respondents (40%) state that changes have been made in the zonation of their biosphere reserves since their inception. Most of the changes have taken place after the adoption of the Seville Strategy: 74%.

An analysis of the reasons for changing the zonation shows the following pattern:

- To enhance conservation: 40% of the changes reported;
- To increase possibilities for development: 13%;
- To enhance both conservation and development possibilities: 13%;
- To rationalize management: 13%;
- As a reaction to co-operation with another biosphere reserve: 13%;
- As a reaction to landscape changes: 7%.

About a third of the respondents (34%) expect changes in land-tenure that will affect the biosphere reserve.[3]

An analysis of the authorities responsible for the biosphere reserves and their different zones shows a consistent influence of Departments of National Parks (and their equivalents) and Ministries of Environment. Forty per cent of the respondents indicate that the Department of National Parks is the authority responsible for the biosphere reserve as a whole, and another 20% indicates that the Ministry for Environment is responsible. Only 7% indicate that an institution that is not specifically geared towards the environment (like a regional or town council) is responsible for the biosphere reserve as a whole.

Core zones are mainly controlled by departments or Ministries solely focussing on the environment (80%). The remaining 20% are controlled by departments combining an environmental emphasis with agricultural concerns (mainly combining forestry and agriculture) or by local government institutions.

Remarkably, the exact same pattern is found for the buffer zones.

Strategies to increase funding

One question asked whether biosphere reserves had implemented any strategies for mobilizing funds. The results are the following:

TABLE 6. **Strategies developed to mobilize funds from different sources**

Source of funding	*Percentage of respondents indicating that a strategy has been developed for the particular resource*
NGOs	34%
Foundations	34%
Bilateral resources	23%
Regional economic organizations	28%
GEF and other international sources	22%
Private sector	28%

3. The data received on land-use regulations and management plans are still being analyzed.

Biosphere reserve networks

More than three quarters of the respondents indicate that their biosphere reserves maintain contacts with other biosphere reserves in the country. For 6% of the respondents the question was not applicable since they represent the only biosphere reserve in their country.

Respondents were asked to indicate what they considered useful means of communications. The results are as follows:

TABLE 7. **Percentage of respondents judging a means of communication useful**

Means of communication	*Percentage of respondents replying positively*
Newsletters	78%
National network meetings	84%
Joint projects	78%
Exchange of people	72%
Exchange of information	88%
Government co-ordinated mechanism	59%
Private biosphere reserve association	29%

The advantages respondents judged to have gained from the World Network of Biosphere Reserves were the following:

TABLE 8. **Advantages gained from the World Network of Biosphere Reserves**

Advantages	*Percentage of respondents indicating the advantage*
Personal contacts	80%
Joint projects	45%
Exchange of people	50%
Exchange of information	92%
New ideas	84%

Periodic reviews

The last issue addressed in the questionnaire was the periodic review and its perceived impacts.

A fifth of the biosphere reserves from which replies have been received, have been subjected to a periodic review. Sixteen percent have been subjected to some other form of review. Three percent of the respondents are preparing a periodic review.

Of those who have prepared a periodic review 69% indicated that preparing the review had positive consequences for the organization and functioning of the biosphere reserve. Just over half, 53%, indicated that the implementation of the Advisory Committee's recommendations had positive influences. Not all have yet received the recommendations that are sent through the official channels of the permanent delegations at UNESCO.

PROGRESS ON REGIONAL NETWORKS

Seminario EuroMAB: Coordinación y cooperación entre EuroMAB y las restantes redes del Programa El Hombre y la Biosfera

Pamplona, España, 20, 21 y 22 de Octubre de 2000

Javier Castroviejo

CONCLUSIONES GENERALES

1. Se reconoce a las Redes un papel esencial para la vertebración, coordinación y desarrollo del Programa MAB.

2. El término Red deberá entenderse exclusivamente en relación a las Redes regionales integradas, en su caso, por subredes, Redes nacionales y comités nacionales de reservas de la biosfera.

3. Se reconoce como un problema universal para la operatividad y eficacia del Programa MAB la falta de un mínimo soporte jurídico que sustente la declaración de las reservas de biosfera y por ende la actividad de los comités nacionales y Redes regionales.

4. Se recomienda para soslayar esta falta de apoyatura legal que el Programa MAB, a semejanza de lo ocurrido con la mayor parte de los programas internacionales en materia de medio ambiente, eleve su rango al de Convención Internacional en la que, con pleno respeto de la soberanía de los países y partes contratantes, éstos adquieran el firme compromiso de incorporar a su legislación interna mecanismos eficaces para el logro de los objetivos del Programa MAB.

5. Debe organizarse un flujo de información que permita a las Redes conocer las actividades y acuerdos entre comités, reservas y el Secretariado en París.

6. Debe incorporarse un programa para que a nivel de Red se pueda recoger y distribuir la información inédita existente sobre los comités y reservas de cada Red.

7. Los aspectos socioeconómicos deben recibir especial atención dentro de cada red a nivel de investigación, seguimiento, gestión u otros.

ESTRUCTURA DE LAS REDES

8. Teniendo en cuenta la positiva experiencia desarrollada en las redes ArabMAB, IberoMAB y EuroMAB, se sugiere la conveniencia de extender a las restantes redes una estructura orgánica consistente en el establecimiento de una Secretaría permanente así como una Presidenta con funciones ejecutivas y de representación a

desempeñar por comités nacionales con carácter rotatorio.

OBJETIVOS DE LAS REDES

9. Se reconocen como objetivos prioritarios :

- Analizar la conveniencia de declarar reservas que vengan a completar el objetivo general del Programa MAB de obtener una adecuada representación de los diversos ecosistemas y situaciones socioeconómicas dentro del ámbito de la red.
- Favorecer la declaración de reservas transfronterizas o multinacionales para lograr una gestión coherente de ecosistemas uniformes afectados por divisiones administrativas y/o políticas.
- Desarrollar sistemas de asesoramiento, cooperación conjuntos de las reservas de la biosfera de forma que las Redes permitan ensayar sistemas de gestión compartida.
- Realizar evaluaciones conjuntas de las reservas de la biosfera dentro de las Redes por los comités nacionales, con la participación de auditores externos independientes.
- Reforzar los vínculos de participación y cooperación de las Redes con las entidades supranacionales de su correspondiente ámbito territorial vgr UE, MERCOSUR, Pacto Andino, ASIAN, COMMONWEALTH, SICA y otros.
- Dotar a las Redes de una mínima reglamentación común pero flexible y adaptable a las problemáticas locales.

INSTRUMENTOS

10. Reforzar el uso del Programa BRIM y de MAB-Net como medio de proyección de la red.

11. Publicar una monografía sobre restauración de ecosistemas, ya que en muchos lugares es necesaria una recomposición de los mismos para lograr su adecuado manejo.

12. Publicar una monografía sobre la gestión de reservas de la biosfera, basado esencialmente en casos concretos de gestión de las mismas.

13. Impulsar la edición de diferentes materiales sobre las Redes, utilizando materiales escritos, audiovisuales, en soporte magnético o electrónico u otros.

14. Fortalecer los Comités Nacionales como piezas esenciales para el buen funcionamiento de Redes y subredes del Programa MAB.

15. Favorecer la incorporación de los responsables de las reservas de biosfera, corno miembros de pleno derecho en los comités nacionales respectivos como medida esencial para garantizar su representatividad como protagonistas de la gestión cotidiana de dichas reservas.

16. Revisar, con una periodicidad mínima de dos años, los objetivos y logros de las Redes.

EuroMAB: An outline 1978–2000

Martin Price

EuroMAB is the regional MAB network for Europe and North America consisting of some 42 countries, and at the time of the Pamplona meeting, with some 197 biosphere reserves and 5 transboundary biosphere reserves (the only transboundary biosphere reserves to date).

The region is characterized by an extreme diversity in terms of languages, cultures, and economic and political systems. To date, there have been a number of joint activities, thematic meetings, National MAB committees' meetings and biosphere reserve managers and co-ordinators' meetings, but these have been held in a rather sporadic fashion.

Activities within the EuroMAB region include:

- **Northern Sciences Network:** which brings together groups of scientists working on scientific research topics of common interest (for example on northern birch forest), but these efforts have been independent of the EuroMAB meetings.
- **Biosphere Reserve Integrated Monitoring (BRIM)**: the idea of a BRIM began at an EuroMAB meeting in 1991. Driven mainly by the MAB Committees of the United States of America and Germany, it has served to compile databases of flora and fauna, as well as the 1996 'Access' directory of permanent plots which monitor flora, fauna, climate, hydrology, soil, geology and the effects of anthropic changes in 132 biosphere reserves in 27 countries.
- **Research**, e.g.:
  - ecological impacts of land use change;
  - adaptation of indicator species to global warming;

- **Thematic meetings,** these include for example:
  - Mountain national parks and biosphere reserves: Monitoring and management (Czechoslovakia, 1993);
  - The social dimension of biosphere reserves: Biosphere reserves for people (Germany, 1995);
  - Ethno-ecological interactions in biosphere reserves (Czech Republic, 1999);
  - Planning instruments in biosphere reserves (Spain, 1999);
  - Changing agriculture and landscape: Ecology, management and biodiversity decline in anthropogenous mountain grassland (Austria, 1999);

The actual EuroMAB meetings are given in the following table.

EuroMAB Meetings

Year	*National Committees*	*Biosphere reserve managers/ co-ordinators*
1987	Germany	
1989	Czechoslovakia	
1991	France	
1993	Poland	
1994		France
1995	Greenland	
1996		Slovakia
1997	Belarus	
1998		Finland
2000	EUROMAB 2000, Cambridge, UK	

CONCLUSIONS AND PROSPECTIVE

It can be concluded that:

- Developing a common understanding of the philosophy of the MAB Programme has taken a long time;
- Biosphere reserves have become a major emphasis for all countries;
- Meetings are essential to allow people to build trusting relationships and to discover interests and concerns they have in common. Exchanges can be developed thereafter, notably through electronic communications;
- Participants in biosphere reserve co-ordinators' meetings have developed a real sense of 'belonging' to a Network with a common vision and Strategy.

In the future, it is expected that:

- New technologies have great potential for stepping up the level of exchanges of information and experiences;
- Collection, analysis, and dissemination of success stories are critical;
- Biosphere reserves need to be better integrated at national and European scales;
- Many potential benefits of belonging to the network have yet to be identified and acted on.

EABRN: Towards consistent conservation policies, genuine ecotourism and transboundary conservation co-operation

Han Qunli, Han Nianyong and *Kim Kwi-gon*

PROGRESS ALONE THE GOALS AND OBJECTIVES

Conservation policy, ecotourism and transboundary conservation are EABRN[1] priority subjects since 1996. The 6th Meeting of EABRN 'Ecotourism and Conservation Policy in Biosphere Reserves and Other Similar Conservation Areas', held during 16–20 September 1999 in the Jiuzhaigou Biosphere Reserve, China, offered an opportunity to further their work on these subjects. Jiuzhaigou Meeting brought together some 50 participants from eight countries: China, Democratic People's Republic of Korea, Japan, Mongolia, Republic of Korea and the new member Russian Federation as well as Thailand and United

1. East Asian Biosphere Reserve Network (EABRN) is constituted by six MAB National Committees: China, Japan, Mongolia, People's Dem. Rep. of Korea, Rep. of Korea and Russian Federation. The network was initiated in 1994. Jakarta Office hosts EABRN Secretariat service.

States of America. Six MAB country reports together with some 20 papers covering the above-subjects were presented at the EABRN-6.

The participants carried out a field evaluation in Jiuzhaigou Biosphere Reserve, an interdisciplinary diagnosis of MAB for conservation and sustainable management of the area. Suggestions and recommendations were made for improving management of this extraordinarily beautiful Biosphere Reserve and World Heritage site. A detailed report of this meeting has been published. As follow up, three new small-scale projects were immediately launched by UNESCO Jakarta Office after the EABRN meeting. These include:

- 'Development of conservation policy for Bogdkhan Mountain Biosphere Reserve of Mongolia',
- 'Investigation and study on the biodiversity of Main Wetlands and training activities for its conservation and management in Democratic People's Democratic Republic of Korea',
- 'Study on indicators for ecotourism management in China's Nature Reserve'.

The output of the result will be reported at EABRN-7 to be held in the Sikhote Alin Biosphere Reserve of Russian Federation in 2001.

The 2000–2001 will be the commencement of the second phase of EABRN co-operation. During this period, effort will be made to consolidate EABRN achievements, and to improve its performance against certain weaknesses that have been identified by EABRN evaluations. Some of the weaknesses are, for example, lack of continued follow up to the recommendations provided by EABRN, needs for systematic analysis of biosphere reserve management experience, lack of systematically-organized EABRN training programme and interdisciplinary projects. The timing is good for EABRN to start second phase, since 2000–2001 is also the period for the review of implementation of the Seville Strategy and shaping new MAB Programme that to be carried out at this Council session.

STRATEGY FOR EABRN DEVELOPMENT DURING 2000–2001

The overall goal and objectives of EABRN co-operation remain same as were articulated in the EABRN Statutes. Pursuing these will help the countries' MAB committees and their associated institutions, NGOs and individuals to improve their roles in conservation, research and sustainable management of the biological diversity. For this biennium, a strategy for network development will be three-folds:

- **Continue working on the identified priority areas.** During 2000–2001, EABRN will continue with its effort in the identified fields: ecotourism, conservation policies, transboundary conservation and Biosphere Reserve field evaluations. A new priority area will be given to the development of training activities for BR managers and young researchers. Small task forces will be set up to lead the co-operation in each of the fields.
- **Build strong interaction and co-ordination with the priorities set up by MAB Programme internationally.** In 2000–2001, MAB Research will be very much focused on ecosystem goods and services, ecological economics and use of ecosystem approach in management. Effort will have to be made to ensure that MAB research contributes to, and benefits from, the EABRN co-operation. Interaction between EABRN and other UNESCO networks will be improved (e.g. natural World Heritage, MAB Southeast Asian Ecotone programme, IBSICA programme, SeaBRnet, People and Plant Initiative, etc.), co-operation with other existing regional co-operation mechanisms, especially those led by NGOs, such as the recent initiative on Eco-Peace Network for Northeast Asia, should be developed.
- **Improve funding situation in order to develop more tangible project activities.** So far UNESCO Regular Programme funds are used to match the Korean contribution and this should have to be improved by exploring other funding possibilities including fund-in-trust projects toward EABRN training and interdisciplinary research.

ACTIVITIES TO BE CARRIED OUT DURING THE REMAINING YEAR 2000 AND YEAR 2001

- **Preparation and convening of EABRN-7 meeting.** The meeting will held in September 2001 at the Sikhote-Alin Biosphere Reserve, located in the East Asia part of Russia, as was proposed by MAB-Russia at EABRN-6 and endorsed by all the EABRN member states. The tentative title of EABRN-7 is 'Building capacity toward the fully functioning of Biosphere Reserves in East Asian Countries'. EABRN-7 will provide an opportunity for the countries to examine and discuss thoroughly along the lines of EABRN priorities (ecotourism, transboundar conservation, conservation policies and legal instruments and BR field evaluation) from the perspectives of required (scientific, managerial and technical) capacities for Biosphere Reserves. Training, as a central part of capacity building,

will be discussed. The output of the meeting will be used as a basis to further construct a Handbook for Managing Biosphere Reserves in Asian countries.

- **EABRN in depth studies on ecotourism, transboundary conservation and conservation policies.** From 1997 and 2000, a number of studies (on ecotourism indicators, conservation policy and transboundary conservation co-operation) have been carried out. During 2000–2001, support will be continued to further some of the studies, such as ecotourism indicators, conservation policies, Biosphere Reserve development in-depth assessment and transboundary conservation. Effort will be made to ensure that EABRN studies are closely related to the MAB research themes of the biennium. DMZ area between Democratic People's Republic of Korea and Republic of Korea, will be given a priority for studying the possibility on the establishment of transboundary Biosphere Reserve or Permanent Peace Park.
- **Capacity building through EABRN training and support.** A training workshop on ecotourism and its management will be held in mid 2001. Support will be provided to EABRN participants to attend other related training especially those organized or sponsored by UNESCO, such as UNESCO-UNITAR training on legal instruments for environmental and multilateral co-operation in conservation, UNESCO-BIOTROP training on the management of freshwater ecosystems, MAB-Smithsonian Training on Biodiversity monitoring, etc.
- **Support to the development of transboundary Biosphere Reserves in the sub-region.** One workshop will be held in January 2001 for the MAB/EABRN-IUCN Scientific Workshop on biodiversity conservation in Southern Kuril Islands/the Four Northern Islands. Another workshop will be in Tumen River area, as part of Eco-Peace initiative by Republic of Korea with other East Asian countries. DMZ TBR possibility will be also further studied.

The development of biosphere reserves in South East Asia over the past five years in response to the Seville Strategy

Effendy Sumardja and *Nyguen Hoang Tri*

INTRODUCTION

The Seville Strategy and Statutory Framework for the World Network of Biosphere Reserves, the two primary documents arising from the Seville Conference in 1995, reinforced the position of MAB as an international framework for environmental research and co-operation. Focusing on issues such as integrated ecosystem conservation and management, collaborative exchanges with surrounding local communities, transboundary conservation co-operation, and applied ecological research, the two document set out a clear path for the members of the Word Network to develop new activities in line with the main environmental conventions.

It is now five years after the Seville Conference. Clearly, there is no lack of general commitment from all national parties engaged in the World Network to implement the Seville Strategy and the Statutory Framework. Certain interesting progress has been achieved in the Southeast Asian region, as are shown in the following examples. However, problems in terms of implementation capacity remain a long-term challenge in this region.

RECENT BIOSPHERE RESERVE ACTIVITIES IN THE REGION

Goal 1 on natural and cultural diversity

The first goal of Seville Strategy is to use Biosphere Reserves to identify and conserve natural and cultural diversity. In line with this overall goal, and corresponding the new needs raised by countries in the implementation of the Convention on Biological Diversity and Agenda 21, some new Biosphere Reserve have been added to the World Network, showing an interesting progress.

In 1996, the **Ranong** Mangrove Biosphere Reserve of Thailand was included in the World Network in 1998, earmarking a new phase in the

Thailand's participation to the MAB Programme. Ranong covers 30,000 ha of coastal and marine areas. It has no less than 24 mangrove species and more than 300 animal species. The area had been a long-term ecological research site, supported by UNEP and UNESCO, with recent activities also on education and training, on mangrove management and rehabilitation. Ranong is an area where minority ethnic groups live, whose livelihoods mainly depend on fishing and shrimp farming.

In 1998, Vietnam submitted its Biosphere Reserve nomination for **Can Gio**, marking both the entry of Vietnam the World Network of Biosphere Reserves as well as the second recent Biosphere Reserve nomination of a mangrove/coastal zone in the region. A 75,740 ha mangrove dominated reserve; the area has identified more than 200 species of fauna and 52 species of flora. It serves as an interplay area between Ho Chi Minh City and the sea and as 'green lungs' for the most populated urban area of Vietnam. The local population mainly lives from agriculture, fisheries, aquaculture and salt production. It is interesting to note that Can Gio is a Biosphere Reserve based on an entirely restored ecosystem, a first case in the World Network.

Corresponding to this development, not far from this area, China also nominated **Shankou** as a Biosphere Reserve in 1998, located at the northern coast of South China Sea, a first mangrove Biosphere Reserve of China and also an area of ecosystem rehabilitation.

In Cambodia, **Tonle Sap** became a Biosphere Reserve in 1998. Tonle Sap is the largest freshwater lake in Southeast Asia. Its size changes greatly due to the monsoon effects in Mekong River basin. The lake's fisheries are some of the most productive in the world, providing Cambodian people with more than 60% of their protein intake. Tonle Sap provides vast habitats for waterfowl, including some endangered species.

Vietnam is currently preparing its second biosphere reserve nomination for the Red River Delta, a wetland adjacent to extensive agriculture development. People's Dem. Rep. Lao started to look at the border conservation areas close to Yunnan of China where tourism is booming, and is considering the establishment of its first Biosphere Reserve. Thailand has proposed developing some transboundary conservation research with the coastal areas (largely mangroves) on the Myanmar side to Ranong. Indonesia has also seen the interest from East Kalimantan coast to develop a new type of conservation systems that may group a cluster of sites as a Biosphere Reserve, where most of the core areas would not be national parks, as is the current practice in the country.

The new and potential Biosphere Reserves in Southeast Asian countries have shown a clear shift from Biosphere Reserve nominations in early years, of which many were same as national parks. This change reflects the increasing concern of the countries over the conservation and sustainable use of their coastal zone resources and large scale of land-water ecotones. The sites all have a clearly identified and strong human dimension. This development has narrowed, and will continue to narrow the possibilities of creating new biosphere reserves in key ecosystems in the region. With the existing coastal Biosphere Reserves in the region (Palawan and Puerto Galera of Philippines and Indonesia's Tanjung Puting, Komodo and Siberut), Southeast Asia now is better placed for develop MAB co-operation on coastal zones.

RECENT BIOSPHERE RESERVE ACTIVITIES IN THE REGION

Goal 2 on the use of Biosphere Reserves as models of land management and of approaches to sustainable development

Efforts have also been made in this field. Here are some recent examples:

- **Siberut Island**, famed for its very special indigenous culture and biological diversity, as well as conflicts over different conservation concepts and priorities, has recently been the site of an ongoing UNESCO's interdisciplinary project. To assist the Mentawai communities of the island, UNESCO has conducted a number of surveys, workshops and certificate training covering the subjects of the roles of traditional law (Adat) in conservation and land resources, sustainable agriculture, fair-trade and marketing skills. The project offered in particular training on coconut processing techniques and cultivation of cinnamon and coffee, as complementary economic income for the indigenous communities.

  To improve communication between all the actors and stakeholders, UNESCO organized a number of workshops and community meetings to look at the pressing issues encountered, such as the new logging concessions and palm oil plantation. An Education project 'Community Learning Centre (CLC)' under the Asia-Pacific Programme of Education for All (APPEAL) was also introduced, aiming to increase opportunities for education, community empowerment, and to provide a centre for research on alternative education models. In addition, a Siberut water supply and sanitation project was carried out for eight villages that were partially supported by the Embassy of Netherlands.
- In **Komodo**, which is also a Word Heritage site, support has been provided to the Nature Conservancy Indonesia to organize technical training

for the local fishing communities living in the area to conduct pelagic fishing. This was in order to shift the traditional focus on squid, for which catch rates have fallen in last 10 years due to over-fishing. Support is also needed to start a project for seaweed culture as an alternative livelihood for the coastal communities. There is now great concern about the threats to the marine resources of this Biosphere Reserve and World Heritage site. MAB needs to enhance its co-operation with World Heritage to intensify the conservation measures.

- **Cibodas** Biosphere Reserve has been the most active site in Indonesia's MAB Programme, partially due to its vicinity to the Jakarta and Bogor, where research institutions are concentrated. A management consortium has been in place for some years. The CI-UNESCO training course on GIS/GPS/Internet for Asian Biosphere Reserves was organized in the site in January 1998. A MAB study on forest fire impact to biodiversity was conducted in 1998. The area is ideal for organizing environmental education and training, given the famous botanical gardens and research institutions situated in the area. A new education project for learning about plant diversity will be launched in November 2000 as a co-operation with LIPI and its Bogor Botanical Garden.
- In **Palawan Island** of the Philippines, the Biosphere Reserve has been host of a wide array of activities centred around Ulugan Bay, a spectacular mangrove, sea grass, coral reef and fisheries site on the main island's western coast. There has been an ongoing US$265,000 UNESCO-CSI/UNDP Project targeting community based sustainable coastal resource management a nd the development of sustainable tourism ventures. The Philippines' second Biosphere Reserve, **Puerto Galera** is also involved in a broad range of activities linked with integrated coastal management and development.
- In Thailand, a **Ranong** Biosphere Reserve Task Force was established in 1998 as a mechanism of interdepartmental working group tasked with securing broad-based and efficient implementation of activities and programmes. The Task Force was established on a joint initiative of UNESCO and the Thai UNESCO National Commission. Among the Task Force's first undertakings was the planning and executing of a UNESCO Participation Programme grant for the improvement of the educational and information dissemination capabilities of the Ranong Mangrove Forest Research Centre – which doubles as the central management unit for the Biosphere Reserve. The outcomes of the project included the improvement of meeting room facilities presented on the occasion of the ECOTONE VIII conference.

UNESCO has been in a continuing dialogue and co-operation development with Aarhus University's Centre for Tropical Ecosystem Research (cenTER), which is the implementing agent for a DANCED-funded mangrove research project in Thailand and Malaysia. CenTER furthermore works for DANIDA in the Vietnamese Mekong Delta, adjacent to the newly nominated Can Gio Biosphere Reserve. A memorandum of understanding has been drafted between the two organizations. Expected of future co-operation includes a cenTER's 5-year project at its Thailand, Malaysia and Vietnam sites for research, training and ecosystem rehabilitation. For Ranong, the key objective of such a future phase would be the provision of research and management input into the formulation of a comprehensive Ranong Biosphere Reserve management plan.

Activities targeted at using Biosphere Reserves for scientific research are also carried out, such as the ecosystem valuation study of Can Gio Biosphere Reserve and the social economic study in Siberut Biosphere Reserve. The MAB Certificates of Indonesia are a new initiative, created by UNESCO to support young researchers and environmental managers who are working in Biosphere Reserves.

REGIONAL NETWORKING

In an effort to exchange information on national efforts at the sub-regional scale, in October 1998, the Can Gio Biosphere Nomination Workshop held in Ho Chi Minh City, Vietnam, formulated a South East Asian Biosphere Reserve Network, or SeaBRnet for short. Initiated by the represented nations – Cambodia, Indonesia, Japan, Philippines, Thailand and Vietnam– the new network received strong support and encouragement from UNESCO. Japan officially announced SeaBRnet at the MAB International Co-ordinating Council in December 1998. The SeaBRnet members have identified the following missions as key for the emerging network:

- Promotion and enhancement of understanding of traditional, modern and long-term ecological and developmental processed across national and regional boundaries; Promotion of comparative analysis and synthesis across SeaBRnet sites;
- Facilitation of interaction among participating researchers across disciplines and sites;
- Promotion of comparability of observations and experiment, integration of research and monitoring, and encouragement of data ex change within the regional MAB programme;

- Enhancement of training and education in comparative research, methodologies, and their relevant technologies, especially in less developed countries;
- Augmentation of contributions to the scientific basis for coastal and marine ecosystem management;
- Development of resulting models and programmes in countries of the region where they currently do not exist; and,
- Development of links and collaboration with UNESCO Programmes such as MAB Young Scientists Award Scheme, UNESCO Chairs, Diversitas, IBSICA and CSI.

A fully operation network across the wide scope of the sub-region's Biosphere Reserves will not be financially and institutionally possible at the initial stage. SeaBRNet has chosen to focus its efforts in the first instance on coastal ecosystem, taking its point of departure in mangrove and associated ecosystem research. At the Ho Chi Minh City meeting, an informal Mangrove Working Group was established with the objective of taking a pragmatic and effective approach to a series of initial activities of the network.

It should be mentioned that, over last ten years, the Government of Japan has supported a programme for regular Ecotone seminars in Southeast Asia. Apart from thematic exchanges on ecotone research, the seminars provided good opportunities for the countries to share their experiences on coastal Biosphere Reserve development. Ecotone VIII was organized by MAB Thailand in 1999 in Ranong Biosphere Reserve, and Ecotone IX was hosted by Philippines in Puerto Galera Biosphere Reserve in May 2000. It has been decided that Ecotone X will be hosted in Hanoi, offering an opportunity for the countries to look at the second Biosphere Reserve nomination of Vietnam. The future Ecotone will be tailored as an instrument for supporting SeaBRnet development, while maintaining its function to promote scientific co-operation in the region. By such changes, it will bring together the limited resources of MAB for Biosphere Reserves.

In Southeast Asia, UNESCO is also developing co-operation with other important regional organizations. A recent initiative is concerning ASEAN-UNESCO-WCPA co-operation on transboundary conservation co-operation.

WEAKNESS, DIFFICULTIES AND CHALLENGES

The long, persistent economic crisis in the region has brought more pressures on Biosphere Reserves. Implementing the Seville Strategy for many countries has become an urgent and a more demanding task. In this context, it is urgent to overcome the weakness and difficulties in the implementation of the Seville Strategy in this region. Some of these weakness and difficulties are:

- Inadequate capacity at national and site levels for implementating the Seville Strategy. The Seville Strategy deals with the issues that are beyond the capacity of the scientific communities (where the MAB co-ordinating body is usually located) and therefore support from other governmental institutions is necessary. Unfortunately, such support is often too limited, if existing at all. The current institution arrangements and legal support are generally inadequate for fully achieving the Seville objectives.
- Lack of technical assistance and seed funding from the World Network for biosphere reserve managers and local communities to take on initiatives at the site level. For many Biosphere Reserves in the region, there has been very limited support; some have even never received any support for their participation in the World Network.
- In many cases in the region, an international MAB presence in each Biosphere Reserve is needed. However, only a few sites have such opportunities. This is often in contrast with international NGOs as well as development agencies, which maintain relatively stable teams on the ground.
- Weakness in social economic studies in many biosphere reserves. While the conservation values of many Biosphere Reserves have been identified and promoted, the opportunities for environmentally-sound economic development are less studied.
- Lack of explanation of the meaning, significance and relevance of Biosphere Reserve and its designation to the people who live in the concerned area.
- Weakness in law enforcement in the core and buffer zones. Illegal land encroachment is serious in many Biosphere Reserves;
- Gap between the 'thinkers' and 'doers' remain large. Many plans were made without consulting the 'doers' and those who are suppose to benefit from the plans, resulting in inefficiency and a waste of resources.

The division of major ecosystems by national frontiers makes a challenge as well as an opportunity for Biosphere Reserves: new instruments and approaches need to be developed to address it. It is also necessary to consider the zonation scheme of Biosphere Reserves for the management of large-scale landscapes containing major water bodies. Lake Toba in Indonesia, for example, has a clear conservation value at the landscape level, and has been the focus of

a MAB project for community-based conservation and rehabilitation, but it would be difficult to designate restricted protected core areas in the area.

To improve this, UNESCO should develop a mechanism to attract international and national volunteers to work on Biosphere Reserves, such as has been done in the Siberut Biosphere Reserve. Establishing long-term co-operation with NGOs for working in the field for promoting Biosphere Reserve concept and the Strategy is also necessary.

CONCLUDING REMARKS AND SUGGESTIONS

There has been very interesting development in the implementation of Seville Strategy and Statutory Framework in Southeast Asia, for all the goals of the Strategy. There has been a trend in recent years for an increased focus within the MAB Programme on coastal and marine sites, and ecosystems that have complicated histories of human uses. Networking is not a recognized need, and at the initial stage of development.

Actions have to be taken to deal with the weaknesses and challenges encountered in the implementation of the Seville Strategy, including for example:

- A much greater effort in building up capacities for Biosphere Reserves. Such a capacity building is not only on technical aspects, but also on new mechanisms that would ensure the Biosphere Reserve functioning. Such mechanisms include national and site co-ordination structures, funding mechanisms, and means for the full participation in site management by the people living in the area.
- Resource should be tapped to provide better technical support for Biosphere Reserves. Such support should be organized in a way that it is long-term, flexible, and adaptable to specific sites. A technical guide for the implementation of the Seville Strategy and the Statutory Framework will be probably needed.
- More efforts to inform people about the Seville Strategy, through designing and distribution of information materials and products interpreting the Strategy so that it can be easily understood by all the major stakeholders of Biosphere Reserves.
- Support from UNESCO and countries to improve the functioning of the networks so that they are productive and delivering the needed services.

Développement des réserves de biosphère dans le réseau ArabMAB

Driss Fassi

La région arabe est centrée sur un immense désert, le Sahara arabo-africain le plus grand du monde. Ce n'est que sur ses bordures nord et sud qu'elle touche aux domaines méditerranéen et tropical.

Constat décourageant si l'on part du principe, qui a longtemps prévalu, qu'une réserve de biosphère devrait rayonner à partir d'une forêt dense et bien venante. Il devient, au contraire, stimulant si l'on considère qu'il s'agit d'un monde naturellement bien typé, doué d'une biodiversité spécifique, d'autant plus précieuse qu'elle est rare, souvent endémique, et adapté à un milieu agressif.

En tant que tel, il peut constituer un sanctuaire de développement durable, un observatoire concernant la réalisation et l'impact des expériences de développement. Il s'y prête sans doute le mieux, s'agissant d'un espace naturel fragile, excellent enregistreur de toute intervention humaine, et en permettant la mesure la plus précise.

Il donne de même des témoignages de civilisations parmi les plus longs, traversant toutes les domestications, animales et végétales, se rapprochant ainsi des conditions idéales d'évaluation historique du développement durable et, peut-être, de la mise en place des concepts à venir de la durabilité la plus difficile à obtenir.

Ces atouts, naturels et historiques, apparaissent à l'état brut, et requièrent des moyens logistiques appropriés pour devenir productifs de systèmes viables.

Les réserves de biosphère offrent le cadre de telles recherches et réalisations.

Dans la région arabe, elles exploitent inégalement quatre domaines d'intérêt :

- le Méditerranéen humide, à éléments souvent hérités,
- les approches de la zone tropicale,
- l'aride ou le Saharien plus ou moins complets, et de plus en plus,
- les grandes régions humainement actives, de l'aride au sub-humide.

LES RÉSERVES DE BIOSPHÈRE DU MÉDITERRANÉEN HUMIDE : UN PATRIMOINE RÉGIONAL PRIVILÉGIÉ

Il a fallu commencer par là, car il s'agit des paysages bioclimatiques les plus impressionnants et qui répondent aux canons conventionnels de l'abondance et de la beauté. C'est aussi un legs précieux d'un passé quaternaire plus généreux, conservé dans les conditions géographiques les plus propices.

Les meilleurs exemples se trouvent en Afrique du nord et en syro-liban, deux ponts jetés entre l'Afrique et l'Eurasie. C'est en effet par ces deux axes que migraient, vers la région arabe, les espèces animales et végétales chassées par les rigueurs des glaciations quaternaires qui sévissaient au nord.

Lors des interglaciations, plus clémentes en Europe, plus sèches au sud de la Méditerranée, la translation se fait en sens inverse sauf dans les cas particuliers où des ambiances privilégiées permettent la conservation. De plus, souvent la biodiversité s'en trouve rehaussée car les processus d'adaptation créent des endémismes.

Dans ce cadre, l'Algérie a proposé la réserve de biosphère de la Djurdjura, inscrite en 1997, alors que le Maroc prépare le dossier de la réserve de biosphère des Jbala, dans le Nord-Ouest du pays, et la Syrie la réserve de biosphère des Cèdres et du Sapin. Même si souvent on retrouve les mêmes essences et les mêmes ambiances, le endémismes ont fait que la cédraie est structurée par *Cedrus atlantica* à l'ouest, *C. libani* à l'est, et la sapinaie par *Abies maroccana* à l'ouest, *A. numidica* au centre et *A. cilicica* à l'est.

Il est intéressant de noter que les sols ont gardé également des parentés ave ceux des ambiances tempérées.

Cependant, à aucun endroit il ne s'agit d'un duplicata d'écosystèmes plus tempérés, mais bien d'une évolution spécifique et d'un patrimoine unique, car placé dans un cadre zonal non conforme, et fournissant les outils précieux d'une promotion biogéographique.

LES APPROCHES DE LA ZONE TROPICALE

Il s'agit de la rive méridionale du grand Sahara. Les bioclimats dans la région arabe en sont sahélo-soudaniens en majorité.

Cette région est encore largement sous-exploitée par les réserves de biosphère, sans doute parce qu'elle est peu étudiée. Elle l'est d'autant moins qu'elle est fortement marquée par l'aridité.

La candidature prioritaire est celle de l'île de Socotra, au Nord de l'Océan Indien. Il faudrait de même encourager les projets stratégiques de contournement du grand Sahara arabo-africain par l'ouest, avec éventuellement des réserves de biosphère transfrontalières entre la Mauritanie et le Maroc, et par l'est entre le Sultanat d'Oman et les pays du Golfe arabo-persique. En effet, sur ces deux bordures extrêmes, les influences tropicales de la rive sud du Sahara arrivent, même si très difficilement, à rejoindre les influences méditerranéennes de la rive Nord.

Là, on n'en est plus à la protection d'une biodiversité, certes relativement importante mais produisant une biomasse sans envergure ; l'objectif de la réserve de biosphère prendrait une dimension toute particulière, donnant le pas à la réhabilitation d'écosystèmes ayant connu des fortunes différentes selon les pulsations biochimiques du Quaternaire.

LA ZONE SAHARIENNE : DES ATOUTS À PROSPECTER

Les deux premières zones étaient centrées sur des noyaux bioclimatiques dotés d'une certaine abondance, avec, dans toute la mesure du possible, la recherche de sites exceptionnels, souvent vestiges d'un passé climatique fastueux.

A l'inverse, l'aride ou le Saharien, vides d'hommes, constituent la partie médiane de la région arabe : vaste océan de cailloux et de sable que les nomades traversent de part en part selon des itinéraires privilégiés. Les axes de pénétration sont jalonnés d'oasis ou de massifs montagneux qu'il est bon de promouvoir au rang de réserves de biosphère, afin de doubler les contournements de la seconde zone, par un réseau intérieur de protection des oasis et de réhabilitation des bioclimats d'altitude intra-sahariens.

Il serait notamment utile de prospecter autour du grand nœud montagnard centre-saharien de l'Ahaggar, Aïr et Tibesti, en Algérie, Niger et Tchad, en renforcement du Tassili algérien qui existe déjà en tant que réserve de biosphère depuis 1986. Le jeune MAB libyen pourrait être intéressé par ces projets, car le pays possède les marges immédiates de ces massifs montagneux. De plus, ces immenses taches d'ancrage de la biodiversité saharienne sont susceptibles d'être reliées aux anciens axes du transport caravanier qui joignent les pays du Sahel aux cinq pays du Nord de l'Algérie.

C'est ainsi que les alignements oasiens des vallées sahariennes pourraient être connectés à des réserves déjà existantes ou en projet, telles que celles de l'Égypte, celle de Bou Hedma dans le sud tunisien

et surtout à l'immense réserve de biosphère des oasis du sud marocain.

Il s'agit là de travaux considérables, au long cours, qui requièrent de l'audace doublée d'une connaissance scientifique approfondie des environnements sahariens. Mieux encore, ils dépendent de coordination serrée avec des pays arabes relativement éloignés tels que le Yémen et le Sultanat d'Oman, et surtout avec des pays africains, sud sahariens, qu'il serait sans doute judicieux de rassembler, pour mieux coopérer, dans un sous-réseau africain du Sahel.

LES RÉGIONS DYNAMIQUES ET LES FONDEMENTS DU DÉVELOPPEMENT DURABLE

Si on enlève de la région arabe les sites les plus humides, avec surtout leurs environnements hérités des pluviaux du Quaternaire, la transition au tropical et le plein Sahara, il reste encore à envisager les régions majeures de l'aride, semi-aride et sub-humide de la zone méditerranéenne, celles qui contiennent la biodiversité la plus spécifique et la population humaine la plus abondante encore souvent misérable.

C'est dans ces régions que les problèmes de sauvegarde des ressources naturelles se posent avec le plus de sévérité. C'est dans ce monde de rareté de la biomasse et de gravité de la demande, que le niveau de base de la notion de développement durable devrait être défini. Car, si l'on arrive à déterminer les jalons de la durabilité à partir du minimum critique des ressources viables, on pourrait à plus forte raison résoudre les problèmes de développement durable dans les régions de plus grande abondance naturelle.

Un bon exemple de ce parcours difficile est fourni par la réserve de biosphère du lac Jehkeul en Tunisie. Le site qui a reçu au début (1977) plusieurs labels de reconnaissance internationale, fait partie actuellement des sites à risques, car il a été rattrapé par un développement agricole régional légitime certes, mais qui a besoin de trouver les voies et moyens d'une croissance économique plus en harmonie avec le fonctionnement des écosystèmes naturels.

Les autorités de gestion s'activent à concevoir des solutions pour le plus grand bien du fonctionnement des réserves de biosphère dans le monde. L'expérience tunisienne pourrait alors s'ériger en école en la matière.

La réserve de biosphère de l'Arganeraie (1998) représente la cellule méditerranéenne la plus méridionale de l'hémisphère Nord. Elle arrive avec l'Arganier, *Argania Spinoza,* espèce unique au monde, à placer des populations végétales de type forestier jusqu'à un minimum de 150 mm de précipitations. Sous sa forme rupestre, l'Arganier arrive à pénétrer plus avant vers le désert et à rejoindre des populations arborées, spécifiquement sahariennes telles que l'*Acacia Suddiana.*

Cependant, des intérêts économiques considérables, dont la progression des périmètres agricoles irrigués modernes et de l'urbanisme, menacent l'existence de l'Arganier et requièrent un *modus vivendi* approprié pour tous.

Enfin, le projet de réserve de biosphère oasis du sud marocain est sans doute l'outil le plus efficace que saurait posséder la région pour lutter efficacement contre la désertification, ainsi que pour mener la stratégie de pénétration biologique du grand Sahara.

En effet, la réserve de biosphère concerne un tronçon remarquable parmi les mieux conservés et les plus dynamiques du Pré-Sahara mondial. Sa conservation est cruciale pour maintenir à distance le Sahara. La communauté humaine qui l'habite a développé une authentique civilisation de l'aride et du saharien. Son savoir-faire, l'organisation de ses oasis et celle de la société et de l'habitat, représentent le meilleur gage pour la pérennité et le développement du Pré-Sahara. L'inadéquation à l'urbanisme moderne, les exigences du tourisme et, d'une façon générale, l'accroissement insoutenable de la demande en eau, risquent de faire disparaître la zone bioclimatique pré saharien, et de rapprocher dangereusement le Sahara du monde tempéré.

Parallèlement à cela, le réseau arabe du MAB a connu une longue gestation avant sa création tardive en juin 1997. Il a impulsé de façon décisive les créations les plus intéressantes, a multiplié les ateliers de formation et a facilité de façon remarquable la fluidité de l'information entre les États.

Une des réalisations les plus utiles de ce point de vue, a été la création du site électronique du MAB-arabe, élaboré par l'Égypte, et maintenant accessible à chaque État ou réserve qui peuvent l'alimenter et assurer le suivi des réalisations. Les réserves de biosphère de la région arabe marquent certainement un tournant dans l'évolution de l'œuvre élaborée par le MAB-international dans les domaines privilégiés de la protection, du développement et de la recherche.

Elles introduisent dans ces trois domaines un souci stratégique de lutte contre la désertification, étayé par des outils biologiques hérités d'un passé plus humide, ainsi que par un patrimoine culturel et des technologies douces fortement adaptées. Pour atteindre ces objectifs, la coopération étroite, nécessaire avec les pays du Sahel notamment, devrait être rehaussée par l'expérience édifiante des régions arides de l'Ouest et du centre de l'Asie, ainsi qu'avec les pays de la Méditerranée. Les extensions ou coalitions de réseaux sont parfaitement envisageables dans l'intérêt bien compris du monde vivant tout entier.

Rapport AfriMAB

Bonaventure Guédegbé

Le continent africain, terre de diversité des peuples, des cultures, des traditions, des écosystème, a constitué un berceau où les réserves de biosphère ont fleuri, nourris du soleil de nos différences et de la force de nos cultures.

Le concept de Réserve de Biosphère a eu un écho favorable, car l'Afrique du lendemain des indépendances y a trouvé l'approche rédemptrice de ses valeurs ancestrales d'interrelations entre l'homme et les composantes de la nature.

Pour apporter une meilleure contribution à l'évolution du concept, l'Afrique a opté en 1996 à l'Atelier de Dakar pour la création du réseau AfriMAB. Son objectif est de promouvoir le réseau de réserves de biosphère, en tant que sites d'expérimentation privilégiés pour la conservation et la gestion durable de notre environnement.

Après quatre années de maturation, l'AfriMAB a entamé à Dakar son processus de renaissance par l'atelier des pays francophones (octobre 1999), suivi de celui des pays anglophones (septembre 2000) à Nairobi au Kenya.

Cette bipolarité n'est pas un indicateur de division mais l'expression d'un souci d'efficacité car ce qui nous lie par le cœur est beaucoup plus fort que la barrière linguistique qui nous sépare.

L'atelier de Dakar a connu la participation de 14 pays d'Afrique francophone (Bénin, Burkina Faso, Burundi, Cameroun, Congo, Côte d'Ivoire, Gabon, Guinée, Mali, Mauritanie, Niger, République démocratique du Congo, Sénégal, Togo) et la France. Celui de Nairobi a connu la participation de 11 pays anglophones (Botswana, Ghana, Kenya, Lesotho, Malawi, Nigeria, Afrique du sud, Swaziland, Tanzanie, Uganda, Zambie), 2 pays lusophones (Angola, Mozambique) et 2 pays francophones (Bénin et Rwanda). Ces forums ont été honorés par la participation du PNUD, UNEP, FAO, UNEP/GEF, ORSTOM, UEMOA, UICN, CILSS, WWF, Coopération française, Coopération néerlandaise.

Les progrès des réseaux ont été évalués avec l'appui des membres du Secrétariat MAB et les représentants des différents pays à travers la thématique comprenant :

- Zonage et amélioration du fonctionnement des réserves de biosphère ;
- Coopération et mise en place de réserves de biosphère transfrontières ;
- Recherche, formation et éducation dans les réserves de biosphère ;
- Réflexion sur le réseau AfriMAB.

Il a été mis en évidence que les réserves de biosphère ont permis de faire de grands pas dans la mise en œuvre de la convention sur la diversité biologique et contribuer notablement aux objectifs du développement durable. Les principaux progrès réalisés sont relatifs à :

- L'intégration des communautés ;
- Le partage de revenu ;
- La création de réserves transfrontières ;
- La recherche scientifique.

Mais des difficultés subsistent toujours et sont liées :

- Au risque de vulnérabilité des aires suite au zonage matérialisé ;
- A l'émergence d'intérêts économiques majeurs (exploitation minière) ;
- Au conflit d'intérêts dans les aires de transition ;
- A l'inadéquation réglementaire en ce qui concerne les réserves transfrontières ;
- A l'inégalité des moyens humains et matériels ;
- A la léthargie du réseau.

Face à ce tableau, les membres ont décidé, pour que l'AfriMAB puisse s'animer comme les autres réseaux continentaux, qu'il faut :

- Se munir d'un véritable esprit de réseau qui doit être avant tout constitué d'hommes et de femmes décidés à partager un objectif commun de travail.
- Définir de nouveaux principes de fonctionnement et de collaboration que sont :
  - **la responsabilisation.** Tous les membres du réseau doivent se sentir concernés et impliqués dans des activités, identifiés suivant les axes d'un programme commun de travail.
  - **la transversalité.** Les recherches doivent concerner plusieurs pays à la fois pour assurer un cadre intégré de travail et un accent sur les groupes transfrontières de recherche.
  - **la mobilisation des ressources locales et opportunités internationales.** Le concept de réserve de biosphère a influencé tous les programmes de développement en cours dans les pays africains sous différentes appellations : Développement Rural Intégré, Gestion Participative des Terroirs ; Aménagement Intégré des Aires Protégées, etc. Les programmes nationaux MAB précurseurs de ces approches stratégiques doivent pouvoir s'y reconnaître pour y puiser des ressources. Les points focaux des conventions sur la Diversité Bio-

logique, de Lutte contre la Désertification etc. sont autant d'opportunités internationales à exploiter.

- **le maintien d'un cadre d'échange permanent.** Il faut pouvoir garder un esprit de réseau vivant par un contact et un dialogue dynamiques. Le monde dispose aujourd'hui de l'Internet et les membres de AfriMAB doivent en faire usage pour leurs échanges.

Sur la base de ces principes, il a été retenu une approche de formulation de thèmes de recherche qui assurent une véritable intégration des équipes, une obligation de contact, un intérêt transnational.

Quatre thèmes retenus

Thème I : Cadre institutionnel législatif et réglementaire

Avec les spécificités des contextes nationaux, d'importants changements s'opèrent par la création de ministères, d'agences en charge de l'environnement ou d'offices autonomes, de gestion des aires protégées. Cette évolution institutionnelle est accompagnée par l'élaboration et l'adoption de nouvelles lois ou codes sur l'environnement qui confirment et renforcent les objectifs fondamentaux des réserves de biosphère.

L' AfriMAB se fixe comme objectif de suivre et d'accompagner cette tendance positive de l'environnement institutionnel et juridique qui s'opère en Afrique. Le groupe thématique en coopération avec le secrétariat de l'UNESCO, se propose de :

- Faire l'inventaire des textes législatifs et réglementaires relatifs à la gestion des aires protégées et réserves de biosphère ;
- Faire l'inventaire des modèles de cadres institutionnels et juridiques des réserves ; faire une analyse comparée des cadres institutionnels et juridiques ;
- Évaluer la mise en œuvre des objectifs de la Stratégie de Séville (obj. II.2 'mieux assurer l'ajustement harmonieux des différentes zones de la réserve de biosphère et leurs interactions' et les indicateurs correspondants) ;
- Contribuer à l'élaboration par l'UNESCO de lignes directrices sur l'application, du zonage et à la publication d'études de cas bien ciblées.

Thème II : Participation des partenaires et des acteurs sociaux et partage des revenus

L'une des composantes essentielles de la stratégie du Développement Durable est la participation des acteurs concernés. Cette participation vise non seulement une contribution à la prise de décision mais aussi une intégration au processus de gestion et surtout un accès équitable aux revenus générés.

Cette participation s'exprime en Afrique sous une diversité qui est l'image de la richesse des connaissances et acquis endogènes des différents bassins socioculturels et dont la prise en compte est recommandée par la Stratégie de Séville (obj. II-I point 4).

Le réseau AfriMAB se fixe comme objectif de mettre à la disposition du réseau international des réserves de biosphère la richesse de ces expériences et acquis africains.

Le groupe de travail se propose de :

- Faire un inventaire des pays où une expérience de participation des communautés à la gestion des réserves de biosphère est en cours ;
- Faire une analyse des processus d'élaboration et de mise en œuvre des cadres de participation. Un accent particulier doit être mis sur le rôle des femmes ;
- Mettre en évidence les spécificités socioculturelles ou autres qui constituent des atouts ou des contraintes ;
- Faire une évaluation comparative de ces différentes modalités selon un certain cadre méthodologique élaboré par le groupe de travail en coopération avec le secrétariat de l'UNESCO.

Thème III : Recherche scientifique et renforcement des capacités

La mise en œuvre efficiente des conventions sur la diversité biologique, de lutte contre la désertification et sur le changement climatique doit prendre comme base, entre autres, les réserves de biosphère qui peuvent jouer le rôle de :

- Cadre de suivi des indicateurs de référence au niveau de chaque pays qui peuvent être élaborés en fonction des gradients du zonage ;
- Cadre de formation des ressources humaines nécessaires à la mise en œuvre des activités desdites conventions et des programmes de développement respectueux de l'environnement ;

L' AfriMAB a pour objectif d'assurer la promotion de ce cadre de référence qui est la réserve de biosphère.

Le groupe de travail se propose, en coopération avec le secrétariat de l'UNESCO, de :

- Faire l'inventaire des travaux de recherche et des activités de formation réalisés dans les réserves de biosphère des pays francophones d'Afrique selon un cadre défini préalablement par le groupe ;
- Transmettre les informations pour inclusion dans les bases de données du MAB ;
- Évaluer les acquis des recherches scientifiques effectuées, identifier les besoins en la matière et formuler des propositions de programmes scientifiques pour le MAB ;
- Renforcer les interactions avec les différents réseaux panafricains de recherche et les institutions compétentes.

Thème IV : Les réserves transfrontières

Le Conseil de l'Entente, le CILSS, la BAD, la CEDEAO, l'UEMOA, l'UDEAC sont l'expression de la volonté politique des États à développer un cadre régional intégré de développement. Elle est constituée par la *Déclaration Yaoundé* issue du sommet des Chefs d'État d'Afrique Centrale sur la conservation et la gestion durable des forêts tropicales (mars 99) où ils s'engagent à accélérer le processus de mise en place de réserves transfrontières. Cette Déclaration répond à l'objectif 1.2 de la Stratégie de Séville qui recommande la création de réserves de biosphère transfrontières comme moyen de conservation d'organismes, des écosystèmes et des ressources génétiques qui chevauchent les frontières nationales

Enfin la Conférence de Dakar de 1996, dans sa recommandation N° 9 incite les pays de la région à la mise en place de réserves de biosphère transfrontières. Le réseau AfriMAB se fixe comme objectif d'apporter sa contribution au développement des réserves transfrontalières et le groupe de travail se propose avec l'appui du secrétariat de l'UNESCO de :

- Faire l'inventaire des formes de coopération transfrontières existantes et promouvoir leur désignation comme réserves de biosphère transfrontières (éventuellement leur inscription sur la liste du patrimoine mondial, en coopération avec le Centre du Patrimoine Mondial de l'UNESCO) ;
- Analyser les démarches ou processus de leur mise en place ;
- Identifier les atouts et contraintes de leur mise en œuvre ;
- Évaluer les besoins en matière de réserves transfrontières ;
- Identifier les administrations compétentes, le cadre juridique approprié et faire la liste des institutions régionales (ACCT, Francophonie) pouvant assister ce groupe.

NIVEAU D'EXÉCUTION

- Un premier rapport a été élaboré sur les réserves transfrontières et coordonné par M. Ndiaye Souleye du Sénégal ;
- Un second rapport sur les cadres institutionnel et législatif est en cours sous la coordination de M. Bonaventure Guedébé, du Bénin ;
- Un troisième rapport sur la participation des partenaires, des acteurs sociaux et le partage des revenus sont en cours d'élaboration sous la coordination de M. Baikoro Fofana.

PROBLÈMES RENCONTRÉS DANS LA MISE EN ŒUVRE DE CETTE NOUVELLE APPROCHE

L'expérience est à son démarrage et il est difficile de tirer maintenant des conclusions fiables; cependant, on perçoit déjà quelques difficultés liées :

- Aux conflits sous-régionaux qui entravent les possibilités de communication ;
- A l'inexistence dans certains pays de comité fonctionnel du programme MAB.

IberoMAB and REDBIOS

Javier Castroviejo and *Juan Antonio Menéndez Pidal*

The following texts are reports on short meetings of the IberoMAB and REDBIOS networks that were held in conjunction with the Seville + 5 meeting. Up to date details on activities and progress with these networks can be found on their respective web sites:

http://www.iberomab.com/pagina_n.htm
http://www.unesco/org/mab/redbios/index.htm

REPORT OF IBEROMAB GROUP MEETING

Javier Castroviejo

Countries present: Argentina, Brazil, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, México, Spain, Venezuela.

The meeting was chaired by Mr Javier Castroviejo, MAB Spain, and Mr Wilson Torres, MAB Ecuador. The meeting concentrated around the question of the international IberoMAB meetings. After a short explanation of the Chair regarding the cancellation of the foreseen meeting in Bolivia in June 2000 and the withdrawal of the proposal by the Dominican Republic to hold the next meeting in this country in January 2001, participants examined new offers to host up-coming meetings. It was eventually agreed to hold the fifth IberoMAB meeting in Argentina from 23 to 28 April 2001. The sixth meeting is to be held in Costa Rica from 5 to 9 June 2001.

