



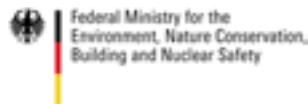
German Commission
for UNESCO

United Nations
Educational, Scientific and
Cultural Organization



Management Manual for UNESCO Biosphere Reserves in Africa

A practical guide for managers



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Prof Dr Wafaa Amer, Sheila Ashong and Dr Djafarou Tiomoko

edited by

the German Commission for UNESCO

in collaboration with AfriMAB, ArabMAB and

the UNESCO MAB Secretariat

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FOREWORD by the Director-General of UNESCO

The UNESCO Man and the Biosphere programme, and its World Network of Biosphere Reserves, paints a new map of the world – a map that crosses all borders, that brings women and men together in harmony with the planet, for inclusion and for sustainability.

This Network comprises today 631 sites across 119 countries, including 14 that are transboundary – with the goal to better understand the linkages between the environmental, cultural and socio-economic issues underpinning human well-being.

Biosphere Reserves have been at the forefront of UNESCO's efforts for the more effective integration of nature conservation and human development, for the purposes of sustainability, cooperation and peace. With the support of sound sciences to enhance livelihoods and environmental sustainability, Biosphere Reserves are, indeed, powerful learning sites for sustainable development, addressing global issues through local solutions.

UNESCO is fully engaged in supporting the new global sustainable development agenda, to be adopted by States at the United Nations in September 2015, and the Man and the Biosphere programme is a key component of our action. In line with UNESCO's Medium Term Strategy, the *MAB Strategy 2015-2025* will ensure that Biosphere Reserves will have flagship roles in implementing the new global agenda.

The effective management of Biosphere Reserves requires the full involvement of communities and all relevant stakeholders, through equitable, inclusive and participatory planning and management approaches. For this, capacity building is critical, especially for managers, and especially in Africa, a UNESCO Global Priority. That is the importance of this *Management Manual for UNESCO Biosphere Reserves in Africa*, targeting managers as well as their staff, key partners and stakeholders.

This Manual focuses on how to engage communities and stakeholders into the management of Biosphere Reserves across the continent. It provides a compendium of pertinent knowledge as well as practical know-how for day-to-day management. It has been structured through a series of workshops across Africa, which gathered the knowledge and experiences of a wide range of representatives of managers and MAB national committees all over Africa. This process has by itself added value, fostering networking and collaboration among Biosphere Reserves in the region. In addressing the need expressed by the African MAB network, I am confident that this Manual fills a key gap in current training materials.

I congratulate and thank all authors and contributors to this Manual. I am deeply grateful to the Government of Germany and the German Commission for UNESCO for their continuous leadership in the MAB programme and for their support to this Manual.

Irina Bokova
Director-General of the United Nations Educational, Scientific and Cultural Organization



FOREWORD by the German Minister for the Environment

Germany appreciates UNESCO's Man and the Biosphere Programme (MAB) for its tangible contribution to sustainable development through research and implementation of a harmonious relationship between mankind and nature. The concept of biosphere reserves plays an essential role in the multifaceted cooperation between partners in Germany and many African countries. I am convinced that biosphere reserves offer solutions to the challenges facing mankind in the future.

Biosphere reserves promote a sophisticated approach to mainstreaming biodiversity and ecosystem service conservation in local livelihood and development strategies. They constitute an institutional framework for sustainable development. This framework needs to be further developed by a range of stakeholders. Germany is a constant and reliable partner in enhancing capacities for effective implementation of the MAB Programme and currently supports more than 30 biosphere reserves worldwide.

Generally speaking, industrialised countries are not at the forefront of shaping a harmonious relationship between man and nature. Africa can be an inspiration in this regard. The MAB Programme explicitly enables mutual learning and partnerships on equal footing.

“Thinking globally - acting locally”: UNESCO's MAB Programme can move us an important step forward to ‘the future we want’ with regard to the post-2015 agenda. This manual therefore addresses the numerous related challenges for biosphere reserve managers in implementing the MAB Programme. Information and guidance are illustrated by good practices, which will hopefully inspire imitation.

The Federal Environment Ministry and the Federal Agency for Nature Conservation, in cooperation with the German Commission for UNESCO, are very glad to present this manual. Developed closely together with our counterparts in African biosphere reserves, I am convinced that the manual will provide very useful guidance. I am confident that it will considerably strengthen MAB throughout Africa and that it will also be a basis to further strengthen cooperation with Germany in multilateral and bilateral frameworks.



Dr Barbara Hendricks
Federal Minister for the Environment, Nature Conservation, Building and Nuclear Safety

JOINT FOREWORD by AfriMAB and ArabMAB

For over four decades, UNESCO biosphere reserves have contributed enormously towards attaining sustainable development in Africa. Through the unique opportunities provided by the MAB Programme and the biosphere reserve concept, common problems in bio-diversity conservation and natural resource management such as resource overexploitation, poverty, land degradation and encroachment youth unemployment have been addressed through the various interventions at the reserve level.

Since the establishment of the African Network of Biosphere Reserves (AfriMAB) in 1996, the network has been firmly established through an institutional framework, which has seen the election of two successive bureaux. This continuity is itself a key achievement. At present, AfriMAB has a membership of 64 biosphere reserves covering diverse ecosystems in 28 countries. The membership of the network is growing each year with regard to participation of member countries, who also increasingly demonstrate tangible sense of ownership.

In turn, the ArabMAB Network was launched by the Amman Declaration in 1997, promoting cooperation between MAB stakeholders in the Arab world, in particular MAB National Committees. The ArabMAB Network's Coordinating Council (ACC) meets every three years in a different country, its most recent seventh meeting was held in Jordan in 2013. Today, eleven Arab States (in North Africa and the Middle East) have successfully nominated 24 UNESCO biosphere reserves. Altogether on the African continent, there are 80 biosphere reserves, with additional biosphere reserves expected to be designated by UNESCO in June 2015.

However, the major hurdles of improving the zonation and functioning of our biosphere reserves, climate change mitigation and adaptation, optimizing stakeholder participation and benefit sharing with local communities are still yet to be overcome due to capacity challenges that require a tool for systematic management of these challenges.

This manual, the first of its kind, was initiated by AfriMAB and endorsed by ArabMAB to enhance the capacity of African biosphere reserve managers in addressing day-to-day challenges in the face of climate change, urbanization and biodiversity degradation. The Dresden Declaration 2011 and the Rhon Communiqué provided impetus for the preparation of this manual to address these challenges. It is, indeed, an honour to have a manual developed by members of AfriMAB and ArabMAB working together to provide the basis for collaboration on biosphere reserve management: "A manual developed by Africa for Africa." We acknowledge the technical support provided by the UNESCO MAB Secretariat, the German Federal Agency for Nature Conservation (BfN) and the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) for financial support; the German National Commission for UNESCO for coordinating the project, the AfriMAB bureau and the entire membership of AfriMAB and ArabMAB for contributing to the success of the training workshops and online review process. In addition to the English and French versions of this Manual, ArabMAB in cooperation with our partners, plans to translate the Manual into Arabic language to promote its application also in Arab States.

As the entire World Network prepares to implement the new strategy (2015- 2025), AfriMAB and ArabMAB expect that biosphere reserve managers and all other stakeholders who use this manual will put into practice the concepts outlined to enable biosphere reserves attain their role as tools for sustainable development at the local, regional and global scale.

Daniel S. Amlalo
Chairman of AfriMAB

Prof Dr Samir Ghabbour
Member of ArabMAB Bureau, former Chairman of ArabMAB

PREFACE

This document is a Manual *for* the managers of UNESCO biosphere reserves in Africa as well as their staff, key partners and stakeholders.

This Manual has been elaborated *by* African experts and managers of UNESCO biosphere reserves.

- The **authors** are Professor Dr Wafaa Amer from Egypt, Sheila Ashong from Ghana and Dr Djafarou Tiomoko from Benin.
- The Table of Contents has been defined by some **20 experts from across Africa** in a workshop in Mombasa, Kenya, in February 2013.
- After the three authors finalized the first draft, it was discussed and improved through **four consecutive workshops** in 2014: in May in Accra, Ghana; in July in Dar es Salaam, United Republic of Tanzania; as well as in October and in November in Tunis, Tunisia.
- Representatives of all UNESCO biosphere reserves in Africa were invited to these workshops. Some **110 participants** of these workshops thus contributed to a thorough review and improvement.
- The final shape of the Manual was achieved through a wide **online consultation** in 2015.

This Manual addresses a **demand voiced by AfriMAB** in cooperation with representatives from the **ArabMAB** region in 2011, in the Rhön Communiqué. The project was coordinated by the German Commission for UNESCO in close cooperation with the AfriMAB Bureau, ArabMAB and the UNESCO MAB Secretariat. The project to elaborate this Manual, including all workshops, was financially and politically supported by the German Federal Agency for Nature Conservation (BfN) with funds from the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) on request of AfriMAB and the UNESCO MAB Secretariat.

This Manual was finalized shortly before the adoption of the new MAB Strategy 2015-2025. It has been ensured that the main content and thrust of the Strategy is fully reflected in the Manual. This Manual is a comprehensive reference document providing an “overall picture”, with practical guidance focusing on community engagement. This Manual will add value in particular by emphasizing the differences and the similarities between managing a protected area and a biosphere reserve, by contextualising theoretical information to the situation in Africa, and by providing examples that could be replicated.



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This Manual has drawn upon the commitment, expertise and tangible contributions of

- The three authors: Professor Dr Wafaa Amer, Sheila Ashong and Dr Djafarou Tiomoko,
- The managers of all UNESCO biosphere reserves in Africa who have participated in one or several of five workshops organized across Africa in 2013 and 2014,
- The representatives of the AfriMAB Bureau and of ArabMAB as project advisory board,
- The contributors to the online consultation in 2015,
- Noeline Raondry-Rakotoarisoa of the UNESCO MAB Secretariat, Head of Section, Biosphere Networks and Capacity Building, and her colleagues,
- Dr Lutz Möller, Claudia Marggraf and Sonja Mühlenfeld, plus Kathrin Wolf and Laura Jäger of the German Commission for UNESCO, and their colleagues,
- Florian Carius and Olga Borkner of BfN, and their colleagues,
- Marc Auer, Martin Waldhausen and Dr Christiane Paulus of BMUB, and
- The governments and partner institutions of the host countries of the five workshops in 2013 and 2014,
- Several other individual experts who contributed to the drafting and the workshops as resource persons or trainers, in particular Dr Thomas Schaaf.



EXECUTIVE SUMMARY

UNESCO biosphere reserves are regions that resemble protected areas, but go far beyond mere protection. Their target is to **balance nature conservation with socio-economic development and poverty alleviation**. They can only do this successfully by drawing upon two ideas at the centre of the biosphere reserve concept: **engaging with local communities** (participation, co-management) and **using a knowledge-based approach** (traditional knowledge, scientific research, monitoring and education). UNESCO biosphere reserves are model regions for sustainable development, balancing today's human needs with those of future generations and of nature.

This Manual gives guidance to managers, their key partners and stakeholders on this central issue of UNESCO biosphere reserves: **Why and how to work with local communities**, both for the direct benefit of the communities and as an enabler to attain goals such as conservation of biodiversity and ecosystem services. Managers can use this Manual to introduce new staff to the concept and the work in a UNESCO biosphere reserve. They can also use it to make their work better understood by stakeholders and superiors, politicians and other decision-makers. The Manual also provides arguments for potential donors and other supporters and decision-makers.

This Manual focuses on **practical aspects** such as how to address and manage local conflicts between stakeholders, how to share benefits with communities or how to elaborate a management plan. It also presents several options for legal and administrative frameworks of UNESCO biosphere reserves and, very tangibly, how to organize consultations and hearings. It also focuses on co-management with local communities and benefit-sharing. In addition, it aims at promoting up-to-date terminology and methodology of the diverse biosphere reserves on the African continent and to support their networking.

This Manual also explains the **uniqueness of biosphere reserves** as being designated by UNESCO according to binding global criteria. They thus carry a quality mark and a stamp of approval by a globally well-respected intergovernmental organisation. At least every 10 years, biosphere reserves have to conduct an obligatory periodic review. If the periodic review is not done or if a periodic review reveals major shortcomings, a UNESCO biosphere reserve risks its status. This system of designation and evaluation has important consequences, i.e. that biosphere reserves as model regions can be developed into very stable and globally visible institutions which are attractive to donors and other partners.



SECTION 1 -BIOSPHERE RESERVES

An introduction



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SECTION 1

BIOSPHERE RESERVES

An introduction

This section introduces the context and the goals of UNESCO biosphere reserves. It explains why sustainable development is needed and how UNESCO biosphere reserves contribute to it. Reading this chapter you should understand:

- *Key benefits that biosphere reserves provide to African communities*
- *Key achievements of biosphere reserves*
- *Differences to and commonalities with protected areas*
- *The most important characteristics*

1.1 Why do we need this Manual?

We need sustainable development. Therefore, we need UNESCO biosphere reserves.

The development of the world, including Africa's development, is not sustainable. We need to change this unsustainable development. Sustainable development is not only about the environment. Sustainable development is also about better health, it is about decent jobs and sustainable livelihoods. It is about engaging and empowering individual citizens, about making them aware that every individual and every community can be part of the problem and of the solution (for more about sustainable development, cp. section 2.1). Therefore we need UNESCO biosphere reserves, because they help to make our development more sustainable, including by engaging and by empowering communities.

Biosphere reserves need active participation

Many UNESCO biosphere reserves in Africa until today are managed in a rather top-down manner. Typically, governments define goals, policies and management interventions. So far, it has not been explained well enough that a top-down approach is not sufficient and not even appropriate for the management of UNESCO biosphere reserves.

This Manual seeks to contribute to change this. This Manual explains to governments, to authorities, and to local managers the need for participation. It offers practical support to the managers of UNESCO biosphere reserves when implementing instruments of participatory management in order to better fulfil their duties, tasks and responsibilities.

This Manual wishes to support managers of UNESCO biosphere reserves in Africa in improving their management methods. The Manual intends to promote and to increase communities' and stakeholders' participation in management – and how to do this.

The objectives of this Manual

The objectives of this Manual are to:

- Put communities at the core of the work of African biosphere reserves
- Support the establishment of participatory, adaptive management in UNESCO biosphere reserves in Africa and to better manage conflicts
- Guide managers of African UNESCO biosphere reserves to use “standard” processes such as nomination and periodic review to improve participation in management
- Guide managers of African UNESCO biosphere reserves to formulate, implement and evaluate management plans through participatory processes
- Inspire central or provincial governments to allow, to encourage and to support local bottom-up, participatory processes in UNESCO biosphere reserves
- Inspire local stakeholders to become partners of the management of UNESCO biosphere reserves, while accepting associated rights and responsibilities.

As a comprehensive reference document, this Manual provides an “overall picture”, lots of the information already known to experienced manager of a protected area.

By improving management methods, by performing high-quality and participatory periodic reviews and by implementing participatory management plans, African UNESCO biosphere reserves will not be affected by the “UNESCO exit strategy” which may delete a site from the World Network of Biosphere Reserves starting from 2016 (see also Appendix 6).

1.2 Who should read this Manual and why?

This Manual addresses managers and administrators of UNESCO biosphere reserves in Africa as its main target group. It intends to support them in most aspects of their work and daily routines, especially once they are keen on working more closely together with local communities - and thus want to know how to do this better. Wherever this willingness is not yet given, this Manual provides arguments and inspiration.

This Manual is for the managers

This Manual also addresses, as a secondary target, all partners of UNESCO biosphere reserves in Africa (stakeholders and communities) locally and beyond the actual regions, in order to facilitate mutual interaction and collaboration.

This Manual is also for all partners

This Manual should be of use for any UNESCO biosphere reserve in Africa. It should be useful for various types of biosphere reserves' management, for example those which are similar to those of a national park, managed by a national authority, with communities living only in the surrounding areas. It should also be useful for community-led biosphere reserves with 3 zones designed as stipulated by UNESCO and with people living in the buffer zone and transition area. It should also give guidance to authorities and communities interested in setting up a new biosphere reserve.

Useful for all types of biosphere reserves...

... and also for future biosphere reserve

On the one side, this Manual has a limited focus. It cannot give guidance on all concrete problems, e.g. nature conservation, adaptation to climate change, tourism promotion, marketing of products, or fund-raising. Also specific issues such as problems of tenure resulting from land restitution to the respective community in biosphere reserves cannot be covered.

On the other side, this Manual makes the case that this limited focus is actually the most important dimension of work of a biosphere reserve at all: if collaboration with the local communities works well, then it will inspire easily solutions to most practical problems.

Participation is absolutely essential

This Manual should be read by:

- Managers of UNESCO biosphere reserves primarily in Africa (top management and project/programme staff), because it is essential that each staff member welcomes, encourages and enables participation
- Superiors of managers of UNESCO biosphere reserve in ministries and other agencies
- Local stakeholder institutions interested in increased participation in management
- Representatives of local communities interested in increased participation in management
- Consultants, e.g. for natural resources management
- Other partners, including members of MAB National Committees and partners outside of Africa such as funding agencies



1.3 UNESCO and its MAB Programme

Biosphere reserves have a long tradition in UNESCO

UNESCO biosphere reserves are designated in the framework of UNESCO's Programme on "Man and the Biosphere" (MAB), established in 1971. UNESCO is an intergovernmental organization and specialized agency of the United Nations with almost 200 member states; it promotes peace and sustainable development through international cooperation in education, science, culture and communication. UNESCO does this through several dozen programmes and legal instruments; MAB is one of UNESCO's most successful and best known programmes.

MAB promotes scientific approaches

MAB explores strategies of conserving biodiversity and enhancing ecosystem services – strategies *which at the same time enable their sustainable use and community development*. As a scientific programme, MAB promotes scientific research on human populations' interaction with ecosystems. Moreover, MAB also promotes the cooperation between all the scientific disciplines needed to better understand human-nature interactions through science, through education, through training and through building capacities of communities.

Sustainable development is at the centre of MAB

MAB promotes one of UNESCO's central goals, i.e. **sustainable development**. In a sustainable world, resources are used fairly and equitably – globally. A sustainable world limits its resource consumption so that future generations have fair opportunities as well. MAB has promoted the concept of sustainable development even before the term was explicitly used in world politics, i.e. even before the 1980ies. Since 1971, MAB tries to overcome conflicts between people's livelihoods and nature through a "rational" use of natural resources, to establish or re-establish "harmony" between people and their environment. Actually, the concept of sustainable development is a more detailed and scientific version of "harmony of people and nature". It is about overcoming modernity's alienation of people from their natural environment.

Peace is at the centre of MAB

Since 1971, MAB also explicitly promotes UNESCO's central goal **international peace**, inter alia through:

- Improved international scientific cooperation
- Cooperation on managing transboundary ecosystems, as well as
- Overcoming unsustainable and thus conflict-prone livelihoods.

MAB is an intergovernmental programme

MAB is an "**intergovernmental programme**" of UNESCO. This means that decisions are taken on behalf of the world community by the "*International Coordinating Council*" (shorter: ICC or MAB Council) which consists of representatives of governments from 34 states (rotating). MAB is governed by a series of key strategy documents (cp. below "Key Documents"), until 2015 in particular the Madrid Action Plan, subsequently by the MAB Strategy 2015-2025.

Since 1976, MAB specifically designates environmentally important and globally representative sites, called UNESCO biosphere reserves. The official definition reads: "*Biosphere reserves are areas of terrestrial and coastal/marine ecosystems where, through appropriate zoning patterns and management mechanisms, the conservation of ecosystems and their biodiversity are combined with the sustainable use of natural resources for the benefit of local communities, including relevant research, monitoring, education and training activities*".



There are more than 600 biosphere reserves in more than 110 countries: 631 sites in 119 countries in May 2015; for a presentation, cp. [[UNESCO2011]], there are also several best practice books, e.g. [[UNESCO2013-1]] about Sub-Sahara Africa and [[UNESCO2010]] about Asia. Biosphere reserves cooperate in a global network, the **World Network of Biosphere Reserves**. For a short overview cp. [[ISH2008]]. Since 2013, the MAB Council has increased oversight over the World Network, demanding full compliance with the requirement of periodic review for each site. Noncompliant biosphere reserves are threatened with exclusion (“exit strategy”, cp. Appendix 6). The aim of this Manual is to support countries to enhance their performance also in this regard.

1.4 UNESCO biosphere reserves – The essentials

Key characteristics

IUCN defines *protected areas* as “clearly defined geographical spaces, recognised, dedicated and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values” [[IUCN2012]]. At first sight, this might be seen as a sensible definition for UNESCO biosphere reserves, but their ambition as a holistic and integrated concept from the outset *extends beyond pure nature conservation*. For biosphere reserves, it is just as important to promote sustainable economic and social development in the local communities as well as participation, education, research and monitoring – **sustainable community development is not only a means to achieve nature conservation, it is a goal by itself**.

The key differences to protected areas are in fact key characteristics

Another key aspect is that UNESCO biosphere reserves are designated according to *globally identical criteria* – all protected areas such as national parks, wilderness areas, national forests, or wildlife refuges are only specified by national laws, which differ from country to country. Only few countries have national laws specifically for biosphere reserves.

UNESCO biosphere reserves are landscapes and ecosystems where people live and work – another word for this is *socio-ecological systems*. Still today in Africa, many biosphere reserves only protect primary forests or other untouched nature, such as the Taï Biosphere Reserve in Côte d’Ivoire, a huge dense evergreen forest under strict protection. But actually, biosphere reserves are much more than that. They can also be used to conserve cultural landscapes, i.e. landscapes and ecosystems that have been created over centuries through a particular human use, e.g. pastoralism or extensive agriculture. In many cases, unique biodiversity has been created *through* this human use. Often *cultural diversity* goes hand in hand with biological diversity.

Three functions and three zones

In the language used by UNESCO, biosphere reserves have three main **functions**:

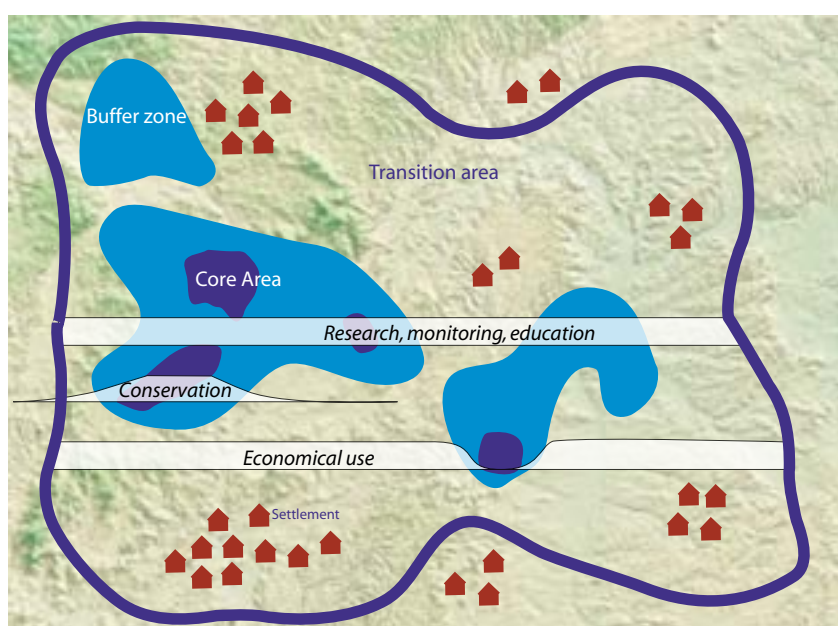
1. **Conservation** of biodiversity and functioning ecosystems
2. Socio-economic **development**
3. Logistic support which means mainly **research, monitoring and education**

Three functions

The importance of the logistic function

All *three functions are equally important* – successful conservation depends on successful socio-economic development – and vice versa. An important aspect of MAB comes on top: We need to *understand* conservation and development and create knowledge through research. We need to transfer the skills, attitudes and knowledge about sustainability to future generations. We need to monitor change and we need to exchange experiences. Without such knowledge-based efforts, any conservation and development will not be effective in the long run. This is why the function of the so-called logistic support is just as important.

Maybe the best known characteristic of biosphere reserves is their **zonation**: The “core area” is typically strictly protected in a legal sense, it is typically rather small in comparison to the entire biosphere reserve; of all human activity, typically only research is allowed there. There can be several core areas. The core area should be surrounded (or adjoined) by a “buffer zone”, with typically quite some restrictions as well –human



Schematic zonation (incl. functions); graphic by the German Commission for UNESCO

Three zones activity in these areas should be compatible with the conservation goals. The third zone is the “transition area”, where the focus is not on “restrictions”, but on “promoting” sustainable practices. This zonation in particular supports “ecosystem approaches” to management [[UNESCO2000]].

While UNESCO has globally spearheaded this zonation approach in the legal-institutional terms since the 1970ies, the concept is very ancient and wide-spread in Africa, in practical terms. Many African indigenous communities have been practising a “zonation method” of conservation and sustainably sourcing livelihoods for centuries, in particular by respecting sacred “no-touch” sites.

Key documents

- The Seville Strategy** The [Seville Strategy for Biosphere Reserves](#) of 1995 sets specific objectives for UNESCO biosphere reserves and calls for full stakeholder involvement. Stakeholders need to be involved in management and in establishing consultative frameworks. They also need to receive training in order to ensure their full participation in the planning, management and monitoring in biosphere reserves (full text: cp. Appendix 3).
- The Statutory Framework** The [Statutory Framework of the World Network of Biosphere Reserves](#) of 1995 contains very specific criteria and conditions – both for nominating sites as UNESCO biosphere reserves as for periodically reviewing them (full text: cp. Appendix 2).
- The Madrid Action Plan** The [Madrid Action Plan](#) of 2008 has identified three key challenges in the 21st century: urbanization, climate change and biodiversity degradation. It underlined once more that UNESCO biosphere reserves are learning sites for sustainable development bringing together all stakeholders. The Madrid Action Plan has been the key strategic document for the period 2008-2013. Its results are the basis of the MAB Strategy beyond 2015 (abridged text: cp. Appendix 4).
- The Dresden Declaration** The [Dresden Declaration](#) of 2011 has recognized UNESCO biosphere reserves as tools for effective climate change mitigation and adaptation. It also calls upon biosphere reserves to prepare and implement management plans to adapt to a changing climate, based on vulnerability assessments and involving local communities. (full text: cp. Appendix 5). African biosphere reserves managers in a 2011 workshop issued the [Rhön Communiqué](#) (cp. Appendix 5), calling upon biosphere reserves to prepare and implement participatory management plans to adapt to climate change.
- Four important conferences** These documents are the results of the four most important conferences in the history of the MAB Programme: Three Biosphere Reserve Congresses had served to review MAB implementation and to plan its future strategy. The [First Biosphere Congress](#) in 1983 in Minsk, Belarus, had developed a first Action Plan for Biosphere Reserves. The [Second World Congress](#) in Seville, Spain, in 1995, observed a successful implementation of the biosphere reserve concept but also challenges. It thus adopted the Seville Strategy and the Statutory Framework (cp. Appendices 2 and 3). Also the [Third World Congress on Biosphere Reserves](#) took place in Spain, in Madrid, in 2007 (cp. Appendix 4). The [Dresden Conference “For life, for the future”](#) in 2011 celebrated 40 years of the MAB Programme (cp. Appendix 5).

It is foreseen that the MAB ICC in 2015 will adopt the new [MAB Strategy 2015-2025](#). The [Fourth World Congress on Biosphere Reserves](#) in Lima, Peru, in March 2016 will foreseeably adopt the corresponding Action Plan.

Different institutional approaches, one objective

- One concept and different implementations** The management of biosphere reserves varies from region to region (for a definition of “management”, cp. section 2.2). This diversity of management approaches clearly is something positive. It is a consequence of the peculiarity of each region. UNESCO biosphere reserves vary in terms of biodiversity from landscape to landscape, from ecosystem to ecosystem. So does the use of natural resources, so does the constitution of stakeholder groups, and the “governance” and institutions. For the results of two global studies on governance and in particular community participation, cp. [[STOLL2005]] and [[STOLL2010]].
- Institutional diversity is cherished** UNESCO emphasizes the importance of exploring and maintaining such diversity, including the management approaches, i.e. the work of managers. The entire “governance” of biosphere reserves varies substantially (“governance” refers to the rules for decision-making and the legal frameworks, i.e. the institutional set-up; in other words, governance is the word for describing the totality of committees, legal texts, statutes, their implementation, etc.). Some biosphere reserves have backing at the national level through a separate law and by being part of a national administration. In others, only the core area is legally gazetted. As a matter of fact, governance approaches in particular regarding the engagement of communities and stakeholders, frequently vary substantially even within one country, from one biosphere reserve to the other.

Such diversity of management and governance approaches represents a value in itself and should be promoted, provided that approaches are based on the same underlying values and objectives. UNESCO encourages the international exchange about advantages and disadvantages about such management/governance approaches. Each UNESCO biosphere reserve is an opportunity for new institutional innovation, while being able to draw from a wealth of experience globally. Each UNESCO biosphere reserve first of all is a **framework to create opportunities**.

This is also the reason why the zonation pattern of UNESCO biosphere reserves (shortly introduced above) is only *schematic*, because it needs to apply to all biosphere reserves globally. In practice, many different approaches can implement this schematic zonation in specific ecosystems such as coastal regions, savannahs, drylands, or forests. In some cases, the entire biosphere reserve is legally gazetted as a “protected area”. Other biosphere reserves incorporate several protected areas as core areas and combine them through “ecological corridors” between them. In most cases, especially of new UNESCO biosphere reserves, the core areas and buffer zones are more or less strictly protected, and the transition zone has low or no protection; at the same time, their legislative basis has been designed comprehensively to meet the goals of the biosphere reserve in its entirety.

Schematic zonation allows flexibility

Thus, **in practice, UNESCO biosphere reserves look quite different** – in goals, zonation, management and governance. One purpose of the World Network is also to exchange experiences of success or failure with different institutional set-ups.

Experts of the MAB Programme often speak about biosphere reserves “of the first generation”. This refers to biosphere reserves designated by UNESCO until 1995 and the adoption of the Seville Strategy and Statutory Framework – many of those have hardly any population. Often these early biosphere reserves are exactly those that are strictly protected in their entirety; they often coincide with national parks and may be good conservation and research sites. However, such sites are not biosphere reserves in the modern sense. Today, UNESCO is reminding its member states to adapt the status of many early biosphere reserves – it is to be expected that until 2016, several early biosphere reserves might lose their status.

The main focus of this Manual is on the newer biosphere reserves which work closely with the people that live and work in the buffer and transition zones, and to promote sustainable socio-economic development. Biosphere reserves “of the first generation” can find ideas in this Manual in how to transform into the next generation which emphasizes local community involvement for enhancing nature conservation *and* sustainable development.

“Old” biosphere reserves versus “new” biosphere reserves

A snapshot: What does “managing a biosphere reserve” actually mean?

Managers of UNESCO biosphere reserves, having the task to promote sustainable development, need to address a region comprehensively, not just the legally protected ecosystems (a warning: “region” does not necessarily mean a territorial or administrative unit). They need to address abiotic factors (climate, water, soil, and landscape in its entirety, etc.), the local communities (cultures, traditions, knowledge, heritage, etc.) and their practices (fishing, forestry, agriculture, livestock breeding, tourism, etc.).

Learning places for sustainable development

UNESCO biosphere reserves are instruments for *integrated management of socio-ecological systems or cultural landscapes* – i.e. managers have to do many different interventions at many different levels, targeting for example at the same time: protecting individual species, improving the water cycle, supporting the marketing of agricultural products, training local communities and monitoring of the environment.

Managers of biosphere reserves need to work in a team that brings together a vast set of skills and knowledge; managers need to act more like moderators than like rangers. Managers need also specific skills to *maintain* a biosphere reserve beyond the initial nomination. Starting a project is always much easier than maintaining momentum in the long run. Sometimes the “launchers” of a biosphere reserves are even not the best people to manage it over extended periods of time. Also financial resources are often more readily available at the start of an initiative than over prolonged periods. Whatever the context, biosphere reserve management is essentially **about empowering local communities, not about restricting them. Managers’ most important task is to motivate, moderate and negotiate, and to interact with local communities in order to empower them and to inspire sustainable forms of life and work, not to restrict.**

Diverse skills are needed, in particular moderating

Focus on enabling development, not on restrictions

In this Manual we specifically discuss all means and approaches to involve a broader group of stakeholders into management – structurally, over the long term plus ad-hoc frameworks. Biosphere reserves require a broader and more intense involvement of stakeholders than what is usual in protected areas.

Managers of UNESCO biosphere reserves, working as a team of specialists and generalists, need to plan ahead, to identify upcoming changes in climate, in nature, in society, in the economy. They have to integrate all forms of knowledge in such planning. Together with communities they have to lay down such planning into consensus

Participation is essential

strategies and management plans. They have to implement these plans – through own interventions, through fund-raising and through coordinating interventions of other actors and of communities. They have to identify whether unforeseen developments are threats or opportunities, whether a consensually planned roadmap is a defence against threats or whether new developments actually are enriching. They have to consult widely, while also being able to take quick decisions as needed.

This Manual is not a blueprint

Managing a UNESCO biosphere reserve is not easy – but it is one of the most exciting challenges one can imagine. There is no blueprint for management, for governance or stakeholder involvement; each case is different and must be decided following local needs and specific threats, e.g. adaptation to climate change. **This Manual does not provide a blueprint either; it provides support and ideas.**

1.5 The context and benefits of UNESCO biosphere reserves – in Africa

Sustainable development is an African priority

The African Union (AU), the cooperative mechanism of 54 African states, has defined sustainable development as one of the 14 objectives of its constitutive act: *“to promote sustainable development at the economic, social and cultural levels as well as the integration of African economies”*. Environmental protection is a mandated activity of the AU Executive Council. The AU Strategic Plan, which was adopted in 2009, said: *“To achieve continent-wide sustainable development, Africa must preserve its natural environment; and indeed, what we do today must in no way be allowed to compromise the natural environment in which we shall work tomorrow. On this score, while we seek to improve the quality of our lives, we should not upturn the balance of nature as has happened with the activities that triggered climate change”* [[AU]].

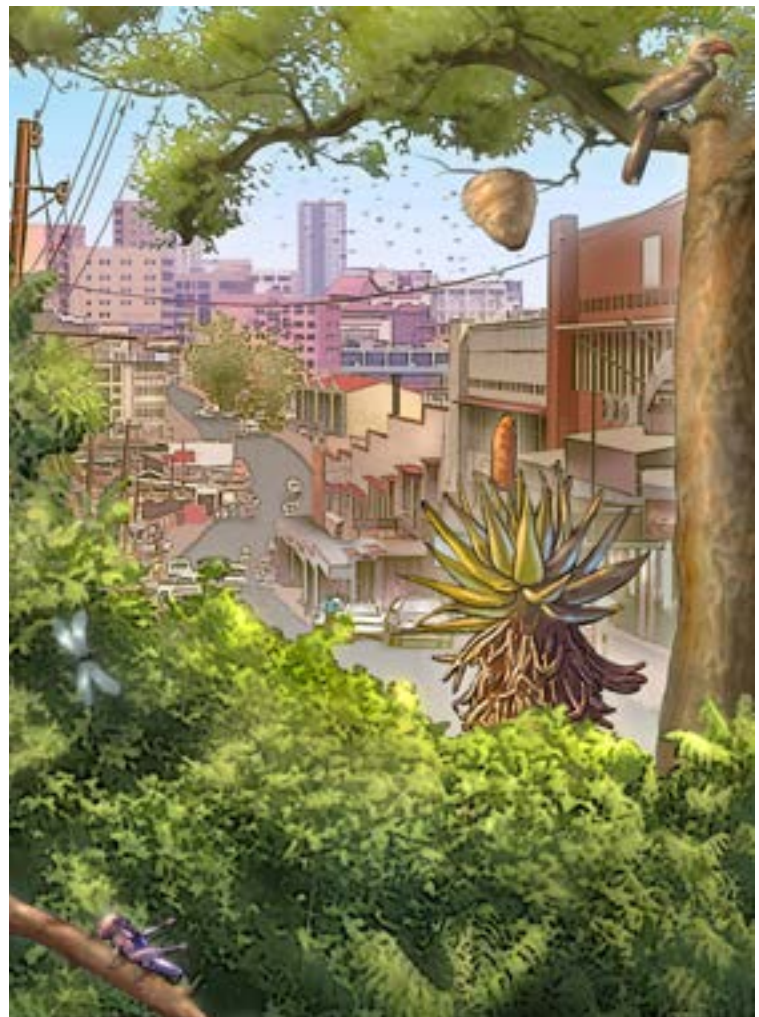
Key political, operative and institutional instruments of the AU to implement initiatives to address sustainable development through an integrated approach are the *Africa Agenda 2063* (agenda2063.au.int), the *New Partnership for Africa's Development* (NEPAD) and African sub-regional bodies/Regional Economic Communities (RECs). NEPAD officially acknowledges that sound environmental management is prerequisite to achieving sustainable growth and development, since economic development need to be reconciled with sustainable resource use (“NEPAD environment initiative”). Principles guiding NEPAD include good governance, partnerships within and beyond Africa, participation and ownership by all people.

Sustainable development challenges of Africa

In its two *“Sustainable Development Reports on Africa”* (cp. [[UNECA]], also [[UNEP2008]] and [[UNEP2012-1]]), the UN Economic Commission for Africa (UNECA) highlights the following challenges:

- Inadequate institutional and legal frameworks for environmental management
- Weakly applied institutionalized environmental planning and management tools due to inadequate capacities
- Unchecked population growth rates
- Transboundary management of environmental resources
- High turnover of national experts and officials

The following topical challenges of Africa are quoted again and again by all international organizations: over-exploitation of natural resources, loss of biodiversity, land degradation and desertification, agriculture and food security, social protection for poor and marginal groups, gender equality, disaster and risk management plans, access to water and sanitation facilities, as well as youth unemployment. Countries of the North and their companies often support such unsustainable practices at least implicitly, i.a. by enforcing minimal market prices for resources or by not supporting processing



of resources in Africa itself. Both ecosystems and environmental laws are often a victim of investments, e.g. in plantations of coffee, rubber, or cocoa, often in GMO varieties. **In a nutshell: Africa, as all other continents, needs to develop more sustainably.**

UNESCO biosphere reserves support sustainable development in Africa

Nobody knows in advance, what the concept of sustainable development will really mean for a specific landscape or a specific society, how a specific community will live and work sustainably. Sustainable development is specific to an ecological, institutional and cultural context. It is a learning process and a negotiation process, which needs to involve all relevant stakeholders.