Finally, UNESCO informed about the establishment of a new electronic bulletin in the UNESCO

Montevideo Office on MAB related affairs in Latin America. This bulletin is being elaborated with the help of the University of Buenos Aires, and will thus increase considerably the visibility of the Programme by providing easy access to all available data through the Internet.

REPORT OF REDBIOS GROUP MEETING

Juan Antonio Menéndez Pidal

Countries present: Morocco, Spain.

Mr Juan Antonio Menéndez Pidal, ARBIOS, informed about the postponement of the up-coming REDBIOS meeting, to be held in the Island of El Hierro, Spanish Canary Islands, in November 2000. Due to the destruction by the sea of a main touristic site and its reconstruction, this meeting has been postponed to February 2001. UNESCO and the Government of the Canary Islands will work out the new modalities for this venture.

Furthermore, Morocco suggested to host a meeting on eco-mapping in the Arganeraie Biosphere Reserve mid of next year in order to establish comprehensive touristic mapping within the BR to enable local people to offer goods and small scale receptions to tourist groups.

Ad hoc task force on transboundary biosphere reserves

Report of the *Ad hoc* task force on transboundary biosphere reserves

The recommendations presented below were drafted by an *ad hoc* task force on transboundary biosphere reserves, chaired by Mr Julius Oszlanyi, Slovakia, which met during the International Expert Meeting on the Implementation of the Seville Strategy of the World Network of Biosphere Reserves (Seville + 5), in Pamplona, Spain, October 2000. They are expected to guide countries in the establishment and running of transboundary biosphere reserves and will serve as a basis for further work on this issue.

These recommendations are based on the experience in transboundary co-operation of the various regions, which were presented during this taskforce meeting. These presentations included:

Europe: Ms Alicia Breymeyer (Poland)
Asia: Mr Kim Kwi-Gon (Republic of Korea)
Arab countries*:* Mr Driss Fassi (Morocco)
Africa: Mr Hannington Oryem-Oriega (Uganda)
Latin America: Mr Carlos Ponce (Peru) and Mr Juan José Castro (Costa Rica)

Other participants also provided information on individual cases in: Romania/Ukraine; Poland/Slovakia; Czech Republic/Poland; as well as sites for potential transboundary biosphere reserves in Russian Federation, the Republic of Korea and the Democratic People's Republic of Korea, and North and Central America.

The second part of the meeting was devoted to the drafting of the recommendations, and was attended by a smaller group of people, listed below.

Mr Julius Oszlanyi, Slovakia (Chairperson)
Ms Alicia Breymeyer, Poland
Mr Juan José Castro Chamberlain, Costa Rica
Mr Jean-Claude Genot, France
Mr Till Harres, Germany
Ms Eva Jelinkova, Czech Republic
Mr Kim Kwi-Gon, Republic of Korea
Mr Kallie Naude, South Africa
Mr Valery Neronov, Russian Federation
Mr Zbigniew Niewiadomski, Poland
Mr Silvio Olivieri (Conservation International)
Mr Hannington Oryem-Oriega, Uganda
Mr Carlos Ponce, Peru
Mr Angheluta Vadineanu, Romania

Secretariat:
Ms Mireille Jardin
Ms Juliet Fall
Mr Philippe Pypaert

RECOMMENDATIONS FOR THE ESTABLISHMENT AND FUNCTIONING OF TRANSBOUNDARY BIOSPHERE RESERVES

As borders between states are political and not ecological, ecosystems often occur across national boundaries, and may be subject to different, or even conflicting, management and land use practices. Transboundary Biosphere Reserves (TBR) provide a tool for common management. A TBR is an official recognition at an international level and by a UN

institution of a political will to co-operate in the conservation and sustainable use through common management of a shared ecosystem. It also represents a commitment of two or more countries to apply together the Seville Strategy for biosphere reserves and its objectives. It corresponds to the increasing recognition of the appropriateness of the ecosystem approach, for conservation and sustainable use of biological diversity.

The recommendations presented below deal with the establishment of TBR, the measures which can be taken to respond to the MAB principles and in particular the goals of the Seville Strategy and the way of ensuring that a TBR truly operational. However, it should be kept in mind that, although the biosphere reserve provides a general framework for action in a transboundary location, the real-world situations will vary very much from a place to another, and flexibility is needed even more than in a national context.

The process leading towards the official designation of a TBR can include many forms of co-operation and co-ordination among the existing areas on either side of a border. These serve as a basis for formalizing the TBR proposal and should be encouraged.

Procedure for the establishment of a TBR

Up until now, all existing TBR were established as separate biosphere reserves in individual countries before being designated as TBR. However, it could be envisaged in the future that a TBR be established jointly by the countries concerned in one step. In both cases, the ultimate aim should be to have one *functional biosphere reserve*.

In these two different scenarios, the following respective procedures are recommended:

- Establishment of a biosphere reserve on each side of the border;
- or, when the TBR is established in one step, definition of the zoning of the area according to the general criteria for designation of biosphere reserves.
- Identification of local and national partners and establishment of a working group to define the basis and identify key issues for co-operation.
- Signing of an official agreement between governmental authorities regarding the TBR.
- Nomination of the various parts by the respective State authorities;
- or, when the TBR is established in one step, joint nomination for the whole area by the concerned State authorities.
- In both scenarios, indication of the main components of a plan for co-operation in the future.
- Official designation by the UNESCO MAB ICC .

Functioning of the TBR

Among the measures recommended to make the TBR function effectively, priority should be given to:

- Preparation and adoption of a zonation plan for the whole area and implementation of the zonation by strict protection of core areas, delimitation of the buffer zones and co-ordinated objectives for the transition areas. This implies that the countries concerned have a common understanding of the characteristics of each of the zones, and that similar management measures are in place for each zone.
- When the zonation plan is defined, publication on a joint map of the zonation.
- Definition of common objectives and measures, work plan, timetable, and required budget. This should be a demand-driven process, based on perceived needs or management requirements. This work plan should take into account the elements listed under the goals of the Seville Strategy as suggested below.
- Identification of potential funding sources for the work plan and joint or simultaneous application for these funds.
- Establishment of a means of communication between the co-ordinators/managers of the different parts of the TBR, including electronic mail when feasible.
- Efforts towards harmonized management structures on each side.

Institutional mechanisms

The TBR will not function without a joint structure devoted to its co-ordination. Although this structure can vary greatly from one TBR to another, the following points can be recommended:

- The co-ordinating structure is representative of the various administrations and the scientific boards, as well as the authorities in charge of the protected areas, the representatives of local communities, interested and affected groups, including youth, and of the private sector.
- The NGO sector in the area is also represented in the structure.
- This structure has a permanent secretariat, and a budget is devoted to its functioning.
- A person is designated on each side to act as a focal point for co-operation.
- General and regular meetings of the co-ordinating structure are complemented by thematic groups, on an *ad hoc* basis, in order to create a platform for discussion among stakeholders from the countries concerned, with a

view to promote all opportunities for exchanging views and knowledge.
- Joint staff teams are operational for specific tasks.
- An association is set up with the specific aim of promoting the TBR.

Responding to the goals of the Seville Strategy

Goal I: Use biosphere reserves to conserve natural and cultural diversity

In order to develop a concerted strategy for conservation, the following measures can be recommended:
- Co-ordination of regulatory measures on protection and, in case of incompatibility, their harmonization.
- Common or co-ordinated policies for threatened and protected species and ecosystems, migratory species, as well as control of invasive alien species.
- Common or co-ordinated policies for rehabilitation and restoration of degraded areas.
- Co-ordinated action against illegal activities such as wildlife poaching and unauthorized logging.

Goal II: Utilize biosphere reserves as models of land management and of approaches to sustainable development

The human component of biosphere reserves and their role in promoting approaches to sustainable development can lead to a variety of forms of co-operation, ranging from the use of natural resources to the protection of cultural heritage. Among the measures that can be recommended in TBR are the following:
- Co-ordination of management practices, for example in forestry, logging, forest regeneration, or in the field of pollution control.
- Identification of possible perverse incentives and promotion of viable sustainable alternatives.
- Elaboration and supporting the implementation of a joint tourism policy.
- Promotion of partnership among various groups of stakeholders having the same interests, in order to make the TBR a common project.
- Promotion of participation of local communities in the TBR, including local NGOs.
- Promotion of joint cultural events and fostering of co-operation on cultural and historical heritage preservation.
- Developing of common strategies for planning based on research and monitoring.

Goal III: Use biosphere reserves for research, monitoring, education and training

Joint activities on research and monitoring should be led by scientific boards and planned in joint sessions; these activities could be carried out along the following lines:
- Define and implement joint research programmes.
- Develop common data collection formats, indicators, and monitoring and evaluation methods.
- Exchange existing data, including maps and geographical information, and facilitate access to results of research.
- Share scientific information, including through the organization of workshops, conferences, etc.
- Share equipment when feasible.
- Jointly publish results of common research.
- Develop joint mapping and GIS.

Many joint activities in the field of education and training can be recommended, such as:
- Organization of joint training courses and technical meetings for managers and field staff.
- Promotion of staff exchanges.
- Promotion of understanding of neighbouring country's culture.
- Organization of linguistic training when needed.
- Exchanges of scientists between universities and academic and research institutions of each country.
- School exchanges.
- Launching of participatory training programmes for various groups of stakeholders.

Information and public awareness are crucially important to develop a common understanding and build support for and appropriation of the objectives of the TBR by the different stakeholders. Therefore, the rationale and objectives of the TBR should be explained by varied means to different targets groups (decision makers, local populations, visitors, schools, scientists, managers, etc). Among other activities, the following can be recommended:
- Develop a common public relations' strategy with the aim of raising awareness and promoting the TBR.
- Produce information material, brochures, books, etc.
- Organize exhibits and events around the TBR.
- Develop a common logo for the TBR, as well as a common design for published material.
- Implement joint demonstration projects.
- Set up a common Internet site.

Transboundary biosphere reserves: An introduction

Alicia Breymeyer

The Polish National MAB Committee has made particular efforts in relation to Transboundary Biosphere Reserves. The main reason is of a purely ecological nature. Crowded, densely-populated Europe has many valuable areas bisected by national borders, and it is clear to all that – when associated with distinct fragmentation of natural landscapes and ecosystems – the impact on their functioning and rational use is devastating. We have proposed that Transboundary Biosphere Reserves be established, and we have gained very broad support for the idea.

The other, semi-political reason is the very long history of border conflicts – these conflicts are repeated again and again. Can we trust in the peaceful mission of ecology in this field? We believe that it is very good that the actions of ecologists themselves have initiated the joint, rational care of large, internally-linked ecological systems that happen to have borders running through them.

RESERVES ON THE BORDERS: THE STATE OF THE ART

The 1990s saw the emergence of an abundance of initiatives with a view to identifying protected areas divided by national borders. The IUCN published a map entitled 'Protected Areas in Europe that cross national frontiers' (Parks for Life 1994), on which some 42 such protected areas were marked. The chapter devoted to them (Chapter 8.7) suggested the establishment of 25 'transfrontier protected areas' (9 in mountains, 11 on rivers and seas, 3 in wetlands and 2 in boreal forests). This chapter also offered the following formulation:

> 'Priority Project 22. Link together and support the various Pan-European initiatives, other involved agencies and programmes to ensure liaison and in particular to:
> a) identify the possible locations for further transboundary protected areas across Europe ...;
> b) revise and extend the IUCN guidelines for transfrontier protected areas;
> c) publicize and celebrate the benefits of this approach, showing how countries can collaborate.'

Two years later Hamilton (1996) calculated that there were just over a hundred pairs of transboundary parks in 65 countries, while other authors, moderating the criteria somewhat, have identified 136 transboundary complexes on 112 different borders (Zbicz and Green, 1997).

Organized jointly by the IUCN World Commission on Protected Areas and UNESCO-MAB, the 1996 World Conservation Congress in Montreal included a special workshop under the telling title of *Biosphere Reserves – Myth or Reality?*. Materials from its meetings were published in 1998 and I would like, if I may, to cite and discuss several fragments from this publication. Two introductions (from P. Lasserre, Secretary of the UNESCO-MAB Programme and A. Phillips, Chairman of IUCN-WCPA) are joined by 3 general papers and the Conclusions in stating quite cohesively that '... the Biosphere Reserve concept was by definition well before its time in the early 1970s', while 'now, at the eve of the 3rd millennium, it is very much "in time"'. What is being referred to here is the growing acceptance in society of Biosphere Reserves, whose zonation into a 'core zone' and the less-strictly protected 'buffer zones' and 'transition areas' allows for the promotion of nature conservation while remaining friendly to an area's economic development. People are invited into Biosphere Reserves with their established land-use customs and culture and are not limited in their activity by a whole list of prohibitions displayed at the entrance of every traditionally-protected National Park. Contemporary society will no longer accept this kind of prohibitive form of protection, and hence the Congress heard that 'since the World Parks Congress in Caracas, Venezuela, in 1992, there has been a revolution in thinking about the management of protected areas. Many of the features of this change are reflected also in the Biosphere Reserve concept' (Phillips, 1998).

Another feature of Biosphere Reserves of importance to us is their regional character. Bioret *et al.* (1998), Bridgewater and Cresswell (1998) and Guziova (1998) emphasise the importance of this spatial feature of Biosphere Reserves time and time again: even in the first definitions of Biosphere Reserves it is stated clearly that the type of ecosystem proposed for protection in the 'core zone' must be well-representative of the biogeographical region in

which it is found. The extension of a Biosphere Reserve into surrounding buffer zones and transition areas makes it a regional unit based on similar geographical conditions and forms of land use and traditions practiced. Only in such units it is possible to implement a modern kind of land use and environmental management that takes account of both nature and people, their output and needs. Let us recall the relevant fragment from the paper by Bridgewater and Cresswell (1998) at the aforementioned IUCN Congress, namely:

> 'Land management and planning have traditionally occurred using the cadastral base. The division of land into ownership parcels, largely without any ecological context, is a planning legacy that impacts strongly upon our ability to plan biodiversity conservation and management in an effective way. ... Effective, long-term management that will conserve ecological processes, crucial to the capacity of the land to sustain human communities, needs what Barker (1992) terms a paradigm shift. That paradigm shift is offered by Biosphere Reserves, providing a regional basis for biodiversity conservation and management'.

With this strong statement it is worth rounding off the discussion on the nature of, and apparently promising prospects for, Biosphere Reserves.

Formally speaking, BRs do not have their own legal status in the majority of countries. As Bioret *et al.* (1998) write:

> 'This characteristic is at once a strength and a weakness, allowing considerable flexibility and putting new ideas into practice in a variety of contexts. BR management does not depend solely on applying rules and regulations to carry out specific activities, except when these exist for the structure in charge of the site. On the contrary, BR management relies on convincing the local communities, and on obtaining their support before any action can be undertaken with the MAB label. In this way, the existence of a BR can facilitate the cohabitation of different structures concerned with the piece of land.'

Our French colleagues are undoubtedly right in saying that the lack of a 'straitjacket of regulations' releases the activities of the managers but at the same time it requires them to obtain the agreement of the local communities for each action. However, there are undoubtedly many players in environmental agencies that regard the lack of clear regulations and entitlements as a green light to refrain from any kind of activity. Discussions as to whether a clear legal status for Biosphere Reserves is needed are continuing, while in the meantime the number of BRs increases steadily. Clearly the lack of legal empowerment does not prevent a great many countries from making liberal use of Biosphere Reserves in their spatial organization and planning.

HOW THE TRANSBORDER BIOSPHERE RESERVE CONCEPT AROSE IN PRACTICE

In 1983, UNESCO and UNEP jointly convened the First International Biosphere Reserve Congress in Minsk and in 1984 UNESCO-MAB presented its 'Action plan for Biosphere Reserves' (Nature and Resources 1984). This was a proposal for the intensive development of Biosphere Reserves in terms of their number and area, and in relation to the realization of scientific programmes within them. The newest 'Strategy for Biosphere Reserves' was proposed at the international conference of experts held in Seville in 1995. The Statutory Framework of the World Network of Biosphere Reserves was formulated at the same conference.

The debates on transborder BRs were held in early 1990s at the MAB meeting in Kiev (May 1990) and during the EUROMAB-IV meeting (June 1993) in Zakopane (Tatras). In 1992, the Czech-Polish Karkonosze BR and Polish-Slovakian Tatry BR were created. The next transborder BRs were accepted in 1998: French-German - Vosges du Nord-Pfälzerwald and the Romanian-Ukrainian - Danube Delta.

In the same decade the first trilateral BR Eastern Carpathians was created. The history of the Eastern Carpathians Biosphere Reserve (east part of Carpathians) is long and complex. The Polish MAB Committee came up with an initiative for the creation of a Polish-Slovakian-Ukrainian International Biosphere Reserve offering Polish Bieszczady National Park as the main part. The proposal was presented at the MAB meeting in Kiev in May 1990 and gained favour amongst the interested parties and the delegates from the UNESCO-MAB Secretariat. The organization progress was slow because this was a difficult region with two new states – Ukraine and Slovakia – having emerged simultaneously, because of certain delays in action by the Ukrainian party and because of other, parallel international action in the area (the creation of the Carpathian Euro-Region). Finally, in November 1992, UNESCO accepted the Eastern Carpathians Polish-Slovakian Biosphere Reserve. The Application Form of the Ukrainian part of Eastern Carpathians Biosphere Reserve was submitted to UNESCO in 1998 and the final approval of the MAB ICC was made at the end of the same year. In 1999 MAB Poland celebrated the Inauguration of East Carpathians B.R. The scientific seminar on 'Biosphere Reserves on Borders' was held and at the ending session the proposal of The Carpathian Convention on the Boundary Areas was formulated and voted. The text of this convention is reproduced below.

The Carpathian Convention on the boundary areas

We, the representatives of the national MAB focal points and the managers of Biosphere Reserves network in the world,

- believing that modern management of the boundary areas mobilises local communities for co-operation,
- fearing of arising in the twenty-first century the new ethnic conflicts, which ruin the valuable natural boundary lands and people living there,
- trusting that nothing will mitigate the behaviours of these societies like understanding and common care about the destiny of the Earth will do,
- understanding that fragmentation of natural land destroys the possibilities of survival of many species living there,

appeal to governments, international organizations, and people of good will to support our initiative and to sign the convention protecting all shared resources creating a natural whole in the neighbouring countries. Biosphere Reserves have a particularly good application here as the forms, which simultaneously promote the land protection and the economic development of local populations, of which the history and customs have assured approval and respect.

This is a preliminary text of Carpathian Convention, which is proposed for further discussion, and correction as formulated during the 1999 Inauguration of the East Carpathians transborder BR.

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EABRN experience in Transboundary Biosphere Reserves

Kim Kwi-gon

EABRN EXPERIENCE ON TRANSBOUNDARY BIOSPHERE RESERVES (TBR)

Overview of Transborder Biosphere Reserve

The designation of transborder biosphere reserves, one of objectives of the East Asian Biosphere Reserve Network (EABRN), was one of main discussion topics in the fifth EABRN meeting held in Mongolia in August 1997. It was agreed to list EABRN sites where multi-national conservation is possible and where transborder biosphere reserve designation is necessary.

To this end, EABRN joint projects to designate transborder biosphere reserve are required. It is necessary to seek outside financial support to carry out the

projects. Above all, members recognized that they need actions for similar/same biosphere reserves among EABRN members and a general consensus.

Areas that may be designated as transborder biosphere reserves identified among the six EABRN members (including Russia) are shown in Table 1.

TABLE 1. Potential sites for Transborder Biosphere Reserve designation in East Asia

	Rep. of Korea	*Dem. People's Rep. of Korea*	*China*	*Russia*	*Mongolia*	*Japan*
Rep. of Korea		DMZ	–	–	–	–
Dem. People's Rep. of Korea			Tumen River Delta	Dalaihu, Tumen River Delta	–	–
China				Daurksiy, Tumen River delta	Mongol Dornol	–
Russia					Uvs Nuur Depression	–
Mongolia						–
Japan						

– Not applicable.

Tumen River Delta is an area that can be designated as a three-nation biosphere reserve in case of the Democratic People's Republic of Korea, China, and Russia border area. In the DMZ, at the borderline of the Republic of Korea and the Democratic People's Republic of Korea, the natural temperate ecosystem of a region, which is rarely seen globally, is conserved close to its original state. Its value as a transborder biosphere reserve is highly recognized.

Although Japan does not share borders and therefore the concept is not applicable in the country, Japan nevertheless showed keen interests in transborder biosphere reserves and is committed to provide support. Efforts made by each nation for transborder biosphere reserve are shown in Table 2 beside.

Problems and issues

Since the Seville Meeting in 1995, co-operation and efforts for transborder biosphere reserve designation are taking place extensively throughout the world. Efforts in East Asia are described above. Today, surveys and efforts related to transborder biosphere reserve designations are made at the level of UNESCO National Commissions. However, it is believed that co-operative relations with bordering nation are still insufficient.

TABLE 2. Efforts by each nation for Transborder Biosphere Reserve designation

Nation	*Details*
Rep. of Korea	• Recognize the need to designate DMZ transborder biosphere reserve; • Review designation of Rep. of Korea-Dem. People's Rep. of Korea transborder biosphere reserve covering Mt. SorakHyangro Peak-Mt. Kumgang.
Dem. People's Rep. of Korea	• Seek international co-operation centering around migratory birds; • Seek international co-operation in training personnel to utilize ecosystems, including the use of modern survey techniques; • Make efforts to build a co-operative system for a joint research on changes of migratory birds; • Joint study activities with Chinese and Russian academic groups in progress.
China	• Survey DPRK-Mongolia border area.
Mongolia	• Understand the importance of steppe area bordering with China and Russia and develop plans to conserve it.

Although the UNESCO National Commissions are aware of the importance and necessity of transborder biosphere reserve, organized and effective surveys and studies for designation are not carried out due to the special status of border areas. This is closely related with unique political and social background of East Asia.

In order to resolve such issues, activities are required at the EABRN level, which functions as a consultative body of national UNESCO/MAB structures. At several EABRN meetings, the necessity of transborder biosphere reserves has been mentioned, but no specific activities have been carried out.

EABRN-level solutions and support

Designation, management, and operation of transborder biosphere reserves require close co-operation and efforts at the level of both governments. A number of plans and activities to support such efforts at EABRN level are required. First, EABRN should initiate setting up a joint-study body to conduct surveys on member nation's transborder biosphere reserves. The joint-study body will enable to

request administrative and financial support and co-operation for transborder biosphere reserve designation to governments more proactively.

Also, standardized procedures for transborder biosphere reserve designation should be developed and disseminated to all countries at EABRN level. This will promote transborder biosphere reserve designation more efficiently. Such efforts by EABRN for transborder biosphere reserve will contribute to easing tension and fostering peace in East Asia as well as achieving its initial goal of designating transborder biosphere reserves.

PROPOSED STRATEGY FOR THE CREATION OF A TBR IN THE DMZ, KOREA

Potential for the creation of a TBR in the DMZ in the Korean Peninsula

The creation of a TBR in the DMZ would fulfill objectives for conservation and sustainable use of biodiversity and also meet objectives at the political and diplomatic level. With the growing inter-Korean economic co-operation in the wake of South-North summit meeting, 'there is a new climate of co-operation between the South and North Korea'.

The development of the DMZ TBR offers potential for the involvement of international initiatives and treaties, such as the UNESCO/MAB, the Ramsar Convention on Wetlands or the Convention on Biological Diversity.

History of transfrontier co-operation in the DMZ

Although there have been some occasional discussions on inter-Korean transfrontier co-operation in the DMZ at an informal basis, there were no tangible results. In the Rio Summit in 1992, Prime Minister Won-sik Chung proposed to North Korea that DMZ ecosystem should be conserved and North Korea agreed to the idea. Nevertheless, it appeared that North Korea could not afford to pay attention to this issue. However, in the wake of recent South-North Summit, a number of achievements have been made:

- Restoration of Kyungeui Railway between Seoul and Sineuijoo. This railway passes the DMZ in South and North Koreas. Under the agreement between the two parties, restoration efforts and the planning of new stretches are now underway.
- Developing the inter-Korean Road between Munsan and Kaesung. This road also goes through the DMZ in South and North Koreas, and according to the bilateral agreement, road design and road construction are in progress. An environmental impact assessment on road construction in the Southern DMZ is also being carried out. The road construction is planned to be completed by September 2001.
- With the advent of an atmosphere of reconciliation in the Korean Peninsula, including the restoration of Kyungeui Railway, discussions on the DMZ conservation and development are becoming intense.

Value of a TBR in the DMZ

The creation of the TBR in the DMZ would serve a dual purpose, at the level of biodiversity conservation and sustainable use and also at the political and diplomatic level.

- The DMZ TBR enables an integrated approach to management and conservation of the transfrontier zone.
- By merit of its historical significance, the TBR constitutes a pole for eco-tourism attractive to other parts of the world.
- Wetland systems in the DMZ including Mt. Daewang Yong Swamp (upper wetland), which is designated as one of Ramsar sites, and the Sachon River, may contribute to regional co-operation as the Northeastern flyway of migratory birds such as Japanese crane and white naped crane.

Constraints on the development of the TBR

Existing constraints

- Damage caused by military activities on protected areas;
- Different administration systems;
- Relative importance of the DMZ in the South and North Korea;
- Lack of accurate ecological information on DMZ; in particular hardly any information is available about the North Korean side.

Potential constraints

- Military context;
- Administrative constraints with respect to border crossings and security;
- Institutional framework;
- Role of international conventions;
- Status of economic development.

Recommendations/guidelines on the establishment and functioning of the DMZ TBR

The DMZ provides great benefits for the local people and contribute to conserving the biodiversity of the planet.

Therefore, it is recommended:

1. To declare 'DMZ TBR', a new protected area which would include parts of South and North Korea, with a Ramsar site located in one of them. This initiative should be facilitated by UNESCO/MAB and the EABRN.
2. To sign a document on an 'Agreement on the Establishment and Joint Management of a Transboundary Protected Area in the DMZ', by the relevant authorities of North and South Korea.
3. To identify wetland systems of the DMZ shared by North and South Korea and co-operate in their management through actions such as formal joint management arrangements or collaboration in the development and implementation of bilateral management plans
4. To encourage international donors and funding agencies to provide additional financial and technical assistance to support the DMZ TBR that would meet agreed criteria.
5. To secure funding through a 'Trust Fund'. A proposal to conduct a project on DMZ has been already presented as part of 'The Millennium Ecosystem Assessment Programme'. If the DMZ proposal is selected with the support of UNESCO, a part of project fund may be provided by South Korea from the South-North Unification Fund as the 'Trust Fund' to share the cost. Strong support from UNESCO for this proposal is expected.
6. To promote the establishment of an international or local non-governmental organizations.
7. To set up a International DMZ Ecology Joint Study Team. The Ministry of Environment of South Korea announced the transboundary area environment conservation plan (September 2000), but this did not include the Northern DMZ. Therefore, the TBR concept and approach of UNESCO/MAB should be introduced and an comprehensive and long-term plan (Master Plan) on DMZ development and conservation should be developed urgently. To this end, with UNESCO as a facilitator, it is recommended that an 'International DMZ Ecology Joint Study Team' with participation of both South and North Koreas be organized and that the necessary activities be implemented.
8. To develop a framework approach for integrated monitoring by the International DMZ Ecology Joint Study Team. This should be part of the Biosphere Reserve Integrated Monitoring Programme (BRIM), initiated as a part of MAB activities for Europe and North America.

Transboundary biosphere reserves: The African experience

Hannington Oryem-Origa

INTRODUCTION

The Seville Strategy and Statutory Framework of Biosphere Reserves, according to Goal 1 on the use of biosphere reserves to conserve natural and cultural diversity and objective 1.2 on integration of biosphere reserves into conservation planning, recommended the establishment of transboundary biosphere reserves as a means to deal with the conservation of organisms, ecosystems and generic resources that cross national boundaries.

This theme has been separately discussed at both the Francophone and Anglophone AfriMAB Technical Workshops in Dakar and Nairobi from 28th September to 2nd October 1999 and from 12 to 15 September 2000 respectively. From both workshops, it was noted that there was yet no designated transboundary biosphere reserve in Africa.

The presentation from South Africa however pointed out the deliberate efforts in the sub-region to establish a transboundary biosphere reserve. The concept of international peace parks and transboundary conservation areas (TBCAs) developed to manage shared natural resources was introduced quite a long time ago (1920s and 1930s). For over 50 years,

several TBCA initiatives have been developed informally through communications among stakeholders. The initiatives were later supported by USAID for a study of transboundary activities in the region. Informal collaboration between Gemsbok National Park in Botswana and Kalahari Gemsbok National Park in South Africa culminated in the declaration of Kgabagadi Transfrontier Park in 1999. Authority was granted to the government agencies in the two countries to make joint management decisions. This area is now recognized as a TBCA with one ecosystem but not yet designated into transboundary biosphere reserve. This effort has been ratified by SADC Wildlife Sector Protocol to promote the conservation and management of shared wildlife resources. Another bilateral arrangement resulted in the preparation of a memorandum of understanding for Transboundary biosphere natural resource management of the water catchment area of Maloti Mountains in Lesotho and Khahlamba-Drakensberg in South Africa.

From the Francophone AfriMAB Technical Workshop, presentations were made giving examples of transborder co-operation including the Niokolo-Badiar ecological unit between Guinea and Senegal, the 'W' area between Benin-Burkina Faso-Niger; Diawling National Park and the prospective Lower Senegal River Delta Biosphere Reserve between Mauritania and Senegal.

The political will exists in the direction of establishing transfrontier biosphere reserves in Western and Central Africa as is exemplified in the Yaoundé Declaration (March 2000). This declaration aims at the preservation and the lasting management of tropical forests.

OPPORTUNITIES FOR SETTING UP TRANSBOUNDARY BIOSPHERE RESERVES

Intentions or opportunities for establishing transboundary natural resource management exist in abundance in several parts of Africa as contained in the report of both Anglophone and Francophone AfriMAB Technical Workshops.

Report from Anglophone AfriMAB Technical Workshop

The following were identified as potential or possible areas for the establishment of TBRs in the Eastern and Southern African Region:

- Masai Mara/Serengeti between Kenya and Tanzania,
- Amboseli/Kilimanjaro between Kenya and Tanzania,
- Minziro/Sango Bay between Uganda and Tanzania,
- Mt. Elgon National Park between Kenya and Uganda,
- South Africa/Mozambique/Zimbabwe,
- Zambezi between Zambia and Zimbabwe,
- Botswana/Zimbabwe/South Africa,
- South Africa/Swaziland,
- Bwindi/Mgahinga/Virunga/Volcans between Democratic Republic of Congo (DRC), Rwanda and Uganda – a region with the highest population of mountain gorillas in the world,
- South Africa/Lesotho,
- Tanzania/Burundi/DRC/Zambia.

Reports from the Francophone AfriMAB Technical Workshop

The following were identified as potential or possible areas for the establishment of TBRs in the Western and Central African Region:

- NikoloKobar/Badiar between Senegal and Guinea,
- 'W' area between Benin and Burkina Faso,
- Geprenaf/Sahel between Burkina Faso and Mali,
- Dja/Ngoila/Minton between Cameroon, Gabon and Congo,
- Lake Lobeke/Sanga/Nonabale/Ndoki between Cameroon, Congo and Central African Republic,
- Mt. Nimba between Côte d'Ivoire, Guinea and Liberia,
- Comoe' between Burkina Faso and Côte d'Ivoire,
- Comoe'/Diefoula/Logomie' que' between Burkina Faso and Côte d'Ivoire,
- Pendjari/Keran between Mauritania and Senegal,
- Senegal River Delta between Senegal and Mauritania,
- Diawling/Djoudj between Mauritania and Senegal,
- Senegal River Delta between Senegal and Mauritania,
- Saloum Delta National Park and Niumi Ramsar Site between Senegal and Gambia.

BENEFITS

Both Anglophone and Francophone AfriMAB Technical Workshops identified several benefits of TBRs:

- Harmonizing and improving management approaches,
- Provision of space for ecological movements,
- Enhance opportunities for increased reserve zoning,
- Exchange of information and sharing of research and management experiences,

- Permits cost-sharing for equipment, building of data bases, setting up gene banks *in situ*,
- Improvement of staff training by organizing joint training sessions,
- Joint ecotourism can be enhanced, thus diversifying and improving tourism.

CONSTRAINTS

- Incessant wars/conflicts in the African region,
- Corruption,
- Policy formulation,
- Legislation,
- Institutions,
- Poor visions,
- Differing land tenure systems.

THE WAY FORWARD

- Need to launch a UNESCO Chair in Ecotechnics Programme in collaboration with identified universities, institutions and research centres mandated to manage and conserve biodiversity through higher degree programmes,
- To develop and implement integrated courses in biodiversity conservation, particularly in biosphere reserves,
- To request UNESCO Secretariat to increase funding for the MAB Young Scientists Award Scheme,
- To provide support for feasibility studies for the establishment of transboundary biosphere reserves,
- To promote collaborative and interdisciplinary research in all aspects of biodiversity conservation which respond to management needs,
- To request UNESCO/MAB Secretariat to support the identification of scientific indicators for monitoring environmental changes, with periodic reviews in accordance with Article 9 of the Statutory Framework and with the Seville Strategy for Public Awareness and Exchange of Information,
- To request the UNESCO/MAB Secretariat to produce annotated bibliographies of research within biosphere reserves. These to be disseminated through print and electronic modes,
- To request the UNESCO/MAB Secretariat to assist African countries to acquire training in appropriate information technology systems for information dissemination,
- To develop a framework for dialogue between scientists and protected area managers,
- To strengthen ties among research networks in Africa and other regions,
- To increase public awareness through mass media about biosphere reserves concepts and their applicability.

Referencia de algunas nuevas iniciativas de reservas de biosfera transfronterizas (transboundary biosphere reserves) en América Latina

Carlos F. Ponce

PRESENTACIÓN

En este documento se proporcionará información resumida sobre algunas de las iniciativas en marcha para tramitar el reconocimiento de nuevas Reservas de Biosfera en América Latina, haciendo énfasis en las propuestas que tienen una proyección para constituirse como Reservas de Biosfera Transfronterizas.

Se deja expresa constancia del amplio reconocimiento por la información proporcionada para este Informe a los colegas señores: Juan José Castro y Mario Rojas (Costa Rica), Jorge Ugáz, Gustavo Suárez de Freitas, Eddy Mendoza, Carol Mitchell y Juana Silva (Perú) así como a José Luis Gadea, de Paraguay.

PROPUESTAS DE RESERVAS DE BIOSFERA TRANSFRONTERIZAS

Hay que señalar que dentro del marco de varias iniciativas existe un dialogo técnico respecto a la posibilidad de procurar el reconocimiento para Reservas Transfronterizas entre los siguientes países: Colombia-Ecuador; Colombia-Venezuela; Ecuador-Perú; Perú-Bolivia; Bolivia-Argentina; Bolivia-Paraguay-Argentina;

Argentina-Chile. Por ejemplo, hay una propuesta avanzada en relación a una Reserva de Biosfera en la Serranía de San Lucas, que abarca áreas protegidas y zonas de amortiguamiento del departamento de Antioquia en Colombia y el Estado Bolívar, en Venezuela.

1. Propuesta de Reserva de Biosfera Los Pehuenes (Argentina y Chile)

Incluye las áreas de *Araucaria sp.* en la provincia de Neuquén en Argentina y la Novena Región, en Chile. Al parecer, en el marco del Proyecto Ecoamércas se ha desarrollado una propuesta concreta con el Ministerio de Planificación y Desarrollo de la citada provincia (COPADE). Para esta propuesta ya se han realizado gestiones ante la oficina de UNESCO, en Uruguay.

2. Propuesta Binacional de los Yungas Andinos (Bolivia y Argentina)

Se localiza en el sur de Bolivia y el noroeste de Argentina. La propuesta es gestionada por las Secretarias de Medio Ambiente de la provincia de Salta (Argentina) y el departamento de Tarija (Bolivia). En Argentina incluye el Parque Nacional Baritu, el Parque Nacional Calilegue y el Parque Nacional El Rey. En Bolivia el área núcleo sería un Parque Nacional ya establecido.

3. Propuesta de Reserva de Biosfera del Gran Chaco Americano (Paraguay, Argentina y Bolivia)

Se trata de una propuesta de Reserva de Biosfera trinacional, que recibirá, entre otros, el apoyo de la Red Latinoamericana de Parques Nacionales y la Oficina Regional de FAO en Chile. Recientemente se llevó a cabo una reunión sobre esta iniciativa en Santiago del Estero, Argentina. Ya hay diálogo acerca de esta propuesta y la Oficina Regional de UNESCO en Montevideo. El tema también mereció la atención de un grupo de trabajo específico en la reunión de Salta, del Proyecto Ecoamércas.

4. Propuesta de Reserva de Biosfera Humedales Alto Andinos (Argentina, Chile y Bolivia)

Se trata de un esfuerzo trinacional que incluye a Argentina, Chile y Bolivia. El proyecto es impulsado por la Universidad Nacional de Salta, el Servicio de Parques Nacionales y WCS.

5. Propuesta de Reserva de Biosfera Transfronteriza Tambopata (Perú) Madidi (Bolivia)

La propuesta Reserva de Biosfera de Tambopata, está ubicada en la amazonía del suroriente de Perú, sobre territorios que políticamente corresponden a las provincias de Tambopata, en el departamento de Madre de Dios, y las provincias de Carabaya y Sandia, en Puno, respectivamente. De los más de 1,8 millones de hectáreas que abarca la propuesta de Reserva de Biosfera, cerca del 60% corresponden a Puno y el 40% a Madre de Dios, involucrando casi la totalidad de las cuencas de los ríos Tambopata, La Torre y Malinowski, así como parte de la porción peruana de la cuenca internacional del río Heath.

Esta propuesta, en el ámbito peruano, tiene una proyección al sector boliviano, cuya área núcleo es el Parque Nacional y Area de Manejo Integrado Madidi.

En el sector peruano la propuesta de Reserva de Biosfera se inicia con el establecimiento de la Zona Reservada Tambopata-Candamo (ZRTC), en 1990.

El caso de Tambopata-Candamo es conocido internacionalmente, ya que a partir de un rechazo inicial de las poblaciones y autoridades locales al establecimiento de la Zona Reservada, mediante un amplio proceso participativo impulsado por la administración nacional con apoyo de diversas instituciones, se ha logrado un entendimiento del positivo significado de la conservación para el desarrollo sostenible de la región. Pero se ha avanzado más aún: existen varios proyectos o actividades en marcha, realizados con la población local, que constituyen una manifestación de la viabilidad de trabajar en colaboración entre autoridades, organizaciones de conservación y poblaciones locales.

Desde 1990 a 1994 se llevó a cabo un proceso participativo con la población local, para llegar a una primera aproximación de grandes zonas apropiadas para diferentes usos (protección estricta, uso múltiple), detalladas en el primer estudio de factibilidad (Bernales *et al*., 1993.) La propuesta original para el establecimiento del Parque Nacional Bahuaja-Sonene estuvo basada en los resultados de este proceso participativo (INRENA, 1994), pero para la creación del Parque actual en 1996, el gobierno aprobó una propuesta modificada y de área reducida debido a la presencia del lote de exploración petrolera 78 superpuesto en una gran parte del sur de la Zona Reservada.

El 4 de setiembre de 2000, respondiendo al retiro de la empresa petrolera del área, y a la propuesta de zonificación, el gobierno peruano expidió el Decreto Supremo nº 048-2000-ag que amplió la superficie del Parque Nacional Bahuaja-Sonene, y estableció

la Reserva Nacional Tambopata y una Zona de Amortiguamiento.

6. Reserva de Biosfera del Alto Marañón (Perú) y su proyección al sector ecuatoriano

El área de la propuesta para una Reserva de Biosfera contiene un mosaico de sistemas ecológicos representativos de regiones biogeográficas importantes como los Andes y la Amazonia (UNESCO, 1996) o los Bosques Montanos de la Cordillera Real Oriental (WWF, 1997) que comprende varias formas de intervención humana.

La propuesta Reserva de Biosfera está ubicada en el departamento de Amazonas, en la parte norte del Perú.

La referencia de coordenadas geográficas en la que se ubica la propuesta es la de: Latitud 4° 50´ 38¨, Longitud 78° 7´ 35¨.

Esta propuesta tiene importancia para la conservación de la diversidad biológica: debido a su complejidad topográfica y geológica, se ha convertido en un refugio de muchas especies, especialmente las partes bajas de la Cordillera del Cóndor, donde existe un bosque de una diversidad florística verdaderamente excepcional, como por ejemplo los *tepuis*. Además la fauna es predominantemente amazónica, entremezclados con algunos elementos andinos, como el caso del oso de anteojos (*Tremarctos ornatus*) y la presencia de una importante variedad de aves como el paujil (*Crax mitu*), una especie altamente depredada. En la Cordillera de Colán podemos citar la presencia de especies amenazadas, tales como el mono de cola amarilla (*Lagothrix flavicauda*) y el guacamayo militar (*Ara militaris*). Hay que resaltar que es todavía una región en la que se deben realizar muchas investigaciones debido a lo inaccesible del área.

El área propuesta como Reserva de Biosfera ofrece posibilidades de ensayar y demostrar métodos de desarrollo sostenible para la escala regional, como por ejemplo, actividades de agroforestería, pesca artesanal y acuicultura con especies de la región.

7. Reserva de Biosfera del Noroeste (Perú) y su proyección al sector ecuatoriano

Esta propuesta es un resumen de la iniciativa de ProNaturaleza (Perú) y la Fundación Arco Iris (Ecuador).

El área de la propuesta para una Reserva de Biosfera transfronteriza, incluye la ya existente Reserva de Biosfera del Noroeste en territorio peruano y se propone plantear el reconocimiento en territorio ecuatoriano de una figura similar. Esta Reserva de Biosfera transfronteriza tendría como Zona Núcleo el Parque Nacional Cerros de Amotape en el lado peruano y algunas áreas de uso indirecto, que sería posible establecer en el lado ecuatoriano.

Tomando en cuenta que los ecosistemas predominantes son los de Bosques Secos, la propuesta es tomar esa característica para el nombre de la propuesta Reserva.

La propuesta Reserva de Biosfera está ubicada en los departamentos de Tumbes y Piura en Perú y la Provincia de El Oro en Ecuador. Se encuentra a unos 1.300 km al norte de la ciudad de Lima y unos 600 km al sur de la ciudad de Quito.

La referencia de coordenadas geográficas en las que se ubica la propuesta son: 3° 35´ de latitud sur, 80° 30´de longitud oeste.

La región costera fronteriza entre Perú y Ecuador es reconocida como de gran importancia biológica, por el alto número de especies y su alto nivel de endemismos, dentro de una superficie relativamente reducida. La región incluye ecosistemas que están considerados dentro de los más severamente amenazados en el mundo por el alto grado de pérdida de su distribución original. De acuerdo a estudios de Conservation International, más del 90% de los bosques de esta región por debajo de los 900 msnm han sido transformados y se estima que de los tres mayores tipos de bosque en esta región, sólo el 6% mantiene su cobertura original.

La zona se ubica dentro de los límites del centro de endemismo Tumbesiano, propuesto por Cacraft (1985) el cual se extiende por una angosta faja de bosque seco desde el norte del golfo de Guayaquil a lo largo de la costa, hasta el departamento de La Libertad en Perú, aproximadamente 600 km al sur de la frontera. A pesar de que cubre una extensión relativamente pequeña, alberga un número significativo de taxas endémicas.

Las áreas de bosque más extensa y mejor conservadas son las que se encuentran en las áreas naturales protegidas peruanas, como son el Parque Nacional Cerros de Amotape, la Zona Reservada de Tumbes, el Coto de Caza El Angolo y el Santuario Nacional Manglares de Tumbes, las cuales forman parte de la actual Reserva de Biosfera del Noroeste. Estas áreas funcionarían como Zonas Núcleo o Zonas de Amortiguamiento, a lo que habría que añadir las áreas en Ecuador, que tendrían que ser establecidas o consolidadas legalmente.

En la propuesta Reserva de Biosfera se manifiesta una importante necesidad para la realización de estudios científicos e investigaciones, siendo muy escasos los trabajos que se han realizado en la zona, particularmente en temas ecológicos y de diversidad biológica.

The experience of the Ukraine MAB National Committee concerning the organization and functioning of the Transboundary Danube Delta Biosphere Reserve (Romania/Ukraine)

Valentyn Voloshyn and *Tetiana Poltoratska*

Today the national network of UNESCO biosphere reserves in Ukraine consists of four sites, of which and two form part of transboundary biosphere reserves, covering a total area of more than 296,000 hectares. These are: Chornomorsky, 'Askania-Nova', functioning in the territory of Ukrainian Prychernomorye, Carpathian in the region of Ukrainian Carpathians and Dunaisky in the region of Danube Delta. These latter two sites form part of the transboundary biosphere reserves 'Eastern Carpathians' (Poland/Slovak Republic/Ukraine) and 'Danube Delta' (Romania/ Ukraine).

The Dunaisky Biosphere Reserve, the 'Eastern Carpathians' and 'Danube Delta' transboundary biosphere reserves were created after the adoption of the Seville Strategy. This means that the number of biosphere reserves in Ukraine has doubled over the last five years. This gave the possibility for MAB Ukraine to create a full-scale national network of biosphere reserves in Ukraine based on the principles of UNESCO Seville Strategy.

This network was created keeping in mind the scientific recommendations on the natural zonation of Ukraine's territory, particularly regarding its coastal zones and transboundary regions. Biosphere reserves play a special role in promoting the new interconnection between environmental conservation and sustainable development at a regional level, as well as in the optimization of species, landscape and ecosystem diversity on the basis of their protection through 'ecological corridors'.

The development of biosphere reserves in Ukraine is being carried out in close contact with the regional authorities and with the active involvement of local populations, with emphasis on the preservation of its traditional forms of land use.

In December 1998 the International Coordinating Council of UNESCO's Man and the Biosphere Programme considered the biosphere reserve proposals submitted by the National MAB Committees of Romania and Ukraine. One of these was the Dunaisky Biosphere Reserve already recognized as a Ramsar site and forming one of the units of transboundary Danube Delta Biosphere Reserve in Romania and Ukraine. The organization of this biosphere reserve stimulated creative contacts between Romanian and Ukrainian specialists with the aim of resolving biodiversity conservation issues within the Danube Delta. It should be stressed that this region today is exposed to some of the greatest anthropogenic impacts of Europe.

The territory of the transboundary biosphere reserve covers 626,000 ha, consisting of 580,000 ha and 46,000 ha respectively in Romania and Ukraine. A number of recommendations were made as to the relevant scientific and organizational measures for this reserve to start its activity.

From the very beginning, we realized that it was necessary to prepare normative instruments regulating the activities of the Danube Delta Biosphere Reserve (Romania/Ukraine). After preliminary consultations with our Romanian colleagues and World Bank representatives in April 1999, the Ukraine MAB Committee proposed the creation of a Coordinating Council for the transboundary Biosphere Reserve and to elaborate its Statutes.

Twelve persons were included into the list of the Coordinating Council: six persons from the Romania and six persons from Ukraine. Those persons were the representatives of the National Commissions for UNESCO of Romania and Ukraine, MAB National Committees of Romania and Ukraine, Ministries of Ecology, National Academy of Sciences of Ukraine as well as regional authorities.

The Statutes precisely set out the rules for the work of the Coordinating Council.

A Draft Programme with Guidelines for joint scientific research between Romania and Ukraine and a draft Framework for the transboundary UNESCO Danube Delta biosphere reserve were elaborated as well.

The drafts of the above-mentioned documents were thoroughly examined and approved on 23–24 September 1999 at the meeting of representatives from Romania and Ukraine in Vilkovo, Odessa Region, dedicated to the inauguration of the transboundary Biosphere Reserve. The approved docu-

ments formed the foundation of the Biosphere Reserve's activity. We regret however that the practical realization of the provisions in these documents is complicated by the lack of relevant international acts at the UNESCO level related to interstate cooperation in transboundary territories. In this connection, it is to be noted that in July 2000, the Slovak Republic introduced visas for visitors from Ukraine, and Poland is also likely to do the same in the near future. This situation makes communications between specialists working in the transboundary Carpathian Biosphere Reserve (Poland, Slovakia, Ukraine) much more difficult. Hence we consider it necessary to underline the need for elaborating international legal documents at the UNESCO level containing the recommendations for countries which are the units of transboundary biosphere reserves, to introduce the appropriate regime which will actively facilitate the implementation of tasks laid by UNESCO on the transboundary biosphere reserves. Presently Ukraine MAB Committee is preparing relevant proposals for the National Commission of Ukraine for UNESCO.

Notwithstanding the difficulties of the organizational period, note should be taken of the first results of joint activities of Romanian and Ukrainian specialists.

First and foremost, we have greatly developed constructive contacts aiming at the solution of urgent problems of conservation and further development of the biodiversity of Danube Delta as a sole and unique nature ecosystem in Europe.

Secondly, the coordinated efforts of Romanian and Ukrainian specialists have made it possible to begin the creation of a comprehensive database of the flora and fauna of the Danube Delta. As a first step of this activity the Romanian/Ukrainian vegetation map of the Danube Delta is being prepared for publication, with the active support of the Ministry of Water Economy of the Netherlands.

The map of bird populations in Danube Delta is being finished: this map is based on an analysis of the causal factors of changes in numbers and location on birds in the territory of the Delta.

Joint research regarding sturgeon fish populations in the Danube Delta has been completed. The reasons for the reduction of sturgeon populations have been analyzed and proposals for the restoration of sturgeon populations have been prepared.

During the period 30 September–2 October 2000, a seminar of directors and managers of delta reserves from 15 countries of the Mediterranean, Black and Caspian Seas' regions took place in the territory of the Ukrainian unit of the transboundary Danube Delta Biosphere Reserve. At this seminar the urgent problems of activity of delta reserves and the mentioned regions were discussed.

On 11 October, our Romanian colleagues celebrated the 10th anniversary of the activity of their unit, in which their Ukrainian colleagues were also invited to take part.

The experience of our activity demonstrates the necessity for each transboundary biosphere reserve to have a Scientific Coordinating Council with its own Statutes. It is also advisable that a Statutory Framework of UNESCO transboundary biosphere reserve be worked out and approved.

The Ukraine MAB Committee coordinates the activity of the network of biosphere reserves of Ukraine through the exchange of information, specialists, the organization of joint seminars and projects. Topical issues are discussed at the meetings of the Ukraine MAB Committee. In particular, the question of 'The Scientific Bases of the Preservation of Biological and Landscape Diversity in the Context of Sustainable Development of Ukraine' was discussed in June 1999. We consider that the organization and conduct of the integrated monitoring in the long-term is a prerequisite for successfully resolving conservation and development problems. In this context the perspective plan on the creation of the network of transboundary biosphere reserves in Ukraine has been elaborated.

Today the proposals on the creation of the following transboundary biosphere reserves are being prepared: 'Western Polissya' and 'Rostocha' (Poland/Ukraine) and 'Marmarosh' (Romania/Ukraine). Together with our Russian colleagues we have started to work on the establishment of the transboundary biosphere reserve on the Bryansk and Starohuts Forests, in the Desna River basin.

WORKING GROUP 1: BIOSPHERE RESERVES AS SITES FOR INTERNATIONAL SCIENTIFIC RESEARCH AND MONITORING, AND PROVIDING SCIENTIFIC UNDERPINNING OF MAIN CONSERVATION CONVENTIONS

Biosphere reserves as sites for international scientific research and monitoring, and providing scientific underpinning of main conservation conventions: Summary of interventions

Marja Spierenburg

During the session of Working Group 1, various presentations were made on ongoing research and monitoring activities in biosphere reserves. These showed that many biosphere reserves were very active in the domain of research and monitoring, covering many different subjects. Below a brief summary is provided of the different presentations and the discussions that followed.

Ms Dalia Maimon from Brazil, member of the Advisory Committee for Biosphere Reserves, presented the activities taking place in the Mata Atlântica Biosphere Reserve in Brazil, focusing on biodiversity in an urban context.

Mr Olaf Olsson, Secretary of the Swedish MAB Committee, presented the long-standing monitoring and research programme on Arctic issues. Specific attention was being paid to global climate change. A network of science institutes had been created which use similar methods in order to generate comparative data. The Arctic monitoring programme used affordable and relatively simple data collection methods to facilitate participation by as many institutes and organizations as possible.

Sweden was currently preparing two new biosphere reserve proposals, one would include the National Park of Stockholm, which is a wetland site that has been proposed also for the Millennium Ecosystem Assessment.

Ms Boshra Salem, the Rapporteur of the ArabMAB network and Chair of the Advisory Committee for Biosphere Reserves, presented the many, well advanced research and monitoring activities related to ArabMAB. One of the most important developments was that the network had established an online biodiversity database on the ArabMAB website. Several workshops had been organized to harmonize

standards and protocols for data collection, to generate truly comparative data. The network had been very active in organizing training on GIS and new information and communication technologies (NICTs) among its members.

Ms Salem mentioned the programme on observation of climate change in Saharan and Sahel countries that is funded by GEF. Furthermore, she mentioned that the research efforts in the region have benefited from the existence of the Ecotechnie chairs in Egypt, Bahrain and Lebanon.

Mr Roger Soles, Executive Director of US MAB, presented the research and monitoring activities related to the United States of America biosphere reserves. He noted that many different research activities were conducted in the biosphere reserves, as well as in protected areas, and that there is a need to co-ordinate these. Many biosphere reserves had forged partnerships with local universities. One attempt to co-ordinate activities and generate comparative data was the creation of a network of long-term ecological research sites (LTERs). There were now 18 such LTER sites in the United States of America, of which 15 were biosphere reserves.

Together with University of California at Davis, US MAB continued to work on and update the MAB Flora and Fauna database, which was part of the Biosphere Reserve Integrated Monitoring Programme (BRIM).

Mr Soles furthermore mentioned an activity in the Smokey Mountains within the Southern Appalachians Biosphere Reserve. There, volunteers were conducting capture studies. So far, this had led to the identification of 30 new species in these mountains. Attempts were now being made to introduce a similar programme in Costa Rica.

Mr Jim Birtch, from the Canadian Biosphere Reserve Association also discussed the importance of volunteers in monitoring. He stressed the advantages of the implication of volunteers, including that there is less turn-over in personnel since those concerned were often people who actually lived and worked in the area where the monitoring took place, they had a direct interest in that area, and they often possessed quite a lot of knowledge about it. The disadvantage was, however, that there were limits on the amount of work that could be demanded from volunteers. Mr Birtch also presented a programme that used the Canadian biosphere reserves as sites for training in research. Students who had been engaged in the monitoring activities thereafter trained a new generation of students to continue the monitoring work.

According to Mr Birtch there were several advantages of using biosphere reserves as research and monitoring sites for biodiversity:

- They were areas of high conservation values;
- The site was expected to be permanent over time;
- They promoted community involvement, particularly volunteer participation and education;
- The presence of local BR committee, which can identify research needs and facilitate research activities and experimental work.

However, there were also disadvantages:

- Scientific programmes did not always have many resources and expected volunteers to do much of the organization.
- Conventions (e.g. Convention on Biological Diversity) were co-ordinated in Canada by Federal agencies and the biosphere reserves (which are not part of a federal program) did not have the resources or the contacts to contribute to national positions on the issues addressed under the Convention.

Mr Effendy from Indonesia presented the important decision taken by ASEAN to participate in the Global Taxonomy Initiative. He then raised several issues that were discussed by the working group.