An answer to African challenges

UNESCO biosphere reserves do exactly this: They explore and demonstrate very specifically sustainable development approaches in specific ecosystems and landscapes through a joint learning process. Biosphere reserves demonstrate the benefits of sustainable development - benefits to improved livelihoods and to community empowerment, to biodiversity conservation as well as to climate change mitigation. They help to improve the effectiveness of management institutions and they help to re-orient stakeholders and partners. They help Africa to become sustainable.

UNESCO biosphere reserves and protected areas

For many decades, UNESCO biosphere reserves have set global standards in integrating conservation and community benefits. They have overcome the limitations of “classical protected areas”, being “**pioneers for modern protected areas**”, but many other protected areas have been “catching up”.

Pioneers for a new type of protected areas

Designating protected areas is a standard answer since the mid-20th century to conserve the integrity of ecosystems and to protect species (for overviews of all protected areas, cp. [[WDPA]] and [[DOPA]]. In the past, protected areas have often been created without taking into account local communities, their opinions, needs, complaints and interests. Sometimes, communities have even been evicted from an area, prioritizing nature conservation above all other concerns. Such protected areas may effectively fulfil their goals for some time. Yet their continuity and long-term acceptance remains threatened when they do not make efforts to serve the needs of local communities.

Nature conservation theorists and practitioners have warned already a long time ago that this practice of nature conservation “against” communities will not be effective in the long run. Modern protected areas usually have goals, properties and practices that are very similar to those of UNESCO biosphere reserves: zonation, safeguarding decent livelihoods for communities, participation, adaptive management, integrating science. Almost all the topics covered by this Manual are covered also by excellent guidelines and handbooks issued by nature conservation NGOs, in particular by IUCN. Therefore, this Manual references much of this high-quality literature. Also UNESCO has edited excellent guidebooks, e.g. for biosphere reserves as well as for related topics such as World Heritage site management in Africa [[UNESCO1992]].

Nature conservation “against” communities is not effective

UNESCO biosphere reserves therefore cannot make an exclusive claim today to concepts such as zonation, promoting sustainable livelihoods or participation. “At the Fourth World Congress on National Parks and Protected Areas (...) in 1992, the world’s protected-area planners and managers adopted many of the ideas (community involvement, the links between conservation and development, the importance of international collaboration) that are essential aspects of biosphere reserves” (cp. Seville Strategy, Appendix 2). There exist convincing reports on such wider impact, e.g. from protected areas in South-East Asia [[UNESCO2010]], in Europe [[MOSE]], their effectiveness has been globally evaluated [[IUCN2010-1]], and ambitious targets for their governance have been formulated [[GRAHAM]]. However, UNESCO biosphere reserves still accentuate and balance these issues quite differently than other protected areas. Nature conservation simply is not their primary goal – their primary goal, from the outset, is to harmonise the human-nature relationship through *balancing three functions* (cp. below). This makes a fundamental difference in many practical cases. While also protected areas serve additional purposes such as education, ecosystem services, spiritual enlightenment, aesthetical enjoyment, recreation, hunting (within limitations), the range of additional purposes of biosphere reserves is much larger. For an analysis on how biosphere reserves (do not) fit into the IUCN system of protected area categories, cp. [[BRIDGE]] and [[IUCN2008]].

A unique balance of goals

What makes biosphere reserves also unique is that they are **designated by UNESCO according to binding global criteria**. A UNESCO biosphere reserve carries a quality mark, a stamp of approval of quality management and quality development. The success is **regularly monitored and assessed**. A periodic review is obligatory every 10 years; it further enhances the credibility of the quality mark. This designation has important consequences:

Globally binding criteria and their effects

- Biosphere reserves are **globally visible**. This means that there is an unambiguously delineated area, which is globally known and recognized, and that there is a management structure and a management team which

are globally known and recognized. Biosphere reserves cannot easily “disappear” – if changes to a biosphere reserve are made, the entire world will notice.

- Biosphere reserves are **stable institutions**; they are set up for the long run, in principle forever. This is a crucial difference to a “project” which has a beginning and an end. In fact, quite often, biosphere reserves are set up at the end of a development project in order to safeguard its results for the long run.
- As globally visible and stable institutions, they are **attractive to donors and funding partners**. Donors that support a project in a biosphere reserve can be rather sure that the effects of the project will be safeguarded in the long run; if changes take place locally, not only the donor will notice, but UNESCO and its entire network of partners.

Key differences of biosphere reserves from “protected areas”

To summarize some key differences of biosphere reserves from protected areas (all these differences will become more obvious later in this Manual):

- At the level of primary goals: **balancing** conservation of biodiversity with its sustainable use, community development, promotion of economic opportunities and poverty eradication
- Globally **identical criteria**, quality mark, global visibility, including for donors and tourists
- Participatory management as a **requirement**, not as a helpful intervention
- Focus on research, monitoring, education, global exchange of **knowledge**
- Focus on valorizing traditional knowledge and cultural diversity
- Focus on socio-ecological systems
- Unambiguous zonation
- Special incentives for collective management of trans-boundary ecosystems, because of the intergovernmental designation and of a UN-based conceptual consensus

Key achievements and key benefits of UNESCO biosphere reserves

Several global achievements

UNESCO biosphere reserves have **high global reputation** because of many important achievements: at the political level, in science, and most importantly, in practice.

- The most important achievement is successfully championing the conceptual and political paradigm shift towards nature conservation *with and through* people. This approach is increasingly copied by modern protected areas, such as through Integrated Conservation and Development Projects [[WELLS]].
- They have established and successfully promoted concepts of *zonation*, *transboundary sites* and *ecological corridors*.
- They are characterized by an all-inclusive approach as they address concerns of protected *and* non-protected areas in a holistic management scheme.
- The *World Network* of Biosphere Reserves *really* facilitates exchange of information and experiences.
- *Regional and thematic networks* foster cooperation across similar ecological regions; examples are AfriMAB for Sub-Saharan Africa, and ArabMAB for the Arab states.
- They support successful global cooperation in *ecosystems research* (which had previously been organized along 14 thematic priorities).

Benefits and opportunities to local communities

Successful UNESCO biosphere reserves provide many **benefits and opportunities to local communities**:

- They can create *income and employment opportunities*, e.g. through tourism and marketing of agricultural products, and thereby help to eradicate poverty.
- They support and enhance *livelihoods*, *social empowerment* and a stable social development, e.g. through interventions improving health and education or through supporting the creation of local associations and partnerships.
- They help to reduce *conflicts* and improve stakeholder cooperation and collective decision-making.
- Through ecosystem management and adaptation to climate change, they foster the long-term viability of a landscape.
- They support creating *local identity and pride*, including through recognition for local conservation efforts. They help preserving intangible heritage, traditional knowledge and cultural diversity, also through the international recognition by UNESCO.
- By creating economic opportunities, they may *stop outward migration* from rural areas and thus mitigating urbanisation.
- Through research, they improve the *evidence-base for decision-making*.
- They support *international cooperation* and peace at transboundary sites, through reducing conflicts and through reducing conflict-prone economies.

UNESCO biosphere reserves serve as learning sites whose best practice can be emulated elsewhere. They do not only have local benefits, but many benefits for the entire world: a more comprehensive understanding of the biogeographical regions in their entirety; the research-based comparison of developments across continents; the promotion of joint approaches of sustainable development globally; a mutual understanding of challenges and

opportunities globally; and a feeling of belonging together across continents.

In addition, UNESCO biosphere reserves bring the following **concrete benefits to local communities, in particular in comparison with other types of protected areas**:

Benefits to local communities, in comparison to other protected areas

- The UNESCO designation makes a certain region *visible* to the world and to its own inhabitants. Often, the inhabitants create strong *sense of identity and pride* for their biosphere reserve. This often results in positive social and demographic trends.
- Tourists consider the UNESCO designation as a *quality label*. It has been proven that tourists will visit some regions exactly because they are designated by UNESCO; therefore, biosphere reserves provide new economic opportunities in tourism. Well-managed biosphere reserves add more income through tourism alone that outweighs the costs of administration.
- *Income* from agriculture can be boosted: More and more organic and/or fair-trade products originate from biosphere reserves and are in high demand on the world market – such as the world-famous Argan oil from the Arganeraie biosphere reserve in Morocco or the “Comoé Honey” from the biosphere reserve in Côte d’Ivoire (cp. below).
- For almost any local sustainable development problem, the World Network is a source of *best practice solutions* and an opportunity for twinning and partnerships. As part of a global network, *international cooperation* becomes much easier.
- Biosphere reserves need to encompass a “representative” or typical ecosystem; therefore they typically cut across provincial or national borders and bring together all the stakeholders who are *really* needed to address a problem.
- *Participation* is usually “difficult” and thus too often not done. Biosphere reserves really and necessarily require participation – there is no excuse for not involving local people in the overall design and management of a biosphere reserve.
- Many scientists globally cooperate in the MAB Programme – this makes biosphere reserve an *attractive study site for scientists*. Often, research projects lead to development projects.

Concrete examples from African UNESCO biosphere reserves:

In the Waterberg biosphere reserve in South Africa, collaboration of the management team with 13 communities has yielded numerous benefits. Projects include the training and sale of handicrafts such as leathercrafts, bead work and embroidery. They also include engagement of local women to conduct tours and environmental education at the Lapalala Wilderness School.

Example from South Africa

The forests of the Kafa biosphere reserve of Ethiopia are managed in a participatory way. The results are: pristine forests have been preserved and community plantations for fuel-wood have been set up. In addition, a micro-credit scheme has been established, jobs in tourism are created and thus community livelihoods are enhanced.

Example from Ethiopia

Village associations in the Delta du Saloum biosphere reserve in Senegal are actively involved in reforestation, for example through communal tree nurseries. Traditional fisheries practices are preserved through combination with new techniques and thus reduce coastal and mangrove degradation. 1,000 solar panels have been installed for providing energy to the communities.

Example from Senegal

In Morocco, the Argan biosphere reserve’s designation has supported the globally enormously increasing interest for Argan tree oil. Most of this oil is harvested by women’s “Argan oil cooperatives” and the biosphere reserve has ensured that the increase in export price actually trickles down to local people. The boom has enabled rural families to increase their goat herds, and families can send their girls to secondary school.

Example from Morocco

Honey from the Comoé Biosphere Reserve in Côte d’Ivoire is produced, bottled and marketed by an association in the village of Kakpin. This project was successful in changing the habit of gathering honey from the core area and its surroundings by setting anarchic fire. Through the partnership of park managers with local communities, both income could be generated and the core area could be protected.

Example from Côte d’Ivoire

SECTION 2 SUSTAINABLE DEVELOPMENT POPULATION – CONFLICTS – KNOWLEDGE

Key dimensions of UNESCO biosphere reserves



© PASEF, Kruger to Canyons Biosphere Region, Andrea Moroni (Flickr CC), Thomas Schaaf

SECTION 2

SUSTAINABLE DEVELOPMENT – POPULATION – CONFLICTS – KNOWLEDGE

Key dimensions of UNESCO biosphere reserves

This section discusses in depth what sustainable development is, the role of stakeholders – specific stakeholders and the local population at large – as well as arguments, reasons and needs for their participation and involvement in managing a biosphere reserve. This section also discusses how to deal with conflicts. This section also presents various key aspects of the role of “knowledge” – specifically scientific research and traditional knowledge. Reading this chapter you should understand:

- *That biosphere reserves can deliver tangible and unique benefits in terms of sustainable development and conflict resolution*
- *That biosphere reserves require a knowledge-driven approach*
- *Why participation is so important and what we mean by it*

2.1 Sustainable Development

Defining sustainable development

Sustainable development is about fairness, globally and between generations

According to the best-known definition (from the 1987 Report “Our Common Future” [[WCED]]), sustainable development is a “*development that meets the needs of the present without compromising the ability of future generations to meet their own needs.*” Sustainable development strikes a balance: One the one side, it promotes global fairness and equity, and the right of all individuals and communities globally to develop and to live a life in dignity. At the same time, sustainable development seeks to preserve the natural resources necessary for the long-term survival of our children. Sustainable development is about eliminating poverty, about fairness and opportunity – globally today and between generations.



It is not true that sustainable development is about denying the South its development opportunities; it means something very different in the North as in the South [[REDCLIFT]]. **It is universally acknowledged that developing countries have the urgent need and the right to develop further.** It is also acknowledged that industrialized countries must heavily reduce their resource consumption. But also for the South, not *any* development is advisable; many ideas have been proposed according to which the South may “leap-frog”, including through technical cooperation, to a better life and a modern economy that does not require the heavy, inefficient resource use of industrialized countries.

Sustainable development is about better development

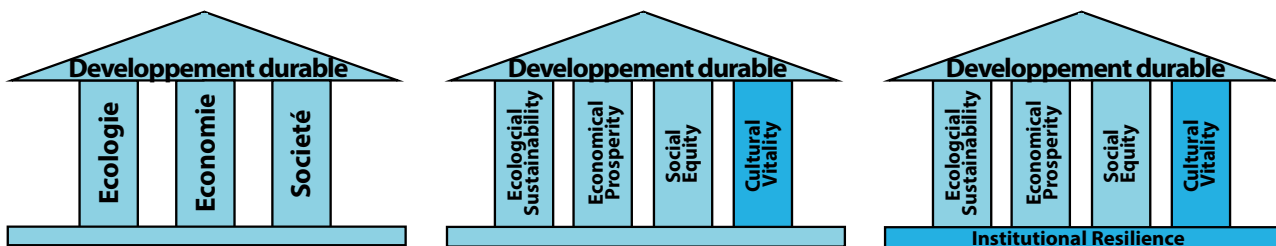
The concept of sustainable development implies *uncertainty*: From today’s perspective, we know what was unsustainable in the past, but it is difficult to predict what will prove to be sustainable in the future. We know that poverty is unsustainable; we know that excessive resource use is unsustainable; but we do not know how rich we all can be without using resources excessively. So far we lack an integrated vision as well as data, methodology and political instruments to *really* move closer to environmental sustainability.

The concept implies uncertainty

In regions with low levels of educational success, using and understanding an abstract concept and word such as “sustainability” is difficult. However, the concept has forerunners and correspondences in many traditional communities, also in Africa. **It is not necessary in all contexts to use this word “sustainability” explicitly in public.** It is often sufficient to explain the *meaning* and the causal connections in a given community, for example, of poverty and land degradation. It is more important *to implement sustainable development* in practical terms, for the benefit of people and of nature. In other words: It is more important that people **as a matter of fact live and work sustainably** - what is often the fact in Africa.

Focus on the message, not the term

A very simple but not fully correct explanation of sustainable development, concerning the development of a village: “*To live and work such that the available land, water, wood, wildlife etc. is used such that all people in the village have a decent life and that also the children and grand-children have enough land, water, wood, wildlife etc. for a decent life*”. Some aspects which are not fully correct in this explanation: “Used such” implies a quantitative limit, but the qualitative use of resources is just as important (e.g. drip irrigation). In addition, maybe future generations do not need to use a resource like wood at all, e.g. because of technological progress, so individual resources do not necessarily count. In addition, even rural communities are part of a globalized world, so they use resources from other continents, e.g. fuel and plastic – a purely local approach is not sufficient. Also a fair distribution of resources between the people of a village has to be taken into account, not only a minimal standard of decency.



There are many “models” of sustainable development. Here we use a mixture of the most frequently used models. The classical model introduces three “pillars” of sustainable development, *the environmental, the social and the economic pillar*. Other frequently discussed models have a “fourth pillar”, culture; other models have an additional “institutional” layer. In the three-pillar model, development is sustainable, if it addresses challenges in all three pillars. Often this is not possible; there are many possible conflicts between the different pillars, and the true challenge consist in solving these conflicts. The additional models focus on the fact that cultural and behavioural patterns govern all our human activities and that sustainable development requires designing appropriate institutions: institutions that are able to negotiate appropriate solutions, between the three pillars, especially in times of conflict. Compromises are possible and necessary, but need to be negotiated.

The model of the three, four or five pillars

What is important is that all these models makes transparent that **sustainable development is not only about the environment**. It is also about poverty, about work standards and workers’ rights, about education, about fair trade and about the role of economic growth.

Sustainable development allows interconnecting many challenges such as climate change, population dynamics, empowerment of women, desertification, water scarcity and pollution, or access to sanitation. At the United Nations, more than 30 different topics are negotiated jointly under the title of sustainable development – the concept of sustainable development is in particular essential to constantly remind us that we have to avoid too narrow, technical and sectoral approaches, for example to climate change.

Sustainable development is a conceptual umbrella

Case study: Sustainability challenges in Middle Zambezi biosphere reserve, Zimbabwe

The biosphere reserve, designated in 2010 by UNESCO, is the first one in Zimbabwe and a priority biodiversity area. It covers an area of some 2,160,000 ha, including the enormous reservoir Lake Kariba, shrubland plateaus and riverine forests, and the Mana Pools and Chewore World Heritage sites. Apart from global warming, human pressure is an intensifying threat to biodiversity and natural resources. When Lake Kariba was created, the Tonga people were moved onto marginal lands, which they had no experience in managing. This is why they remain the most impoverished and food-deficit community in the country. Moreover, they also do not profit from tourism revenues. Tourist accommodation along the riverfront also heavily impacts on wildlife. Among the issues with negative impact on nature and wildlife are: man-made fires, unplanned development and unwise management of pests such as the tsetse fly. In the Zambezi valley illegal hunting for wildlife products such as rhino horn and elephant tusks has proven that species can be driven to the brink of extinction in a very short period. The biosphere reserve addresses poaching as a crime with a resolute determination and it attempts to support local communities in profiting from the economic value of biodiversity. Other approaches are: family-based income generation, opportunities of the carbon market, creating institutions for community-based natural resource management, education and skills development to boost the labour market, as well as solving human/wildlife conflicts. [[UNESCO2013-1]]

Sustainable development at the UN

The “Rio+20” World Summit in 2012 decided to establish global “Sustainable Development Goals” until September 2015, which will follow up on the “Millennium Development Goals” [[UN2012]]. A universal agenda for the North and the South is thus on the horizon, unified under the headline of sustainable development. Sustainable development today is the explicit goal of the United Nations.

The former UN Secretary General Kofi Annan said in March 2001: “*Our biggest challenge in this new century is to take an idea that seems abstract - sustainable development - and turn it into a reality for all the world’s people*”. This is exactly what UNESCO biosphere reserves try to do every day.

Biosphere reserves organize learning processes

In spite of their diversity, UNESCO biosphere reserves share a goal: Supporting the most effective approach for sustainable development which is participatory local development and management of resources. That biosphere reserves are often called “**learning places for sustainable development**” means that they involve stakeholders and people in the joint “experimentation” of what is sustainable and what is not, which economic practices support conservation and which not, which infrastructure development helps to eradicate poverty and which not. Biosphere reserves try to “formalize learning-by-doing”.

Key challenges in African biosphere reserves

The issues of sustainable development most frequently quoted by managers of African biosphere reserves are:

- Poverty, population growth and health problems
- Youth unemployment
- Human-wildlife conflicts
- Poaching, illegal logging, illegal wildfires, bushmeat hunting
- Erosion and land degradation
- Demand for land and encroachment of farming onto forests and other natural areas
- Biodiversity loss in more general terms, including invasive alien species
- Depletion of natural resources including water
- Climate change
- Mining (legal and illegal)
- Dispossession of land in more general terms
- Lack of alternative livelihoods
- Improper waste disposal and management
- Lack of proper institutions, accountability, transparency; weak governance
- Lack of legal basis and legitimacy

Improving livelihoods and generating income for communities

Generating income opportunities has positive side effects

UNESCO biosphere reserves should help to eliminate extreme poverty and hunger which is part of their *development function*. Improving livelihoods and generating real income opportunities have several positive effects. First of all, the livelihoods themselves and the more dignified and secure lives of individuals and communities. Second, extremely poor people often ravage natural resources including through hunting, collecting roots and plant parts. Third, improved livelihoods means empowerment and responsible citizenship.

Multitude of actions is possible

UNESCO biosphere reserves managers can work with farmers to improve agricultural productivity, moving away from pure subsistence farming, leading both to higher farm and rural incomes and household food security. Projects could be, for example, improved fodder production and conservation, irrigation or double cropping. Better

organizing farms of small farmers can also create additional farm and non-farm employment and has a strong poverty-reducing effect. For details on how to combine conservation with food security, cp. [[FAO2014]]. They can also support identifying alternatives to unsustainable hunting.

UNESCO biosphere reserve managers are typically not well-trained to implement projects in the areas of health, agriculture or nutrition themselves – but they can serve as coordinators and moderators of projects implemented by partner agencies. Partner agencies could be public sector agencies, NGOs or foundations which are specialized on providing rural health services, providing improved energy services, seeking alternatives to wood fuel, providing access to food by the neediest and promoting better nutritional practices. Through their holistic view at sustainable development, managers as coordinators can ensure that changes for example in agricultural systems do not have a negative effect on natural resources. Such work on the development function of biosphere reserves needs to be improved considerably in most countries [[COETZER]].

Biosphere reserves as platforms

Biodiversity and ecosystem services

Biodiversity conservation is one of the *three functions* of UNESCO biosphere reserves and one dimension of sustainable development which is particularly close to the hearts of the managers. Biodiversity means the diversity of ecosystems, living organisms including animal and plant species as well as the genetic diversity within species (and between species populations). Ecosystem services are the benefits provided by nature that make human life both possible and worth living. Human beings need ecosystems and their services. We can only eradicate poverty and hunger if ecosystems function well. We cannot survive without ecosystems that sustain human livelihoods, societies and economies.

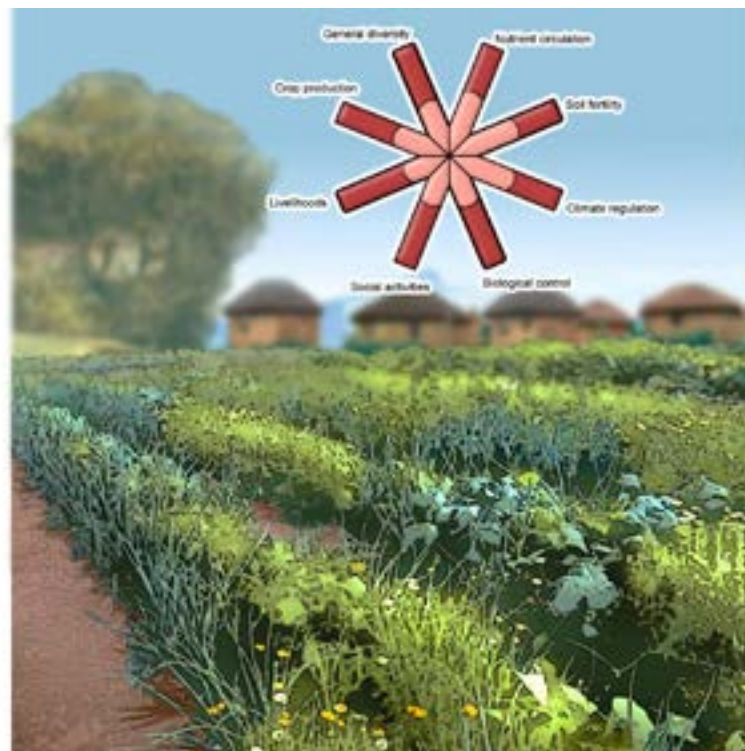
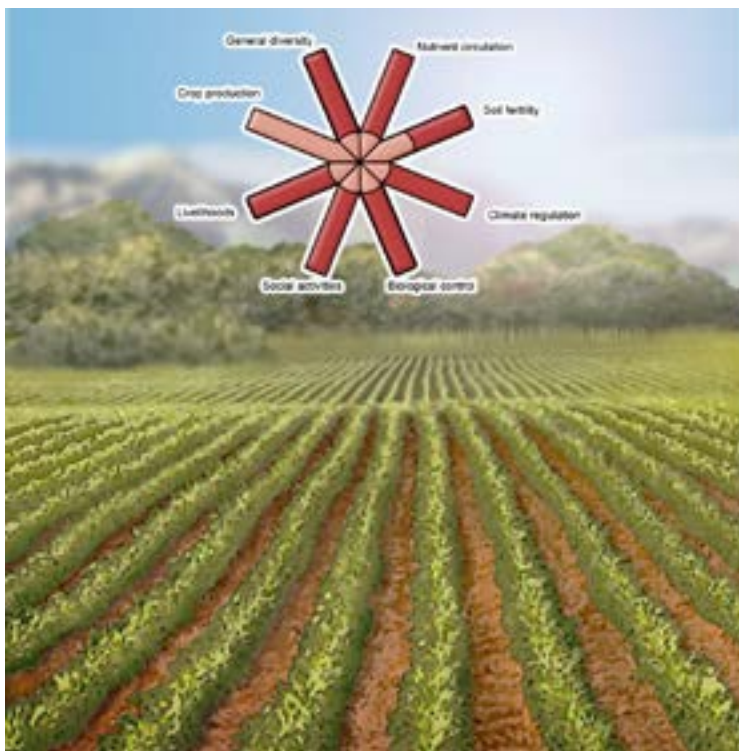
Biodiversity is the basis of mankind's survival

Traditional societies know well the importance of ecosystems. Also modern science knows this well, but our profit-driven economic models, politicians and companies recognize it only slowly again, after a long period of ignorance. Only very recently, there have been attempts to measure Gross Domestic Product (GDP) while taking into account the huge economic value of “natural capital”. It is an urgent task to explain to politicians but also to the general public that we need biodiversity, for our own survival. It is an urgent task to conserve biodiversity, not only in the hotspots [[MYERS]], [[CEPF]] or the Global 200 Ecoregions [[WWF2012]] or Important Birdlife Areas [[BIRDLIFE2012]] – yet in Africa [[EGOH]], protected areas with high biodiversity value and high human pressure often coincide with such hotspots [[HARTLEY]], but they are also too isolated [[NEWMARK]].

The need to explain the value of biodiversity

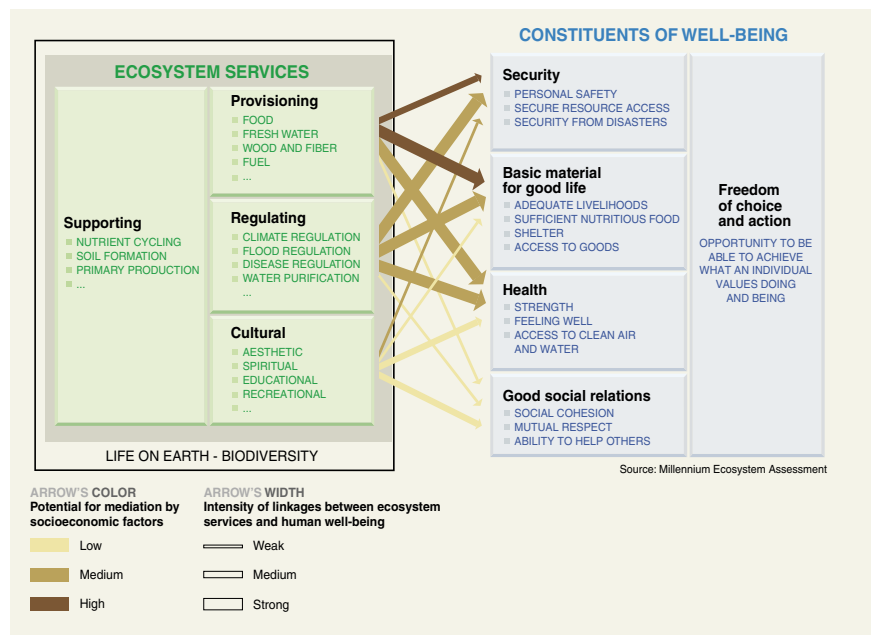
This task is very urgent, since scientific research unambiguously shows that biodiversity is extremely threatened. The loss of biodiversity is truly alarming, rampant and actually “out of control”: We have already gone beyond a so-called “planetary boundary”, cp. [[ROCKSTRÖM]] and [[STEFFEN]]. Depending on the estimate, between 1 and 100 species disappear every day.

Biodiversity loss is out of control



As the most important attempt to halt biodiversity loss, the United Nations in 1992 have adopted the *Convention on Biological Diversity*. Almost all African states have ratified it (as of early 2014). This convention requests governments worldwide to elaborate National Biodiversity Strategy and Action Plans and to regularly report about their implementation. Yet, too many governments do not yet effectively implement their own laws and policies.

Ecosystem Services: Modern conservation focuses on entire ecosystems instead of individual species. Science has recognized again something well known to traditional societies: No species can survive alone. There are tiny and huge ecosystems: In the human gut, at least 500 different bacteria species are necessary for our survival. Mushrooms and trees live in symbiosis. The experience of Yellowstone Park in the USA has demonstrated that ecosystems can dramatically changed after the re-introduction only one species: Once there were again wolves in Yellowstone Park in 1995, even the courses of rivers changed because of the changes in the food chain.



The UN Convention is not yet well implemented

What are ecosystem services?

Ecosystems, through the interaction of plants, animals and micro-organisms, perform “services” for human well-being. The term “ecosystem service” was popularized by the “Millennium Ecosystem Assessment” (2005) [[MA]], as well as biodiversity as essential component of human well-being, contributing to human security, basic needs of life, good health and social relations.

- *Provisioning* ecosystem services are the products of ecosystems, e.g. food, water, leather skins, fuel wood, energy, ornaments such as gold or furs or flowers, medicinal resources.
- *Regulating* ecosystem services encompass waste decomposition, carbon sequestration, air purification, pest control.
- *Cultural* ecosystem services include their aesthetic, recreational, educational, spiritual and religious value.
- *Supporting* ecosystem services are the primary production (e.g. of soil), the dispersal of seed (through wind, water and animals) and the cycle of nutrients (e.g. nitrogen, phosphorus).

A biosphere reserve is an excellent framework to highlight the importance of ecosystems for human survival, human livelihoods, social relations and our economy. Several biosphere reserves such as the Intercontinental biosphere reserve of the Mediterranean (Morocco) or the Badiar biosphere reserve (Guinea) regard themselves as “water towers”, providing water as an ecosystem service to their surrounding. Of course, seeking to maintain ecosystem services leads to the question of sustainable land-use (cp. below) – which forms of land-uses are sustainable, which are not? Because of the high human pressure, we are in urgent need to ask the “biosphere reserve” question – conservation through use. Such an approach is more and more accepted, even for fragile ecosystems such as wetlands [[WOOD]], [[MEDWET]].

Case study: Ecosystem services in Mount Kulal biosphere reserve, Kenya

Designated in 1976, Mt. Kulal is the only community-owned biosphere reserve in Kenya. The landscape around the volcanic mountain with its deep crater includes various extreme habitats such as a volcanic landscape and hot springs, the occasionally flooded Chalbi salt desert, sand dunes and seasonal water courses. The predominantly pastoralist inhabitants of the Samburu, Rendille, and El Molo live on livestock raising, fishing, and tree felling. Ecosystem services include the provision of food and water for livestock, particularly during the long dry season. Wood is used as fuel wood, raw material for charcoal, construction timber, etc. Other ecosystem services include the provision of medicines and socio-cultural including spiritual values. Threats include the way livestock is fed during drought, over-exploitation of timber, water pollution, overgrazing of understorey areas and erosion from grassfires. The biosphere reserve tries to mitigate the threats to ecosystem services, inter alia by forest policing by the national police and traditional samburu Elders.

The concept of ecosystem services allows a perspective on land-use which is both *wide* (focusing not only on water or soil) and *anthropocentric* (i.e. from a purely human perspective). Using these concepts in discussion with land-users does not avoid conflicts, but frames conflicts in a context which does not put “we humans” in opposition against “nature”. The concept of ecosystem services allows integrating nature conservation and poverty alleviation. Therefore, the concept of ecosystem services is often used together with the concept of “green economy”, emphasizing the economic value of ecosystems towards decision-makers [[TEEB]].

If managers are well-informed about the economic value of their individual ecosystems, they can also come up with overall estimates on the “total economic assets” of a biosphere reserves. Such estimates can also be used to provide arguments against detrimental investment projects or for lobbying in national parliaments. For an overview of estimates of certain types of service as provided by a certain ecosystem, compare [[DEGROOT]]. However, it is warned that such data and such arguments are used with great care. Once there is a widely publicised “price-tag” on an ecosystem, somebody might make a “higher offer”.

Payments for Ecosystem Services (PES) as a concept has been established in many countries around the world, including many developing countries. Typically, PES means financial incentives for farmers or landowners in exchange for managing their land in some specific way, which is beneficial for ecosystem services. PES is voluntary – but based on contracts. A typical example is payments by city water utilities to farmers in the catchment area such that they do not use fertilizers. For the water utility this is often much cheaper than building a water purification plant. In other examples, farmers are paid if they harvest hay in a way that preserves nesting birds; sometimes coffee plantations are paid if their practices improves the carbon sink capacity of the plantation soil; small farmers are paid for sustainable forestry. A PES scheme is the “market economy substitute” for dysfunctional integrative systems; such payments safeguard benefits which otherwise would not occur at all.

What is “payments for ecosystem services”?

Human-wildlife conflicts: Many protected areas and biosphere reserves in Africa are set up with a predominant goal of conserving large mammals (“megafauna” such as elephants, or rhinoceros). Often, the core area of such biosphere reserves is used to protect such mammals. However, mammals roam wide areas and especially in times of increasing food demand and increasing population, the areas around the core areas (maybe including the buffer zone, maybe not) are increasingly used for agriculture. Therefore, human-wildlife conflicts are almost necessary consequences. Currently, most efforts to reduce these conflicts focus on trying to keep the mammals within the core area. Several measures have been proposed, such as digging trenches, setting up fences including electrical fences or even walls, or using chili, either by hanging the entire chili husks into trees or by spraying a mixture of water and chili oil around the core area. The effectiveness of these measures is still under debate. Even if such measures are effective, they will not prevent all cases of animals from roaming outside the core area. Thus, compensation schemes have to be introduced for the loss of crop harvest and even for the loss of human life. Whatever the scheme, it is advisable to use approaches tied to conditions, e.g. for harvest loss to compensate only for losses larger than a certain minimal amount and to offer more compensation for areas further away from the core area than for areas directly adjacent to its boundary. An independent commission might be tasked with investigating each claim. For the case of injuries or loss of life, it is most important to offer fair, transparent and speedy procedures.

Human-wildlife conflicts

Invasive alien species: Globalization and changes of ecosystems have globally led to an intense pressure of alien species on endemic species. Often, alien species have been originally introduced with good intentions to address a certain ecological problem. In most countries, some species have already spread to an extent that is no more controllable. Biosphere reserve managers have to take a very pragmatic approach, since with very limited resources they will not be able to contain the spread of every alien invasive species.

Invasive alien species

Case study: Invasive alien species in Delta du Senegal biosphere reserve, Senegal

By the end of 1980s, many of the water bodies in West Africa were invaded by very aggressive alien plant species: water hyacinth, water lettuce, and water fern. They were introduced as ornamentals or for use in aquariums from their native range in South America to many parts of the world where they turned into an invasive species. They produce large biomass, most times covering the entire surface of water bodies, threatening the survival of lakeside and riparian communities, killing other aquatic life by blocking out light, and harbouring snakes, malaria and bilharzia. In 1999, the invasion of water fern threatened the rich bird life of the Delta du Senegal biosphere reserve. Floating water weeds can be controlled by physical and biological means, i.e. removal by hand or with mechanized equipment, by herbicides, and by biological control. The latter consists of the release of host specific natural enemies, usually insects, mites, but also pathogens. In a different approach, utilisation of the water weeds is sometimes considered as a means of control, because large amounts are removed, e.g. for the production of biogas, as feed for livestock, for the production of paper, as organic manure, for the treatment of polluted water, and for making ropes, mats, crafts, or furniture. In a project at the ECOWAS level in the 2000ies, the focus was on integrated pest management, i.e. combining biological control with physical removal for composting for vegetable production. In the Delta du Senegal, these measures were successful to remove 90% of water lettuce and 95% of water fern, cp. [[DIOP]] and [[AJUONU]].



For each invasive species, you should do a careful analysis of whether it does harm to your priority goals, whether there are proven methods available anywhere worldwide to contain this species and whether it is realistic to contain this species with the financial possibilities and expertise available. Maybe it is wise to seek advice from your MAB National Committee or other scientists.

Biocultural diversity

Biocultural diversity: Several years ago, the United Nations and particularly UNESCO have observed increasing awareness of the “inextricable link between biological and cultural diversity, and the recognition of the crucial role that it plays in sustainable development and human well-being worldwide”. Biological and cultural diversity have evolved together, are “interdependent and mutually reinforcing. Each culture possesses its own set of representations, knowledge and cultural practices which depend upon specific elements of biodiversity for their continued existence and expression. ... Maintaining local and indigenous traditional knowledge of nature as well as innovations and practices relevant to the safeguarding of biological diversity requires their continued intergenerational transmission, which occurs mainly through language as an effective means of communicating, classifying, and organizing information” [[UNESCO2007]].

Important concepts in this regard are “biocultural diversity”, “biocultural heritage” and “cultural landscapes”. Especially relevant in this context are indigenous people and their traditional knowledge (cp. section 2.4). IUCN observed that “the natural resource management and conservation systems of indigenous peoples and local and mobile communities, the stability and force of their institutions and the rules and practices pertaining to their land and resource use are generally related to the strength of their collective cultural identity.” IUCN thus recommends documenting and re-affirming the cultural dimension of conservation, to respect and employ existing ethnic and local resource management systems, to promote broad social respect for indigenous peoples and local and mobile communities and to secure their rights, to promote co-management, and to promote the survival and vitality of local languages [[IUCN2004-2]].

Sustainable land-use and resource use

“Natural resources” is a term to speak about any part of nature in the perspective of its usage (or deliberate non-usage) by human societies. They can be differentiated into biotic (plants, forests and animals and materials derived from them, plus fossil fuels) and abiotic (water, air, land, ore), or into renewable and non-renewable.

Sustainable forms of land-use do not over-use or destroy natural resources. They sustain the capacity of ecosystems to deliver their services also in the future. Examples:

- They maintain the quality of *soil* and its micro-biological constitution and prevent erosion, soil degradation and desertification, cp. [[ECJRC]].
- They maintain the *water* cycle; water in good quality, groundwater availability, aquatic organisms etc.

- They maintain *biodiversity* in forests, grasslands and savannahs, in farmland areas, etc.
- They do not pollute *the air, soil and water* and do not change the *climate*.
- They do not generate uncontrollable *risks* (e.g. genetically modified organisms).

What is sustainable land-use?

There are many options of sustainable land-use, for example organic agriculture; maintenance of boundary ridges in agriculture; restrained grazing of marginal grasslands; agro-forestry or forestry based on standards of the “Forest Stewardship Council” (FSC); cultivation of medicinal plants; integrated agriculture; integrated aquaculture or fisheries based on standards of the “Marine Stewardship Council” (MSC).

No easy solutions for sustainable land-use

Whether a particular form of land-use is sustainable *depends on the context*. Seasonal grazing can be necessary for grassland in some ecosystems; the same grazing intensity can destroy grassland in another ecosystem. Whether a particular form of land-use is sustainable can *actually* be judged only by the consequences: if a resource is depleted or destroyed, the land-use was unsustainable. *Therefore, there are no easy solutions for sustainable land-use*. Generally, it seems wise to use renewable resources only in line with their assumed regeneration capacity and the precautionary principle (cp. below) and non-renewable resources only if they cannot be substituted by other resources.

There are clearly unsustainable forms of land-use.

However, there are many forms of land-use, which we know already are unsustainable, without the need for testing them. Many forms of land-use have been implemented in all ecosystems and everywhere, they have proven to be harmful to natural resources and to exceed the capacity of the ecosystem. Examples:

- Extractive industries such as *clear-cutting of forests* (which in mountainous areas is often followed by massive erosion) and *mining* (in particular cyanide-based gold mining) are almost always so destructive and irreversible that they should be prohibited within biosphere reserves. In some cases such as Mount Nimba biosphere reserve, the UNESCO designation has been the only effective barrier against mining.
- *Intensive agriculture* based on monocultures, heavy use of pesticides and synthetic fertilizers.

Several forms of traditional land-uses can also turn unsustainable, if done destructively and excessively, such as *trophy hunting, bushmeat hunting, snail-picking, forms of careless nomadic pastoralism, animal husbandry and fishing*. The same applies to forms of Green Economy which are not wisely implemented such as proliferating and uncontrolled tourism. Whether a certain land-use is sustainable or unsustainable, does not only depend on the ecology of a region, but also on land-use rights, inheritance rights, economic planning and other social-economic factors within a community and beyond a community.

Case study: Extractive industries in biosphere reserves on the example of Peru

The 12-year Swiss “NCCR North-South” research framework has implemented transdisciplinary research globally, including in the Oxapampa-Asháninka-Yánesha biosphere reserve in the central Peruvian Amazon. In interaction with local authorities, researchers identified the lack of a strategy for dealing with extractive industries. More than 85 mining concessions and four oil concessions overlapped with some of the biosphere reserve’s key watershed and agricultural areas. The researchers identified that globally, managers of protected areas seem to fight extractive industries case-by-case and on an ad-hoc basis. They argued for global standards and guidelines that safeguard biospheres from destructive extraction, but also called for innovation: They argue that biosphere reserves can find completely new approaches in relation to no-go zones that encompass environmental impact assessments, indigenous rights, consultation and consent procedures, and ultimately allow for social, cultural, and environmental issues to be fully addressed in parallel [[LARSEN]].

Ecosystem restoration

Restoration - often an important task

“Restoration” means trying to bring land which has been modified by human use back into the direction of its original state. Ecosystem restoration can be an important task of managers of UNESCO biosphere reserves in cases where there have been very unsustainable forms of land-use, conflicts or disaster. Instead of “ecosystem restoration”, sometimes the term “land rehabilitation” is used: the differences between the two concepts are not overly important; usually the first term has more ambition to attain the previously given state. Of course, managers should first of all try to avoid unsustainable forms of land-use, but sometimes they come too late.

Limits to restoration

A “full restoration” to an “original” state is rarely realistic, because of several reasons: Only if there was comprehensive monitoring, would it be possible to know the “original” state; ecosystems are not a state, but dynamic. Additionally, there could have been further natural changes since the modification ended or maybe the modification was already too long ago to know at all. In some cases, modifications can also be irreversible: For example, when open mining or soil erosion changed the physical basis of an ecosystem, or just because “full” restoration would be too expensive. For these reasons, restoration is often limited to an “approximate” recreation of habitat.



Restoration does not necessarily require a technical intervention. As an example, after leaving an open mining pit to itself (“succession”), many environmental processes redevelop, provided that populations of key species still exist in the vicinity. This however, might be a long process, which could be sped up by human intervention. Also invasive alien species can be a problem in this context.

When is human intervention needed?

Human intervention becomes vital if an ecosystem will never recover naturally, either because it has been physically transformed, or because species cannot migrate to repopulate the area. Examples of possible action are to remove all regulatory installations from a river (dams, rectifications etc.); or to build fish passes for dams; or to build bridges for migratory mammals over motorways. Restoration may rely heavily upon the reintroduction of species maintained *ex-situ*, in other provinces, other countries or even in zoos or botanical gardens. Maybe certain plant seeds are only available in seed banks. Human interventions very often consist of improving the soil basis, of replanting of plant species, of re-connecting fragmented forests, etc. Today, there are also efforts of relocating species and entire ecosystems, for example because of climate change (e.g. intertidal habitats on the East Anglian coast in the UK). In recent years, interest is increasing in restoration which is more responsive to local conditions and devolves responsibility to local communities, including indigenous people. Scientific experts should be involved to the extent possible. Since the 1980ies, the academic field of “restoration ecology” emerged and scientists working in this field are organized in the Society for Ecological Restoration.

The status quo affairs of restoration

In case there is need for ecosystem restoration at your site, or in case some agency or “Civil Society Organization” (CSO) proposes a concrete restoration project, always start with a proper analysis:

- Is restoration (in general and/or the proposed intervention) the best, the most effective and efficient option?
- What is the current state of the ecosystem, how degraded is it? What services does it deliver? What services would the restored ecosystem deliver?
- How reasonable are the proposed goals? Are they reasonable in times of climate change, do they reduce vulnerability? Are they compatible with the biosphere reserve’s goals, the management plan and the zonation? Would you need to change your goals and plans?
- How realistic are the proposed goals? Are there sufficient funds? Can the restoration’s goals be safeguarded after an intervention has been finalized (maintenance, monitoring)?
- What is the opinion of communities and stakeholders, landowners, scientists? Can they be involved in planning and implementation, including through traditional knowledge? What are the benefits for communities?
- Use restoration projects as appropriate for your wider management context, for example to refresh the zonation and mapping, the management plan and other key management tools. IUCN’s guideline on “Ecological restoration for protected areas” of 2012 provides further guidance.

Disaster risk reduction and risk management

A natural disaster is a major harmful event, in which vulnerable people are heavily impacted by natural processes such as the weather system, the hydrological cycle or the earth itself. Examples are: droughts, floods, storms, tornados, mudslides, landslides, wildfires, volcanic eruptions, earthquakes, and tsunamis. A natural disaster is always the combination of a natural phenomenon and a large loss of life or property. *Most natural phenomena cannot be inhibited; but natural phenomena can be inhibited to turn into disasters.* This requires managing natural habitats (e.g. by reducing flood risks along rivers) and working with communities (e.g. by improving alertness or by relocating settlements in dangerous settings).

Natural phenomena can be inhibited to turn into disasters

Disasters can be a throwback for efforts of sustainable development, but they can also be the consequences of unsustainable forms of land-use, e.g. wildfires, mudslides or droughts. Thus, managers of UNESCO biosphere reserves clearly have to take into account the dimension of disasters – preventing them and reducing their effects. They can promote studies and interventions to identify potential risk areas, to identify alternatives, to promote and improve disaster preparedness and recovery practices. This also includes setting up early warning systems, contingency planning and being prepared for emergency response. “Environmental degradation is a key factor turning extreme weather events into natural disasters” [[WWF]]. Intact floodplains and riparian forests mitigate floods; maintaining soil quality through extensive agriculture maintains the soil’s capacity to store heavy rainfall – which can mitigate floods. Maintaining healthy forests prevents erosion and mudslides; intact coastal mangroves and coral reefs protect against storm surges.

Sometimes an effect of unsustainable land-use

Therefore, the conservation of ecosystems – including through the creation of protected areas and biosphere reserves – is an effective approach to reduce disaster risk. It is often also the cheaper approach: The WWF reports that communities in Vietnam invested some 1 million US\$ to replant mangroves by which they save more than 7 million US\$ per year. This money would be needed to maintain dykes against dangers of the sea. [[WWF2008]]. And even any form of preventive interventions (ecosystem or technical) will always be cheaper than coping with the impact of disasters.

An effective disaster risk reduction

Therefore, disaster risk reduction can be a powerful argument for conserving ecosystems. Of course this argument will not apply in all circumstances. But biosphere reserve managers should draw the attention of stakeholders and communities also to this critical dimension of their work, which is directly beneficial to the life, security and property of communities.

Managers can play also an important role in moderating discussions on the priority of preventive interventions against disasters, including among diverse disasters: Should we introduce more drought-resilient crops? Should we build better housing because of the threat of more powerful storms? Should we build a dyke along the river? Biosphere reserve managers can moderate such discussions and bring in scientific knowledge about the different risks.

A role for moderators

Managers can also play an important role in valuing the importance of local knowledge for disaster management. In Swaziland, “floods can be predicted from the height of birds’ nests near rivers. Moth numbers can predict drought. The position of the sun and the cry of a specific bird on trees near rivers may predict onset of the rainy season for farming. The presence of certain plant species indicates a low water table”. [[UNEP2007]]

Draw upon traditional knowledge

In general, disaster risk reduction should be integrated into an overall context of risk management. Risk management is a structured approach to dealing with ever-present uncertainty and trying to make sure that uncertainty does not detract from sound management oriented towards goals. Risk management implies forecasting and identifying risks, scenario-building, trying to reduce probabilities and negative effects or even “accepting” some potential consequences. There are several standards of risk management and monitoring models.

Also get involved in education

Managers can also play an important role in education for disaster prevention; people need to know what to do in the case of storms, floods, earthquakes or tsunamis. For many disasters, there is excellent traditional knowledge, but due to global change (bringing about new unknown types of disasters), not all ancient disaster prevention techniques are still valid today. Disaster risk reduction and prevention relating to education, training and awareness-raising should be included into all relevant ongoing learning and education processes and practices.

A unique opportunity

Tourism

Tourism, under favourable conditions, has great potential to generate income and offer livelihoods to communities through the recreational services of a biosphere reserve – especially where other forms of livelihood have been made difficult, e.g. by global environmental change, economic globalization, or population growth. In 2012, for the first time, the number of international tourists exceeded 1 billion per year; most money has been spent abroad by tourists from China, Germany and the USA.

Statistical figures



A great potential for tourism

In 2011, approximately 50 million tourists came to Africa, more than 4 times as many as 20 years earlier. Morocco, South Africa, Tunisia and Zimbabwe together account for 25 million visitors [[UNAR]]. However, only 10 African countries are among the top 100 most competitive tourist destinations [[WEFORUM]]. 60% of tour operators' clients in Africa travel for nature and wildlife attractions, further 11% for cultural attractions. Approximately half of international tourists in Africa originate from other African countries [[UNWTO]]. The World Bank report "Tourism in Africa" considered high potential especially for Botswana, Cape Verde, Namibia, South Africa and Tanzania to expanding tourism. Many other African countries are on the verge of success. Nevertheless, obstacles for rapid expansion include the lack of political stability, security and infrastructure as well as health concerns.

UNESCO biosphere reserves have a potential for tourism, since they have an international designation/brand, which may be related to high natural and cultural values; however, this link is not automatic and has to be supported in order to really realize touristic attractiveness. A 2014 report from Germany for the first time made proof of the touristic attractiveness of biosphere reserves: The 15 German biosphere reserves are visited by 65 million tourists each year, providing the livelihoods for 86,000 people [[JOB]]. Depending on the site and efforts to strengthen touristic attractiveness, more than 20 percent (or less than 5 percent) of the tourists may visit a biosphere reserve *because of this UNESCO biosphere reserve designation*. The high touristic potential of a UNESCO designation is well documented also from other countries - however, it needs professional expertise in order to develop appropriate offers that cater to the actual needs of tourists and that respect the needs of local communities.

A potential threat as well

Tourism can also pose threats, both to communities and to ecosystems, and can create conflicts. First of all, there is the danger of uncontrolled and unsustainable growth of tourism – for which pro-active strategies have to be developed [[THANH]]. Tourism facilities should employ local people and pay sufficient wages. Many tourism facilities squander scarce water resources, have no sewage and no solid waste disposal or recycling. Many tourism destinations are affected by increased drug trafficking, crime and prostitution. Many tourism facilities on the most scenic spots are left unfinished or are left deserted after short use because of poor planning, mutilating the landscape.

What is sustainable tourism?

“Sustainable tourism” instead is tourism that actively contributes to sustainable development. Ecotourism is sustainable tourism to natural areas. Sustainable tourism means creating employment and decent income for the local population. Sustainable tourism uses only the available natural resources and does not pollute. Sustainable tourism creates incentives for biodiversity conservation and respect for cultural diversity. Sustainable tourism does not mean small profit; it means careful long-term planning.

- Sustainable tourism needs raising awareness with all local decision-makers about bad and good practices of the past, avoiding the attraction of alleged “big profits”.
- Local government and the private sector must cooperate in appropriate structures for better planning, based on a vision and objectives that can be shared by all parties, including shared benefits with communities.
- Sustainable tourism needs appropriate planning at the macro-level (what offers will be made to tourists,

Case study: Tourism potential analysis in Kafa biosphere reserve, Ethiopia

The recently designated biosphere reserve in 2013 formulated as one of its objectives to “attract tourists to visit the area in a responsible way”. The basis of the analysis is the following data: in 2008, about 330,000 people visited Ethiopia, vacation tourists accounting for 31 per cent of these overall arrivals, and an average annual growth rate of about 13%. The top ten source countries for vacation tourism are USA, Canada, UK, Italy, Germany, France, Netherlands, Saudi Arabia, United Arab Emirates. Most foreign visitors to Ethiopia are in the age group of 50 to 60 years, are experienced and well-educated travellers, quality-conscious but prepared for basic conditions and mainly interested in the cultural and historic heritage. The vast majority (95%) travel in groups organised by tour agencies along Northern and Southern circuits. While the Kafa region is currently not included in these circuits, about 200 foreigners visited Kafa in 2008.

The following key communication tools for attracting tourists were identified: Creating a pool of excellent pictures and audio-visu-als with images that convey feelings, arouse dreams, inspire people and give them the first idea to decide for a destination; addressing print/broadcast media and travel guide books (and their online presence) as well as travel websites and forums. The Kafa BR website should be a key source of information and should be linked to prominent tourism portals of Ethiopia, but it is important to be present on other sites such as travel blogs and travel review sites [[BERGHÖFER]].

Case study: Sustainable tourism in Songor biosphere reserve, Ghana

Songor, Ghana’s second largest Ramsar site, was designated a UNESCO biosphere reserve in 2011. The Volta river estuary and the Songor lagoon, its mangroves, marshes and beaches, are an important roosting site for migratory birds on the East Atlantic fly way. Twenty-three species of terns, three species of marine turtles, crocodiles and monkeys can be found. Local and international tourists visit Songor for recreation, bird and turtle watching, for boating as well as for the Asafotufiam festival in August. The town Ada is one of the top tourist areas in Ghana. The local population is well aware that the natural resources are the basis for their incomes and livelihoods, provided there is blessing from traditional authorities. The national conservation authority and the national tourist board jointly promote sustainable tourism approaches. Examples include the marketing of cultural products and handicraft; awareness-raising for the concerns of indigenous communities; involving them in local tourism services. Members of the local community are employed in the hotels and other tourism facilities. “Tourism patrons” provide scholarships to needy pupils and donate educational materials and school infrastructure.

which roads, electricity infrastructure, water supply need to be put in place). It also requires careful planning at the micro-level (such as employment policies, sewage and waste disposal). Planning should be done in a participatory manner and involve stakeholders in conservation, land-use planning, business etc. Adequate guidance for planning sustainable tourism is provided, e.g. by the global criteria for sustainable tourism of GSTC (www.gstcouncil.org), the certification scheme “European Charter for Sustainable Tourism in Protected Areas” [[EUROPARC]], the tourism standard “EcoMark Africa” (www.ecomarkafrika.com), the NGO “Fair Trade Tourism” (www.fairtrade.travel) in Southern Africa or the GIZ tourism handbook [[GIZ2014-2]]. The “marketing concept” of the Kafa biosphere reserve in Ethiopia is an excellent inspiration [[BERGHÖFER]].

- Job opportunities for local people may require specific training and micro-credits (e.g. working in hotels and lodges, working as tour guides, retailers, boat operators and other service providers). Also for investors it is much wiser to work with local communities and thus to integrate tourism facilities into a well-functioning local economy instead of importing staff from other places or even from abroad.

In 2015, IUCN will offer a best practices book on case studies of sustainable tourism; an advance copy is available. [[IUCN2015]]. For an in-depth discussion of tourism in protected areas, cp. [[IUCN2002]] and [[BUSHELL]]. For a guide on tourism planning in biosphere reserves in Eastern Europe, cp. [[GEF2007-2]].

Once your biosphere reserve is “ready for tourists”, you also need to attract them, in particular by providing information online, including on attractions and facilities such as accommodation and transport infrastructure. This can be done at a separate website of your biosphere reserve, on websites of local or national tourism marketing organizations or on websites such as TripAdvisor which many travellers are using to plan their tours: please compare below (section 4.5) about other effective measures, such as using Wikipedia.

Climate change

Climate change seriously threatens poverty eradication and sustainable development, worldwide. Climate change is a result of human activities, in particular excessive emissions of greenhouse gases during the last 150-200 years of the industrial age. The bulk of historic emissions is due to countries of the North, but countries in transition and developing countries today emit even more greenhouse gases than the North. Some 20% of emissions today are due to deforestation, including of high-carbon mangroves and tropical forest peat bogs.

A threat to sustainability

Climate change today is the dominant challenge to sustainable development in a global perspective, even questioning the conceptual preconditions of sustainable development (“is constant adaptation compatible with sustainability?”). However, climate change is not the only challenge. None of the other well-known challenges to sustainability has disappeared, but is exacerbated by climate change: for example poverty, malnutrition, loss of biodiversity and ecosystem services, demographic change, desertification, water scarcity, urbanization, an altered nitrogen cycle, or pollution.

Exacerbating all other challenges

Any isolated policy focusing only on climate change is likely to do more harm than good. UNESCO biosphere reserves are the right places for solving intractable conflicts. Biosphere reserves all around the globe can be very suitable places where new, comprehensive policies on climate change mitigation and adaptation are tested and implemented in order to safeguard their practical viability, once all other variables need to be included into the equation [[GUC2011]].

Need for integrated solutions

For African biosphere reserves, in particular in least-developed and fragile states, the challenges they face today will be exacerbated by climate change, for example through: increased frequency and/or intensity of extreme events (e.g. floods, droughts), rising mean temperature, reduced rainfall in particular in the drylands, sea-level rise, ocean acidification, or species loss). These changes will differ substantially across Africa and hardly any prediction is robust so far. But it is very likely that the average effect on Africa will be more severe than on the global average. Some predictions foresee an average temperature increase in Africa of more than 2° Celsius from the pre-industrial level, until 2050 already.

Impacts on Africa

Expected impacts of climate change in Africa include

- Reductions in yields from rain-fed agriculture (in some countries maybe minus 50% already in 2020) [[IPCC]]
- Further spread of infectious diseases into highlands
- Habitat loss, increase of the size of arid and semi-arid areas, impact on wetlands and aquatic ecosystems
- Extinction of species, isolation of some species populations, reduction in population size of many species (especially montane species), changes in the life-history of species (phenology)
- Spread of invasive species
- Additional human migration and refugees



Climate change is expected to have significant negative impacts on populations in Africa, affecting food security, access to water and energy, equity, sustainable livelihoods, and in particular leading to more conflicts about natural resources [[MWITUR]]. The climate change mitigation capacity of African biosphere reserves should not be ignored (land-use, renewable energies and green economy) – but this mitigation capacity is nevertheless quite limited. The focus in African biosphere reserves must be on developing and testing *options for adaptation*, including safeguarding sustainable livelihoods of vulnerable groups, e.g. [[IUCN2010-2]]. The currently intensive discussion on *ecosystem-based adaptation* provides many good lessons how to proceed.

Climate change increases the uncertainty associated with management. Climate change emphasizes the need for adaptive management (cp. below) to ensure management plans and interventions consistently take into account changes and lessons learnt linked to climate variability. Climate change and how it is addressed should be a major issue (or even flagship priority) in the management plan of each biosphere reserve, based on a vulnerability analysis and taking into account the concerns of biodiversity conservation; there should be a specific budget line for related actions. The management plan should not only reactively respond to threats, but proactively reduce vulnerability.

Increasing uncertainty

Biosphere reserves should also be integrated into national climate change strategies/action plans. Lessons learnt should be disseminated in AfriMAB, ArabMAB and the overall World Network.

Places for learning

The following interventions are *examples* of climate change related actions that can be integrated in a local action plan:

- Reducing emissions from deforestation and forest degradation (REDD+) or reforestation
- Preserving or restoring mangroves, wetlands, peat bogs and other high carbon ecosystems
- Managing rivers and floodplains adaptively in light of expected increase in extreme events
- Controlling slash-and-burn practices
- Revitalizing farming methods that have prevented erosion and maintain carbon in the agricultural soil
- Discontinuing shifting cultivation
- Controlling sea erosion/shoreline recession
- Monitoring saltwater intrusion into coastal aquifers
- Using improved stoves in households requiring simple biomass
- Using sustainable sources of electricity
- Improving water- and energy-efficiency in households
- Creating income from a local tourism carbon credit mechanism – this means to allow tourists to compensate their carbon emissions from flights in local projects which mitigate climate change

Case study: Adaptation to climate change in Delta du Saloum biosphere reserve, Senegal

The Delta du Saloum biosphere reserve, with a size of 200,000 hectares, covers the huge delta of two rivers in Senegal. Four species of mangroves dominate the ecosystem, which is a crucial carbon sink; mangroves are accompanied by sand dunes, forests and islands. The delta is critical for migratory birds such as the royal tern, for which the Saloum delta is the most important nesting site globally. The mangrove ecosystems experience many human pressures, for example from rice cultivation, from fuel-wood clearing, excessive fishing, and destruction of bird colonies. Climate change has become a central issue of the biosphere reserve management. A focus is on mangrove restoration as being highly relevant for the ecosystem at large, as carbon sinks and for coastal protection. Six community protected areas have been created in the terrestrial buffer zone; moreover, there is the Bamboung marine protected area which is in the transition area. These community protected areas have been set up in order to meet demand for fuel-wood and non-timber forest products. Other measures include the construction of a dam sealing off agricultural land from seawater inflow. Village associations support mangrove restoration schemes, including through tree nurseries and through combining traditional and modern practices in fisheries and they have set up 'eco-guards'.

2.2 Management and participation

Management

Management means: *seeking to accomplish the goals of an organization through efficient and effective implementation of available resources*. If the organization is a business company, they do business management; if the organization is a biosphere reserve, they do biosphere reserve management. Among the resources which a manager can use for implementation, there are human resources (employed staff, volunteers, partners, voluntary and honorary committee members etc.), financial resources, knowledge resources, administrative resources (implementation of laws and by-

What is
"management"?

laws, ordinances etc.).

What is essential is that the goals of an organization come first. Resources are allocated and activities are implemented *in order to reach goals*.

Combining three functions

The goals of a biosphere reserve derive from the “three functions” (cp. above): conserving biodiversity and ecosystem services, promoting sustainable community development; and support provided by research, education and monitoring. **These “three functions” do not yet fully specify the objectives of a particular biosphere reserve.** Each biosphere reserve has to identify for itself clearly what its goals will be. For example, there are biosphere reserves which mainly focus on preserving large un-dissected forests; others which mainly focus on preserving a particular traditional form of agriculture. What makes biosphere reserves special is that they will always bring together nature conservation and community development. In the mentioned examples this could mean: Preserving forests or one species *through* creating livelihood alternatives to cutting down forests or hunting species; preserving traditional agriculture *because of* the high agro-biodiversity. The “three functions” are very general – and they have to be understood not as “conflicting goals”, but as compatible goals.

In other words, management interventions need to improve the sustainability of the biosphere reserve. Therefore it is important that they are planned and implemented wisely – and that they *actually improve sustainability*; this can be supported through a “sustainability checklist”; for an example [[K2CCHECKLIST]].

Continuity and change

The goals of a biosphere reserve can remain constant over many years. But they can also change, in the light of new developments. If, for example, the overarching goal is to preserve a flagship species and this species becomes locally extinct due to climate change, the overarching goal has to be adapted. However, if goals need to be adapted rather quickly, this is a sign that the goals were not well chosen. As a matter of fact, a biosphere reserve could indeed consider the goal of safeguarding an endangered species rather a “secondary goal”.

Different levels of management

There are *different levels of management*: In any organization, there is an overall management which coordinates all other efforts to reach the overall goals of the organization. In addition, there is project or programme management which needs to reach the goals of individual projects, which are typically limited in time. Within each larger organization there will always be departments, divisions, sections, facilities, sub-institutions with their own set of more limited responsibility and more narrow secondary goals.

Planning

What is planning?

Planning is an important part of management. Planning is an analytical way of thinking about the future; not any future, but a concrete state of a desired future: Planning starts from the optimistic assumption that it will be possible to reach the goals of the organization.

Planning is hands-on

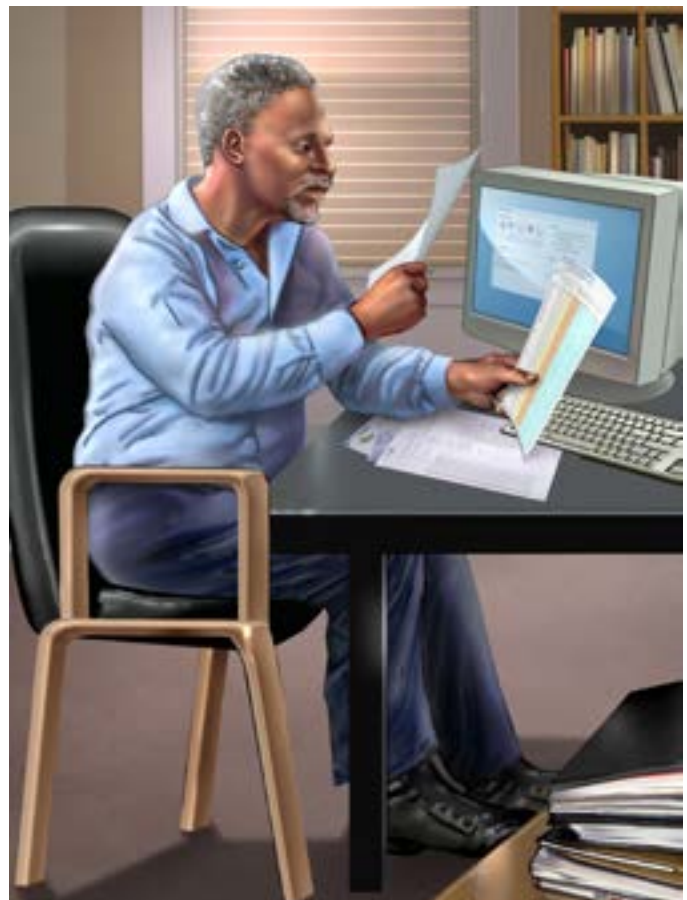
Planning is then the process of connecting this state in the future (maybe 5, 10 or 15 years in the future) with the present situation. Planning tries to *identify the measures needed today in order to reach the desired goal in the future*.

Planning is a process

Planning is not a scientific process; the future is not known even to the best planner. Good planners work with probabilities, contingencies and several scenarios. Planning contains a speculative “brainstorming” phase; it also contains a structured phase of formalizing assumptions and conclusions and checking their viability and likelihoods. Planning also entails writing down the result of the planning, usually starting with the overarching long-term goals (impact), from which secondary medium-term goals are deduced (outcome), then the needed concrete work results (output) and then the activities. A plan should also contain the underlying assumptions, potential risks and the required framework conditions.

Management is communication

At the same time, management planning is a process and not a one-time event. Planning will have to be



adapted in the case of changing goals, changing conditions, and unexpected events (cp. below section 2.4). Of course, management plans need some stability or “resilience” such that not any changing circumstance requires a change of plan. For a guide on management planning of protected areas, cp. [[NCC]], [[ONTARIO]], and [[IUCN2003-2]].

Planning tries to take into account, as much as possible and sensible,

- All available knowledge and analysis about the past and the present, including traditional and indigenous knowledge
- Best practice
- “Pros and cons”, priorities of diverse groups
- Probable developments of the future and how to react to them
- Current policies and regulation

Participation in management and planning

Hardly any goal can be reached by one person or one organization alone. Therefore, management and planning should be people-oriented; one of the main purposes of planning is to assemble a wider coalition of partners and supporters around a common goal. Management and planning is a process of coordination and *communication* – with employees, with one’s superiors (e.g. in a ministry) and with all stakeholders, including local communities.

Participatory management and planning tries to involve as many stakeholders (cp. below) as possible and sensible, their views, their ideas and their commitment. Planning introduces priorities and negotiates compromises, which are always needed in cases of scarce resources. Participatory management allows biosphere reserves and key stakeholders to define their mutual roles, responsibilities, benefits and authorities in the management of a natural resource. Participation allows communities to understand why conservation is important. Participation leads to communities taking on responsibility. Additionally, participatory approaches valorize, use and preserve traditional and indigenous knowledge. Research has shown that participation improves management [[BRODY]]. And after all, participation is also a human right: “*Everyone has the right to take part in the government of his country, directly or through freely chosen representatives*” [[UDHR]].

What is participatory management?

Still, participation can only be “optimal”, not “maximal”. Not every management question needs a consultation; for a proposal on criteria, cp. [[POLLOCK]]. Some decisions have to be taken quickly; some decisions are simply too complicated to be explained to a wider audience. Some decisions need to be implemented by a ministerial or presidential order. Some issues are a national secret. Also, it is unrealistic to resolve every individual need. With all this said: Every manager should *check any decision whether it is really not possible to involve stakeholders and the population*. The number of issues for which participation makes sense is always higher than what any individual manager thinks initially. Optimization means: prioritization of the most relevant issues and parties concerned.

“Optimal”, not “maximal”

If participatory management and planning is taken seriously, some restriction on the future freedom of managers to take decisions is the consequence. But this loss in freedom is compensated by **better decision-making**:

Better decision-making

- Participatory management provides managers with **better arguments** and reasons to take decisions because it is based on all available knowledge.
- Participatory management provides managers with **better legitimacy** to take decisions, because everybody has been part of the process.
- Participatory management improves **social acceptance**, because arguments, “pros and cons”, priorities and compromises are transparent to everyone. There is more “rationality” in cooperation.
- Participatory management strengthens **partnerships with local communities** to implement decisions. This strengthens trust, equity, pluralism and good governance in the local community.
- Participatory management helps to **resolve conflicts** associated with natural resource use.
- Participatory management **builds capacity** of stakeholders, empowers marginalized groups and leads to better recognition of their rights and responsibilities.

Development will be more sustainable if management is participatory – this has been empirically proven in a meta-analysis of all available case studies in 2013 [[ECOPAG]]. It has been proven that participation has substantive environmental impacts *and* improves project delivery *and* social outcomes.

Empirical evidence for success

Participation offers an opportunity to connect and integrate the biosphere reserves into other development planning frameworks.

The “foundation document” of sustainable development, Agenda 21, has more than 150 references to the need for participation [[AGENDA]]. The UN and UNESCO demand participatory management of natural resources, in particular in biosphere reserves. Participation is also a human right: “*The will of the people shall be the basis of government*” [[UDHR]].

Participation in the UN

Participation in the MAB documents

In the UNESCO MAB Programme, participation is required by all key documents; examples are the references in the *Seville Strategy* of 1995 (cp. Appendix 3):

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

5. Survey the interests of the various stakeholders and fully involve them in planning and decision-making regarding the management and use of the reserve.

Objective II.2: Ensure better harmonization and interaction among the different biosphere reserve zones.

4. Establish a local consultative framework in which the reserve's economic and social stakeholders are represented, including the full range of interests (e.g. agriculture, forestry, hunting and extracting, water and energy supply, fisheries, tourism, recreation, research).

Objective II.3: Integrate biosphere reserves into regional planning.

3. Organize forums and set up demonstration sites for the examination of socio-economic and environmental problems of the region and for the sustainable utilization of biological resources important to the region.

Objective III.4: Improve training for specialists and managers.

Encourage training programmes for local communities and other local agents (such as decision-makers, local leaders and agents working in production, technology transfer, and community development programmes) in order to allow their full participation in the planning, management and monitoring processes of biosphere reserves.

The *Statutory Framework* recommends “organizational arrangements [...] for the involvement of a suitable range of, inter alia, public authorities, local communities and private interests in the design and carrying out the functions of a biosphere reserve” (cp. Appendix 2). Stakeholder participation in biosphere reserves was already discussed in depth in 1999 for Francophone Africa [[UNESCO1999]].

In essence, participation enables local communities to partake in essential decisions about their very own life and future. Participation helps to harmonize conflicting interests and approaches to resource management of different sectors and user groups. Participation builds capacity of local communities and other stakeholders.

What is the population, what are stakeholders?

What is the population?

The “population”, quite straight-forwardly, is **everybody who lives and/or works in the biosphere reserve**, full-time or part-time. The population also encompasses people who have a house and family in the biosphere reserve but work during the week in a holiday resort or city outside the boundaries of the site; it also includes people who originate from outside, but work during several months in a local tourism facility. It also comprises pastoralists or nomads who only live during some months in the biosphere reserve. In contrast to protected areas that deal mostly with people living in the *surrounding* of the area, there is a clear difference in that biosphere reserves have real *inhabitants*, living within the area.

What about migrants?

From the perspective of a biosphere reserve manager, migrants or foreigners (present legally or illegally) should be regarded as any other member of the population. A biosphere reserve management team typically has no “policing function” – but of course they need to stop harmful and illegal practices such as overfishing or illegal forest exploitation, which the resident population often (wrongly or rightfully) attributed to outsiders. Where necessary, managers should seek support from ordinary police; but managers should also mistrust indiscriminate allegations or avoid making foreigners scapegoats.

Working through stakeholders

Good biosphere reserve management seeks to involve the population – in principle in its entirety. Direct involvement of the entire population is almost never possible; managers have to *work through networks of multipliers, representatives and special stakeholders*.

Valid interests

A **stakeholder** is defined as someone (person or group) who has a **valid interest in a process, in an institution or in a piece of land** – for example on the basis of traditional structures or on the basis of resource use. There can be knowledge stakeholders, community stakeholders etc. A stakeholder can be an individual, an informal group or a formal institution. All those people are stakeholders, who live in a biosphere reserve and who have a conscious interest in its future development. Persons and groups with “unconscious” interests are typically not referred to as stakeholders. This means that education and training will increase the number of stakeholders. If stakeholders are carefully selected, they will be representative of the entire population and its various interest groups including those who are unaware or do not consider themselves as stakeholders.

Justified interests as part of the definition

In short, a stakeholder is any individual, informal group or institution that *affects a biosphere reserve and/or that is affected by a biosphere reserve* – and that therefore has a (*conscious*) and *justified interest* in its *success or failure*.

— A stakeholder can thus be a person whose actions affect a biosphere reserve, as a user of its biological or other resources and/or its territory – for example a fisherman or a farmer.

— A stakeholder can be a company who makes a claim on certain environmental resources, for example a mining company.

- A stakeholder can also be a land-owner who is expropriated by the government when a protected area is being installed or a shepherd who is no longer allowed to use some grassland.
- Stakeholders include institutional partners and decision-makers, government ministries, UNESCO, international donors, scientists, tourism operators, etc.
- Also the managers themselves are stakeholders.

[[UNESCO2008]] has differentiated three types of stakeholders (co-managers who are actively involved, “resource stakeholders” because of their knowledge or competence, and citizens), as well as primary and secondary stakeholders. In principle (although not for practical purposes), in a globalized world, stakeholders include everybody including future generations. There have been many studies about individual biosphere reserves, e.g. [[SCHULTZ2007]] or [[STRINGER]] to analyze and categorize the vast diversity of stakeholders and how to best involve them into management.

As long as there are no “conflicts”, many inhabitants will not be aware that they are or should be stakeholders – being a stakeholder often only becomes visible in a conflict. **Good management makes the entire population aware of their stakes in the biosphere reserve, before conflicts emerge, in order to avoid conflicts** (cp. below). This is similar to “absent third parties” as in [[UNESCO2008]].

Stakeholders become
“visible” in conflicts

Sometimes, communities might not actually consider themselves as stakeholders, while still fearing, maybe wrongly, that the biosphere reserve affects their life. For example, in the Carpathian biosphere reserve in Ukraine, people tended to connect the high price for wood directly to the existence of the biosphere reserve, when in fact there was no causal connection [[WALLNER]].

Sometimes it might be sensible to further differentiate stakeholders:

- “Primary stakeholders” who directly affect/are affected negatively or positively; for example those whose livelihood exclusively depends on the biosphere reserve’s resources or an industrial/tourism investor;
- “Secondary stakeholders” who either play an intermediary role and whose interests are only partially or indirectly affected;
- “Key stakeholders” who influence decision-making and activities in a significant way, e.g. the provincial Minister for the Environment, the local Member of Parliament or an opinion leader within a community.