One of these was the absence of social scientific studies in the different presentations. The participants discussed the importance of such studies. Both the management plan of biosphere reserves and the research and monitoring programmes should address the needs of the local communities and the benefits they can derive from the biosphere reserve. The positive contribution that local communities and local NGOs could make to monitoring and research activities was directly related to this issue.

A second issue discussed was the importance that the participants attributed to the link between monitoring, research and biosphere reserve management.

A third issue was the lack of co-ordination with international conventions. It was concluded that it was often very unclear how local monitoring and research activities could contribute to these international conventions.

Working group 1: Biosphere reserves as sites to contribute to international research and monitoring programmes

Moderator: Prof. Mohammed Ayyad (Egypt).

General discussions were preceded by a round table during which a number of participants presented site-level experiences. Presentations were made by Ms Dalia Maimon (Brazil), Mr Effendy Sumaradja (Indonesia), Mr Jim Birtch (Canada), Ms Boshra Salem (Egypt), Mr Roger Soles (United States of America) and Mr Olof Olsson (Sweden).

The working group recognized biosphere reserves as ideal sites for long-term monitoring and research projects.

Recommendations

- That the MAB Secretariat elaborate a concise, user-friendly overview of the different conventions, relevant to the MAB program and prepare guidelines for their implementation in the framework of the MAB programme; these should be translated in as many different languages as possible, with assistance from the MAB national committees.

- That the MAB Secretariat co-ordinates with the secretariats of the relevant multi-lateral environment agreements (e.g. the Convention on Biological Diversity) and develops guidelines to harmonize research initiatives concerning the different conventions.

- The regional networks, in consultation with the MAB Secretariat, should define and adopt a limited number of research and monitoring projects that are related to conservation and sustainable development, such projects should be promoted in all biosphere reserves.

- The networks should encourage research especially at landscape level in order to study the interaction between different eco-systems.

- That the regional networks increase inter-regional co-operation and exchange research results using appropriate communication technologies, including the Internet.

- That co-operation will be increased between biosphere reserve managers, researchers and local communities to jointly define research needs, monitoring needs, and the utilization of monitoring and research data and results.

- That simple, but standardized, monitoring is applied to ensure comparable quality data.

- That MAB national committees or the equivalent focal points develop a national inventory of all research and monitoring activities in their biosphere reserves, and document the existence of permanent monitoring plots.

- Implementation of the BRIM program should be accelerated, including explicit recognition of the need to integrate the social sciences in its activities. In this connection the BRIM meeting foreseen for Kiev (2001) should be used *inter alia* to generate inputs for the conference of the European ministers of environment to be held in 2002.

- The MAB secretariat is asked to develop guidelines for volunteer biosphere reserve committees on monitoring and research, recognizing and mobilizing the potential of the local communities in and around the biosphere reserves to contribute to the development of research and monitoring activities.

- Biosphere reserve co-ordinators should use volunteer monitoring activities both to generate data and for environmental education purposes.

WORKING GROUP 2: RAISING VISIBILITY, MOBILIZING SUPPORT FOR THE WORLD NETWORK OF BIOSPHERE RESERVES

Réserve de biosphère de Mananara-Nord

Baptiste Noël Randrianandianina

INTRODUCTION

La Réserve de Biosphère de Mananara-Nord est située sur la côte nord-est de Madagascar. Instituée en réserve de Biosphère en 1989, elle fait partie intégrante du réseau du Programme MAB/UNESCO.

D´une superficie de 144.000 ha, la Réserve de Biosphère de Mananara Nord est composée de 23.000 ha de parc terrestre, 1000 ha de parc marin, 20.000 ha de zone tampon et 100.000 ha de zone de développement.

INTÉRÊT DE LA ZONE COMME RÉSERVE DE BIOSPHÈRE

La réserve présente un grand intérêt biologique et un potentiel génétique remarquable tant terrestre que marin.

OBJECTIFS

Un des grands objectifs de la réserve de biosphère de Mananara Nord est de préserver la qualité et la quantité de la biodiversité et de mettre la population riveraine à un niveau de développement suffisant. Ceci répond au cadre du programme MAB qui cherche l'harmonisation de la conservation de la diversité biologique avec la sauvegarde des valeurs culturelles.

RÉALISATIONS DU PROJET

Les actions menées jusqu'à présent ont porté principalement sur :

- la conservation de la biodiversité basée sur le suivi écologique et le transfert de gestion des ressources naturelles renouvelables ;
- le développement de l'agriculture ;
- le développement de l'élevage et de l'apiculture, la pêche et l'infrastructure rurale ;
- la mise en place d'une trentaine d'associations dans différents domaines tels que la gestion communautaire des forêts, la gestion de l'eau, la pêche, l'agriculture et l'information, l'éducation et la sensibilisation
- le développement du partenariat avec les ONGs et les différentes institutions. Le projet a ainsi tissé avec le hall d'information de la commune une relation de partenariat avec le centre d'information de la PNW de HOEP et le centre ECOMARE des Pays-Bas pour développer le système éducatif et de sensibilisation.

L'APRÈS-PROJET DES ACTIVITÉS DE LA RÉSERVE

Placé sous l'égide du PNUD-UNESCO depuis 1998, l'après-projet débutera en 2002.

Le parc terrestre et marin passera à la gestion

directe de l´ANGAP (Association Nationale pour la Gestion des Aires Protégées) qui est l'organisme mandaté par l'État pour assurer la gestion durable du réseau national des aires protégées de Madagascar. Le reste de la réserve sera considéré comme zone périphérique du parc

Un système de pérennisation est en cours de mise en place pour assurer la durabilité des activités et de leur financement après le projet.

Depuis deux ans, l'ANGAP a mené une série de réflexions pour élaborer son plan de pérennisation. Ainsi, elle a déjà élaboré le COAP (code des aires protégées) qui définit le cadre juridique et institutionnel des aires protégées malgaches et le plan de gestion du réseau des aires protégées (PLANGRAP) qui contient les directives géographiques et stratégiques pour développer et valoriser le réseau national d'aires protégées représentatives de la biodiversité malgache.

Actuellement, l'ANGAP est en train de finaliser son audit organisationnel pour évaluer au niveau de sa structure, la pertinence de ses systèmes et de ses compétences.

Ces trois éléments constituent la base du plan de pérennisation des activités et de leur financement. Ce document fixera les orientations précises de gestion des aires protégées à court et moyen termes. Il analysera les besoins, en détermine les sources éventuelles de revenu à long terme et proposera des hypothèses de budget.

Quant au développement de la zone périphérique du parc, les actions à mener doivent découler des expériences acquises du projet ; ainsi, elles doivent prendre en considération :

- la capitalisation des expériences acquises dans le cadre du projet ;
- la participation de la population locale à tous les stades de l'après-projet ;
- le développement des activités génératrices de revenus ;
- l'intégration des actions dans le cadre des grands programmes existants dans le pays comme la stratégie nationale de lutte contre la pauvreté, le plan d'action pour le développement rural et la stratégie nationale de biodiversité.

LE FINANCEMENT DES ACTIONS

Il s'agit de valoriser les différents fonds utilisables dans la région et les mécanismes de financement mis en place. Ce sont particulièrement :

- Le FORAGE (fonds régional d'appui à la gestion de l'environnement) mis en place par le programme environnemental actuel destiné à financer des activités qui ont trait à l'environnement;
- Le FID (fonds d'intervention pour le développement) qui sert à financer des projets de développement à caractère social ou économique ;
- L'utilisation des recettes occasionnées par les droits d'entrée dans l'aire protégée (DEAP) dont les 50 % sont affectées par l'ANGAP aux communautés locales de la zone périphérique pour réaliser des micro-projets par l'intermédiaire d'un comité de gestion (COGES) ;
- Les mutuelles de crédit qui font des prêts à des taux préférentiels ;
- Les bailleurs traditionnels nationaux, bi- et multinationaux ou encore les ONGs internationales qui ont la facilité de mobiliser des fonds ;
- Les rachats de dettes constituent une autre opportunité pour les actions de développement dans le monde rural ;
- Les réflexions menées dans le cadre la pérennisation des financements ont permis d'imaginer la mise en place d'un trust fund.

Enfin, on évaluera les bénéfices éventuels à tirer du dynamisme au niveau international pour la création de fonds importants d'investissement pour le développement de l'entreprise favorable à l'environnement

L'INTERNALISATION DES PROCESSUS ET DES STRUCTURES

Par ailleurs, le gouvernement a développé un certain nombre de processus qui intéressent directement le projet de Mananara Nord.

- La gestion locale sécurisée (GELOSE), la gestion communautaire ou participative des forêts (GCF ou GPF) qui assurent le transfert de gestion des ressources naturelles renouvelables aux communautés locales ;
- L'opération domaniale concertée (ODOC) et la zone d'action en faveur de l'arbre (ZODAFARB) qui donnent la possibilité à ceux qui mettent en valeur les terres d'accéder facilement au titrage de sécurisation.
- La concertation régionale qui a pour objectif l'élaboration des plans d'actions cadrés et basés sur la programmation régionale avec la participation de tous les intervenants de la région. C'est ainsi qu'ont été mis en place l'AGERAS (appui à la gestion régionalisée et à l'approche spatiale), le CTD (comité technique de développement et le GTDR (groupe technique de développement régional) :
- La création et le renforcement des différentes associations paysannes et des ONGs locales pour mener des actions de sensibilisation et d'éducation et pour réaliser les travaux identifiées dans la région ;

- Le développement du partenariat avec les administrations et les ONGs locales, nationales et internationales (jumelage).

Bien que ces différents outils se trouvent actuellement dans leurs phases recherche-actions, il s'avère indispensable de les appliquer et de les valoriser dans les différents éléments de la biosphère autre que le noyau dur.

EN CONCLUSION

Je tiens à souligner ce qui suit :

- L'ANGAP est très consciente de la responsabilité qui lui échoit de prendre la relève pour le succès futur des initiatives déjà lancées, c'est ainsi que d'ores et déjà l'ANGAP s'attelle à préparer ce transfert.
- Nous attendons bien bâtir sur les acquis et profiter des expériences acquises pour poursuivre dans la même philosophie et selon les mêmes principes d'actions qui sont essentiellement ceux que le programme MAB favorise.
- Nous demeurons conscients qu'il s'agit là d'un défi complexe qui exige l'intégration harmonieuse de toute une gamme de programmes et de processus dont ceux que j'ai mentionnés plus haut. L'avenir de la réserve de biosphère repose en bonne partie sur l'engagement et la collaboration de tous.
- Notre plus grand souhait est que la réserve de biosphère soit un modèle pour le programme de réserves MAB. Nous considérons n'avoir pas le choix compte tenu du caractère unique de la biodiversité malgache et de l'importance des dangers qui la menacent.

Belovezhskaya Pushcha Biosphere Reserve (Belarus) in co-operation with the Bialowieza Biosphere Reserve (Poland)

Heorhi A. Kazulka

The 'Belovezhskaya Pushcha' Biosphere Reserve (the name means the wild, dense, very old forest near a white tower) is a National Park situated in the south-west part of Belarus at the state border with Poland. It is a remnant of former lowland primeval forests, which has been relatively well preserved up to the present. In 1992, this lowland forest, the oldest in Europe, was included in the World Heritage List. In 1993, the Park was declared a biosphere reserve, and in 1998 it was presented with a European Diploma.

The Belovezhskaya Pushcha Primeval Forest makes up an integral natural complex in both Belarus and Poland. In Poland, the Bialowieza National Park has also been designated as a Biosphere Reserve. This National Park comprises 10,502 ha but has been extended to cover the entire territory of the Polish Puszcza Bialowieska. In Belarus, the National Park now covers 101,603 ha, of which 88% is forest. The administrative centre is situated 20 km from Kamenets town, founded in the 13th century, characterized by a watch-tower (Belaya Vezha). In the centre of the forest is a small village named Viskuli. Here, in an attractive palace (government dacha), the famous 'Belovezha Agreement' was signed in 1991, declaring the disintegration of the Soviet Union and proclaiming the independence of its Republics.

The Belavezhskaya Pushcha has been divided into four functional zones with various conditions of protection:

1. The Wilderness Protection Zone (17.9% of the area); the zone of untouched nature where all kinds of economic and other activities are forbidden, except for scientific research and limited scientific tourism;
2. The Regulated Nature Zone (65.3%); all measures in this zone must provide optimal conditions for the development of natural ecosystems; to some degree sustainable forestry and other kind of traditional activity are possible;
3. The Regulated Recreational Zone (12.3%); the landscapes of this zone have high aesthetic values and serve recreation goals;
4. The Economic Activity Zone (4.5%); in this zone are the offices for administration, park staff, tourist services, accommodation as well as an intensive economic activities.

The so-called Support or Buffer Zone (c. 90,000 ha around the National Park) is used by the local people with a number of restrictions with respect to economic activities.

The Belovezhskaya Pushcha is one of the oldest nature reserves in the world. The first known records of the Belovezhskaya Pushcha Primeval Forest are mentioned in the Ipatievskaya Chronicles (983 AD). For centuries, this virgin forest was the property, in turn, of the Lithuanian princes, Polish kings, and Russian tsars. Under the Soviet Union, the Belovezhskaya Pushcha was a game area with a protection regime oriented especially for hunting by the leaders of the Communist Party and the Soviet Government.

The Belovezhskaya Pushcha Primeval Forest is the last ancient virgin forest of the Central European lowland, with more than a thousand 400–600 year-old oak trees, 250–350-year-old ash and pine trees, and 200–250-year-old spruce trees. Most stands are more than 100 years old, some of them are 250–350 years old. The forest is unique in that it has a combination of European boreal coniferous and West European broadleaf forests. Coniferous forests make up 68.8% of the forested area, consisting mainly of pine (58.0%) and spruce (10.7%) forests. Broadleaf forests cover 5.8% of the area: mainly oak, the rest being alder, ash, birch, and hornbeam. Marsh forests are widespread (18.7%). The rest of the park consists of mires and marshes.

The watershed between the Baltic and the Black seas lies near the border of the Belovezhskaya Pushcha.

Due to the location of Belovezhskaya Pushcha on the transition zone between Western European mixed hardwood and Eastern taiga systems, it has a very rich biological diversity. Vast numbers of species characteristic of natural forests still live in the Belovezhskaya Pushcha Primeval Forest. There are for example many rotting dead trees, which are an ideal habitat for many species going from microscopic bacteria and fungi to vertebrates.

The Belovezhskaya Pushcha has 900 species of higher vascular plants and more then 3,500 lower plant species. The most common forests are pine, spruce, oak, and alder. Various plant species including silver fir, ivy, dark geranium, and many others, are unique in Belarus. Sixty-five plant species in the Belovezhskaya Pushcha are under special control, listed in the Belarussian Red Data Book.

The fauna comprises more than 12,000 species, including 59 mammal, 227 bird, 7 reptile, 11 amphibian, 24 fish, and more than 9,500 insect species. The most important animal is the bison, with a current population around 250. Interesting and rare animal species include beaver, wolf, lynx, pine marten, otter, and badger. The fauna is rich in rare bird species such as capercaillie, black grouse, lesser spotted eagle, white-tailed eagle, great grey owl, eagle owl, black stork, and woodpeckers.

The area is managed for forestry, wildlife and agricultural production. In 1992–1996, the Global Environmental Facility Project 'Belovezhskaya Pushcha Forest Biodiversity Conservation' supported by the World Bank was carried out. The aim of this project was to evaluate the biodiversity richness and ecosystem sustainability in Belovezhskaya Pushcha forests, to define the anthropogenic influence to the forests and to elaborate a management plan to conserve an unique forest complex. This plan generated the following management actions:

- adding areas of botanical and hydrological importance;
- protecting riparian corridors in the Support Zone;
- improving supporting regulations and policies for the zones and associated activities;
- re-zone the sanitation cutting to have dead wood in natural areas (such as Conservation Zones) and increase removal in economic areas;
- eliminate artificial winter feeding;
- reduce ungulate populations;
- clone rare plants, screen sites, and re-establish natural populations;
- establish a bison exchange programme based on population viability requirements;
- reduce or halt wolf harvest;
- develop an extension programme for new landowners in soft agricultural and associated trade technologies;
- develop an extension and assistance programme for nature-based tourism development;
- provide GIS as an extension tool and develop it as an analytic tool;
- establish a programme to involve the local public in land-use planning through education, committee memberships, extension, and public meetings;
- plan the next phase of research, development, and management employing an ecosystem analysis approach.

The same project was carried out at the Polish side of Belovezhskaya Pushcha.

Because the Belarus and Polish parts of Belovezhskaya Pushcha create one single forest unit, there is a long-term tradition of co-operation between the two National Parks. In the centre of forest a simplified pass across the state border exists for the workers of National Parks and the local population. The relationships between National Parks have gradually improved. Joint meetings of the Scientific Boards are organized to discuss and resolve the most important complex ecological and socio-economical

problems. Joint research activities are conducted by scientists of both National Parks.

Last year, we concluded a lot of bilateral agreements with scientific institutions, universities, nature conservation organization including non-governmental associations, for example, the Belarus Bird Protection Society. Several project proposals are currently being considered. For instance, 'Development of conception and programme for joint scientific research, nature conservation and educational activities in the territory of the Belovezhskaya Pushcha/Bialowieza National Parks (Belarus/Poland)' made in co-operation with both Belarussian and Polish Academies of Sciences.

We are working the company called 'Kampsax Consult' to conduct a restoration project of the Narewka river at Bialowieza in Poland and we are trying to extend this work to the Belarus side. We are also discussing the use of GIS with this firm as well as with the 'Atlantic States Legal Foundation' (United States of America). Very good relationships have been developed with the nature conservation organization 'Natuurmonumenten' from the Netherlands. As a first step, a trilateral conference was held in June this year targeted to organize a big conservation project. We are developing communications in the fields of cultural heritage and tourism, for instance, with the Dutch 'COWI' project. A wide range of examples of such co-operation can be given.

It is very important to organize the exchange of so-called 'without visa' tourists who use the simplified pass across the State border. It is also important to create the transboundary Biosphere Reserve as a historically single indivisible area; this transboundary Biosphere Reserve is functioning already for a long time but has not been given a legal basis until now.

Thus, nowadays Belovezhskaya Pushcha and Bialowieza National Parks form a major nature centre for conservation, science, education, and culture in the region of Poland and Belarus. It is possible to consider the co-operation between two National Parks as a bridge between Belarus and the European nature conservation community as well as an example of breaking down the political barriers between West and East countries.

Proyección, movilización de apoyos y articulación intersectorial en Reservas de la Biosfera de la Argentina[1]

Claudio Daniele, Marcelo Acerbi y Sebastián Carenzo

INTRODUCCIÓN

Se presentan conclusiones elaboradas a los efectos de la Reunión Internacional Sevilla + 5. No se basan en actividades sistemáticas de investigación precedentes y no constituyen un diagnóstico exhaustivo sino una lectura que aporte a las discusiones de la Sesión.

Las nueve RBs argentinas incluyen una superficie de más de 2.655.000 has en 7 Ecoregiones, y presentan diferentes grados de implementación en contextos territoriales diversos (una descripción sintética de las RBs y su localización puede consultarse en http://www.promab.4t.com/index.htm y en http://www. medioambiente.gov.ar/mab.

San Guillermo	Altos Andes, Puna
Laguna Blanca	Altos Andes, Puna
Costero del Sur	Pampa
Ñacuñán	Monte Llanuras y Mesetas
Laguna de los Pozuelos	Altos Andes, Puna
Yabotí	Selva Paranaense
Mar Chiquito	Pampa
Riacho Teuquito	Chaco Seco
Delta del Paraná	Delta e Islas del Paraná

Otras iniciativas para la designación existen en Argentina para otros sitios[2].

1. La versión completa de esta ponencia se encontrará disponible en http://www.promab.4t.com/index.htm.

2. Recientemente la Secretaría de Desarrollo Sustentable y Política Ambiental (SDSyPA) de la Nación, sede del Comité Nacional MAB ha generado un sitio en su página Web (http://www.medioambiente.gov.ar/mab/) donde puede obtenerse información sobre RBs de Argentina.

PROYECTANDO LA FIGURA DE RESERVA DE LA BIOSFERA: PUBLICACIONES

Se considera la experiencia de producción de publicaciones que ha permitido la proyección de las RBs en diferentes ámbitos, ya sea de la RB como objeto de estudio, como escenario de proyectos de investigación o de acciones de conservación y desarrollo.

En Argentina existe un importante y diverso conjunto de publicaciones sobre RBs e incluso con estudios comparados, posibilitando el acceso a la información y promoviendo la difusión del conocimiento a públicos heterogéneos, aunque dominantemente del ámbito científico.

Dominantemente, se trata de publicaciones que presentan cierta continuidad en un medio exclusivamente dirigido a una comunidad meta de usuarios (científicos) o producciones aisladas dirigidas a fines específicos (periódicos), sin que exista un canal de comunicación activo entre las RBs y los diferentes sectores de la sociedad interesados.

MOVILIZACIÓN DE APOYO EN RESERVAS DE LA BIOSFERA: TENDENCIAS

Ya que la totalidad de las RBs de Argentina han sido impulsadas por los gobiernos provinciales o municipales, ha sido importante el apoyo de recursos humanos e institucional brindado, dentro de las frecuentes limitaciones económicas de las administraciones gubernamentales locales. Actualmente, se están gestionando importantes apoyos económicos para algunas de las RBs.

El apoyo internacional ha sido prioritario en la red argentina, debido principalmente a los subsidios de apoyo brindado por UNESCO y la ORCYT para la creación de las RBs o para la resolución de problemas y por el involucramiento de ONGs internacionales en diferentes proyectos.

Los apoyos han sido de alcance parcial, restringidos en el tiempo y en la mayoría de los casos han financiado aspectos sectoriales de la implementación de una RB.

ARTICULACIÓN INTERSECTORIAL EN RESERVAS DE LA BIOSFERA: TENDENCIAS

Como tendencia principal se observa una amplia participación de los actores gubernamentales, de universidades e institutos de investigación y una escasa participación del sector privado. La misma se verifica principalmente en la etapa de «planificación previa a la designación», ya que estos actores son generalmente los responsables de estudios técnicos y gestiones políticas necesarias para la presentación. En la etapa de «implementación de la RB» se verifica un incremento de la articulación intersectorial con actores como ONGs, comunidades, productores locales, etc. Ello se relaciona con la puesta en marcha de programas, proyectos y actividades específicas.

Se destaca la e*scasa participación de patrocinadores y cooperantes internacionales*, situación que reflejaría inconvenientes en la búsqueda de fondos para el financiamiento de las diferentes actividades en RBs. La reducida participación del sector privado y empresarial a limitados ejemplos, es una restricción que debe resolverse, especialmente cuando una importante superficie de las RBs está bajo propiedad privada.

FORMAS INTERNACIONALES DE PROYECCIÓN DE RESERVAS DE LA BIOSFERA: LAS REDES REGIONALES Y LAS EXPERIENCIAS TRANSFRONTERIZAS EN ARGENTINA

Participación en Redes

A lo largo de la última década, Argentina ha incrementado su participación en las Redes IberoMAB y CYTED, además de su participación en diferentes ámbitos nacionales e internacionales.

La *Red IberoMAB* es la Red Iberoamericana de Comités Nacionales y Reservas de la Biosfera. La misma viene impulsado la consolidación de Comités Nacionales MAB, las actividades de cooperación y la creación de nuevas RBs. Argentina ha participado en las 4 reuniones organizadas por la red IberoMAB. La reunión IberoMAB 6 se celebrará en septiembre/octubre del 2001 en Formosa.

Por otra parte, la Red Temática CYTED ha sido inicialmente creada en el marco del Programa CYTED (Programa Iberoamericano de Ciencia y Tecnología para el Desarrollo) y ha venido contando con su apoyo financiero para fomentar la cooperación y formulación de proyectos entre RBs de países de América Latina, además de Portugal y España. Argentina ha participado en por lo menos 6 reuniones (internacionales y regionales) organizadas por la Red CYTED.

Experiencias transfronterizas

En Argentina se han iniciado varios procesos de cooperación entre RBs transfronterizas o acciones que llevarían a una eventual designación oficial de nuevas RBs Transfronterizas. A continuación se mencionan las principales iniciativas:

- **Corredor Verde Trinacional** (Argentina, Brasil y Paraguay). Corresponde a antecedentes de cooperación entre la RB Yabotí y el Parque Estadual Florestal do Turvo (una de las zonas núcleo de la RB Mata Atlántica).

- **Area Binacional de Conservación Los Pehuenes** (Argentina y Chile). Proyecto impulsado por la provincia de Neuquén en Argentina con la finalidad de implementar una RB transfronteriza conjuntamente con la X Región de Chile.
- **Cooperación entre Reservas de Biosfera Costeras** (Argentina, Brasil y Uruguay). Cooperación técnica sobre temas de monitoreo ambiental entre RBs costeras.
- **Propuestas Transfronterizas de Conservación de Ambientes de Puna y Altoandinos** (Argentina y Bolivia). Corresponde a la iniciativa de crear la RB transfronteriza «Lagos del Cielo» de América.
- **Proyecto EcoAméricas.** Corredor Ecológico en Las Yungas. Proyecto impulsado con el apoyo de la WCS y la UNESCO. Uno de sus componentes es la creación de una RB transfronteriza.

UNA ALTERNATIVA DE PROYECCIÓN INTERNACIONAL: EL BOLETÍN ELECTRÓNICO DE RESERVAS DE LA BIOSFERA

La Oficina Regional de Ciencia y Tecnología para América Latina y El Caribe de la UNESCO (Montevideo) con la cooperación del ProMAB (Argentina) ha planificado desarrollar el Boletín Electrónico de Reservas de la Biosfera. Los objetivos principales son:

- Difundir información sobre RBs, el Programa MAB de la UNESCO y temáticas relacionadas, de manera accesible para los actores involucrados en el ámbito local, nacional e internacional.
- Alentar el uso de tecnologías de la información entre los interesados en RBs, fortaleciendo de este modo el trabajo en Red.

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The Atlantic Forest Biosphere Reserve experience

João Lucilio Albuquerque

I believe that most of you know very well and in detail, the focus of my speech, but I think it would be useful to give you some information about the Atlantic Forest, known in Brazil as Mata Atlântica, and its Biosphere Reserve, which is very peculiar in comparison to others of the Planet.

When the Portuguese arrived, 500 years ago, 1 million sq km of the Brazilian territory, that is to say, more or less, twice the size of Spain, was covered by the Atlantic Forest, which together with the Amazonian Forest form the most significant forest complexes of the American Continent.

The very beginning of the Brazilian colonization was the Atlantic Forest. Since then up to now we have had several Economic Cycles in this region. The first one is known as the 'Pau-Brasil Cycle' which began in 1500. Pau Brasil (*Caesalpina echinata*) is a Brazilian native tree, which gave the name of the Country. The name *Pau Brasil* was given to the tree because of the color of its caulis, which is red, and as the word *Brasil* in Portuguese means the burning coal. This wood was very appreciated and was the glory of the churches and the decoration of European palaces in the 16 th century. This tree is completely extinct species today. This economic cycle has brought about the Non-Planned utilization of the forest, as well as the beginning of its destruction.

Tropical forests, because of humidity and heat, are the ecosystems with the greatest biodiversity on Earth. Among these, the Atlantic Forest is the place

where the highest bio-diversity in the world can be found. In a publication of the New York Botanical Garden and CEPLAC, a Cocoa Agricultural Research Institution of Brazil, it is recorded that about 450 tree species per hectare were found in the Atlantic Forest of the South Bahia.

Due to the great extent of the Brazilian territory, the Atlantic Forest shows different aspects depending on the geographical and climatic region. Brazil is divided in 5 very specific geographical regions; N, Center-West, NE, SE and S. The Atlantic Forest occupies three of them: NE, SE and S, which present great climatic variations from an almost arid to a temperate climate and with great variety of soils and elevations.

It is very important that all the associated ecosystems of the Atlantic Forest are preserved for the future.

After 500 year of non-planned use, less than 4% of the original forest plus 4% of secondary forests remain. This makes the Atlantic Forest the most threatened tropical forest in the world and places it as a priority at the scale of the planet. In spite of all that destruction, the Atlantic Forest is still one of the most significant forests' complex on Earth.

THE ATLANTIC FOREST BIOSPHERE RESERVE

The MAB Biosphere Reserve Concept is a very suitable planning instrument in a country like Brazil.

The Brazilian governmental structure and the Biosphere Reserves

Brazil is a Federative Republic divided into States and Municipalities, with legislative and executive powers very well established for each level of government.

In such a institutional framework, a decentralized system of planning, like the Biosphere Reserves, which in reality is more a concept and a method than a system, can overcome the rigid (strict) Brazilian governmental structure, making it possible to the federal and state governments, the non-governmental organizations and the society to join efforts in addressing the preservation and the sustainable development of the forest.

The MAB zonation

In order to attain the main objectives of the MAB Program, biosphere reserves must have a Zonation based on three major zones, namely:

- **Core Area:** legally protected conservation areas as parks, ecological site, etc.
- **Buffer Zone:** planned zones surrounding the Core Zone to protect them.
- **Transition Area:** where the development of economic activities can be allowed as far as they do not cause great environmental impact on the other two zones.

In Brazil, these different zones occur all over the coastal areas, as well as in some inner areas, including in area with remains of the Atlantic Forest. Hence it has been possible to create a very big Biosphere Reserve consisting in fact of many biosphere reserves, all of them linked into big ones called the Atlantic Forest Biosphere Reserve.

UNESCO designation of the Atlantic Forest Biosphere Reserve

The Atlantic Forest Biosphere Reserve was designated by UNESCO in response to a request of the Brazilian Government in a series of phases, from 1991 to 1992. The Reserve encloses the main remains of the Atlantic Forest Coastal Zone in the country. It also encompasses thee Sao Paulo City Green Belt Biosphere Reserve.

There other existing biosphere reserve in Brazil is the Cerrado Biosphere Reserve and there are currently three projects waiting to be analyzed by the UNESCO. One concerns the enlargement of the Cerrado's Biosphere Reserve (Phase 2); another concerns the Pantanal, and another the Central Amazon.

The Atlantic Forest Biosphere Reserve encloses 14 States from the North East (latitude 2° N) to the South (latitude 33° S), in an area that encompasses 1000 municipalities, covering about 290 thousand km^2 with approximately 80 million inhabitants.

The Atlantic Forest Management Plan

The Atlantic Forest Biosphere Reserve's Management Plan was devised to meet the needs of the MAB Programme to make the biosphere reserve functional and top ensure the preservation of the Atlantic Forest.

The Biosphere Reserve was divided in three Regions – NE, SE and S – and has four segments: Governmental (Federal, State and Municipal), Non-Governmental, Scientific, Inhabitants and Environmental Entrepreneur.

■ *The Council*

The Council is the main institution of the Biosphere Reserve. It has the function of making the

guidelines for the management of the Reserve. It has 36 members, with parity between the government and the civil society. The council has an Executive Secretariat to implement its decisions.

■ ***The Council's Bureau***

This is formed by 16 members elected by the Council to help on decision-making constitute it.

■ ***Pilot areas***

Selected among the best areas in each State, they are the place where 'special projects' are to be carried out with the aim of promoting the knowledge and the practical demonstration of the concepts of the Reserve.

■ ***State Committees***

They are the States management instances, subordinated to the Council, with the function of implementing the Biosphere Reserve in the States. Its constitution involves representatives of the government and the civil society in parity; however, there is no need to be a Council member to take part on it.

■ ***Outposts***

Outposts are diffusion centers of the ideas, concepts programs and projects developed in the Reserve. To be an Outpost it is necessary to be able to develop, at least, one out of the basic actions of the Reserve: conservation, sustainable development and scientific knowledge.

The Atlantic Forest Biosphere Reserve Administration

This Management Plan clarifies the principles and the strategies of the Reserve's administration.

Principles

- Articulation/co-operation/partnerships,
- National approach,
- Participation and decentralization,
- The Atlantic Forest's preservation, restoration, conservation and sustainable development,
- Continuity and permanent monitory of the forest.

Strategies

- Parity and decentralized Management Plan,
- Guidelines actions – Pilot Areas and Outposts,
- Political and institutional enforcement, communication and environmental education.

Strategic lines

- Integration and institutional enforcement,
- Public Policies,
- Atlantic Forest remains' protection,
- Recuperation and restoration of degraded areas of the Atlantic Forest,
- Scientific and technical development,
- Empowerment and training,
- Environmental education,
- Economic and financial resources.

The Atlantic Forest National Council

With very few financial resources, the Council is now developing and managing projects and programmes in the Atlantic Forest area.

These programmes and projects are always developed in technical and economical partnerships with national and international governmental and non-governmental institutions.

The Council has been developing efforts in order to achieve that the Brazilian Government budget for the Atlantic Forest Preservation. It has been developing efforts also for the opening of both, internal and external credit for the Atlantic Forest.

Projects and Programmes

The Projects and Programmes developed by the Council include:

■ *Forestry resources of the Atlantic Forest*
The main objective of the project is to roll the forestry resources produced by the economic exploration, which has a significant economical impact in the local and the regional levels; it analyzes also the way of management of that exploration.

■ *Water and forests*
The main objective of this project is to promote the conservation and the recuperation of the natural resources in hydrological basins.

■ *Ecotourism*
The main objective is to promote the sustainable development of the Atlantic Forest, as well as, of its local communities through the correct ecological tourism.

■ *Brazil's biosphere reserve consolidation programme BRA-MAB*
The main objective is to consolidate the Biosphere Reserves of Brazil as management and political instruments to implement the concepts of the MAB Program.

The Component Atlantic Forest is developed through 4 projects:

- Institutional Enforcement
- State Committees Implementation,
- Pilot Areas of the Atlantic Forest Biosphere Reserve Guidelines Projects,
- Atlantic Forest Yearbook.

■ *International Programmes*
- Brazil/Uruguay Programme at Mirim Lagoon to protect the water and the vegetation of the site. The partnership in Uruguay is carried out by the Bañados del Este Biosphere Reserve.
- 1st Mercosul Biosphere Reserves Meeting. Realized by the Council in partnership with the UNESCO Uruguay and the Environmental Ministry of the Brazilian Government.

■ *Communication and environmental education*
Publishing books, posters, folders, making videos and promoting exhibitions with the aim of implementing the conservation of the Atlantic Forest.

Working group 2: Raising visibility, mobilizing support for the World Network of Biosphere Reserves

Moderator: Juan Antonio Menéndez Pidal (Spain).

Speakers in round table

Projects in biosphere reserves: Baptiste Noël Randrianandianina (Mananara Nord Biosphere Reserve, Madagascar); Driss Fassi (Arganeraie Biosphere Reserve, Morocco); Heorhi Kazulka (Belovezhskaya Pushcha Biosphere Reserve, Belarus); Claudio Daniele (Argentinean Biosphere Reserves); Joao Albuquerque (Mata Atlântica Biosphere Reserve, Brazil).

Support for biosphere reserves in the Redbios sub-network: Juan Antonio Menéndez Pidal.

After a short introduction in which the Moderator recalled the main recommendations of objective IV.2: 'Strengthen the World Network of Biosphere Reserves of the Seville Strategy', the meeting started with short presentations of projects in biosphere reserves. Case studies were presented from Mananara Nord Biosphere Reserve in Madagascar, Arganeraie Biosphere in Morocco, Belovezhskaya Pushcha Biosphere Reserve in Belarus, Argentine Biosphere Reserves, Mata Atlântica Biosphere Reserve in Brazil. The support for biosphere reserves in the Redbios sub-network was also explained.

For the Malagasy and the Moroccan biosphere reserves, it was reported that substantive amount of financial and logistic support has been provided in the last years, particularly from UNDP, the World Bank, the Global Environment Facility, and from French, German, Dutch and Italian Co-operation. Responsible authorities were now in the process of taking over the management of project activities, particularly the conservation parts. Local NGOs would take over activities in the development or transition area. Twinning with other biosphere reserves, particularly in the North, would help to sustain educational activities.

The representative of the Belarus Biosphere Reserve emphasized the transboundary aspect of the Biosphere Reserve with Poland which thus received strong support from GEF and which had established agreements with Denmark, the Netherlands and United States of America. These efforts were seen as particular important to link nature conservation efforts from former Soviet Union countries with Western European countries and opened therefore an East/West dialogue.

The participants from the Argentine and Brazilian biosphere reserves also stressed multinational aspects of some biosphere reserves with neighbouring countries such as Bolivia, Chile Paraguay and Uruguay. Both countries explained their active participation in the World Network of Biosphere Reserves through new nominations and extensions of already established biosphere reserves. In Brazil, GEF projects have been established and nowadays the Government is giving high visibility to biosphere reserves through a project on consolidation of the existing sites. Finally, with the help of the MAB Committees of Latin America and with the involvement of experts, an electronic newsletter and a database would be created in the UNESCO

Montevideo Office. This initiative would bring together all available information on MAB Committees, biosphere reserves and on general MAB-related issues in the region and would thus increase considerably the visibility of the Programme by providing easy access to all available data through the Internet.

The last speaker reported on the origin and the development of the REDBIOS sub-regional network. He pointed out the many differences between the participating countries, as there are four languages (French, Arabic, Spanish and Portuguese), the continental and island realms, the European, and the African and the Arab regional aspect. The main linking point in this network was the biosphere reserve approach. This common approach helped to overcome all the above-mentioned differences. Support for this initiative was coming until present from Spain and Germany, but a GEF project was under preparation and would hopefully soon provide support to the project activities.

Due to lack of time, only a short discussion was possible after the presentations. Main interventions concerned communication of 'good projects', reinforcement of well functioning sites and the possibility of 'discarding' non-functional biosphere reserves. One participant suggested to shorten the periodicity of the periodic review.

The role of regional networks was stressed as well as the need to communicate better to local stakeholders. Other interventions considered principally international and national funding, visibility, the publishing of success stories, including through the MAB Digest series. The creation of a MAB award for success stories was encouraged. The need to publish in local languages was stressed as well as the opportunity to raise visibility for biosphere reserves by presenting the network through international congresses and events, such as the up-coming IUCN World Parks Congress in 2003.

Furthermore, the need to designate clearly who was doing what with the recommendations was suggested, in order to identify responsible actors. As biosphere reserves should also be economically viable, the aspects of generating income for local population of a biosphere reserve in developing countries was emphasized.

Recommendations

- National authorities and the regional networks should create regional or sub-regional information mechanisms via electronic bulletins, printed material, as appropriate with the support of the UNESCO Regional Offices.

- At the site and the national level, projects for donors involving biosphere reserves, using models such as GEF/Belarus, GTZ/Morocco, the Netherlands/Madagascar, should be prepared with, as appropriate, the logistic support of the Secretariat. The Secretariat is invited to prepare guidelines on how donors should be approached.

- Reinforce evaluation mechanisms by using the regional and thematic networks as appropriate.

- Site and national authorities should develop mechanisms to increase awareness of biosphere reserves.

- Site and national authorities should utilize new technologies to publish success stories.

- Site and national activities should increase NGO participation to assist in fund raising and in establishing links among biosphere reserves.

WORKING GROUP 3: BIOSPHERE RESERVES FOR *IN SITU* CONSERVATION OF GENETIC RESOURCES AND REHABILITATION/ REINTRODUCTION OF SPECIES

Experience from Mexican biosphere reserves

Sergio Guevara Sada

You will agree that the basic questions of human knowledge are how the universe came into being and developed, and how life emerged and evolved. On the subject of the universe, I will make no comment. On the subject of life, however, I would point out that these questions can only be answered through an understanding of biological diversity, which is undoubtedly the only real means within our reach of understanding the nature of life itself.

We shall also agree that humankind, since its origins, has sustained its biological and social development by making use of the biodiversity to hand, a factor which will doubtless continue to play its part in the future for a long time to come.

For these two reasons, knowledge, conservation and restoration of biodiversity are the highest priorities for human society, on a regional, national and world scale.

Knowledge and conservation of ecosystems, species and genetic diversity have focused the attention and inspired the substantial efforts of a large number of scientists throughout the world, as well as those of numerous governmental and private organizations which have devoted themselves over the last four decades to the protection of natural areas in regions considered to warrant priority.

The various models of conservation have developed according to the resources, needs and threats prevailing in each country or region. Thus, methods and models of protected natural areas have emerged which, to a greater or lesser extent, have yielded favourable results both for conservation and for our state of knowledge of biodiversity.

Among all these conservation models, the biosphere reserve stands out as the most versatile, the most appropriate, the most widely accepted and the most widespread in all countries. As a result, biosphere reserves safeguard a greater wealth of ecosystems, species and genetic diversity than any other form of protected natural area thus far.

Conservation is a race against the advance of urban development and industrial agriculture. The result of this race, after four decades of effort, is considerable growth and spread of protected natural areas in every country and region of the world. Despite this encouraging result, the range of protected

natural areas remains insufficient to represent the diversity of the planet's natural systems, especially in countries or regions of greater biological diversity or megadiversity.

We are convinced of the importance of continuing this race to conserve natural areas in the years to come. However, we must be aware that with each day that passes it will become more difficult to compete with humanity's need to consume natural resources as the human population grows.

It is essential that we go beyond this situation and the efforts we have expended thus far. We must be more creative and more daring, and we must make more intelligent use of that knowledge of biodiversity that we have gained, in order to strengthen and enrich our present conservation strategy with new tactics that will place conservation of biological diversity ahead of the production goals that we have diligently pursued for the last 40 years.

To achieve this, we must reflect on a few crucial issues concerning conservation and the knowledge of biodiversity:

- Natural areas designated for conservation are increasingly isolated and threatened by an environment of considerable deforestation, by the proliferation of increasingly large human settlements and by adverse economic and social conditions.
- It is becoming more difficult day-by-day to find natural systems spread over a wide area, because of the growing deterioration of the environment caused by the destruction of plant cover and by limitations imposed by human society.

This leads us to ask:

- Can protected areas continue to be preserved in the long term, or will the erosion of biodiversity around protected natural areas cause them to lose their effectiveness through contact with cultivated areas?
- To what extent will the drive to pursue conservation create conflicts between scientists, government agencies and the social and industrial environment?
- How far can knowledge of biodiversity help this kind of conservation?

These are simple questions, but important ones if we are to evaluate the results achieved and to determine a strategy for the next hundred years. In this context, I should like to call your attention to some other points of interest in this discussion:

- The widespread deforestation of temperate and tropical ecosystems, caused by the removal of plants and animal life and by the consumption of land and water, has surrounded native species with fragments of natural vegetation of varying size and imprecise shape, scattered over wide areas of agricultural land. These are fragmented landscapes, likely to be biologically impoverished and difficult to restore.
- Physical conditions have changed over time all over the world. The interaction between humankind and nature has been both intensive and extensive for many thousands of years, and all this has decisively influenced the distribution of species and the structure and functioning of ecosystems.
- Ecosystems are heterogeneous. They are composed of distinct, contiguous structures in which species are distributed over a variety of environmental registers.

All of the above leads us to ask once again:

- Is it through ignorance that we are disregarding the biological diversity of fragmented landscapes?
- Do the structure and dynamics of fragmented landscapes facilitate the understanding of ecosystems and the knowledge of biodiversity?
- Are not fragmented landscapes ideal scenarios for science and society to meet for purposes of conservation?

MEXICAN BIOSPHERE RESERVES

Let me give you a simple example of what I have been talking about, in the form of a recently designated biosphere reserve in Mexico. Mexican biosphere reserves have increased considerably in the last six years, both in number and in the area they cover. Today, Mexico has 26 nationally designated biosphere reserves with a total surface area of almost 100,000 km^2 (9,298,913 ha), equivalent to 69% of all our protected natural areas. These reserves are distributed over the whole country, and help to conserve arid and semi-arid ecosystems, pine and oak woodlands, mangrove swamps, tropical rainforests and temperate woodlands.

One of the most recent biosphere reserves to be designated at the national level is the Los Tuxtlas biosphere reserve, an area of tropical rainforest on the coastal plain of the Gulf of Mexico, in the south of the state of Veracruz. This region is emblematic of humid, tropical Mexico, the theatre of Central American development, the utopia of the colonial era, and a product of the model of post-revolutionary Mexican development. This reserve is a landmark of conservation and understanding of biodiversity in Mexico. I will explain why.

LOS TUXTLAS BIOSPHERE RESERVE

The Los Tuxtlas mountain region was one of the

earliest conservation dreams of the Mexican scientific community. Since the end of the 1960s, ecologists and taxonomists have gathered to carry out research projects and studies that, over the years, have resulted in a vast accumulation of data. This has made Los Tuxtlas one of the best-known regions in Mexico.

This prolonged activity and extensive knowledge of the region became the driving force behind the aim of conserving the ecosystems of Los Tuxtlas.

A lost cause, since the forest was besieged by the pasturelands, which proliferated in low-lying areas and on level ground. It found a means of escape up the steep hillsides as far as the tops of the volcanic peaks, sought refuge in small hollows and took cover in inhospitable, inaccessible rocky gulleys, having shrunk to almost nothing.

Today, Los Tuxtlas is dominated by a fragmented landscape, islands of forest in a sea of grass, tiny fragments condemned by the theory of the biogeography of islands to disappear without trace. However, the experience and knowledge built up over the years as a result of countless research projects, and the determination of a few scientists, yielded a new vision: that of saving the forest from outside the forest.

This vision implied a change in how the landscape and its fragmentation were perceived, making scale the crucial factor in defining the features of the landscape and revealing which fragments of forest were connected with one another and with the surrounding pasturelands.

The mountains of Los Tuxtlas mark the northern limit of the rainforest of Central America, and today form their last bastion on the coast of the Gulf of Mexico. It is imperative that we conserve what remains of the forests of this region, in spite of its acute deforestation and fragmentation.

Originally, a great diversity of animal and plant species was spread over the length and breadth of the coastal plain of the Gulf of Mexico in the states of Veracruz and Tabasco. However, deforestation has limited their distribution, so that the only thriving populations of these species remaining are those in the Los Tuxtlas region.

Scale and connectedness

Let me show you the importance of using the right geographical scale to perceive and understand this fragmentation process. At a scale of 1:250,000 (as in satellite images), all that can be seen are large fragments surrounded by vast areas of emptiness.

If we change to a larger scale, 1:75,000 (as in aerial photography), we can detect an infinite number of elements and tiny fragments.

If we now attend to what might be called the minimum fragment of the forest, i.e. the single tree, we find that the ecological processes operating in its shade are similar to those of the forest. These are mechanisms by which propagula emerge, seed and fruit are dispersed, banks of seed are formed in the earth, seeds germinate and woody and tree species are established in the forest.

We have proved that this landscape exhibits considerable biodiversity, similar to the original one, that elements of the landscape were not isolated and mutually unconnected, that the ecosystem retains its own resilience, i.e. its capacity to regenerate forest conditions in deserted areas, and, lastly, that the pattern of the landscape is able to reproduce itself and sustain itself for its long-term management and conservation.

Design of the reserve

The recently designated Los Tuxtlas Biosphere Reserve is fundamental to the conservation of the biodiversity of the mountains and coastal plain of the Gulf of Mexico. The protected area covers 155,000 ha, and includes three core areas totalling 30,000 ha in which rainforest and mountainous temperate woodlands are well conserved.

The core areas are surrounded by a broad buffer zone of 125,000 ha, which extends as far as the coast and includes dispersed forest vestiges consisting basically of jungle and, on a lesser scale, mangrove, pine and oak, in locations with low agricultural potential.

The maintenance of local biodiversity, and with it that of the assistance of ecosystems and the natural regenerative potential of jungle and other types of forest vegetation, depends on the existence of larger expanses of woodland and on the interconnection of the surrounding fragments which remain. This interconnection process is complex. However, identifying key landscape elements, which we propose should be those trees left standing in cultivated fields and the vegetation which grows along water courses, will make it possible to design a connected landscape with a real flow of individuals and genetic information from fragment to fragment of the forest.

This concept of connectedness must govern the management of the territory around the core areas and specifically in the buffer zone, where productive activities must correspond to the intended design of the landscape, in order to preserve the biodiversity of the mountain region as a whole.

CONCLUSION

The conservation of natural areas and that of fragmented areas, the two not being mutually exclusive, are complementary activities. The inclusion

of fragmented landscapes could result in a conservation model for the twenty-first century which conceives of nature as a set of fragments scattered over wide areas whose limits are determined by technical and scientific management capabilities and the participation of society.

Fragmented landscapes show the capacity of species, populations and ecosystems to adapt to different patterns of short- or long-term disruption. This could be the key laboratory for an understanding of the role of biodiversity in the structure and functioning of ecosystems.

The connectedness of landscapes demonstrates the inherent capacity of the system to conserve genetic diversity, and to rehabilitate and reintroduce species into abandoned areas and into its own fragments.

This means that, besides being a good way of conserving biodiversity over wide areas, it brings substantial advances in our knowledge of biological diversity, its distribution, its capacity to resist disruption and its ability to recolonise deserted areas.

In situ conservation of biological resources: Examples from Egypt

Mohammed Ayyad

Two experiments were carried out, one in each of the two biosphere reserves of Egypt, aiming at:

- the conservation of plant genetic resources;
- rehabilitation of ecosystems which have been degraded due to wood-cutting and overgrazing;
- providing sources of income for local inhabitants and furnishing additional resources for grazing animals in the regions of the two reserves.

Three major criteria were applied for selection of plant species to be propagated in the sites of the two biosphere reserves:

- on the basis of current information, the species concerned were becoming more rare or were endangered due to the impact of anthropogenic activities; and therefore an effort is needed for in situ propagation of these species as a means of their conservation;
- that the species would be endowed with the ability of sand fixation (perennial grasses and woody shrubs) with the objective of using them to play a role in rehabilitating degraded ecosystems;
- that the species would be of economic benefits to local inhabitants as sources of food, fuel and medicine; multipurpose species would have a priority;

Seeds of each of the selected species were collected from its different populations within the range of its distribution in Egypt, in order to ensure the genetic diversity in its propagation in the biosphere reserve. Laboratory and field tests were carried out on breaking seed dormancy, germination and seedling establishment. The established seedlings were transplanted under two different conditions: a) in plots within the wild vegetation stands of the biosphere reserve, and b) in field plots nearby the settlements of local inhabitants. Reseeding natural plots were also applied for the species that proved to be more easily germinated and established.

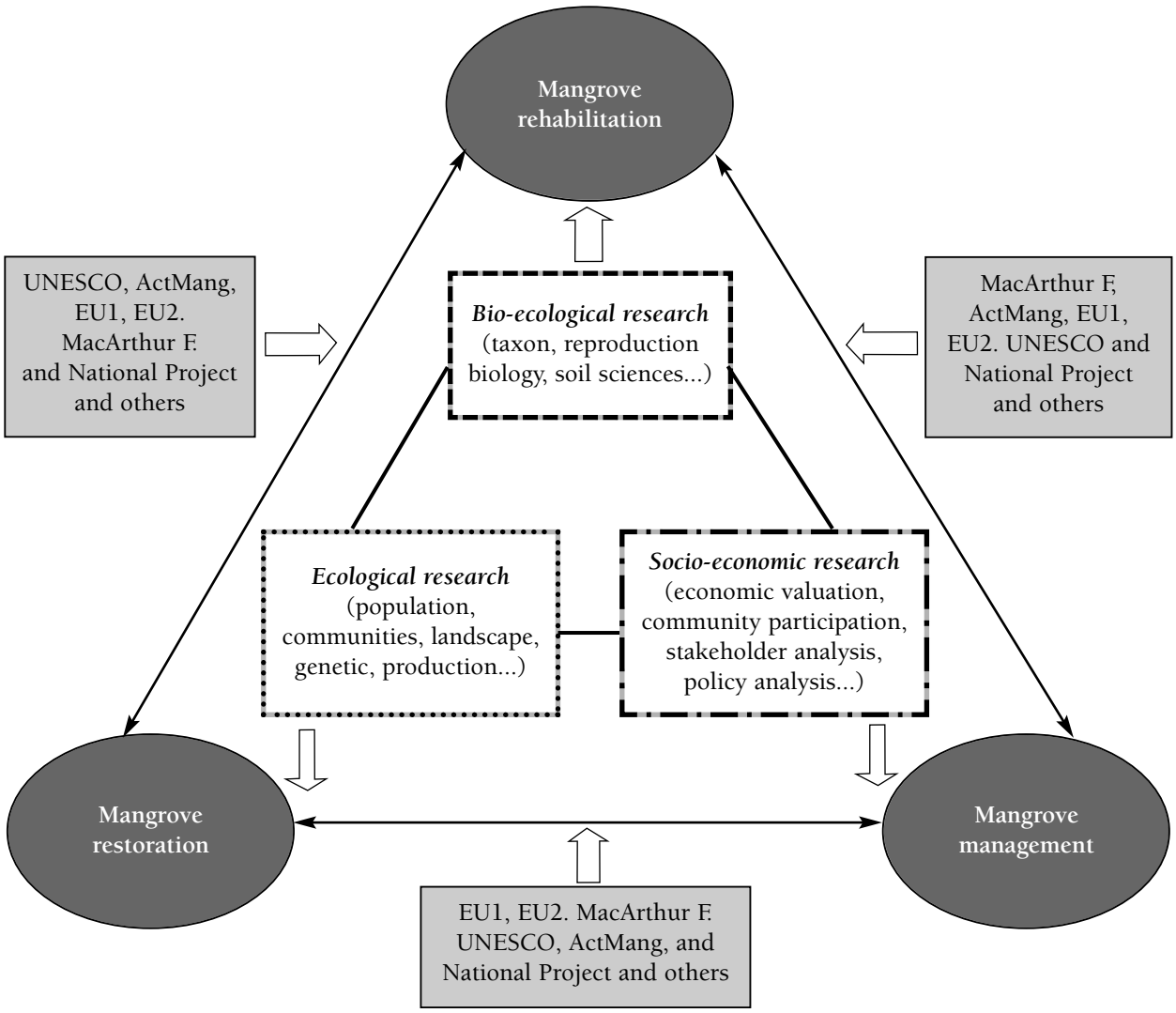
Monitoring of the establishment of species in the experimental plots was carried out and the results were encouraging for a good number of species.

These experiments represented an educative and training experience that can be built upon for more successful and wider application. Larger scale application based on the experience achieved so far is therefore being planned for.

A recommendation is extended to the MAB International Programme to adopt a project on the rehabilitation of degraded ecosystems with a basic element of the propagation of multipurpose species that can play a major role in this respect.

Scientific research as a key factor of successful rehabilitation, restoration and management of mangroves in Can Gio Mangrove Biosphere Reserve, Ho Chi Minh City, Vietnam

Major points to be presented in Seville + 5 Meeting by The Vietnam MAB National Committee



Notes:

- UNESCO Funded Project on 'Establishment of Can Gio Mangrove Biosphere Reserve and Biosphere Reserve Network Initiative for SEA' 1998–99.
- UNESCO Funded Project on 'Valuation of the Mangrove Ecosystem in the Can Gio Mangrove Biosphere Reserve, HCMC' 1999–2000.
- National Project on 'Building the Strategy of Wetland Protection and Management 2000–2020' 1997–1998.
- National Project on 'Research on Biodiversity of Mangrove Ecosystems' 1995–2000.
- MacArthur Foundation Funded Project on 'Comparative Research Studies and Training for Sustainable Planing of Vietnam's Coastal Areas', 1996–99.

- EU1/Vietnam-EU Project on 'Environmental Assessment of Mangrove Restoration as a Means of Improving Coastal Protection Stability and Fisheries Production' 1994–96.
- EU2/Vietnam-EU Project on 'Prediction of The Resilience and Recovery of Disturbed Coastal Communities in The Tropics (SEAsia)', PREDICT, 1999–2002.
- Oxfam America Funded Project on 'Establishing Silvo-Aquatic Models in the Mangrove Forests of Can Gio District, HCMC for Improved Family Income and Environmental Protection' 1995–97, and Actmang: The Japanese Action for Mangrove Reforestation.