Further differentiations
of stakeholders

A “**stakeholder analysis**” is a frequently used method in project management which helps to determine the stakeholders as well as the needs, abilities, roles and responsibilities of each stakeholder. The analysis also identifies their respective degree of being affected. The goal of stakeholder analysis is to prioritize the most relevant actors in a context or project – such as the planning and management of a biosphere reserves. When time and financial resources are limited, attention has to be focused on some stakeholders.

What is a stakeholder
analysis?

A “stakeholder engagement matrix” *can be* an additional second step. It is a categorization of important stakeholders according to the “intensity of their interests” and their “power”. You might try to differentiate:

- “Powerful and interested” – focus management attention on them.
- “Powerful and less interested” – keep them satisfied and try to raise their interest – there can be opponents of the biosphere reserve among them.
- “Less powerful and interested” – keep them at least informed; if possible, empower them.
- “Less powerful and less interested” – at least monitor their interests, try to raise their interests, if possible, empower them.

Stakeholder
engagement matrix

There are many other models of “stakeholder matrices” or “stakeholder circles” etc. Use such models as “stakeholder engagement matrix” with great care and only for specific situations – *never treat somebody derogatorily or even disrespectfully just because she/he is less interested or less powerful*. There is a high danger that such an analysis creates “elites” and that it creates suspicion toward you as manager.

Vulnerable groups

While using stakeholder matrices can be helpful, it can be very dangerous by turning your attention away from the needs and expectations of vulnerable groups – they can seem the least powerful and they can appear to be the least interested ones; however, this might not be true at all. Vulnerable groups are those that need pro-active attention, you need to reach out to them. A biosphere reserve manager from Sweden has said: “We have an ‘Open Door’ policy but not enough time to include some groups that are not currently at the table” [[JACKSON]]. This is typical: Most biosphere managers would say that they will listen to everybody, that they “have an open door” and that they do not exclude anybody. But “inclusion” is more than “avoiding exclusion” – you should *actively seek to include vulnerable and disadvantaged groups*.

Inclusion is more than
“not exclusion”

Definition of vulnerable groups

Vulnerability refers to the inability to withstand shocks (e.g. natural disasters) and to the inability to adapt to a hostile environment. Vulnerable people are those most affected by situations of sudden or permanent hardship such as by disasters or by poverty. “People are more vulnerable if they are more likely to be badly affected by events outside their control.” [[ActionAid]].

Examples

There is no universal definition what a “vulnerable group” is in a particular society. Often, the following groups of people are said to be vulnerable (*not in hierarchical order*):

- Indigenous people
- Ethnic minorities, language minorities
- Religious minorities
- Migrant minorities
- Socially excluded groups, e.g. mobile communities, nomads, pastoralists
- Illiterate people
- Extremely poor people
- Malnourished and hungry people
- People with illnesses and disabilities
- The elderly
- Children
- Women (especially pregnant women)
- People with “non-normative sexualities and gender expressions”

Youth are normally not considered as a vulnerable group, but because of the current demographic trends in many countries and high youth unemployment, they should be given special attention.

Fundamental principles of participation

Almost a fourth function

This Manual emphasizes the role of “participation”, almost as a fourth function of biosphere reserves. Local communities and stakeholders should not participate in all, but in most aspects of biosphere reserve management and decision-making; participation is conceptually important and pragmatically beneficial. Participation is **beneficial both for the managers of the biosphere reserve as well as for stakeholders and communities** – and for nature at the same time. Participation will increase support of stakeholders and will make management more effective. Participation leads to empowerment and builds capacities. Credibility and trust is built towards the practices implemented. For stakeholders and communities, participation equals an improved role in decision-making and having a say in vital issues of their lives.

For participation in the management of a biosphere reserve, there are many occasions, including site nomination and periodic reviews of existing biosphere reserves.

Decide about the appropriate forms depending on the context

For participation to be successful you often need to overcome suspicion and other forms of prejudice. Participation can take many forms – there are no “*universally applicable solutions*”: public hearings with face-to-face discussions, working groups and interactive planning, negotiation and consensus building, brainstorming and problem solving, capacity building, competitions, surveys and questionnaires, electronic consultation (email, social media such as facebook or twitter, websites such as surveymonkey or doodle, telecommunication technologies such as skype, etc.). Face-to-face discussions and negotiations have various additional benefits and are therefore more effective than any other form of participation.

The following attitudes are essential to establish trust:

Seriousness: Participatory methods should only be used if the results can actually be taken up. Be realistic, honest, don’t raise false expectations.

Respect: Participation must really be interested in drawing upon and valuing the knowledge, the opinion, the needs, the complaints and the commitment of both the stakeholders and local communities. “Bad participation” imposes new concepts and ideas. A biosphere reserve as a flexible concept can and should be adapted to the concepts, traditions and ideas of a given region, not the other way round. A biosphere reserve can transfer local concepts and traditions into an institutional setting.

Benefit-sharing: Participation is not only about “talking”. It is also about sharing economic and socio-cultural costs, benefits and impacts equitably. This includes benefits of access to ecosystem services and genetic resources.

Transparency and good governance: A participatory process needs to set clear and transparent goal and rules; these rules need to be respected by all partners. All relevant information should be accessible for relevant parties. Disputes need to be resolved fairly.



Optimal, not maximal participation: For some questions, as many community members as possible should be consulted. For other questions, work has to be done in smaller groups. This implies the choice of the right stakeholders:

- Who has the necessary knowledge about all relevant aspects of a problem?
- Who is representative of which groups?
- Who has “official” influence and authority?
- Who has “hidden” influence?
- What about property owners, what about “elders”?
- What about indigenous and local communities, what about outside partners?
- Do you need to prepare some stakeholders in advance such that they can participate effectively (capacity building)?

It has been shown that some stakeholder engagement improves management effectiveness, while other engagement can even be detrimental [[SCHULTZ2010]].

2.3 Conflict management

Wherever and whenever people live and work together, there are conflicts. Conflicts arise from scarce resources, from disagreements and from differing *interests* and needs (recall that stakeholders are *defined* by their interests). Even under the best possible circumstances, among people with the best intentions, conflicts will emerge. **Conflicts are something truly normal for all human beings. If conflicts are recognized as such, in a respectful and solution-oriented approach, they can be handled, managed and positively resolved.** *Avoiding* addressing existing conflicts is the *first step to escalation and great harm*. Addressing conflicts is an opportunity to strengthen the ties in a relationship, in a team, community and society.

A biosphere reserve manager is a moderator for the stakeholders and communities and their diverging interests. Managing and resolving conflicts is one of the key tasks of every daily work of a biosphere reserve manager. Sometimes she/he can be a neutral moderator, sometimes she/he needs to take sides and represent the “interests” of “nature” and/or of “future generations” – then the manager is not a moderator, but a conflict party herself/himself. Try to remain in the moderator’s role as long as possible. Wherever possible, have a third party (e.g. nature conservation group) represent “nature’s interests”.

As said above already, stakeholders and their interests often become “visible” only in the case of conflicts. In case you are asked to moderate a conflict, but the one conflict party does not yet know you and does not have trust towards you, it is very difficult to be recognized as a neutral moderator. This is an important reason to reach out to every potential stakeholder, *before* they “officially” formulate their interest in a biosphere reserve.

Conflicts are something normal

Managing conflicts is the daily bread in a biosphere reserve

Moderation needs trust

[[HYMAN]] has made an additional important observation concerning the management of a biosphere reserve: “If no conflict ever arises from the activity of the biosphere reserve, then it is probably not asking questions that really matter.” – This means that actively engaged biosphere reserve managers may themselves trigger conflicts. You should not seek such conflicts, but you should also not avoid them at all costs.

Types of conflict For biosphere reserve managers it is essential to distinguish between **conflicts among the population**, i.e. between individuals, stakeholders and communities all living within the biosphere reserve, and **conflicts with outsiders**.

Managing conflicts within the biosphere reserve

Reasons for conflict The following *reasons for conflict* are quite frequent in any natural environment including in biosphere reserves:

- Conflicts based on incompatible uses of identical natural resources and particular places (e.g. overgrazing of common lands by one member of the community; or if traditionally well-adapted forms of land-use stop being suitable either due to population growth or due to climate change)
- Power conflicts between people seeking to strengthen their position
- Conflicts between different beliefs, cultures and traditions (e.g. between a traditional knowledge and some scientific research or if some groups insist on traditional practices such as bush-meat in spite of declining species numbers)
- Conflicts over the methodology how to approach a certain situation (e.g. should we impose a solution top-down or should we seek democratic decision-making)
- Structural conflicts because the governance institutions are exclusive to some interests or because institutions are not recognized (e.g. hunters simply disclaiming the actual limits of a core area)
- Sectorial approaches to problems

Conflict resolution There are a number of *techniques* for handling, managing and even resolving conflicts. Although conflict resolution requires experience and is even an academic field by its own, many techniques are actually simple and can be implemented *using common sense*. Conflict resolution can be seen as a set of *psychological approaches*, it can also be seen as a rather *semi-legal approach*. In the latter sense, conflict resolution is related to arbitration, negotiation, conciliation and mediation; it can be supported by (external) moderators and, in the case of legal escalation, by lawyers.

The most salient points Some important aspects are common to all approaches of conflict resolution:

- Promote **addressing conflicts actively**, instead of avoiding to talk about it, or denying that a problem exists (although there can be situations in which “wait and see” helps, because conflict reasons could disappear over time).
- Promote a style of **dialogue and negotiation** among conflict partners – dialogue prevents the escalation of disagreement into outright hostility.
- Help avoiding the perspective on a conflict in which there is a winner and a loser (competitive situations or “fight” situations); help recognizing that there can be **win-win-situations**. Cooperative conflict resolution is almost always the best option. “Losing face” is a very negative outcome of any conflict; it will always have consequences in the long run. A concrete realization is the “Mutual Gains Approach to Negotiation” supported by the BIOPAMA Africa initiative [[BIOPAMA2014]].
- Help the conflict parties to explore **new and alternative options** for compromise, based on common areas of interest (think out-of-the-box).
- Help exploring underlying **causes of conflict** (this might *not* be sensible in an *acute* phase of conflict), with a view to preventing future repetitions.

What to do as a manager? How should you, as a moderator, approach conflict management within a biosphere reserve?

- **Differentiate emerging and acute conflict**. In cases of acute conflict, carefully weigh every word, every intervention – in cases of emerging conflict, a more light-hearted approach may just be the proper way forward.
- Wherever possible, use **well-proven traditional conflict resolution** methods, based for example on tribal law (e.g. the traditional Gacaca procedure in Rwanda). Where traditional methods seem inadequate, try to integrate them into other approaches to the extent possible, thus improving legitimacy.
- If you are the moderator, **really be neutral**, even if you think that one conflict party really has better reasons and more legitimate interests. For a cooperative solution, each party has to win. If you are working as a government employee with a main focus on conservation, being accepted as neutral will not be easy.
- You **need a mandate** to intervene as moderator. If the conflict parties do not approach you, then you should be very careful. It can be wise to offer your moderation through a third party, e.g. by suggesting a particular conflict resolution approach.
- Maybe you yourself are not the best moderator, maybe rather some other staff member, maybe an external scientist, elder or consultant. This is of course necessary if the biosphere reserve managers are seen as a party with a vested interest in the conflict.

- Create **transparency** about the conflict, what benefits can be shared, what “deals” can be made.
- Try to understand for yourself, as best as possible, the conflict, the **conflict parties and their social context**, their power networks and the reasons/arguments/interests given (publicly stated as well as hidden reasons) and the meanings and concepts they give. Try to understand the individual interests “from the perspective of the other”, and try to understand to what extent somebody argues because of a real-life interest or because of a power struggle.
- Invite the conflict parties to a **neutral place** or “forum for negotiation” and provide them with a “nice” atmosphere – show them that you as moderator have invested time and effort in preparing a compromise. This can make it easier for the parties to make an effort as well.
- You should also consider changing to a different negotiation place or to a **different negotiation format** (e.g. with a smaller group or representatives) if there is no progress; e.g. finding a compromise only among two or four people.
- Depending on the context, invite not only the direct conflict parties, but important “**background actors**”.
- Allow the conflict parties to discuss their issues transparently among themselves **in private**; this might require that no information about the meeting is unnecessarily becoming public.
- As much as possible try to **avoid speaking about “values”, “culture” and “traditions”** in the negotiation process. They are absolute and not conducive to a compromise; nobody will publicly accept that compromises on values have been made. Be aware that real estate ownership is very tightly bound up with values and culture in most of Africa.
- Shift the attention from **positions to interests**; in order to do this, start by explaining the interests and needs of the conflict parties as perceived from your perspective; in doing this, choose open formulations such that each party can correct or supplement your presentation; focus on empirical facts and try to clarify different views of these facts. Be aware that there might be disagreement on what a fact is.
- Emphasize the **high status of fair compromise in all traditional cultures** and in modern conflict resolution techniques used globally.
- Help the conflict parties to **formulate alternative options** for solution (win-win-situation, benefit-sharing), also using “out-of-the-box” thinking, widening the horizons of the conflict parties.
- Support the conflict parties to formulate the associated benefits and **pros and cons**.
- If you want to move parties from their positions, treat them as they could be and not as they are. Only if you interact with them such as allowing them **space for changing their positions**, they can actually do it.
- If reasonable, prepare a **written agreement** (to be sure what exactly has been agreed upon) and support its legitimacy (maybe with a solicitor or with courts, maybe with other power hierarchies) and its implementation.

Managing external pressures

There are also many cases of conflicts in which there are “inside parties” and “outside parties”. The typical case is that an outside investor proposes an intervention such as infrastructure development (hotels, roads), mining, trophy-hunting, acquisition of land to start monoculture farming. Such outside parties, often purely by the large financial

An entirely different context of conflicts



Less reason to be neutral

investments they have at their disposal, can get easy access to political decision-makers and to state administrations. Typically, decision-making in such cases is biased; the investor or any other powerful outside party will be much better heard, even if there is not even any corruption or bribing. An investor will clearly pay taxes and thus create reliable and traceable income to the state, maybe much more than the sum of taxes from local residents. An investor usually expresses his/her plans unambiguously. When he/she meets with local opposition, the opposition tends to be divided and will use differing and conflicting arguments.

If there is an indication that an outside intervention will not be overall beneficial to the sustainable development of a UNESCO biosphere reserve, managers *should not be neutral* as in the case of internal conflicts. They should take a stance to defend the objectives laid down in the management plan. While it will typically not be possible or even sensible to participate in protests since they are often state employees, they should position themselves as “biased moderators”. In cases of large-scale and potentially negative external development, a counter-weight is needed which the biosphere reserve managers can present if they have adequate coordination and moderation skills.

There are several efforts underway in this context such as IUCN’s BIOPAMA approach to foster protected areas as a “legitimate land use now and in the future” [[BIOPAMA2013]].

Benefit-sharing

What is benefit-sharing?

Benefit-sharing is sometimes used as a synonym for “win-win-situation”, in the case of conflict-resolution. More comprehensively in a biosphere reserve, this could mean using natural resources such as to *both* conserve the resources *and* to improve livelihoods and enhance economic opportunities for the local population. Conserving ecosystems and their services is good for nature *and* for the population. Benefit-sharing could also amount to different societal and economic groups (local community, small-scale farming, agro-industrial producers, industrial production, and government). This could also prohibits forms of economic development which are not beneficial to the local community.

But there are also **two different but very clear meanings** of “benefit-sharing”: **The first** is the sharing of the financial benefits which originate from the biosphere reserve, directly and indirectly. **The second** is a notion used at the international level in the framework of the UN Convention on Biological Diversity (cp. below).

Sharing financial benefits: Some African biosphere reserves have substantial income from tourism, e.g. through park entrance fees or through taxes and levies on tour operators and hotels – or through payment for ecosystem services (a “direct benefit”). Some management authorities of biosphere reserves use a model in which they pass on some 10 percent of their financial income (whether collected directly or whether assigned to by the state) to communities – however, such transfers often take the form of investment into infrastructure. Communities may get better roads or new schools, but maybe no direct financial inputs. The case study from Amboseli is typical; the case study from Jozani Chwaka Bay national park offers a more democratic approach on how such income can be shared with local communities. Compensation payments for wildlife damage are another example. Below in section 3.5, we will discuss to what extent such income can help funding the management of biosphere reserves.

Indirect benefits are much more diverse in character and thus much more difficult to share. An indirect benefit for example would be that intact ecosystems lead to safer water and this in turn to less expenditure for health care. “Sharing of indirect benefits” actually refers to the word “indirect” itself: If managers of a biosphere reserve invest into ecosystem restoration which may lead to better ecosystem services, then down the line communities can have an immediate benefit (e.g. better health and less expenses for the doctor), but this is an *indirect* benefit of the original ecosystem investment. PES are an example (cp. section 2.1)

Case study: “Before ABS”, Tai biosphere reserve, Côte d’Ivoire

The Tai biosphere reserve covers the largest undisturbed natural forest in West Africa. It was designated a biosphere reserve in 1978 and a world heritage site in 1982. It contains the Tai national park with its 1300 plant, 230 bird and 54 mammal species. It is also the world’s most productive cocoa region and many genetic resources seem suitable for bio-prospecting. One example of commercially successful bio-prospecting from this biosphere reserve, of the sugar-substitute Thaumatin, has taken place in the early 1990ies, before there was any thought of ABS. Thaumatin is a natural protein from the Katemfe fruit seed which local communities have long used as a sweetener. Thaumatin is 2000-3000 times sweeter than sugar, it has been patented in the US and the UK and is commercially used in the production of flavours and chocolate based sweets. In this case, since in the country there had been neither awareness nor ABS regulation, local communities did not receive any benefits at all. In the future, provisions need to be made such that international companies (pharmaceutical, cosmetic, food, etc) gain access to knowledge and genetic resources only through ABS regimes.

Case study: Sharing revenues in Amboseli biosphere reserve, Kenya

Already in the early 1990ies, the biosphere reserve at the border of Kenya and Tanzania had adopted an initial system of sharing revenues with the local Maasai pastoralists, operated by the Kenya Wildlife Service, based on the proportion of the Amboseli migratory wildlife accommodated by each of the adjacent group ranches, particularly in the wet season. This included training, the establishment of cultural centres and incentives to promote schooling. Community empowerment had remained a challenge though. [[UNESCO2000]].

Case study: Sharing revenues in Jozani Chwaka Bay national park, Tanzania

An interesting model has been established by the Jozani Chwaka Bay National Park, which is a prospective biosphere reserve on the island of Zanzibar. Here, the park authority regularly invites the entire community to public meetings in which all incomes and all expenditures (due to park management) are publicly displayed, down to every single Tanzanian Shilling. Whatever is left after deducting expenditures from income, is shared 50-50 between the government budget and local communities. The share which goes to the communities is transferred to communities' bank accounts on the basis of concrete project proposals which are voted upon in village meetings. Therefore, there are no blank financial transfers, but full transparency and accountability for every single citizen about every single Shilling.

Sharing benefits from access to knowledge and genetic resources: As said above, the term “benefit-sharing” also has a second use in modern nature conservation. The “*UN Convention on Biological Diversity*” (CBD) has as one of its three objectives the fair and equitable sharing of the benefits arising out of the utilization of genetic resources. The “*Nagoya Protocol*” to the CBD of 2010 establishes a predictable legal framework for access to genetic resources and for ensuring the associated benefit-sharing.

What is ABS?

“**Access and Benefit Sharing**” (ABS) basically seeks to avoid the so far frequent situation that researchers or companies exploit the traditional knowledge of healers, indigenous groups and other local communities, with a view to make a commercial profit and but not to share such profit with the communities. ABS also seeks to avoid the commercial exploitation of the genetic resources which is particular to one country or region, e.g. in pharmaceuticals or cosmetics. ABS should establish reliable forms of payments, if such information and knowledge is indeed used.

Co-management

The term *co-management* can mean different things. The definition of IUCN is: “a situation in which two or more societal actors negotiate, define and guarantee amongst themselves a fair sharing of the management functions, entitlements and responsibilities for a given territory, area or set of natural resources” [[BORRINI]].

What is co-management?

Co-management largely relates to the topic of this Manual:

- Seeking true participation in the management of the biosphere reserve, also with a view to improve empowerment, justice and democracy
- Incorporating partners and stakeholders, along with their knowledge, their ideas and their financial/power capacity, to improve conservation, sustainable development and benefit-sharing

Very often, “co-management” refers to very substantial delegation of capacity of communities to take decisions on how to use the natural resources in their area – this is “co-management of resources”. The question of the proper degree of co-management of resources cannot be answered irrespective of the context, it depends on the zonation of a biosphere reserve, the national, provincial, local and traditional laws and regulations on land-use, and other factors. In many circumstances, such co-management of resources is a very effective approach. What we focus on here is “co-management of the biosphere reserve” which indeed overlaps considerably with the notion of “participation”.

Co-management is participatory management, with a focus on conflicts

The IUCN definition, quoted above, focuses as well on the negotiation process and thus highlights that participation is not top-down, but an interactive process of conflict resolution. This means that a biosphere reserve manager should not only regard herself/himself as a neutral moderator of “the conflicts of third parties”. Rather the entire process of participation is a process of conflict resolution. In the definition of IUCN, co-management requires “full access to information (...), freedom and capacity to organise, freedom to express needs and concerns, a non-discriminatory social environment, the will of partners to negotiate, confidence in the respect of agreements, etc.” And still, it will be “a complex, often lengthy and sometimes confused process, involving frequent changes, surprises, sometimes contradictory information, and the need to retrace one’s own steps”.

Participation is not top-down, but an interactive process of conflict resolution

“There is no unique and objective solution for managing natural resources but, rather, a multiplicity of different options which are compatible with both indigenous knowledge and scientific evidence and capable of meeting the needs of conservation and development” [[BORRINI]].

Key characteristics of co-management

Co-management needs to be pluralistic, respecting the diversity of different values, interests, concerns and views, as well as the diversity of management styles both outside and within the local communities; it also needs to respect different types of entitlements (not only formally legal entitlements). It needs to be transparent and seeking equity, empowering for communities and civil society organization, harnessing the complementarity of capacities and comparative advantages of different institutional actors. Co-management needs to be adaptive (experimental, incremental, learning from past experience, valuing uncertainty). Co-management as a process is more important than short-term products, cp. below: adaptive management. For an in-depth analysis of the notion of co-management, cp. for example [[CARLSSON]].

Acute escalation of conflicts

Natural resources as reasons for conflict

Conflicts have always several reasons, whether they are international or within one country, acute or latent, even if they escalate into civil war and international armed conflict. The reasons often include *disputes about access to natural resources* such as minerals, fossil fuels, timber or water, and about the equitable sharing of benefits arising from them. Natural resources are *hardly ever the only reason* for a conflict, hardly ever the reason which could mobilize the masses. But natural resources, as sources of income, industry, and identity, play *almost always at least a background role*. Promoting sustainable development and sustainable use of resources therefore also means promoting peace.

Local resource conflicts can spiral out of control

Especially in developing countries, communities depend very directly on local natural resources for their livelihoods as a primary source of income such as agriculture, fisheries, and timber. Most of these local resources are directly consumed locally, while some are also traded. Also local resources can create conflicts which sometimes threaten to spiral out of control; an example is the clash on the Tana River in Kenya 2012-2013 which evolved out of conflict over natural resources [[PRACTICAL]].

Natural resources, apart from being a reason for conflict, have two other important relationships to conflicts: Firstly as “casualty” of conflicts and secondly as “peace-builder”, resolving and managing conflicts and preventing the re-occurrence of violence in a post-conflict environment.

Natural resources as casualty

Natural resources as conflict casualty: UNEP explains that natural resources are often impacted by conflict parties in order to secure a strategic advantage, in order to demoralize communities or in order to subdue resistance. “Water wells have been polluted, crops torched, forests cut down, soils poisoned, and animals killed.” Examples are the draining of the marshlands of the Euphrates-Tigris Delta in Iraq during the 1980s and 1990s; or the use of the defoliant Agent Orange during the Vietnam war. “While numerous other examples of natural resources being used as a weapon of war exist, the majority of the environmental damage that occurs in times of conflict is collateral” [[UNEP2009]]. In 2001, IUCN has issued a “draft code” calling upon conflict parties to continue to observe the principles and rules of international environmental and humanitarian laws; natural and cultural resources shall not be pillaged under any circumstances [[IUCN2001]].

Natural resources as peace builders

Natural resources as peace builders: Historically, cooperation over natural resources has often helped to support broader international cooperation. A useful example is water cooperation, as UNESCO has well documented: Agreements about shared rivers are often the first agreements that states establish after a war. In Europe after the Second World War, cooperation on iron and coal was the first step towards the creation of the European Union of today. Biosphere reserves, i.e. transboundary ones, can be set up as “peace parks”. There have even been proposals

Case study: De-escalation in Maya biosphere reserve, Guatemala

Guatemala has a long history of political conflict over land ownership. Some 50 percent of the forest cover has been lost over the past thirty years in the region close to the Guatemalan border with Mexico. Reasons are commercial logging, cattle ranching, oil exploration and illegal drug plantings. In order to address the growing environmental conflicts, exacerbated by years of political conflict, Guatemala chose the model of biosphere reserves, balancing nature conservation with the needs of a growing population. The Maya biosphere reserve encompasses a vast forest with vital natural resources as well as the rich cultural and ecological history of the Maya civilization. The Maya biosphere reserve includes an institutional framework that holds indigenous subsistence farmers responsible for land degradation. This has depoliticized the land-use at local and regional level. The biosphere reserve is supported by the Guatemalan government, NGOs, international aid partners, and the local population including indigenous people and migrant populations.

for biosphere reserves on military zones between two conflict countries as well as along long-disputed borders. Such “peace parks” would serve a dual purpose, for conserving ecosystems, habitats and biodiversity *and* for making progress at the political-diplomatic level, especially if endorsed by the United Nations and UNESCO. This concept has found increasing popularity, supported also by the IUCN declaration of principles of “The Parks for Peace Conference” in 1997 [[IUCN1997]].

What can you do in acute cases? Armed conflicts are situations which will almost always be beyond the reach of managers. In these cases, managers might need to focus on protecting their own lives, as well as on avoiding the worst impacts on communities and ecosystems.

Moderate, but protect your life

As a manager of a site designated by a UN organization, you can turn towards UNESCO, by yourself, through your government, alone or together with your stakeholders, to seek the *good offices of UNESCO*. Indeed, UNESCO has often supported fact-finding missions or other activities in support of its sites (although most activities concern UNESCO designated World Heritage sites). UNESCO, in the programme “Biodiversity conservation in regions of armed conflict” [[UNESCOWEB]] had a cooperation with the Congolese Institute of Nature Conservation and NGOs from 2000 until 2013. It has politically and diplomatically supported the conservation of five sites in the Democratic Republic of Congo, with success. An international donors’ conference was organized and emergency action plans were implemented.

Call upon UNESCO

UNESCO, with its international MAB secretariat and its field offices in Africa, is of course not the only international

Call upon other international partners



partner. You can also turn towards UNEP and other UN agencies, including resident coordinators (cp. section 3.5). You can turn to the embassies of (previous or current) donor countries, including EU representatives. You can turn to the African Union or one of the eight African Regional Economic Communities (RECs: SADC for Southern Africa, COMESA for Southern/Eastern Africa, IGAD and EAC for Eastern Africa, ECCAS for Central Africa, ECOWAS for Western Africa, CEN-SAD for Sahel-Saharan, and UMA for the Maghreb). If a World Heritage site or a Ramsar site is endangered, turn towards the respective Secretariat. If poaching results from demand for endangered species, contact the CITES Secretariat. If an international NGO such as WWF or The Nature Conservancy has been working in your area, turn towards them. IUCN can be addressed in all cases; IUCN has special expertise through its Specialist Group “Armed Conflict and the Environment” [[IUCNWEB]].

If displaced people or refugees arrive in your region in significant numbers, it is necessary to cooperate closely with UNHCR in order to minimize additional social conflicts and adverse impact on the natural resources.

It is likely that from your perspective, not all partners will respond as immediate or adequate as you wish, especially in situations of urgency. Do not have unrealistic expectations; even if you have a local conflict which threatens to become violent, there will

Have realistic expectations

not immediately be a resolution of the UN Security Council, there will not be a UN peacekeeping mission. A fact-finding mission will likely be the best possible result. Therefore it is important that you use any international reaction as an important signal of awareness and support, whether it is a diplomatic note or recommendation or threat of sanction. Use any such signal in order to try to hedge and mitigate the local conflict.

Call upon investors
and civil society

Finally, you might also wish to turn towards outside parties. No conflict is without connections to outside parties. Conflicts over resources of international importance such as minerals, for example, are directly or indirectly driven by international demand, foreign investors, and international trade-partners. Cooperation from these actors is paramount for conflict resolution. First of all it is helpful to distinguish the level of involvement: Some outside actors could be *actively involved* in the conflict with an interest in a change in local power; do not count on them to resolve the conflict. Other outside actors (or at least their key decision makers) might not even know that their demand for minerals, for example, might promote a violent conflict. Maybe the local representative of a large company conglomerate takes isolated decisions. Try to turn such actors into your supporters. In such cases, letters to company CEOs, to human rights organizations or to “consumer watchdog organizations” (e.g. Global Witness, Oxfam, and Transparency International) as well as social media campaigns can help raising public awareness. For the case of several minerals, there are company round tables such as the “International Lead and Zinc Study Group”, the “International Nickel Study Group” or the “Kimberley Process” (for diamonds) or the “Conflict-Free Gold Standard” of the World Gold Council. Addressing such organizations can create pressure and support for your case within an industry group. Other outside parties and potentially good partners are investors, e.g. in tourism facilities, who have an economic interest in limiting and ending the conflict. When turning towards any outside party, including an international organization, it is wise to report in a manner that is as neutral and analytic as possible. An IISD report from 2009 [[IISD]], introducing and comparing several techniques of “conflict analysis”, can be an inspiration on how to report on a conflict situation. However, the techniques themselves are quite technical to be used in an emergency situation.

Report neutrally and
analytically

Assess the damage
and make new
priorities

Post-conflict situations: After a conflict, the first priority must be to care for human casualties, displaced people, refugees and other victims, to support immediate peace-building and reconciliation - and thus to prevent a re-escalation of the conflict. Once the time is adequate again to care for natural resources, the first step must be to *identify and assess the damage* done on the ecosystem, as well as the continuing threats such as landmines or pollution point-sources. The second step is to consult with all concerned (and intact) authorities, legitimate representatives of local communities as well as other stakeholders, about the *priorities* regarding your management response. The priorities will certainly have shifted in comparison to the pre-conflict situation. All stakeholders and community representatives have to agree on the priority in which you should address:

- Fighting hunger and deprivation, providing shelter, re-establishing basic services such as health provision and education
- Supporting reconciliation between conflict parties
- Catering for the needs of refugees
- Rebuilding communities and livelihoods, including rehabilitating agriculture and livestock as well as rebuilding infrastructure such as bridges, roads and electricity
- Restoring ecosystems

As a biosphere reserve manager, you should not exclusively emphasize ecosystem concerns, especially not in emergency situations. It will be the best possible sign for a “functioning” biosphere reserve, if you are not the first one to bring up the topic of ecosystems. To implement the primarily most important interventions, it may be wise to establish an emergency trust with previous donors. It could also be a way forward to think about payments for compensation and reparation that could also finance ecosystem restoration.

Reconciliation: Whatever you will do on the ground after a conflict, be aware that it will happen in a fragile context of reconciliation and peace building. It can happen easily that a local stakeholder may have had an active part in a conflict, but maybe the community, supported by the state, has decided to prioritize reconciliation over prosecution. Then it will be also your task to re-engage with this stakeholder, provided that you can accept it with your conscience. Many moral predicaments, for which nobody can give you any recommendations, can emerge after a conflict. If you, as manager, work in a governmental authority, you might also be asked to take part in prosecuting those alleged to have committed offences.

2.4 The role of knowledge in management

Why knowledge?

“Management” has been defined as “seeking to accomplish the goals of an organization through efficient and effective implementation of available resources” (cp. section 2.3) In order to manage, you need to *know* your resources (such as staff, partners, funds, or instruments, you need to *know* the goals (such as biodiversity conservation, sustainable use of natural resources, or poverty reduction) and you need to *know* how implementing your resources might lead to attaining your goals.

Sound knowledge of a system is prerequisite to its effective management. Effectively planning and managing a biosphere reserve requires much knowledge about biophysical (landscape, climate, biodiversity, etc.) and socio-economic features (livelihoods, power, culture, conflicts, etc.) of the biosphere reserve (cp. below in more detail).

Without going into detail, you need to differentiate:

- *Data* (e.g. annual rainfall 2014 at the top of the hill is 230 mm)
- *Information* (e.g. so far in 2015, rainfall is significantly below the annual average for your region)
- *Knowledge* (e.g. the low rainfall so far in 2015 cannot be compensated and requires formulating emergency strategies for farmers and wild animals). Knowledge is not only the raw (biophysical or socio-economic) data, not only its interpretation, but its contextualisation in a system of cultural and scientific concepts.

Data – information –
knowledge

A key difference of UNESCO biosphere reserves in comparison to regular protected areas is the very conscious approach to “management based on knowledge”. The first biosphere reserves were established around world-class monitoring stations and environmental research labs. Today’s biosphere reserves excel in bringing together different forms of knowledge. UNESCO biosphere reserves can be regarded as “custodians of knowledge” for one particular region. They recognize that knowledge can emerge from indigenous/traditional sources, from common-sense experience and from scientific research and they bring these sources together as needed. Yet it is important to identify common denominators of these sources of knowledge. Knowledge needs to be appropriately validated, because tradition, common-sense *and* scientific research can all result in false data and false knowledge. UNESCO biosphere reserves should also play an important role in properly handling knowledge, e.g. as regards Intellectual Property Rights (cp. “benefit-sharing” in section 2.3).

Biosphere reserve are
all about knowledge –
from their beginning

According to the Seville Strategy, biosphere reserves should promote and use interdisciplinary research and other knowledge to improve the management plan and its implementation – and the interaction of humans with ecosystems in general. Research and monitoring should be combined with evaluations of management effectiveness and of individual projects (cp. section 4).

Until today, biosphere reserves function as “*learning laboratories*”, exploring approaches to sustainable development and setting standards for knowledge-generation, e.g. [[NGUYEN2009]], [[NGUYEN2013]]. Many scientists love to do their research in biosphere reserves *because here they may have ready access to data and knowledge, collected in previous years and decades*. Monitoring and long-term research projects (over decades) may be done better here than anywhere else, even if data is sometimes spread across authorities.

“Learning
laboratories”



Case study: Research in the Mare aux hippopotames biosphere reserve, Burkina Faso

The forest around “Hippopotamus Lake”, where some 100 hippos live, and the pools and marshes in the flood plain of the Black Volta River in the west of Burkina Faso have been designated in 1987 by UNESCO. It had been protected by decree in 1937, and by an order of 1968. Unfortunately, these early protective measures were taken without real participation from surrounding communities: Hostility came to the fore since local people felt that the state was denying them their best agricultural land and pastures. The results have been poaching, bush fires, agricultural clearing, illegal grazing, etc., and thus the deterioration of natural resources. Yet the lake and the forest are considered as sacred areas by the surrounding villages and are used as places for sacrifice. Once the biosphere reserve was established, measures to counteract environmental degradation have received various support, including from GEF and the World Bank. Approaches included the active involvement of local populations (traditional leaders, village delegates, teachers), administration (prefect and leaders of local services), and the ministries concerned. The biosphere reserve status has also helped to attract scientific research on hydrologic, piscicultural, wildlife and forestry issues. For example, comprehensive inventories of the species diversity of the flora and fauna have been carried out. Moreover, research on the abundance of fish species together with the fishermen’s cooperatives of the riparian villages demonstrated that species of main economic interest can maintain high growth rates if proper management rules are respected [[UNESCO2013-1]].

What knowledge and what research are needed for managing a biosphere reserve?

Too frequently, managers in their quest for knowledge focus only on natural resources (endangered species, water cycle, etc) and on the biophysical description of their biosphere reserve.

What needs to be known?

Managers need to know many more things, beyond the immediate questions asked in the biosphere reserve nomination form. For example, they need to know *socio-economic aspects*:

- How many people live in a biosphere reserve, where do they live, what is the ethnic, gender and age composition of the population, what are the main sources of incomes, how pressing is poverty, how literate are the inhabitants, what is the school enrolment rate, are there changes in demography and what migratory pressures exist to and from the site?
- What are the livelihoods, job opportunities and forms of land-use exercised by the population?
- Who are the stakeholders, what are their social and economic perspectives and interests, which power structures exist?
- What are the external pressures on the biosphere reserve, what are the vulnerabilities?
- Which causal relationships exist between different trends and phenomena, e.g. global change, local land-use and observed biodiversity loss?
- Which measures can improve conservation, which measures can improve livelihoods and which interactions between these measures could increase effectiveness?

How can you answer these questions?

Answering these questions requires *either*

- Small or large dedicated research projects implemented by specialists of one scientific discipline (quite expensive) or
- Interdisciplinary research projects bringing together many scientific disciplines or
- Long-term monitoring (e.g. by a weather station or by your national statistics office) or
- Specific projects of valorisation of traditional knowledge or
- Joint brainstorming of all stakeholders or
- A combination of all these approaches.

Participative research framing is needed

Most questions can only be answered if they are conceptually well framed in a dialogue and exchange among scientists, biosphere reserve managers, local communities, “Civil Society Organizations” (CSOs) and stakeholders (cp. below: co-design, co-production).

Structural approach is needed

Most questions require a structural approach to knowledge generation which also involves properly storing and disseminating knowledge, translating scientific knowledge into ordinary language and presenting knowledge in a target-group specific language to decision-makers.

Not all research is useful for managers

In many biosphere reserves, research of many different kinds is implemented: fundamental research, applied research, engineering, sociological, and economic or even philosophical research. *Not all this research is useful for biosphere reserve managers - too much unuseful research can lead to “research fatigue”.*

Co-design and co-production as criterion

The question of *usefulness or societal relevance* of research cannot be decided on the criterion whether research is fundamental or applied, also not whether it is done by natural scientists or by social scientists. The criterion of usefulness for biosphere reserves is: Do managers, stakeholders and communities *participate in framing the research question* (this is often called “co-design” of research); and/or do they participate in *devising methods*; and/

or do they participate in the *knowledge-generation* (this is often called “co-production” of knowledge)?

Scientific methods which involve different scientific disciplines are called “*interdisciplinary*” or “*multidisciplinary*”. Methods which involve both natural science and social science are often called “*strongly interdisciplinary*”. Methods which involve stakeholders in research design and knowledge production (“co-design” and “co-production”), are often called “*transdisciplinary*”.

Inter- and
transdisciplinary
research

Since around the year 2000, there have been many efforts to promote “*Sustainability Science*” [[KATES]]. These new research approaches have exactly the same goals as biosphere reserves - societal relevance. Biosphere reserve managers should demand that research projects on their territory follow the principles of “*Sustainability Science*” – this can greatly improve the relevance and usefulness of research projects.

Sustainability Science

However, *biosphere reserve managers may not regard scientific researchers as only “delivering a service” for them*. Researchers have their own goals (e.g. generation of “pure” knowledge, publications, teaching). These goals are also useful for society, but often in an indirect manner. The interaction of managers and scientists must be a *win-win-situation*, from which both benefit. Today, too often, only scientists benefit from their research – which is not their personal fault, but which is due to scientific systems which do not provide enough incentives to steer research towards societal relevance and usefulness. For win-win-situations, managers and scientists need to openly discuss research goals to identify their respective expectations, rules and constraints.

The same goals as
biosphere reserves

“*Sustainability Science*” is said to do exactly this: Problem-oriented research that involves managers and stakeholders already in the formulation of the research design (this means, the research question is generated jointly, it is not imposed from the outset) and research is implemented through close interaction of scientists, stakeholders and managers, cp. also [[UNESCO2006]]. If successful, the results are both academically interesting and at least partially a solution to a “real-life problem”.

Regarding researchers
as partners

In terms of benefit-sharing from research, the Nagoya Protocol of the Convention on Biological Diversity with its ABS scheme gives guidance on the most up-to-date concepts and legal implementation of ownership and sharing of knowledge (cp. section 2.3). In a nutshell, informed consent to the extraction of knowledge should be sought in advance and benefits from the commercial exploitation of any research should be equitably shared.

As explained, the research needs of a biosphere reserve should be identified in a dialogue of scientists, managers, stakeholders and communities, irrespective of whether the research is on, cp. also [[ISH1994]]:

Examples of research
needs which might be
identified in a dialogue

- Evaluating trends in physical data, including occurrence of extreme events
- Characterizing and inventorying biodiversity, understanding dynamics of biodiversity and predicting changes, characterizing needs of individual species
- Assessing ecosystem services
- Evaluating the ecological, economic and social impacts of ecosystem changes
- Evaluating socio-economic and cultural changes (for participatory survey techniques, cp. Appendix 12)
- Evaluating attitudes and expectations of communities and tourists
- Developing practices of sustainable land-use, of green economies, of conservation (of biological resources, of water and soil) and of rehabilitation of degraded ecosystems
- Detecting external pressures and measuring vulnerabilities
- Participating in international sustainability-oriented research initiatives such as “Future Earth”, or in other intergovernmental science programmes of UNESCO such as the “International Hydrological Programme” (IHP)

The third AfriMAB General Assembly in 2013 particularly emphasized the need for further research into ecosystem services and their relevance for moving towards green economies in biosphere reserves [[UNESCO2013-2]].

Managers as coordinators can be supportive in many ways in order to improve and intensify relevant research on the biosphere reserve:

What can you do as a
manager?

- Identify all available databases, articles and reports about past research on the biosphere reserve; if necessary, revalidate them and make them accessible in a local library and/or bibliography, physically or electronically or online (within the limits of Intellectual Property Rights).
- Help creating inventories of empirical data, including data management, and of research and monitoring results.
- Promote the creation of capacities for long-term monitoring of biophysical as well as of socio-economic data (cp. below on Monitoring).
- Promote creation of local capacities to support research, e.g. a small lab or capacities for processing of data and of IT-based model building.
- Ask all researchers (at the beginning of a project) to make accessible to the biosphere reserve all primary or secondary data (as far as possible within the limits of Intellectual Property Rights).
- Improve the mapping capacity of the biosphere reserve, including GIS referenced data, exact zonation, and map overlays including of cultural and historic sites.

Case study: Research on communities' knowledge in Mare aux hippopotames biosphere reserve, Burkina Faso

Scientists from various research institutions of Burkina Faso did a survey in 2006 of the communities of the biosphere reserve, including their economic activities, human-wildlife conflicts, and knowledge and attitudes towards the biosphere reserve and towards wild fauna. This survey was intended to better address some of the main local problems such as wild fires, poaching, conflicts with hippopotami, illegal fishing with machines, illegal grazing and illegal use of green wood. Data were collected by means of formal surveys in six villages and fishing camps within and bordering the biosphere reserve. The survey sample consisted of 8 to 9 households selected at random in each village, irrespective of ethnic groups. The survey was conducted in the national language Dioula. Interviews were conducted in a semi-structured manner, following the Rapid Rural Appraisal method [[GUEYE]]. All surveyed individuals are mainly farmers. Stock farming is the main secondary activity for 32%, 14% work as patrol guards for the biosphere reserve secondarily. Crop damage by monkeys, hippopotami and elephants are cited by 35%, 30% and 14% of the surveyed individuals. Individuals were also asked to name wildlife that they encountered in the biosphere reserve. More than 30 species of fauna (mostly mammals) were named by at least half of the respondents (without support), demonstrating a considerable awareness of the wildlife diversity – however, the actual number of different species found today in the biosphere reserve is lower. Four of these species of wild fauna are used in traditional medicine or for supernatural forces. An example is burning the tail bones of the hippopotamus and using them to treat sinusitis. For 50% of the population, there are customs linked to hunting. 60% of those think that verbal or written authorization exists for this practise. 96% of the population is aware of the UNESCO designation, 91% of them attribute the improvement of vegetation diversity and the return of wild fauna to the region to the work of the biosphere reserve. [[UNESCO2013-1]]

Identify and evaluate community research needs

- Strategically collect and document/report your open questions and your limits of knowledge (of the biosphere reserve management authority, of stakeholders and of communities – *community research needs*); establish a local working group that identifies which of these knowledge gaps actually can be closed through exchange of knowledge within the biosphere reserve; whenever you meet a scientist, try to find out whether there are already new research results that close any of your knowledge gaps; thus, try to move towards a list of “really open research questions”.
- Try to identify those “really open research questions” which could be addressed by bachelor, master or PhD theses – in order to promote that they are really taken up.
- Organize a “biosphere research day” – either locally in the biosphere reserve or at the next suitable university/research institute, presenting your “open questions” to a larger community of scientists, especially those questions suited for individual theses – also present the valorisation of traditional knowledge in this context.
- Establish framework agreements or MoUs with suitable universities and research institutes.
- Examine, together with stakeholders and experts, research proposals, research protocols and procedures, inventories, monitoring programmes, in order to recommend improvements that meet your needs.

Use the results of the research

- Actually use research recommendations which are targeted at improving management into your routines and practices.
- Present research recommendations to other suited levels of decision-making.
- Be careful that any research especially in the core area is “non-destructive”.
- Promote research approaches that have the added value of empowering communities, e.g. participatory rural appraisal or participatory action research; cp. Appendix 12.

Through UNESCO, you can also have access to satellite monitoring data, cp. the “Open Initiative”, supported in particular by the German Aerospace Center [[OPENINI]].

Science and traditional knowledge

Definition of traditional knowledge

The UN Convention on Biological Diversity (CBD) defines “*traditional knowledge*” as “the knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles” (cp. CBD, Article 8 (j)). Analogously and for simplicity, we will use the term “traditional knowledge” only, not “traditional, local and indigenous knowledge”. We thus do not differentiate whether knowledge is that of indigenous or “non-indigenous” communities, or whether it is “really old” or only “well-established”.

Origins of traditional knowledge through trial and error

Traditional knowledge systems can be very complex, consisting of knowledge, know-how, skills and practices, which can be interwoven with values, spiritual beliefs, narratives and representations. Such knowledge systems often have been developed and maintained by communities over many centuries. Many elements of traditional knowledge are philosophical, ethical or religious, which have emerged through introspection or anecdotal observation of the world. But, *many other elements of traditional knowledge have emerged through trial and error and subsequent refinement of “theories”, building on close observation of natural processes*, e.g.

Case study: Empowerment of traditional knowledge in Kruger to Canyons biosphere reserve, South Africa

The biosphere reserve “K2C” covers a huge region of 2.6 million hectares and includes the grasslands of the Mpumalanga Drakensberg escarpment, the Afromontane forests of the kloofs and upper slopes, and the Savannah of the lowland. Eight perennial rivers have their source in the escarpment, including Olifants River and Blyde River (Mohlatse River). The biosphere reserve was designated in 2001 by UNESCO. Since 2007 the management entity of K2C has the form of a voluntary association, the K2C Representatives Council, which elects an executive committee. The K2C Biosphere Reserve Region Non-profit Company, with a Board of Directors of six, was subsequently registered to facilitate management. The majority of the indigenous population is very poor and lives in the countryside, being highly dependent on natural resources, including on medicinal plants for traditional health care. The traditional healers working in the biosphere reserve harvest these plants based on traditional knowledge, which also generates income. Some products have started to being marketed to cosmetic companies in South Africa. The biosphere reserve makes great efforts to emphasize and cherish the role of the healers as important custodians of complex knowledge as well as transmitters of traditional values.

- Diseases and their healing, in particular medicinal plants
- Successful and sustainable agricultural methods
- Seeds, their crossbreeding and storage
- Behaviour of migratory animals, including for navigation
- Interactions of species and ecosystems
- Threats to species and ecosystems and methods for their conservation and monitoring of human behaviour

In fact, many forms of traditional knowledge have implicitly applied the “scientific method” (if very broadly defined as “trial and error”). While such inquiries have seldom been systematic (or with a view to “falsify” existing theories), the inquiries have often been *conducted over decades and centuries and are still ongoing*, and thus result in very robust knowledge.

Too often, scientists or other “modern” people have dismissed traditional knowledge, because these systems often use spiritual “background theories”. But a knowledge system can be of high quality, even if the “background theory” is unconventional. Traditional knowledge can be wrong. *But also science can be wrong*. Whether traditional knowledge is trustworthy or not, cannot be judged only on the basis of whether it is traditional knowledge. However it needs to be emphasized: Some specific forms of traditional knowledge *may clearly not* be celebrated – forms that infringe on human rights, including women’s rights, or that empirically result in unsustainable practices.

The “background theory” is not decisive

Provided that traditional knowledge fulfils this last condition (respect of human rights and of sustainable development), and provided it is real knowledge, it should be celebrated not only as a “knowledge input”, but also *culturally*, as an important element of the *world’s cultural diversity*.

Taking a balanced position towards traditional knowledge



Case study: Monitoring in Ichkeul biosphere reserve, Tunisia

The biosphere reserve, designated in 1977, contains the lake and wetlands that are a major stopover point for hundreds of thousands of migratory birds, such as ducks, geese, storks and pink flamingoes, who come to feed and nest at this site. It is a rather small biosphere reserve with 12,600 ha. Ichkeul is the last remaining lake in a chain that once extended across North Africa and it is characterised by a very specific hydrological regime, a double seasonal alternance of water levels and salinity – with salty water flowing in from the ocean and back out again with the seasons. Ichkeul is also a Ramsar and a World Heritage site, thus the biosphere reserve designation and sustainable development have not been at the centre of attention before. Six government departments have responsibilities for different aspects of the biosphere reserve. In terms of nature conservation, there have been enormous efforts though, supported by research (e.g. on the hydrological model and ornithology) and monitoring. Particularly effective is the monitoring, based on a programme developed jointly with IUCN in 2002, including the water resources and waterfowl. Between 2003 and 2008, GEF funded the preparation and implementation of a Management Plan and a Community Development Plan, approved by all parties in 2007. Their main features are: a progressively more autonomous management structure; development of zoning; management of water resources; participatory management with local communities; and generation of income through sustainable tourism. The Ichkeul National Park Management Committee has also been formed with representatives from local inhabitants, the Ichkeul Agricultural Development Group (an association of local farmers and inhabitants), government departments, and other stakeholders [[RAMSAR2012]].

Summary: positioning towards traditional knowledge and communities

Biosphere reserve managers should

- Have an *open mind* towards traditional knowledge
- Promote its use as *complementary to scientific research*, improving management effectiveness
- Particularly focus on the traditional knowledge of *women* as custodians of sacred knowledge and power, as medical specialists, educators, healers and ritual specialists, including their lifestyles, livelihood patterns, and oral traditions
- Empower *indigenous communities* as important but vulnerable guardians of unique knowledge
- Actively involve communities in *research co-design*
- Promote the recognition of traditional legal and cultural practices, provided that they are consistent with human rights, within formal local and national legal systems

Monitoring

Differences of research and monitoring

Scientific research is different from scientific monitoring. Research is targeted at identifying new methods, data or theories; research can be open or closed, but it is organized in *individual, time-bound projects*. Monitoring in contrast can be characterized as a *long-term approach*, detecting changes over long terms. Monitoring continuously *applies one methodological standard and one form of data protocols* – while research seeks to optimize methodological standards or data protocols. In summary, monitoring means repeated observation (of biophysical or socio-economic data), according to prearranged schedules in space and time and using comparable data collection methods. Today, there are more and more efforts at African or global standards of monitoring, cp. for example [[UNEP2006]].

Biosphere reserves are useful for monitoring

Monitoring has always been a key dimension of the work of a biosphere reserve – exactly because biosphere reserves are not “project-based”, but are institutions which should exist at least for many decades. Since biosphere reserves are also representative of a certain ecosystem, they are the ideal places for a globally comparative monitoring of ecosystems and the variables that influence them. Monitoring is also necessary to evaluate whether a biosphere reserve fulfils its purpose and whether a vision is *actually* achieved – Is poverty *really* reduced? Can species numbers *really* be maintained?

Monitoring as follow-up of research

Often, monitoring systems are initiated through research projects, when methods devised in a research project are continued. However, simply continuing a research project in the long run is not necessarily the best approach, because methods used in a one-off research project can be quite expensive. In order to be maintained in the long run, monitoring methods should be as cheap as possible. Monitoring should also follow, to the extent possible, national and international protocol standards, wherever possible, data should be provided to international databases (e.g. for river water runoff, the “Global Runoff Database”) – this typically requires going through a national service (e.g. national weather service). Other examples of monitoring are regular socio-economic surveys, e.g. of household income, composition of communities, expectations and attitudes; such data should be disaggregated by relevant data such as sex, age, etc. (cp. Appendix 12).

M&E as an aspect of project management

The Seville Strategy proposes, *inter alia*, the following monitoring: “making inventories of fauna and flora, collecting ecological and socio-economic data, making meteorological and hydrological observations, studying the effects of pollution, etc.” and “developing indicators of sustainability (in ecological, economic, social and institutional terms)” (cp. Appendix 3).

Monitoring and evaluation (M&E)

The emphasis on continuous scientific monitoring is particular to UNESCO biosphere reserves in the context of its scientific MAB Programme. It is not to be mixed up with “monitoring and evaluation” (M&E) which is a normal and necessary element of the work of every manager, in particular in the context of project management. Such M&E does not necessarily have to follow scientific standards – although in order to demonstrate real achievements and societal change, the impact of a project actually needs to be measured with almost scientific methods, e.g. in projects targeting society through surveys with test groups.

M&E actually do not start at the end of a project, but before its inception, through the definition of goals; they must be measurable and accompanied by appropriate success indicators and associated data requirements and benchmarks (generic or situation-specific indicators).

This is the cycle of project management (cp. below on adaptive management):

- Step 1: Define goals, expected outcomes and associated success indicators.
- Step 2: Define outputs that are needed in order to achieve the outcomes.
- Step 3: During and after project implementation, measure progress.
- Step 4: Summarize the success in attaining goals according to indicators.
- Step 5: Improve your approach (lessons learned).

Always be clear: What exactly is evaluated, by whom, according to which standards, and why? What will be done with the results, how can we optimally use the results for the benefit of the biosphere reserves and its communities?

M&E should be regarded as the most important learning opportunity for improving the biosphere reserve management. Assessments, even of small-scale projects, can positively influence the dynamics of social change in a community. For the implementation of each strategy or project, M&E is a necessary, integral part. Without M&E, you can just claim that you had success, but not many people may believe you; positive evaluation results are an excellent feedback for all those people who invested their time and resources. Conversely, lack of evaluation and follow-up will lead to partners not to take such processes seriously in the future.

M&E can be approached as setting quantitative and qualitative performance indicators in advance and then monitoring their values; if performance indicators have not been set in advance, you can and should still use a “lessons learnt” approach. For an example lessons learnt, cp. [[K2CLESSONS]].

Knowledge and power

Management needs knowledge, but this is a two-way relationship. Those who acquire knowledge also acquire power. Knowledge is truly not the only source of power, but an important one. The philosopher Francis Bacon in 1598 wrote “knowledge is power”; 600 years earlier, a Persian poet used a similar expression. For the philosopher Michel Foucault, knowledge allows more control which in turn allows better inquiry and thus better knowledge. For Foucault, the technical knowledge of steam engines and guns of the 19th century allowed missionaries and explorers to prepare *imperialism and colonialism*.

What is crucial: better knowledge in a given situation *means more available options*. A studied agronomist knows alternative crops that can be cultivated in a given climatic region: thus, if pests threaten traditionally planted crops, more options turn a “hopeless disaster” into a “manageable problem”. Knowledge means more options, which means more freedom and thus more power – not necessarily over other people, but *power not to be victim of adverse external pressures*.

For biosphere reserve managers, the connection of knowledge and power means five things:

- Managers have to be aware of the “power aspect” of their own personal privileged knowledge position – and avoiding at all costs misusing this power.
- Managers have to improve knowledge-based approaches to conservation and development, through leveraging traditional knowledge and through involving scientific research to the extent possible.
- Managers have to seek and share experiences with other biosphere reserves, but also with places (nationally or internationally) that do not enjoy biosphere reserve status.



Most important learning opportunity

“Knowledge is power” – an old observation

Knowledge makes available more options for action

What does this mean for biosphere reserves?

- Managers should act appropriate to their knowledge and mandate, not beyond (*subsidiarity*).
- Managers have to empower communities through sharing knowledge with them.

Power is not only knowledge

However, power is not based on knowledge alone. Power can derive also from democratic representation, from state delegation, from real-estate ownership, from aristocratic lineage, or from access to large financial resources. Biosphere reserve managers may not be deceived that taking decisions based on knowledge and rational arguments is sufficient against entrenched power structures. Powerful institutions will not accept the rationality and evidence-base of arguments which are directed against their interests – they will taunt and dismiss such arguments as themselves only being “interest- or power-driven” and block all related decision-making

Knowledge is not enough for effective management

Therefore it is important to emphasize once more that managing a biosphere reserve requires being fully aware of all existing stakeholders and their interests, seeking consensus and win-win situations with them, giving stakeholders a sense of ownership.

Limits to Knowledge

It is impossible to manage without uncertainty

Management, including the management of natural resources, is always associated with *uncertainty*; knowledge is never complete, to every form of knowledge, there are limits – sometimes very definite limits, sometimes vague limits. No matter how careful a manager of a biosphere reserve will analyze cause-effect relationships between different phenomena as well as between management interventions and their potential outcomes, she/he will always have to deal with uncertainty. In any concrete decision situation, a “full picture” and a “complete” scientific model will never be available. Because of global environmental change, because of global financial crises and the increasing fragility of many states, *external pressures and their uncertainties* both increase considerably.

Three types of uncertainty of knowledge

There are at least three **types of uncertainty of knowledge**:

- *Uncertainty as a scientific concept is something very precise. It refers to the probability that a certain prediction* (about a laboratory experiment or about the entire world) will take place as predicted. There are margins of errors that can have many origins, e.g. the number of repetitions of an experiment, or in cases of unrepeatable experiments (e.g. climate change), variations of open variables and scientific models. For scientists, *this uncertainty* can be described very well and supports improving knowledge; these uncertainties are typically described in terms of “standard errors” or “standard deviations”.
- Another source of uncertainty is that *theories/models cannot take into account all factors* (e.g. because that would require too much computing power or because nonlinear feedback mechanisms dominate). This is one reason for a quite substantive long-term uncertainty in climate change predictions. Also the human society and its institutions are so complex that they cannot be properly described by a mode.
- Another source of uncertainty is that any model about some phenomenon is based on *assumptions about other phenomena*. Again on the example of climate change, the long-term warming will significantly depend on whether humankind will soon reduce the emissions of greenhouse gases – or not. This is called “*scenario building*”. Such kind of uncertainties about the future will persist, even for perfect theories/models: Even if you know very well that under stable political conditions your local biodiversity can be conserved, this knowledge will be of little value if a revolution or a civil war breaks out.

Uncertainties of action

In a specific situation, there are also many other forms of “**action uncertainty**”:

- Uncertainty about *what really is the problem* in a given situation; what is the *problem* to be addressed – and what is its *context* which cannot be changed.
- Uncertainty about *which type of approach* or theory or model should be used to describe and solve the problem: Can you apply a known theory? Do you need to develop an entirely new model?
- Uncertainty about the *action of other partners*. Will stakeholders join a coalition that is needed to address a problem? Does another government department address the problem from a different perspective, but in parallel?

In concrete practical questions, even if you make efforts to draw upon all available knowledge and to gain additional knowledge, there are limits. There are limitations for a knowledge-based approach, there are disagreements about data requirements, research to be undertaken, need and value for forecasts and risk assessments, etc.

Don't foresee the future, enable the future

Thus, some people have said that one should not worry too much about the future because by its nature it is unpredictable. Other wise women and men have said that **if you do plan for the future, you make the future happen; if you don't plan, you will later wonder what happened. Uncertainty is not an excuse for inaction.** Malcolm X said: “The future belongs to those who prepare for it today.” Antoine de Saint-Exupéry said: “As for the future, your task is not to foresee it, but to enable it.”

An important part of **enabling the future is to properly deal with uncertainties**. Be aware of the different kinds of uncertainties (uncertainties as intrinsic parts of a model, uncertainties as not-yet understood parts of a model, unpredictable external contingencies, action uncertainty). Use predictions, but don't rely too much on predictions. Know the limits of knowledge.

Enabling the future needs a constructive approach to uncertainty

Biosphere reserve managers cannot eliminate uncertainty. But through enabling dialogue among all stakeholders and communities, they can help partners to understand and cherish a knowledge-driven and learning-by-doing approach which also takes well into account uncertainties [[WALTERS]]. Jointly understanding the uncertainty and risks associated with management interventions, as well as jointly developing scenarios improves management quality and stakeholder engagement.

Establish a culture of knowledge

What is adaptive management?

Global environmental change is a fact; the number of economic and financial crises increases, the number of fragile states increases. For every manager of a biosphere reserve this means that uncertainty of management strategies is increasing – both as regards natural resource management and socio-economic interventions [[USDA]]. “*Adaptive management*” is the straight-forward answer to rising uncertainty. It has been defined as “a structured, iterative process of robust decision-making in the face of uncertainty, with an aim to reducing uncertainty over time via system monitoring” [[DOI]].

Adaptive management is an answer to rising uncertainties

“Adaptive management” can be described in very scientific and abstract terms; the scientific approach dates back to the two Canadian ecologists C.S. Holling and C.J. Walters, starting in the late 1970ies [[WALTERS]]. But the basic concepts are simple. *Adaptive management means that there is monitoring, feedback and learning from the results of past decision-making for future decision-making, such that future actions become adapted. A second crucial aspect is embracing uncertainty. A third crucial aspect is participative management.*

The basic ideas are simple

The “Open Standards for the Practice of Conservation” of 2007, published by the “Conservation Measures Partnership” (CMP) are a concrete implementation of such adaptive management [[CMP]]. In thousands of nature conservation projects, adaptive management as understood by the “Open Standards” has since been implemented worldwide: in CSO-driven projects, government projects or ODA projects. The WWF and the Nature Conservancy, for example, have taken up adaptive management as their own management standard. African biosphere reserves have typically taken up adaptive management only in principle, not in practice

The “Open Standards” have established a true standard



and not following one standard. However, the increasing uncertainty of managing complex socio-ecological systems in times of climate change make adaptive participatory management a practical necessity.

Adaptive management integrates different forms of knowledge including traditional and interdisciplinary scientific knowledge into dynamic models, under the condition of uncertainty, in order to make better predictions about the impacts of certain management actions. The results of previous interventions in the same region and in other regions are fed back into the decision-making, *as a learning process*. Learning is based on monitoring and evaluation.

Adaptive management is knowledge-based

Techniques differ in their ambition

Adaptive management can most easily go wrong because of mistakes in the monitoring of results. This step of monitoring is typically not sufficiently prioritized. For examples, monitoring of results is done in a fairly inaccurate or incomplete manner, monitored data are not properly analyzed or interpreted.

Several researchers, e.g. [[STOLL2008]] have proposed that a form of adaptive management, called “management as mutual learning” should be the most appropriate management style for biosphere reserves.

Several techniques of adaptive management exist; they differ substantially in detail. Later in this Manual, in section 4, we will come back to this issue. Some adaptive management techniques have “little ambition”, i.e. they focus only on *incremental* or reactive improvement of actions, but not on dialogue or an overall strategic and purposeful direction. *Passive adaptive management* uses past data very consistently to determine the most suitable approach in a new situation; but such “passive” approaches have a limited awareness of uncertainty and they have the implicit conviction that there can be a “right” model. *Active adaptive management* consistently integrates the use of “experiment” and uncertainty into management design and implementation. *Integrated adaptive management* techniques focus on strengthening interactions of managers with stakeholders and scientists - thereby promoting learning *and* building relationships. This Manual promotes such integrative approaches.

Some general
recommendations

Whatever technique you use, make sure that

- You remain focused on your problems and not on the technique (don’t let yourself confuse by a technical approach).
- The technique *enhances dialogue* of managers with stakeholders and other outside experts such as scientists.
- The technique does not introduce *an artificially skewed picture of reality* or bias.
- The technique *strengthens your management institution* – the best technique is worthless, if the implementer suffers from implementing it.
- The technique really moves you forward by *widening the space of options* and/or eliminating options that under closer inspection are unlikely of doing much good.
- You *identify helpful knowledge gaps* and that the result is not “that you don’t know anything”.

Applying a supportive, simple technique of adaptive management can lead to helpful experiences of combining knowledge generation/application with management. They can help re-inventing management as a source of learning i.e. learning to manage by managing to learn. Through many iterative cycles, by “joint trial-and-error”, and moderated by you, stakeholders, entire groups and societies better learn to respond to changes; i.e., they may adapt.

SECTION 3 BIOSPHERE RESERVE MANAGEMENT AND FINANCING



all photos © Sheila Ashong

SECTION 3

BIOSPHERE RESERVE MANAGEMENT AND FINANCING

This section describes in detail why biosphere reserves should be governed by certain committees with specific compositions and mandates. It also describes why biosphere reserves need certain documents, in particular a management plan (including its implementation and monitoring), and which legal, administrative and funding frameworks seem suitable. Reading this chapter you should understand:

- That there can be very different structures to manage a biosphere reserve
- That biosphere reserves have strong international legitimacy and also many partners that can be addressed by you with good reason
- That periodic reviews are necessary and helpful for you
- What is a management plan and why do you need one?
- How can you address donors?

3.1 Governance structure of a biosphere reserve

No universal structural model

UNESCO does not specify or even prescribe what kind of organizational structure should be set up in order to implement the concept of a biosphere reserve. It only expects that there are appropriate structures – already in the process of nomination. In the following we present two “models” which often have been found useful as a suitable governance structure – not only in biosphere reserves, but in all organizations which are interested in being more inclusive towards their stakeholders.

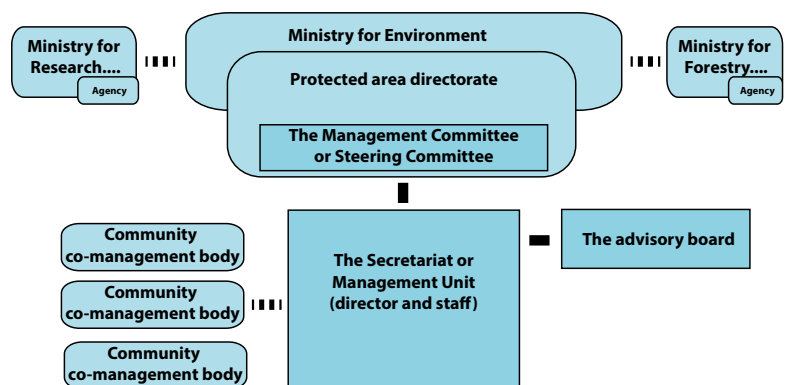
3 components: secretariat, committee, and advisory board

Both models in principle have three main constituents:

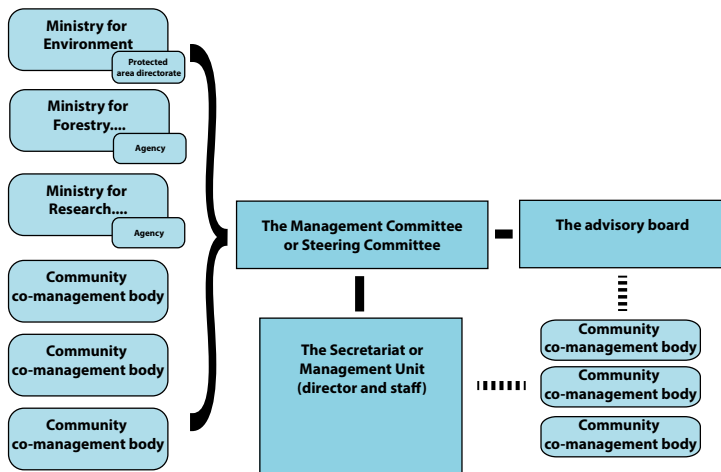
1. A “secretariat” or “management unit” of the biosphere reserve consisting of professional staff who performs full-time paid work every day in concrete activities for the biosphere reserve
2. A “management committee” or “steering committee” or “executive committee” with key decision-making power
3. An “advisory board”, which may also have a specific scientific mandate

The “authority model”

The first model is the one most typical in use in Africa; we call it the “**authority model**”. In this model, the “secretariat” or “management unit” is more or less dependent on one ministry or even part of that ministry – either the Ministry for the Environment or the Ministry for Forestry or a similar ministry. The dependence can be directly or through the “Directorate for Protected Areas” which in some countries is a part of the ministry, in other countries is more autonomous. In similar setups, the “secretariat” or “management unit” depends on another national (or provincial) authority. If in this model there is a “management committee”, it is typically instituted by the respective ministry or directorate. Cooperation with local communities and other local authorities can be realized, but typically not through the management committee. There can be an advisory board, but it is rather a loose connection.



What is typical about this model is that the “management unit” itself has a sovereign mandate and “highest authority”, at least with regard to one topic (the topic for which the ministry is in charge), such as nature conservation. As a consequence, it is often difficult for the “management unit” to become active in other fields such as community engagement or sustainable development. As another consequence, such “management units” are often legally only in charge of the core area, i.e. the legally protected area.



In this Manual, we promote a second model, entitled “NGO model” which so far is not widespread in African biosphere reserves (the rather young Ethiopian biosphere reserves follow this second model and also most of the South African biosphere reserves). In this model, the “management committee” as supreme decision making body is composed of several different institutions and authorities. The “management unit” therefore has less formal authoritative or executive power such as fighting poaching, but it can be active in several thematic areas and in all zones. It can act more like a platform to bring together diverse interests and the communities can have a direct role in the supreme governance model. It can also flexibly react to new situations and offer conflict resolution [[HAHN]].

The “NGO model”

While an “authority model” biosphere reserve has at least a sectoral relevance, for at least some zones, the “NGO model” biosphere reserve managers must gain their acceptance by proving their societal relevance for communities. This is natural: “When UNESCO designates a biosphere reserve, this status does not per se make it a relevant actor in managing its area. Rather, its institutional arrangement must render the biosphere reserve pertinent” [[HYMAN]]. For a study on some institutional arrangements of biosphere reserves outside Africa, cp. [[GEF2007-1]].

The management unit / secretariat

Composition: The management team or secretariat consists of all employed staff; it may also include (national/international) consultants, volunteers, or interns, as appropriate. Examples for biosphere reserve staff:

- Rangers working in the field, for example on patrols, in nature conservation projects, in forestry, or as tourist guides
- Community workers and/or community engagement specialists
- Accountants or project life-cycle coordinators
- Administrative staff, clerks, and secretaries
- Biologists or other scientists or research coordinators
- Communication and education experts
- IT/GIS/database/monitoring system manager, statistician, photographer and librarian (for GIS, [[SWETNAM]])
- Press spokesperson/public relations manager and website administrator
- Tourism marketing expert
- Agricultural advisor
- Fund raiser, expert on international cooperation, donor focal point and
- Director (or “chief executive”)

A possible staffing table

UNESCO does not recommend specific positions and specific job profiles in the administration of a biosphere reserves; UNESCO requires that the biosphere reserve fulfils its functions. In order to do so, some biosphere reserves have management teams with 40 or more staff, others have much less; the minimum number of staff depends on the tasks assigned and on the size of the area; but even a biosphere reserve with very few official “authoritative” or “sovereign” tasks should have at least around 10 staff.

No universal model prescribed

To employ staff (permanent or temporary) directly by the biosphere reserve organization can sometimes be difficult, especially if the organization is a government authority; many government authorities today are asked to cut their staff in number. Some biosphere reserves therefore cooperate closely with an “associations of friends” (cp. section 4) which can be used as well to hire staff. In this way, there are biosphere reserves with “official staff” of only 3 or 4, but with *effective access to manpower* of more than 20 staff.

Innovation and flexibility for staff

The most typical job profile of the list above is the one of the ranger; most biosphere reserves will have several of them, some have more than 10 rangers. Most biosphere reserves still need to become aware that employing rangers is *not sufficient*; rangers are needed, but they can address properly only one of the three functions of a biosphere reserve (biodiversity conservation). Of course, at least some staff is needed with in-depth knowledge of the most important ecosystems in the biosphere reserve. But there are many other job profiles and the corresponding staff members need the matching level of education and professional skills. *In particular*, they need the skills for closely interacting with communities. This includes communication and negotiation skills, (multi-) language communication, respectful attitudes when working with communities, as well as the valorisation of different forms of knowledge. *Several skills can be improved through on-the-job training.*

You need rangers, but you need a much more diversified skill set as well



The office building should allow easy access

The management team should be based in a properly equipped office building (or several buildings) within the biosphere reserve, at locations which allow easy access to the entire region. The location of the office(s) should also allow the communities to get easy access to the management unit. The office building(s) should be fully functional, it does not need to be – maybe should not even be – representative; managers serve the communities as moderators; they are not “governors”. Obviously, the office building(s) should be equipped according to its/their functions: for example if there is an archive, it needs to be protected against humidity and insects; doing research on biological samples requires a refrigerator. Electricity, communication technologies and transport are needed in any case.

Typical tasks and responsibilities of the management unit

Responsibilities of the management unit vary greatly from one biosphere reserve to the other. A proper secretariat should have *well-defined statutes, job profiles and rules of procedure*. Typically, the secretariat has the task to implement decisions taken by the management board, or in the “authority case”, by the government. Of course, the secretariat will also need to prepare and summarize meetings (e.g. of the management board and of the advisory board), and will need to prepare drafts such as for the management plan, for strategies, visions or the periodic review. Other typical permanent tasks include:

- Project coordination, project management and project implementation, including through activities on the ground, through workshops, public hearings, awareness raising, education, research as well as through planning, accounting and documentation
- Engaging with stakeholders and communities
- Patrolling the biosphere reserve and doing other forms of surveillance
- Facilitating scientific research and monitoring, performing data collection and standardization as well as updating of maps
- Project development and fundraising
- Communication with internal and external partners, including through electronic communication, through public relations and by maintaining a website
- Sharing and disseminating knowledge and success stories to other biosphere reserves and the public at large
- Maintaining a prospective and retrospective calendar
- Archive, documentation and data base management
- Financial accounting
- Maintaining contacts towards UNESCO and MAB bodies
- Preparing regular reports, annually and at the end of projects

Project management skills are needed

Most of these tasks, especially accessing and maintaining access to a diversified funding portfolio (cp. section 3.5) depend on *project management skills*. Only if you write good proposals with a clear-cut strategic approach and clear priorities, will you get funding. Only if you implement projects well, and if you administer your funds well, will you get funding next time. Proposal writing, project scheduling, delegation of responsibility, controlling, project lifecycle monitoring, accounting, and appropriate reporting are all needed. These are skills which can be learned; but to be proficient in all of them, you need practical experience of many years. Thus, it is *very important to plan long “handover periods” for the transfer of skills and site-specific knowledge in cases of staff replacement or staff transfer.*

The management board

“Management board” is the term chosen in this Manual for the decision-making body, although there can be very different names. Such a decision-making body exists in cases where a biosphere reserve is run by an independent organization, such as an “association of communities”, “non-profit company”, CSO, or foundation.

The decision-making body

There are also many cases in which the “governing organization” of a biosphere reserve is a *governmental authority: either a stand-alone authority or a department or branch of a national or provincial authority*. In these cases, there will most likely not be a “management board”. In these cases, several tasks of the “management board” will be executed by the “advisory board”.

Between the two “models” of governance of UNESCO biosphere reserves, the “NGO model” and the “authority model”, there are also combinations in which one of the three functions of a biosphere reserve is implemented rather in an authority model, and the two other two functions in an NGO model. Both models have their benefits and their shortcomings.