Conserving 'agrobiodiversity' in the White Carpathians Biosphere Reserve (Czech Republic)

Ivana Jongepierova and *Eva Jelinkova*

PROTECTING LOCAL FRUIT CULTIVARS IN THE WHITE CARPATHIANS

The White Carpathians (*Bile Karpaty*) Biosphere Reserve is an area of hills and uplands on the border between the Czech Republic and Slovakia.

It was designated a UNESCO Biosphere Reserve in 1996 for its biodiversity, in particular for the extensive species-rich orchid meadows and near-natural deciduous forests. Old orchards and solitary fruit-trees also form an indivisible part of the White Carpathian countryside. Although the old fruit varieties are well adapted to local conditions and often resistant to certain diseases – therefore not needing chemical treatments – they are gradually disappearing and being replaced by modern cultivars.

MAPPING

Since the beginning of the 1990s much attention has been paid to local fruit varieties of the region and their preservation.

Firstly, two experienced and motivated local fruit specialists were involved and they started searching for local genotypes in the southern part of the White Carpathians, called *Hornácko*. The location of each find was recorded on maps (scale 1:10,000) and data such as name, site, condition, age, size, etc. were put into a computer database.

This way over 270 interesting trees were selected. From 1994 to 1997 the central part of the area called *Moravské Kopanice* was mapped out, and from 1996 to 1997 also the northern part (*Valašskoklobouckо*) received similar attention. The mapping of local fruit varieties (cultivars) still continues.

So far, altogether more than 600 trees of apple, pear, cherry, plum and *Sorbus domestica* (local name *oskeruse*) have been documented.

GENEBANK

In 1991 a genebank orchard was founded in the National Nature Reserve *Zahrady pod Hájem* near the village of *Velká nad Velickou*, where the detected local cultivars have been grafted and cultivated. At present, the three-hectare area comprises over 450 trees, mostly pear, apple and plum. There are plans to set up similar orchards in other parts of the Biosphere Reserve. The aim is not only to preserve the old cultivars, but also to repatriate them eventually to villages and to the countryside by using them in the restoration of line-elements, building of biological corridors, planting of new orchards.

Their qualities also make them very prospective in ecological farming. In autumn 2000 the first 1500 seedlings were sold to interested private persons and local communities.

ECONOMICS, PROMOTION

The fruit-tree project also pays attention to fruit processing (so far producing mainly juice and dried fruit) and to marketing of these products. This aims at offering the local people an economic motivation to co-operate and eventually support local economies.

Another indispensable part of the project is its promotion among the people in the White Carpathians and other regions. In past years several conferences, field excursions and fruit exhibitions

have been organized. In addition leaflets, a booklet and posters have been published.

The project is supported by four NGOs – three of them are local groups of the Czech Association for Nature Protection and the fourth is a regional association 'Traditions of the White Carpathians'.

MEADOW MANAGEMENT IN THE WHITE CARPATHIANS

Man-induced species-rich meadows are one of the specific features of the White Carpathians. In the past, thousands of extensively managed ha were mowed or grazed once a year, almost without fertilization. The socio-economic situation has changed since the time before the World War II when small landowners were taking care of their meadows and harvesting hay.

Both intensive management on one side and abandonment of the meadows on the other side cause significant changes in species composition and the decline of biodiversity. Land-use and management changes and resultant micro- and mesoclimate and biodiversity changes have been studied here by different scientific institutions that co-operate with the administration of the biosphere reserve. Recommendations of steps to be taken are therefore based on an in-depth analysis of the ongoing processes of degradation and restoration of the meadows.

There is good experience with involving the local population (private people, NGOs, former collective farms) in voluntary actions aimed at restoration and close-to-the-traditional management of species-rich meadows in the core zone of the Biosphere Reserve.

Within a project prepared in co-operation with an NGO and local farmer, several people in the northern part of the Biosphere Reserve 'adopted' a sheep. The constituted flock enables the restoration of an old type of management practized here: mowing in summer followed by grazing in autumn.

For the restoration of species-rich grasslands, the seed of local meadow species and varieties was collected by school children and then supplied to local farmers who now produce and sell seed mixtures for application when turning arable land into grassland.

Working group 3: Biosphere reserves for *in situ* conservation of genetic resources and rehabilitation/reintroduction of species

Moderator: Mr Sergio Guevara Sada (Mexico).

In addition to the plenary introduction by Mr Sergio Guevara (Mexico), the working group heard presentations by Mr Nguyen Hoang Tri (Vietnam), Ms Eva Jelinkova (Czech Republic) and Mr Mohammed Ayyad (Egypt).

The working group recalled that biosphere reserves originated from MAB Project 8 on the 'conservation of natural areas and the genetic resources they contained'. The Seville Strategy reiterated this concern in Objective 1.2 on the 'use of biosphere reserves for the *in situ* conservation of genetic resources, including the wild relatives of cultivated and domesticated species' and 'as rehabilitation/reintroduction sites, and link them as appropriate to *ex situ* gene banks'. Biosphere reserves are excellent sites for the conservation and study of genetic resources, since they incorporate core areas which serve as pools of genetic diversity, cultural landscapes where domestic species and wild crop relatives are found, and sometimes offer degraded ecosystems for experiments in rehabilitation.[1] Biosphere reserves provide the framework for co-ordinating the work of local communities, scientific institutions and NGOs to ensure a long term commitment to these tasks. Today, these concerns are of international importance, as recognized by the Convention on Biological Diversity. Hence biosphere reserves have a new role to meet these challenges.

1. Here the term 'rehabilitation is used in a wide sense. 'Degraded' ecosystems include those with invasive species.

Recommendations

- Biosphere reserve co-ordinators should contact their scientific committees/associated local scientific institutions to inventory the potential of their biosphere reserves as *in situ* gene pools of wild and/or domestic species, especially as complements to *ex situ* gene banks, in consultation with IPGRI and FAO. Biosphere reserve co-ordinators should ensure that the size and zonation of the biosphere reserve should be revised as appropriate to meet these special conservation needs.

- The scientific committees of biosphere reserves should set up projects on conservation and/or rehabilitation of genetic resources. Local NGOs and community interest groups can often provide the initial support and workforce – however such projects should engage the support of government authorities and national science foundations to ensure the projects long-term sustainability and economically viable livelihoods of the populations concerned.

- Whenever appropriate permanent plots should be established for the monitoring the progress in these projects and to provide viable primary data for the local, national and global scientific community.

- Biosphere reserve co-ordinators should use the WNBR to facilitate exchanges of experience in such projects, for example through the regional networks, web sites, the MABnet.

- The MAB ICC, to the extent it adopts international research projects, should consider a project on the rehabilitation of degraded ecosystems in different ecological regions, as a contribution by biosphere reserves to the scientific underpinning of the multilateral environmental agreements, *inter alia* the Convention on Biological Diversity, the United Nations Convention on Combating Desertification and the United Nations Framework Convention on Climate Change. Internationally important regions for such an international research project, could include:
  - arid lands, focused on the use of multi-purpose species;
  - tropical rain forests, based on reconstitution of forests from forest fragments;
  - temperate zones, using traditional cultural landscapes and remnants of ancient forests mangrove systems.

WORKING GROUP 4: BIOSPHERE RESERVES AS MODELS OF LAND MANAGEMENT AND APPROACHES TO SUSTAINABLE DEVELOPMENT

Experience in Spain

Ignacio Ballarín Iribarren

INTRODUCTION

It is almost a *cliché* that biosphere reserves are not, as their very name may sometimes lead those unfamiliar with the MAB concept to think, just another kind of protected natural space, but that they correspond to a much broader and ambitious concept: in sum, that of serving as models of approaches to sustainable development models capable of harmonizing the conservation objectives of both natural and cultural resources with those of socio-economic development.

Certainly, back in the distant seventies when the MAB programme began its activities, this approach presupposed something of a conceptual revolution which progressed in its own good time, so that we had to wait almost until the end of the eighties, when people began to talk about 'eco-development' (especially at the Earth Summit in Rio de Janeiro in 1992 with its Agenda 21), for the concept of sustainable development, which lies the very heart of the different characteristics of biosphere reserves, to become a universally accepted concept. People thus began to look for a way which would go beyond the approaches adopted hitherto, which had imposed policies sector by sector for a practically uncontrolled kind of development, and which confined conservation to narrow declarations of protected natural spaces conceived as 'bubbles' or glass containers isolated from the grave degradation of their general surroundings.

However, as was evident at the international conference held in Seville in 1995, the conclusions of which ought now to be revised, biosphere reserves spread contagiously in line with those trends, in such a way that in some of them the 'human factor', to which the MAB programme makes such express reference, was scarcely present at all, so that biosphere reserves could thereby be assimilated to other protected spaces, where all that was defined was a core area subject to strict protection, and, at the most, a buffer zone around or before it, where certain traditional activities with low environmental impact were permitted.

As we shall attempt to demonstrate in this paper, in the five years which have passed since that time, and following the recommendations of the

Seville Conference, considerable efforts have been made to achieve general progress from those 'first-generation reserves' to today's 'second-generation reserves', often thanks to their inclusion in broader transition areas containing human populations and economic activities. This progress has enabled them to match the initial definition of the concept and to serve as models for approaches to sustainable development and with a view to their subsequent dissemination.

The concept of sustainable development has been most elegantly elaborated, culminating in the definition of the Brundtland Report drawn up by the World Commission on Environment and Development in 1987, which conceived of it as 'development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs'. This implies a number of principles that must be applied in entirety, for example the 'precautionary principle', which calls for the adoption of measures to avoid certain development activities having potentially negative repercussions on the environment, even in cases where no cause-effect relationship between the two has yet been fully proven. Another very important principle is that of 'participation' of society in sustainable development, which starts from the belief that sustainable development can only result from a social 'pact', as referred to in key direction No. 8 of the Seville Strategy, whose success is principally guaranteed by the participation of the social actors involved in decision-making and by their appropriating this model.

These and other principles, indicate how complex are the factors that must be taken into account for the success of a sustainable development model in a given territory. But in order to demonstrate that these are not merely theoretical or academic ideas, please allow me to share with you some concrete examples from the experience of biosphere reserves in Spain where these criteria are being applied in practice.

THE SIERRA NEVADA BIOSPHERE RESERVE

An example of restoration of natural resources

As well as some well-preserved specimens of natural ecosystems, the Sierra Nevada reserve includes large areas that have suffered severe degradation as a consequence of processes of destruction of resources in the past. In concrete terms, these are mountainous areas near the Mediterranean where the combined effects of ploughing up the hillsides, over-pasturing and forest fires, repeated over the centuries, have caused considerable loss of topsoil and serious damage to plant cover. In such conditions, which are of course common to most mountain areas of the world, biosphere reserves constitute an ideal place in which to test, on the basis of pre-existing scientific knowledge of the flora and natural vegetation of the site, models for the restoration of plant cover which make it possible to reverse erosion processes and gain tangible benefits from species of this kind, the whole with the active participation of the local population. This is what is currently happening under the direction of Professors Francisco Valle and José Algarra in the framework of the LUCDEME project (fighting the advance of desertification in the Mediterranean lands) of the Spanish Ministry for the Environment, an interesting project to restore plant life using mainly species of scrub and other botanical resources from the extremely rich flora of this reserve (where more than 2,000 species have been identified) which, in addition to its function of reclaiming land and preventing erosion, could produce sustainable benefits in the form of lumber, wood, fibres, textiles or fruit, natural inks, condiments, herbal teas and vegetables, leathers, fodder, natural insecticides and cosmetics, as well as aromatic and medicinal plants such as honeys and their derivatives.

The cultivation, rather than their uncontrolled harvesting, of these native plants growing in marginal soils, thus generates employment and wealth in these semi-arid regions, where it constitutes an alternative with which traditional agriculture cannot compete, and one which slows the advance of desertification and the population drain from such regions.

THE URDAIBAI BIOSPHERE RESERVE

The importance of participation

Although the participation of local inhabitants is an element common to the management of all Spanish biosphere reserves, it is perhaps in the Urdaibai reserve in the Basque country that local participation has been taken to a higher level of organization. Indeed, the high population density of this reserve (22 municipalities totalling 45,000 inhabitants, to whom should be added tens of thousands of visitors, particularly from the nearby city of Bilbao, all in a relatively small area of 22,000 ha) has stimulated the introduction of the participative mechanisms under discussion. Thus, the management of the reserve is defined by a governing plan for its use and management (PRUG) and a plan for the harmonization and development of socio-economic activities (PADAS), drawn up following direct, open and active participation of around a hundred representatives of the reserve's stakeholders, both public and private. The plans may be considered as a real, local

Agenda 21 for the entire reserve. These plans have been implemented through five future projections, 10 strategies, 22 action plans and a hundred or so proposals for socio-economic development. This entire collection of initiatives is continuously controlled by a monitoring committee which supervises their due execution.

THE MONTSENY BIOSPHERE RESERVE

An example of an active policy to promote sustainable development on the part of the public authorities

In this Catalan reserve, situated at medium altitude in the mountainous area straddling the Atlantic and Mediterranean biogeographical regions, whose sparse population is mainly devoted to primary-sector activities (agriculture, cattle-breeding and traditional forestry activities), the authorities involved in the management of the reserve have opted for a determined policy of subsidizing only those agrarian or traditional smallholdings which have proved to be compatible with the general objectives of environmental conservation. In this way, they have succeeded on the one hand in compensating the inhabitants for the limited benefits the reserve is able to provide and, on the other, in reversing the dynamic of rural depopulation which was to a large extent linked to the low economic yield of smallholdings of this kind and to the lack of financial resources on the part of local inhabitants with which to secure the continuity of their operations. Indeed, human population within the reserve has increased by 13.8% in the last five years, a much greater rise than the population increase of 0.5% for Catalonia as a whole.

Another series of public subsidies has been directed to the promotion of service businesses: restaurants, camp sites, country guesthouses and other tourism services, thus strengthening this economic sector, which also receives decisive support from the tourism 'brand image' provided by its designation by UNESCO as a natural park and biosphere reserve. It is also very closely related to the entire infrastructure of equipment and services for the use of the public which the management of the reserve has put in place and which must be considered as essential assets of the tourism sector.

For this Montseny Biosphere Reserve, may I point out, as its Director, Jordi Soler-Insa has done, that the biosphere reserve's very existence and the way in which it is managed have contributed, thanks to active investment policies and financial support from certain private-sector activities which are considered to be sustainable, to the strengthening of development processes, especially those related to the gradual move towards a service-based economy and closely linked to adding value to the natural and cultural resources of the reserve. All in all, this has played and continues to play a core role as a motor for the sustainable development of this region.

THE CASE OF THE ISLANDS OF MENORCA, LANZAROTE, LA PALMA AND EL HIERRO

Plans for integrated sustainable development and sectoral plans

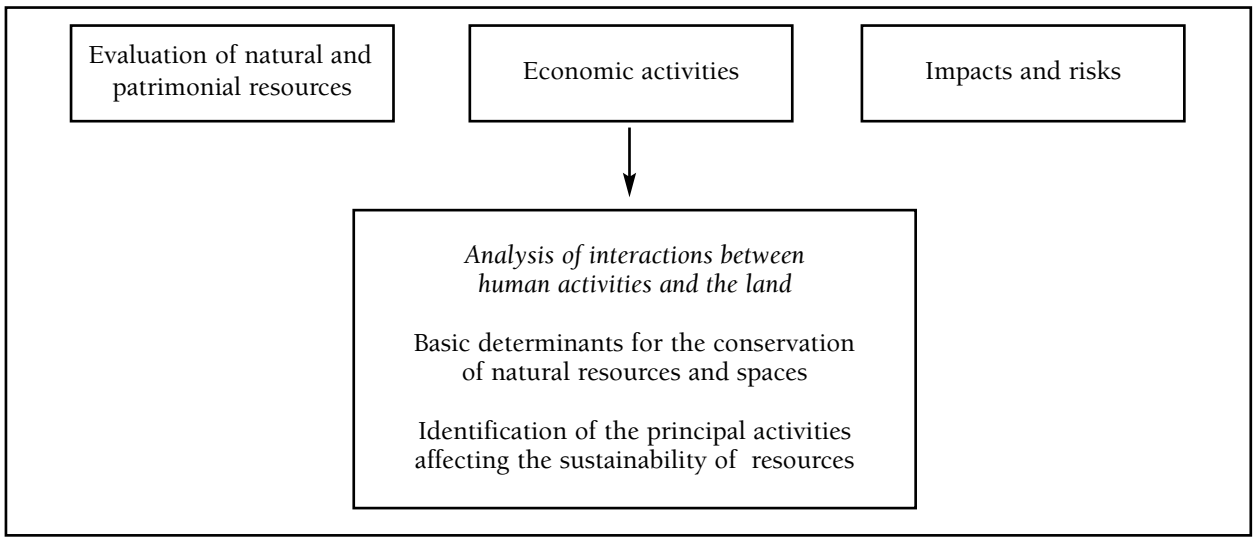
Although several Spanish reserves have made plans for integrated sustainable development, it is probably in the case of those biosphere reserves including island territories that planning has reached its most advanced level. This may be closely linked with the known fact that islands are places where the need to impose reasonable limits on unchecked growth is probably more obvious to local inhabitants, so that it is possible to achieve a form of economic development in which priority is given to qualitative variables over and above merely quantitative parameters, and so that growth can be harmonized with the conservation of often fragile and unique national and cultural resources.

The integrated sustainable development plans for the biosphere reserves of Menorca, Lanzarote, La Palma and El Hierro have similar characteristics. They include on the one hand an analysis of the situation and an inventory of resources, uses and activities, pinpointing risk factors and impacts. On the other hand, they identify the various parts and sectors of the programme (e.g. water resources, tourism, architecture and landscapes) and define a set of horizontal and logistical measures (e.g. telematics services; education and awareness building) before finally defining orientations for action that will constitute the operating plan for sustainable development as a final conclusion of the entire process.

The complexity of the sustainable development plan makes it necessary to break it down into a series of sectoral operating programmes, in which objectives and measures to be taken are identified in detail for each sector previously identified. An example of a sectoral sustainable development plans, which is currently being executed in the El Hierro Biosphere Reserve, is given as an illustration beside.

LOS TILES BIOSPHERE RESERVE

An example can also be given of a project on local sustainable development in the Los Tiles Biosphere Reserve (La Palma) where new communication



EL HIERRO BIOSPHERE RESERVE
Sectoral Operating Programme for Energy: initiatives, projects, demonstration actions, accompanying measures

Orientations	*Actions*
100% renewable projects Island of El Hierro	Completion of a project for a 100% renewable electricity supply based on a mix of wind- and water-driven systems. This is the first energy project to be developed in Europe with these characteristics and on this scale. Phases: Finalization of project documents. Installation of the wind park and the water-driven system.
Alternative modes of transport	Public transport with minimal energy consumption. Electric vehicles as storage system for the wind- and water-driven system.
Reducting impact of power lines	Programme to move power lines underground. Identification of sensitive areas. Burying or camouflage of low-voltage lines in rural settlements and in town centres.
Programme of energy efficiency and saving	Good practice guidelines for domestic consumption, industry, transport and . tourism. Passive systems and traditional building methods.
Renewable energy applications in isolated places	Pilot plan for biogas, photovoltaic and solar-generated electricity (ACS) in rural tourism, stand-alone systems in remote places. Thermal solar energy systems in traditional buildings.
Aqua-energy	Accumulation of energy surpluses (renewable energies project) in the form ofdesalinated water and electric transport
Awareness building, promotion and training	Energy agency Identification of funding mechanisms Assistance and creation of local small and medium enterprises in the energy sector

Note:
The commitment which the island of El Hierro has decided to make in favour of renewable energies (water- and wind-driven) in its reserve should be emphasized, as should its project to cover 100% of the island's consumption through these clean energies at some time in the future.

Local sustainable development project

- Exploitation of new technologies to facilitate access to distant markets, using the image of the biosphere reserve.
- Establishment of an electronic-commerce system.
- Adaptation of local products and services to wide-area distribution channels.
- Needs: design of an electronic commerce system oriented towards business (B2B) and consumer targets (B2C), and deployment of the logistics necessary for marketing activity.
- Duration: 12 months.
- Budget: 10,500,000 pesetas (63,106.27 euros).

technologies are used to derive greater value from local goods and services.

Note: in the age of the Internet, biosphere reserves cannot remain at the margins of the Web, and Internet can be highly useful for the electronic promotion and sale of products characteristic of biosphere reserves, thus contributing to its sustainable development. This is what the La Palma Biosphere Reserve is currently planning.

TOURISM AND SUSTAINABLE DEVELOPMENT PLANNING

Tourism is the main economic activity of most of our island biosphere reserves. Sometimes, it so outstrips other activities that some economists speak of 'touristic monoculture'. Indeed, if one studies a list of main tourist destinations, it can be seen that relatively small island territories such as the Balearics and the Canaries are highly important tourist areas in comparison with other regions of the world. In addition, the massive inflows of tourists are concentrated into very short periods of the year, essentially in the summer months of July and August.

Tourist destinations: millions of arrivals (in absolute figures)

Caribbean	14.4
Portugal	9.5
Greece	11.0
Balearic Islands	9.0
Canary Islands	9.0

In the Balearic Islands and the Canaries, there are some 85,000 beds of which 18,000 (22%) are in hotels. The majority of tourists come from Britain, Germany, and also from Spain itself. In terms of uses and activities, the 'beach/sun' segment predominates. Some risk factors and negative impacts which need to be addressed are: decline in the quality of accommodation; dispersion of supply of accommodation and basic facilities; absence of guidelines and criteria for use in natural spaces and sensitive areas; and aggressive infrastructure. As a consequence, *strategies for sustainability of resources* have been elaborated which take account of the following factors:

- Plan for the ecotouristic quality of the destination;
- Plan for quality of lodgings;
- Development of new, sustainable tourism products;
- Diversification of supply of accommodation;
- Development of the network of centres for understanding;
- Limiting of growth in the number of beds; improvements in quality;
- Codes of conduct for tourists, tour operators, hoteliers and service providers;
- Information systems and sensitization to questions of nature and heritage;
- Cost-reduction and rationalization programmes: water, waste, energy.

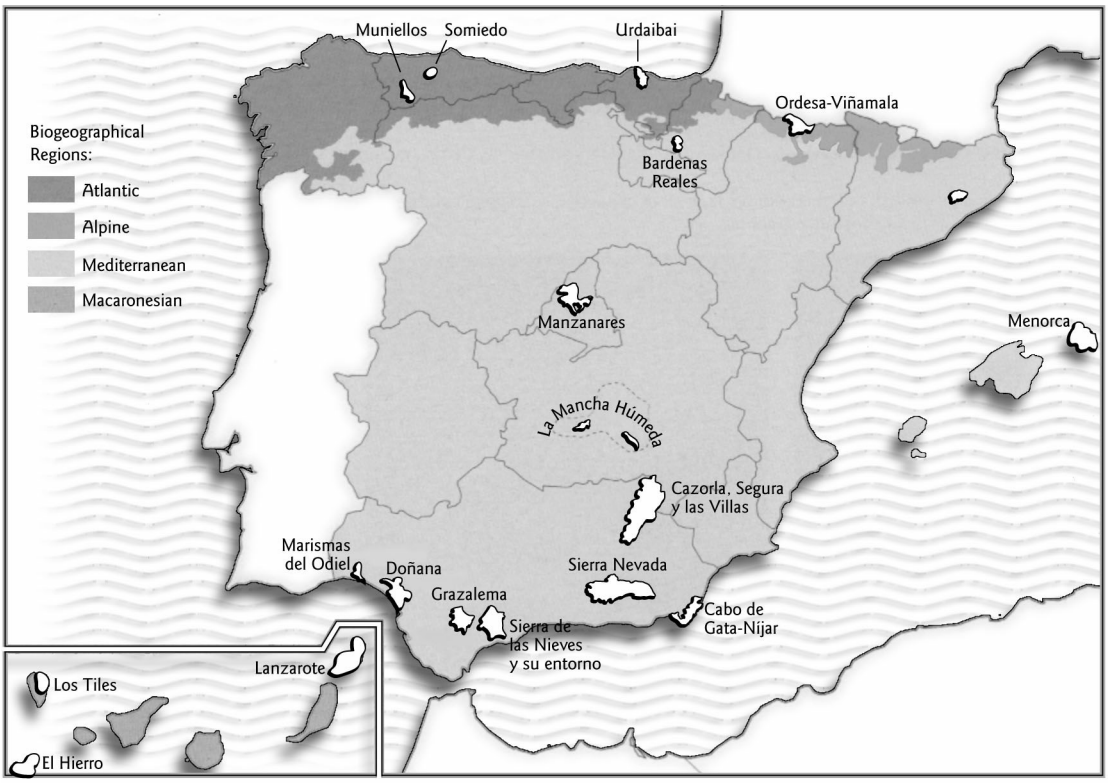
The experience of biosphere reserves such as those on the islands of Menorca (Balearics) or Lanzarote (Canaries) are very interesting. Here, by means of a long and complex process of social debate, the local population itself and, most importantly, representatives of the hotel sector, have placed quantitative limits on the growth in the supply of beds and have thereby opted for a model of sustainable tourism in which quality outweighs quantity, and where conservation of the landscape and of natural and cultural resources appears not as a curb on development but precisely as an economic resource of the greatest importance.

It is essential to monitor sustainable development and land management plans to evaluate their effectiveness and adapt as necessary.

CONCLUSION

We have tried to share with you some of the ideas, approaches and experience which, from the Spanish point of view, biosphere reserves have to offer as models for land management and sustainable development. Although we are only at the beginning of this road, the experience gained from these biosphere reserves enables us to demonstrate that reconciling development and conservation, which constitutes the core philosophy of the MAB programme, is not some unworkable utopia but rather something which can be made a concrete reality. Biosphere reserves are without a doubt the ideal laboratory in which to prove this.

Location of Biosphere Reserves in Spain



Utilization of biosphere reserves as models of land management and approaches to sustainable development: A case study of Amboseli Biosphere Reserve, Kenya

Joseph M. Mburugu

INTRODUCTION AND HISTORICAL BACKGROUND OF AMBOSELI BIOSPHERE RESERVE

Amboseli Biosphere Reserve is today a remnant of the 27,700 km^2 established in 1906 which held a predominant position in the history of wildlife preservation in Kenya. This reserve was reduced to 3260 km^2 in 1948 and was given the name of Amboseli National Reserve and placed under the administration of the National Park Trustees. In 1961, the same area became a country council Game Reserve administered by Kajiado County Council.

In 1971, due to the realization of the unique values of Amboseli, and the need for more intensive management, a Presidential decree was issued declaring that an area of 392 km^2 be set aside exclusively for wildlife and tourism. Subsequently, Government Notice Number 264 of 1972, set apart land for National Park purposes.

In 1991, Amboseli Biosphere Reserve (ABR) was accepted by UNESCO-MAB bureau as the fifth Biosphere Reserve in Kenya.

Zonation of Amboseli Biosphere Reserve

The three distinct zones of ABR are:

- Core area (Amboseli National Park): 39,206 ha,
- Buffer zone: 244,000 ha,
- Transitional zone: 200,000 ha.

The total area covered by the ABR is 483,206 ha.

Amboseli Biosphere Reserve management problems

During the workshop on Geo-information for Resource Management of the Amboseli Biosphere

Reserve held from 29th April to 3rd May 1991 in Nairobi/Amboseli; causes and effects of problems were identified and a problem tree was constructed highlighting crucial management problems such as human/wildlife conflicts, overgrazing, tourist pressure on animals and conflicts over scarce resources such as water among others.

Amboseli Biosphere Reserve management strategies

In order to address the above mentioned problems, which lead to degradation of the overall ecology of the reserve, an integrated management approach which takes account of the whole of the Amboseli ecosystem was recommended.

This paper addresses the strategies that have been employed in the reserve to achieve the integrated management approach. The strategies discussed focus on securing the support and involvement of the local people and integrating the Amboseli Biosphere reserve into regional planning in accordance with the objectives 11.1, 11.2 and 11.3 of Seville Strategy respectively.

SIGNIFICANCE OF ABR IN CONSERVATION OF BIOLOGICAL DIVERSITY AND SUSTAINABLE USE

Article 2 of the Statutory Framework states that the World Network constitutes a tool for the conservation of biological diversity and sustainable use of its components, thus contributing to the objectives of the Convention on Biological Diversity and other pertinent conventions and instruments.

The conservation of Amboseli Biosphere Reserve core area contributes to the conservation of landscapes, ecosystems, species and genetic variation.

The ABR is a home for 79 species of mammals, 8 species of amphibians, 20 species of reptiles and 425 species of birds. A total of 628 plant species have been recorded in ABR of which 121 species are of medicinal values.

Support and involvement of local people

The Kenyan wildlife authorities realized the need to involve the local people in the management of the biosphere reserve in order to solicit their support. The key to ABR's viability therefore revolves around the good will of the surrounding Maasai population who should get tangible benefits from conservation of natural resources. The core area is too small covering only 392 km^2 which cannot support the wildlife populations throughout the year. The buffer and transition zones are necessary for the support of the migrating wildlife during the dry season.

The ABR buffer zones is comprised of four main group ranches, which include: Olgulului, Kimana, Mbirikani and Selenkei.

In order to identify priority development community projects within the above group ranches and transitional areas it was necessary to involve the local people in the identification and planning process. This process was carried out through Participatory Rural Appraisals (PRA). PRAs were important tools for the local people to identify their own priority projects and to suggest implementation strategies.

Some of the activities implemented so far for the purposes of securing the support of local people include:

- establishment of Kimana Community Wildlife sanctuary and Selenkei Wildlife conservation Area. These sanctuaries are managed by the local communities who derive direct tangible benefits through tourism. For instance, Kimana Wildlife Sanctuary generates over 7 million Kenya shillings per year;
- leaving the Kitiriwa Wildlife Concession area in its natural condition with the consent of the local people to allow visitor satisfaction by viewing wildlife within an undisturbed eco-unit;
- support to the local Maasai communities to develop tourist facilities such as campsites, lodges and cultural villages within the buffer zone;
- environmental education and training through seminars and workshops have been implemented amongst the local communities within the ABR with a view to creating awareness and enhancing skills in environmental management. So far two national seminars and one workshop have been held.

Land use mapping and planning

i) A vegetation map was produced showing the various vegetation types in the ABR.
i) A map showing wet and dry season wildlife dispersal areas was prepared.
iii) A water supply system map within the ABR was prepared.

These maps were meant to demonstrate resource distribution and offer opportunities for alternative land-use activities that are compatible with sustainable use of natural resources.

Problem animal control measures

In order to minimize human wildlife conflicts within the ABR barriers such as electric fences were constructed with the support and participation of the local people.

Medicinal plants study

The local people were fully involved in the identification of medicinal plants within the ABR. The study identified 121 plant species.

Water resource development projects

This has been developed with funding from Kenyan Wildlife Services (KWS) with the objective of providing the community with alternative water source outside the core area. The water is pumped from the core area for a distance of about 90 km. Borehores and dams were also rehabilitated.

Benefit sharing programme

A benefit sharing programme was initiated by KWS with the aim of sharing gate entrance fees for purposes of school fees, construction of cattle dips and dispensaries among others,

Monitoring and evaluation

The local people have been involved in the monitoring and evaluation of their development activities with a view to ensuring economically and sustainable income generating approaches that do not degrade the environment.

INTEGRATION OF AMBOSELI BIOSPHERE RESERVE INTO REGIONAL PLANNING

Internationally conducted programmes like the UNESCO/MAB programme with its many participants and partners are crucial for the exchange of information and networking. Seminars, workshops, conferences, research and training courses, exchange and collaboration programmes are all meant to enhance and facilitate networking. In this case UNESCO/MAB programme is the basic unit in information exchange required for integration and regional planning.

The following activities with a regional outlook have been implemented within the Anglophone countries :

- Four regional seminars/workshops were held during the Biosphere Reserves for Biodiversity Conservation and Sustainable Development in Anglophone Africa (BRAAF) project duration. The first was held in Kenya at Amboseli Biosphere Reserve in 1995, the second in Uganda in 1996, the third in Ghana in 1997 and the fourth in Tanzania in 1998.
- The participants of AfriMAB Technical Workshop for Anglophone countries held in Nairobi Kenya, from 12–15 September 2000 visited Amboseli Biosphere Reserve where they witnessed the progress made in implementing the Seville Strategy, objective 11.2 which recommends 'better harmonization and interaction among the different biosphere reserve zones' and in particular recommendations 3 and 4 at the individual site level.

At the ABR site level the following activities have been implemented:

- A strategic plan for the buffer zone ranches was organized covering the period 1997–2002.
- A local conservation association namely, Amboseli/Tsavo Group Ranches Association was formed.
- Workshops under BRAAF projects demonstrating environmental problems and sustainable use of biological resources were conducted.
- Environmental Impact Assessment for Kimana Wildlife Sanctuary was conducted. The report was very instrumental in soliciting for donations to establish the community wildlife sanctuary.
- Environmental impact assessment for the Kimana/Namelog Electric fencing project was completed and the project was implemented with funding form the European Union.

CONCLUSIONS AND KEY RECOMMENDATIONS

- Biosphere reserves should have clear objectives on which zonation and management actions are based.
- Long-term monitoring/intervention plans on which the management actions/corrective measures should be based.
- The three main functions of a biosphere reserve i.e. conservation, development and logistic support, should be used as a model of land management and approaches to sustainable development.
- The use of local information system, where applicable, is recommended as tools for land management and approaches to sustainable development.
- An integrated management plan for effective management of a biosphere reserve is recommended.
- The involvement and participation of local people in sustainable resource management and development is paramount and could be assured through participatory rural appraisals.
- Sound national and regional planning should be based on well researched and documented information.
- Networking at local, national, regional and international levels should be enhanced.
- Establishment of transboundary biosphere reserves where they do not exist, like in Africa, should be explored.

- Develop basic principles defining stakeholders' participation in zoning and management of the three zones.
- Explore ways of encouraging exchange of information within resource users with biosphere reserves, with emphasis on the need to respect all forms of knowledge, especially indigenous knowledge.
- Explore alternative economic opportunities with biosphere reserves and develop an inventory of all the economic activities and their potential risks.

It is finally recommended that a possibility of establishing a Transboundary Biosphere Reserve be explored given that tremendous opportunities exist and there is no such a reserve currently in Africa. Potential areas in Kenya include: Amboseli/Kilimanjaro, Maasai Mara/Selengeti, Mount Elgon ecosystem in Kenya and Uganda.

Tonle Sap Biosphere Reserve, Cambodia: Management and zonation challenges

Neou Bonheur

INTRODUCTION

The Tonle Sap Lake is one of the largest freshwater lakes in Southeast Asia, located in the central floodplain of Cambodia territory. The unique hydrological regime of Tonle Sap Lake is characterized by the annual flow of the Mekong waters into the Lake basin during the wet season, which increases the Lake's water level by 1 m to 8–9 m. Consequently, the Lake's area increases from 2,500 km^2 to about 10,000 km^2, with the water volume varying from 1.3 billion m^3 to 70 billion m^3 respectively. This hydrological cycle supports and maintains a high biodiversity, particularly fish, plant communities, and wildlife, which are the resource bases for the national economy. Nearly half of the population of Cambodia depends on the Lake's resources: about one million people live in fish dependent communities. Tonle Sap Lake plays a vital role in Khmer cultural identity, which is reflected in the traditions, livelihoods, and festivals. It is believed that the Khmer Angkor civilization and many temples could not prosper without the rich natural resources of Tonle Sap Lake as sources of wealth. Evidence of cultural influence of Tonle Sap Lake can be found in the bas-relief of the Bayon temple.

Recognizing the ecological, economical, and socio-cultural value of the Lake, the Royal Government of Cambodia decided to designate the whole Tonle Sap Lake as Biosphere Reserve under the Man and the Biosphere Programme of UNESCO in October 1997.

TONLE SAP BIOSPHERE RESERVE ZONING

Based on present land use, vegetation cover and biological hotspots, the Tonle Sap Lake is divided into three core areas, a buffer zone and transition area.

- **Core areas:** are located in Prek Toal, Boeng Tonle Chhmar, and Stoeng Sen. The three core areas are characterized by preserved flooded forests, a rich river system and rich biodiversity. Nearly one hundred waterbird species are found in the areas, a dozen of which are considered of international significance. Besides rich fish stocks, the areas are known for wildlife species such as crocodile, turtle, macaque, capped languor, otter, water snakes (including python and king cobra). The areas are currently used mainly for fish production, wildlife hunting, and firewood collection. The total population living inside the three core areas is about 2,000, mainly in Boeng Chhmar core area.
- **Buffer zone:** is covered largely by flooded forest with high biological productivity, especially fish. The area is divided into fishing concessions, which are auctioned every two years to private businessmen. Competing land use practices are agriculture, human settlement, navigation, firewood production, aquaculture. The population is about 100,000.
- **Transition area**: is the agricultural belt surrounding the Lake, where rice farming is practiced. Rapid urban and agricultural devel-

opment, with increased use of pesticides and fertilizers in the area , pose a threat to the flooded forest and water quality.

MANAGEMENT CHALLENGE FOR TONLE SAP BIOSPHERE RESERVE

Core areas

In the biosphere reserve context, the core area usually corresponds to a national park or wildlife sanctuary, where conservation and protection are the priority. However, the core areas of Tonle Sap Biosphere Reserve are demarcated within the concession areas (called fishing lots), which are auctioned to the private sector. This is no doubt contradictory to the conservation policy for the core areas. However, the present Cambodian economic and institutional conditions do not allow translation of the policy into immediate practice. In the case of the core areas of Tonle Sap Biosphere Reserve, conservation programmes would have to be introduced step by step along with fishing lot practices without causing feelings of rivalry with and among the stakeholders concerned. The first step will be to elaborate a legal and institutional arrangement, which enables relevant government agencies to work together in a co-ordinated and co-operative manner. Meanwhile more research and monitoring activities will be conducted to build knowledge for proper decision-making. The following risks have been identified:

- When the fishing lot system is allowed within the core area as stated above, there is a fear of disputes or uneasy working relationship between the fishery department and the conservation department. The fishing lot owners may be reluctant to co-operate with the conservation team because of short-term economic interest.
- The research and monitoring activities may be hindered by limited access to the core area during the fishing operation. The results of research or monitoring efforts produced by the conservation team may not be accepted by the fishing lot owners or the fishery department.
- It may take a long time before consensus is reached between the government agencies involved and before an integrated management plan incorporating conservation regulations and fishery law will be adopted.

Buffer zone

- The buffer zone is divided into two: the flooded forest and the open lake. Fishing concessions are the major form of 'land use' in the buffer zone. Because of the seasonal flooding, some parts of the buffer zone are also used for farming such as dry season rice, lotus plantation, mung bean, vegetables and other crops. Conflicts between stakeholders over land use often occur, because of the lack of inadequate land use policy or integrated management.
- Fishery law is the dominant legal instrument for natural resource management in the buffer zone. The current fishery law has not been changed for nearly century and is now too old to address the emerging problems such as environmental change, population increase, and development and conservation needs.
- Uncontrolled trade with neighbours and a poor market system add pressure on Tonle Sap Lake's natural resources, especially fish and wildlife.
- Inequitable sharing of the resources is causing conflicts among stakeholders. Most of the rich fishing grounds are granted to concessionaires for exclusive fishing rights (fishing lots), leaving only small areas with poor fish productivity for local community to earn a livelihood. The fishing lot boundaries are demarcated without regard to traditional rights of local communities. To fulfill their basic needs, people exploit other resources including wildlife and forests and practice farming, all of which contribute to the reduction of fish stocks. Some fishermen illegally fish in the fishing lots, which result in conflicts with fishing lot owners. With the general population increase, the diminishing fishing stock for the local population risks further worsening the standard of living, causing social unrest and instability.
- Unclear land tenure arrangements are another issue within the buffer zone. Because of the seasonal flooding, the same area is subject to different land use, namely fishing in the wet season and rice or upland crop farming in the dry season. The alternate use-cum-ownership with no sense of responsibility can easily lead to a tragedy of the commons. Indeed, during the short period of use-cum-ownership people try to maximize benefits by over-exploiting resources, knowing that the resources will be transferred to another owner.
- The low education level and poor social organization of local communities are the main obstacles for promoting community-based management of resources. No committee or association has been established representing the interest of a group or stakeholders. The reason is not only the lack of capacity of the community itself, but also the lack of support from the government. Capacity building and appropriate

technical support are required if community-based management is to function in the long run. The community should have the skills to plan resource development, equitable resource sharing, financial accountability, conflict resolution, resource control and monitoring. At the same time efforts should be made to empower communities in decision-making.

Transition area

- Land encroachment for agricultural purposes from the transition area into the buffer zone poses serious threats to flooded forest, and the fish stock of the Lake. Moreover, intensive agricultural production would lead to the increase in fertilizer and pesticide use, reducing in water quality.
- The majority of people living in this zone are subsistent farmers with an average land holding of about 1–2 ha. These farmers also rely on the lake's resources and traditionally migrate to the buffer zone during the dry season for firewood collection, wildlife hunting, and fishing to meet their own needs after the rice has been harvested.
- Lack of environmental consideration and poor co-ordination among government agencies and provincial authorities may lead to uncontrolled development such as logging, irrigation, dam construction, agriculture, navigation facilities, infrastructure, factories, oil and gas exploitation around Tonle Sap region, which would have adverse effects on the lake's ecology.

ONGOING EFFORTS

Legal issues

A draft royal decree for Tonle Sap Biosphere Reserve has been developed as a legal basis for the implementation of the biosphere reserve concept. The critical elements of the draft decree are the formulation of directions and management framework for each zone, an inter-ministerial co-ordination body, and institutional arrangements for implementation. The draft decree is still under discussion by an inter-ministerial working group. The major points of the draft decree are the following:

- The core areas are defined conform to a national park or wildlife sanctuary, which are devoted to long term protection and conservation of natural resources and ecosystem, in order to preserve flooded forest, fish, wildlife, the hydrological system, and natural beauty. Scientific research, monitoring, and ecotourism are allowed here in the core areas. Activities that would cause degradation and destruction of biodiversity are not permitted.
- Fishing lots within the core areas of Tonle Sap Biosphere Reserve shall continue to function in accordance with the Fishery Law, while the fishing lot owner must be committed to the long-term conservation objectives as defined above. These fishing lots are then subject to a periodic review every four years in order to develop a viable management plan that allows fishing lot functioning in a complementary manner along with the protection and conservation objectives of the core areas.
- The buffer zone surrounding the core areas is covered by flooded forest of a variety of species. Activities are managed to be consistent with the protection and conservation plan of the core areas. Fishery activities and other development plans will be managed based on existing law and regulations in a co-ordinated and co-operative manner. The buffer zone is also subjected to experimental research on methods for the management of flooded forest, fishery, agriculture, housing settlement, land use, and navigation to ensure sustainability, increased production, while preserving the environmental quality.
- The flexible transition area is the integrated economic zone, which is managed for sustainable agriculture, human settlement and land uses, without having adverse effects on the flooded forest, water quality and soils of the region around Tonle Sap Lake.

Institutional arrangement

The most difficult elements of the Tonle Sap Biosphere Reserve concern the allocation of responsibility among different agencies, especially between Ministry of Agriculture and Fishery and Ministry of Environment. According to the last version of draft decree, the Ministry of Environment should be the leading agency in the preparation of protection and conservation plan for the core areas, while the buffer and transition zones are managed according to line-agencies.

Inter-ministerial co-ordination

The Technical Co-ordination Unit for the Tonle Sap (TCU) has been working since its establishment in 1996 to promote and develop the Tonle Sap Biosphere Reserve. Based on this co-ordination mechanism, it has been proposed under the draft royal decree to create a secretariat (or sub-committee) for Tonle Sap Biosphere Reserve under the Cambodian National Mekong Committee (CNMC), which would further promote co-ordination at the decision making

level. The major task of this secretariat is to co-ordinate with all stakeholders for involvement in the management of Tonle Sap Biosphere Reserve, to facilitate adoption of a strategic policy towards sustainable development, and to play a facilitating role in conflict resolution. The secretariat through CNMC would also help build partnership with regional bodies such as MRC for incorporation of Tonle Sap Biosphere Reserve into regional planning.

Incentives for conservation and sustainable use

Some initial activities, including identification of community natural resources use, participatory workshops, and conservation of critical resources have been undertaken at the provincial and local level. In one of the communities living adjacent to the Prek Toal, core area alternative economic activities have been developed – with the help of credit schemes – in aquaculture, animal raising, and ecotourism. The aim is to encourage local communities to embark upon alternative options (although there are not many) and opportunities that are more environmental friendly and economically viable than harmful activities such as forest cutting and waterbird hunting. Successes have been achieved, e.g., waterbird hunting and forest felling have been significantly reduced in Prek Toal Core Area. According to three year census, the number of important bird species increased significantly. This in turn offers opportunity for ecotourism promotion. Ecotourism has been initiated by the TCU and a local NGO since 1999, and already brought additional income to the local population. The potential of ecotourism could in the future challenge the traditional fishing practices, once services, infrastructure and a management plan are in place.

CONCLUSION

The Tonle Sap Biosphere Reserve nomination is endorsed by almost all government agencies, but obstacles still exists. Preparation of legal and institutional frameworks is the first priority to guarantee long-term promotion and development of the Tonle Sap Biosphere Reserve. Although difficulties are encountered at this step, the establishment of the inter-ministerial working group signifies the interest of the concerned agencies for consensus building and further co-operation. Meanwhile, successes have been achieved at the local level in the involvement of local community in the conservation, research, and wise management of selected area – Prek Toal Core Area. The success of Tonle Sap Biosphere Reserve also depends on the ability to build partnership with key stakeholders, particularly in fishery and agriculture, on devising management regimes incorporating key factors of sustainability concepts, including social, cultural, economic, and environmental factors. If the royal decree passed, the next plan would be concentrated on the development of an integrated management plan for the core areas, incorporating biodiversity conservation and improved management of fishing lots, in combination with the exploration of opportunities for ecotourism. In addition, research and monitoring programmes, environmental awareness programmes, community empowerment and the promotion of wise stewardship will continue.

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Las reservas de biosfera argentinas como modelos de gestión del territorio y de desarrollo sostenible: potencialidades, obstáculos, tendencias

Alicia E. Toribio

Los lineamientos y objetivos de la Estrategia de Sevilla apuntan, precisamente, a ampliar la eficacia de las Reservas de Biosfera, como un *modelo de gestión* que promueve al mismo tiempo la conservación y el desarrollo sostenible, que puede extenderse a contextos y problemáticas que trascienden el campo específico de ellas mismas y de las áreas protegidas.

Sin embargo, en la mayoría de los casos, para la Argentina y algunos otros países latinoamericanos, las reservas de biosfera están lejos de desempeñar este papel; subsisten aún problemas y limitaciones de diverso carácter, que dificultan y retardan su efectiva implementación y funcionamiento y por ende, la posibilidad de extensión de sus objetivos.

La interdisciplinariedad que reclama lo ambiental no es todavía, en el caso de las reservas de biosfera, una práctica habitual en las actividades de investigación que deben sustentar las tres funciones complementarias que le son inherentes. Tampoco lo es la participación de las Ciencias Sociales en los estudios básicos y aplicados que a tal efecto deben realizarse, situación de la cual derivan no pocas dificultades para hacer viable la estrategia multifuncional que les es propia. La situación marginal que tienen en ellas las Ciencias Sociales resulta contradictoria o incongruente con la noción misma de Reserva de Biosfera.

Para examinar el grado de ajuste que el desarrollo de la gestión de las Reservas argentinas mantenía en relación con algunos de los objetivos y recomendaciones de la Estrategia de Sevilla, el Comité MAB Argentino, a través de su área técnica, la Unidad de Coordinación del Programa MAB (UCPMAB), desarrolló el proyecto denominado *Investigación interdisciplinaria en las Reservas de Biosfera,* con apoyo del Programa de Participación de la UNESCO, entre enero de 1999 y junio de 2000. En el proyecto participaron investigadores, gestores y académicos principalmente de Argentina y México. Su objetivo principal fue contribuir a promover la reflexión sobre las causas de las dificultades en la concreción de estudios interdisciplinarios en las reservas de biosfera. El proyecto consideraba estas dificultades como obstáculos significativos en el cumplimiento de la Estrategia de Sevilla en relación con las recomendaciones de integrar las reservas en las políticas y proyectos de desarrollo regional y en los programas nacionales y regionales de investigación científica –vinculando esas actividades de investigación en las políticas nacionales y regionales de conservación y desarrollo sostenible– y de aprovechar las reservas de biosfera para la investigación básica y aplicada, especialmente en problemas locales y proyectos interdisciplinarios que incorporen tanto las ciencias naturales como las sociales (Objetivo Principal II.3 y Objetivo Principal III.1.7 y 8).

En la primera etapa de desarrollo del Proyecto, la realización del Taller para la Revisión Periódica (junio 99) brindó insumos y determinó una reorientación más marcada hacia el tema de la investigación interdisciplinaria, pues se observó que, aún en aquellas reservas cuyos resultados eran más satisfactorios, el conocimiento aparecía sesgado, parcializado y todos los casos, respetando sus particularidades, evidenciaron la necesidad de integrar los aspectos sociales a los conocimientos de base y el papel estratégico del conocimiento social para hacer viable la estrategia de conservación con desarrollo, esencial a estas áreas.

PRINCIPALES RESULTADOS

- Las reservas de biosfera se muestran como especialmente aptas para permitir avances en el conocimiento y en la aplicación del conocimiento pero su potencialidad es difícil de concretar porque:
  - como sitios privilegiados de investigación, no son adoptados institucionalmente por los centros de investigación dependientes de las Universidades o del Consejo Nacional de Ciencia y Técnica, ni aparecen específicamente incorporadas en las políticas nacionales de investigación;
  - las políticas y los mecanismos de promoción de la investigación (incentivos, subsidios, becas) están predominantemente orientados a la investigación individual y no al trabajo en equipos;
  - en las reservas existentes, la falta de estudios sociales básicos y proyectos interdiscipli-

narios ha impedido concretar acciones de desarrollo sustentable, ya que no se parte de un diagnóstico completo ni se posee el conocimiento necesario para facilitar la participación social, y esto determina un círculo vicioso que atenta contra la legitimación del conocimiento social.

- Para desarrollar la investigación interdisciplinaria, es necesario elaborar metodologías adecuadas. Ellas asumen una forma interactiva de diálogo entre disciplinas. En el proceso previo de definir un marco teórico e ideológico, se sientan las bases para la producción del conocimiento teórico y aplicado sobre la problemática ambiental y para facilitar su transferencia a los organismos de gestión.

- Es conveniente que los proyectos de reservas de biosfera se integren a otros proyectos o programas de carácter regional o nacional y abarcativos de diversas temáticas, lo que, por el momento, se ha dado incipientemente.

- En lo que hace a la gestión ambiental en general, el concepto de Reserva de Biosfera ha ayudado a transformar el concepto de Áreas Protegidas en uno más integral, que incorpora la dimensión humana o socieconómica, pero aún falta que el enfoque integral se sustente en una investigación interdisciplinaria.

- Las Reservas de Biosfera encuentran dificultades en su institucionalización, además, porque, en cierta medida, confrontan con el modelo de desarrollo dominante.

Existen ejemplos a nivel nacional, regional y local que permiten sustentar las afirmaciones anteriores y también advertir tendencias o signos positivos de cambios en la situación descripta, los que serán comentados en la exposición.

Working group 4: Biosphere Reserve as models for land management and approaches to sustainable development

Moderator: Mr J. Mburugu (Kenya).

The working group heard presentations by Mr Joseph Mburugu (Kenya) on Amboseli Biosphere Reserve, Mr Neou Bonheur (Cambodia) on Tonle Sap Biosphere Reserve, Ms June Marie Mow (Colombia) future San Andrés/Seaflower Biosphere Reserve, Ms Alicia Toribio (Argentina) on the role of social sciences in Biosphere Reserves in Latin America and Mr Olof Olsson (Sweden) on the added value of biosphere reserves in approaches sustainable development.

The Working Group examined the question of approaches to sustainable development in reference to three objectives of the Goal II of the Seville Strategy and focused on the experience at the site level. The Amboseli case demonstrated how an old protected area in Africa has been transformed into a site for sustainable ecosystem management taking the interest of local communities into account. The Tonle Sap case presented a very challenging commitment to the Seville Strategy since a large portion of country's economy will be associated with the development of this site. San Andrés/Seaflower of Colombia provided an example of Biosphere Reserve in coastal and marine resource management in a large archipelago. The Working Group agreed that the on social, economic and cultural dimensions described in Argentina and Sweden are indeed crucial to enable biosphere reserves to explore approaches to sustainable development.

The Working Group noted that much remains to be done before any biosphere reserves can be considered as fully ideal and functioning models for sustainable land, coastal and marine resource management. To move forward, action should be taken according to the following recommendations.

Recommendations

Objective II.1: Secure the support and involvement of local people

- Site and national authorities should strengthen the involvement and participation of local people in sustainable resource management and development through training, participatory rural

appraisals and community workshops. Only when the local communities and NGOs become active partners in planning, management and decision making within biosphere reserves, can it be said that support from local people has been truly secured.

- The knowledge of social sciences is crucial for gaining support from the local communities. National authorities should make a greater effort to improve interdisciplinary studies, particularly those bringing together natural sciences and social sciences, within their biosphere reserves.

Objective II.2: Ensure better harmonization and interaction among the different biosphere reserve zones

- Site and national authorities should develop and use national and local information systems, where applicable, as a basis for promoting integrated land management and approaches to sustainable development in biosphere reserves. These systems should enhance information exchange among resource users, and take advantage of all forms of knowledge, especially indigenous knowledge.

- The Secretariat should develop basic guidelines for identifying the stakeholders concerned for the three zones, as well as for the three functions of biosphere reserves, such guidelines should be aimed at facilitating stakeholder on participation on the practical management of biosphere reserves.

- National authorities, aided where appropriate by the Secretariat, should develop technical guidelines for land use and land tenure in biosphere reserves, as well as guidelines for the use of marine resources, based on experience from different countries. These technical guidelines should address the issue of conflict resolution in land use and land management practices.

Objective II.3: Integrate biosphere reserve into regional planning

- Biosphere reserves should have clearly-stated management objectives (in accordance with the biosphere reserve zonation) which serve to integrate the biosphere reserve in regional planning, including in coastal marine areas. These management objectives should also include socio-economic dimensions. For this, site and national authorities should assist the implementation of the BRIM process. National authorities assisted where appropriate by the Secretariat should develop indicators for evaluating and monitoring the progress of biosphere reserves in pursuing sustainable development at the regional scale.

- Regional planning must involve all stakeholder groups. In order to ensure equal participation of these stakeholder groups, national authorities should help to build technical capacity to design, raise funds, and implement biosphere reserve activities.

- Site and national authorities should compile and publish successful experience of integrating biosphere reserves into regional planning.

WORKING GROUP 5: BIOSPHERE RESERVE MANAGER OR CO-ORDINATOR?