The two “models” can be mixed

Responsibilities include:

- Approving long-term and medium-term strategies, visions and in particular the management plan, as well as their updates
- Approving annual work plans and budgets, including staffing provisions, infrastructure requirements and operating costs
- Monitoring and evaluating the progress of the implementation of plans and strategies, based on regular reports of the management unit
- Adopting financial / administrative rules and personnel management procedures in accordance with national law
- (if appropriate) Appointing the director and staff
- Adopting official (annual) reports to the MAB National Committee and to UNESCO
- Discussing thematic and strategic opportunities and new partnerships

Typical tasks and responsibilities

Composition: The appropriate composition has to be chosen locally, according to the legal framework and the specific needs. Some management boards will consist almost exclusively of representatives of local communities; others have a very diverse composition. On this issue, this Manual does not make any recommendation, but wants to provide inspiration.

No general recommendation on composition possible

Whoever is sitting on the management board needs to have a good local reputation. Wherever possible, representatives of local communities should be part of the board. It is up to national law, whether these representatives are democratically elected or chosen according to traditional rules. The rules of representation must be accepted by everybody (e.g. it might lead to conflict that a town is represented by the elected mayor and a village by an elder). Do not only include representatives of larger communities/towns, but also of small villages (on a rotational basis).

Include local communities

It is wise to include the representatives of the 2-5 most relevant provincial government authorities/agencies. It is also wise to include representatives of the most important economic sectors, e.g. agriculture, livestock farming, tourism, or mining. Importance of economic sectors can be determined in terms of GDP *and* in terms of employment – formal and informal employment. Individual representatives of important NGOs/CSOs, of educational entities and the media might be included as well. The director of the management unit/secretariat should also have an *ex officio* seat on the board.

Include agencies and economic sectors

Case study: Management model of Cape Winelands biosphere reserve, South Africa

The biosphere reserve of some 300,000 ha, covering part of the world-famous Cape Winelands, 40 km inland from Cape Town, was designated in 2007 after an extensive public participation process, focusing mainly on private landowners, and conducted by a team of consultants, appointed and funded by the District Municipality. This biosphere reserve is managed by a private non-profit company, registered under Section 21 of the South African Companies Act. The management is done in collaboration with relevant stakeholders, the management committee incorporating a Board of Directors, a technical committee providing technical advice to the Board and a coordination unit. This structure is similar to the other two biosphere reserves in South Africa’s Western Cape Province — Kogelberg and Cape West Coast. The “Western Cape Biosphere Reserves Act” makes provision for financial assistance from the provincial government and stipulates that “all land uses and land use plans within a biosphere reserve must comply or be consistent with the framework plan concerned.” The draft spatial framework plan is based on bioregional planning principles. While aiming to equally address all three functions, a focus exists on social upliftment and sustainable development. Of the core areas, 93% are managed by one other institution, namely the “Western Cape Nature Conservation Board” (CapeNature) [[UNESCO2013-1]].

The board needs legitimacy for its decisions	The most important aspect when considering the composition of the management board is: <i>Who should take part in its decision-making? Will the decisions have due legitimacy and authority and will they be accepted by everybody?</i> Of course you, as the representative of the secretariat, will have to implement these decisions. Thus, it is important to include “powerful” representatives; yet it is just as important to include representatives of “vulnerable groups” (cp. section 4) and minorities. Good governance does not only listen to the majority, but takes care of the needs of minorities, especially if they are vulnerable.
Include women	The same reason demands an active involvement of <i>women</i> into the management board, and also young people. If all representatives of local communities are men, try even more to identify suitable women as representatives of economic sectors and NGOs. When inviting a certain community or association to become member of the management board, stress the priority that you attach to the empowerment of women. If your management board (or any other board) continues to be dominated by men, try to empower women through support to women’s associations (including economic cooperatives), training, and administrative interventions including promoting access to land ownership and to free investment opportunities.
In the early days, start pragmatically	How to agree on the composition of the management board? In the early days of a biosphere reserve, start pragmatically from a small group consisting of people who have been the “main drivers” of a biosphere reserve nomination, together with key representatives of government and communities. This “ <i>initial</i> ” <i>management board</i> should be transformed as soon as possible into a body with optimal representation. The <i>size of a management board</i> can vary substantially; there are boards with 5 members, there are boards with 30–40 members. As a rule of thumb, board meetings with <i>up to 15 participating members</i> are effective in promoting discussion and exchange of views.
Don’t make your boards too large	
Rotation can allow minimizing size	Also in terms of <i>rotation</i> , the members of a management board can have different status; quite likely, the 2–5 most relevant government authorities/agencies must be continuously represented. But, for example, the representatives of communities can rotate: one rotating representative of all towns larger than (for example) 5,000 inhabitants; one rotating representative of large villages; and one or two rotating representatives of small villages. In case of nomadic populations, they should be represented as well.
The chairperson and the role of the management unit	The <i>chairperson</i> of the management board should be elected according to her/his expertise, proven moderation skills and his broad acceptability in the entire board, based on certain neutrality. The role of the director and her/his management teams consists in preparing the discussion, together with the advisory boards, including through working documents and decision papers; in providing additional information as requested; and in documenting decisions (and discussion if needed).

The advisory board

Advisory boards do not decide	The main rationale for the composition of the management board is legitimacy. The advisory board, in turn, has the rationale to involve all those other people that you as a manager need as well, to support <i>evidence-based strategic decision-making</i> . Advisory boards do not decide: they <i>prepare decisions</i> (of the management board or any relevant government entity) through recommendations. Ideally, these recommendations are based on two factors: the best possible knowledge available and broad participation. Another word for an advisory board can be “board of trustees”. The composition of the advisory board will normally be decided upon by the management board, upon a proposal of the managers. You should base your proposal on exactly these two considerations:
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Case study: Management committees in Bia biosphere reserve, Ghana

The Bia biosphere reserve, designated in 1983, covers a forest in Western Ghana with some of Ghana’s tallest trees. Bia has many treasures: the Apaaso sacred grove and its pool, renowned for its healing power, species such as the African forest elephant, the endangered bongo, over two thirds of Ghana’s butterfly species and the giant African snail. The core area is composed of two protected areas, including the Bia National Park; the transition area comprises about 43 communities, which harvest timber, snails, mushrooms and other resources from the forest. Most communities live on low incomes from farming cocoa and food crops. Today, the Wildlife Division of the Ghana Forestry Commission manages the core area; communities manage resources in the transition area. According to Ghana’s local government Act 462 (and its bye-laws), authority has been devolved to the communities to a large extent.

The communities are organized in four resource management committees with elected executive members, whose activities are defined in a constitution and supported by a certificate of devolution presented to them by the national government. The committees are supervised by a multidisciplinary management advisory board involving the management authority, CSOs, traditional leaders, community groups (e.g. women) and other relevant stakeholder groups. Only community members have a vote when decisions are to be taken concerning the resources in the transition area. Community members are also responsible for policing the resources and determining penalties, whose proceeds are used to finance collective projects that address communal needs.

Case study: Evolving management model of Mt. Mulanje biosphere reserve, Malawi

The biosphere reserve, designated by UNESCO in 2000, covers most of the mountainous environment around this 3,000 m high mountain with its high rainfall, which stands out from the surrounding area in south-eastern Malawi. The area is marked by high population density with limited natural resources. Since 2002, the “Mulanje Mountain Conservation Trust” (MMCT) tries to respond to the given challenges by using a participatory approach.

The mountain had been declared a forest reserve in 1927 and staffed and managed as a model forestry area. Biodiversity conservation has become an issue only more recently, with the nomination process of the biosphere reserve driven by scientists. Management of the 80 forest reserves in Malawi, set up mainly for watershed conservation, is done through the Department of Forestry which does not have nearly enough financial resources and priority mandate to implement its tasks. National parks and wildlife reserves are a parallel sector in Malawi, not connected to forestry. Thus, Mt. Mulanje as a forest reserve was not managed with a view to conserving biodiversity. Owing to minimal financial resources, it has become vulnerable to illegal encroachment and exploitation. Also an approach purely focusing on restriction tends to have only increased illegal activities. MMCT is designed as a pioneer bridge between the forestry management agencies, support organisations, commerce, researchers, neighbouring communities and public stakeholders. MMCT was assisted in 2002 by a World Bank project and a GEF grant of 5.5 million US dollars to create an endowment fund for continuous financing of about 1 million US dollars per year. The Department of Forestry has remained the government mandated agency, with assistance from the MMCT. This arrangement is currently under revision, with the aim of creating a more inclusive arrangement.

Slowly, Malawi adopts “Community-Based Natural Resource Management” principles and practices. The Department of Forestry has adopted six collaborative management contracts with neighbouring villages. The “Mulanje Local Forest Management Board” and a strategic plan have been established to assist forest reserve management [[UNESCO2013-1]].

- *Who are the important knowledge holders* who can provide the advice you need when you reach your own limits of knowledge? These can be several scientists who do research in the biosphere reserve on a special or on an overarching topic. This can be an elder who has gathered decades of experience; it can be a traditional healer; it can also be a businessman with long experience and many networks abroad.
- *How can we improve participation* - which societal groups are not well represented in the management group? They can be representatives of a vulnerable group or other minority; they can be additional representatives of local communities or of certain economic sectors.

Knowledge and participation

Never think of the advisory board as the “small sister” of the management board. They have very different roles, and one is as important as the other. The management board will move quickly through a long agenda and take many decisions, maybe after very short discussion. In turn, the advisory board is the place to have this in-depth discussion and “to recommend the management board what to decide”.

Complementary roles, no hierarchy

The advisory board should have the size appropriate to its needs, maybe also up to 15 members to facilitate discussions. Scientists should not make up more than half of the board; ideally they represent all relevant scientific disciplines, including experts on socio-cultural, economic and environmental affairs, or from land-use planning.

Limit the size

Responsibilities include:

- Discussing items given by the management board (and the secretariat) with a view to formulate recommendations
- Discussing thematic and strategic opportunities and new partnerships
- Promoting knowledge-based management, including new scientific research, and the supervision of current research programmes
- Promoting further participation, including through additional working groups and other modes of outreach

Tasks and responsibilities

3.2 Institutional context and partnerships

The international MAB system

The “*Man and the Biosphere Programme*” (MAB) is an intergovernmental framework of UNESCO since 1971. MAB coordinates the efforts of UNESCO’s 195 Member States (as of 2014) in ecosystem research and in the establishment and management of UNESCO biosphere reserves. MAB has a top decision-making committee, the **International Co-ordinating Council** (in short: “Council” or ICC). It meets annually in summer in order to discuss, *inter alia*, the designation and periodic review of the more than 600 biosphere reserves in the World Network (including modifications to existing ones; 631 biosphere reserves in 2014/2015). This Council does not consist of individual experts but of representatives of 34 Member States of UNESCO – some Member States are represented by diplomats, others by scientific experts.

The MAB Council

The ICC is elected for a 4-year term by UNESCO's General Conference. Urgent decisions may be taken by the ICC "Bureau" which has one member from each of the 6 geopolitical regions (Africa, Asia, etc.). In the ICC sessions, which are open to observers, organizations such as IUCN, UNEP and FAO participate regularly.

The ICC sets the priorities in the MAB Programme and supervises the implementation of all activities. The most important ICC decisions concern the designation of new biosphere reserves and the assessment of their periodic review reports. In fact, biosphere reserves are the only *intergovernmental* global network of sites similar to protected areas, because of their designation by the intergovernmental ICC. In spite of this intergovernmental designation, biosphere reserves remain under the exclusive authority of the state in which their territory is located. Another task of the ICC is to propose new research projects that need international cooperation. The ICC also safeguards cooperation of biosphere reserves with other programmes of UNESCO and beyond, e.g. World Heritage and research programmes on freshwater and the oceans.



The MAB programme was founded in 1971. (photo © Thomas Schaaf)

The MAB secretariat and field offices

In May 2015, MAB has a *secretariat* with around 10 staff in the UNESCO Headquarters office in Paris and with expert staff in several of UNESCO's more than 50 field offices worldwide. Since 2013, UNESCO has 5 larger offices in Sub-Saharan Africa, the so-called Multisectoral Subregional Offices (Dakar, Abuja, Nairobi, Harare, and Yaoundé) mostly with experts on biosphere reserves; plus 11 small national offices as well as around 15 project-based "antennas". In North Africa, the regional office for Science is in Cairo. Managers of individual biosphere reserves do *not* often interact with the ICC, except when they are invited to present a case study. Managers more often interact with UNESCO's field offices or MAB National Committees, on individual projects, capacity building or on thematic network projects, e.g. on climate change or on the green economy. Of course, they also interact with the MAB secretariat when attending network regional or thematic meetings, when submitting their periodic review reports, and when responding to questionnaires.

What UNESCO can offer

Both the UNESCO MAB Secretariat and the UNESCO field offices can offer a wide range of support to biosphere reserves, however not in providing direct access to financial funds. UNESCO will offer to you something which is unique and invaluable: They can provide you expert technical support for most questions that are relevant to your biosphere reserve and they can also offer contacts to other experts. UNESCO is a global organization with high-level experts as staff members and with contacts to practically any expert in any field. They provide advice and expertise and can link you up with any expert you need, for example in questions in need of scientific research, in zonation, in funding, in international partnership or in formulating a management plan.



At present there are 9 regional and 2 thematic networks in the MAB Programme, among them AfriMAB and ArabMAB (cp. next subsection). These regional networks are likely the most important platform for international cooperation and exchange of knowledge in MAB. Such networking can be ad-hoc through bilateral contact; it can also be structured through participation in the regular regional assemblies.

The regional networks

Another mode of cooperation has emerged only during the last ten years, this is the inter-continental twinning of biosphere reserves, e.g. between Malindi-Watum biosphere reserve (Kenya) and North Devon biosphere reserve (United Kingdom) and Kruger to Canyons biosphere reserve (South Africa) and Rhön biosphere reserve (Germany).

Twinning between biosphere reserves

Regional MAB networks

Biosphere reserves exchange knowledge and cooperate nationally and internationally – in individual projects, in long-term partnerships and in institutional networks. In practice, sharing experiences is essentially the role of national, sub-regional and regional networks (in the terminology of UNESCO, “Sub-Sahara Africa” is one region, East Africa is a sub-region). What is possible at the inter-regional level are twinning partnerships of biosphere reserves.

What is a region?

National networks of biosphere reserves so far exist only in a few countries. For example in Germany, the managers of all biosphere reserves have been meeting two times per year for 20 years already; cp. [[GMC]] and [[GUC2007]] for information about the German implementation of MAB. Sub-regional networks exist in some parts of the world. A good example is the East Atlantic Biosphere Reserve Network, REDBIOS, which comprises the Canary Islands (Spain), Cape Verde, Mauritania, Madeira and Azores (Portugal), Morocco and Senegal.

National networks

AfriMAB is the regional UNESCO MAB network for Sub-Saharan Africa. It was created 1996 in Dakar in Senegal, during the “Regional Conference for Forging Cooperation on Africa’s Biosphere Reserves for Biodiversity Conservation and Sustainable Development”. Its membership is based on MAB national committees – such committees or focal points for MAB exist in 33 African states, 28 of which are members of AfriMAB. AfriMAB covers 68 biosphere reserves (all figures as of 2014). AfriMAB has the overall objectives to use biosphere reserves as a means of (a) conserving natural and cultural diversity, (b) of regional development and as learning sites for sustainable development, and (c) in research, continuous monitoring, education and training. Finally it supports putting into practice the concept of biosphere reserves. Important aspects of its activities are advocacy for MAB in Africa, strengthening capacities, strengthening synergies and raising funds.

Structure of AfriMAB

AfriMAB promotes regional co-operation through concrete projects in biosphere reserves – i.e. between managers from different states. Exchange through work on joint projects is important. AfriMAB works particular on four topics to exchange knowledge and improve management [[AFRIMABWEB]]:

Work of AfriMAB

- Zonation and improving biosphere reserve functioning
- Biosphere reserves and local communities, stakeholder participation and benefit-sharing
- Transboundary biosphere reserves
- The logistic support function of biosphere reserves

Subregions of AfriMAB;

- **Southern Africa:** Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia, Zimbabwe
- **Eastern Africa:** Comoros, (Djibouti), Eritrea, Ethiopia, Kenya, Madagascar, Mauritius, Rwanda, Seychelles, Somalia, South Sudan, (Sudan), Tanzania, Uganda.
- **Central Africa:** Burundi, Cameroon, Central African Republic, Congo, Democratic Republic of the Congo, Equatorial Guinea, Gabon, São Tomé and Príncipe, Tchad.
- **West Africa:** Benin, Burkina Faso, Cape Verde, Côte d’Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, Togo.
- **Northern Africa (part of ArabMAB):** Algeria, Djibouti, Egypt, Libya, (Mauritania), Morocco, (Somalia), Sudan, Tunisia.



Meetings of AfriMAB

AfriMAB had its subsequent meetings in 1999, 2000 and 2005. Since 2007, every two to three years, all members of AfriMAB meet during a constitutional meeting called **Assembly**. These meetings review the activities of the network and discuss options for a more effective implementation of the biosphere reserve concept in their respective states. They also include technical capacity building (on zonation in 2007, on sustainable financing in 2010 and on ecosystem services and green economy in 2010). AfriMAB is governed by a **Bureau** which consists of the AfriMAB Chair, of four sub-regional coordinators for West Africa, Central Africa, East Africa and Southern Africa as well as of the Secretariat of the host country. The Bureau is newly elected at each Assembly. The AfriMAB Assembly 2010 in Nairobi in Kenya endorsed the statutes and the charter of AfriMAB [[AFRIMAB]]. It also agreed on a financing mechanism for the AfriMAB secretariat [[UNESCO2013-2]]. AfriMAB has also inspired individual African countries to set up their own national MAB action plans, e.g. [[RWANC]].

ArabMAB **ArabMAB** in turn is the regional UNESCO MAB network for Arab States, including Africa north of the Sahara. The first discussions on establishing this network were held at the 2nd regional meeting of MAB National Committees from the Arab region held in Cairo in 1994, as well as in Alexandria in 1996. The Network was officially launched in Amman in 1997, as contained in the *Amman Declaration*. Beyond the nine African States listed above, four of which are members of both AfriMAB and ArabMAB, twelve other States beyond the continent are also part of ArabMAB.

The main objective of the ArabMAB Network is to promote co-operation between Arab National MAB National Committees, to a lesser extent among biosphere reserves. Through increased cooperation, the National Committees exchange experiences about the establishment of biosphere reserves and they prepare implementation of common projects on research and raising public awareness.

Structure of ArabMAB The **ArabMAB Coordinating Council** (ACC) meets every three years to adopt a work programme and to review progress. The Council meetings are usually accompanied by expert meetings and technical workshops. The Council also elects a **Bureau**. Council meetings have taken place in Agadir, Morocco (1999), Damascus, Syria (2001), Beirut, Lebanon (2004), Sharm El-Sheikh, Egypt (2007), Al-Shouf Cedar biosphere reserve, Lebanon (2010), and Dana biosphere reserve, Jordan (2013).

UNESCO National Commissions and MAB National Committees

What is a National Commission? All 195 Member States of UNESCO have a so-called “**National Commission**”. The establishment of such bodies was already foreseen in the constitution of UNESCO of 1945; UNESCO is the only UN agency with constitutionally foreseen national liaison bodies. These National Commissions are institutions of the Member States; they are not part of the institutional hierarchy of UNESCO. They are considered “UNESCO’s first partner” in that Member State, they receive all relevant information in copy and they can get access to special funds, upon competitive bidding, from UNESCO’s Participation Programme.

Some of these National Commissions are intrinsic part of a ministerial hierarchy, often of the Ministry of Education or of the Foreign Office. But there are several other models; dozens of National Commissions are independent; some of them have a quite large number of staff. Some of the independent National Commissions, such as in Germany or in the Republic of Korea, have a partnership programme with Africa, which as a continent is UNESCO’s global priority.

Tasks of National Commissions Tasks are proposed by the “Charter of National Commissions” of 1978, but differ in practice. Typically, they support the national implementation of all UNESCO’s activities; they also seek national synergies among diverse programmes, including among biosphere reserves, World Heritage sites, Global Geoparks, UNESCO chairs and Associated Schools. National Commissions have the mandate to regulate the use of the UNESCO logo at the national level.

What is a MAB National Committee? A government (of a UNESCO member state) typically participates in the MAB Programme by setting up a **MAB National Committee**. What such a national committee does in practice, varies from state to state. UNESCO in 1997 has published guidelines for such MAB National Committees [[UNESCO1997]]. Typically, a MAB National Committee consists of representatives of different ministries, of “Civil Society Organizations” (CSOs or NGOs) and of stakeholder associations as well as of scientists and managers of biosphere reserves. Typically, a MAB National Committee acts as a bridge between UNESCO and all interested national authorities and is involved in all processes of nominating and periodically reviewing individual biosphere reserves. Typically, together with the National Commission of the state, it maintains and expands international contacts. In early 2014, there have been MAB National Committees and focal points in 157 countries worldwide and in 40 countries in Africa (figures as of 2014).

Relation to the National Commission In most countries, the MAB National Committee is part of the UNESCO National Commission. Typically, as subcommittee with a purely consultative mandate, they have the tasks which the Secretary-General of the National Commission or its President (often ex-officio the Minister of Education) attributes to them. In this scenario, the MAB National Committee is also invited to present recommendations on any MAB related issues and to submit general proposals related to issues of the environment.

Independent MAB National Committees However, there is another model with increasing significance: the MAB National Committee is set up as an independent expert committee under the relevant ministry in charge, often the ministry for the environment (alternatively those for agriculture or for scientific research). This scenario has the advantage of improved access to relevant sectoral funding for projects related to ecosystems. For example, Germany and South Korea have such independent MAB Committees which nevertheless maintain very tight cooperation with the UNESCO National Commissions.

In 2013, Makenzi gave an overview of status and host institutions of MAB National Committees in Eastern Africa [[UNESCO2013-1]]. In Kenya and Uganda, they have been set up under the National Commission, in Madagascar and Ethiopia under the Ministry for Research/Science and Technology, and in Tanzania under the “National Environment Management Council” (NEMC).

The *responsibilities of MAB National Committees* vary from country to country. They should always be tailored to national needs and maximise tangible benefits to the society and the environment. Unfortunately, too many MAB National Committees still focus exclusively on statutory tasks such as the selection of candidates for UNESCO prizes. Instead, MAB National Committees can and should play vital and irreplaceable roles [[UNESCO1997]]:

- Supporting the institutional strengthening of existing biosphere reserves
- Facilitating cooperation and exchange of knowledge between all national biosphere reserves
- Facilitating the implementation of projects which are relevant to several biosphere reserves
- Facilitating international cooperation, twinning, and partnerships, both within the World Network and beyond
- Supporting the creation and nomination of biosphere reserves
- Supporting the periodic review of biosphere reserves
- Screening the national territory for suitable sites for potential biosphere reserves and assessing their feasibility
- Ensuring annual reporting in good quality

Also the *composition of MAB National Committees* varies from country to country. Scientists from a wide variety of relevant disciplines should be present as a rule of thumb. Most countries also involve the representatives of the most relevant ministries and governmental agencies, e.g. those in charge of environment, agriculture, education, research, water, and international cooperation. Also committed NGOs, foundations, and private sector companies could be invited. Some MAB National Committees have only around 5 members, others around 15. Wherever possible, MAB National Committees should meet in biosphere reserves, in order to obtain direct impressions on the ground.

In Africa as elsewhere, bodies such as National Commissions and MAB National Committees often suffer from too little continuity of staff and experts. There is no alternative to patiently building contacts again and again. *From the perspective of a manager of a biosphere reserve*, the MAB National Committee should be your main interlocutor at the national level. This committee should be there to help you and to promote your cause politically; they should have the mandate to communicate with ministries at a high level. It should help you finding experts for you to better address your problems. The committee and its members should explain the importance of biosphere reserves to scientists and journalists. Maybe it can even support you in obtaining funds.

If a MAB National Committee is functioning well, then it will be your “national and international link” in all matters of concern. Where MAB National Committees don’t function well, biosphere reserve managers might become active to inspire improvements.

Nominating, designating and periodically reviewing biosphere reserves

The **nomination** process of a biosphere reserve seems complicated and cumbersome. However, there is no “bureaucratic complication” – all steps are needed to provide a sound institutional and regulatory basis for proper management of the future biosphere reserve, for the example of Sweden cp. [[SANDSTRÖM]]. **Nominating a biosphere reserve is never a very short process**; there have been examples of 2 to 3 years; there have also been examples of more than 10 years.

Case study: The Egyptian MAB National Committee

The Egyptian MAB National Committee exists since 1972, formally as a subcommittee of the National Commission for UNESCO. It has had great continuity with three chairpersons only. In the 1970ies, it was the only official body in Egypt tackling environmental issues, considering itself a defender of environmental safety and advocating for a system of environmental governance. Already in the 1970ies, it published reports on the need for introducing environmental education, on incorporating environmental aspects into development planning, and on establishing a governmental environmental agency. These reports show that from the outset, the Egyptian MAB National Committee tried to stretch its mandate as much as possible to deliver on Egypt’s real needs. It has never only been a post box. In the 1970ies as well, the Committee supported two large multi-disciplinary research projects on desert ecosystems along the Mediterranean coast west of Alexandria (SAMDENE and REMDENE). These two projects resulted in the designation of the Omayed biosphere reserve in 1981, one year before Egypt adopted a law on nature reserves. In the late 1980ies, a similar major research project resulted in the designation of Wadi Allaqi as a biosphere reserve, 180 kilometres south-east of Aswan. In the 1990ies and 2000ies, the Committee worked on improving the implementation of UNESCO’s World Heritage Convention. It organized four training courses in Arab countries for managers of biosphere reserves, protected areas, and tentative natural world heritage sites. The Committee successfully supported dossiers for inscribing two new Egyptian sites on the World Heritage List in 2002 and in 2005. From 2002 until 2013, the Committee participated in the SUMAMAD project, studying sustainable management and conservation of marginal drylands in Africa, Arab States, Asia, and Latin America. The project led to harmonized methodologies for nine research sites; this allows comparing results and sharing knowledge. Since 1977, the Committee issues the bi-annual and bi-lingual Egypt MAB Bulletin of some 200 pages each. Several young Egyptian scientists won the MAB Young Scientists’ Award upon proposal of the Committee, which itself awards annually six national awards for young scientists (four per year during 1982 - 2012).

Case study: The Ghanaian MAB National Committee

The MAB National Committee of Ghana is coordinated by the Environmental Protection Agency in close cooperation with the National Commission for UNESCO, as well as the UNESCO field office. It has 24 members and 16 affiliated members: two national ministries, the Wildlife Division/Forestry Commission, which is the management authority for protected areas, the National Commission, two other regulatory institutions, biosphere reserve managers, a representative of traditional authority, and one of local authority (district assemblies), one NGO (Ghana Wildlife Society) as well as some ten representatives of research and academia. The committee has one or two annual general meetings, depending on financial resources, and it has seven subcommittees on topical issues: wetlands, mountains, forests, islands/coasts, settlements, tourism, and capacity-building/education. At the subcommittee level, some 10 field visits are organized per year. The MAB National Committee organizes international contacts to the World Network and to AfriMAB, including South-South cooperation.

Among recent activities, there are international activities, such as hosting the 2013 AfriMAB Assembly, the exchange visit by a delegation from Ethiopia, participation in workshops in South Africa and Botswana, the opening of a Facebook page or the update of all biosphere reserve maps. At the level of the two existing biosphere reserves, the focus is on a Green Economy project in Bia biosphere reserve financed by the Republic of Korea; in Songor the focus is on awareness raising, the revision of the management plan and the harmonization of the biosphere reserve with a Ramsar designation. In the proposed Lake Bosomtwe biosphere reserve, the committee helped preparing baseline studies, the legal framework and the management plan.

A nomination requires collecting much information

What is the problem? Of course, a nomination requires filling out a form (available in English, French or Spanish at www.unesco.org/mab, for an abridged version cp. Appendix 7) and that form (empty) is already 37 pages long. For example, the nomination needs to demonstrate that a biosphere reserve

- Encompasses a mosaic of ecological systems representative of major bio-geographic regions, including a gradation of human interventions;
- Is a significant site for the conservation of biological diversity and cultural diversity;
- Allows to explore and demonstrate approaches to sustainable development.
- Has an appropriate size to serve the three functions;
- Includes identification of the three characteristic zones;
- Provides for the involvement and participation of a suitable range of public authorities, local communities and private interests;
- Has a management plan / policy, management authority and programmes for research and training;
- Has full support from all relevant local stakeholders and from the MAB National Committee;
- Collecting all the required information and data with the sufficient quality is not easy and often requires additional research. But this is not the most difficult part; clearly it is not the most important part.

A nomination requires the support of all local stakeholders

The decisive element in a nomination is a common vision and obtaining the support of stakeholders and of communities located in the biosphere reserve. Formally, this means a signature of all authorities, elected local governments, and/or community representatives. By experience, obtaining such support is often very lengthy: Sometimes it is a single reluctant mayor of only one village, who can delay a nomination process for years. *The arguments against a biosphere reserve are always the same:* Authorities might fear undue restrictions for future economic development, people might be afraid to “live in a cage”. Whoever promotes a future biosphere reserve has to take these concerns serious and work hard. *Experience has shown that it is possible to successfully convince every stakeholder that a biosphere reserve is about opportunities, not about restrictions,* and that there are great socio-economic benefits. A biosphere reserve is the opposite of a “cage”. A recent cooperation of Tanzania with the United Kingdom, has established a very valuable guide on nominating biosphere reserves, with a focus on involving women and taking into account cultural aspects [[BELL]].

Participation from the first moment

Therefore, “participation” in a biosphere reserve has to start *before* the designation by UNESCO. The nomination phase is the best moment to start with participatory processes. If the process is not participatory, the population will for a long time regard a biosphere reserves as something “artificial” imposed from the outside. Much can be achieved in this regard through *feasibility and/or baseline studies* which are often the first step of a nomination. There have been cases of biosphere reserves, in which the initiative was entirely taken by local communities. There have also been cases in which the initiative has been taken at the national and provincial level, e.g. by government authorities or scientists.

Crucial role of the national government

The next steps in the designation procedure are formally governed by Article 5 of the “Statutory Framework” (cp. Appendix 2). A nomination, together with supporting documents, must be submitted to UNESCO by a government entity, where appropriate through the MAB National Committee or MAB focal point. This means that all initiatives for biosphere reserves have to involve the national government. Article 5 of the Statutory Framework also demands that governments *review* a nomination on the basis of the international criteria; a government may not simply forward a nomination to UNESCO. The Statutory Framework also allows that a member state specifies the international criteria in order to adapt them to the national situation (e.g. Germany has done this).

Case study: Nominating the proposed Niimi biosphere reserve, The Gambia

The proposed Niimi biosphere reserve in the Northern part of the Gambia is supposed to cover 132,000 ha (or more than 10% of the country) of traditional/communally owned, private and co-managed land between the border to Senegal and the estuary of the Gambia river, with some 90,000 inhabitants. This first Gambian biosphere reserve would stretch inlands from a small national park (Ramsar) with the same name, which protects one of the last untouched mangrove forests on the West African Coast north of the equator, and also encompass a cultural World Heritage site, a second national park and two state forests. It would also be adjacent to the Delta du Saloum biosphere reserve in Senegal, eventually forming a transboundary biosphere reserve. The aim is to use the biosphere reserve to better tackle problems such as green wood cutting, bush fires, salinization, coastal erosion, destructive fishing methods and gears, invasive species, land tenure, overgrazing and above all poverty. Stakeholder participation for preparing the nomination has started in 2002. Back then, a Technical Advisory Committee was set up in preparation of the more detailed process that started in 2005, funded by IUCN. The Committee is accompanied by a Multi-disciplinary Facilitation Team, which at ground-level should facilitate the efficient participation of all stakeholders and promote ownership. However, these mechanisms do not function as foreseen due to insufficient financial resources. The MAB National Committee has formed a working group involving all stakeholders such as government institutions, NGOs, and local authorities; it meets regularly to plan and implement activities designed in collaboration with local people. A draft management plan has been completed which is on the verge of validation. During the entire process, consultations were held with local communities to reach consensus. Local communities have been consulted as well in the mapping process to minimize conflict over land and land-use. This was made possible because of sensitization, such as an exchange visit to the Delta du Saloum biosphere reserve, which included community members. The UNESCO nomination is planned to be completed soon [[UNESCO2013-1]].

Once submitted to UNESCO (the deadline is 30 September each year), its secretariat verifies the content of the nomination file and its supporting documentation: in the case of an incomplete nomination, the missing information is requested. Completed nominations are then discussed by the “Advisory Committee for Biosphere Reserves”, a small expert working group. This committee formulates a recommendation on how to deal with a nomination. The recommendation is transmitted to the MAB ICC (cp. above), which takes the decision and either approves or defers a nomination. This typically happens in the summer session of the MAB ICC, which means about nine months after the nomination deadline. It often happens that the ICC at each session approves some 10 to 15 nominations, it does *not* approve some 3 to 8 nominations. The Director-General of UNESCO then notifies the State concerned of the decision of ICC. Each approved biosphere reserve receives an official UNESCO certificate and is allowed to use the UNESCO logo within certain limits. Proposals for extension of existing biosphere reserve follow the same procedure.

What does UNESCO do with a nomination?

The **periodic review** at least every ten years, which also must be submitted with the deadline 30 September, is an important moment for each biosphere reserve. Periodic reviews take stock of the functioning, zonation and changes in the context of the biosphere reserve and determine the drivers of these changes. It also provides an opportunity to discuss updating the zonation and the management plan, question the objectives and means of management policies and examine problems of implementation. The managers should think about the periodic review – not as an annoying bureaucratic duty to produce a document – but as a unique opportunity to legitimize the biosphere reserve and thus their jobs, and as a unique opportunity to improve the quality of the work of the biosphere reserve. A periodic review can also be a good moment to consider a re-zonation of a biosphere reserve or to reconsider the legal basis.

Every 10 years a periodic review

The periodic review should in all instances involve the stakeholders and the population, for several reasons: First of all, in order to provide a forum to voice support for the biosphere reserve – or concern about problems. If the result of a consultation is that communities do not think that the biosphere reserve is beneficial, then the biosphere reserve has a serious problem. *It is only in this moment of reporting to UNESCO that substantial change to address such a serious problem can be legitimized easily.* There are also many pragmatic reasons for seeking participation: The community has a wealth of information including traditional knowledge on changes in species and ecosystems. Often traditional tracking systems or indicators may serve as vital tools to inform these reviews. Such participatory structures for data collection should be used and maintained from nomination to review. For more on the periodic review, cp. below in section 4.1 and [[PRICE]].

Periodic review requires participation of local stakeholders

The formal periodic review report (form available in English, French or Spanish at www.unesco.org/mab, for an abridged version cp. Appendix 8) will be submitted to UNESCO by the relevant state authority, in general through the MAB National Committee. Some states successfully demand annual reports of biosphere reserves to their MAB National Committees to facilitate and expedite the compilation of information. The formal periodic review report will again be considered by the “Advisory Committee for Biosphere Reserves” for recommendation to the ICC. The ICC will formally recognize a satisfactory or improved status or management of the biosphere reserve, as compared to the designation or the last review. In case of insufficient quality, the ICC may recommend that the state concerned take appropriate measures, if needed with assistance from UNESCO.

What does UNESCO do with the periodic review?

What happens if criteria are not met

If according to the judgement of the ICC, the biosphere reserve still does not satisfy the criteria within a reasonable period, the area may lose its status as a UNESCO designated biosphere reserve, according to the [exit strategy](#). States can also by themselves remove a biosphere reserve under their jurisdiction from the World Network. So far, 13 biosphere reserves worldwide, which did not meet the criteria of the Statutory Framework, have been withdrawn from the WNBR upon request by the states concerned. Altogether, 293 periodic review reports were examined by the MAB ICC, including 46 from Africa. 6 African biosphere reserves have been reviewed already twice (all figures as of 2013).

In 2013, the ICC has adopted this “exit strategy” for biosphere reserves which have not yet submitted a periodic review report or which do not fully comply with the criteria. After several warnings to the biosphere reserves concerned and their MAB national committees, several areas are bound to lose the status as a UNESCO designated biosphere reserve (cp. full text of the ICC decision on the “exit strategy” in Appendix 6). The “exit strategy” is of particular concern to Africa, since only 33 of biosphere reserves in Africa have undertaken periodic reviews, while 17 have never undertaken the review; as of September 2013, [[UNESCO2013-2]].

Biosphere reserves and their surrounding regions

The entire world as a biosphere reserve?

Some scientists and some politicians have said that the entire world should be a biosphere reserve. Abstractly, they are right: The entire world needs to become sustainable so that our children can live decently. However, a biosphere reserve is much more than a “set of goals” or a “philosophy”. Biosphere reserves need a zonation, periodic review, management plans, management teams, participation and knowledge-based management. All this could be done “large-scale”, but experience shows how difficult it is even at the scale of rather small existing biosphere reserves.

“Philosophy” is not sufficient, you need to do it

Biosphere reserves have the task to develop [solutions that really work](#). This means that biosphere reserves cannot stop at a theoretically interesting idea as proposed by scientists. They need to demonstrate, for example, that they can convince farmers and their families, hunters and foresters to implement this solution, that this solution will be maintained by the users in the long term, that the solution has no negative side effects, that it is economically viable, or that it has the promised ecological effect.

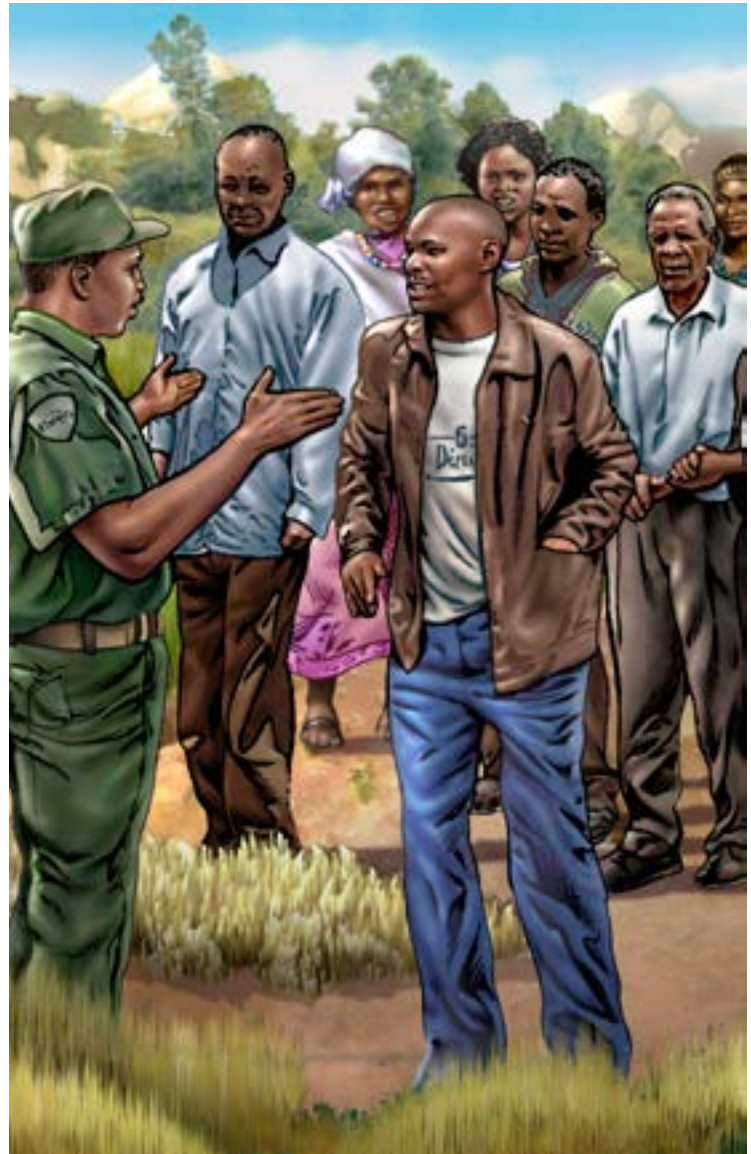
Solutions that really work

No “islands of happiness”

Biosphere reserves are one of the very few places on earth with this high ambition. They should really be “models”. But this also means that they should strive to disseminate their learnings and success stories, inspiring repetition of best practice. They should not try to become isolated “islands of happiness” – instead they should try to positively affect neighbouring regions from the first days of their existence. *They should lead by positive example, not through “preaching”.*

Strong interactions interact anyhow

Usually a biosphere reserve has strong interactions with its surroundings anyhow: Since biosphere reserves often have natural boundaries such as mountain ranges or rivers, they often cut across administrative boundaries and thus cover only part of a district or province. Thus managers and mayors typically take part in exchange meetings of the district and of the province anyhow. Also, inhabitants of biosphere reserves commute to the surrounding region for employment, or vice versa. There are also exchanges in case of conflicts with surroundings and the ensuing negotiation over solutions. The National Commission for UNESCO and the MAB National Committee also should disseminate learnings and successes nationally and internationally.



3.3 Management plans and related documents

Reasons for and requirements of a management plan

The governance structure (management unit, management board, advisory board, cp. section 3.1) of a biosphere reserve should manage on the basis of a detailed strategy. They should not take decisions “ad-hoc”, in an unstrategic “limbo”.

What does “ad-hoc” management mean? Let’s take an example: On Monday, manager A decides to forbid livestock grazing on a certain grassland to protect newly arrived migratory birds. On Tuesday, after complaints from farmers, manager B allows the grazing. On Wednesday, director C decides to forbid the grazing. This example shows lack of clear hierarchy and lack of delegation of decision-making; *but it also shows lack of strategy and lack of a management plan*. In a biosphere reserve with a clear strategy and management plan, all managers A, B and C (and the farmers) should have the identical approach of how to balance the interests of migratory birds with those of livestock grazing, *because* the approach has been agreed among all managers and among all stakeholders, *including* the livestock farmers.

What would be ad-hoc management?

A management plan is an official multi-year framework (process and document) for achieving your objectives (e.g. conservation of natural resources, poverty eradication) in a structured way. The Seville Strategy (cp. Appendix 3) requires “that each biosphere reserve has an effective management policy or plan and an appropriate authority or mechanism to implement it” ... “that includes all of the zones of biosphere reserves”. The Seville Strategy requires as well to “survey the interests of the various stakeholders and fully involve them in planning and decision-making regarding the management ...”. It also encourages training for local communities to enable their full participation in planning and management. A management plan should also help managers to adapt “properly” to change – a management plan is not set in stone, but it avoids that each new development or trend will immediately affect agreed goals.

Crystal-clear requirement of UNESCO

A management plan is needed because

- UNESCO requires it (Seville Strategy, Statutory Framework, nomination form, periodic review form; cp. Appendices 2, 3, 7, 8);
- Your government will most likely require it for accountability (also any other key funding partner will do);
- Any potential donor will most likely require it to understand how an individual project fits into an overall approach;
- Any local partner will expect a written document of what you intend to do;
- Management without a plan is “ad-hoc” and not effective;
- Management without a plan will lead to “strategic shifts” away from your key goals such as biodiversity conservation and sustainable development, maybe only within a few months or years (of course in unforeseen cases you need to diverge from a plan);
- Formulating it is one of the best opportunities to engage in-depth with stakeholders and communities.

7 reasons for a management plan

A management plan *as a document* should contain several items (the following is *one* possibility; these items can be entitled differently, there can also be additional or fewer items; for all details cp. section 4.4):

- Status-quo analysis of opportunities and threats, strengths and weaknesses
- Status-quo analysis of priorities for the biosphere reserve, from the perspective of the stakeholders’ interests
- Scenario development, including analysis of external pressures and internal vulnerabilities
- A long-term vision (either short “summary statement” or visions for several priority themes)
- Medium-term goals which need to be attained to make the vision a reality, accompanied by indicators and benchmarks
- Priority projects, whose implementation will lead to attaining the medium-term goals

Contents of a management plan as a document

In spite of all high standards that one can demand of management plans, they must of course also be *realistic and achievable*. To any *responsibility* announced there must be the *authority* attached to fulfil the responsibility.

Sometimes managers ask whether they should formulate their management plans “very” realistic, i.e. without any optimistic assumptions, only including projects and ideas that they are very sure they can actually implement. Or should they rather formulate “blue-sky wish lists”, assuming very optimistic trends and enumerating any potential project idea that is imaginable? The answer is in between both extremes, but closer to the side of realism. Management plans should guide managers in their *actual* work, taking into account their *actual* challenges in collaboration with their *actual* stakeholders. A “blue-sky wish-list” is only confusing for actual work since it confuses the harsh day-to-day reality with overly bold ideas. On the other hand, being “too realistic” will lead to pessimism. A management plan should breathe a spirit of optimism; it should also depict a future of what could be possible if some key positive trends would continue unabated. Many organizations have experienced the reinforcing power of “positive thinking” – this is nothing esoteric, but it is the very simple idea that people will work harder towards a future which is easy to understand and worthwhile achieving.

Realistic documents are needed

Formulate integrated plans Another typical question is *whether a management plan should be an “integrated plan”* which covers every planning aspect from the vision and the strategy, from the list of priority projects to the financial and human resources needed to implement them. Or should the management plan rather be a collection of several documents, such as a “business plan” [[RUZZIER]] and a “staffing table” and a separate “vision”? While the MAB ICC has given verdicts that can be interpreted to the effect that a management plan should be “integrated”, no definite answer can be given, it depends on the situation. An “integrated document” clearly has many advantages; for example tying the project implementation to the financial and human resources will result in a much more convincing document, internally and externally. It is also valuable to have available all strategic documents in one place. On the other hand, an overly focus on trying to fit everything into one document is unrealistic by itself: With high probability you will need to produce some sort of strategic document every once in a while, for donors and for government. Therefore it is recommended that your management plan is as comprehensive as practically feasible at the time of writing, to serve as an immediate reference (for copy-pasting) for any subsequent strategizing. For example, if you need a “business plan”, it must not necessarily be included in the management plan, but you should be able to write the business plan based on a good management plan within a few hours or days.

Some plans exist on paper only Most biosphere reserves in Africa have some sort of management plans. However, some exist on paper only and have never been officially adopted by the relevant government entity, others are not implemented for other reasons, and others are outdated. At the same time, in particular in the last five years, an increasing number of African biosphere reserves have adopted excellent management plans which are also sincerely implemented.

A management plan addresses all zones

No management plan without zonation If there is no zonation yet at the time of formulating the management plan, the identification of zones should be made up first:

- What should be the objective of each zone?
- Where are the three zones located and where are the boundaries?
- Are they large enough to achieve their objectives?
- Which legal protection do they have?
- What activities are allowed and prohibited to achieve the objectives?
- How is the adherence to restrictions monitored/controlled?

Specific zonation plans must always make compromises between the different rights and claims (traditional use rights, legal property, etc.) and future intended use and/or conservation.

Participatory zonation **Zonation plans have always to find agreement with local communities** (cp. section 4.1) because zonation can affect the communities’ use rights and property. As said already in section 1, the concept of zonation can be related to very ancient and wide-spread ideas from Africa, since indigenous communities have sustainably sourced livelihoods for centuries, including through respect for sacred “no-touch” sites.

Zonation should be based on many different criteria A zonation should take into account

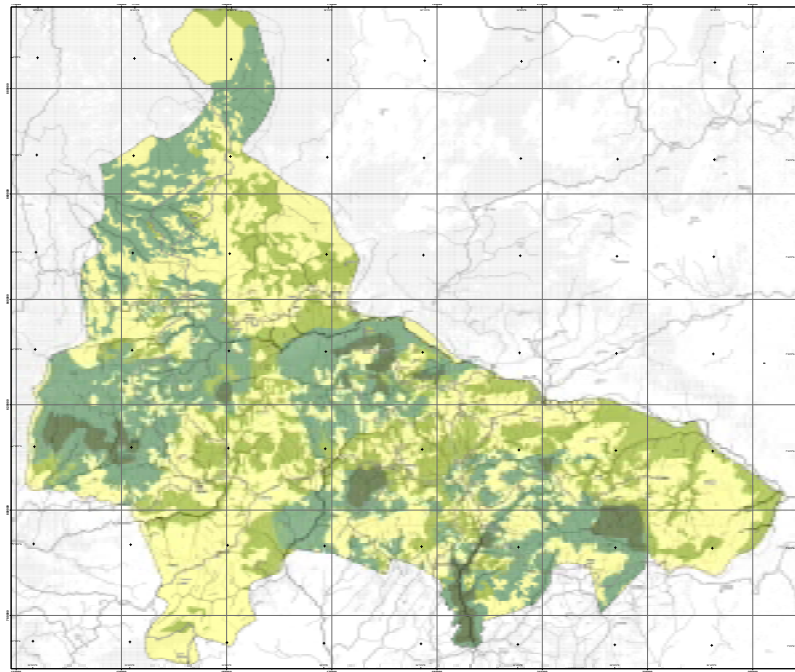
- Territories important for endemic and endangered species, based on taxonomy and red lists
- Territories with minimum disturbances, primary forests, “wilderness areas”
- Ecosystem health and minimum size for ecosystems to actually deliver their services (cp. section 2)
- Connectivity of ecosystems and corridors
- Settings of the physical environment (watersheds, mountain ranges, dead-end valleys, etc.)
- Property rights, including common lands
- Historical and recent land-use and trends
- Agricultural lands, grazing areas, mining sites and other “anthropogenic pressures and their direction”
- “Ecological pressures and their direction” and other threats such as desertification-prone lands or alien invasive species based on a threat analysis
- Towns, villages, linear infrastructure (roads, power lines, canals, etc.), other places and corridors of disturbance
- Socio-cultural traditions, including heritage sites and sacred sites

Thus, establishing a zonation requires considerable knowledge; not all knowledge will be available, some previous research will be outdated. Make a preliminary prioritization of the factors influencing the zonation. Then proceed as proposed in section 4.1.

A management plan for all three zones A management plan will address all zones of a biosphere reserve equally. Conserving biodiversity is necessary in all three zones, but various instruments are available in the different zones. Promoting sustainable economic and social development is necessary in all three zones, but means something different in each zone. Research and education should be promoted in all three zones. As an example of zonation-specific guidelines for action in a biosphere reserve, cp. [[K2CGUIDELINES]].

Many biosphere reserves have a different challenge: *They have zonations due to several policy instruments.* While “zonation” has been invented by UNESCO’s MAB Programme, the approach has been taken over by other national and international designations: Modern national parks have a certain zonation, Ramsar sites have one, and World Heritage sites have buffer zones as well. How to deal with “conflicting” zonations? You should differentiate two aspects: How to ascribe a specific purpose to which zone - and how to publicly communicate these zones with their specific purpose.

First of all, zonations due to different designations really must be conceptually and legally coherent. If a certain “Ramsar zone” supports exclusively conservation, it should be the core area of the biosphere reserve. If two different “zones of a national park” support only conservation, combine the two into the core area of the biosphere reserve. If the function of a World heritage site buffer zone fits the function of a biosphere reserve buffer zone, they should coincide; if the biosphere reserve buffer zone needs to be larger, enlarge it beyond the World Heritage buffer zone. In principle, at the conceptual and legal level, there is much flexibility. UNESCO needs exactly three categories of zones – if according to your national law or because of local specificities it seems wiser to define actually four or five different categories (e.g. two different types of “transition areas”) – there is no problem, just when translating your approach for UNESCO, combine the “two types of transition areas” into one.



Example of zonation: Kafa biosphere reserve in Ethiopia

However, you should be careful in how you communicate such issues to the general public. Several different zonations due to several different instruments, this will be very difficult to explain; most certainly, people will consider it irrelevant for their lives and will not praise you for your work. You should choose to publicly present and use only the terminology of the designation that most people know and that is most relevant to their lives. In many cases this will be the biosphere reserve, in other cases it will be the national park. A particularly difficult situation arises if a biosphere reserve is founded on a site with a long-established and well-known designation that is really incompatible with the biosphere reserve concept. To fundamentally change the publicly known zonation can be a process of many years; the Songor biosphere reserve in Ghana has experienced just that.

Zonation has to be agreed with local communities

Managing the core area: The core area consists of one or several strictly and legally protected site(s) with the prime purpose of conserving biological diversity. Often the core area is a national park, a World Heritage site or a similarly strict nature reserve. There is no globally valid minimum size of a core area. However, countries can adopt national criteria for the implementation of the MAB Programme (e.g. Austria and Germany [[GUC2007]], also India has own recommendations [[IMEF]]) which then demand a minimum size, in terms of percentage of the entire area.

Basic description of the core area

The core area should be large enough to include all natural and near-natural habitats and ecosystems which can be kept free of external disturbance. If the core area consists of several parts, all parts should be larger than a minimum size; this might be needed for example for animals to roam for prey or seek forage; more habitats and niches means more species. Continuity of the core area into the buffer zone is crucial as well, including accessibility for animals (migration, nesting, etc.) and plants (seeds, spores, fruits, pollen, etc.).

Focus on control

The focus of management in the core area is actually control, i.e. the strict control of human activities. In the core areas of some biosphere reserves, *no* human activity at all is allowed (except non-destructive scientific research, monitoring, and low-impact education), others allow tourists to walk on prepared paths; some others allow specific human activities, which are always controlled such as to minimize disturbances of the biological resources. It depends on the country’s customs whether it is sensible to delineate the core area’s borders with clear signs or even gates. Wherever possible, do a mapping using satellite/GPS coordinates, maintain this data in an electronic map and establish a functioning monitoring system.

Managing the buffer zone: The buffer zone should surround or adjoin the core area(s) as its protective cordon; at the same time, it promotes the sustainable use of the natural resources. There is no globally valid minimum size of the buffer zone, although some countries have established rules for a minimum size.

A protective cordon



Only activities compatible with conservation

Management must ensure that human activities are compatible with biodiversity conservation. In addition to the activities allowed in the core area, low-impact activities such as eco-tourism and low-impact grazing are typically allowed, as well as (ecologically acceptable) renewable energy and water infrastructure. Guide visitors, and if needed, impose restrictions and quotas. Also renewable energy installations can have negative impacts, e.g. wind turbines on birds and bats or water turbines on fishes; some countries allow them only in the transition area.

What we have just described is the “classical” or main aim of the buffer zone - to ensure that human activities in the transition area do not negatively affect the core zone. In many ecosystems however, the buffer zone has a different purpose. It is often used to restore degraded environments (e.g. through afforestation). It is also ideally suited to preserve traditional forms of land-use, which have *created* a particular, human-induced ecosystem. Examples are extensive agriculture, or extensive grazing. For this to happen, evaluate the ecosystem impact of the traditions and their economic output, and assess both in terms of long-term viability, under both assumptions that these systems were maintained or that they are changed. For a case study on buffer zone effectiveness, cp. [[MEHRING]].

Making an area sustainable

Managing the transition area: In the schematic picture, the transition area is the “remaining” part of the biosphere reserve (the area which marks the “transition” to the surrounding area). Here, all human activities take place, including settlements, agriculture, livestock breeding, or industry. Typically there are no legal restrictions, but activities need to be “sustainable”. Destructive mining or polluting industries are not admissible even in a transition area. At the time of nomination, not all activities need to be sustainable – it is the task of the biosphere reserve managers *to make them sustainable*, for example through pilot projects on employment, product marketing, renewable energy, water and waste disposal. The communities need real benefits from the biosphere reserve and its efforts for sustainable development; these benefits must be distributed equitably. Thus, *communities should actually be the centre of attention* of a biosphere reserve management unit.

The zonation of a biosphere reserve is truly special and cannot easily be mapped onto the IUCN categories for protected areas. In its most recent guidelines for protected area categorization, IUCN recommended that core areas and buffer zones should be of category I, II, III, or IV [[IUCN2008]]. The transition area should be category V, or VI, or not protected at all.

Implementing plans: Controlling illegal activities and motivating positive change

Some activities are illegal everywhere

There are some activities which are illegal in all zones of a biosphere reserve (because they are *always illegal* such as poaching; or *temporarily illegal* such as certain farming practices during birds’ nesting season). There are also some activities which are prohibited only in certain zones of a biosphere reserve. Recently, combating wildlife crime has received very high political attention, cp. the 2013 Yaoundé Declaration, [[YAOUNDE]], the African Development

Bank's 2013 Marrakech Declaration [[MARRAKECH]], the 2013 African Elephant Summit [[GABORONE]], the Gabon/German UN General Assembly side event [[SIDE]], the 2014 London Declaration [[LONDON]], the 2014 Arusha Declaration [[ARUSHA]] or the 2015 Kasane Declaration [KASANE], cp. [[CITES2014]]. A recent guide proposes measures on how to engage communities in tackling wildlife crime – a strategy that several biosphere reserves have been successful for some years already [[ROE]]. Non-destructive scientific research (following an ABS regime, if appropriate), monitoring and low-impact education should be legal in all parts of a biosphere reserve. Hardly any restrictions typically exist in a transition area.

The management plan, the zonation, and, if appropriate, the legal texts for the individual zones together identify what is legal and what is illegal in the core area and the buffer zone. For example, they may regulate the amount of tourists allowed into the core area per day; also they may regulate, which traditional farming techniques are allowed in the buffer zones during which seasons.

Case study: Poaching in Bia biosphere reserve, Ghana

The biosphere reserve covers part of the "Bia-Goaso forest block" in western Ghana, a significant portion of the forest elephant range in Ghana. It is based on a reserve created in 1935, which was designated a biosphere reserve in 1985. Intensive cocoa farming destroyed much of the original vegetation. A UNESCO project with the acronym BRAAF (1995–1999) promoted snail and mushroom farming in the buffer zone. Corn mills for processing cassava were provided to 2 of the 42 communities around the biosphere reserve for income generation. There are four "community resource management areas" to the north, supported by 34 Community Resource Management Committees, which feed into Bia's Protected Area Management Advisory Board (PAMAB). PAMAB is constituted of 3 chiefs, 2 representatives from the national Wildlife Division, 2 from youth groups, 2 from District Assemblies; 1 from the Police Service, 1 from the Fire Service, 2 farmers and other co-opted members. Another part of the forest block is protected by the "Goaso forest reserves". Different protection methods have been tested and evaluated and the overall protection effectiveness of the concepts of biosphere reserve vs. forest reserve as well. Scientists of the Kwame Nkrumah University in Kumasi, Ghana, tracked both changes in poaching activity, and monitored trends in elephant numbers and distribution in the two regions. The results indicate that the Bia biosphere reserve seems to be considerably more effective. In Bia, poaching activity dropped significantly by a factor of 3 from 2007 to 2009 and the "core elephant range" increased greatly from 45% in 2004 to 78% in 2009. These data have been corroborated by many reports, so short-term effects such as random-elephant movements and rainfall variability can be excluded. Comparatively, in the Goaso area, the figures remained at their previous levels. The scientists attribute these changes to the differing conservation and management regimes in the biosphere reserve, whose law enforcement including wildlife patrol was supported by a project (PADP II) funded by the EU in that period, vs. the forest reserves. The scientists attribute the increasingly threatened status of elephants in Goaso not only to the focus on logging regimes there but to the rapidly increasing human population [[UNESCO2013-1]].

In order to better control illegal activities, the legal framework might be specified more concretely, through government decrees and through use protocols established with landowners and other beneficiaries. It can help if the zone boundaries are clearly marked by signs along paths and roads.

Usually, each biosphere reserve will have available some rangers for terrain patrolling. It depends on the policing authority of these rangers, what they are permitted to do on the ground to stop illegal activities and to promote the application of the law. In Europe, recently patrolling on horseback has been re-introduced in some biosphere reserves with considerable success. If breaches of the law are persistent, a public hearing might be called to address underlying reasons for the breaching of the law. Several biosphere reserves, including in Africa, have introduced joint patrols of rangers and community hunters.

Patrols for control

Patrolling and sanctioning illegal activities is one side of the coin. The other side fits much better to the spirit of biosphere reserves: motivating positive change. Illegal activities should be prevented from the outset through education and awareness raising for local inhabitants, starting with children and youth. Written guidelines on how to behave tactfully can be offered for tourists; they can be just as valuable as booklets with recommendations for farmers. Negotiating and mediating different interests in order to prevent conflicts from escalating should be the daily task of a biosphere reserve manager, in small private sessions or in large public hearings. The same is true for promoting the sharing of interests.

Preventing illegal action

Management plans and their monitoring

No plan makes sense if the results from its implementation are not monitored. Every good plan needs to specify time-bound success indicators. Wherever possible, indicators should be quantified and accompanied by benchmarks. The indicators give an indication whether the medium- and long-term goals of the biosphere reserve are likely to

Success indicators

be achieved. Depending on the goal and intervention that is monitored it can make sense to monitor several times a year or only annually. There are also some indicators which can only be monitored every few years, for example because of the high cost to collect the data.

Don't duplicate monitoring

Monitoring of the management plan should go hand-in-hand with all other relevant monitoring, to optimize the human and financial resources. For example, it should be fully in line with the cycle of the periodic review to be sent to UNESCO. It should also be in line with the monitoring of any large-scale project, as funded by one or several donors.

Make sure that you also “monitor” the process of formulating and implementing the management plan: How many people participate in public hearings? How many participants from vulnerable groups take part?

Indicators must be measurable

As regarding suitable indicators for the management plan, it critically depends on the goals that you set for the biosphere reserve. Be sure to choose indicators that can be actually measured. For example, it is easy to declare the number of beetle species as an indicator; but if counting the beetle species would require a multi-million US-\$ research project, the indicator makes no sense. Also “average income of the communities” or “number of tourists” only make sense as indicators if there is an institution that can actually give you this data. Also be careful with “satisfaction” indicators if you are not really sure how to do a survey according to proper methodological standards.

3.4 Leveraging legal, administrative and ethical frameworks

Leveraging the law

In order to implement a management plan, in order to generally promote the objectives of a biosphere reserve and in order to support averting threats, managers should draw upon all available instruments provided by the state and by local culture and communities. In many cases, an effective tool to avert threats can be local customary law and local traditions – however, this cannot be addressed by this Manual. In the following, the issues of legal remedies, administrative instruments and of political/ethical tools are presented.

No standard legal basis

UNESCO does not require a specific legal basis for a biosphere reserve. It is only clearly required (in the Statutory Framework, cp. Appendix 2) that core areas are legally constituted/gazetted. For legislation on protected areas in general, cp. [[IUCN2011]].

Special legal texts on biosphere reserves

Many countries constitute legally both the core areas and the buffer zones under national law. Some countries have legislations that specifically refer to biosphere reserves as a whole (e.g. Australia, Brazil, Germany, Kirghizstan, Niger and Spain); typically, there is no “separate biosphere reserve law”, but the law on nature conservation or the law on sustainable development has a paragraph on biosphere reserves. Some countries such as Burkina Faso, Congo or Mali refer in their conservation acts to biosphere reserves as a specific category, but not to the understanding as expressed in the Seville Strategy [[GUEDEGBE]]. This has also been the result of a survey for the 2009 session of the MAB ICC [[BONNIN2009-1]]. To this survey, more than 20 countries replied that biosphere reserves are not a specific legal category. For more details, cp. Appendix 15.

Does your country need a law?

Obviously, the question of whether a country should establish a law on biosphere reserves cannot be decided from the outside. Also the more detailed question on whether a separate law is needed or whether an existing law should be amended. A detailed legal analysis is needed to avoid overlapping and conflicting legislation. If gaps exist, still an analysis of advantages and disadvantages has to be carried out.

Foundation by law or by decree

Beyond the countries mentioned, several biosphere reserves worldwide have been established through a specific law, for example the Colombian law on the Seaflower biosphere reserve or the law on the German Bliesgau biosphere reserve. But also other solutions exist, such as an ordinance or decree as legal basis. For example the Pendjari biosphere reserve in Benin has been established by decree N° 94-6, based on the framework environmental law.

Other countries have created specific legitimacy for biosphere reserves through references in strategies or action plans, e.g. for biodiversity (cp. the case of Tanzania later in this section). In countries with particular legislations, it is even more important to seek participation and to achieve community consensus before starting any nomination process.

Taking legal action as public agency

Irrespective of the question whether a biosphere reserve has a legal basis or not, managers need to draw upon all legal resources that are available. In the cases of many countries, if the management body is an agency according to public law, then it has to be consulted anyway in any case of “public interest”, e.g. before any company makes an investment with potential impact on the environment. If such consultation is not taking place or if in any other way rules are not obeyed, the management body might take legal action usually only if it has formal “legal capacity”, which is not given in the case of all management bodies.

Leveraging international instruments

The management board and the management unit of a biosphere reserve should make full use of the fact that the biosphere reserve is designated by UNESCO, a *UN agency*. This international context provides added legitimacy to an approach that any protected area could use – but which is too seldom done, if only due to ignorance of the possibility.

Make use of the
UNESCO designation

Biosphere reserve managers should be aware of the option of leveraging international treaties, protocols, agreements, and conventions which have been ratified or adopted by their country. For Africa, it is mostly the UN instruments which apply; the African Union has some relevant intergovernmental agreements as well, and there are regional conventions for marine resources.

Use what is written in
international treaties

- *UN Convention on Biological Diversity (CBD)*: It entered into force in 1993; *all* African countries have ratified it/acceded to it (April 2014) [[CBD]]. Therefore its principles and goals are binding for all African governments. Its three goals are almost identical to the approach of biosphere reserves: biodiversity conservation; sustainable use of biodiversity; and fair and equitable sharing of the benefits arising from the utilization of genetic resources. The CBD requires formulating national biodiversity strategies (NBSAP, cp. below). The CBD provides much legitimacy to the actions of biosphere reserve managers.
- *Cartagena Protocol on Biosafety*: This protocol to the CBD entered into force in 2003; most African countries have ratified it/acceded to it (47 – as of April 2014). This protocol to CBD Article 19.3 obliges its parties to appropriate procedures for safe handling and use of any living modified organism, which may have adverse effects on biodiversity.
- *Nagoya Protocol on Access and Benefit-Sharing (ABS)*: This protocol to the CBD has entered into force in October 2014; already 26 African countries have ratified it/acceded to it (as of April 2015). It is an international agreement which aims at sharing the benefits arising from the utilization of genetic resources in a fair and equitable way (cp. section 2.3).
- *UN Convention on Migratory Species (CMS, “Bonn Convention”)*: It entered into force in 1983; all but 9 African countries have ratified it/acceded to it (April 2014) [[CMS]]. The binding principles of this “framework convention” specify the conservation of migratory species (terrestrial, aquatic and avian) throughout their migratory range. In 2014, it dealt with the conservation of 519 species. It also has sub-conventions such as the *Agreement on the Conservation of Gorillas and their Habitats*. Use CMS for your species conservation efforts.
- *UN Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES, “Washington Convention”)*: It entered into force in 1975; almost all African countries have ratified it/acceded to it. The therefore binding principles specify conditions under which international trade in wild animals and plants becomes a threat to their survival – and which trade is therefore forbidden. Use CITES in the context of poaching [[CITES2009]].

CBD and its protocols

Convention on
migratory species

Trade in endangered
species



- The *Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services* (IPBES) is modelled on the IPCC and will deliver similar integrated scientific assessment reports – it is only implicitly normative though. It will set new standards to balance scientific and traditional knowledge [[IPBES]].
- Desertification** — The *UN Convention to Combat Desertification* (UNCCD) entered into force in 1996; almost all African countries have ratified it [[UNCCD]]. The UNCCD links environment to sustainable land management and specifically addresses drylands (arid, semi-arid and dry sub-humid areas), with some of the most vulnerable ecosystems and peoples.
- Climate change** — The *UN Framework Convention on Climate Change* (UNFCCC) entered into force in 1994; almost all African countries have ratified it [[UNFCCC]]. UNFCCC sets an overall framework for tackling the challenges of climate change under the principle of “common but differentiated responsibilities” to national emissions reductions.
- The *Kyoto Protocol to the UNFCCC* is in force since 2005. It commits states through internationally binding emission reduction targets. The first commitment period was from 2008 to 2012.
- The *UN Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation* (REDD) was launched in 2008. It supports nationally-led REDD+ processes in 48 partner countries through direct support to the design and implementation and through analyses, methodologies, tools, data and best practices [[REDD]].
- The *Intergovernmental Panel for Climate Change* (IPCC) is well known for its integrated scientific assessment reports – it is only implicitly normative though. Watch out for its regular reports to see what you should do for climate change adaptation (cp. section 2.1) [[IPCC]].
- World Heritage** — *UNESCO World Heritage Convention*: It entered into force in 1975; almost all African countries have ratified it [[WHCWEB]]. It provides the basis for the designation and management of the more than 1000 World Heritage Sites – in 2015, 41 of them are Natural Heritage sites in Africa, some within biosphere reserves. This convention gives the entire world a shared responsibility for the conservation of these sites of “Outstanding Universal Value” (OUV).
- Wetlands** — *Ramsar Convention*: entered into force in 1975; almost all African countries have ratified it/acceded to it (47 – in April 2014), [[RAMSAR]]. This convention improves protection of internationally important wetlands; around 150 wetlands in Africa have been designated as Ramsar sites already, some within biosphere reserves.
- The *Millennium Ecosystem Assessment* (MA) was a global report published in 2005, with a focus on the impacts of ecosystem changes for human well-being [[MA]]. The *Global Environment Outlook* (GEO) is a series of so far five global reports by UNEP [[UNEP2012-2]]. Similar to the GEO series, the African Environment Outlook (AEO) is the leading environmental assessment tool for Africa. Its third edition appeared in 2013. The *Economics of Ecosystems and Biodiversity* (TEEB) was another important global study published in 2010/2011 and on-going initiative [[TEEB]].
- The Seed Treaty** — *The International Treaty on Plant Genetic Resources for Food and Agriculture* (ITPGRFA or “Seed Treaty”) entered into force in 2004. It has 45 state parties in Africa. It is in line with the CBD, guaranteeing food security through the conservation, exchange and sustainable use of the world’s plant genetic resources for food and agriculture [[ITPGRFA]].
- The *International Assessment of Agricultural Knowledge, Science and Technology for Development* (IAASTD) evaluated all agricultural knowledge in a global report in 2007 [[IAASTD]]. Since 1993, the FAO publishes (bi) annually its reports *The State of Food and Agriculture* [[SOFA]] and *The State of World Fisheries and Aquaculture* [[SOFIA]].
- African Union Nature conservation** — **African Union**: *African Convention on the Conservation of Nature and Natural Resources* (“Algiers Convention”) entered into force in 1969 and was revised in Maputo in 2003. Around 30 African countries have ratified it/acceded to it. Its goal is to encourage joint action for the conservation, utilization and development of soil, water, flora and fauna, committing its state parties to adopt appropriate measures “in accordance with scientific principles and with due regard to the best interests of the people.” Issues are to manage habitats, to control hunting, capture and fishing, to prohibit the use of poisons, explosives and automatic weapons in hunting, to prevent and control water pollution, to establish conservation areas and to consider ecological factors in development plans [[ALGIERS]].
- East African ocean** — **East Africa**: *The Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region* (“Nairobi Convention”), entered into force in 1996, and was amended in 2010. Its state parties are the Comoros, France, Kenya, Madagascar, Mauritius, Mozambique, the Seychelles, Somalia, Tanzania and South Africa. It promotes regional cooperation and coordination on coastal and marine environmental issues including critical national and transboundary issues [[NAIROBI]].
- West African ocean** — **West/Central Africa**: *The Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Region* (“Abidjan Convention”) entered into force in 1984, and was amended in 2010. Its state parties are Angola, Benin, Cameroon, Cape Verde, DR Congo, Congo, Côte d’Ivoire, Equatorial Guinea, Gabon, the Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mauritania, Namibia, Nigeria, Sao Tomé e Príncipe, Senegal, Sierra Leone, South Africa and Togo. It is a comprehensive umbrella agreement for the protection and management of marine and coastal areas, listing sources of pollution that require control: ships, dumping, land-based activities, exploration and exploitation of the seabed, and pollution from the atmosphere. It also deals with coastal erosion, specially protected areas, combating pollution in cases of emergency; and environmental impact assessment [[ABIDJAN]].



- Also of interest is the African Union's *Bamako Convention on the Ban of the Import into Africa of Hazardous Wastes*, which entered into force in 1998. It has around 25 state parties from Africa. In the field of chemicals and waste, there are several other UN instruments: the *Basel Convention on Hazardous Waste*, the *Rotterdam Convention on the Prior Informed Consent Procedure*, the *Stockholm Convention on Persistent Organic Pollutants*, and the *Minamata Convention on Mercury*. Also UNEP's Strategic Approach to International Chemicals Management (SAICM) should be mentioned.
- **European Union:** *Forest Law Enforcement, Governance and Trade (FLEGT)*: This action plan by the EU, adopted in 2003, contains several measures to exclude illegal timber from import into Europe and to discourage illegal logging, while promoting sustainable forestry in export countries. The EU thus goes further than the *UN Forum on Forests* (which takes place every two years), which in 2007 adopted the *Non-Legally Binding Instrument on All Types of Forests*, later adopted by the UN General Assembly.

Waste and chemicals

Illegal timber and forests

Beyond these environmental agreements, we could list dozens or hundreds of UN, AU and REC treaties in field such as social development or human rights.

Incorporating biosphere reserves into action plans at the national level

Too many biosphere reserve managers work too isolated from political discussions. Too many managers seem to be convinced that if they do good work, the rest of the world will pay attention. Unfortunately, doing good work is not enough. We live today in a "world of communication", in which those who do not tell their successes, simply become inaudible. They are "silenced" by hundreds of others who have successes to tell and many thousands who are not successful, but claim success nevertheless.

You need to lobby for your biosphere reserve

In short, you need to do "lobbying" for your biosphere reserve targeting mayors, municipal parliaments, provincial governors, provincial parliaments, national government, national parliament, UN country coordinator, or embassies. Good lobbying efforts tell the interlocutor a story which excites her/him, because the story either contains an argument for re-election, or because it supports a political strategy of the interlocutor. Better do no lobbying without good stories and arguments; of course don't just ask for money. And *of course* don't bribe – lobbying is a perfectly acceptable practice, and it is strictly separate from corruption.

Lobbying needs good stories

- Best lobbying success:** The best possible way of promoting your biosphere reserve is not by convincing one official or politician (who might have a different job the next day). **The best possible way is to incorporate your biosphere reserve in overall provincial or national strategies or action plans.** Of course every strategy or action plan can be rewritten; but such action plans can provide a long-term strengthening and a permanent legitimacy. An action plan often will turn into a policy and later into law. Already the Seville Strategy required to incorporate biosphere reserves into sustainable development plans, into strategies for biodiversity conservation, in plans for protected areas, and in the “National Biodiversity Strategies and Action Plans” (NBSAPs) as well as in other development and land-use planning projects.
- Incorporation into action plans**
- Examples of strategies or action plans:
- UNDAF** — *UN Development Assistance Framework (UNDAF) / United Nations Development Assistance Plan (UNDAP)* is a document agreed upon between a government and the UN country team encapsulating jointly agreed priority actions for 5-year periods. Almost all African countries have UNDAFs, some even their fourth for 2012-2016; UNDAPs are more recent and not known continent-wide. The Common Country Assessments (CCA) are important documents in the UNDAF context as well.
 - PRSP** — *Poverty Reduction Strategy Papers (PRSP)* are overarching documents that are broadly consulted with national stakeholders, bilateral donors and supervised by the International Monetary Fund (IMF) and World Bank. Almost all African countries have PRSPs. They are updated using annual progress reports; they describe the countries macroeconomic, structural, and social policies in support of growth and poverty reduction, as well as associated external financing needs and major sources of financing.
 - *UNESCO Country Programming Document (UCPD)* provides a succinct results-based status description of all ongoing and recent UNESCO activities and identifies deliverables for future common country programming exercises. UNESCO has about 50 UCPDs, one third of them for African countries.
 - Sustainable Development Strategies** — *National Sustainable Development Strategies (NSDS)* have been stipulated by the Johannesburg World Summit 2002 [[UN2002]]. By 2010, 106 countries had NSDS which they implemented, including 20 from Africa [[NSDS]].
 - *National Environmental Action Plan (NEAP)*: NEAPs had been required by the World Bank in the 1990ies; they are not very relevant anymore.
 - Biodiversity Action Plans** — *Biodiversity Action Plan (NBSAP)*: Such plans have been demanded by the CBD; almost all countries have established one, a recent example being Ghana’s National Biodiversity Strategy and Action Plan of 2015. The AfriMAB Assembly 2013 has demanded increased efforts on incorporating biosphere reserves exactly into these NBSAPs. Tanzania’s NBSAP focuses on sustainable use of Lake Manyara, a UNESCO biosphere reserve.
 - Climate change strategies** — *Climate change strategies*: The majority of countries have such a strategy; also many provinces have their own. Some strategies focus on climate change mitigation (emissions reduction), others focus on adaptation. “National adaptation programmes of action” (NAPA) and REDD documents are quite standardized. *Examples*: South Africa’s Climate Change Response Strategy, 2004; Climate Change NAPA of Ethiopia, 2007; Kenya’s National Climate Change Response Strategy, 2010; Zambia’s National Climate Change Response Strategy, 2010; Nigeria’s National Adaptation Strategy and Plan of Action on Climate Change, 2011; Ghana’s National Climate Change Adaptation Strategy, 2012

As can be seen from the above, such strategic planning at the national level is often prompted by international legal instruments and done through a wide process of participation. Obviously, this is beneficial – since participatory planning, as promoted by this Manual, is necessary not only locally, but also nationally.