EuroMAB experience

Frédéric Bioret

Over the last ten years, the biosphere reserve concept has evolved and in particular gives more emphasis to local populations and human activities. This trend has led to the reconsideration of conservation objectives the light of human uses, and planning management interventions in space and time to take account of these new considerations. Here, 'management' is understood to cover action to conserve the natural, cultural and historic heritage but also action in the interest of local populations and the different stakeholders. In biosphere reserves, the main challenge is to design a form of management based on identifying man-nature interactions which correspond to the inter-relations between natural resources and various uses. The old conflict between nature conservation and economic development should henceforth be considered as obsolete, superseded by the more ambitious notion that conservation can actively promote development, and *vice versa,* that development can contribute to the conservation of the cultural and natural heritage.

In this paper, we will try to answer the following question: is a biosphere reserve run by a manager or by a co-ordinator?

SEVILLE STRATEGY RECOMMENDATIONS

In 1995, the International Conference on Biosphere Reserves organized by UNESCO in Seville (Spain) set out the main guidelines for biosphere reserves for the next ten years. The need for each biosphere reserve to have a management plan or policy and a appropriate, clearly defined management structure were highlighted. Reference should be made to Objective II.2 of the Seville Strategy 'Ensure better harmonization and interaction among the biosphere reserve zones', number 1: 'Ensure that each biosphere reserve has an effective management policy or plan and an appropriate authority or mechanism to implement it'.

EUROMAB BIOSPHERE RESERVE MANAGERS/CO-ORDINATORS MEETINGS

A series of meetings of biosphere reserve managers/co-ordinators were organized in the framework of EuroMAB. The First Biosphere Reserve Managers meeting took place in 1994 in Florac in the Cevennes Biosphere Reserve in France. In 1996, the Second International Seminar for Managers of

biosphere reserves was organized at Stara Lesna (Slovakia) and one of the recommendations emphasized the function of a *co-ordinator* of management. 'Participants agreed that a biosphere reserve manager is above all a co-ordinator'. 'Biosphere reserves should first and foremost serve the different needs and priorities of the various stakeholders of each biosphere reserve.' In 1998, at the Third EuroMAB Biosphere Reserve Co-ordinators' meeting, organized at Ilomantsi and Nagu (Finland), the function of a biosphere reserve co-ordinator was confirmed. In 2000, in Cambridge (UK) the First Joint Meeting of Biosphere Reserve Co-ordinators and MAB National Committees was organized.

CHARACTERISTICS OF BIOSPHERE RESERVES IN RELATION TO OTHER TYPES OF PROTECTED SPACES

Protected areas	*Biosphere Reserve*
• One type of area *a single category of area, usually relatively small is size and managed for a single purpose (nature conservation)*	• A mosaic of different types of areas *several categories of area, generally managed for different purposes (conservation, development...)*
• One type of objective and function *conservation*	• Overlapping of different types of objectives and functions *conservation, development and logistic support*
• One main category of interests *natural* *landscape* *cultural* *historical…*	• Multitude of interests *often conflicting: farmers, foresters, fisheries, tourists, scientists, elected officials*
• One manager *well identified, directly in charge of the management of the territory*	• Several managers *several managers who work more or less independently without consultation*
• One type of zonation	• Complex zonation *three zones, transition area without demarcated outer limit*
• Protection through reglementation	• Various means of protection *reglementation limited to the core areas, existence of management agreements or contracts*
• Management plan *single planning scenario applied to a well defined land area*	• Guide to biosphere reserve co-ordination *harmonization of different planning scenarios for different areas in line with biosphere reserve concept; emphasis on local participation*
• Single ecosystem approach *populations, ecosystem functioning*	• Landscape approach *complexes of ecosystems*
MANAGER	CO-ORDINATOR

The co-ordinator of the biosphere reserve is not the direct manager of the territory concerned: he/she merely co-ordinates, or facilitates. One of the main problems encountered in biosphere reserves is the visibility of the structure in charge and adequate recognition of the co-ordinator.

ROLE OF THE BIOSPHERE RESERVE CO-ORDINATOR

The role of the biosphere reserve co-ordinator is that of a moderator and communicator of the different aspirations and needs of each partner around a 'common territory project' (a project which balances consideration of the environment, economy and equity of a specific area) with which all stakeholders can identify themselves (resource users, professional groups, local populations, government agencies, elected officials, scientists, etc.). Hence a biosphere reserve co-ordinator must ensure:

- Identification of the main conservation and development issues and potentialities at the scale of the territory concerned and at the scale of the wider biogeographical region. Certain conservation or development priorities, and even sustainable development experiments, could be envisaged.
- Identification of the main management issues focused on man-nature interaction using the ecosystem approach. Different types of interactions can be highlighted; these include:
  - negative interactions: divergence of interest;
  - neutral interactions;
  - positive interactions: convergence of interests.
- Resolving conflicts throughout mediation processes.
- Setting up working groups devoted to common concerns of the main groups of actors.
- Organization of thematic workshops and training sessions.
- Promotion of results of successful experiments.
- Carrying out the periodic review of the biosphere reserve using a multidisciplinary approach. This approach can be realized by setting up a management guide for the biosphere reserve territory. Here, a GIS can prove to be a relevant and efficient tool for the biosphere reserve co-ordinator, since a GIS can serve to set up, structure and continually update a data base for the biosphere reserve and provide an excellent basis for decision making by facilitating the elaboration of various zoning scenarios. The maps produced using a GIS can also help in discussions and consultations with the local communities and the various stakeholders.

Sustainable use of 'W' Parks in Benin, Burkina Faso and Niger: What is needed, management or co-ordination?

Jean-Jacob Sahou

'W' PARKS IN BENIN, BURKINA FASO AND NIGER

Located in the heart of West Africa, the West African 'W' Parks cover more than one million ha distributed among three states: Niger (220,000 ha) Burkina Faso (250,000 ha) and Benin (550,000 ha). It is the only park in West Africa to ensure viable populations of the large savannah animals: lions, elephants, buffaloes, giraffes, hippopotamus, etc. The first protective measures were taken as from 1926 and the 'W' Parks were classified as one entity in 1954. The Niger portion of the 'W' Parks was designated as a 'Biosphere Reserve' in 1996. The portions in Benin and Burkina Faso, which up to 1996 had less human and financial resources, are in the process of being nominated as Biosphere Reserves.

The 'W' Parks located at the junction of the three states have together protected an area recognized as one of the last contiguous landscapes in West Africa endowed with biodiversity of global importance. The majority of species classified on national and international red lists exist in this savannah forest ecosystem.

More than 544 plant species have been identified in the area, of which more than 50% have disappeared in some areas in the three countries or in the sub-region. The ecosystem is an important habitat for the last remaining mammal populations of the Sahel-Sudanese region. More than 70 species have been identified including elephants, buffaloes, giraffes (whose last population in West Africa are found more in the Northern part of Niger), hippopotamus, lions

and cheetahs. There are many rare species such as sea cow (manatees). The ecosystem has also some 500 sedentary and migratory aquatic bird species; 150 reptile and amphibian species and more than 100 fish species that exist today only in the preserved areas.

THREATS TO BIODIVERSITY AND DEVELOPMENT ISSUES

Studies conducted by IUCN and other partners have underlined the major difficulties confronting the sustainable use of these protected areas. Threats to local ecosystems and biodiversity include: illegal occupancy and use of protected areas, poaching, abusive logging and use of other forest products, overgrazing. In the buffer zone, threats stem from the increase in human populations, with extension of cropland in traditional grazing lands leading to land conflicts and additional pressure on park resources; deforestation to meet energy needs causing degradation of springs, and overgrazing.

The peripheral area of the 'W' Parks is also densely populated. In order to combat poverty, land has been cleared for cotton production especially in Benin and Burkina Faso. Although cotton production is an income-generating activity, it proves to be more and more a destructive factor on the reserves, first due to the speed of extension of cultivated surfaces in this area with an increase of at least 50% every two/three years, and second, due to the use of pesticides required in cotton cultivation and that can be very harmful to the wild fauna compelled to graze contaminated vegetation and to drink polluted water. Swidden cultivation techniques are used which accounts for bushfires affecting buffer zones and sometimes the core area. As regards transhumance, risk factors on wild fauna from cattle should not be overlooked as they can transmit epizootic diseases.

These various factors constitute important constraints affecting generally development in reserve peripheral zones and leading at the same time to the problem of management of these protected areas. The management or co-ordination system to be established shall take into account these important constraints and bases itself on the Seville Strategy, namely in its items 1.1.4, 1.1.1.3 and 1.1.1.4 to ensure a sound development of W Parks.

INSTITUTIONAL FRAMEWORK

When we consider the case of Benin whose area is half that of the total of the 'W' Parks preserved areas (550,000 out of 1,020,000 ha), we can be see that up to 1995, the management of national parks and game reserves was under the Department of Forestry and Natural Resources (DFRN) based in Cotonou and the Division of National Park (DNP) in Natitingou, both being under the Ministry of Rural Development. The two divisions did not have either the capacity nor the necessary human and financial resources for an efficient management of theses areas. However, since April 1996, the management of Park and game reserves was entrusted to the National Centre for Management of Fauna Reserves (CENAGREF) by Decision N° 96-73 dated 2 April 1996, in replacement of DFRN and DNP. This new institution is a state social, scientific and cultural agency with a moral entity, and a financial and administrative autonomy.

The Benin 'W' Park is managed by a Board of Directors involving seven ministries, NGOs and rural associations. Its wide autonomy will enable it to efficiently co-ordinate the 'W' Parks, as long as is has sufficient means at its disposal.

On the Niger side, the 'W' Parks management is entrusted to the National Commission on Sustainable Development and the Directorate of Fauna and Fishery.

In Burkina Faso, the 'W' Parks management involves the Ministry of Environment and Tourism, the Director of Fauna and the Director of Forestry. This institutional framework in force in all the three countries requires an organizational and technical stocktaking to better assess the conditions to be met toward an efficient management at local level of 'W' Parks.

CURRENT AND FUTURE EXPERIENCE

Many related projects and programmes exist in the area. Two regional initiatives including the Regional Programme of 'W' Parks Management funded by the European Union and the Natural Resources Management in the peripheral zone of 'W' Parks in Niger and Benin by French Assistance and Co-operation Fund and the Netherlands.

In Burkina Faso, the projects are: local Development-East Burkina funded by IUCN and Swiss co-operation. Participatory management of Fauna in Die Foula and Longinie classified forests by IMF/World Bank; the IMF Assistance to protected areas in East Burkina Faso; financed from European Union and French Development Fund of Arly Parks and Fauna Reserves in Kourtiagou and Madjouari .

The projects in Benin are: funding from World Bank, GTZ and UNDP for the natural resources management; many initiatives from numerous donors (Dutch, German, French) in collaboration with GTZ and SNV and other national partners for the management of the 'W' Zoological and Pendjari Parks in Benin as well as of the peripheral areas of Atacora, Seri, Porga and Batia.

The Projects in Niger are: biodiversity preservation in the reserves of Tamou and Dosso in Niger

(USAID, World Conservation Union-IUCN); forestry policy reform (GTZ funding), tourism development within the 'W' Reserves in Niger (FDF funding); Sustainable Natural Resources Management, financed by the European Development Fund and implemented by Dutch Development Agency; and the natural resources management project of the World Bank (PGRN) in the River Niger basin.

The presence of various protected areas and the presence of many development projects funded by the government, donor agencies and some NGOs has led to a tremendous overlapping, lack of coherence in the programming and poor harmonization of action. The local communities are at a loss as far as the objectives and activities of the different actors are concerned. Socially, economically, politically and ecologically speaking, it is thus especially important that an efficient co-ordination mechanism has to designed and set up for the reserves' activities; this will be possible through the enforcement of Items II-2.1 and II.2.3 of the Seville Strategy.

AT THE SITE LEVEL: MANAGEMENT OR CO-ORDINATION?

Selection criteria and major concerns

The selection criteria (management or co-ordination) must be focused on the major concerns of biosphere reserves. Biosphere reserves are 'areas of terrestrial and coastal/marine ecosystems or a combination thereof, which are internationally recognized within the framework of UNESCO's Programme on 'Man and Biosphere (MAB)'. As far as the MAB Programme is concerned, it aims at promoting, through the natural and social sciences, the basis necessary for the efficient use and conservation of the biosphere's resources, as well as the improvement of the relationships between man and environment. Each biosphere reserve should ensure the three functions of conservation, development and logistic support for research and education. The managerial method of the reserves must take into account the major risk factors characterizing protected areas, which are:

- Absence of harmonized policies and strategies in matter of biodiversity development and preservation;
- Weak institutional capacities for monitoring the reserves;
- Different interpretation between the administration and the populations as far as ownership is concerned;
- Upsurge of social conflicts between actors of the same country as well as those from neighbouring countries.

In view of these risk factors, it results that implementing the biosphere reserve concept cannot be a mere management issue, but that an overall co-ordinating system, at the site, national and regional levels, would be necessary for their efficient management.

SEVILLE STRATEGY AS AN EFFICIENT CO-ORDINATING INSTRUMENT

The Seville Strategy has been adopted to serve as an instrument for the management and co-ordination of the biosphere reserves, which constitutes an important World Network made up of 368 sites in 91 countries, at this date. That network is a key means to attain MAB Objectives aiming at a sustainable balance between the occasionally conflicting necessities of preserving biodiversity, promoting economic development, and preserving related cultural values. The strategy aims at making recommendations to assist in the biosphere reserves development and setting up requisite conditions for the network operation. Thanks to this strategy in its objective II.2 and III.2 especially, it should be possible to set up and operationalize an efficient co-ordinating mechanism likely to get rid of incoherence detrimental to the 'W' Parks management stated above. The strategy finally provides some indicators enabling to secure the follow-up of its implementation. These ones constitute an important element of the efficiency of the co-ordinating system to be set up at the level of the 'W' Reserves.

The co-ordinating system

At the **local level**, priority actions are the following:

- Perform the descriptive analysis of 'W' peripheral areas, and design a global development plan of the complex and its peripheral areas. This will enable to assess the different functional sub-areas along with the activities that can be carried out there and the parties involved. This provision will enable the enforcement of the Seville Strategy, especially in its objectives 1.1.3 and 1.1.4. It should also be possible to make an inventory of all public and private institutions in the areas, and analyse the rights, roles and responsibilities of the actors involved.

- Harmonize and make coherent legal texts, by means of compilation of these texts, their comparative analysis identifying bottlenecks in the

course of their enforcement and designing a plan for the implementation of reform measures that will prove to be necessary. All parties involved, particularly the peripheral communities, should be involved in this exercise and the approach to be adopted must be participatory. The projects in progress must be involved in that key initiative to guarantee the legitimization of their actions. Reference will be made to objective.2.3 of the Seville Strategy for this.

- Set up a periodical consultation framework for political, administrative and technical officers at national and decentralized levels. This task will start with the adoption of a collaboration convention accepted by all parties involved for the development and management of the 'W' complex. This provision will enable the implementation of the Seville Strategy objective II.2.4. This consultation framework shall also aim at mobilizing financial resources and expertise for the strengthening of the initiatives.

- Finally, a follow-up/local evaluation system must be designed and developed through the efficient functioning of the consultation framework suggested above. Success indicators compatible with the intervention area can be identified in the indicators list for the implementation of the Seville Strategy. This provision will also supply precise and periodic information on biodiversity conditions prevailing in that area.

At the **level of each country,** a co-ordinating body is set up, for example in Benin the CENAGREF, the Protected areas Authority. It is this body that must carry out the task of co-ordination between programmes, and the different actors.

This will enable the actors involved to reduce the lack of co-ordination likely to arise from the multiplicity of structures and harmonize viewpoints on a great number of concepts generally used in the management of protected areas. This structure should be given the necessary authority and means to enable it to play efficiently its role. It should also be cautious in taking into account the concern of all partners while seeing to technical requirements of parks management.

It is advisable that a similar structure is set up in other countries.

However, these efforts at co-ordination at the local level will not yield fruit if there is neglect at the **regional level** and each entity keeps working on its own. The lack of regional co-ordination precisely accounts for the fact that, despite the national efforts undertaken, the current regional complex has produced only limited results. It is the reason why the regional projects underway in the designing process deserve to be supported.

However this regional co-ordination can be only successful if the political will is secured by the authorities of the three countries. That is why the meeting of the three ministers on 12 May 2000 in Tapoga is a positive initiative. The development of these protected areas must not only help the communities of the three countries to conserve biodiversity while rationally solving their short-term needs, but it must constitute a tool for regional co-operation between the populations. This regional co-operation must be implemented in the form of an authority operating on the basis of strict principles applicable to everyone. The current projects or those in the pipeline which should aim at this end, are mainly:

- The project of protected area management funded by European Union for 20 million Euros over 4 years, with a national component in each of the three countries and a regional component aiming mainly at capacity building and synergy of actions.
- The regional GEF project, the currently at the drafting stage, which will help to design a big project (PDF-B) for a total amount of US$7 million over 4 years.

Benin has been granted a technical assistance of UNESCO through its Division of Ecological Sciences, to build a framework for fruitful collaboration with UNDP-Benin. The project laid great emphasis on co-ordination activities, which will be technically supervised by a neutral body, the World Conservation Union (IUCN). It will be implemented in the form of assistance to peripheral communities for the promotion of sound practices as regards biodiversity in these protected areas. This technical co-operation experience at local level between UNDP and UNESCO has been successful and needs to be imitated by other UNDP Offices.

CONCLUSION

Benin, Niger and Burkina Faso 'W' Parks are highly important due to wealth in biodiversity and the threats to their integrity. There is a multiplicity of actors involved and initiatives underway in these areas. This led to the conclusion that a mere management system is no longer adapted to these reserves and only an efficient *co-ordination* system based on the systemic approach would prove to be successful. This co-ordination system, which must be functional at the local as well as the regional levels, must secure the commitment of all actors involved towards a sustainable use of biodiversity in this area. At the local level this co-ordination should be set up on the basis of an

analysis of the entire 'W' areas, the harmonization or the coherence of texts, the establishment and conduct of a consultation framework, as well as the implementation of an efficient follow-up or evaluation mechanism. Lastly the procedures relating to the nomination of the Benin, and Burkina Faso areas as UNESCO biosphere reserves must be speeded up in the framework of the harmonization of their status.

Promoting environmental health and stewardship of natural and cultural resources in the Southern Appalachian Mountains, United States of America

Robert Turner

The Southern Appalachian Man and the Biosphere (SAMAB) mission is 'to promote environmental health and stewardship of natural and cultural resources in the Southern Appalachians. It encourages community-based solutions to critical regional issues through co-operation among partners, information gathering and sharing, integrated assessments, and demonstration projects'. SAMAB consists of a regional co-operative of 11 Federal agencies and the natural resource departments of 3 states; a not-for-profit foundation with corporate, educational, non-governmental-organization, and individual membership; and 6 public and private biosphere reserve units.

The biosphere reserve units independently *manage* their resources and affairs according to their own agency mandates or corporate charters and bylaws. The public-private SAMAB partnership of co-operative and foundation works to *co-ordinate* gathering and understanding of information about the six-state region (including the biosphere reserve until and the surrounding zone of co-operation), education and communication using that understanding, and demonstration of the application of that understanding. This presentation features several examples of these co-ordination activities.

The Southern Appalachian Assessment, completed in 1996 as a joint project of the Federal and State member agencies, was published as a five-volume report and a five-CD-ROM data set. Both the report and supporting data were made available on the SAMAB Web site (http://www.samab.org) for downloading by anybody interested. The assessment reports status and trends through time of atmospheric, aquatic, terrestrial, and socio-economic and cultural resources of the region, making extensive use of mapped information. Assessment results show clearly that resources in the biosphere reserves and other natural areas in the region can be influenced greatly by management practices and development in both the reserves and the surrounding zone of co-operation. The assessment has been cited as a model for regional assessment and has won several awards.

SAMAB has worked with a number of communities in the region to better understand conditions and trends in their environment. A 1997 'Community Sustainability Indicators Workshop' helped them use Assessment data to envision and evaluate alternative futures, and has lead to additional work with several of the communities that are gateway communities adjacent to biosphere reserves or other natural areas.

SAMAB is now in the process of planning and co-leading an assessment of the environments surrounding the 2,167 mile (3,467 km) Appalachian Trail that extends from Maine to Georgia. This project will engage managers, researchers, educators, entrepreneurs, and community folks in an assessment and outreach effort that illuminates the needs, capabilities, and constraints that each works with on a daily basis.

Finally, SAMAB is building a World-Wide-Web-based Southern Appalachian Regional Information System that will enable information exchange and widespread access to information, models, and maps. This system will make information and analysis technology much more accessible and will be a major tool for future assessments and public and private visioning and planning.

SAMAB co-operative Members

- National Park Service;
- USDA Forest Service;
- USDA Natural Resources Conservation Service;
- Tennessee Valley Authority;
- Economic Development Administration;
- Appalachian Regional Commission;
- Environmental Protection Agency;
- Fish and Wildlife Service;
- Army Corps of Engineers;
- Geological Survey;
- Oak Ridge National Laboratory/Department of Energy;
- Georgia;
- North Carolina;
- Tennessee.

Biosphere Reserve Units

- Great Smoky Mountains NP;
- Coweeta Hydrological Laboratory;
- Oak Ridge National Environmental Research Park;
- Grandfather Mountain, Inc.;
- Mt. Mitchell State Park, NC;
- Tennessee River Gorge Trust, Inc.

SAMAB Foundation

A private, non-profit organization established to complement the activities of the co-operative of Federal and state agencies; comprises university, community, corporate and NGO collaborators.

Working Group 5: Biosphere reserve manager or co-ordinator?

Moderator: Mr Frédéric Bioret (France).

The working group heard presentations by Mr A. Grigoryan (Russian Federation), Mr T. Kokovkin (Estonia), Mr J.-J. Sahou (Benin) and Mr R. Turner (United States of America).

The presentations and discussions indicated that there was a great diversity of structures and status of co-ordinating bodies of biosphere reserves. Accordingly, they had to fulfil roles varying from carrying out concrete actions to co-ordination work, for example of community participatory processes, consensus building, and political lobbying, to administration. It appeared therefore clear that the question 'biosphere reserve manager or co-ordinator?' was not the key one, but that the 'biosphere reserve co-ordinator' needed most of all to be clearly recognized and given more visibility, in particular as the focal person to be designated for each biosphere reserve.

Recommendations

- Specific institutional structures in charge of biosphere reserve co-ordination should be clearly identified or created. The Advisory Committee should pay more attention to this aspect when evaluating applications for new biosphere reserves. This structure should in particular be guaranteed continuity in time of its operations.

- Among the multiple roles to be assumed by this structure, the following should be considered as essential:
  - Capacity to correctly promote and develop participatory processes and consensus building;
  - Ability to integrate all kind of knowledge into the elaboration and implementation of a 'common territory project' (a project that balances consideration of environment, economy and equity in a specific area of common interest to stakeholders);
  - Improvement of information flow at all levels, by using a variety of tools including GIS and Internet.

- A survey and critical analysis of existing biosphere reserve co-ordination structures be undertaken in the coming months by the regional networks, with the support of the Secretariat, with the objective of developing a set of guidelines on the creation, roles and functioning of such structures.

WORKING GROUP 6: BIOSPHERE RESERVES FOR DEVELOPING QUALITY ECONOMIES

The Fitzgerald River Biosphere Reserve, Australia

Giles West

INTRODUCTION

The Fitzgerald River Biosphere reserve lies on the Southern coast of Australia, some 450 km south of Perth and 200 east of Albany. It consists of an area of 1, 354,630 ha of which 48% is National Park. With the exception of some areas of Shire and Crown owned land, the remainder is privately owned.

Both the Park and Biosphere Reserve owe their existence to an inspired, concerned and responsible community who over the years have fought long and hard to protect the unique gene resources from exploitation of the tempting mineral resources. It would be incorrect to disregard the role of Government Agencies in this process, but community input has been and continues to be significant.

Approximately 2,500 people live in the Biosphere Reserve. Their livelihoods are almost all directly or indirectly connected to primary agricultural production. Today these livelihoods are threatened. The biosphere reserve concept, however, may provide opportunities to revive the local economy. One of the tasks of the biosphere reserve management is to promote the significant value of the biosphere reserve, particularly its terrestrial and marine diversity, the image of the biosphere reserve, and its role as a place for recreation and as an important source of livelihood in the future.

BIODIVERSITY IN THE FITZGERALD RIVER BIOSPHERE RESERVE

The soils of the biosphere reserve are an ancient and fragile mix mainly duplex in nature. Sand, clay and gravels form the top soils. Areas of ancient granite protrude and bands of rock dykes give rise to complex drainage systems and water tables. Much of the landscape has huge natural accumulations of saline ground water at depth and a curious and complex mix of fresh and saline areas, creeks and rivers.

Rainfall has for some considerable time been low and erratic. A wonderful range of plants and animals has adapted to these relatively demanding conditions. Diversity abounds within the core area but has also survived to varying degrees in the remaining natural and introduced vegetation of the buffer zone and 'zone of co-operation'.

The Fitzgerald National Park, which constitutes the core area of the biosphere reserve, carries some 1,784 species of plants, 75 unique to the area. Sharing this area are 22 mammals, 41 reptiles and 184 bird species. Spring brings a profusion of flowers and Right and Humpback whales regularly visit the bays between July and October. Access to the Park is by well graded and some 4wheel drive tracks. No road runs through the entire length of the Park, although this has been proposed. The Department of Conser-

vation and Land Management (CALM) that manages the Park, provides basic camping facilities, walking trails and whale viewing platforms. The Park also has a concerned community group, The Friends of the Fitzgerald, who maintain a Field studies centre and alert CALM to issues related to management and development of the Park.

The terrestrial diversity has been mapped and a CALM sponsored a marine study indicated a rich diversity under water. The community is currently engaged in a marine monitoring and mapping exercise of the Bremer Bay area with a local dive operator.

Diversity is being protected and enhanced in a number of ways by both Government Agencies and the community. Fox baiting and feral cat control has lead to a significant increase in marsupials and indigenous birds such as the malleefowl.

Community-led fencing of remnant vegetation and replanting has assisted in water table management, wind erosion control and has provided sanctuary for wild life. Rabbit baiting has greatly reduced crop losses but also reduced damage to areas of regeneration.

The *Gondwana Link* is an exciting new proposal that aims to re-vegetate two significant corridors linking the Stirling Ranges further to the west with the Fitzgerald Biosphere Reserve. Once linked there will be virtually continuous habitat from Cape Leeuwin to Cape York. This will significantly contribute to the value and image of the Fitzgerald River Biosphere Reserve.

THE COMMUNITY AND THE ECONOMY

Community attitudes towards the biosphere reserve concept are mixed these days. There is a not unusual division between the 'green' and the 'production' sections of the community. In reality they are not as far apart as they would like to think. A minority of environmentally concerned community, labelled as 'green', has been instrumental in the development of the Biosphere Reserve. The 'green' perception has not always been constructive in promoting the sustainable use issue, but both sides now realize that a practical compromise has to and can be reached.

Farmers and other primary producers are the main source of the social and economic health of the Biosphere Reserve. The emphasis of production and production systems has changed significantly over the years, though these changes have often been 'just in time' and driven by impending crisis.

The current production areas were cleared in a number of stages but the two principal clearings occurred in the early 1950s and again in the early 60s. Clearing was a fairly indiscriminate process characteristic of the period and, after an initial rush, continued sporadically until the late 1980s. Further clearing is strongly discouraged these days and the remaining and frequently fragile remnants provide important wildlife corridors. The adoption of 'no till cropping' has greatly reduced wind erosion.

The decline in wool prices lead to the adoption of extensive cropping systems and reduction in pasture. While farmers made significant strides forward in productivity, any gains have been more then discounted by declining terms of trade and significantly increased debt burdens associated with large scale cropping. Once again, in the face of impending crisis farmers are adopting a more diversified production base reducing exposure to risk both financially and environmentally.

Though agriculture remains the dominant economic activity, a number of alternative sources of income have been developed over time. A small but expanding industry harvesting inland crayfish and coastal abalone is developing along with seed potatoes and vegetables. These are minor contributions to the local economy but have the potential to expand and, being high added value, will be labour intensive.

Plantation forestry (Blue gums) has been established in a small area in the 600 mm rainfall area of the Biosphere Reserve and is the subject of much controversy within the community. Maritime pine suits some of the drier areas and has been planted in a very limited way.

Indigenous plants such as Mallee eucalyptus show potential for biomass production and carbon fixing credits. Oil, gums, sandalwood and a variety of 'bush' foods also show potential for development but in all cases these options have to further developed and promoted.

There is a small but growing sector of the population in the two coastal towns. They often bring new ideas and enterprises but expansion of these initiatives is often hampered by initial lack of customers, distance to markets, local scepticism and regulation. Investors are increasingly interested in land for development and this is reflected in coastal land prices.

THE LANDCARE MOVEMENT

The Landcare movement[1] was born out of the need to address wind erosion and other environmental issues facing the community. It enjoys considerable power at the local and State level with the respective Minister responsible for addressing issues raised by

1. Landcare Australia is a non-profit company, set up 'at arms length' from the Government with two main aims: 1) raising awareness of, and participation in, landcare and landcare issues; 2) raising funds and resources for landcare projects. (http://www.landcareaustralia.com.au)

the Land Conservation District Committees (LCDC) that were established by the movement.

The Jerramungup LCDC was formed in 1983 and has been instrumental in encouraging farmers to address wind and water erosion, implementing initiatives for managing ground water and salinity, protecting remnant vegetation, encouraging farm and catchment group planning, and feral pest and weed control.

Farming groups have been encouraged to organize themselves in natural catchment areas and to follow through a 'focus catchment planning process'. This process assesses the resource, the state of the resources, potential for production and management options. This is a community led and managed process with assistance from Agriculture Western Australia, Water and Rivers and other Agencies which provide specialist technical support for the groups in catchment assessment and planning, and guidance in fund raising.

In times of poor financial returns, it is difficult to demonstrate direct benefits from Landcare particularly when planning and budgets rarely go beyond a season. Recent years have seen an increasing reluctance by farmers to continue to adopt Landcare and responsible production techniques and this is particularly evident as farmers reach retirement age and the younger generation see little reason to work so hard for so little.

CHALLENGES FOR THE FUTURE

The Biosphere reserve economy is currently almost entirely dependent on agriculture, which is in gradual decline. The next generation of farmers needs to see a significant increase in return on investment if they are to remain in the industry. Branding was seen as a way to assist in improving product differentiation with the potential to at least maintain market share and possibly price.

Another challenge ahead will be to reduce dependence on primary production and develop tourism and other industries to diversify and expand the local economy. The potential is there, the challenge is to change community perception and encourage investment in these new livelihoods.

Tourism and ecotourism

Bremer and Hopetoun are popular local (and increasingly State wide) tourist destinations offering a range of services including fishing and scuba diving. The Fitzgerald Park appeals to those keen on natural history, wilderness and fishing. Accommodation exists in various forms but is in short supply and it is generally considered that there is potential for growth. Realization of the potential will depend convincing the local community that it is a serious service industry and promotion work to encourage potential tourists to visit the area.

Diversification of livelihoods

This will be essential for the economic and environmental future of the Biosphere Reserve. New crops and cropping systems, new primary and value-adding industries need to be adapted and adopted. Necessity has always been a key driver to adopt change and the current low returns on primary production are sending clear messages to the community of the need to diversify. It will be important to encourage people to try to remain in the Biosphere reserve rather than to move away. An essential ingredient will be a sense of belonging and pride in the area and the Biosphere Reserve image will be important here.

Branding

Consumers have become more discerning, less price conscious and more aware of global issues in recent years. Increasingly products are marketed with an image or brand. This is particularly useful where there is currently little product differentiation, a characteristic of many agricultural primary products. The role of branding in assisting the marketing process is clear but has to be promoted to the community.

There are a number of important issues currently facing primary producers. State controlled bulk product marketing systems are likely to be deregulated in the near future. As consumers become more discerning, the demand increases for product quality assurance. This is an ideal opportunity to promote branding as a tool for marketing. Essentially branding is all about quality assurance and can take into account not only quality but also social and environmental commitment of the producing community. The biosphere reserve image has great potential to enhance this process.

The Fitzgerald producers and community have been discussing brand development for almost a year and after several false starts have made some progress. The main constraint has been scepticism and confusion about the differences between selling, markets, marketing and branding and labelling.

A core group of community champions recently formed and established a vision '*to have a recognized image that inspires our community to responsibly produce market edge products*'.

Following the funding of a pre-feasibility study, an unsuccessful attempt was made to obtain funds to launch the development of the image and brand.

Despite this setback, the group decided to take a less ambitious approach and are currently:

- Promoting the concept locally;
- Establishing contacts and linkages with similar branding initiatives;
- Working on a submission for funding for product identification and promotion.

There may be advantages to this long-term approach which is encouraging greater community participation.

Cultural issues and revival

Related to the issue of branding is the cultural history of the biosphere reserve. The area has two distinct cultural histories: that of indigenous land users and that of the very recent settler and landowner. It would be difficult to find two cultures with such differing characteristics and approaches to resource use. These differences have been graphically demonstrated by the change in the landscape and long term economic and ecological viability in the last 50 years. Revitalization of local indigenous culture and an appreciation of settler history can both contribute to a positive local identity and image.

The history of the indigenous land user is poorly documented and evidence is difficult to find. Some information was recorded by early settlers but there is an urgent need to trace indigenous history and to understand the approaches to resource use which appeared to be sustainable.

By contrast the history of farmer settlers has been relatively well recorded though in a rather fragmented fashion. Various local oral history recordings have been made and others are being proposed before some of the older members of the community pass away.

Education and awareness

It is possible that awareness of the Biosphere Reserve is least developed locally. Education and awareness raising amongst all age groups in the community is essential along with maintenance of local identity and image. Youth not only has a vested interest in ensuring the conservation of resources for the future but is also a potential source of guardians and ambassadors for the Biosphere Reserve. Pride of being part of a Biosphere Reserve will hopefully be an important ingredient in the future.

Currently schools are targeted to increase awareness of Landcare and farming systems' issues as well as the need to maintain and enhance diversity in the Biosphere reserve. Agriculture WA and Natural Heritage Trust funds currently support Landcare education officers to work with and assist teachers and students in understanding sustainability issues and future implication.

Awareness among the adult population also requires development particularly during a period of economic decline.

CONCLUSION

A concerned core of community has seen the value and potential of the Biosphere Reserve and the status it brings to an area. The task for the immediate future is to convince the wider community locally of the potential positive impact on many aspects of life.

Related to the above, promotion, education and general awareness raising in all sections of the local and wider community of the biosphere reserve is essential. The value, potential and importance in helping to create a sustainable future need to be demonstrated to all, but particularly younger generations who have a vested interest in the future.

Primary production has been the main stay of the local economy. This sector now faces both financial and longer-term environmental problems requiring an integrated and diversified approach fitting a responsible social and environmental image. Support agencies have responded to this but further work is required.

Diversification of the local economy is essential in primary production, value adding and service industries including tourism and eco-tourism need to be promoted.

Where communities have lost cohesion the Biosphere Reserve concept and Branding can play an important role in developing ownership, local identity and image to have pride in. The history of the area also becomes more important to community and the values of local indigenous culture more relevant than ever.

A Biosphere Reserve label has the potential to attract investment into the community provided investors can see that theory is reasonably well reflected in reality. The Community needs to be aware of this potential.

A thriving Biosphere Reserve is a thriving community.

Clayoquot Sound Biosphere Reserve, Canada: New economic opportunities for different social groups

Jim Birtch

- Clayoquot Sound, declared as a terrestrial and marine biosphere reserve in 2000, covers approximately 350,000 ha on the west coast of Vancouver Island, British Columbia
- Over 50% of the 5,000 residents of the area are First Nations (aboriginal), with about 3,000 living in two modern villages and the rest in aboriginal communities.
- The traditional economy of forestry and wild fishing has been significantly curtailed by closures because of environmental protests and by resource depletion.
- New employment has come in the form of tourism (1 million visitors) and aquaculture, but most of this benefits only one community (Tofino).
- Unemployment is high and reaches 80% or more in traditional aboriginal communities.
- Cultural differences exist between those communities and others in the region.
- Social differences exist, as well, between highly educated newer arrivals from urban areas and longer-term residents who depend on resource extraction for work.
- The biosphere reserve proposal grew out of government attempts to end protests and blockades over cutting of old growth forests, and address serious economic problems.
- The provincial government and Nuu-Chah-Nulth First Nation formed a board that reviews development plans and forest practices and led the biosphere reserve proposal.
- The biosphere reserve provides a focus for co-operation among initiatives in the area.
- A joint venture corporation, with 51% Aboriginal ownership, carries out sustainable forestry, while a wholly owned Aboriginal company explores new work opportunities.
- Another venture uses ex-loggers to successfully rehabilitate salmon streams.
- The federal government provided US$12 million for a trust fund that supports biosphere reserve activities of research, education and development, while encouraging co-operation.
- The biosphere reserve – an experiment in conservation, sustainable development and capacity building – addresses the needs of Clayoquot Sound's social and cultural groups.

Examples of the Rhön Biosphere Reserve, Germany

Doris Pokorny

The main concern of the Rhön Biosphere Reserve (BR) is the maintenance of cultural landscapes through traditional agriculture systems being threatened by a constant decrease in the number of farms and the income of the farmers. The natural conditions of agricultural production are too unfavourable to face international or even national competition.

The development of quality economies plays an important role in this context and can be characterized by different phases.

PHASE 1: DISCOVERING THE AREA'S POTENTIAL AND INITIATING MODEL PROJECTS

We have been looking for a range of (agricultural) products that could become important in terms of regional marketing. Projects concerning the Rhön sheep or the Rhön apple are good examples. Processing and marketing of these products both to the private consumer and local restaurants has been successful.

However, most of these initiatives are just pilot projects depending on a few local actors, and most projects concern mainly agricultural businesses. Furthermore, consumers do not necessarily notice that the products are linked with the biosphere reserve.

PHASE 2: CREATING A PLATFORM FOR BUSINESS PARTNERSHIP

Instead of looking for product labels first (the discussion about this had been going on for years and was given up) the BR has rather been looking for business partners which contribute to the biosphere reserve idea in terms of innovative and environmentally friendly products and help create or safeguard jobs in our rural area.

The 'Biosphere Reserve Business Partners' project was initiated by the Hessian administration of the Rhön Biosphere Reserve in 1998 and has a transboundary approach. It involves all types of enterprises e.g. farms, restaurants, hotels, grocery stores, crafts, tourist agencies or riding stables.

What are the criteria?

'Biosphere Reserve Business Partners' in agriculture meet the EU Council Regulation (EC) for organic production of agricultural products and indications, including livestock production (No. 1804/99, former No. 2092/93). 'Biosphere Reserve Business Partners' found it fairly easy to adapt to this (already existing) criterion in catering activities, which were set up with local and external experts – a process which took about two years. Criteria for regional grocery stores are being developed.

Restaurants and grocery stores need to offer a minimum number of products that – again – come from 'Biosphere Reserve Business Partners'. Thus, links between the different business types are strengthened.

'Biosphere Reserve Business Partners' do not necessarily need to be situated inside the Biosphere Reserve as long as they contribute to the Biosphere Reserve idea. This aspect is important as it creates links between the Biosphere Reserve and the adjacent regions.

If needed, all criteria for 'Biosphere Reserve Business Partners' will be adjusted as the project develops.

How are 'Biosphere Reserve Business Partners' organized?

All enterprises wishing to become 'Biosphere Reserve Business Partners' apply to the Private Biosphere Reserve association (Hessen). If they meet the criteria they are authorized to use the partnership sign, however they need to become member of the Biosphere Reserve association first. 'Biosphere Reserve Business Partners' are controlled by an independent agency. Where possible already existing control systems (e.g. EU control system concerning organic farming, EU eco-management and audit scheme) will be applied.

By now twenty farms and one brewery have become 'Biosphere Reserve Business Partners', and ten restaurants have applied for this status.

Problems:

- 'Biosphere Reserve Business Partners' pay membership and control fees. In turn, they are expecting support from the Biosphere Reserve association for advertisement campaigns. Those costs, however, can only partly be covered by membership fees. This means that additional funding will be necessary.
- Only a small percentage (less than 1%) of all farms in the Biosphere Reserve is organic farms and meets the criteria for 'Biosphere Reserve Business Partners' in agriculture. Critics blame the criteria as being too strict and inappropriate as they exclude the majority of farms in the Biosphere Reserve although they contribute substantially to maintaining the landscape.

PHASE 3 (FUTURE PERSPECTIVES): INTRODUCING A GENERAL RHÖN BIOSPHERE RESERVE LABEL

As a further step, the Rhön Biosphere Reserve is trying to combine the 'Biosphere Reserve Business Partners' with an overall concept of Biosphere Reserve labelling, which should:

- be product/service related rather than just related to enterprises;
- enable the marketing of a variety of regional products in (regional) supermarkets, which is an important aspect as most customers do their shopping in supermarkets;
- enable the integration of non-food products or services.

In order to meet the financial needs concerning the setting up of management structures and advertisement campaigns, the Rhön BR is planning to apply to the EU for funding for a project in the framework of LEADER+.

Lessons learned

The Rhön Biosphere Reserve is still experimenting, but so far, it seems to be advisable to:

- create labels (and criteria) for both products/ services **and** enterprises;
- discuss criteria sufficiently but not forever... Criteria should refer to the major biosphere reserve goals and not be too strict or exclusive. External consultants play an important role in this process
- apply criteria, which are simple but precise enough to be controlled. The adoption of already existing criteria (e.g. EU Council Regulation for organic production, EU eco-management and audit scheme (EMAS)), which can again be linked to defined control mechanisms, seems to be most efficient.

CONCLUSIONS

Dealing with three (independent) Länder in the Rhön Biosphere Reserve, it is very difficult to agree upon a common label, criteria or evaluation procedures.

As to this aspect the Rhön Biosphere reserve is dealing with the same difficulties as any transboundary biosphere reserve.

Ecotourism in Jiuzhangou Biosphere Reserve, China

Han Nianyong

Ecotourism, when broadly defined, and biosphere reserves share a set of similar goals linking conservation to sustainable development. Biosphere Reserves provide resources and logistics for ecotourism, thus offering opportunities for each to jointly play a role in stimulating local, sustainable development.

BACKGROUND INFORMATION ON THE JIUZHAIGOU BIOSPHERE RESERVE

Location: Jiuzhaigou Country, Sichuan Province, China
Area: 72,000 km^2
Altitude: 2,000–4,528 m
Main objectives for protection:
Geological and geomorphological landscape, mountain forest ecosystem and wildlife, and local (Tibetan) culture.

History of the area:
1966: logging farm;
1978: establishment of nature reserve;
1980: logging was stopped;
1984: establishment of scenery area;
1992: World Heritage site;
1997: Biosphere Reserve.

Population: 1,021;
Households: 222;
Villages: 9;
Nationality: Tibetan.

TOURISM

With its beautiful landscape and local culture, Jiuzhaigou has attracted many tourists since early 1980's, and the number of visitors has been increasing. Especially, after construction of a new road from Chengdu to Jiuzhangou in 1997, the number has sharply increased from 181,000 (in 1997) to 580,000 (in 1999). This increases opportunities for a growing local economy and promoting conservation of nature and culture of this area.

ECONOMY

In economic terms, development of tourism in Jiuzhaigou Biosphere Reserve has not only benefited the reserve management authorities and the local people, but also benefited the economy of the whole of the region in which Jiuzhaigou Biosphere Reserve is located. The following figures illustrate some examples of direct economic benefits.

- The annual income per person of the local people was 2,000 yuan in 1995, 4,000 yuan in 1998 and reached to 10,000 yuan in 1999, to 6 times the average income of the farmers in Sichuan Province. And this income is derived mainly from tourism.
- The annual revenue generated through entrance tickets by the Jiuzhangou Biosphere Reserve Administration has also increased along with the increasing numbers of tourists and as a consequence the Biosphere Reserve's financial situation has improved significantly. The revenue

in 1999 amounted to 46.88 million yuan nearly equal to 1/4 of total budget allocated by the government for all the 926 nature reserves of China in 1998.

- The tax paid by Jiuzhagou Biosphere Reserve to the country government was also increasing year by year, from 2,780 million yuan in 1997, to 5,658 million yuan in 1998 and 11,486 million yuan in 1999, which made up about 80% of the total annual collected taxes by the county government.

ECOLOGY

In ecological aspects, some main issues have been improved due to the economic growth, for example:

- The land that had been under cultivation within the reserve has been completely reverted back to secondary forest because the local people no longer need to rely on farming anymore;
- Access to the paths within the reserve is totally controlled and one third of the paths have been hardened;
- Waste water treatment plants have been constructed in the settlements as well as some high quality waste control toilets at some sites in the reserve;
- A visitors centre for providing information and interpretation has been established recently and is now fully operational. The costs, nearly 30 million yuan, have been entirely covered by the Jiuzhaigou Biosphere Reserve Administration;
- All (more than 400) the normal buses and cars providing transport for visitors into the reserve have been replaced by 180 so-called 'green buses' that run on natural gas.

LESSON LEARNED

Two key factors have been of crucial importance in obtaining the above mentioned improvements in economic and ecological aspects:

- The wide involvement of local people in the ecotourism operations (e.g. a cultural village showing local customs, establishment of family-run hotels, restaurants, horse and yak riding, cultural performances, handicraft shops etc.). It has proved to be important to link people's economic interests closely to conservation actions through appropriate mechanisms. For example, a new green bus company was established through the mechanism of stock-sharing to give all the owners and thereby sharing the interest of the new company;

- Adoption of participatory management strategies for the reserve. For example, one third of the reserve staff consists of members of the local communities. Their functions range from reserve directors, bus drivers, tour guides to cleaners This makes the management team capable of balancing conservation and local needs.

THE FUTURE

There are still problems remaining to be solved in the future, for example those identified during the EABRN review of the Jiuzhaigou BR in 1999: overcrowding of the BR by visitors, traffic jams and noise pollution, insufficient information provided in the field, inadequate tour guide training, fast urbanization and environmental problems just outside the boundaries, non-environment friendly business operating in the BR, and so on.

To solve the problems and further the ecotourism development in a healthy way, the reserve has to deal with some the main challenges:

- Keep pace with trends of rapid increasing numbers of tourists. In 2002 an airport will be built near the reserve which will further increase the influx of visitors;

- Base management on scientific research and monitoring and explore mechanisms to channel more revenue to the enhancement of scientific support;

- Adapt the administrative and co-ordinating structure to facilitate involvement of stakeholders who more and more often are outsiders.

Amélioraton des conditions socio-économiques des communautés dans la Réserve de Biosphère « W » au Niger

Ahmed Oumarou

La Réserve de Biosphère « W » a été classée en 1996 et couvre une superficie de 1.000.000 ha. Elle est peuplée de 209.700 habitants avec un taux d'accroissement de 3,6 à 5,4 % principalement des populations rurales, soit des agriculteurs et des agropastoraux.

Zonation :

- Zone centrale = parc national du « W » (220.000 ha) ; dernier écosystème de savane à l'état viable et habité par une faune diverse et spécifique ;
- Zone tampon = réserve de Tamou et de Dosso (700.000 ha) ;
- Aire de transition = 80.000 ha ; dans cette réserve les dernières populations de girafes de l'Afrique de l'Ouest co-existent pacifiquement avec la communauté humaine ; cette zone est aussi celle de la brousse tigrée qui est un écosystème particulier.

Importance des réserves de biosphère :

- L'engagement de l'État et des autorités;
- La responsabilisation des communautés locales;
- La crédibilité des partenaires; facilité de trouver des financements et appui au Niger par la mobilisation des financements des projets.

Projets mis en œuvre

■ ***Projet d'utilisation des ressources naturelles de Kouré, financé par l'Union Européenne***

- Élaboration d'un plan d'aménagement de la zone ;
- Établissement des conditions de mise en œuvre de la réserve de biosphère (information, textes conventionnels) ;
- Activités de développement ;
- Suivi scientifique des girafes.

■ ***Projet d'écotourisme, financé par le Fonds français pour l'environnement mondial***

- Promotion du tourisme local ;
- Création d'emplois ;
- Organisation de la population.

■ ***Projet de gestion des ressources naturelles, financé par la Banque Mondiale***

- Activités de développement local (promotion de l'agriculture, du maraîchage, des activités génératrices de revenu, etc.) ;
- Renforcement de capacités.

■ ***Programme régional de conservation des réserves du « W », financé par l'Union Européenne***

■ ***Plusieurs autres actions locales.***

Tous ces projets, en particulier les trois premiers, sont mis en œuvre de façon participative avec l'implication quasi-totale de la population locale.

Activités de développement durable

- Écotourisme: formation et organisation des guides locaux, promotion de l'artisanat local, création d'emplois à partir de l'installation d'un centre au niveau local: gardiennage, vente des produits locaux, promenade à chameau, etc. ;
- Recherche sur les girafes et la faune du parc ;
- Pêche artisanale ;
- Apiculture ;
- Tourisme de vision ;
- Chasse coutumière ;
- Développement de l'agriculture ;
- Éducation relative à l'environnement.

Income generating projects by local communities in Queen Elizabeth Biosphere Reserve in Uganda, supported by the BRAAF Project

Hannington Oryem-Origa

INTRODUCTION

The Queen Elizabeth Biosphere Reserve (QEBR) is located between 0° 15' S and 0° N and 29° 45' E and 30° 05' E in Western Uganda. It has an altitudinal range of 910–1,390 m a.s.l. QEBR was first established as a National Park in 1952 and then designated as a Biosphere Reserve in 1979 by UNESCO, covering 2,500 km^2.

Between 1925 and 1949, people resident in the current park area abandoned it because of its infestation by trypanosome-carrying tsetse flies. Currently, the biosphere reserve has a human population of about 20,000 distributed among 11 villages scattered in and around the biosphere reserve. Most of these people are engaged in fishing and salt winning for their livelihood.

The local communities are dependent on plant materials obtained from the biosphere reserve for smoking fish, salt winning and other domestic uses. There is also a cobalt processing plant near the Biosphere Reserve.

In 1995, UNESCO/MAB launched a project entitled 'Biosphere Reserves for Biodiversity Conservation and Sustainable Development in Anglophone Africa' (BRAAF) in five countries. The countries involved were Ghana, Kenya, Nigeria, Uganda and the United Republic of Tanzania.

BRAAF ACTIVITIES

At the national level, the Uganda MAB National Committee organized three national workshops involving the local communities in the biosphere reserve area, park managers, various local government leaders, academics and members of the MAB National Committee.

The first national workshop was on 'National Parks and community relations'. The second national workshop was on 'Problem animals and the well-being of communities around protected areas'. All these seminars were sponsored through the 'BRAAF Project'.

OUTCOME OF SEMINARS

Through these workshops, the MAB National Committee recognized that while increasing human populations exerted a lot of pressure on the natural resources in the protected area, wild animals also exerted a negative influence on the communities.

Poaching and illegal extraction of plant materials for firewood, construction, medicines, fish floats, salt winning and various crafts do exert a lot of pressure on resources in the biosphere reserve. On the other hand, crop raiding by wild animals caused food insecurity among the local population, and people have also been wounded and killed by animals.

BIOSPHERE RESERVE CONCEPT

The biosphere reserve concept envisages conservation of biodiversity alongside sustainable utilization of resources. The Seville Strategy, Goal II, Objective 11.1, recommendation 8, stresses the need for the 'development of incentives and sustainable use of natural resources and development of alternative means for the livelihood of the local populations when existing activities are prohibited or limited within the biosphere reserve'.

ACTIVITIES SUPPORTED IN THE CEBR

With seed money provided through BRAAF Project, the Uganda MAB National Committee requested the local communities within QEBR area to develop their own small income-generating projects, which could then be supported. Accordingly, two projects were identified through consultation by the Warden for Education within the QEBR.

Katunguru women's Craft Shop

With the help of the Warden for Education, a project proposal for the establishment of a women's craft shop was written and submitted to the Uganda MAB National Committee. The project proposal was considered and approved for funding. Finishing touches to the building and furnishing of the craft shop were funded through BRAAF Project. Thirty women formed an association to run the shop for income generation purposes. The craft shop is located along a highway at one of the entrances of Queen Elizabeth National Park. The women obtain plant

materials from outside and inside the biosphere reserve for producing crafts. They teach and learn from one another the skills and techniques for making the various crafts.

The outputs of this activity include:
- the women sell a variety of crafts;
- the quantity and variety of crafts have continued to increase;
- men have also joined the women's group;
- their income base increased steadily over time;
- the group intends to diversify their activities to include drama productions depicting conservation issues as well as the sale of refreshments;
- there is now more unity among women and men in the area;
- another women's group has also come up with a proposal seeking financial assistance through BRAAF Project. The Uganda MAB National Committee expects some residual funds from BRAAF Project and intends to support local initiatives for income generating activities.

The constraints of this activity were as follows:
- low educational standards among the women;
- poor project management skills;
- low capital base to expand their trade (the BRAAF Project only provided catalytic funding);
- the local community still requests more funding to consolidate and expand their activities;
- small number of customers because of a rather low tourist turnover presently.

Bee-keeping activities

The Warden for Education of QEBR identified six wildlife Clubs, some of whom had already been engaged in bee-keeping. They jointly developed a project proposal for bee-keeping and submitted this to the Uganda MAB National Committee for funding. The project proposal was approved and funds provided to purchase 60 modern bee-hives to be divided equally among the six wildlife clubs. Two of the wildlife clubs consisted of pupils and teachers of a primary school and students and teachers in a secondary school. Provision of the modern bee-hives was intended to improve the quality, quantity and security of honey. (Chimpanzees often break into the more traditional bee-hives). The total membership of the bee-keeping project was 480 and this number continues to increase as more people see the benefits of having joint projects.

The outputs of this bee-keeping activity include:
- by March 2000, over 90% of the bee-hives were colonized by bees;
- honey was harvested twice a year;
- the yield ranges from 5–10 litres per season per group;
- it is anticipated that the yield will rise to between 20–30 litres of honey per harvesting season per group when production is about 70%;
- a lot of enthusiasm was generated among the local communities by the BRAAF Project;
- some other individuals who do not belong to any of the existing wildlife clubs have also expressed interest in buying modern bee-hives after seeing the benefits from the others;
- other groups of people want to be assisted with modern bee-hives;
- one local investor has already acquired a honey-processing machine in response to the increased honey production in the villages bordering QEBR. This has added value to the crude honey extracted by the wildlife club members;
- raiding of bee-hives by chimpanzees has been stopped;
- increased tree planting activities by the local communities as another alternative source of income generation.

The constraints of this activity were as follows:
- low level of education;
- lack of knowledge of proper bee husbandry. Only one seminar was organized by the District Entomology Officer, which, according to the local communities, was insufficient;
- limited number of bee-hives and suitable harvesting equipment;
- lack of project management skills.

RECOMMENDATIONS

- There is need to continue sensitising the local communities around the QEBR about the value of conservation of wildlife;
- There is need to encourage the local communities to initiate alternative activities for income generation rather than thinking of depending mainly on natural resources in the protected area;
- There is need to conduct research on crops that are not often eaten by wild animals,

- There is need to involve the local communities in the development of the general management plan for the QEBR;
- There is need to come up with a workable policy on equitable sharing of revenue from the QEBR.

Working group 6: Biosphere Reserves for developing quality economies

Moderator: Mr Giles West (Australia).

Presentations were made by Mr Jim Birtch (Canada), Ms Doris Pokorny (Germany) Mr Seyani Seidou (Niger), Mr Han Nianyong (China), Mr Hannington Oryem-Oriega (Uganda) and Mr Jorge Adamoli (Argentina).

The discussions revolved around three themes. The first was the need to promote and increase the understanding of the Seville Strategy and the Statutory Framework. Participants felt that the emphasis that is put on the development component of biosphere reserves in the Statutory Framework is not well reflected in the Seville Strategy.

The second theme related directly to the development of quality economies including new economic opportunities. This then resulted in a third topic surfacing: caution about drastic changes and the need to build upon resources, knowledge and structures that are already in place in the biosphere reserves.

Recommendations

- The MAB Secretariat should develop a concise, user-friendly, practical guide to the Seville Strategy and the Statutory Framework to be translated into as many languages as possible with the assistance from the National Committees. The guide should highlight the importance of sustainable economic and social development and cross-link the different goals and objectives both within and between the Seville Strategy and the Statutory Framework.
- The MAB ICC should find ways of reminding that biosphere reserves 'should provide an opportunity to *explore and demonstrate* approaches to sustainable development on a regional scale'. This is not well-reflected in the Seville Strategy, nor as widespread in action as it might be.
- The MAB Secretariat should use the results of the survey on the implementation of the Seville Strategy to create a web-accessible database of information about each biosphere reserve and encourage non-respondents to provide their information/reply.
- Sustainable development needs to be based on a diversity of economic activities whose key characteristics are: profitability, sustainability and responsibility (socially and environmentally).
- The MAB secretariat should facilitate the establishment of a task force, including biosphere reserve managers and local specialists, on developing quality economies at site level. Issues which such a task force should consider:
  - defining 'quality';
  - development of criteria (social, environmental and economic);
  - branding and the criteria behind the image or the meaning of the brand;
  - critical analysis of branding, labelling, marketing, and associated mechanisms/structures (including successes *and* failures).
- Development of new economic activities implies building and complementing existing activities, and building on special characteristics of the region and its regional identity. It also implies consideration of consequences of these for the cultural and natural landscape.
- The MAB Secretariat should investigate and develop propositions for ways to utilize biosphere reserves for the conservation and sustainable development of agricultural activities, so as to increase agro-biodiversity.

WORKING GROUP 7: CO-ORDINATION OF NATIONAL NETWORKS OF BIOSPHERE RESERVES

Co-ordination of the Cuban National Network of Biosphere Reserves

María Herrera Álvarez

The National Committee for the 'Man and the Biosphere' Programme (MAB) and its biosphere reserves in Cuba works under the auspices of the Cuban Ministry for Science, Technology and the Environment (CITMA) and the Cuban Commission for UNESCO. Both its management and its members work on an honorary basis.

'Sierra del Rosario', in the Western region of Cuba, was the first biosphere reserve to be designated by UNESCO in our country, in 1985. Two years later, in 1987, three new biosphere reserves were designated: the 'Península de Guanahacabibes', in the extreme west, and 'Cuchillas del Toa' and 'Bacaonao' in the eastern region of the country. The central region, which, like the other regions mentioned, presents particularly interesting biological characteristics, was still unrepresented, and it was not until last year that we succeeded in gaining acceptance for two new proposals in the north and south central areas. These were approved in January 2000: 'Buenavista', in the north central part of the island, is a mixed reserve which includes areas with significant resources such as ecosystems with land and sea caves and island groups. 'Ciénaga de Zapata', in the south central area, is one of the most important wetlands in Latin America and is a Ramsar site. The six biosphere reserves that make up our national network are thus representative of the region's principal and secondary ecosystems, as well as having speleological and architectural value.

Within Cuba's biosphere reserves can be found examples of other categories of our national system of protected areas: natural reserves, which constitute core areas, plus national parks, ecological reserves, wildlife reserves, etc.

The economic activities of Cuban biosphere reserves include forestry, cattle-breeding, agriculture, beekeeping and tourism. Inhabitants of the communities within the reserves work mainly in these sectors, and participate in local decisions through their leaders or representatives. The socio-economic conditions of human settlements are diverse; nevertheless, free education and health care contribute to the quality of life there in all cases.

We have periodically evaluated the development of our biosphere reserves, guided by the concept, functions and Action Plans for Biosphere Reserves approved at the two International Conferences held for that purpose in 1983 and 1995 respectively. In particular, in connection with the Seville

Strategy, we consider that four main objectives have been, or are in the process of being achieved: reserves are being used for the conservation of natural and cultural biodiversity; these territories are being used as models of land management and of approaches to sustainable development; its sites are being selected for scientific research, monitoring, and also for the education and training in environmental matters of their inhabitants. Our proposals for new biosphere reserves strengthen the World Network as well as applying the concept and functions implicit in the international title of UNESCO's MAB Programme.

An objective analysis of the development of Cuba's Network of Biosphere Reserves shows that it has not been achieved smoothly. 'Sierra del Rosario', recognized as a pioneer for its gradual, sustained progress, is now in its fifteenth year and has always been considered a model, since it fulfils most of the characteristic functions of a biosphere reserve, i.e. conservation, development and logistic support. The reserve's accomplishments in the field of education for the environment are outstanding, its management and its working group are stable, it has its overall management plan and also its duly constituted co-ordination committee, although the latter does not yet function as desired. Nevertheless, in the past five or six years the other three reserves have achieved noteworthy successes, especially Cuchillas del Toa and Península de Guanahacabibes. Bacanao also continues to develop its activities. These first four biosphere reserves have sent UNESCO's Division of Ecological Sciences a satisfactory periodic review report of their first ten years. The two most recent reserves 'Buenavista' and 'Ciénaga de Zapata' were established from the outset with a certain infrastructure in human and material terms, which will doubtlessly contribute to their more rapid development.

In 1999, when we analysed our work in connection with the application of the basic directives of the Seville Strategy in all our biosphere reserves, we concluded that, in Cuba, we still needed to stress action on the following points (numbered as in the original document):

7. Devote increased attention to the human dimensions of biosphere reserves. Emphasize the links between biological and cultural diversity. Take greater account of traditional knowledge and genetic resources for sustained development.

8. Foster the collegial management of biosphere reserves. Management should be open, evolving and adaptive, so as to enable any undesirable actions to be confronted and resolved.

9. Promote biosphere reserves among managers and leaders locally and through networks. Ensure that information on biosphere reserves is circulated.

10. Use biosphere reserves to build programmes of environmental education capable of contributing to raising awareness of the inter-generational relationships between humanity and the natural world, in order to achieve a popular culture of the environment.

The legal framework of biosphere reserves in Cuba comprises the Law on the Environment and the Decree-Law on Protected Areas, which take account of the fact that land is, for the most part, in the ownership of the State. Ground, water and the atmosphere are also covered by legal provisions.

Concerning the functioning of the National Network of Biosphere Reserves, each reserve has a manager or Director and a group of specialists who report to the corresponding territorial authority and to the Agency for the Environment, both of which come under the Ministry for Science, Technology and the Environment (CITMA) and carry out scientific research in connection with biodiversity, the functioning of ecosystems, environmental impact, the rehabilitation of damaged ecosystems, education on the environment, the monitoring of parameters concerning global changes, etc. This team takes responsibility for the running of the reserve as such, fostering the development of its management plan and the organization of its co-ordination committee. It is precisely in this latter connection that the greatest difficulty is being experienced at present, since the task is not only to constitute the committee but to stabilize its operations, which has not always been successfully achieved, failing which the personal relationships which the Director establishes with local community leaders and the representatives of all local activities to a great extent supplant the workings of the co-ordination committee.

On the other hand, the above-mentioned Directors are members of the National MAB Committee, attend its plenary sessions and in all cases are consulted at the proper time. Likewise, we periodically organize a national meeting of Cuban Network of Biosphere Reserves. The latest such meeting took place in July of this year (2000), in the new 'Buenavista' reserve, and was attended by high representatives of the UNESCO Regional Office for Culture for Latin America and the Caribbean and the Cuban Commission for UNESCO. Representatives of sister biosphere reserves in Mexico also participated actively, as well as officials of the Mexican Ministry for the Environment, local authorities and delegates from institutions related to our six reserves, the National Centre for Protected Areas and members of the Cuban MAB National Committee. The meeting devoted much attention to the Law on Protected Areas and its application, as well as to the functioning of management plans and the co-ordination committee of

each reserve. Amongst other matters, it was agreed that these meetings would take place biennially, and Península de Guanahacabibes was proposed as the venue for the next meeting, in February 2002.

One proposal which we must strive to make a reality is the publication of a 'Newsletter of the Cuban National Network of Biosphere Reserves', which would enable us to contribute at regular intervals to the dissemination of the objectives and work of the reserves.

It is also worthwhile recording our participation in the regional networks of biosphere reserves, in particular in the various IberoMAB meetings which have taken place, and which were attended by delegates from the majority of biosphere reserves in Latin America, the Caribbean, Spain and Portugal. Among these meetings we should make special mention of the Third IberoMAB Meeting, which took place at the Sierra del Rosario Biosphere Reserve in Cuba in 1998.

One aspect, which we must not omit to mention, is the increasing importance of tourism, especially ecotourism, rural or natural tourism, in most of our biosphere reserves. It is clear that this activity needs to be carefully controlled to avoid its causing serious damage. This requires the establishment of specifications, interpretative pathways, suitably qualified guides, and preparation of staff in general through training in essential ecological knowledge. Naturally, if this activity is pursued within a biosphere reserve, it will add value to the advantages that our landscapes are able to provide. However, this opportunity is not sufficiently exploited in the promotion efforts of tourism companies and companies in other sectors.

Neither do we possess any seal of ecological or organic quality for the products obtained from these areas. It is clear that we shall still need to make progress on other fronts before we can aspire to one.

The representative qualities of our most interesting ecosystems have by no means been exhausted and we shall certainly be presenting new proposals for future biosphere reserves in Cuba.

On the other hand, if we look back over the last 25 years, we can see the valuable results achieved in Cuba in the area of the environment and in particular in our Network of Biosphere Reserves. However, if asked to conclude in a few words, we would say: satisfactory, but not in line with potential. There is a long way to go, although we are progressing with every step we take.

What we lack in Cuba is a real culture of the environment. In our case, it is not enough to get the message across to decision-makers, or to use 'clean' technologies: we must aspire to educate the *entire* population about the environment, in such a way that the concept of biosphere reserve can also be grasped by all.

To paraphrase W. Ospina, may we say that, important though human rights are, equally or even more important are the rights of the planet.

Canadian Biosphere Reserve Association

Charles Roberge

SOME KEY CHARACTERISTICS OF CANADIAN BIOSPHERE RESERVES

- Biosphere Reserve designation has no status under Canadian Law. Jurisdiction for land management remains the same as before designation. Therefore the program depends on co-operation.
- Canada has taken the concept of community participation one step further by promoting community leadership of biosphere reserves. Eight of Canada's ten current and candidate biosphere reserves are community led. The other two are developing local committees.
- The transition zone in a Canadian biosphere reserve is called the Zone of co-operation. This is where people live and work. It is not a transition to the working landscape; it is the working landscape.
- Canada's biosphere reserve activities are co-ordinated almost exclusively by volunteers.

FORMATION OF THE CANADIAN BIOSPHERE RESERVE ASSOCIATION

Although there have been biosphere reserves in Canada since 1978, the federal government has never found a formula to support them. This has made it difficult for biosphere reserve committees to maintain volunteers and momentum.

In 1997, representatives of the biosphere reserves began a 19-month process, working through the Bios-

phere Reserves Working Croup of the Canada MAB Committee, to create their own association.

The Canadian Biosphere Reserves Association (CBRA) is a non-profit organization with a director from each biosphere reserve, plus two federal departments. There are a small number of honorary directors, as well as observers from the two candidate biosphere reserves.

Parks Canada provides a part-time executive secretary and funds a national newsletter and some meeting costs.

Environment Canada hosts the CBRA newsletter, provides monitoring assistance and bas helped find some project staff in the past.

ACTIVITIES OF CBRA

- CBRA's main roles are national co-ordination for biosphere reserve activities, advice on the development of biosphere reserves and fundraising.
- In the past three years, it has really stimulated co-operation among Canada's biosphere reserves and succeeded in developing a number of national projects, namely:
  - Smithsonian-MAB Forest *Biodiversity Monitoring/l* Plots were established in current and proposed biosphere reserves, and are used for both monitoring and education;
  - *Landscape Chan/le* was plotted on GIS maps for all biosphere reserves using historical records, air photos and satellite imagery. These maps are useful for local co-ordination and education.
  - *Ecological restoration projects* have been carried out, in response to local priorities, such as invasive weeds, water decontamination or species reintroduction.
  - *Ecotourism projects* are being developed at current and candidate biosphere reserves through a national product club and web site.
  - *A Students Network* has been developed to advise and encourage students doing research related to Canadian biosphere reserves.

ADVANTAGES OF CURRENT ARRANGEMENT

- Co-ordination of biosphere reserves through a non-profit association has emphasized the community aspects of the program, increased co-operation and led to a feeling of ownership by volunteers.
- There is also a good potential for private donations through CBRA.
- Interest in the program in Canada has become so strong that CBRA cannot even respond to all the inquiries for information from communities, organizations and the public.

DISADVANTAGES OF CURRENT ARRANGEMENT

- Without some government core funding, volunteers will continue to struggle to find time and resources for their biosphere reserve activities.
- It was with mixed feelings that CBRA members learned of the CAD$15 million federal grant to Clayoquot Sound Biosphere Reserve, when the other seven biosphere reserves receive either CAD$5,000 per year or nothing from the federal government.

HOPE FOR THE NEAR FUTURE

- CBRA feels that a non-profit association with some modest core support would be the best arrangement to co-ordinate the community-based program of biosphere reserves in Canada.
- Requests for core funding of biosphere reserves and CBRA have been made to both Environment Canada and Parks Canada. So far there has been no official response, but we are still hopeful.

CANADA'S BIOSPHERE RESERVES

- Mont-Saint-Hilaire (Quebec). The protected mountain is owned by McGill University, and the surrounding lands are used for fruit and vegetables, as well as country living
- Waterton (Alberta). The core area is a national park, and the zone of co-operation is ranch land and forests.
- Long Point (Ontario). The core is a national wildlife area, and there are small towns, farms and woods in the vicinity.
- Riding Mountain (Manitoba). This contains Riding Mountain National Park and almost a million ha of surrounding agricultural land.
- Charlevoix (Quebec). Two provincial parks are core are as and the economy is based on tourism, farming and forestry.
- Niagara Escarpment (Ontario). It contains federal and provincial protected areas, and is important for recreation, town and country living, fruit, vegetables and dairy cattle.
- Redberry Lake (Saskatchewan). Core areas are wildlife sanctuaries on a saline lake and the main economic activity is grain farming.
- Clayoquot Sound (British Columbia). It includes one national park reserve and 16 provincial parks. Major activities are forestry, fishing and tourism.

Chinese Biosphere Reserve Network (CBRN): An instrument for implementing the Seville Strategy in China

Han Nianyong

■ The Biosphere Reserve (BR) concept is an unconventional model of conservation. To implement BR concept, particularly the Seville Strategy, an unconventional instrument is required which should fit the circumstances of the country and also adapt to the local context where each biosphere reserve is located. The Chinese Biosphere Reserve Network (CBRN) is such an instrument within China.

■ The CBRN was established in 1993. The background and needs for setting up such a national network have been:
- Sharp conflict between conservation and development facing the protected areas of China due to its huge population, with heavy pressures to the natural resources and environment;
- There has been a rapid growth in the number of nature reserves, but the resources they have received have been far from their demand. Their management has lagged much behind in consequence;
- A multitude of sectors have been in charge of the nature reserves, resulting in fragmentation in management;
- China-MAB based in the Chinese Academy of Sciences has some advantages to make contribution to improve this situation;
- Since 1993, UNESCO-MAB Programme has placed biosphere reserve as its central component. Following this shift China-MAB has focused its priority on biosphere reserves too.

■ Addressing above concerns, the main functions of CBRN have been defined and played as:
- To provide scientific support (soft input) focusing on improving the nature reserve management. This is complementary to the 'hard' input given to establishment of the nature reserves by the agencies that are administratively in charge of them;
- To serve as a round table for communication of the nature reserves across the sectors;
- To be an international linkage under the UNESCO umbrella for China's nature reserves to contact to outside countries and organizations.

■ Since establishment in 1993, CBRN has undertaken about 100 activities and projects including training activities, workshops, study tours, reviews, research, etc. More then one thousand persons participated in these activities/projects, and among them about 70% were reserve managers. The current priority fields of these activities/projects are:
- **GIS application in biosphere reserve management**
  7 biosphere reserves and 1 nature reserve have established GIS addressing such issues as habitat assessment, zonation, ecotourism planning, forest fire detection.
- **Ecotourism**
  A series of activities/projects have been taken respectively on strategic study, development of management indicators, training and seminars, publishing ecotourism guidelines, study tours, etc.
- **Policy issues**
  Management policy, which plays a key role in the implementation of Seville Strategy, has often been taken as main subject of national surveys, seminars, and research projects. A policy study on sustainable management of China's nature reserves has been carried out and completed recently including some important issues of management regime, financial support, local participation, capacity building and resources use. As a result of this work, a series of recommendations has been made to the government.
- **Biosphere reserve review**
  Besides the periodic review organized by UNESCO, CBRN has also carried out national reviews on biosphere reserve management to strengthen implementation of the Seville Strategy in China. The characters of the national review are: 1) to be taken in field at the site; 2) to have the site management issues as the main topic; 3) to involve as many managers from other reserves as

possible; 4) not necessary to be undertaken once every 10-years period. Up till now, 10 biosphere reserves were reviewed in this way and about 400 managers of CBRN member reserves have been involved.

- **Information dissemination**
  CBRN publishes a periodical journal (quarterly) entitled 'Man and the Biosphere' mainly for interpreting knowledge on biosphere/nature reserves to the public readers and a newsletter in respectively Chinese and English version, as well as some non-periodical publications addressing the needs of biosphere reserve management.

■ CBRN as a national network, since its establishment, has been always facing a question in how make the network really work. In this aspect, the main experiences 'learned through doing' by CBRN are:
- Keep its activities and projects problem/need-oriented in context of the country;
- Take into consideration the interests of the of majority member reserves, for example make the activities and projects interesting to majority of the members and widely involved by them, and provide the information that is useful in common;
- Use UNESCO's limited seed-funds in an integrative manner to make activities/projects link each other to the maximum and increase their visibility by outputs and results.

■ The activities organized by CBRN have been focusing on the aspects of research, training, dissemination of information and transformation of management skills. However, to implement Seville Strategy in practice instead of only spread the concept on the 'paper', the actual demands are much beyond input of above activities. Policy and financial support are even more important. However there are big gaps and filling the gaps is difficult due to the weakness of CBRN, even if the MAB programme provides a structural position and administrative function. If the gaps cannot be filled, Seville Strategy will still remain in 'spreading on paper' and it will be difficult to implement concrete action. Therefore convincing the governments to provide support is becoming a key task. To this end, one low cost option is to establish successful demonstration of biosphere reserves. This has been identified as a priority of CBRN in further implementing the Seville Strategy in China.

Co-ordination of the French Network of Biosphere Reserves

Catherine Cibien

INTRODUCTION

What can be done at the national level to co-ordinate biosphere reserves which have in common the biosphere reserve concept, the Seville Strategy and the Statutory Framework, but are very diverse from geographic, ecological, cultural, social and administrative points of view?

The main advantage of the biosphere reserve concept is that it is more fully comprehensive than other systems (for instance protected areas and land use systems).

CO-ORDINATION OF A NATIONAL NETWORK OF BIOSPHERE RESERVES

Co-ordination of a national network of biosphere reserves needs:

1. To establish and effective network

1.1 Promoting and helping exchanges between biosphere reserves at the national level:

- Organizing regular meetings between co-ordinators and administrative agencies with scientists on specific topics,
- Publishing a regular newsletter, which concerns the biosphere reserves co-ordinators, scientists, local representatives, and administrative bodies;
- Managing a web site;
- Publishing various documents (technical, scientific) by the network.

1.2 Establishing a common approach, using common tools, setting up projects at the level of the national network:

- Establishing national data bases on biosphere reserves, in order to be able to make some evaluations at the national level: for example, what the role has the BR network to play in biodiversity conservation at the national level? These national data bases, bridging the local data bases, with common standards can deal not only with flora and fauna, but especially with indicators concerning man/biosphere interactions,
- Having common management tools for biosphere reserves, as for example as been done in France with Management Guidelines (*MAB Digest* n°19),
- Launching common research programmes in ecology, geography, sociology, economy culture etc,
- Developing approaches for local involvement,
- Having common educational tools and projects for biosphere reserves,
- Creating a label for the BR for clean enterprises,
- Defining and developing partnerships to address agricultural, forestry, and fisheries questions,
- Opening discussion as to renewable energies and how to promote them,
- Investigating urban development.

2. To help each biosphere reserve to work better

2.1 To promote the revision of old biosphere reserves which are not in accordance with current concepts (zoning system, co-ordinating system...)

2.1 To help each biosphere reserve establish management guidelines.

A MAB committee team initiates the process during a 2 or 3 day meeting with the people involved in the biosphere reserve. Other meetings can be organized to follow up.

2.3 To give financial support to biosphere reserves.

3. To make the network better known and to obtain better recognition

3.1 Specific communication support designed for different audiences: institutional, local, etc. (paper, internet...)

3.2 Obtaining official recognition.

It has proved quite difficult to obtain official recognition for the biosphere reserve network at a national level: there is no legal status, the biosphere reserve is often placed alongside protected areas, and its functions do not appear to be clear. This situation has probably grown out of the fact that the position of the BR has changed with time: at the beginning we talked much about biogeographical representation. Then the focus was on scientific research and also local involvement. A 'biosphere reserve' was considered as a label for sites with a high ecological and scientific profile before this was changed, in Seville, to become tools to experiment new forms of territorial land management.

In France we have various systems of conservation, some of which (Nature regional parks) are based on contracts between local representatives and the state. These appear very similar to biosphere reserves, even if the logistic function is less clearly laid out (especially research). So, the biosphere reserves are not sufficiently visible to enable them to stand out from the rest. This must be improved, to get increased support from the relevant Ministries (Environment, Agriculture, etc.).

CONCLUSION: WHAT DO BIOSPHERE RESERVES OFFER THAT THE OTHER APPROACHES DO NOT?

They are designed to be as comprehensive as possible, their values are universal, they make up an international framework for co-operation, but also present the dimension 'experimentation site for sustainable development'. Our ecological and social problems (pollution, soil erosion and degradation in

general, unemployment, unbalanced population distribution, intolerance...) are so very diverse that it is hard to imagine global solutions. The value of 'test' zones or pilot sites must be accepted, and ways must be found to obtain recognition for biosphere reserves as such by our government.

Indian National Network of Biosphere Reserves and its future contribution to the World Network

R. K. Rai

The Biosphere Reserve Scheme is the main field level activity of the Indian National MAB Committee.

Goals

- Improving scientific understanding of natural and social processes relating to man's interactions with his environment,
- Providing information useful to decision making on resource use,
- Promoting the conservation of genetic diversity as an integral part of land management,
- Enjoining the efforts of scientists, policy makers and local people in problem solving ventures,
- Mobilizing resources for field activities,
- Strengthening of regional co-operative framework.

IMPLEMENTATION OF THE SCHEME

Unique and pristine areas (ecosystems), which are representative of the overall biota of the region and represent globally significant landscapes are identified and designated as biosphere reserves.

The goal is to facilitate *in situ* conservation and maintenance of India's immense biological diversity which is estimated to consist of over 47,000 plant species and 81,000 animal species, representing about 7% of the world's flora and 6.5% of world's fauna respectively.

The emphasis of biosphere reserves of the MAB Programme is on:

- the conservation of landscapes, ecosystems, species and genetic variations;
- promotion of economic development which is culturally, socially and ecologically sustainable; and
- providing logistic support for research, monitoring, education and information exchange related to local, national and global issues.

This concept is functionally different from protected areas like National Parks and Sanctuaries, and adopts an inter-institutional and inter-sectoral approach with emphasis on active participation of local communities in management and scientific research with focus on conservation and local development issues.

Biosphere reserves are not a substitute or alternative, but complementary to other protected areas like National Parks and Sanctuary. Biosphere reserves are designed to promote and demonstrate a balanced relationship between people and the nature leading to sustainable socio-economic development.

INSTITUTIONAL MECHANISMS

The Indian National Man and Biosphere (MAB) Committee

The Committee advises on policy issues and programmes and their implementation in the Biosphere Reserves. The Committee periodically examines management activities and suggests necessary interventions.

The National Scientific Advisory Group for Research in Biosphere Reserves

This Group advises on research priorities and recommends research projects for implementation.

State Level Steering Committee

The concerned States have constituted state level steering commit tees to advise on policy, programmes and management interventions for specific biosphere reserves and to ensure co-ordination among different line departments.

Local (biosphere reserve) Level Committees

Biosphere reserve level local committees are constituted for selection of priority items of activity, to

oversee implementation of the Management Action Plans and its beneficiaries, and to create awareness etc.

Village Level Committees

A large number of Village Level Committees are very active in many biosphere reserves. These Committees ensure people participation and co-operation.

Nodal Agencies and cross-sectoral co-ordination

- The nodal agencies for the implementation of the scheme are mostly Forest Departments with the exception of Pachmarhi biosphere reserve where the Environmental Planning and Co-ordination Organization (EPCO), an autonomous body of the state, is acting as nodal agency.
- Joint meetings of the Project Managers and Research Scientists are organized annually at the national level to facilitate exchange of information and interaction.

RESEARCH PRIORITIES

- Study of natural systems and how they are changing;
- Monitoring structure and dynamics of the core area and compare them with functioning of human-affected landscapes in buffer zones to understand changes over time;
- Study of traditional forms of resource and land use practices devised by people over long periods, which do not deplete natural resources and can provide valuable knowledge for modem production system;
- Share knowledge on sustainable management of natural resources and development of skills through on the spot training and demonstration;
- Conflict resolution pertaining to major problems of sectoral nature involving stakeholders concerned (local officials, landowners, farmers, fishermen, private enterprises etc.)

CURRENT INITIATIVES

Management

The management of biosphere reserves is the responsibility of concerned state governments with necessary technical, financial and training input from the central government. The activities include:

- Enhanced protection measures,
- Institutional capacity building,
- Extensive eco-regeneration involving local communities and setting up of demonstration plots,
- Alternate livelihood options and socio-economic up lifting of local communities,
- Alien species eradication,
- Maintenance and protection with emphasis on corridor areas.

Research

More than 79 targeted research projects have been taken up in priority areas in different biosphere reserves.

FUTURE NEEDS

- Training of policy level officials and biosphere reserve managers, preferably at a best managed biosphere reserve;
- Remoteness of the sites do not attract good managers. To overcome this, infrastructural facilities at site level need to be augmented;
- Capacity building with equipment and security for field level staff;
- Mass education and awareness among local communities that are mostly traditional communities largely dependent on forest resources.

PRESENT BIOSPHERE RESERVES

- *Name:* Nanda Devi
  Total area in km²: 5,860.69 of which of which 624.62 + 87.5 are core zone
  Date of notification in India: 18 January 1988 (Revised on 7 February 2000)
  Location (State): Uttar Pradesh (Chamoli, Pithoragargh and Almora Districts)

- *Name:* Nokrek
  Total area in km²: 820 out of which 47.48 are core area
  Date of notification in India: 1 September 1988
  Location (State): Meghalaya (Garo Hills)

- *Name:* Manas
  Total area in km²: 2,837 out of which 520 are core area
  Date of notification in India: 14 March 1989
  Location (State): Assam (Kokrajhar, Bongaigaon, Barpeta, Nalbari, Kamprup and Darang Districts)

- *Name:* Sunderbans
  Total area in km²: 9,630 out of which 1,700 are core area
  Date of notification in India: 29 March 1989
  Location (State): West Bengal (Delta of Ganges and Brahamaputra river system)

- *Name:* Gulf of Manar
  Total area in km²: 10,500
  Date of notification in India: 18 February 1989

Location (Sate): Tamil Nadu (Indian part of Gulf between India and Sri Lanka)

- *Name:* Nilgiri
  Total area in km²: 5,520 out of which 1,240 are core area
  Date of notification in India: 1 August 1986
  Location (State); Tamil Nadu, Kerala and Karnataka (Wynad, Nagarhole-NP, Bandipur-NP and Madumalai, Nilambur, Silent Valley-NP, Mukuruthi-NP, New Amarambalam and Siruvani Hills)

- *Name:* Great Nicobar
  Total area in km²: 885 out of which 520+185 is core area
  Date of notification in India: 6 January 1989
  Location (State): Andaman and Nicobar Islands (Southern most islands)

- *Name:* Similipal
  Total area in km²: 4,374 out of which 845 are core zone
  Date of notification in India: 21 June 1994
  Location (State): Orissa (Mayurbhanj district)

- *Name:* Dibru-Saikhowa
  Total area in km²: 765 out of which 340 are core area
  Date of notification in India: 28 July 1997
  Location (State): Assam (Dibrugarh and Tinsukia districts)

- *Name:* Dehang Debang
  Total area in km²: 5,111.5 out of which 4,094 are core area
  Date of notification in India: 2 September 1998
  Location (State): Arunachal Pradesh (East Siang, West Siang and Debang Valley districts)

- *Name:* Pachmarhi
  Total area in km²: 4,926.28 out of which 524.37 are core area
  Date of notification in India: 3 March 1999
  Location (State): Madhya Pradesh (Parts of Betul, Hoshangabad and Chindwara districts)

- *Name:* Kanchanjunga
  Total area in km²: 2,619.92 out of which 1,784 are core area
  Date of notification in India: 7 February 2000
  Location (State) Sikkim (Parts of North and West Sikkim)

OTHER POTENTIAL SITES FOR BIOSPHERE RESERVES

Name of the site	*Name of the State*
1. Cold Desert	Jammu and Kashmir, Himachal Pradesh
2. Namdapha	Arunachal Pradesh
3. Kaziranga	Assam
4. Thar Desert	Rajasthan
5. Kanha	Madhya Pradesh
6. Abujmarh	Madhya Pradesh
7. Amarkantak	Madhya Pradesh
8. Little Rann of Kutch	Gujarat
9. Seshachalam	Andhra Pradesh
10. Chintapalli	Andhra Pradesh
11. Sahyadri Hills	Goa, Karnataka, Maharashtra
12. Agasthyamalai	Kerala and Tamil Nadu
13. Lakshadweep Islands	Lakshadweep
14. North Islands of Andamans	Andaman and Nicobar Islands

The National Network of UNESCO Biosphere Reserves of Ukraine

Valentyn Voloshyn and *Tetiana Poltoratska*

Today the National Network of UNESCO biosphere reserves in Ukraine consists of four national and two transboundary biosphere reserves with the total area of more than 296,000 ha.

The following **national reserves** are included in the network:

- Chornomorsky,
- Askania-Nova', functioning in the territory of Ukrainian Prychernomorye,
- Carpathian in the region of Ukrainian Carpathians,
- Dunaisky in the region of Danube Delta.

The two **transboundary biosphere reserves** are the 'Eastern Carpathians' (Poland/Slovak Republic/ Ukraine) and 'Danube Delta' (Romania/Ukraine).

The Eastern Carpathians constitute the exceptional and unique protected area that is the world's first, and so far only, trilateral transboundary biosphere reserve. Its total territory covers nearly 206,000 ha and includes Poland's Bieshchadsky National Park with the territory of 108,000 ha, Slovakia's Poloniny National Park with the territory of nearly 41,000 ha and Ukraine's Uzhansky National Nature Park with the territory of 58,000 ha.

The total territory of transboundary biosphere reserve 'Danube Delta' covers 626,000 ha and includes the Romanian and Ukrainian units with their territories of 580,000 ha and 46,000 ha correspondingly.

It is necessary to underline the fact that after the adoption of UNESCO Seville Strategy, the Dunaisky biosphere reserve and the above-mentioned transboundary biosphere reserves 'Eastern Carpathians' and 'Danube Delta' were created in Ukraine. This means that the number of biosphere reserves in Ukraine has doubled in the last five years. This has provided the possibility to create a full-scale national network of UNESCO biosphere reserves in Ukraine. Such results were achieved through the implementation of the principles of UNESCO Seville Strategy in the context of which MAB-Ukraine is working on the development of the National network of UNESCO biosphere reserves.

The above-mentioned biosphere reserves network was created taking into consideration the scientific recommendations on the natural zonation of Ukraine, particularly in its coastal zones and transboundary regions. Biosphere reserves play a special role in meeting the new challenge to harmonize environmental conservation needs and sustainable development at a regional level, as well as the optimization of biological diversity at the level of species, ecosystems and landscapes through their protection by 'ecological corridors'.

This activity is being carried out in close contact with regional authorities with the active involvement of local populations, including the conservation of traditional forms of land uses. In this context let me characterize briefly each biosphere reserve of Ukraine's national network of biosphere reserves.

- **The 'Eastern Carpathians' Transboundary Biosphere Reserve (Poland / Slovak Republic / Ukraine)** includes the territory of Uzhansky National Nature Park with its unique mountains, with virgin beech forests of the Ukrainian Carpathians. Our Polish colleagues co-ordinate the activity of this trilateral biosphere reserve.
- **Dunaisky Biosphere Reserve of Ukraine**, whose wetlands are included in the Ramsar List, forms one of the units of the Danube Delta Transboundary Biosphere Reserve (Romania/ Ukraine). The organization of this reserve promoted the intensification of creative contacts between Romanian and Ukrainian specialists in the solution of the issues of the biodiversity conservation issues within the territory of Danube Delta as a unique nature ecosystem in Europe. It should be stressed that this region today is exposed to the most anthropogenic impact on the European territory.
- **Chornomorsky Biosphere Reserve** (covering more than 100,000 ha) represents the zone of the Black Sea coastal areas and dry steppe of Southern Europe. The main wealth of this reserve is its bird fauna. The bays of this reserve are included in the International List of Ramsar Convention on Wetlands.
- The steppe zone of Ukraine is represented by the **Askaniya Nova Biosphere Reserve** with the territory of nearly 33,000 ha. This is the only area in Europe with intact fescue-feather grass steppe ecosystems.
- The **Carpathian Biosphere Reserve** covers nearly 58,000 ha. It is a part of the mountain system of the Central Europe. The ecosystems of the reserve belong to the mountain-forests and

valley sites of the Carpathian bio-geographical region with its unique coniferous and mixed forests as well as the sole 'Daffodil Valley' in Central Europe.

The Ukraine-MAB Committee co-ordinates the activity of the network of biosphere reserves of Ukraine through the exchange of information, specialists, the organization of joint seminars and projects.

Burning issues are discussed at the meetings of UNESCO-MAB of Ukraine. In particular, the problem 'On the scientific bases of the Preservation of Biological and Landscape Diversity in the Context of Sustainable Development of Ukraine' was discussed in June 1999. We consider that the organization as well as the conduct of the integrated monitoring in the long-term is the main conditions for a successful solution of the problem on conservation and development. In this context, the perspective plan on the creation of the network of transboundary biosphere reserves in Ukraine was elaborated.

Today the proposals on the creation of the following transboundary biosphere reserves are being prepared: 'Western Polissaya' and 'Rostocha' (Poland/Ukraine) and 'Marmarosh' (Romania/Ukraine). Together with our Russian colleagues we have started to work on the establishment of the transboundary biosphere reserve in the Desna basin and the Bryansk and Starohuts Forests.

Working Group 7: Co-ordination of national networks of biosphere reserves

Moderator: Ms Catherine Cibien (France).

The working group heard presentations by Mr Nianyong Han (China), Mr Charles Roberge (Canada), Ms Catherine Cibien (France), Mr R. K. Rai (India), Mr Vladimir Voloshyn (Ukraine), Ms María Herrera (Cuba) and Mr Heorhi Kazulka (Belarus).

The presentations showed that the co-ordinating structures at the national levels need support – in terms of funds as well as human resources – which is identified as their own and is constant, in order to assume their essential duties serving the national biosphere reserve networks. These duties include:

- Exchange of information (among the biosphere reserve themselves, but also as an interface at the national and international levels).
- Development of joint/co-ordinated activities/projects (including research, monitoring, training, information systems and materials, etc.).
- Fund raising and 'political lobbying' at the national and international levels.

Even if in many cases the funding of the national co-ordinating structure is supported by governmental bodies, there are also cases where the funding is coming from the biosphere reserves themselves, or from private/non-profit associations. In both situations, this support is rarely at the required level, and limits possible action.

The core of the Seville Strategy implementation is the existence of successful biosphere reserves, i.e. where the biosphere reserve concept is not just declared but put into practice. This means that individual biosphere reserves need adequate support from both the national and international supporting/co-ordinating structures, which in turn need to mobilize the necessary support to enable them to fulfil their mandates. Continuous and positive interaction among a) biosphere reserves, b) national co-ordinating structures and/or mechanisms and c) the MAB Secretariat and regional networks can only be achieved if there are strong and active national structures.

It was finally underlined that the simple fact of being part of a network should also generate benefits for individual biosphere reserves.

Recommendations

In this connection, it is recommended that:

- Biosphere reserve co-ordinators should be closely associated with the national co-ordinating structure.
- For sites nominated as biosphere reserves, the Advisory Committee for Biosphere Reserves should verify that plans or strategies for financial and human support are clearly indicated in order

to ensure that new biosphere reserves will be able to function efficiently, and, in particular, to be able to link with the national co-ordinating structures and/or mechanisms. (Such a criterion should also be used when reviewing national structures). It is expected that, through this verification process, countries will be stimulated to (re)commit themselves, in particular by examining the situation of their national networks in the light of the implementation indicators of the Seville Strategy.

- The Secretariat should assist Member States to help them identify and submit proposals to potential donors/financing agencies for support to establish and co-ordinate a national biosphere reserve network and also for specific projects in their biosphere reserves.

- National co-ordinating structures should be encouraged to exchange and/or share material and human resources (on a bi- or multilateral basis).

WORKING GROUP 8: IMPACT OF THE PERIODIC REVIEW

The impact of the Periodic Review of Biosphere Reserves: Towards ensuring a strong World Network

Martin Price

THE CONTEXT: CHANGING PERCEPTIONS OF CONSERVATION

The past 25 years have seen significant changes in concepts of conservation, in particular the growing realization that areas of importance for the conservation of biological diversity can no longer be 'protected' from those that live around them, but that these people need to play key participatory roles in the management of these areas. Over the same period, the biosphere reserve concept, as it has evolved, has foreshadowed this changing approach of the conservation movement in general (Price, 1996). In the first formulation of the concept, published in 1974 (UNESCO, 1974), conservation and ecological research were the major objectives. The provision of opportunities for education and training were also important functions. Buffer zones were envisaged, but with a primary emphasis on the management of ecological resources (e.g., wildlife migration), as well as opportunities for 'educational programmes, tourism or other purposes designed to foster appreciation of the biome' and manipulative research. In addition, a biosphere reserve – both core and buffer zones – was expected to have 'adequate long-term legal protection'.

Between 1976 and 1981, under this formulation of the concept, 208 biosphere reserves were designated: more than half of the current number in the World Network of Biosphere Reserves (WNBR). In the early 1980s, the need to strengthen links between conservation and development was stressed in both the World Conservation Strategy (IUCN/UNEP/WWF, 1980) and many papers at the First International Biosphere Reserve Congress in 1983 (McNeely and Navid, 1984), whose Action Plan stated 'People should be considered part of a biosphere reserve' (UNESCO, 1984). By 1985, there were 239 biosphere reserves. The concept was reformulated in 1986 by the Scientific Advisory Panel on Biosphere Reserves, which stated that 'A primary concern of the biosphere reserve is *conservation* …. [H]owever ... the conservation function ... should be viewed in a more anthropic manner, where *biosphere reserves should be demonstration sites of harmonious, long-lasting relationships between man and the natural environment*' (UNESCO, 1986, emphasis in original). The three current func-

tions emerged, as concerns to be combined and harmonized:

- **conservation:** 'Biosphere reserves should help to strengthen the conservation of biological diversity, genetic resources and ecosystems';
- **logistic** (international research and monitoring): 'Together, biosphere reserves should constitute a well identified international network of areas for research and monitoring directly related to MAB field activities, making the accompanying training and information exchange';
- **development:** 'Biosphere reserves should associate environment and land and water resources development in their research, education and demonstration activities'.

THE SEVILLE CONFERENCE: A TURNING POINT

It was not until 1995, when the Statutory Framework of the World Network of Biosphere Reserves (UNESCO, 1995) went through its final stages of drafting at the Seville conference and was then adopted by the MAB International Co-ordinating Council (ICC) and the General Conference of UNESCO, that a mechanism emerged for encouraging biosphere reserves to keep 'up-to-date' with the evolving concept. As noted already by the Advisory Committee on Biosphere Reserves in its report to the ICC in 1993 (UNESCO, 1993), many sites within the WNBR had been proposed and approved without full consideration of their potential for achieving the objectives of even the earlier versions of the concept. Consequently, in their current configuration, a significant proportion of the 328 biosphere reserves designated by 1995 – particularly the 239 designated before 1985 – do not, and are unlikely to, fulfil all of the intended functions defined in the Statutory Framework.

One of the background documents for the Seville conference was the 'Evaluation of the Implementation of the 1984 Action Plan for Biosphere Reserves', prepared by IUCN (1995). In 1986, it had been suggested that, if all of the recommendations included in the 1984 Action Plan were carried out, 'biosphere reserves might become the most important component of the world's protected-area system' (WRI/IIED, 1986). However, while the concept had continued to develop, remaining in the forefront of conservation thinking, IUCN found that there was a considerable gap between concept and reality. Some of its key findings were:

- 'approximately fifty percent of biosphere reserves consist of a national park with an additional buffer or transition zone';
- 'the majority of biosphere reserves are managed by people trained in the biological sciences who may be more adept at working on ecological, rather than socio-economic, issues. This, too, has led to the under-representation of the social sciences and development function';
- 'There is a critical gap ... as to what are the unique management challenges of biosphere reserves';
- Local participation is a crucial component of biosphere reserves that has never received the attention it merited. ... It is not enough to allow local communities to participate in biosphere reserve management; they must also benefit from it'.

THE PERIODIC REVIEW PROCESS

Such findings, and the recognition that the potential of the WNBR could only be realized if all biosphere reserves conformed as closely as possible to the current version of the concept, were the background to the Seville conference and the formulation of the Seville Strategy and Statutory Framework. As stated in the Statutory Framework, the key expression of the concept at the beginning of the twenty-first century is that 'biosphere reserves should strive to be sites of excellence to explore and demonstrate approaches to conservation and sustainable development at a regional scale'. The periodic review process enshrined in Article 9 of the Statutory Framework is a means for ongoing evaluation of the degree to which individual sites do strive to attain the goal of being such a 'site of excellence'. The process consists of the following stages:

1. the MAB Secretariat sends out a form to the concerned authority requesting a report on the status of the biosphere reserves according to the criteria in Article 4 of the Statutory Framework (i.e., existence and functioning of the full suite of zones, management policy/plan and designated authority, public participation, and programmes for research, monitoring, education, and training);
2. the concerned authority submits a report to the MAB Secretariat;
3. the Advisory Committee on Biosphere Reserves considers the report and makes a recommendation to the ICC;
4. the ICC either a) recognizes the satisfactory status or management of the biosphere reserve or b) recommends measures to be taken to ensure conformity with the provisions of Article 4.

In practice, the recommendations of the Advisory Committee have been sent to concerned authorities by the MAB Secretariat for further action before consideration by the ICC.

As well as the end point of the process mentioned under 4(a) above, two others are possible. First, if, after a 'reasonable period', the ICC finds that a biosphere reserve still does not satisfy the Article 4 criteria, it can notify the Director-General of UNESCO that this area will be longer be referred to as 'biosphere reserve which is part of the network' (WNBR). Second, if a state recognizes that a biosphere reserve under its jurisdiction does not have the potential to satisfy these criteria, it can remove it from the WNBR, notifying the MAB Secretariat. This was done in 1998 by Norway with regard to the former Northeast Svalbard Biosphere Reserve; a site of great conservation importance, but with no resident human population and therefore inappropriate for fulfilling the development function. The ultimate aim of the periodic review process is to ensure, within a reasonable period, that all members of the WNBR do fulfil the three complementary and mutually reinforcing functions of biosphere reserves, so that the reality comes to match the concept, and biosphere reserves achieve the recognition as the sites of excellence that they should be. It is realized that this may mean the loss of a number of the oldest biosphere reserves. However, given that new reserves are being proposed and designated every year, it is unlikely that the total number of members of the WNBR will decline significantly.

The periodic response form has now been sent to those responsible for the 291 biosphere reserves designated up to 1990. The types of actions taken to provide completed reports to the MAB Secretariat have included:

- completion of the form by site managers/co-ordinators;
- completion of the form by national MAB committees;
- preparation of a report by a consultant;
- participatory processes leading to wide consideration of the various issues relevant to all of the reserves in a country currently under consideration;
- proposals to the MAB Secretariat for the extension of reserves to reflect the current concept.

In addition, despite repeated requests for reports, a considerable number of countries have not responded.

THE REVIEW PROCESS IN THE UK

The review process in the UK, described below, has not yet led to a report being submitted to the MAB Secretariat. Nevertheless, the thoroughness of the process, and the willingness of the concerned agencies to seriously consider how the concept could be effectively implemented, provides a model which other countries – especially those with biosphere reserves designated in the early years of the concept – might wish to consider.

There are currently 13 biosphere reserves in the UK. All were designated in 1976 or 1977 and were almost entirely on National Nature Reserves, the highest level of national conservation designation in the UK. As these are some of the earliest biosphere reserves, the MAB Secretariat sent the periodic review form to the UK government in 1997. In 1998, the Department of Environment, Transport and the Regions (DETR) tendered a competitive contract for a thorough review of the UK's biosphere reserves. The winning bid was from the Environmental Change Unit at the University of Oxford. The principal aim of the study was to consider the application of the criteria defined in the Statutory Framework with respect to the UK, with two main objectives defined in the terms of reference:

- to consider the concepts supporting biosphere reserves and provide advice on their relevance and value in the light of other designations across the UK;
- to determine if there is any real wildlife gain (i.e., benefits to wildlife) to be achieved by adopting the designation in the UK and, if so, under what circumstances.

The review process began with a workshop in September 1998, which brought together 65 people from a wide range of government agencies, non-governmental organizations, and academia to consider the MAB programme in the UK, particularly biosphere reserves. Work then started on a review of the evolution of the biosphere reserve concept, the history of UK biosphere reserves, and a desk review of the existing sites. At a meeting to review progress on the project held in November 1998, the inter-agency Steering Group for the project concluded that the second objective was too narrow, and that the report should therefore take a wider view of the benefits of biosphere reserves as 'sites of excellence to explore and demonstrate approaches to conservation and sustainable development on a regional scale', as defined in the Statutory Framework.

Further areas of background work, which contributed to the final report (Price *et al.*, 1999) were: 1) a comparison of the functions and criteria of biosphere reserves with those of UK, European, and global designations and 2) a review of the application of the Seville criteria in the UK, with an emphasis on sustainable development and the involvement of local communities. The latter work recognized that many recent speeches by government ministers and

documents from UK government agencies had stressed the importance of partnerships based on the linkages between sustainable development and conservation. It was concluded that:

> 'Reaching agreement on 1) a management policy or plan covering a non-statutory area under a wide range of ownerships and (often overlapping) jurisdictions and 2) the resources and appropriate "authority or mechanism" to implement it would be a challenging and complex process. This has recently been shown with regard to Natural 2000 sites and is also recognized for [Areas of Outstanding Natural Beauty] – and these are statutory designations. Considerable effort would be required to ensure the long-term goodwill and resources required from a large number of stakeholders within the region – recognizing that the outer boundaries of the transition area do not have to be specifically delineated. Nevertheless, there are a number of positive experiences in the UK, particularly in coastal areas, and, as experiences with biosphere reserves in other countries ... have shown, such agreements are possible and can be successfully implemented in the long term, as long as there is broad stakeholder support and funding from a broad base of sources.'

REVIEW OF UK SITES

In order to assess the applicability of the biosphere reserve concept to the existing UK biosphere reserves, a preliminary desk comparison was made to the criteria specified in Article 4 of the Statutory Framework. It was concluded about all existing sites that:

- they are 'of significance for biological diversity conservation' (sec. 2);
- they have 'a legally constituted core area devoted to long-term protection' (sec. 5[a]).

Many sites 'encompass a mosaic of ecological systems representative of major bio geographic regions', though there is rarely much of 'a gradation of human interventions' (sec. 1). Many have 'programmes for research, monitoring, education and training' (sec. 7[d]). In some cases, these programmes are implemented *de facto*; in others, according to strategic research plans. Very few of the existing biosphere reserves have organizational arrangements for involvement and participation of stakeholders (sec. 6). However, none has:

- a clearly identified buffer zone(s), with mechanisms for managing human use and activities (sec. 5[b], sec. 7[a]);
- a outer transition area (sec. 5[c]) and is therefore of 'an appropriate size to serve the three functions of biosphere reserves' (sec. 4), particularly providing 'an opportunity to explore and demonstrate approaches to sustainable development on a regional scale' (sec. 3);
- a management policy or plan for the area *as a biosphere reserve,* or designated authority or mechanism to implement this policy or plan (sec. 7 [b], [c], emphasis added).

The corollary of these findings is that if any of the existing UK biosphere reserves are to continue as a member of the WNBR, their boundaries and management will need significant changes. For two sites, however, there appears to be no possibility of restructuring to meet the criteria in Article 4 of the Statutory Framework: Clash Moss and St. Kildare. The absence of any local community at these two sites makes it impossible for them to fulfil the development functions of a biosphere reserve. Moreover, their isolation makes many of the logistic functions, such as education and training, equally difficult. Consequently, it was decided that these sites did not merit a site visit and could be recommended for de-designation as biosphere reserves without further consideration. All of the remaining sites were visited in November and December 1998.

The principal aims of the visits were:

- to assess the extent to which the site, and activities on it, matched the Seville criteria;
- to identify existing activities, designations, initiatives, schemes etc. on, adjacent to, or near the site which could contribute to meeting the Seville criteria;
- to evaluate existing local management structures which could contribute to meeting the Seville criteria for a restructured biosphere reserve.

During the site visits, lasting three days on average, semi-structured interviews were conducted with representatives of statutory agencies concerned with the existing biosphere reserve and the surrounding area, particularly with regard to conservation and land-use planning. In addition, representatives of relevant non-governmental organizations and landowners were interviewed when appropriate. Elected officials were generally not interviewed unless they had additional responsibilities (e.g., on local or regional statutory or non-statutory bodies). Information was also obtained through the review of relevant documents and maps.

As noted above, the general conclusion was that conservation objectives are largely met at the 11 sites which were visited, which is not surprising as not only are all Sites of Special Scientific Interest, all but one (which was re-declared in 1996) are National Nature Reserves, but all also fall (wholly or partially) under other UK and European designations. In and

around many sites, sustainable resource management practices are being implemented. However, in most cases, such practices are not linked particularly closely, if at all, to the management policy of the sites currently included in the biosphere reserve. This is largely because these sites are effectively core areas, managed for conservation; in some cases, with a surrounding 'buffer'. Nevertheless, in the region surrounding many of the sites, there are a number of schemes, structures or institutions that could contribute to the effective functioning of potential buffer zones and/or transition areas. The clear conclusion is that, to function as biosphere reserves under the current criteria, the boundaries would need to be redefined and considerably expanded. In addition, appropriate management policies/plans would have to be drawn up, mechanisms for local participation developed, and resources found.

FURTHER ACTIONS

The draft final report of the review was completed by the end of 1998. It was very slightly modified following comments from members of the inter-agency Steering Group, but not published until August 1999 because of the process of devolution within the UK, which included spring elections in Scotland and Wales. One implication of devolution has been that responsibilities for the one reserve in Wales are now with the Countryside Council for Wales (CCW); and, for the nine reserves in Scotland, with Scottish Natural Heritage (SNH). In summer 2000, the DETR conducted a consultation process with these and other interested government agencies and NGOs to consider how to take forward the recommendations in the review.

At the time of writing (December 2000), the final outcomes remain unclear. In Wales, CCW has expressed support for the extension of the Dyfi Biosphere Reserve, noting the need to define the optimal boundaries of the three zones and identify the resources necessary for efficient functioning. A public meeting, organized by CCW and the Dyfi Eco Valley Partnership, which brings together over 20 representatives from the public, private and NGO sectors to foster sustainable development in the wider region, was held in November 2000 to consider the potential expansion of the biosphere reserve and its benefits for regional sustainable development. Strong support was expressed by a local member of the Welsh Assembly. A workshop is planned in early 2000 to consider the future of both the Dyfi Biosphere Reserve and the three in England.

In Scotland, the Scottish Executive led a consultation, mainly with national organizations. Very few responses were received. SNH then undertook an internal review of the existing nine Scottish biosphere reserves, and recommended to its Board that Caerlaverock, Claish Moss, Rum, and St. Kilda should be delisted as biosphere reserves. At its meeting on 12 December, the Board of SNH recommended to the Scottish Executive that it should delist these sites as biosphere reserves, through a letter to the MAB Secretariat in Paris. The remaining five sites should be retained as biosphere reserves, to allow further examination of options to improve their functioning as biosphere reserves, particularly in the context of the ongoing review of National Nature Reserves.

CONCLUSION

The value of the biosphere reserve concept is increasingly well recognized around the world as a valuable and workable model for linking the conservation of biodiversity with sustainable development at the regional scale. In 1996, at the Montreal World Conservation Congress, UNESCO organized a workshop entitled 'Biosphere Reserves: Myth or Reality' (IUCN, 1998). In his foreword to the proceedings, Adrian Phillips, chair of IUCN's World Commission on Protected Areas, states that the workshop showed that 'biosphere reserves are an idea whose time has come'. However, as exemplified by the UK experience, the evolution of the biosphere reserve concept has led to a number of sites, which are biosphere reserves only in name, and not in reality.

If the WNBR is to become a network that truly consists of 'sites of excellence to explore and demonstrate approaches to conservation and sustainable development at a regional scale', it is necessary to accept that a number of the early sites, designated when a) biodiversity conservation and ecological research were the major objectives and b) it was expected that the entire area of each biosphere reserve should be legally protected, may not have the potential to function as such 'sites of excellence' for various reasons. This is the basis for the understanding that SNH has now come to, recognizing that it may be appropriate to delist some sites, in the interests of focussing on other existing sites – and perhaps, eventually, also new ones in Scotland – that have the potential to fulfil all the functions of biosphere reserves, thus strengthening the value of the WNBR as a whole, and of the individual sites within it, for both biodiversity conservation and sustainable development. It is to be hoped that other countries will follow the example of Norway and the UK, leading to a strong network that demonstrates the evolution of a fine idea, which should be a global reality, which benefits both local people and the world as a whole.

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Biosphere Reserves in Switzerland

Engelbert Ruoss

SITUATION IN 2000

One person of the Swiss administration (Swiss Department of Environment, Forest and Landscape - BUWAL) is responsible for the Natural World Heritage and the MAB Programme. The Swiss UNESCO National Commission was actively involved in MAB research projects in the 1908s but has been relatively less involved since then.

To date, only the 'Swiss National Park' has been designated as a biosphere reserve in 1979. Although no periodic review report has been prepared, it can be said that this site does not fulfill the criteria of the Seville Strategy, nor the Swiss criteria for biosphere reserves. However, it is planned to enlarge the Swiss National Park by adding a buffer zone but, for the moment, this plan has not been accepted by the local population.

In 2001, the Swiss UNESCO National Commission 2001 will adopt a strategy whereby it will create a committee on 'Swiss world heritage and MAB' consisting of six persons which would be responsible for strategic overview of action under World Heritage and MAB This committee will invite experts to participate. The scientific aspects will be a duty of the Swiss administration BUWAL.

SWISS CRITERIA FOR BIOSPHERE RESERVES

Following the example set by Germany, at set of Swiss criteria for biosphere reserves were elaborated in 1998–2000 by the BUWAL. These criteria concern the selection of sites as potential biosphere reserves and then a set of criteria for assessing their functioning, in a similar manners as a periodic review.

Mandatory Criteria (A) for eligibility as potential biosphere reserves

1. Representative of ecosystems and landscapes;
2. Size of the area should be at least 20,000 ha;
3. The core area, buffer zone and transition areas should be identified;
4. The core zone should be more than 3% of the total area, or, in the case of a biosphere reserve cluster, at least 5%;
5. The buffer zone should be more than 10% of total area;
6. The core area and buffer zone should correspond to about 20% of the area;
7. The transition area should be more than 50%;
8. The core area must have a legal protection;

9. The site must have a functional administration and a budget.

10. A management plan (draft concept) must exist, addressing the following elements: zonation; sustainable use and development; monitoring of sustainability and environment; nature protection; environmental education; visitor programme; research; structure for management; organizational arrangements; logistic support; a financial plan; monitoring an evaluation; participation processes; public relation and communications.

Criteria (B) for assessing biosphere reserves

The following criteria are assessed after a ten-year period:

1. Administration and organization;
2. Sustainable development;
3. Nature and landscape protection;
4. Natural resources;
5. Research;
6. Environmental observation;
7. Education;
8. Public relation and communications.

A system of points is used such that:
1 point = basic criteria are fulfilled;
2 points = first measures are defined and started;
3 points = primary measures have been taken;
4 points = primary measures have been taken and further measures are started;
5 points = all measures for protection, land use and development have been taken.

For each of the 'B' criteria, 20% of the total possible points have to be realized.

The first biosphere reserve, which will be established according to the Swiss criteria outlined above, will be the 'Entlebuch' site, to be nominated for designation in 2001.

Impacto de la Revisión Periódica en Argentina

Alicia E. Toribio

El proceso de Revisión Periódica en la Argentina fue desarrollado por el Comité MAB Argentino –nivel político– a través de la Unidad de Coordinación del Programa MAB (UCPMAB) –nivel técnico y operativo–. La UCPMAB es quien coordina la Red Nacional de Reservas de Biosfera.

El proceso de revisión periódica se desarrolló durante los meses de mayo, junio y julio de 1999.

La primera fase consistió en la distribución del cuestionario correspondiente a los administradores de las cuatro reservas a ser revisadas.

La segunda fase fue la convocatoria de un taller: «Taller para la Revisión Periódica de las Reservas de Biosfera Argentinas, resultados de diez años de gestión», en Buenos Aires, los días 7 y 8 de junio de 1999.

PARTICIPANTES DEL TALLER

Los participantes del taller fueron:

- dos representantes por cada una de las Reservas;
- un grupo multidisciplinario de expertos vinculados a las reservas y las actividades del programa MAB en Argentina;
- los cinco miembros de la UCPMAB, incluyendo al representante de la Administración de Parques Nacionales;
- un representante de la Oficina Regional de Ciencia y Tecnología de la UNESCO;
- un representante de la Oficina UNESCO Buenos Aires;
- un representante de la Comisión Nacional Argentina de Cooperación con la UNESCO.

El primer día, el programa del Taller consistió en la presentación de los informes de cada reserva. Y en el segundo día, se realizaron comentarios y se elaboraron conclusiones. Existe un documento de síntesis del Taller.

A la luz de los comentarios y las recomendaciones recibidas, de regreso en sus sedes, los administradores de las Reservas incorporaron más información y realizaron correcciones a las presentaciones originales y los enviaron a la UCPMAB.

La UCPMAB elaboró comentarios que incorporó como información adicional.

El Comité Nacional envió toda la información reunida a la Secretaría del Programa.

RESULTADOS OBSERVADOS DEL PROCESO

Beneficios para las Reservas de Biosfera y para la UCPMAB

- Permite la actualización y comparación de datos;
- Fomenta el intercambio de experiencias;
- Propicia cambios en la gestión.

Beneficios para la UCPMAB

- Eleva el nivel de asesoramiento en la presentación de nuevas reservas;
- Brinda información significativa para otras actividades como, por ejemplo, el « Proyecto Investigación Interdisciplinaria en las Reservas de Biosfera » que estaba en desarrollo;
- Proporciona una referencia para gestionar apoyos para la gestión de las Reservas.

Una de las dudas iniciales al encarar el proceso, si es necesario realizar una visita a terreno para completar la evaluación, quedó como una cuestión a evaluar en cada caso. En esta ocasión, dicha posibilidad se evaluó y desestimó porque se trataba de revisar cuatro reservas, y esto exigía recursos económicos importantes y también porque se privilegió la alternativa de reunir a un grupo multidisciplinario de expertos a quienes, por su disponibilidad de tiempo y también por el factor costos, era más factible reunir en la ciudad de Buenos Aires. En el caso de tener que evaluar una o dos reservas, sería conveniente y más factible complementar el proceso de consulta con especialistas con una observación *in situ* y la posibilidad de mayor intercambio con actores locales.

Short characteristics of four 'old' biosphere reserves in Poland

Alicia Breymeyer, Feliks Kaczanowski, Czeslaw Okolow and *Jerzy Kruszelnicki*

Biosphere Reserve	*Position*	*Size*	*Zonation hectares*		
			Core	*Buffer*	*Transition*
Babia Gora BR	19° E, 49° N	1,734 ha	1,061	2,331	–
Bialowieza BR	23° E, 52° N	5,348 ha In 1996 enlarged to 10,501 ha	4,747	4,846	908
Lukajno Lake BR	21° E, 53°N	710 In 1999 enlarged to 3,410 ha	710	700	2,000
Slowinski BR	54° N, 17° E	18,247 ha In 1996 enlarged to 18,618 ha	5,622	12,996	
			Enlargement in ratification		
			5,622	27,169	47,078

Biosphere Reserve	*Selected characteristics*					
	Library	*Monitoring programs*	*Research programs*	*Number of participating scientists*	*Education center*	*Others*
Babia Gora BR	> 10,000	3 from 1996	Actually 49	40/year		
Bialowieza BR	8,800 papers Bialowieza bibliography since 1930s	6 long-term	Actually 50, some from 1936	> 60/year 3 scientific institutions PAS, Warsaw University, Forest Research Institute	Since 1994	1979: World Heritage Site, enlarged in 1992 on Polish-Bielorussian (4,500 ha) 1996: European Diploma
Lukajno Lake BR	–			30 students doing research in Warsaw University Station	Warsaw University Station	They are in the course of connection of Luknajno BR to large Masurian National Park/BR (in creation) Ramsar Site since 1978
Slowinski BR				34–45/year	Museum of Natural History	25000 tourists/year Ramsar Site from 1995

Periodic review in Poland: A comment

Czeslaw Okolow

The following comments are given in addition to the tabulated information.

Such a form of the periodic review offers us little, since it repeats basic data on the protected area and its characteristics unnecessarily and does not give any assessment of ongoing changes in its state and functioning. The questionnaire for the review of biosphere reserves should include an assessment of the changes that have occurred since the date of designation as a biosphere reserve. Hence, the review form should also contain questions on the situation of, and changes in, the following elements:

- Threats to the protected area and the state of its environment (was pollution of the different elements of the environment reduced? Was action taken in this regard and what was the degree of effectiveness? Have new threats or sources of threat arisen?).
- Has a management or protection plan been drawn up (or updated) and how is it being implemented?
- Does the Biosphere Reserve administration receive adequate funding for the pursuit of its statutory activities?
- Has tourist traffic increased? How is tourist management of the Biosphere Reserve progressing, and how does any enhanced tourist traffic influence the Biosphere Reserve's ecosystems?

- Has there been progress with the Biosphere Reserve's educational activity?
- What is the status of the relationships between the Biosphere Reserve and the local communities?
- What progress has there been in scientific research and monitoring within the Biosphere Reserve?
- Is there co-operation with other biosphere reserves in the country and abroad, as well as with other protected areas?

Impact of the periodic review on Omayed Biosphere Reserve, Egypt

Mohammed Ayyad

Before Omayed was declared a Biosphere Reserve, for a period of about ten years, it was the site of two extensive research and monitoring activities on ecosystems structure, function and dynamics aiming towards building models of these ecosystems for predicting the consequences of anthropogenic impacts. There were no direct concerns about the conservation of biodiversity or means of promoting sustainable development. Nevertheless, comprehensive background information was generated that had been of considerable value in planning for these two main concerns of biosphere reserves.

Thus, Omayed was declared a biosphere reserve as a site for experimental field research site in 1984 oriented towards sustainable development. At that time, as it was really a 'mini-biosphere reserve' not exceeding 1,000 ha in size, implementing the conservation objective was rather limited. Diversity of habitats, biological communities, species and populations, as well as land use was not adequately covered, and accordingly the involvement of local inhabitants and other stakeholders was also limited.

The development of 'Periodic Review' stimulated the consideration of enhancing the area of the Omayed Biosphere Reserve and redesigning its zonation in order to fulfil the major objectives and functions in a much more efficient and encompassing manner.

Thus, the area of Omayed Biosphere Reserve was considerably enlarged to ten times the size of the original area. The original site of the Biosphere Reserve was kept as one core area and another larger core area was added in order to cover a much greater member of microsites of high biodiversity conservation value. The buffer zone of the enlarged biosphere reserve included a greater variety of settlements of local inhabitants and a greater variety of traditional land uses. It also furnished greater possibilities for education and training, as well as for experimental research and monitoring with the objectives of sustainable development and rehabilitation/restoration of degraded land and biodiversity. The transition area was expanded to encompass new developments such as irrigated agriculture, tourist resorts established on the coastal dunes, and quarrying activities on limestone ridges. Thus, a much greater diversity of stakeholders became involved in the biosphere reserve management plan and management activities. All this was stimulated and guided by the periodic review.

In conclusion, a lesson was learned from the changes in the area, zonation and activities of the Omayed Biosphere Reserve stimulated and guided by the periodic review. This lesson was that biosphere reserve(s) should be looked at as dynamic rather than static entities, in the sense that their area, zonation and activities must be periodically reconsidered and revised. With the new information gained through research and monitoring, other hot spots may be recognized, and with the continuous changes in land use, such revision may be necessary.

Therefore, I would like to recommend that the MAB Secretariat and individual biosphere reserves adopt the notion of the dynamic nature of the structure and activities of biosphere reserves.

Working Group 8: Impact of the periodic review

Moderator: Mr Martin Price (UK).

Working Group 8 discussed how the periodic review process foreseen in Article 9 of the Statutory Framework contributed to strengthening the World Network of Biosphere Reserves. To guide its discussions, an overall presentation had been made in plenary by the moderator, who had also described the experience of his country, the United Kingdom, which had led to a general rethinking of all the UK biosphere reserves, and therefore an enhancement of the UK participation to the Network.

The work of the group was introduced by five presentations of national experiences from Mr Effendy Sumardja (Indonesia), Mr Engelbert Ruoss (Switzerland), Mr Alicia Toribio (Argentina), Mr Mohammed Ayyad (Egypt) and Ms Alicia Breymeyer (Poland). The importance of the periodic review process as a mean to enhance awareness and support for biosphere reserves, and to improve their functioning as sites to demonstrate approaches to sustainable development at a regional scale, was underlined. The importance of looking at biosphere reserves at dynamic entities, which should be subject to continuous evaluations with regard to conservation and land use policies was also very much supported.

Recommendations

- The process of developing a periodic review should be used as an opportunity to strengthen support for BR and raise awareness among national agencies, NGOs and other stakeholders. At the level of each BR, local stakeholders should be actively involved in the review process.
- The main purpose of the review is to ensure that each BR effectively fulfils all three functions of a BR, or has the potential to do so, *inter alia* through an effective and robust institutional arrangement. The review should therefore pay particular attention to the institutional aspect.
- The process of developing a periodic review should be interactive, involving at least the co-ordinators(s) of the BR(s) concerned and the national Committee or focal point. Where appropriate, a workshop involving multidisciplinary experts/scientists (including co-ordinators of other BR in the country) should also be held as part of the process. Where possible, field visits should be organized to contribute to the process and reinforce local commitment.
- The process should also facilitate new policy guidelines emerging in the country concerned for the improvement/expansion of existing BR and the selection of new ones.
- BR are dynamic entities with respect to policies, management, land uses and conservation. For each BR, sets of qualitative and/or quantitative indicators should be developed and applied, in collaboration with local stakeholders, as tools to continuously evaluate the success of the BR in achieving its functions. These progress indicators should be easy to use, cheap, and quick.
- The MAB Secretariat should provide support for the compilation, dissemination and critical analysis of national experiences of the review process, possibly through workshops. The MAB Secretariat, including UNESCO's regional offices, should also provide support, when requested, for the preparation of reviews and implementation of recommendations.
- To improve follow-up of recommendations on the periodic review, the Secretariat should request that information on measures taken should be provided in time for the following meeting of the Advisory Committee.

WORKING GROUP 9: LINKING BIOSPHERE RESERVES TO DECISION MAKING AT THE NATIONAL LEVEL

Vinculación entre las Reservas de la Biosfera y la toma de decisiones a nivel nacional: Legislación para el manejo de las zonas costeras/marinas

María Herrera Álvarez

La República de Cuba es un archipiélago conformado por una isla grande y un sinnúmero de islas pequeñas, cayos e islotes; es así que sus costas y mar adyacentes merecen especial atención y aún más si pertenecen a una de sus seis Reservas de la Biosfera.

Existe en Cuba una voluntad política correspondiente al propósito de las Reservas de la Biosfera creadas por el Programa MAB de UNESCO, es decir, la voluntad de usar los recursos naturales de forma sostenible, armónicamente, con el sano e inteligente propósito de prolongar indefinidamente su disfrute.

El reconocimiento UNESCO-MAB para las áreas que comprenden nuestra Red Nacional de Reservas de Biosfera es considerado como un Título Honorífico de alto valor internacional que compulsa cada vez más a las autoridades cubanas de cualquier nivel – locales, provinciales, nacionales – a cumplir las normas establecidas para las mismas.

Particularmente relacionado con el manejo de zonas costeras marinas, y desde el punto de vista jurídico, contamos con la Ley 81 de 1997, Ley de Medio Ambiente, cuyo Capítulo III, Artículo 90, inciso que se refiere a «Proteger, rehabilitar y manejar el medio y los recursos costeros y marinos para su conservación y uso sostenible»; asimismo, considerando la fragilidad e importancia de estos ecosistemas para nuestro país, acaba de aprobarse el Decreto-Ley 212, de agosto del 2000, específicamente sobre « Gestión de la Zona Costera », que protege legalmente estas zonas. Este Decreto-Ley 212 en su capítulo II, Artículo 7, dispone que el Ministerio de Ciencia, Tecnología y Medio Ambiente (CITMA) es el organismo central del Estado «encargado de proponer la política y estrategias de manejo integrado de la zona costera ... en coordinación con los órganos y organismos competentes ...»; igualmente este Ministerio junto con la Comisión Nacional Cubana de la UNESCO, auspicia y sustenta las actividades UNESCO de su competencia, dentro de las cuales se encuentra el desempeño del Comité Nacional del Programa «El Hombre y la Biosfera (MAB)» y su Red Nacional de Reservas de la Biosfera. A partir de esta información, y tomando en cuenta que, en Cuba, la gran mayoría de las tierras son estatales, podemos considerar el relevante papel que juega

el CITMA en cualquier decisión relacionada con el uso o intervención antrópica en las áreas de referencia o la afectación por fenómenos naturales y su posible rehabilitación. Es así que, para el inicio de una inversión con incidencia en el medio, el inversionista debe contar con la licencia ambiental expedida por el Centro de Inspección y Control Ambiental (CICA) de la Agencia de Medio Ambiente del CITMA, quien además deberá ejercer un control sistemático sobre los compromisos adquiridos por los inversionistas; podrá, pues, tomar medidas y aún detener obras si no se ajustan a lo convenido. Además está vigente el Decreto-Ley 201 de diciembre de 1999, «Del Sistema Nacional de Areas Protegidas», que establece el régimen legal para estas áreas, y que «incluye las regulaciones del ejercicio de su rectoría, control y administración, las categorías de las áreas protegidas, su propuesta y declaración, el régimen de protección y el otorgamiento de las autorizaciones para la realización de actividades en dichas áreas» (Capítulo I, Artículo 1). Ocho categorías conforman el Sistema Nacional de Areas Protegidas, entre las cuales se encuentra el «Area Protegida de recursos manejados», cuyas estructura y funciones se corresponden bastante estrechamente con las de «Reserva de la Biosfera», de tal manera que bajo esta categoría quedan legalmente protegidas las Reservas de la Biosfera cubanas. En todo este complejo legal, el CITMA juega un papel preponderante aunque no exclusivo, mientras que el Comité Nacional MAB cumple sus funciones como auspiciador, coordinador e impulsor de las propuestas de Reservas de Biosfera, así como de vigilancia para el buen desempeño de sus objetivos.

Sin embargo y aún contando con todo este amparo legal vigente, así como con la infraestructura correspondiente, en la práctica, la presión económica pesa demasiado, – no voy a abordar la situación política y económica de nuestra Patria contando con que se conoce suficientemente –. Es así que, en ocasiones, el deseo o la urgencia de dirigentes de determinado nivel, de obtener rápidos dividendos (este es, entre otros, el caso del Turismo), les hace precipitar decisiones sobre determinadas inversiones, de tal forma que El CITMA se ha visto en la necesidad de interrumpir algunas obras que no cuentan aún con la correspondiente Licencia Ambiental o que se apartan de lo convenido en ella, lo que obliga, por supuesto, a mantener una vigilancia y espíritu de lucha por el «hacer sostenible» de todos los que, en este sentido, estamos comprometidos.

Por otra parte, ya específicamente en relación con la Red de Reservas de Biosfera de Cuba y en particular las que comprenden áreas costeras, marinas y parte de la cayería, puedo informar que el interés por conocer, valorar y considerar adecuadamente estas áreas ha crecido sensiblemente entre nuestros tomadores de decisiones, líderes comunitarios, dirigentes, especialistas afines, etc., durante el último quinquenio. Sin dudas se ha concretado un mayor apoyo a las tareas del Comité Nacional MAB; sólo vamos a citar dos ejemplos válidos y recientes: la II Reunión de la Red Nacional de Reservas de la Biosfera, realizada en julio del presente año, en la RB «Buenavista», contó con el respaldo y participación personal de dirigentes locales y nacionales, en cuya ocasión se explicó la ley de Areas Protegidas y se debatieron cuestiones relacionadas con la aplicación de la misma, así como la redacción e implementación de los Planes de Manejo Integrado y las Juntas Coordinadoras de los intereses de cada Reserva. Y la ponencia sobre el concepto de Reserva de la Biosfera, y su aplicación, que desarrollamos en el « Seminario Metodológico Informativo » que organizó la Oficina para el Desarrollo Integral de la Península de Guanahacabibes, Pinar del Río, con la presencia de autoridades provinciales y locales, líderes comunitarios y responsables involucrados todos, de una u otra forma, en el manejo de la Reserva de la Biosfera «Península de Guanahacabibes», situada en el extremo más occidental de la Isla, por lo que cuenta con áreas costeras y parte de la plataforma marina, y donde se discutió ampliamente importantes cuestiones relacionadas con el concepto de Reserva de la Biosfera, que aquí también va mostrando su influencia mas allá de sus límites físicos.

Como ejemplo de la importancia que se brinda a la conservación de los recursos naturales en Cuba, pudiéramos terminar esta breve intervención con un fragmento del discurso de nuestro Presidente en la Cumbre del Milenio, celebrada recientemente en la ONU:

> «...Cualquiera comprende que el objetivo fundamental de las Naciones Unidas, en el siglo apremiante que comienza, es el de salvar al mundo no sólo de la guerra, sino también del subdesarrollo, el hambre, las enfermedades, la pobreza y la destrucción de los medios naturales indispensables para la existencia humana. Y debe hacerlo con premura antes de que sea demasiado tarde.»

Linking biosphere reserves with decision making in the Nordic countries

Timo Hokkanen

The perception of biosphere reserves in Nordic countries can be summed up in the phrase of the Nordic Council of Ministers Nature and Outdoor Recreation Group dated 16 August 1999: '... the Biosphere Reserve concept does not at the moment, contribute anything new to already ongoing activities in the framework of, for instance, the establishment and management of traditional reserves, Local Agenda 21 and international monitoring systems'.

There are very few biosphere reserves in Nordic countries:

Iceland: none;
Norway: none (since the removal by the Norwegian authorities of Svalbard);
Denmark: North East Greenland (1977);
Sweden: Lake Torne (1986);
Finland: North Karelian (1992) and the Archipelago Sea Area (1994).

It can be said that biosphere reserves are not well established in Nordic countries. Their significance is low since the MAB Programme and the World Network of Biosphere Reserves are poorly known, and there are few sites to talk about (only in Sweden is the number expected to increase). The current sites are remote in areas of low population and low economic potential; and are mainly oriented towards research on natural systems. They offer minimal possibilities for co-operation with other sites and the level of funding is low, if not decreasing.

The North Karelian Biosphere Reserve in Finland is an example of this situation. It lies in a remote area in the extreme east of the country, next to the border with the Russian Federation. The population density is low, only 0.6 inhabitants per km^2. Per capita income is relatively low for Finland, with an average of US$10,000 per year. The unemployment rate is high, at 25–30% of the population. The age structure of is weighed to elderly people, with relatively few people under 30. In addition, the population is rapidly declining; for example, the population of the village of Hattuvara fell from 594 people in 1960 to 179 in 1987. Scientific research is important, but is not geared to solving local problems and hence in general the connections between the research workers and the local communities are weak. This calls for more work in the social sciences, in economics and applied sciences.

Decision-makers do not see the advantages of biosphere reserves (exchanges through the Network, models for land-use planning, partnerships among different stakeholders). Hence, the biosphere reserves have not been originally selected for use as models for regional planning. They concentrate on nature protection and their value to society is little understood.

In a nutshell, it can therefore be said that the problems of biosphere reserves lie in their lack of legal status/recognition at the national level, the lack of interest of politicians in sites with such little political weight (few voters) and the sectoral nature of administrations which cannot embrace such a comprehensive concept. Obviously, this calls for a clear explanation of the objectives and specificity of biosphere reserves with respect to other initiatives on environment and development. Such an explanation is required not only for national decision-makers but also for local people.

The following recommendations can therefore be made:

- the Nordic countries need to set up larger-scale biosphere reserves that form economically viable units. This can be stimulated in part by the periodic review and subsequent revisions of existing biosphere reserves;
- existing biosphere reserves should develop international co-operation projects on politically important topics related to nature conservation and development, for example of tourism;
- comprehensive Nordic co-operation needs to be started as regards to the concept of BRs and their use as many-sided models of sustainable development;
- there should be clear connections to the programmes of the European Union, for example on sustainable development;
- there should be an EuroMAB campaign to promote the biosphere reserve concept at all levels, including the UNESCO National Commissions and MAB National Committees.

Vinculación entre las reservas de biosfera y la toma de decisiones a nivel nacional en Ecuador

Wilson Torres Espinosa

INTRODUCCIÓN

La crisis que en todos las órdenes, principalmente el económico, ha sufrido el Ecuador, ha postergado en alguna medida que la filosofía que entraña la Estrategia de Sevilla, respecto a las Reservas de la Biosfera, haya sido puesta en práctica en toda su magnitud y menos aún en todo el país.

Si bien, por ejemplo, los aspectos de conservación, investigación, capacitación y divulgación, especialmente en Galápagos, dada la eficiencia que durante varios años ha caracterizado a la administración del Parque Nacional Galápagos, a cargo de esta reserva de biosfera, así como la investigación y capacitación que durante varias décadas ha liderado la Estación Internacional Charles Darwin, constituye un alto porcentaje de cumplimiento de la estrategia de Sevilla; pero deja que desear la participación de la comunidad en la interacción conservación-desarrollo; es decir, en este campo, no se ha avanzado mucho.

Por ello y con el objeto de que las autoridades y comunidad científica se percaten de la importancia de la aplicación de la Estrategia de Sevilla, no sólo en las Reservas de la Biosfera, sino en el contexto del desarrollo en general, se realizó en noviembre pasado, en la Isla Santa Cruz, Archipiélago de Galápagos, la IVª reunión temática del IBEROMAB, sobre la «Planificación y participación de la comunidad en la gestión de las Reservas de la Biosfera», evento al que concurrieron alrededor de cincuenta científicos y gestores de Reservas de Iberoamérica.

A pesar de la crisis sí se han realizado esfuerzos nacionales para proteger el medio ambiente y la conservación en áreas protegidas, esfuerzo en los que se inscriben la expedición de políticas ambientales y el Plan Ambiental Nacional, principalmente promovido por la Comisión Ambiental de la Presidencia de la República, de la que fuí su Secretario Técnico.

Posteriormente, el año pasado se aprobó la Nueva Constitución de la República, en la que en el Capítulo 2, Sección Segunda, se legisla sobre el Medio Ambiente; disposiciones por las cuales el Estado se compromete a proteger el derecho de la población a vivir en un medio ambiente sano y ecológicamente equilibrado, que garantice un desarrollo sustanciable, establece un Sistema Nacional de áreas naturales protegidas.

Se refuerzan las atribuciones del Ministerio del Ambiente y una serie de normas conexas y ampliatorias a las existentes, en varios frentes, para cumplir su amplia e interdisciplinaria tarea de la mejor forma posible.

ZONAS INTANGIBLES

Hasta hace poco tiempo era un sueño pensar que podía detenerse la explotación de recursos naturales a gran escala, y particularmente la actividad petrolera, minera o maderera en alguna región de la Amazonía ecuatoriana.

Hoy se cuenta con un Decreto Presidencial N° 552, del 9 de enero de 1999, que prohibe esas actividades en dos zonas cultural y biológicamente frágiles e importantes, demostrándonos que la voluntad, la decisión, la negociación y el diálogo son los caminos para conseguir avances.

Se han creado nuevas condiciones para la Amazonía del Siglo XXI, partiendo de reconocer el enorme daño que por más de 25 años la explotación de hidrocarburos generó en sus ecosistemas, así como la gran importancia que tiene esta región, no solo para los ecuatorianos, sino para la humanidad entera y las generaciones futuras.

La idea fundamental que orienta el declarar dos zonas intangibles en la Amazonía y concretamente en la Reserva de Producción Faunística Cuyabeno y en el Parque Nacional Yasuní, Reserva de la Biosfera, es la de prevenir más daños irreparables a los pueblos indígenas y a su medio ambiente, y así garantizar la vida en todas sus manifestaciones. Sabemos que éste no es el final sino más bien el inicio de un proceso de construcción de otro modelo de desarrollo, donde los valores humanos, culturales y ambientales comiencen a jugar un papel primordial.

Extensión: 130.802 km^2.
Población: 539.933 habitantes.[1]
Pueblos indígenas: Quichua, Shuar, Achuar, Huaorani, Siona, Secoya, Cofán, Záparo.
Población indígena: 140.000 (aproximadamente) o el 26% del total de la población amazónica.
Provincias: Sucumbios, Napo, Pastaza, Francisco de Orellana, Morona Santiago y Zamora Chinchipe.

Sistema Amazónico de Areas Protegidas: 9 áreas: Parque Nacional Sumaco-Napo Galeras, Parque Nacional Podocarpus, Reserva de Producción Faunística Cuyaveno, Reserva Biológica Limoncocha, Parque Nacional Yasuní, Parque Nacional Llanganates, Parque Nacional Sangay, Reserva Ecológica Antizana y Reserva Ecológica Cayamba Coca.

Extensión de Areas Protegidas Amazónicas:
3.082.097 hectáreas aproximadamente.

1. Datos a 1996.

Estas áreas protegidas incluyen también zonas de altura en los Andes.

PORQUÉ SON ZONAS INTANGIBLES?

La decisión política del gobierno ecuatoriano de declarar zonas intangibles por la diversidad cultural y biológica parte de la consideración que:

- Es política oficial buscar otras opciones de manejo de recursos de manera oportuna antes de entrar a concesiones de bloques petroleros, dando coherencia y equilibrio a la política de aprovechamiento de los recursos naturales del Ecuador.
- Es necesario buscar alternativas al actual modelo de desarrollo preservando zonas que puedan contribuir a mejorar la calidad de vida de las generaciones presentes y futuras de ecuatorianos a través de un manejo sostenible de sus recursos, valorizando y respetando los territorios, derechos colectivos y conocimientos ancestrales de los pueblos Huaorani, Siona, Cofán y las comunidades Quichua que habitan en las zonas declaradas como intangibles.
- Es responsabilidad del Estado valorar y reconocer los sistemas culturales y conocimientos de estos pueblos indígenas, que han contribuido notablemente a la medicina contemporánea y han aportado para el desarrollo de principios activos utilizados para tratar las enfermedades que afectan a la humanidad.
- Es urgente pensar en la economía y el desarrollo con un enfoque integral y sostenible, con una perspectiva de mediano y largo plazos, considerando el valor a futuro y de utilidad más rentable y beneficiosa que los recursos biológicos del Cuyabeno y del Yasuní pueden proporcionar al país. Hay que colocar en la balanza los valores comerciales que pueden tener en la actualidad los productos de origen biológico, y en el largo plazo, las fuentes y los entornos naturales y culturales que hacen posible la existencia de esos bienes.
- Es deber del Estado mantener una línea equilibrada de gestión pública que respete las Areas Naturales Protegidas a la vez que permita un equilibrio entre las zonas dedicadas a actividades extractivas y zonas destinadas únicamente a conservación de la biodiversidad. Las comunidades indígenas, asentadas en estas zonas intangibles pueden ocupar y usufructuar de las mismas, de forma tal que tanto sus derechos territoriales como los objetivos de la conservación sean respetados.
- Establecer una alianza basada en el respeto total de los pueblos indígenas, sus territorios, sus culturas y de las áreas destinadas a la conservación. Esta política será el fundamento de los acuerdos entre instituciones estatales, no gubernamentales y organizaciones indígenas, involucradas en la administración de áreas protegidas y en la gestión de territorios indígenas.
- Es necesario crear espacios seguros, estables y de tranquilidad con el fin de permitir el desarrollo de los grupos nativos, respetando su voluntad de permanecer libres de contacto con la civilización.
- Es fundamental reconocer los aportes, argumentos y acciones de variados actores de la sociedad ecuatoriana e internacional, que han procurado encontrar fórmulas viables de protección a estos grupos amazónicos y los espacios vitales que habitan.

Con esta decisión de declarar las zonas intangibles, el Estado ecuatoriano cumple con sus deberes constitucionales y asume sus compromisos internacionales.

LA POLÍTICA DEL ESTADO

Es deber del Estado ecuatoriano de acuerdo con la Constitución Política de la República:

- Fortalecer la unidad nacional en la diversidad cultural.
- Mantener una política de respeto a los derechos colectivos de los pueblos indígenas.
- Defender el patrimonio natural y cultural del país y proteger el medio ambiente.
- Promover, valorar y fortalecer las prácticas tradicionales de los pueblos indígenas en el manejo de los bosques, la biodiversidad y de su entorno natural.

Son compromisos asumidos a nivel internacional:

- Aplicar en la definición y ejecución de las políticas públicas, lo pertinente a derechos humanos en general, y culturales en particular, estableci-

dos en la Declaración Universal de los Derechos Humanos.

- Acoger plenamente el artículo 1.1. de la Convención Americana de la Organización de Estados Americanos (OEA) de respetar y garantizar los derechos humanos de todos los habitantes del país.
- Asegurar la vigencia futura de la Declaración de Reserva de la Biosfera al Parque Nacional Yasuní por la UNESCO en 1989.
- Ratificar y fortalecer en el marco de las políticas del Estado, los principios y metas establecidos en los convenios de Biodiversidad y Cambio Climático, suscritos en 1992, durante la Conferencia Mundial de Medio Ambiente y Desarrollo de Río de Janeiro.
- Proteger y conservar no solo aquellos humedales de importancia internacional, sino todos aquellos que se encuentran en el territorio nacional, de acuerdo a la Convención RAMSAR sobre Humedales.
- Internalizar en el marco jurídico y en las políticas del Estado, las metas y principios establecidos en el Convenio 169 de la Organización Internacional del Trabajo (OTI) sobre Pueblos Indígenas y Tribales, ratificado por el Congreso Nacional del Ecuador en 1998, y presentes en la actual Constitución de la República.

NÚCLEO DEL PARQUE YASUNÍ Y TERRITORIO TAGAERI-TAROMENANE

Otra zona intangible es el Núcleo de Reserva de la Biosfera Yasuní (PNY) y el Territorio Tagaeri-Taromenane. Con una superficie que se aproximada a las 700.000 hectáreas, abarca la parte sur del Parque Nacional Yasuní y una parte al sur-este del Territorio Huaorani. Esta zona dedicada a la máxima protección a largo plazo, en el marco de su condición de Reserva de la Biosfera, es también reconocida como territorio de los grupos Huaorani sin contacto conocidos como Tagaeri y Taromenane.

Se extiende en las cuencas de los ríos Yasuní, Cononaco, Sashiño y Tiputine. Existen áreas de elevaciones, donde predomina un paisaje formado por una sucesión infinita de pequeñas colinas, así como también zonas planas que se ven afectadas permanentemente por inundaciones en la temporada lluviosa, debido al crecimiento de los ríos. Allí suelen formarse zonas pantanosas o humedales.

Reserva de la Biosfera Yasuní

Ubicación: Provincias de Orellana y Pastaza.
Creación: Julio 26, 1979,
Decreto Interministerial N° 322 (ampliación 1990 y 1992).
Declarado por la UNESCO como Reserva de Biosfera en 1989.
Superficie aproximada: 982.000 hectáreas,
2.426.489 acres.
Zonas de Vida: Bosque Húmedo Tropical.

El extenso bosque del Yasuní es uno de los más ricos y variados.

En algunas colinas, los suelos poseen mayor nivel de drenaje, donde crecen especies muy diversas que incluyen árboles maderables de gran altura. También abundan las epifitas, orquídeas y bromelias. En las zonas bajas, en cambio, abundan los suelos rojos y arcillosos, con plantas como la balsa, la chambira, la caña brava, el guarumo, el higuerón y la higuilla. En los morichales, o pantanos poco profundos, existen los montes, mientras que en tierra firme la vegetación principal se compone de ceibo zapote, clavelín o « flor de mayo ».

La presencia de grandes predadores como el jaguar y el puma, es una muestra de que la fauna aún mantiene un equilibrio con su entorno. Especies como el armadillo gigante, el oso hormiguero, la danta, gran variedad de monos, el puma, el manatí, el perezoso y la guanta son comunes en la zona. Se ha determinado que existen más de 500 especies de aves de excepcional belleza como los guacamayos, loras, tucanes y el águila arpía. En cuanto a los mamíferos, se han registrado 173 especies, no obstante algunas estimaciones señalan que deben existir 200, lo que correspondería al 57% de toda la fauna de mamíferos del país.

La declaración de esta zona como intangible busca detener el avance de la actividad petrolera y la colonización. Una muestra del alcance de esta Declaratoria es la eliminación definitiva del bloque 32 que ocupaba una extensión 200.000 has.

Los Huaorani

Históricamente el pueblo Huaorani habita en el territorio comprendido entre los ríos Napo al norte y Curaray al sur. Su hábitat lo mantuvieron al interior de las tierras, en los espacios interfluviales, quedando estratégicamente aislados de los otros grupos humanos regionales. El contacto iniciado a finales de los años 50 por los misioneros evangelistas del Instituto Lingüístico de Verano (ILV) los indujo a rápidos cambios sociales, culturales, económicos y políticos.

Esta etnia se estructuró en pequeños grupos esparcidos –manteniendo entre ellos vínculos de parentesco– alrededor de la autosubsistencia. El modelo económico Huaorani es el de cazadores/recolectores, con una horticultura reducida. La variedad de las plantas cultivadas es débil y éstas no son más que complementarias a los productos de la caza y de la

recolección, principales fuentes de abastecimiento alimenticio.

ASPECTOS LEGALES

En la nueva Ley de Gestión Ambiental de 1999, se establece que «El aprovechamiento racional de los recursos naturales no renovables, en función de los intereses nacionales dentro del patrimonio de áreas naturales protegidas del Estado y en ecosistemas frágiles, tendrá lugar por excepción, previo un estudio de factibilidad económico y de evaluación de impactos ambientales».

Por otra parte el Reglamento Ambiental para las Operaciones Hidrocarburíferas regula las actividades de prospección geofísica, perforación, desarrollo y producción, almacenamiento, transporte, industrialización y comercialización de petróleo crudo, derivados, gas natural y afines, susceptibles y sociales y de las poblaciones asentadas en su área de influencia.

La Subsecretaría de Protección Ambiental del Ministerio de Energía y Minas es la dependencia técnico-administrativa del sector que controla, fiscaliza y audita las actividades hidrocarburíferas en relación al cumplimiento de los planes de Gestión Ambiental de las operadoras hidrocarburíferas, estatales o privadas.

Las autorizaciones concedidas han sido ubicadas sólo en un caso en áreas de transición o en la zona tampón, en ningún caso en el núcleo.

La Unidad de Protección Ambiental de PETROECUADOR, es la encargada del control de que los Planes de Gestión Ambiental de las Filiales operadoras se cumplan.

La Auditoría Interna de PETROECUADOR, entre otras actividades, realiza auditorías ambientales a las diversas operaciones de las Filiales.

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Biosphere reserves, conservation policy and legal instruments in the Republic of Korea

Jung Kyun Na

BIOSPHERE RESERVES IN KOREA

Mt. Sorak National Park was designated as a Biosphere Reserve by UNESCO in 1982 and remains the only Biosphere Reserve in Korea. The nomination of a new Biosphere Reserve is now in progress in co-operation with local community. The Sorak Biosphere Reserve is located near the East Coast of the Korean peninsula in Kangwon Province. It is one of the most beloved mountains of Koreans, boasting spectacular rocky hills and ridges as well as rich flora and fauna. Its vegetation type is a temperate deciduous forest. Mt. Sorak was designated as a natural monument in 1965 and as a national park in 1970. An area of 373 km^2 was designated as a Biosphere Reserve in 1982, which was extended to 393 km^2 in 1993.

There were only a few limited activities immediately following designation as a biosphere reserve. The Korean MAB Committee published pamphlets and established a statue and an information board at the entrance of the biosphere reserve. However, as from the mid-1990s a more diverse set of activities has been undertaken, including long-term monitoring, policy studies, regional and national gatherings, and development of an ecotourism guidebook.

The Mt. Sorak Biosphere Reserve does not have its own management structure; its management mainly depends on the National Park system. Nonetheless, the concept and principles of the Biosphere Reserve have not been effectively reflected in the strategy or plans for the management of Mt. Sorak National Park. There is a lack of public awareness about the Biosphere Reserve. The management authority of Mt. Sorak National Park, as well as scientists, have not carried out surveys and research with

sufficient understanding of the central ideas of the Biosphere Reserve, especially on the relations between ecosystem conservation and community development.

LEGAL AND INSTITUTIONAL FRAMEWORK FOR NATURE CONSERVATION

Institutional framework

The 1991 Natural Environment Conservation Act, last amended in 1999, is Korea's basic law for biodiversity and nature protection. It defines categories of protected areas and provides for species protection. The Act serves as a common framework for and strengthens the provisions of other nature laws administered by government agencies. Several government agencies share responsibility for nature conservation. The Ministry of Environment is responsible for general ecosystem conservation, including the protection of endangered species and the management of national parks. The Ministry took over the operation of the Wildlife Protection and Hunting Act from the Forestry Administration in 1999.

- The Forestry Administration, part of the Ministry of Agriculture and Forestry, manages forests;
- The Ministry of Construction and Transportation is responsible for land use planning;
- The Cultural Properties Administration, part of the Ministry of Culture and Sports, protects designated natural monuments; and
- The Ministry of Maritime Affairs and Fisheries is responsible for protecting the marine environment, including tidal mudflats.

The following are the laws related to biodiversity conservation in Korea.

- Law on Natural Environment Conservation;
- Law on Wildlife Protection and Hunting;
- Law on Natural Parks;
- Law on Wetlands Conservation;
- Law on Ecosystem Conservation of Uninhabited Islands;
- Law on Forests;
- Law on Environmental Impact Assessment;
- Law on Cultural Properties Protection.

Basic policy

With the policy goal of realizing an environmentally sound Korean peninsula where humankind and nature coexist in harmony, the government is implementing natural environment conservation policy based on the following six principles:

- Conserve, manage, and sustainably use natural resources and ecosystems to protect the public interest;
- Maintain harmony and balance between conservation and land use;
- Conserve biodiversity, ecosystems, and beautiful natural scenery;
- Promote the participation of all citizens in conserving the natural environment as well as opportunities for sound use;
- Equitably distribute the expenses of conserving the natural environment, and Promote international co-operation for conserving the natural environment;

Ecosystem survey

In accordance with the National Environment Conservation Act, the Ministry of Environment conducts nationwide surveys on ecosystems every ten years. The first survey was conducted from 1986 to 1990. The second survey began in 1997 and will be completed by 2002.

Designation and management of protected areas

To properly protect ecosystems, which are being rapidly destroyed as a consequence of numerous development projects, the government has designated and managed protected areas, including national parks and ecosystem conservation areas.

Biodiversity conservation

Korea formally acceded to the Convention on Biological Diversity in 1994 and has been actively co-operating with international efforts to achieve the goals of the convention ever since. The Ministry of Environment, with other ministries, specialized institutions, and NGOs, established a National Strategy for the Conservation of Biological Diversity in 1997. The main contents of the National Strategy include measures for regular surveys of biodiversity, designation and management of protected areas, strengthening protection for endangered species, strengthening management of Genetically Modified Organisms, and restoring damaged lands.

Wetlands conservation

Korea's western coast, on the Yellow Sea, is noted for its tidal flats. Approximately 2,393km^2 of tidal flats exist, comprising 2.4% of national territory.

Tidal flats have been under severe stress and in decline due to reclamation and landfill projects undertaken to build industrial complexes and agricultural areas. Recently, a large proportion of proposed reclamation and landfill projects have been temporarily halted for review as the ecological value of these areas is recognized. Korea acceded to the international convention on protecting wetlands, the Ramsar Convention, in 1997. Korea is participating in international efforts to conserve wetlands, such as designating two wetlands as Ramsar sites, as well as enacting the Wetlands Conservation Act in 1998.

BIOSPHERE RESERVES AND NATIONAL CONSERVATION POLICY

There is no legal management system for the Biosphere Reserve. Management depends mainly on the national park system according to the Law on Natural Parks. It is very difficult to involve local residents and local management authority in the Biosphere Reserve's management as well as make them understand Biosphere Reserve concepts and principles. Actually, local communities do not know much about the Biosphere Reserve. The principles of the Biosphere Reserve cannot be introduced into the management system supported by national protected area laws because they have no legal obligation. It is generally said that the designation of the Mt. Sorak Biosphere Reserve has not contributed to improve the conservation and management of Mt. Sorak National Park.

However, the designation and the periodic review of the Biosphere Reserve have reflected on both the management of Mt. Sorak National Park and the conservation policy of Korea. The National Parks Authority has expanded the 'no trespassing area' to follow the recommendations of the periodic review of Mt. Sorak Biosphere Reserve by the Advisory Committee for MAB in 1998. The Korean government has also adopted the management tools of Biosphere Reserves step-by-step. In 1997, the Ministry of Environment revised the Natural Environment Conservation Act to introduce the zoning system of Biosphere Reserves (core area, buffer zone and transition area), and outlined public participation in protected areas.

To achieve the goal of the Biosphere Reserves, legal and financial systems to support the activities for Biosphere Reserves are needed. In fact, the activities of the Korean MAB Committee have been limited because the Committee has no legal power, nor enough financial resources to accomplish more for the Biosphere Reserve. It is recommended that the government should show greater interest in the Biosphere Reserve system and allocate a larger budget to the national MAB Committee.

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Working Group 9: Linking biosphere reserves to decision making at the national level

Moderator: Mr Jürgen Nauber (Germany).

To facilitate discussion, the working group first heard five national cases presented by Ms María Herrera (Cuba), Mr June Kyun Na (Republic of Korea), Mr Wilson Torres Espinosa (Ecuador), Mr Timo Hokkanen (Finland) and Mr Jürgen Nauber (Germany). This was further enriched by national experience of other participants. The Working Group noted that, for various reasons, the biosphere reserve concept is not yet sufficiently appreciated by decision-makers on the national level.

Recommendations

To improve this situation, the working group recommended:

- MAB National Committees, with the help of the Secretariat, should clarify the added values of

biosphere reserves and their products to social development, and provide a clearer definition of MAB services, products and tools for sustainable development for national decision makers. These services, products and tools include scientific advice, technical expertise, assistance in conflict resolution, and capacity building. Emphasis also needs to be made on the role biosphere reserves can have for poverty alleviation in developing countries. On a societal level biosphere reserves, through involvement of local people, provide opportunities for the participation of young people and women in environmental matters.

- The Secretariat should assist governments to develop clear national policy on biosphere reserves, taking fully into account national contexts and conditions and, if requested, advise on appropriate legal status for biosphere reserves.

- The Secretariat and MAB National Committees should formulate communication and marketing strategies for biosphere reserves addressing all sectors, with specific follow up actions. In this undertaking, a special attention should be given to the media.

- MAB National Committees have a central role in promoting the linkages between biosphere reserves and national decision-making. Hence, MAB National Committees should further improve their status at the national level, and include representatives of decision-making groups at all levels, including biosphere reserve co-ordinators/facilitators. In this context, countries without National Committees should move to establish them.

- MAB National Committees, with the assistance of the Secretariat, should develop activities to raise awareness and a sense of belonging and pride by decision-makers in their biosphere reserves, especially through international exchange activities among biosphere reserves. For this, the Secretariat should establish a scheme for the international exchange of young professionals and volunteers to work in biosphere reserves.

- MAB National Committees should take a more active role in the development of national strategies for sustainable development. In particular, MAB National Committees should promote biosphere reserves as an instrument needed by governments to fulfil their obligations under international environmental agreements.

- The Secretariat should actively co-operate with the Secretariats of the international environmental agreements to promote biosphere reserves as instruments for their implementation.

WORKING GROUP 10: EDUCATION, AWARENESS BUILDING AND TRAINING IN SUPPORT OF BIOSPHERE RESERVES

Education, awareness building and training in support of biosphere reserves: Experience from Nigeria

B. A. Ola-Adams

INTRODUCTION

Biosphere Reserves provide a broad array of environments – both natural and anthropogenic, ranging from the biologically diverse natural areas to extremely artificial ecosystems – that may be utilized as field laboratories for environmental education and educational research.

Through the development of pilot projects focusing on problems of local and national importance but also of regional and international relevance, MAB has met the demands of various countries with different socio-economic and cultural conditions, for adequate research support to plan the sustainable use of natural resources. It was in pursuance of this objective that the UNESCO-MAB initiated the UNESCO Project 'Biosphere Reserves for Biodiversity Conservation and Sustainable Development in Anglophone Africa (BRAAF)', financed through funds-in-trust from the Federal Ministry of Economic Co-operation and Development (BMZ) of the Federal Republic of Germany and contributions in kind from the Governments of Ghana, Kenya, Nigeria, Tanzania and Uganda. The project was implemented between June 1995 and December 1998.

Common environmental problems and sustained management of natural resources are best addressed by information sharing. The need to share information, therefore, necessitated the establishment of an international network of biosphere reserves in the five countries: Bia (Ghana), Amboseli (Kenya), Omo (Nigeria), Lake Manyara (Tanzania) and Queen Elizabeth (Uganda).

This paper reports on education, awareness building and training with respect to the BRAAF Project, specifically on and in the Omo Biosphere Reserve in Nigeria.

Omo Biosphere Reserve is located between 6° 35' to 7° 05' N and 4° 19' to 4° 40' E in the southwest of Nigeria, about 135 km north-east of Lagos, about 129 km east of Abeokuta and about 80 east of Ijebu-Ode and covers about 130,500 ha in area. The Omo Strict Nature Reserve was established in 1948 and in 1977 the area was designated as a biosphere reserve in 1977.

ENVIRONMENTAL EDUCATION

Environmental education intends, through a systematic approach and interdisciplinary methods, to train people to show greater respect for natural

balances. It aims to awaken man's awareness of his relations with his environment.

The objective of environmental education in respect of the human environment should be:

- to promote knowledge of the structure, functioning and limitations of the human environmental system
- to make a critical assessment of man's relations with nature.

Environmental education should be aimed to promote and/or reinforce attitudes and behaviours that are compatible with sound environmental resource management.

The use of biosphere reserves for ecological education and training purposes is predicated by the fact that a great deal of practical experience and research of the ecosystem, flora and fauna had been accumulated over the years.

EXPERIENCE IN THE OMO BIOSPHERE RESERVE

Environmental education in biosphere reserves involves the exchange of professional knowledge at seminars, colloquiums and meetings devoted to particular problems of biodiversity conservation and sustainable utilization. The BRAAF Project was based on multi-disciplinary approach involving natural and social scientists and pooled resource persons in several national institutions in each participating country involving national environmental agencies, conservation authorities, University Departments, extension officers, biosphere reserve managers, National Parks Managers and technical staff. This co-operative effort involves participation of local people, planners and policy makers. It includes the use of the best expertise and resources of various donors and technical assistance programmes and agencies in several countries (Gilbert, 1983). Four international seminars/meetings were held in Kenya, Ghana, Tanzania and Uganda involving participating National BRAAF Team leaders, Biosphere Reserve managers, environmental scientists and representatives of UNESCO. These seminars/meetings afforded the participants first hand experience on the management of biosphere reserve in a different country and situation and allowed for the sharing of environmental conservation management experiences among African countries and interactions with local people of the biosphere reserve during field visits.

Environmental education in the Omo Biosphere Reserve addresses many different audiences. The orientation of school children through their involvement in practical activities in nature conservation was one of environmental education objectives (Ola-Adams *et al.,* 1994). It included field trips to nature trails, wildlife domestication, growing of tree seedlings in school nurseries and tree planting in and around school compounds. An NGO, the Forest Elephant and Wildlife Survey and Protection Group (NFWSG), started a conservation programme in primary schools. The programme operates within a formal education setting and is under the State Primary Education Commission. The Group employed staff that went around the schools teaching courses in conservation and organize field trips for staff and students. The group also established a snailery project and tree nursery in the Schools. Four primary schools and one secondary school participated in the project. Each school was allocated snail cages, snails, feeding and drinking troughs, snail feeds, hatching boxes and tree seedlings. In most schools fruit trees were planted around the school farms.

Omo Biosphere Reserve furthermore serves as excellent training ground for students during their Students Industrial Work Experience Scheme (SIWES), which covers between six months and one year depending on the Institution. Students from Technical Colleges (Colleges of Forestry and Wildlife) undergo practical training in tree identification, forest survey, ecological survey, timber harvesting, saw milling and wood working. Students from various universities also carry out their industrial attachment assignments in the reserve. Practicals are organized in forest pathology, forest entomology, ecological surveys, wildlife survey, taxonomy, forest products utilization and socio-economic aspects of the biosphere reserve.

Undergraduate and postgraduate students carry out their research projects on various topics to fulfil their study requirements. Scientists and specialists also carry out scientific studies on Omo Biosphere Reserve as the main site or as one of the sites for studies of the dynamics of the Nigerian forest ecosystem.

Several national training and scientific workshops were held in Nigeria in connection with the BRAAF Project. A training workshop on 'Biodiversity Inventory and Monitoring' was organized which included participants of local communities, schools in the reserve, research institutes, parastatals and private industries operating within the reserve (Ola-Adams *et al.,* 1996). A training seminar/workshop on 'Wildlife Domestication' was held in 1997 to train some hunters and interested inhabitants of selected hunting camps/villages in domestication of snails and grass-cutters.

A workshop on 'Biosphere Reserves Integrated Monitoring (BRIM)' was held in 1998. The workshop included instructions on modern techniques in biodiversity data collection and analyses, computer applications and field trips. The participants at the workshop included park managers from all the six

National Parks, scientists from research institutes and universities and staff of State and Federal forestry services.

Like Nigeria other BRAAF participating countries held several national scientific seminars and training workshops. The national seminars and workshops were used to sensitize local people on the BRAAF Project and to interact with them on their specific economic needs and aspirations with a view to coupling environmental conservation with income generating activities.

At the end of the first phase of the Project, a consultative seminar/meeting was held in December 1998 with the resource persons, local people, non-government organizations (NGOs), stakeholders in Omo Biosphere Reserve, private and government parastatals operating in the reserve to deliberate on 'Partnership in Sustainable Utilization and Conservation of Biodiversity in Protected Areas' (Ola-Adams, 1998).

LESSONS LEARNT FROM THE BRAAF PROJECT

There is need to promote awareness and understanding of the values of biodiversity conservation and utilization. Inadequate publicity and understanding of biodiversity conservation constitute a major problem of biodiversity conservation and sustainable use.

Biodiversity conservation is a new technical term for many governments as well as for citizens who lack basic knowledge on biodiversity conservation. There is need for both formal and informal public education and for in-service training for government personnel to convey the existence and importance of biodiversity.

At present biodiversity conservation and environmental education is not an integral part of the curricula at any level in the nation's schools. It is covered in such subject areas as forestry, wildlife management, fisheries, water resources management for some universities that offer these courses. There is need for integration of natural and social sciences for a proper understanding of the ecosystem management. The insights offered by economics, psychology, taxonomy, history, anthropology, political science and sociology should be harnessed for the benefit of conservation (McNeely, 1996). There is urgent need to develop teaching manuals and materials and to provide for specialized training for teachers.

In a re-appraisal of the responsibilities of a scientist in the developing world, Odhiambo (1993) suggested the empowerment of the poor to resurrect their will to self-improvement and self-realization. The empowerment must include a decisive policy for investment in a different kind of education and training. The new education and training envisaged must re-integrate science into local people's own cultural endowment to meet the needs of the prevailing stressful geo-economic and geopolitical conditions.

The first phase of the BRAAF Project has completed inventorying the biodiversity and initiated some income-generating projects among local communities in the participating biosphere reserves. The income generating activities enhanced the living standard and welfare of the local communities and improved the incomes of individuals within the communities.

Through integrating research activities with dialogue with the local communities, the research teams observed that the local people had a considerable amount of undocumented information about the ecosystem structure and functioning. This cross-fertilization of ideas enhanced research findings to promote local community socio-economic development and conservation within the biosphere reserves.

The implementation of the BRAAF Project activities had helped to remove the mistrust that existed between the local people, government at all levels and other stakeholders through amicable interaction on the same platform created through the focus group discussions and national seminars. This development has significantly paved the way for a strong mutual trust and collaboration in the management of the biosphere reserves to be fostered. It was also observed that integrating dialogue on conservation issues with purposeful support for income generating activities within the communities produced very fruitful results. This kind of approach did not only eliminate mistrust but promoted the development of a spirit of partnership between the reserves management staff and the local people.

There is need, however, to monitor the impact of the Project's support for income-generation on the socio-economic status of the reserve. Women's participation on the on-going income-generating activities has been rather low in all the participating biosphere reserves. There is, thus, the need to involve more women in the Project activities by providing training and support for women-oriented activities.

The preparation of communities for post-project operation and maintenance is inadequate within the framework of most donor-funded projects. This raises fears about a lack of sustainability after the project has ended.

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Partners in biodiversity conservation and sustainable development: First South African biosphere reserve learning seminar

Kallie Naude

Because of its former policies, South Africa was effectively barred from the United Nations and international forums. This isolation – cultural, social, economical, scientific, environmental and academic – had a strong negative impact on the country's development. South Africa's reintroduction into the international community, since the 1994 elections enabled it to contribute and fulfil its moral and social obligations in global terms for the benefit of all. Biosphere reserves constitute one such area of international networking that became available to South Africans.

Under the auspices of the Kruger to Canyons Biosphere Reserve, this first South African biosphere reserve learning seminar was held in the proposed Kruger to Canyons Biosphere Reserve at the Hans Hoheisen Research Station and the South African Wildlife College, from 2 to 5 May 2000. It was organized with support from the MELISSA Programme (Managing the Environment Locally in Sub-Saharan Africa – A World Bank project, based in Pretoria).

The aim of the seminar was to facilitate the sharing of knowledge, experiences and ideas between participants from the current biosphere reserve initiatives in South Africa.

These initiatives include:

- Kogelberg Biosphere Reserve (designated 1998);
- Cape West Coast Biosphere Reserve (designated in 2000);
- Waterberg Biosphere Reserve (designated in 2001).

The following initiatives are at various stages of development towards Biosphere Reserves:

- Kruger to Canyons Biosphere Reserve (to be submitted in 2001);
- Boland;
- Cedarberg;
- St Lucia/Maputoland;
- Pholelo;
- Tugela;
- Ekangela Grassland (Wakkerstroom).

The seminar drew 130 participants from all 9 South African provinces including national and provincial government representatives, local community leaders, local interest groups and NGOs, private interested individuals such as farmers and school teachers.

The seminar was structured around themes that were each introduced by an invited speaker. Each introductory session was then followed by an *indaba* (discussion) session in which participants broke into groups to discuss various topics relating to the given theme. The whole seminar was conducted with the help of a professional facilitator.

The success of the seminar can be judged by measuring the extent to which specific objectives were attained:

- Create an understanding of biodiversity conservation and sustainable development as the

foundation of biosphere reserves. The understanding of biodiversity conservation was reinforced and the reality of sustainable development was discussed at all *indaba* sessions: this emphasized that biosphere reserves are more than protected areas.

- Create an understanding of the role of biosphere reserves in planning at the local, provincial and national levels. The exact role of biosphere reserves was difficult to ascertain since there was at that time no clear picture in South Africa. However, one province was using biosphere reserves as the corner stone for bioregional planning. Attention was drawn to the other planning initiatives such as Integrated Development Projects where biosphere reserves could play a role.

- Create groundwork for the development of partnerships for the ongoing synergy and implementation of the biosphere reserve philosophy. This objective was certainly attained in that there was a huge amount of interaction amongst participants at the local, provincial and government al levels. In addition, a number of partnerships were started at the local level between biosphere reserve initiatives.

- Create a learning environment in which participants may understand their roles meaningfully and set about changing their attitudes and actions. The representatives of nine biosphere reserve initiatives gave overviews of their development and status: this was an extremely fruitful information exchange on lessons learned and problem areas. In turn, this led to a greater understanding of the roles of different groups in establishing and running biosphere reserves.

- Create links between the role-players interested in working in the establishment of a biosphere reserve. Such links were created at the formal as well as the informal level. Formal links were forged amongst biosphere reserve initiatives, funders, UNESCO, national and provincial governments and local people. Representatives of three biosphere reserve initiates located in the same province met formally to strengthen ties between them.

- Create of forum for the exchange of information and experience and the building of a best practice database that links to the Knowledge and Resource Network (KERN) of the MELISSA Programme. At the end of the seminar, a resolution was made that a) a follow-up seminar should be held in 2002; b) that an association of South African Biosphere Reserves should be formed, and c) that a web site should be established for the continued sharing of information.

- Other important outcomes included the adoption of a declaration of commitment by the participants of the seminar to the philosophy and implementation of biosphere reserves in South Africa.

In conclusion, the First Southern African Biosphere Reserve Learning Seminar can be regarded as a great success. The dedication, hard work and long hours invested in organizing the seminar bore fruit and paved the way for a new and exciting era in establishing biosphere reserves in South Africa.

Estategias educativas en la Reserva de Biosfera del Montseny, Catalunya (España): Modelos y políticas de acción y comunicación

Angel Miño Salinas

En el marco de esta Reunión Internacional sobre el cumplimiento de la Estrategia de Sevilla relativa a la Red Mundial de Reservas de la Biosfera (1995-2000) «Sevilla + 5», se trata de analizar el grado de cumplimiento del Objetivo III.3, fomentar la educación, la concienciación pública y la participación, en el caso de la Reservas de la Biosfera (RB) Españolas.

Hay que puntualizar que, dentro del Objetivo III, hay toda una serie de conceptos que se interrelacionan y que son de difícil delimitación. En el campo de la

educación, la educación medioambiental y la interpretación; en la concienciación publica, el uso público, la atención a los visitantes, la interpretación y la información, y así se podrían enumerar otros conceptos o ámbitos como el voluntariado, la participación, la capacitación, la formación, el intercambio, etc.

En cuanto a educación ambiental se refiere, ya en los diferentes informes elaborados a instancias del Comité MAB español en los años 1990 y 1994, se reflejaba una buena situación en equipamientos. La totalidad de RB están provistas de equipamientos dedicados a educación ambiental e interpretación, principalmente dirigidos a la población escolar y al público visitante. Hay que destacar las aulas o escuelas de naturaleza y los centros interpretativos que se han extendido a todas las reservas.

Los grados de cumplimiento de los objetivos fijados en la Estrategia de Sevilla, denominados recomendaciones (7 recomendaciones: 2 a nivel internacional, 2 a nivel nacional y 3 a nivel de las reservas) se deberían seguir y, por tanto, evaluar. Este diagnóstico y posterior análisis no se ha realizado o no se ha dado a conocer. Sin embargo existen experiencias de cooperación internacional entre RB de distintos países y de distintos continentes (Exposición itinerante y de divulgación «El Hombre y los Animales» entre la RB del Montseny (España), la RB de Cevennes (Francia), RB la Amistad (Costa Rica y Panamá) y PN de Seguenay (Canadá)), en donde diferentes sectores de las distintas RB dedicados a la educación medioambiental participaron de forma muy gratificante desde el punto de vista de los gestores. Claro que normalmente se deben a un impulso de las propias reservas.

Sobre el desarrollo de sistemas de comunicación, cabe decir que Internet ha propiciado que diversas instituciones crearan páginas de consulta de espacios naturales protegidos, de las RB y del programa MAB. De su impacto social, las propias organizaciones podrían dar cuentas (UNESCO, Redes Regionales, Comités MAB nacionales, Administraciones gestoras). A nivel individual, en mi caso de la RB de Montseny, se puede decir que un público variado las utiliza y se atienden numerosas consultas, inducidas por el descubrimiento y utilización de datos. De forma que, aunque indirectamente, se podría decir que sí se difunde información de las Reservas de la Biosfera a nivel internacional.

A nivel nacional la inclusión de la conservación y el uso sostenible en programas y manuales educativos, así como en los medios de comunicación e información, se produce por diferentes medios. Estos son conceptos que han arraigado en los medios de comunicación, en los niveles de decisión política y, por tanto, en la sociedad. Sí es cierto que añadir a un proyecto de desarrollo territorial la idea de Reserva de la Biosfera lo hace más atractivo socialmente, más creíble, más coherente y le da un valor añadido de calidad.

La participación de las RB en redes y programas internacionales se produce no desde el ámbito nacional (Comité MAB) sino debido al propio estímulo de las RB. Si bien la participación en reuniones internacionales, como ésta misma, ayuda a establecer lazos entre distintas RB.

Donde se aprecia un mayor vigor y dinamismo es en las recomendaciones a nivel de cada reserva. En la totalidad de la información que obra en nuestro poder, existe un buen nivel de participación de las comunidades locales, escolares y otros sectores interesados en programas de educación y capacitación y en las actividades de investigación y observación permanente en las RB. Es más fácil fomentar la participación de los distintos sectores en los programas educativos y de capacitación, que en las actividades de investigación y de observatorios vivos ya que en este último caso se precisan medios y preparación especializados y caros, difícilmente asumibles por algunos sectores de interés.

A modo de ejemplo se pueden citar algunas de las experiencias más recientes realizadas por varias RB españolas:

RB Sierra de las Nieves:

- Guía del Patrimonio Natural e Histórico de la RB «Sierra de las Nieves» y su entorno.

RB del Montseny:

- Programa cultural «Vive el Parque» (Programa escolar);
- Programa pedagógico «Conozcamos nuestros parques»;
- Círculo de Amigos de los parques naturales (Voluntariado);
- Plan de Información de la RB del Montseny.

RB de Lanzarote:

- Proyecto de las visitas escolares a la Casa de los Volcanes;
- Proyecto del Aula de la Naturaleza de Máguez.

RB de Urdaibai:

- Programa de información y divulgación. Premios Urdaibai;
- Programa de educación ambiental del ámbito educativo;
- Programa de investigación y cooperación científica.

La preparación de materiales dedicados al uso público en los que se resalte la importancia para la conservación y el uso sostenible de la diversidad biológica, sus aspectos socioculturales y sus recursos y programas recreativos y educativos, se produce en todas las RB españolas.

También se ha fomentado adecuadamente el desarrollo de centros educativos de terreno en las RB, con instalaciones que contribuyen a la educación de los escolares y otros grupos interesados. La creación inicial de aulas o escuelas de naturaleza, de centros de interpretación y itinerarios guiados ha inducido, en algunos casos, a la iniciativa privada a introducirse en este campo, consolidando un sector económico de gran interés.

A modo de resumen, se podría decir que ha habido un mayor impulso en el seguimiento de las recomendaciones en el ámbito de cada reserva que en los niveles nacional e internacional. Es necesario un impulso más decidido en estas recomendaciones. En este sentido sería bueno retomar el trabajo iniciado por la Red de Reservas de la Biosfera Españolas, apoyado por el Comité MAB Español, en cuanto a la elaboración de diversas guías prácticas para el establecimiento de programas de seguimiento, y extenderlo al campo de la educación medioambiental y la concienciación pública. Otro tipo de iniciativas que se podrían iniciar sería la elaboración de estrategias y acciones concretas para reforzar y conseguir plenamente los objetivos planteados en las recomendaciones de la Estrategia de Sevilla para las Reservas de la Biosfera.

La Réserve de Biosphère de Luki (République Démocratique du Congo) : un laboratoire vivant pour l'École Régionale Post-Universitaire d'Aménagement et de Gestion Intégrés des Forêts Tropicales

Jean Ngog-Nje

INTRODUCTION

L' essor quasi exponentiel de la science et de la technologie ces dernières décennies amène l'homme à s'interroger davantage sur son propre avenir. Certes chaque espèce a une longévité biologique, c'est-à-dire qu'elle est vouée à la disparition à un moment de l'histoire. Les dinosaures ont ainsi disparu sans l'intervention de l'homme. Cependant ce dernier est à l'origine du livre rouge « Red data book » où de nombreuses espèces sont présentées dans différentes catégories de menaces. L'*Homo sapiens* n'y figure pas encore tout simplement parce que l'on sous-estime ou ignore tous les paramètres qui le rendent éligible au fameux livre. Lorsqu'on confronte sa courbe de croissance démographique avec celle des ressources naturelles vivantes renouvelables dans le contexte socio-politique actuel, même les plus optimistes s'inquiètent. L'homme ne pourra donc survivre que s'il accepte de vivre en équilibre relatif et dynamique avec son environnement. Autrement son inscription dans le livre rouge ne saurait tarder.

Le concept innovateur de réserve de biosphère a cette particularité de montrer aux gens que les notions de conservation et développement durable sont tout à fait compatibles, complémentaires voire symbiotiques. Cette nouvelle vision impose une approche interdisciplinaire et intégrée impliquant réellement tous les acteurs dans tout le processus. Ceci exige entre autres, une bonne connaissance des ressources en présence, donc un renforcement des capacités humaines. C'est à ce niveau qu'intervient l'École Régionale Post-Universitaire d'Aménagement et de Gestion Intégrés des Forêts Tropicales (ERAIFT).

PRÉSENTATION GÉNÉRALE DE L'ERAIFT

Historique

La dégradation continue des écosystèmes forestiers tropicaux et particulièrement ceux de l'Afrique constitue un enjeu très important sur les plans biologique, écologique, économique, social et politique. La nécessité de les conserver et de les gérer pour un développement durable est ressentie par tous. Ce sentiment se traduit entre autres par la tenue de plusieurs réu-

nions multiformes débouchant parfois sur des projets locaux, nationaux ou régionaux de conservation et développement.

Le besoin de création d'une institution régionale spécialisée en aménagement et gestion intégrés de l'environnement forestier tropical a été vivement exprimé en 1989 et 1991 (allocution de Mr Kabala Matuka lors d'une table ronde des bailleurs de fonds sur les secteurs sociaux à Kinshasa et séminaire régional sur la forêt tropicale africaine à N'sele (République Démocratique du Congo)). Le séminaire de N'sele avait été organisé par l'Institut Zaïrois pour la Conservation de la Nature et l'UNESCO. Ces deux rencontres ont conduit à la création de l'ERAIFT qui a officiellement ouvert ses portes le 10 avril 1999 à Kinshasa. Le choix de ce pays hôte se justifie car il est le principal pays forestier de l'Afrique.

Vocation régionale

L'École a une vocation régionale: elle reçoit les ressortissants de tous les pays du continent dont les territoires forestiers pâtissent pratiquement des mêmes problèmes. Elle a aussi pour vocation d'être un centre de recherche appliquée et entretient des relations avec les institutions internationales spécialisées en environnement tropical et développement.

A ce jour, en plus du pays hôte, six États sont associés au projet: Cameroun, Congo, Côte d'Ivoire, Guinée, Madagascar et Mauritanie.

Objectifs de formation

L'objectif primordial de l'École est de contribuer à accroître les capacités nationales des États africains dans la mise en œuvre d'une approche méthodologique nouvelle. Celle-ci consiste à appréhender les problèmes de gestion des écosystèmes forestiers tropicaux et de développement dans une perspective systémique et de manière concertée avec les premiers intéressés, à savoir les populations locales. Il ne s'agit pas d'une école forestière au sens classique où l'exploitation forestière industrielle constitue l'essentiel de la formation. Le milieu forestier est plutôt abordé sous un angle écosystémique. Les cadres sont formés au niveau de diplôme d'études supérieures spécialisées (18 mois) et du doctorat (3 ans minimum). Les conditions d'admission et les programmes d'enseignement peuvent être obtenus sur demande adressée à la Division des Sciences écologiques de l'UNESCO à Paris ou à l'École.

Tous les professeurs sont vacataires (africains, européens, nord américains). Ce brassage est très important car il permet un échange d'expériences tout en favorisant la coopération internationale.

Financement

Actuellement l'École est financée par le PNUD Kinshasa dans le cadre d'un projet d'assistance qui prend fin le 31 décembre 2000. La Division des Sciences Écologiques à Paris en est l'Agence d'exécution.

Cependant d'autres bailleurs de fonds ont manifesté leur intérêt (Belgique, Canada, France, États-Unis d'Amérique, France, Pays-Bas, WWF (à travers CARPE)) en finançant le séjour des professeurs vacataires, l'équipement ou les travaux de terrain.

Il est clair que l'avenir de l'École dépend de la recherche et de l'obtention des fonds auprès des différents partenaires. Un document d'appui au projet vient d'être élaboré à cet effet et sera soumis aux différentes instances intéressées pour financement.

Ligne d'autorité

L'autorité de l'ERAIFT revient aux instances suivantes:

- l'agence d'exécution (l'UNESCO) en coopération avec le PNUD Kinshasa et en tenant compte des décisions du Conseil International de Supervision (CIS);
- le CIS, organe décisionnel principal de l'ERAIFT;
- le Directeur de l'ERAIFT.

Réalisations

L'École a réhabilité deux bâtiments mis à sa disposition gracieusement par le Gouvernement congolais. L'un des bâtiments comprend les bureaux, une salle de cours, un laboratoire de cartographie numérique, quatre appartements servant de logement et l'autre un dortoir de 23 chambres pour les étudiants. Ce laboratoire est bien équipé et sert de référence au plan sous régional pour la formation et la recherche.

L'École dispose de deux bases (Mbanza-Ngungu et Luki) pour ses travaux de terrain. Chacune d'elles possède un bâtiment d'accueil.

L'institution a deux promotions en formation totalisant 52 étudiants dont 42 au DESS et 10 au doctorat venant de Madagascar, de la Mauritanie, de la République Démocratique du Congo et de la République du Congo. En plus des cours donnés aux étudiants, plusieurs séminaires sur des thèmes divers traitant des interactions entre l'homme et son milieu ont été organisés.

Les étudiants de la première promotion ont fait un stage de terrain de deux mois dans les villages (district de Mbanza Ngungu, Bas-Congo) et exécuté des micro projets d'intérêt collectif avec les populations

concernées (amélioration de l'habitat, reboisement, entretien des routes, etc.). Ceci a été fort apprécié par ces populations et les autorités locales.

APERÇU SUR LA RÉSERVE DE BIOSPHÈRE DE LUKI

Statut juridique

La République Démocratique du Congo compte 8 parcs nationaux, 30 domaines de chasse et 3 réserves de biosphère couvrant environ 8 % du territoire national soit 190.430 km^2 (figure 1).

La réserve forestière de Luki, d'une superficie approximative de 33.000 ha, fut créée par ordonnance n° 5 agri. du 12 janvier 1937. L'objectif principal était la protection intégrale de la partie centrale (parcelle témoin et réservoir génétique) et la recherche agroforestière dans le reste de l'aire. Le Limba (*Terminalia superba*) a été associé au bananier, caféier ou cacaoyer.

Présentation

La réserve de Luki est située à 120 km à l'Est de la côte atlantique du pays et environ 450 km de la capitale Kinshasa. Les latitudes 05° 30' et 05° 43' Sud et les longitudes 13° 04' et 13° 17' Est forment ses limites.

L'altitude varie de 150 à 500 m.

Le climat est du type sub-équatorial tropical humide avec 5 mois de saison sèche et très influencé par le courant marin froid de Benguela entraînant souvent la formation des brouillards. La pluviosité moyenne annuelle est d'environ 1.100 mm et la température moyenne de 25° C. Le diagramme ombrothermique qui fait ressortir deux pics en mars-avril et novembre pour la courbe pluviométrique. L'humidité relative se situe entre 81-82 %.

La végétation naturelle forestière est composée d'un mélange d'essences sempervirentes et sémicalducifoliées. Il s'agit d'une forêt subéquatoriale ombrophûle guinéenne. Lubini (1984) cité par Gata (1997) signale que la flore de la réserve contient: 35 espèces de Ptéridophytes, 1 espèce de Gymnosperme et 997 espèces d'Angiospermes. La réserve de Luki était, jusqu'en 1998, entourée de nombreuses concessions forestières dont certaines touchaient ses limites. Compte tenu de l'impact négatif de cette proximité sur l'aire protégée, l'administration forestière a procédé à une révision de la carte de concessions en 1999 en situant celles-ci à plus de 30 km de Luki. L'aire centrale de la réserve est pratiquement le seul îlot de la forêt primaire de Mayombe du pays (prolongement de la forêt guinéenne). Le reste de la région a été victime de l'emprise humaine qui a sérieusement perturbé les écosystèmes naturels par une utilisation multiforme et anarchique de l'espace. L'exploitation forestière a été motivée par la présence des espèces précieuses et la proximité des ports d'évacuation (Boma et Matadi).

La faune de Luki est aussi relativement riche malgré le braconnage. Pendje et Baya Ki Malanda (1992) font état de l'existence de 33 espèces de mammifères (rat de Gambie, aulacode, athérure, diverses espèces de chauve-souris, deux espèces de pangolins, trois espèces de genettes, quatre espèces de céphalophes, sitatunga, guib harnaché, moustac, deux espèces de galago etc.). Évidemment d'autres classes sont représentées dans la réserve mais des études d'inventaires sont nécessaires pour mieux apprécier la situation.

Aménagement et gestion

La gestion de la réserve par l'INEAC visait essentiellement la connaissance de la dynamique forestière et l'identification des méthodes permettant une agroforesterie rentable.

Le plan d'aménagement de Luki élaboré par B. Kap et R. Bounloth (1987) sous l'égide du Comité National MAB/Congo (actuel gestionnaire) en 1987 retient 7 zones dont certaines subdivisées en unités d'aménagement avec les objectifs spécifiques.

- *zone centrale* (8.137 ha soit 25 % de la réserve): conservation de la diversité biologique ;
- *zone de protection* (5.747 ha soit 17 %) : exploitation sélective des essences forestières pour déboucher sur un modèle d'axe d'utilisation durable ;
- *zone expérimentale* (9.505 ha soit 29 %) : expériences sur l'agroforesterie: sylvo-bananier, sylvo-caféier ou sylvo-cacaoyer.
- *zone de reconstitution* (3.458 ha soit 10 %) : zone fortement dégradée où des expériences d'agroforesterie énumérées ci-dessus sont menées.
- *zone d'agrément* (2.015 ha soit 6 %) : activités d'éducation et du tourisme.
- *zone de reclassement* (1.873 ha soit 6 %) : installation des villages déguerpis d'autres zones de la réserve.
- *zone d'enclaves* (2.257 ha soit 7 %) : les enclaves sont des agglomérations qui existent dans la réserve.

Au vu de la description précédente du zonage de Luki, on peut conclure que la réserve a globalement une aire centrale et une zone de transition dans le sens du concept de réserve de biosphère. La plupart des réserves de biosphère issues des sites créés avant « le concept de réserve de biosphère » ne répondent pas

au schéma classique de zonage. Ce n'est donc pas une particularité de Luki. Cependant l'administration considère l'ensemble zone de protection + zone d'expérimentation comme zone tampon et le reste (hormis la zone centrale) comme zone de transition.

Activités des communautés locales dans la réserve

La population vivant à l'intérieur et à la périphérie de la réserve a été estimée à 49.000 habitants par Gata (1997). Avec un taux moyen d'accroissement de 4,5 % calculé sur 30 ans, elle est actuellement de l'ordre de 56.000 habitants. On compte plus de 50 villages. Des nombreuses ressources sont tirées de la réserve et l'impact humain sur la diversité biologique du site est très important. Des activités illicites d'exploitation se multiplient (population pas suffisamment sensibilisée et impliquée dans la gestion de la réserve, surveillance du site affaiblie par l'insuffisance du personnel et des moyens, la démographie galopante des villages périphériques et des villes voisines, etc.)

Les communautés locales exercent de fortes pressions sur l'ensemble de la réserve: agriculture itinérante sur brûlis (bananier, manioc, maïs, arachide, caféier, cacaoyer etc.), chasse, pêche, recherche du bois d'œuvre et de bois de feu, production du charbon (carbonisation). La cueillette ou la récolte des autres produits forestiers à des fins alimentaires ou médicales ne sont pas négligeables. Plus de 40 espèces végétales interviennent dans l'alimentation et une trentaine dans la médecine traditionnelle. Le braconnage constitue un véritable fléau. Certaines espèces ont disparu dans la réserve (éléphant, gorille de plaine, buffle, pangolin géant, chimpanzé, etc.). Toutes ces activités sont liées à l'économie de subsistance et au commerce avec les centres urbains. En résumé, la réserve de biosphère de Luki contribue significativement à la vie quotidienne de ces communautés.

Cette dépendance non réglementée en pratique des populations vis-à-vis de l'aire protégée est source de plusieurs conflits entre l'administration en charge de la réserve et les acteurs locaux. En effet ceux-ci estiment avoir perdu leurs droits sur les terres ancestrales. L'avènement de la démocratie vient les renforcer dans leurs revendications.

LUKI : LABORATOIRE VIVANT DE L'ERAIFT

Nous avons eu le privilège de visiter la réserve de Luki en août 2000 pour préparer le stage de terrain des étudiants.

Les présentations générales de l'ERAIFT et de Luki vues plus haut montrent clairement que cette réserve de biosphère peut jouer un rôle vital dans la formation dispensée au sein de cette institution régionale pour des raisons suivantes:

- ce site, situé à une journée de voiture de l'institution, constitue un exemple éloquent de destruction d'un écosystème forestier suite à une exploitation anarchique (cas de la forêt de Mayombe) ;
- l'administration de la réserve n'est pas harmonieuse. Les responsabilités du MAB/Congo et de l'INERA ne sont clairement définies ni dans les textes ni sur le terrain. Il se dessine un certain « bicéphalisme » qui ne facilite pas la gestion du site. Cette situation avait déjà été déplorée par Mbemba et Malekakani (1995) ;
- l'ERAIFT et la réserve de biosphère de Luki ont toutes deux un label de l'UNESCO ;
- l'ERAIFT contribuera à la connaissance de la diversité biologique de Luki et le séjour des étudiants dans les villages leur permettra de faire l'éducation mésologique ;
- les expériences d'agroforesterie en cours sont extrêmement importantes dans le triple but d'exercices de reboisement, d'exploitation forestière associée à l'agriculture avec l'implication des paysans ;
- les relations des communautés locales/réserve seront étudiées et les recommandations faites dans le sens d'un véritable partenariat entre les populations et l'administration pour une meilleure gestion de la réserve ;
- l'ERAIFT aura l'occasion de faire des recommandations pour la révision du plan d'aménagement élaboré il y a 13 ans mais sans activités réelles d'application ;
- Luki offre une occasion aux étudiants d'améliorer leurs connaissances pratiques en sciences naturelles, sciences humaines, sciences économiques, etc. et surtout de mieux appréhender le concept de réserve de biosphère en situation réelle.

CONCLUSION

L'Afrique est reconnue pour sa grande diversité biologique à la fois sur le plan quantitatif et qualitatif. Elle a le devoir de la conserver et a aussi le droit et le devoir de se développer pour assurer l'épanouissement de ses populations.

La pauvreté qui sévit dans des nombreux pays du continent amène souvent les décideurs à travailler sur le court ou moyen terme, ce qui est contraire à la philosophie du développement durable. En d'autres termes, la gestion des ressources naturelles en Afrique reste un problème très complexe et nécessite plusieurs approches pour tenter de le résoudre. A notre avis, le renforcement des capacités humaines doit être consi-

dérée comme une priorité des priorités. L'expérience des guerres montre qu'on peut trouver de l'argent et les moyens à tout moment, mais la formation des hommes nécessite souvent des mois et des années. Il faut donc s'y prendre à temps et dispenser une formation qui réponde aux besoins des pays concernés. Il faut une formation de proximité. La recherche doit être opérationnelle en ce sens qu'elle doit permettre de trouver des solutions aux problèmes réels de terrain.

L'ERAIFT compte sur le concours de la communauté internationale pour contribuer efficacement à la conservation du patrimoine forestier et au développement durable du continent.

Quant à la réserve de Luki un séminaire tenu dans la région permettrait d'analyser en profondeur les différents problèmes liés à sa gestion et d'en rechercher les solutions. Cette rencontre permettrait également de former les gestionnaires de réserve de biosphère de la sous-région. Luki pourrait devenir un centre pilote de formation et de recherche appliquée dans le domaine de gestion intégrée des écosystèmes tropicaux et humides. Il est donc urgent que la communauté internationale s'investisse davantage dans cette aire protégée qui à nos yeux permet d'illustrer la complexité du couple « conservation » et « développement durable » dans une Afrique en pleine mutation.

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The CBD-UNESCO Global Initiative on education and public awareness: Formulating new paradigms

Peter Bridgewater

Under the Convention on Biological Diversity (CBD), the 'Global Initiative' was born out of the need to establish global strategy aimed at improving the understanding of biodiversity and sustainable development that integrates knowledge about the values of biodiversity into everyday attitudes and behaviour.

The proposal for establishing a new paradigm for biodiversity education was evoked at the 4th meeting of the Conference of Parties (COP) to the Convention on Biological Diversity, held in Bratislava, Slovakia, in May 1998.

During the 5th meeting of the COP (Nairobi, May 2000), the Parties to the CBD invited UNESCO 'to convene jointly with the CBD a consultative working group of experts to launch the process leading to the design, launching and implementation of the global initiative'.

Accordingly, the first meeting of the working group was organized and held at UNESCO in Paris on 11–13 July 2000. The working group outlined strategic objectives and decided to hold additional working session. The second meeting was held in Bergen (Norway) from 19–21 November 2000, and at the time of writing, the third meeting is scheduled for September 2001, at Urdaibai Biosphere Reserve.

Harmonization and synergy are key components

in the strategic approach to the global initiative. A set of basic principles, criteria and approaches will be developed to guide strategy implementation. These principles concern:

- **Education:** emphasis in the global initiative will be given to enhancing biodiversity education in formal and informal education;
- **Partnerships:** biodiversity experts and scientific organizations in all countries will be mobilized to co-ordinate capacity building and project development, thereby setting up a global team effort;
- **Networking:** inter-sectoral dialogue will be promoted and the transfer and exchange of information that forges partnerships among relevant experts (persons and institutions) shall be facilitated.

The working group identified four activity areas:

- **Network management:** with a communication strategy;
- **Knowledge management:** relating to the transfer and dissemination of information;
- **Capacity building** in order to promote the involvement of stakeholders at all levels;
- **Demonstration project** of an adaptive approach, developing culture-specific and habitat-specific campaigns.

As a result, seven projects have been outlined for future development:

- setting up a network as a means of communication;
- establishing an information highway;
- conducting a demonstration project;
- integrating biodiversity policies using the ecosystem approach;
- implementing biodiversity education projects;
- organization of information;
- determining links between formal and non-formal education.

As the project proceeds it is hoped to use a number of Biosphere Reserves in all countries as education nodes.

Working Group 10: Education, awareness building and training in support of biosphere reserves

Moderator: Mr B.A. Ola-Adams (Nigeria).

Presentations were made by Mr Vladimir Pichelev (Russian Federation), Mr Kallie Naude (South Africa), Mr Juan Miño (Spain), Ms Boshra Salem (Egypt), Mr Jean Ngog Nje (ERAIFT) and Mr Peter Bridgewater (MAB Secretariat).

The discussions following the presentations centred on five themes:

- the importance of promoting awareness of the economic and social benefits generated by biosphere reserves;
- the need for biosphere reserves to exchange information about their activities on education and public awareness;
- the need to analyse target groups as a first step in designing educational and communication programmes;
- the need to apply a diversity of methods that cater for different target groups;
- the importance of establishing a two-way communication process with these target groups in order to benefit from the knowledge they possess.

In relation to these themes, the working group made the following recommendations.

Recommendations

- Biosphere reserves should be connected by information webs and should exchange information about education and public awareness through the regional networks and the world network.

- Educational and public awareness programs and campaigns should always be implemented

through two-way communication. Such programs should be implemented at site and national level and should include *inter alia* efforts to popularize scientific information by producing television programs, films and suitable illustrated books and brochures. An environmental education manual for use at all levels of education should be developed to assist biosphere reserve co-ordinators.

- A diversity of education and public awareness methods should be applied and methods and contents should be adapted to different target groups and their different needs.

- Biosphere reserve status offers opportunities to develop environmental awareness and promote equitable sharing of current and potential economical or social benefits. This awareness and these benefits should be promoted.

- It was suggested that biosphere reserve co-ordinators, national committees and the MAB-secretariat should:
  - develop on-line and hardcopy tutorials on the concept of biosphere reserves and the Seville Strategy and disseminate through appropriate processes such as workshops, favouring a participatory approach and integrating indigenous knowledge and appropriate communication technologies;
  - create concise and user-friendly, practical guides on the Seville Strategy with diagrams, pictures and cartoons;
  - encourage local communities to form community organizations appropriate to their cultural background to participate in decision-making on sustainable resource use and promotion of the biosphere concept;
  - link traditional festivals, where they exist in the context of the biosphere reserves, to foster awareness aimed at improving the conservation and sustainable utilization of resources within biosphere reserves;
  - use appropriate information technology systems and public awareness, including translation into local languages;
  - develop and implement integrated courses in biodiversity conservation and resource management particularly in biosphere reserves with emphasis on the ecosystem approach.

- In the context of biosphere reserves, seminars should be organized to bring together citizens, professional groups, policy makers, governmental agencies and NGOs, to share ideas, common concerns, methods, and technical needs to promote environmental awareness, socio-economic development and equity. Such seminars should also identify specific roles, individuals could take to strengthen co-ordination and co-operation that would help to improve public environmental awareness and promote the biosphere reserve concept.

Conclusions

Main results and thoughts for the future of Biosphere Reserves, or From Bardenas Reales to Mata Atlântica

Peter Bridgewater

Importantly, the Pamplona meeting agreed that science is the basis for a satisfactory Biosphere Reserve Network, which itself is a unique global platform for research and monitoring. But it is not merely a scientific and monitoring tool – the network is vitally concerned with the conservation of biodiversity and *must* be linked with sustainable Human development. In that, local people are the key to success (or failure) in any Biosphere Reserve. Biosphere Reserves can help develop bioregional plans for biodiversity conservation, use and sharing.

The World Network of Biosphere reserves needs to communicate its success at all levels and in many languages. In that way, the network needs to use more modern tools, but not neglect tried and true techniques for management or communication.

It is also true that Biosphere Reserves are as much about economics as ecology!

To be vital and viable the Network must grow, but not only grow, it must *develop*. This implies a review process, which is essential to measure success or failure of individual reserves, and so to maintain a healthy network. A periodic review process exists, but it needs strengthening.

The World Network of Biosphere Reserves also needs to link with processes under the Multilateral Environmental Agreements. To be effective, national structures dealing with Biosphere Reserves need to link with other national structures for Environmental Agreements. But in the end, we realize that Biosphere Reserves are not perfect; in summary they need:

- Better visibility;
- Better support;
- Better outreach;
- Better use as outdoor laboratories;
- Better integration into regional planning;
- Better integration into local economies;
- Better use as classrooms;
- Better methods of evaluation;
- Better links with MEA's;
- Better links with each other.

To resolve this, the meeting had a long and detailed list of conclusions and suggestions, available on the MAB website, which were then examined in detail by the meeting of the Council in November. The council decided on a number of key tasks, which included:

- The MAB Secretariat should co-ordinate with the Secretariats of the relevant multilateral environmental agreements (e.g. the Convention on Biological Diversity) to promote biosphere reserves as instruments for their implementation at the national level, as possible through MAB National Committees. Guidelines should be prepared to harmonize research initiatives concerning the different conventions, for implementation at the national level.

- The implementation of the Biosphere Reserve Integrated Monitoring (BRIM) programme should be accelerated, including explicit recognition of the need to integrate the social sciences in its activities.

- The Secretariat should advise and act as a broker for Member States and groups of Member States and especially the regional networks to help them to identify and submit proposals to potential donors/financing agencies and investors to strengthen biosphere reserves.

- On the theme of linking ecology and economics, the MAB Secretariat should facilitate the establishment of a task force, including biosphere reserve managers and local specialists, on developing *quality economies* at site level. Issues which such a task force should consider include:
  - defining 'quality';
  - development of criteria (social, environmental and economic);
  - branding and the criteria behind the image or the meaning of the brand;
  - critical analysis of branding, labelling, marketing, and associated mechanisms/structures (including successes and failures);
  - formulating communication and marketing strategies for biosphere reserves addressing all sectors, with specific follow-up actions;
  - use of the media.

- The MAB Secretariat should develop a concise, user-friendly, practical guide to the Seville Strategy and the Statutory Framework to be translated into as many languages as possible with the assistance of the National Committees. The guide should highlight the importance of sustainable development and cross-link the different goals and objectives both within and between the Seville Strategy and the Statutory Framework. It should also clarify the added values of biosphere reserves and their products to social development and provide a clearer definition of MAB services, products and tools for sustainable development for national decision makers.

- The Secretariat should help Member States and/or regional networks to devise their own guidelines for identifying the stakeholders concerned for the three zones and the three functions of biosphere reserves. Such guidelines should be aimed at facilitating stakeholder participation in the practical management of biosphere reserves.

- The MAB Secretariat should, in co-operation with biosphere reserve co-ordinators and MAB National Committees, develop on-line and hard-copy tutorials on the concept of biosphere reserves and the Seville Strategy and disseminate through appropriate processes such as workshops, favouring a participatory approach and integrating indigenous knowledge and appropriate communication technologies. The MAB Secretariat should also help MAB National Committees to develop and implement integrated courses in biodiversity conservation and resource management particularly in biosphere reserves with emphasis on the ecosystem approach.

- The MAB Secretariat should provide support for the compilation, dissemination and critical analysis of national experiences of the review process, possibly through workshops. The MAB Secretariat, including UNESCO's regional offices, should also provide support, when requested, for the preparation of reviews and implementation of recommendations

- The MAB Secretariat should use existing overviews of the different conventions of relevance to the MAB programme to prepare guidelines on their implementation in the framework of MAB. These should be translated in as many different languages as possible, with assistance from the MAB National Committees.

All of these actions will be developed and implemented to improve the functioning of the World Network of Biosphere Reserves. If the World Network of Biosphere Reserves builds on past successes while learning from past failures then it will continue to make a positive contribution to a safer more sustainable world.

Support at the site national and international level will be critical to ensure on-going success. We look forward to continuing to work with the World Commission on Protected Areas of the World Conservation Union, on the 'road to Durban' for the World Parks Congress in 2003!

Épilogue : Principaux résultats et réflexions sur l'avenir des réserves de biosphère, ou Des Bardenas Reales à Mata Atlântica

Peter Bridgewater

Ces commentaires sont adaptés des conclusions finales de la réunion « Séville + 5 » qui a eu lieu à Pampelune (Espagne) en octobre 2000 avec l'aide de l'État espagnol et de l'administration de la Navarre, et le soutien personnel de M. Javier Castroviejo, alors président du Conseil international de coordination du MAB.

Fait important, la réunion a convenu de ce qu'un réseau de réserves de biosphère *doit,* pour être utile, avoir pour fondement la science et être une plateforme mondiale unique de recherche et de surveillance. Mais il ne s'agit pas simplement d'un outil scientifique et de surveillance : le réseau a fondamentalement une vocation de conservation de la diversité biologique et il *doit* être indissociable d'un développement humain durable. A cet égard, les populations locales sont la clé du succès (ou de l'échec) dans quelque réserve de biosphère que ce soit. Les réserves de biosphère peuvent contribuer à la conception de plans biorégionaux de conservation, utilisation et partage de la diversité biologique.

Il est nécessaire que le Réseau mondial des réserves de biosphère communique ses succès à tous les niveaux et dans de nombreuses langues. A cet effet, il faut que le réseau utilise des instruments plus modernes, mais qu'il ne néglige pas les techniques éprouvées de gestion et de communication. Il est également vrai que les réserves de biosphère sont autant une affaire d'économie que d'écologie.

Pour être vital et viable, le réseau doit s'élargir, mais pas seulement : il doit aussi *se développer*. Ceci suppose de conduire un processus d'examen, essentiel pour mesurer la réussite ou l'échec des réserves individuelles et ainsi de maintenir un réseau en bon état. Un mécanisme d'examen périodique existe, mais il est nécessaire de le renforcer.

Il est également nécessaire que le Réseau mondial des réserves de biosphère soit lié à des processus relevant des accords multilatéraux sur l'environnement. Pour être efficaces, les structures nationales chargées des réserves de biosphère doivent être en rapport avec celles auxquelles échoient les accords sur l'environnement. Mais, en fin de compte, nous constatons que les réserves de biosphère ne sont pas parfaites ; en résumé, elles ont besoin :

- D'une meilleure visibilité;
- D'un plus grand soutien;
- D'une plus grande portée;
- D'une meilleure exploitation en tant que laboratoire à ciel ouvert;
- D'une meilleure intégration dans la planification régionale;
- D'une meilleure intégration dans les économies locales;
- D'une meilleure utilisation en tant que salles de classe;
- De meilleures méthodes d'évaluation;
- De liens plus étroits avec les MEA;
- De liens plus étroits entre elles.

Pour résoudre ces problèmes, une longue liste détaillée de conclusions et suggestions, consultables sur le Web du programme MAB, a été présentée lors de la réunion; ces conclusions et suggestions ont ensuite été examinées en détail lors de la réunion du Conseil en novembre. Le Conseil s'est prononcé sur un certain nombre d'opérations fondamentales, dont les suivantes :

- Il faudrait que le Secrétariat du MAB coordonne son action avec les secrétariats des accords multilatéraux sur l'environnement relatifs aux problèmes qu'il traite (comme par exemple la Convention sur la diversité biologique) pour promouvoir les réserves de biosphère en tant qu'instruments utiles à leur mise en application au plan national, dans la mesure du possible par le biais des comités nationaux du MAB. Il conviendra de préparer des lignes directrices pour harmoniser les initiatives de recherche relatives aux différentes conventions en vue d'une application au plan national.

- Il faudrait que la mise en œuvre du Programme intégré de surveillance des réserves de biosphère (BRIM) soit accélérée et que soit reconnue expressément la nécessité d'intégrer les sciences sociales parmi ses activités.

- Il faudrait que le Secrétariat joue un rôle de conseiller et de médiateur au service des États membres et des groupes des États membres, en particulier des réseaux régionaux, et qu'il les aide à trouver et à soumettre des propositions aux bailleurs de fonds et investisseurs potentiels afin de renforcer les réserves de biosphère.

- S'agissant de mettre en rapport écologie et économie, il faut que le Secrétariat du MAB facilité la mise en place d'une équipe de travail composée de gestionnaires des réserves de biosphère et de spécialistes locaux chargée de réfléchir à l'idée d'*économie de qualité* au niveau du site. Les questions sur lesquelles devra se pencher cette équipe de travail seront notamment les suivantes :
  - La définition de la notion de « qualité » ;
  - La définition de critères (sociaux, écologiques et économiques) ;
  - La marque et les critères sous-jacents à l'image ou la signification d'une marque ;
  - L'analyse critique de la marque, de la labellisation, des techniques de commercialisation et des mécanismes ou structures qui y sont associés (dont les réussites et les échecs) ;
  - La formation de stratégies de communication et de marketing dans le domaine des réserves de biosphère portant sur tous les secteurs, avec des activités de suivi spécifiques ;
  - L'utilisation des médias.

- Il faudrait que le Secrétariat du MAB rédige un guide pratique sur la Stratégie de Séville et le Cadre statutaire, qui soit concis et maniable et qui soit traduit dans autant de langues que possible avec l'aide des comités nationaux. Ce guide mettrait en relief l'importance du développement durable et couvrirait de manière transversale les différents objectifs de la Stratégie de Séville et du Cadre statutaire, qu'ils soient communs à ces deux initiatives ou propres à l'une seule d'entre elles. Il ferait une mise au point sur la valeur ajoutée des réserves de biosphère et de leurs produits pour le développement social et à apporter une définition plus claire des services, des produits et des instruments de développement durable du MAB, et ce à l'intention des décideurs nationaux.

- Il faudrait que le Secrétariat aide les États membres ou les réseaux régionaux, voire les deux, à concevoir leurs propres lignes directrices pour cerner les parties prenantes concernées dans les trois zones et les trois fonctions des réserves de biosphère. Ces lignes directrices devront viser à faciliter la participation de ces parties prenantes à la gestion pratique des réserves de biosphère.

- Il faudrait que le Secrétariat du MAB, en coopération avec les coordonnateurs des réserves de biosphère et les comités nationaux du MAB, publie des présentations didactiques, en ligne et sur papier, de la notion de réserve de biosphère et de la Stratégie de Séville et les diffuse par le biais de mécanismes adaptés, comme par exemple des ateliers, en privilégiant une approche participative et en intégrant des savoirs autochtones et des technologies de communication appropriées. Le Secrétariat du MAB devra également aider les comités nationaux à élaborer et à mettre en place des cours intégrés de conservation de la diversité biologique et de gestion des ressources, en particulier dans les réserves de biosphère, en insistant sur l'approche en écosystème.

- Il faudrait que le Secrétariat du MAB apporte son soutien à la compilation, à la diffusion et à l'analyse critique d'expériences nationales relatives au processus d'examen, éventuellement grâce à l'organisation d'ateliers. Le Secrétariat du MAB devra également, notamment grâce aux bureaux régionaux de l'UNESCO, apporter un soutien, en cas de demande, à la préparation d'examens critiques et à la mise en œuvre de recommandations.

- Il faudrait que le Secrétariat du MAB utilise les analyses d'ensemble déjà réalisées des différentes conventions relatives à des domaines intéressant le programme MAB, afin de préparer des lignes directrices relatives à leur mise en œuvre dans le cadre du MAB. Celles-ci devront être traduites dans autant de langues que possible avec l'aide des comités nationaux du MAB.

Toutes ces actions seront préparées et mises en œuvre pour améliorer le fonctionnement du Réseau mondial des réserves de biosphère. Elles s'inspireront des initiatives qui ont été des réussites tout en tirant des enseignements des échecs passés et tâcheront d'apporter une contribution enrichissante pour parvenir à un monde plus sain et géré de manière plus durable.

Le soutien au niveau des sites et sur les plans national et international sera crucial pour continuer à enregistrer des succès. Nous espérons poursuivre notre travail avec WCPA, sur le chemin vers Durban !

Epílogo: Principales resultados y reflexiones para el futuro de las reservas de biosfera, o De Bardenas Reales a Mata Atlántica

Peter Bridgewater

Estos comentarios se inspiran en las conclusiones finales de la reunión «Sevilla + 5», celebrada en Pamplona (España), en octubre del 2000, con la asistencia de los Gobiernos de España y Navarra y el apoyo personal del entonces Presidente del Consejo Internacional de Coordinación del MAB, el Dr. Javier Castroviejo.

Los participantes en la reunión convinieron –lo cual es de suma importancia– en que una red de reservas de biosfera satisfactoriamente articulada, que es en sí un espacio mundial de investigación y vigilancia único en su género, debía tener bases científicas. Ahora bien, esta red no es un mero instrumento científico y de vigilancia: su principal preocupación es la conservación de la biodiversidad que *debe* vincularse con el desarrollo humano sostenible. Para ello, las poblaciones locales son la clave del éxito (o del fracaso) de cualquier reserva de biosfera. Éstas pueden contribuir a la elaboración de planes «biorregionales» para la conservación, la utilización y el aprovechamiento compartido de la biodiversidad.

La red mundial de reservas de biosfera necesita comunicar sus logros en todos los planos y en muchos idiomas. En ese sentido, la red tiene que utilizar instrumentos modernos, sin descartar técnicas probadas y auténticas de gestión o comunicación. ¡No deja de ser cierto que las reservas de biosfera tienen que ver tanto con la economía como con la ecología! Para ser viable y vital la red no sólo debe crecer, sino también *desarrollarse*. Esto supone un proceso de evaluación que es fundamental para determinar el éxito o el fracaso de cada una de las reservas y mantener de ese modo una red sana. Existe ya un proceso de revisión periódica, pero debe ser fortalecido.

La Red Mundial de Reservas de Biosfera también debe vincularse con procesos que se inscriben en el marco de acuerdos multilaterales sobre el medio ambiente. Para ser eficaces, las estructuras nacionales que se ocupan de las reservas de biosfera deben establecer relaciones con otras estructuras nacionales a fin de concertar acuerdos ambientales. Pero en definitiva nos damos cuenta de que las reservas de biosfera no son perfectas. En resumen, necesitan:

- una mayor notoriedad;
- un mayor apoyo;
- un mayor alcance;
- una mejor utilización como laboratorios al aire libre;
- una mejor integración en la planificación regional;
- una mejor integración en las economías locales;
- una mejor utilización como aulas escolares;
- mejores métodos de evaluación;
- vínculos más estrechos con las Evaluaciones del Medio Marino;
- vínculos más estrechos entre unas y otras.

Para resolver estos problemas, la reunión elaboró una lista pormenorizada de conclusiones y sugerencias, que figura en el sitio Web del MAB, que se examinaron en detalle en la reunión del Consejo en noviembre. El Consejo adoptó decisiones sobre varias tareas fundamentales, a saber:

- La Secretaría del MAB debe concertarse con las Secretarías de los acuerdos multilaterales ambientales pertinentes (por ejemplo el Convenio sobre la Diversidad Biológica), para hacer de las reservas de biosfera instrumentos que faciliten su aplicación en el plano nacional, de ser posible a través de los Comités Nacionales del MAB. Se deberían preparar directrices para armonizar las iniciativas de investigación relativas a las distintas convenciones, con miras a su aplicación en los países.

- Se debería acelerar la ejecución del Programa Integrado de Vigilancia de Reservas de Biosfera (BRIM) y reconocerse explícitamente la necesidad de integrar las ciencias sociales en sus actividades.

- La Secretaría debería asesorar a los Estados Miembros y grupos de Estados Miembros y especialmente a las redes regionales, y servir de intermediario para ayudarlos a formular y presentar

propuestas a posibles donantes u organismos de financiación e inversionistas con el fin de fortalecer las reservas de biosfera.

- Con respecto al tema de la vinculación entre la ecología y la economía, la Secretaría del MAB debería facilitar la creación de un equipo de trabajo en el que participarían administradores de reservas de biosfera y especialistas locales que se ocuparía de crear *economías de calidad* en las distintas reservas. Entre los asuntos que debería examinar ese equipo de trabajo figurarían los siguientes:
  - definición de «calidad»;
  - formulación de criterios (sociales, ambientales y económicos);
  - utilización de una marca y criterios relativos a la imagen o el significado de la marca;
  - análisis crítico de la utilización de una marca o un sello, la comercialización y los mecanismos o estructuras conexos (comprendidos los éxitos y los fracasos);
  - elaboración de estrategias de comunicación y comercialización en relación con las reservas de biosfera dirigidas a todos los sectores, con medidas de seguimiento específicas;
  - utilización de los medios de comunicación.

- La Secretaría del MAB debería elaborar una guía práctica concisa y de fácil consulta acerca de la Estrategia de Sevilla y del Marco Estatutario que se traducirá al mayor número posible de idiomas con la ayuda de los Comités Nacionales. Esta guía debería destacar la importancia del desarrollo sostenible e interrelacionar los distintos objetivos y metas de la Estrategia de Sevilla y el Marco Estatutario. Debería asimismo exponer claramente el valor añadido que aportan al desarrollo social las reservas de biosfera y sus productos y proporcionar a los decisores de los países una definición más clara de los servicios, los productos y los instrumentos que ofrece el MAB con miras al desarrollo sostenible.

- La Secretaría debería ayudar a los Estados Miembros y/o a las redes regionales a concebir sus propias pautas de identificación de las partes interesadas para las tres zonas y las tres funciones de las reservas de biosfera. La finalidad de esas pautas debe ser facilitar la participación de las partes interesadas en la gestión concreta de las reservas de biosfera.

- En cooperación con los coordinadores de las reservas de biosfera y los Comités Nacionales del MAB, la Secretaría del MAB debería elaborar manuales de instrucción impresos sobre el concepto de reservas de biosfera y la Estrategia de Sevilla, y difundirlos por los medios adecuados, por ejemplo mediante la organización de talleres, propiciando así un enfoque participativo e integrando los conocimientos autóctonos y las tecnologías de la comunicación apropiadas. La Secretaría del MAB también debería ayudar a los Comités Nacionales del MAB a organizar e impartir cursos integrados sobre la conservación de la biodiversidad y la ordenación de recursos, en particular en las reservas de biosfera, haciendo hincapié en el enfoque por ecosistemas.

- La Secretaría del MAB debería prestar apoyo a la compilación, difusión y análisis crítico de las experiencias nacionales relativas al proceso de examen, posiblemente mediante la organización de talleres. La Secretaría del MAB, junto con las Oficinas Regionales de la UNESCO, también debería prestar apoyo, cuando se lo solicite, en la preparación de las revisiones y la aplicación de recomendaciones.

- La Secretaría del MAB debería utilizar las sinopsis existentes sobre las distintas convenciones que guardan relación con el Programa para preparar directrices sobre su aplicación en el marco del MAB. Se deberían traducir al mayor número posible de idiomas, con la ayuda de los Comités Nacionales del MAB.

El objetivo de todas estas actividades es mejorar el funcionamiento de la red mundial de reservas de biosfera. Partiendo de los logros obtenidos y aprendiendo de los fracasos pasados es como se podrá seguir aportando una contribución positiva a un mundo más seguro y sostenible.

El apoyo que se preste en los planos nacional e internacional será decisivo para lograr la continuidad de los resultados. Esperamos seguir actuando con la Comisión Mundial de Áreas Protegidas, «rumbo a Durban».

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APPEAL	Asia-Pacific Programme of Education for All
ASEAN	Association of Southeast Asian Nations
BIOTROP	Southeast Asian Regional Centre for Tropical Biology
BMZ	German Federal Ministry of Economic Co-operation and Development
BRAAF	Biosphere Reserves for Biodiversity Conservation and Sustainable Development in Anglophone Africa
BRIM	Biosphere Reserves Integrated Monitoring
CBD	Convention on Biological Diversity
CEDEAO	Communauté Économique des États de l'Afrique de l'Ouest
CENAGREF	National Centre for Management of Fauna Reserves
CI	Conservation International
CILSS	Comité Inter États de Lutte contre la Sécheresse dans le Sahel
COP	Convention of the Parties
CSI	Environment and Development in Coastal regions and in Small Islands
CYTED	Ibero-American Programme for the Development of Science and Technology
DANCED	Danish Co-operation for Environment and Development
DANIDA	Danish Agency for Development Assistance
EABRN	East Asian Biosphere Reserve Network
ECG	Ecosystem Conservation Group
ERAIFT	Ecole Régionale Post-universitaire d'Aménagement et de Gestion Intégrés des Forêts Tropicales
FAO	Food and Agricultural Organization
GEF	Global Environment Facility
GIS	Geographic Information System
GOOS	Global Ocean Observing System
GTI	Global Taxonomy Initiative
GTOS	Global Terrestrial Observing System
GTZ	German Technical Co-operation Agency
IBSICA	Integrated Biodiversity Strategies for Islands and Coastal Areas
ICC	International Co-ordinating Council
ICSU	International Council for Science
IIED	International Institute for Environment and Development
INEAC	Institut National pour l'Étude Agronomique du Congo
INRENA	Instituto Nacional de Recursos Naturales
IPGRI	International Planet Genetic Resources Institute
ITEX	International Tundra Experiment
IUCN	World Conservation Union
LTERs	Long-Term Ecological Research Site
MAB	Man and the Biosphere Programme
MEA	Multilateral Environmental Agreement
NGO	Non-Governmental Organization
NICT	New Information and Communication Technology
ORSTOM	Institut de Recherche pour le Développement
PNUD	Programme des Nations Unies pour le Développement
RAMSAR	Ramsar Convention on Wetlands
REDBIOS	Réseau Est Atlantique de Réserves de Biosphère
ROSELT	Réseau d'Observatoires de Surveillance Écologique à Long Terme
TBR	Transboundary Biosphere Reserve
UDEAC	Union Douanière et Économique de l'Afrique Centrale
UEMOA	Union Économique et Monétaire Ouest Africaine
UICN	Union Mondiale pour la Nature
UNDP	United Nations Development Programme
UNEP	United Nations Environmental Programme
UNITAR	United Nations Institute for Training and Research
USAID	United States Agency for International Development
WCMC	World Conservation Monitoring Center
WCPA	World Commission on Protected Areas
WHO	World Health Organization
WMO	World Meteorological Organization
WRI	World Resources Institute
WWF	World Wide Fund for Nature