- When there is a new plan, try to have the biosphere reserve included**
- You should be aware of national discussions about new action plans, policies, legislative efforts, and law revisions – as well as, at the provincial level, of land-use planning and infrastructure projects (water, roads, public transport, markets and energy). The same applies to national environmental education and research programmes dealing with climate change and biodiversity. When the drafting of new plans begins, try to promote the biosphere reserve’s goals in this context as much as possible. If you are allowed: Try to get an invitation to public hearings; submit a written opinion.

Environmental Impact Assessment

- What are Impact Assessments?** *Impact Assessment* is used to identify the future consequences of a proposed action or project. “Impact” is the difference between what would happen in a given system (e.g. an ecosystem), if the action were taken – or not [[IAIA]]. *Environmental Impact Assessments (EIA)* are legally prescribed in many countries worldwide for large-scale infrastructure projects, e.g. building a road. There are more and there are less rigorous versions of EIA. In some countries, the environmental impact of a given project has to be “off-set” by compensatory interventions elsewhere (e.g. replanting the same number of trees elsewhere). There are just as many versions of *Social Impact Assessment*. Different types of Impact Assessments may be combined into an *Integrated or Environmental and Social Impact Assessment*.

The OECD has suggested EIA for development assistance projects more than 20 years ago, to integrate environmental concerns into development cooperation, as well as addressing public participation and good governance issues.

Case study: EIAs and community engagement in Vhembe biosphere reserve, South Africa

The South African district Vhembe, bordering Zimbabwe, Botswana and Mozambique, was designated as a biosphere reserve in 2009. The greatest challenge is fighting the legacy of Apartheid based poverty, which is compounded by population growth, continuing unsuitable development, habitat destruction and adverse climate change. Vhembe, governed by a representative body in four municipalities and an advisory group of diverse stakeholders, and supported by the Vhembe district municipality and the provincial government, has made it a priority to involve local communities, non-profit organizations as well as traditional leadership and healers' structures. The biosphere reserve has been involved in the debate about mining in the area and engages actively in Environmental Impact Assessment. It also supports debate about a buffer zone to protect the Mapungubwe World Heritage Site from mining. Vhembe works on a longer-term strategy which includes the preparation of an Environmental Management Framework as a basis for decision-making based on sustainable development principles. The biosphere reserve is actively engaged in the community land restitution process. Land claims are not only considered a constitutional property right, but are also based on customary law. Communities engage in sustainable and participatory land use supported by a local NGO and using Indigenous Knowledge, complemented by scientific knowledge. The biosphere reserve works with the University of Venda, its MSc and PhD courses and in particular its Biodiversity Chair. Support to community projects is often given in the form of working materials, rather than cash in hand.

Most EIA techniques require participatory methods and stakeholder consultation. African biosphere reserves often work with EIA, but mostly not coherently enough and not according to standards; too many EIA applications are project-driven and not part of the institutional tool-box.

EIAs are helpful techniques in decision-making, similarly to the precautionary principle, since they “do not require adherence to a predetermined environmental outcome, but rather they require decision makers to account for environmental values in their decisions and to justify those decisions in light of detailed environmental studies and public comments on the potential environmental impacts” [[HOLDER]].

The basic rationale

Biosphere reserve managers may utilize techniques of EIA as a planning technical tools to analyze the vast space of potential consequences of a planned intervention (strategy, plan, project), which might include results such as heavy pollution and conflicts. EIA promotes transparency and public participation; it leads to identifying monitoring procedures and methods for mitigation of adverse consequences. EIA in biosphere reserves needs to take into account the zonation, cp. also [[MENDOZA]].

How to use them in biosphere reserves?

An Impact Assessment differentiates, inter alia, between localized and widespread impacts, between individual and cumulative impact, between temporary and permanent, avoidable and unavoidable, reversible and irreversible, immediate and delayed, direct and indirect, short-term and long-term as well as one-off, intermittent or continuous impact.

UN documents in support of Environmental Impact Assessment

Rio Declaration, Principle 17: Environmental Impact Assessment, as a national instrument, shall be undertaken for proposed activities that are likely to have a significant adverse impact on the environment and are subject to a decision of a competent national authority.

The “**Equator Principles**”, based on environmental standards of the World Bank, are used by 66 financial institutions to ensure environmental and social justice in global project finance.

Other instruments include: UN Convention on Biological Diversity 1992; UN Convention on the Law of the Sea 1982; UNECE Regional Convention on EIA in a Transboundary Context 1991.

EIA should not be foreseen for all development projects, especially not for small-scale community self-driven projects to benefit indigenous populations for subsistence. With increasing scale of the projects, EIA is recommended or legally required, e.g. for building tourism facilities, energy infrastructure, settlements and housing, industrial agricultural development, introduction of species, dredging and water resource infrastructure, road construction, mining, or dams.

When to use EIA, when not to use it

Environmental Ethics – The Precautionary Principle

Ethics is the term for schools of thought which systematically discuss questions of human morality. Ethics can be “normative”, telling us what we *should* think is good and evil; ethics can also be descriptive, explaining what we *actually think* is good and evil. Ethics is related to philosophy, psychology, culture, and religion. *Environmental ethics* has developed in the 1970ies and even more in the 1990ies. A key question is whether nature has its own value (“intrinsic value”, “deep ecology”) or whether it has value “only for human beings” (“anthropocentrism”). Other questions include limits to the use of finite resources, obligations to future generations, “rights” of animals, plants or even ecosystems.

What is environmental ethics?

Relevant UN texts The United Nations has adopted reference texts such as the Stockholm Declaration of 1972 or the “World Charter for Nature” of 1982. The Rio Declaration of 1992 produced consensus on the need for legal environmental norms. The “Declaration on the Responsibilities of the Present Generations Towards Future Generations”, adopted by UNESCO’s General Conference in 1997, stated that “the present generations should preserve for future generations natural resources necessary for sustaining human life and for its development”.

Limits of political consensus So far, there is *no overarching global political or legal consensus* on most concepts of environmental ethics, such as “polluter pays” or “common, but differentiated responsibilities”. These principles are only agreed upon case by case, the latter is contained in the UNFCCC. This is the case because many governments fear that these principles would have heavy financial implications. For many years already, UNESCO’s member states could not agree whether to start negotiating on a Declaration of Ethical Principles of Climate Change.

What is the precautionary principle? *The precautionary principle* supports anticipation, avoidance and prevention of environmental damage – in cases where there is *not yet clear evidence* that such damage will definitely occur. Precaution shifts the balance in decision-making toward “prudent foresight”, in favour of monitoring, preventing or mitigating uncertain potential threats. *The precautionary principle asks politicians, managers and scientists to very carefully address questions of uncertainty and risk.*

What is risk? “Risk” has many definitions, the most widely used it is the probability that something undesirable will happen multiplied by the amount of damage that is expected to occur. In a typical application of this definition, nuclear reactors have a high risk: Although a nuclear reactor accident is quite unlikely, the potential damage is extremely high.

UN instruments in support of the precautionary principle

Rio Declaration, 1992, Principle 15: In order to protect the environment, the precautionary approach shall be widely applied by states according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.

Convention on Biological Diversity, 1992, Preamble: Where there is a threat of significant reduction or loss of biological diversity, lack of full scientific certainty should not be used as a reason for postponing measures to avoid or minimize such a threat.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (CoP13 Resolution 9.24): The parties shall, by virtue of the precautionary approach and in case of uncertainty either as regards the status of a species or the impact of trade on the conservation of a species, act in the best interest of the conservation of the species concerned and adopt measures that are proportionate to the anticipated risks to the species.

Summary of the principle

Elements of the precautionary principle

- *When does it apply:* In cases of “serious or irreversible” damage to the environment and human health
- *Relation to uncertainty:* Lack of scientific certainty not be used as a reason against cost-effective preventive/protective action
- *Shift of the burden of proof:* Proponents of potentially harmful activities to be required to demonstrate the safety or acceptability of their action

For more details, cp. UNESCO’s publication “The precautionary principle” of 2005 [[UNESCO2005]].

The principle is similar to the approach of biosphere reserves

What does the precautionary principle mean for biosphere reserves? Globally, the precautionary principle is recognized as an ethical – and increasingly political – principle of policy-making and management *under the conditions of uncertainty*. The principle really *is a principle* – only in few situations could you clearly decide what to do, on its basis alone. But the precautionary principle *helps* in the context of management under uncertainty. We have said above that management is always accompanied by uncertainty – if uncertainty and risk is “too much favoured”, risks are taken which are too high. The principle will rule out the “too risky” options from a portfolio of potential alternatives. The principle will not tell you what to do, but it will advise you what not to do. Thus, you should include the principle into legal, institutional and policy frameworks. But be careful – do not expect a panacea and *don’t misuse the precautionary principle*; always clearly specify the uncertainty to which precautionary measures are responding and adopt measures that are *proportionate and cost-effective* to the potential threats.

Don’t misuse the principle

3.5 Funding for biosphere reserves

In general, no funding from UNESCO

UNESCO does not provide funding for biosphere reserves. This is the general answer to the maybe most frequently asked question from biosphere reserve managers. Of course there are some exceptions, when UNESCO coordinates globally or regionally comparative projects, for example recently in West Africa. And there is the AfriMAB Assembly’s proposal in 2010 to investigate the feasibility of AfriBioFund, a special fund for biosphere reserves in Africa. The start-up project for AfriBioFund is still to be funded.

In the long run, each biosphere reserve has to be funded from national, or better even, provincial or municipal sources.

Until this is possible, the UNESCO designation should be used as a “quality label” in order to attract a wide variety of funding from national, international, and private sources. That this is indeed possible and comparatively “easy”, e.g. through GEF, is due to the specific combination of factors that is special for biosphere reserves. Through a *diversified funding portfolio*, biosphere reserves should acquire funding from several different sources for individual projects, for example from scientific institutions, ODA donors, intergovernmental institutions, international NGOs or charitable foundations. A reasonable approach is to formulate a funding strategy like the Kafa biosphere reserve, Ethiopia [[BERGHÖFER]].

Quality label to attract donors

Whatever funding you are seeking, be aware that you will need to write a high-quality funding proposals. IUCN gives guidance on funding for protected areas [[IUCN2003-1]] and [[IUCN2006]]. You can find a lot of free practical guides online on how to write funding proposals. You can use any Internet Search Engine, just enter “writing a grant proposal” or “how to write a funding proposal”. Any funding proposal needs to be well structured and it needs to contain really strong content – the funding agency needs to get an idea *that you know exactly what you want and that you have the staff, knowledge and experience how you will do it once you have the money*.

Writing funding proposals

Possible funding sources at local level

In the long run, a stable funding base has to be created at the local level, with funding from the provincial governments, local communities, and other private sector partners, e.g. tourism facilities. A biosphere reserve must also be “financially sustainable”. Conceptually those should pay for it who benefit from it. Of course you may claim that the entire world benefits from the conservation of biodiversity in Africa; however, at least until today, internationally accepted mechanisms to pay developing countries as “compensation” for conserving specific ecosystems do not exist yet, although a controversial discussion is emerging, cp. [[REDD]], [[YASUNI]]; individual countries provide funding at a global scale to live up to their specific responsibility.

Beneficiaries should pay

In those African biosphere reserves whose core areas are national parks or other protected areas with entry controls, with wardens on patrol – and with entry fees for visitors – there is direct income to the biosphere reserve management and/or the authorities in charge. Some biosphere reserves receive enough funding from entry fees that the staff of the secretariat as well as a budget for projects, maintenance and investment can be fully funded. Through a benefit-sharing approach, such touristically attractive and successful biosphere reserves can greatly benefit local communities (cp. section 2.3 for some concrete models).

In cases of biosphere reserves which are able to raise substantial fees from tourists (either directly through entry fees or indirectly through local taxes and levies on tour and hotel operators), an important question is: How are the incomes shared among all the different parties that stake claims, i.e. (a) national governments, (b) provincial and local governments, (c) the management/conservation authority including the biosphere reserve management team, and (d) local communities.

Clearly there cannot be a universally applicable formula on which percentage of tourism revenues need to go to the local management staff – the “nation as a whole” has its moral and its economic right for a considerable share of the revenue as well, since the national government establishes airports and roads on which tourists arrive. Similar reasoning applies to provincial and local governments. But it is clear that a large part of the revenue from tourists has to benefit local communities and the functioning of a biosphere reserve – otherwise the local pressure on the heritage becomes too large, and management staff will not be able to effectively protect it.

In industrialized countries, biosphere reserves receive their core funding mostly from local sources; i.e. either from provincial governments or from an “association model”, without being tied to direct income such as from tourism fees. The latter can be either

- A statutory association of communities (towns and villages) or
- A supportive association with a mixed membership. For example, the Fundy biosphere reserve in Canada receives some limited funding through their “charter membership” open for government agencies, municipalities, NGOs/CSOs, schools, and individuals.

Most biosphere reserves in industrialized countries however depend also on considerable funding from provincial governments. In most African countries, funding from local or provincial governments seems like a remote possibility today, where any public administration, even for protected areas with high numbers of tourists, struggle to obtain state funding. But the diversification of funding sources is an absolutely necessary requirement for African biosphere reserves, today and even more in the future. No really convincing model has been tested so far, but first experimentation is underway. An interesting example are Trust Funds (cp. below and case study on Mt. Mulanje biosphere reserve at the start of section 3) or working with foundations.

Local and provincial governments in Africa need to pay more



**Funds from
local businesses:
limitations**

Fundraising at the local level may specifically target the local private sector, through partnerships with local businesses. However, partnerships which result in considerable and stable funding require long-standing relations and mutual trust-building. A biosphere reserve typically cannot “levy environmental taxes” and should not claim to do so. A biosphere reserve must also be careful what “benefits” to announce to local businesses in exchange for contributions: “Benefits to businesses” may never conflict with the sustainable development goals agreed with local communities, such as biodiversity conservation goals, participation goals, or any other agreed goals. Otherwise, a biosphere reserve would contradict and corrupt everything it stands for.

**Towards a long-term
partnership with local
businesses**

A biosphere reserve management should make all efforts to present the considerable benefits that they provide to local business operators, including outlets of large-scale tourism operators. In most cases, tourists will come to a region exactly because of the authentic nature. Therefore, it is only fair if the tourism facilities contribute substantially to financing the interventions needed to keep nature intact. This can be modelled on “charitable sponsoring” for individual projects of conservation of the landscape and the natural and cultural heritage, e.g. through fundraising events; however, a long-term stable funding should not be based on “charitable donations” in the sense of “benevolent, voluntary giving”; tourism operators need to understand that the biosphere reserve addresses key business interests which are not available for free. To repeat – community-agreed goals may not be compromised.

Also other local (small-scale) businesses can have significant benefits from the biosphere reserve – and should therefore (in the long run) contribute to its funding. However, biosphere reserve managers should *not* start to engage with small-scale local businesses in this motivation. They should raise the awareness and interest into the biosphere reserve’s goals and activities by explaining the possible benefit *to* businesses. This can include joint national and international marketing strategies for products such as organic cotton or organic coffee, e.g. [[ORGANIC]] and [[KULLMANN]]. This can also include support to the local community to improve handicraft production and traditional food, for example through upgraded quality of the products, better material or better access to markets. A possible model is to establish a “cooperation protocol” with local businesses and other partners based on benefit-sharing.

Such co-funding from local businesses will often require a change of the statutes or the legal act of the biosphere reserve. Establishing such local co-funding represents a considerable challenge in Africa, and managers will not be able to implement such approaches alone. The support from more experienced experts to identify the right model for your particular biosphere reserve is highly recommended.

Possible funding sources at national level

In many countries, including in Africa, biosphere reserves are operated by national government authorities and agencies, for example the national wildlife service or the national nature conservation agency, under the general supervision of the ministry for the environment or for scientific research. The models differ substantially in the details [[GUEDEGBE]], but in the “authority model” (cp. section 3.1), decisions are taken directly or indirectly by a ministry which also provides the budget. Such budgets can originate from the regular tax system or ODA funding, or can be specifically tied to income from hotel taxes, levies on land purchase, real estate surcharge tax, mining royalties, pipeline fees or conservation easements [[SPERGEL]]. Also ministry-funded biosphere reserves, if they are permitted to do so, should venture to diversify their income, both from local as well as from international sources.

Funds from national governments

Also “NGO model” biosphere reserves should look towards national sources for potential co-funding. This could be “national environmental funds” which exist in many countries, including in African countries, for example

- Namibia’s Environmental Investment Fund
- Senegal’s West African Rural Foundation, and
- South Africa’s Green Trust.

Sometimes, trust funds are set up for specific protected areas, for example the Mulanje Mountain Conservation Trust for the Mulanje Mountain biosphere reserve in Malawi, an endowment trust funded by the World Bank through its Global Environmental Facility (GEF).

National foundations and trust funds

Bilateral donors

As has been explained above, there are many aspects of the *concept of a UNESCO biosphere reserve* which make them “donors’ darlings”, ideal for *bilateral development funding*. To repeat the assets of a biosphere reserve, they offer:

Biosphere reserves can be “donors’ darlings”

- A long-term stable, legal and administrative framework
- A management unit which can be held accountable
- A clear set of multi-dimensional goals formulated in the management plan
- A culture of participation
- An adaptive management based on periodic reviews
- Great global visibility in case of emerging problems
- A quality designation and label provided by UNESCO which is attractive for tourists

In short, there are many reasons why a bilateral donor (an international NGO or a donor government) should prefer to invest in any particular project in your biosphere reserve rather than into a similar project 100 kilometres away, where there is no such structure or international designation. And there is a lot of information available on funding, e.g. at [[CFA]]. The scene is quickly evolving, therefore overviews can quickly be outdated [[GUTMAN]].

In fact, several international donors have financially supported biosphere reserves:

Examples of bilateral donors

- European Union (e.g. W Region transboundary biosphere reserve)
- Spain (Ministry for Agriculture and Environment, e.g. IberoMAB; and MDG achievement fund)
- United Kingdom (through DFID, for example Tanzania and Seaflower biosphere reserve in Colombia)
- United States (through USAid, for example Maya biosphere reserve in Guatemala)
- France (AFD, for example Pendjari biosphere reserve in Benin)
- Republic of Korea (KOICA project on “Green Economy in biosphere reserves” with pilot sites in Tanzania, Nigeria and Ghana)
- Germany (BMZ, BMUB, BMBF and AA through GIZ, KfW, BfN and DUK, for example in Ethiopia, Ghana, Kenya, Nigeria, Morocco, Tanzania, Uganda to name but just a few)

The German ministry for development in 2011 even published a brochure on biosphere reserves as a premium instrument for development cooperation [[GIZ2011]]. In 2014, the German support given to international biosphere reserves in currently active projects added up to more than 110 million Euros. Annually, the German government invest 500 million Euros in international nature conservation projects.

More than 100 million Euros from Germany

Also the East Asian and the Gulf states (Kuwait, Saudi Arabia, UAE, Qatar) and others have recently increased their development cooperation significantly, however, so far not focused on biosphere reserves. Some provincial governments, such as the one of the South Korean island Jeju or the Spanish island Menorca, have invested in international cooperation projects of biosphere reserves as well.

Other bilateral funding

Intercontinental twinning partnerships among biosphere reserves, such as the one among Kruger to Canyons, South Africa, and Rhön, Germany, [[K2C]] or the one among Malindi-Watamu, Kenya and Branton Burrows, UK, are

Twinning is not about funding

not “donor partnerships”, but “partnerships of mutual learning”. Yet they can facilitate access to *other* donors. ODA budgets and priority areas are negotiated between the governments of donor and recipient countries. Thus, before approaching a foreign bilateral donor, you should try to convince the government of your own country of the need for support of your project proposal. It might be advisable to approach the MAB National Committee of your country first, which is in a better position to find out which officials will set the agenda for the bilateral ODA negotiations. Those negotiators can discuss your ideas with the donor’s representatives.

How to approach a bilateral donor

You yourself should approach bilateral donors only with great care. Be aware that there are only few large-scale donors, and a project that could support a biosphere reserve management team for several years can only be supported by a few donors. If one or several among the local representatives of potential donors think that you are not professional, access to foreign funding can be illusionary for decades – you could never have a “second shot”. Therefore carefully prepare yourself and make sure that your funding proposal really “fits the donor”. If you are unsure, rather seek external advice. First of all, try to find out what kind of projects any donor is interested in and what funding instruments they offer:

- Does a particular donor cooperate with your country at all?
- Does the donor support activities in the field of rural development, community participation, nature conservation, climate change adaptation, women empowerment, education for sustainable development, poverty eradication, renewable energy, disaster risk reduction?
- Does the donor support concrete projects on the ground? According to the “Paris principles on aid effectiveness”, the “Accra agenda for action” and the “Busan partnership”, ODA donors have agreed on a division of labour. Each ODA donor will cooperate only with a few partner countries, and only in specific sectors, based on comparative advantages. Thus, transaction costs for donor coordination are reduced for the host countries. In some cases, donors only provide budgetary and advisory support and no longer fund activities on the ground.
- Does the donor support projects only of a particular size? Some donors will not be able to accept small-scale projects through their regular instruments; for other instruments, an upper budgetary limit is foreseen.
- What kind of projects does a donor support? Only annual projects or only multi-year projects? Will the donor support the employment of local staff or only consultants? Does the donor support the purchase of equipment? Does the donor support scientific research or only implementation activities, rather capacity building or concrete investments?
- Who could be eligible for project submission? The biosphere reserve team? Only the ministry? Only a local NGO? Only an international agency/NGO? Only a faith-based NGO? Only in a cooperative structure?
- Are there any official project submission guidelines? Are there deadlines?
- Does the donor already have experience (in your country and globally) in working with biosphere reserves?
- Have there been recent developments, e.g. state visits of a president or a minister which resulted in some MoU or similar agreement? What other relevant bilateral agreements between the donor and your country already exist?

Inform yourself about donors through your network

If possible, collect information about relevant donors and their current and emerging priorities at their websites or through existing partners. These could be international scientists or international NGOs active in your area these can be also members in the advisory board or the MAB National Committee or the UNESCO field office. Only if you are properly prepared and only if you know very well for what project you seek support, you should approach the donor for a first meeting. Sometimes this has to be arranged through the embassy, sometimes it is possible directly. Sometimes it is wise to have a full project proposal already prepared, sometimes it is better to just present a brief outline of your project idea. Maybe the donor will insist on a feasibility study as a first step, if it is about the development of a new biosphere reserve.

If you work with a donor indirectly only, ensure transparency and co-design of projects

Maybe it is not at all necessary that you directly approach the donor for a first meeting. In some cases, it is unavoidable that an international NGO such as WWF, Birdlife International or Conservation International, a donor-country NGO or a donor-country implementing agency such as GIZ will take care of donor-handling – however, this is obviously not optimal with regards to local appropriation of the project, capacity-building and empowerment of national and local staff. Make sure that in these cases your voice is fully respected in project design and project implementation (if necessary, including veto rights), that there is full transparency about budget and its spending and that the lion’s share of the funds provided actually reach the ground in your biosphere reserve, and don’t stay with the international NGO.

Multilateral donors

GEF is a key funding source

The same recommendations given above for bilateral donors also apply to multilateral donors. There are several of them; the most important clearly is the “*Global Environmental Facility*” (GEF) which is operated under the auspices of the World Bank, UNDP and UNEP. GEF has funded many large-scale projects in biosphere reserves.

UN partners

The UN has several agencies which can (in principle) provide limited funds for projects in biosphere reserves: UNDP, UNECA, UNESCO, UNEP, FAO, UN Habitat, the conventions’ secretariats of CBD, UNCCD, and UNFCCC.

This includes specific instruments such as REDD, or Clean Development Mechanism (CDM). A few words on REDD: The acronym stands for “Reducing Emissions from Deforestation and Degradation”. This instrument has been founded in 2007; its goal is to make the preservation of large forests – which are considered as carbon sinks under this instrument, not in terms of biodiversity – more financially attractive to governments. Particularly relevant are tropical rain forests. A revision of REDD, called REDD+, addresses not only forest conservation, but also the sustainable management of forests and interventions for the benefit of concerned communities. REDD+ also addresses and monitors forests not yet protected but under immediate threat from logging. All this having said, at present REDD+ is rather a collection of diverse and not yet fully operationalized concepts. At the moment it is not clear whether REDD+ will really be soon relevant for biosphere reserve managers; it is recommended that managers keep themselves regularly updated about new developments. A recent paper explored synergies of REDD+ with biodiversity conservation, looking at the example of Uganda [[UNEP2015]].

REDD

African institutions can be important, too: African Union with its NEPAD, the African Development Bank (AfDB), Islamic Development Bank (IsDB), the West African Development Bank (BOAD), and the Development Bank of Central African States (BDEAC).

Development banks

Again, approach any potential donor only if you know the mechanisms and priorities of that donor quite well. It is recommended that you first approach the UNESCO field office in charge of your country (plus the MAB National Committee), or as an alternative, the office of the “UN resident coordinator” present in 53 countries in Africa [[UNDG]]. You should know references to the biosphere reserve (or to nature conservation in general) in your national UNDAF, PRSP, and UNESCO country programming documents (cp. section 3.4).

Work through the UNESCO field office

To multilateral donors, you should preferentially present an idea which is multi-country or global in scope and interest, but addresses a local challenge as well. Again know very well what you want; but be aware that no general rule can be given whether you should prepare a project document in advance; if you do, prepare it according to international standards and the requirements of the specific donor.

Think multilaterally

A general advice in this context is that you always *have prepared draft blanket project proposals in your drawer*. Draft proposals should cover a diversity of acute challenges of your biosphere reserve, all of which cannot be funded from regular sources. For example, it could be wise to have an outline of a project on water resources, a project on climate change adaptation, or one on electrification. Such prepared project drafts allow you to respond quickly to a call for proposals in case of international competitions: consult the biosphere reserve advisory board, the MAB National Committee and other experts to develop “standard” project proposal(s).

Prepare blanket proposals

Private sector partnerships

So far, there have been only a few cases of partnerships of the private sector with biosphere reserves. Most of them (Spain: Abertis Group; Germany: Danone Waters Germany, Honda Germany) have addressed the biosphere reserves in that country only. Only few cases are known of an intercontinental support, e.g. that of a German company (Merck) for a project related to climate change in Kruger to Canyons biosphere reserve (South Africa) for two years.

Private sector partnerships: few, but increasing

An interesting example is Ecopia, an Ethiopian company that supports small-scale producers in all Ethiopian biosphere reserves; the Indonesian Giam Siak Kecil-Bukit Batu biosphere reserve was even initiated by the private sector. The “UNESCO Centre for Mediterranean Biosphere Reserves”, opened in April 2014 in Barcelona, is a privately-funded institution which will provide support to biosphere reserves in North Africa.

Work through the UNESCO field office

Certainly, the number of international partnerships with the private sector will increase in the future. However, it is not easy to proactively secure funding from private sources. If you are approached by a potential private partner, it may be wise to seek support from the wide network of the “UNESCO family”, in particular the UNESCO field offices. You might also wish to address the UNESCO National Commission of the country of origin of the potential private partner. Often, they wish to get access to the “UNESCO logo”, which you as manager of a biosphere reserve are not entitled to pass on to other partners.

An alternative could be to present your biosphere reserve on “online charity donation websites” such as www.betterplace.org, www.helpdirect.org or www.justgiving.com. Especially on the first two portals, registration is free and you can present your organization and your work. If well done, this might attract small and medium sized donations to support individual projects. Before you do it, look at well-working examples on these websites, how others succeed in effectively presenting their ideas.

Income from the Green Economy

Don't focus on money,
focus on goals

So far in this section 3.5, we have only spoken about funding for the biosphere reserve as a structure. However, you may not forget that in a more abstract sense, it is your job to facilitate the development of your communities. Therefore, your main concern should not be to maximise *your income* as a management unit, but to maximise the *income of the biosphere reserve* and its communities – from sustainable sources.

Therefore, if the functioning of your team is assured, do not focus first on acquiring additional projects funds for your office. Focus first of all on achieving your biosphere reserve's goals, e.g. through sustainable tourism, marketing of organic products including sustainably harvesting of medicinal plants, and wise use of ecosystem services. Make sure to develop good project ideas that fulfil these goals: if the project idea is really good and professionally presented, you will find funds. Also make sure that the revenues from these activities are shared equitably and transparently with the local community; in particular ensure that vulnerable groups (indigenous people, women, homeless, extremely poor, sick, illiterates, etc.) benefit as well.

Case study: Green Economy in Argan biosphere reserve, Morocco

The Argan forest in South-Western Morocco has been designated a UNESCO biosphere reserve in 1998. The Argan tree is the defining species for its eco-region, on which over 1,200 other plant and animal species depend, 140 of which are endemic. So far, the Argan tree has defied domestication. For centuries, the oil of the Argan tree has been a mainstay for the Berber people of the region. Since 1999, basically coinciding with the designation by UNESCO, the oil has met with an enormously increasing interest and appreciation in Europe and other high-value markets. Currently, Argan oil at 300 US-\$ per litre is the world's most expensive edible oil. The biosphere reserve is also supported by the company Procter and Gamble.

Most of this oil is harvested by the women's "Argan oil cooperatives" which have been supported by NGOs, domestic and international development agencies. Together, these partners have made all efforts that the increase in export price actually trickles down to local people and that it preserves the health of the Argan forest, through a win-win-constellation. Detailed analyses of household data indeed suggest that at least the first goal is met, that the boom has enabled rural families to increase consumption and investment, in particular to increase their goat herds – yet with negative effects on the Argan forest. At the same time, families can send their girls to secondary school, so educational outcomes, especially for girls, have improved greatly. In addition, the increased return on female labour might improve women's position in intra-household bargaining [[LYBBERT]].

SECTION 4 ORGANIZING COMMUNITY PARTICIPATION

Practical tools



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SECTION 4

ORGANIZING COMMUNITY PARTICIPATION

Practical tools

This section explains in greater detail, what participatory management is, what stakeholder and community participation is, why they are needed and when they should be utilized. Concrete practical guidance is given specifically to enable managers to work with larger groups, to organize planning workshops, to keep interest alive and to use education as an outreach instrument. Reading this chapter you should understand:

- *That there are plenty of needs and reasons to involve communities and stakeholders, and how to maintain a dialogue once it is established*
- *How to organize hearings and consultations*
- *In particular, how to organize the process of formulating a management plan*
- *That you can consider education as a process of community engagement*

4.1 Reasons and opportunities to involve stakeholders and communities

As described in section 1.3, “management” means pursuing the goals of an organization through efficient and effective implementation of available resources (human, financial, knowledge and administrative resources). Management is very much about coordination and communication, both within an organization (here: the biosphere reserve management team or authority) and beyond (stakeholders, communities, superiors in ministries, international partners, etc.).

Even strong government institutions cannot easily impose goals, rules and regulations that local stakeholders and communities do not support – almost always the success of “purely imposed regulations” is very limited. And after all, participation is also a human right: “Everyone has the right to take part in the government of his country, directly or through freely chosen representatives” [[UDHR]].

Long-term successful management units/authorities know how to maintain a biosphere reserve. Maintenance does not only mean having proper strategies, acquiring the funds needed, having the right staff to implement the strategies through imposing regulations in a “top-down” manner. Management units/authorities listen to the needs and wishes of stakeholders and communities and set priorities accordingly; they create support, commitment and shared values; they involve stakeholders in implementation processes. *Community involvement* and *community engagement* are words sometimes used interchangeably for participatory management. Involvement, commitment, and shared values can never be imposed; they must be created, by “bottom-up” processes.

In the following we will present first the official occasions for involving stakeholders and communities *from exactly this perspective*; these are the instances when UNESCO officially requires you, as a manager, to use participatory management methods. You as a manager should regard these official occasions as “entry points” to do management in a participatory way – UNESCO gives you all legitimacy why you need to organize an outreach event, a working group or a public hearing.

Through these events, the benefit of participation hopefully becomes very evident to everybody, and step by step, participation becomes the norm in the management of your biosphere reserves. Because actually, the need for participation goes much deeper than the official occasions.

Nomination and periodic review

As explained in section 3, nominating a biosphere reserve is a complex and lengthy process. In order to decide about a nomination, the International Coordinating Council (ICC) of the UNESCO MAB Programme requires a considerable amount of data on the future biosphere reserve. Data is required for example about the local biodiversity and its significance; about the geography; or about the livelihoods of people. However, collecting data is the rather “easy part” of preparing a nomination dossier.

Bottom-up needs to complement top-down approaches

Official occasions as entry points for participation

Participation can and must be learned

To repeat a key message once again: Biosphere reserves are not designated by UNESCO for their beautiful landscapes or for endangered species. **Biosphere reserves are designated because an entire region, with all local communities, credibly aspires to become a model region for sustainable development of global importance.** This means that a key element of a nomination file is a credible vision for the future development of an entire region. This is a vision of what should be achieved in the next 10 or 20 years, how it will be achieved and what will be the role of the UNESCO designation in this context. A vision must be jointly developed with stakeholders and communities; it cannot be formulated by a programme officer at a desk in the capital city.

You need a credible vision for the biosphere reserve

A vision can be a rather short text focusing on very few aspects; it can also be a longer text covering many different aspects (e.g. conservation, climate change, demographic trends, migration, economic trends, social cohesion, research, education). There is no blueprint for such a vision; only examples can be given here. Visions should guide action and create commitment. It is clear that visions often are not attained when reality takes a different turn. It is important that stakeholders and communities indeed agree on a vision – together with the responsible government authorities. For example, local communities might want to become a world leader in organic sorghum farming, but the provincial government wants to expand large-scale cotton production. There could be good reasons for both pathways – but obviously in this case, there is *no* joint vision. In this case, the joint vision *must* be formulated and established first.

What is a “vision”?

Visions are not “blue-sky phantasy”; they are no “wishful thinking”. Visions should also be SMART – this is a well-known concept of project management theory, requiring goals of projects (and visions of organizations) to be **Specific, Measurable, Accepted, Reasonable and Time-bound**. But this also implies that any vision must be supported by a strategy describing how to attain the vision.

Visions are SMART

The nomination file must also contain the details about the zonation and information on how the biosphere reserve intends to fulfil its “three functions”. The nomination dossier must also provide plans for the instruments of future participation. The nomination must also contain at least basic elements of the future management plan. All this has to do with participation.

Zonation and three functions

The **nomination** file also requires signatures of all relevant authorities, elected local governments, mandate-holders or spokespersons representative of communities at all levels (municipal, provincial, and national). Most authorities and representatives will not just simply sign a nomination dossier, but need to be convinced that a UNESCO biosphere reserve adds value to the community. All these tasks – developing a draft vision, developing elements of the future management plan and generating political support – are possibilities to start a true dialogue about the future of a region. Nomination requires participation – this requirement should not be considered not as a bureaucratic burden, but as a unique opportunity and legitimacy to start with something which is important and necessary anyway. Without participation, nominations will fail [[GOEDEKE]]; also for other UNESCO designations, participation becomes the rule, cp. [[IREDALE]].

All signatures are needed

You, as a manager, should never go to meet a mayor in order to get a signature, but to make her/him enthusiastic about the idea of the biosphere reserve and to understand better, what her/his particular interests are. You should never be happy with a signature if you do not also have a new partner.

Not only signatures - partnerships

Participation requires time and resources, but is usually cost-effective in the long run, as it reduces conflicts, harnesses innovative ideas of communities, and reduces the need of expensive enforcement. A recent cooperation of Tanzania with the United Kingdom, has established a very valuable guide on nominating biosphere reserves, with a focus on involving women and taking into account cultural aspects [[BELL]].

The **periodic review** of a biosphere reserve has already been introduced. It is an obligatory reporting process to UNESCO, to take place every ten years. Periodic reviews take stock of the functioning of the biosphere reserve, of changes and the reasons for these changes, of whether objectives have been reached or not, whether actions have been adequate and delivered appropriately. Periodic reviews are an opportunity for engagement and for winning support and for improving the effectiveness of the biosphere reserve through changes in governance set-up and

Case study: Developing a vision for the proposed Lake Tana biosphere reserve, Ethiopia

Two stakeholder workshops created the momentum that consequently helped to advocate the idea and gain supporters at the regional level for the preparation of a biosphere reserve proposal. Regional stakeholders and representatives from all relevant administrative levels and religious leaders of the Christian and Muslim communities had been invited to the workshops. The workshops were conducted in Amharic language and translated into English. Based on several presentations and vibrant discussions, the participants finally agreed on a vision and on planned objectives for the biosphere reserve. Consensus emerged for immediate action to safeguard the Lake Tana ecosystem.

the management plan, if necessary. Periodic reviews are not a bureaucratic duty but a chance to highlight some issues which need to be resolved, to update procedures and structures, to improve legitimacy and quality of work. Stakeholders and communities are necessary to give a wider and more comprehensive perspective in periodic reviews, about every single detail, but also about the general effectiveness of the biosphere reserve.

Why participation is needed in the periodic review

UNESCO puts great emphasis on participation in the periodic review. In fact the first “real questions” in the form for the periodic review report are the following:

1.5 Describe in detail the process by which the current periodic review has been conducted:

1.5.1 Which stakeholders were involved?

1.5.2 What methodology was used to involve stakeholders in the process (e.g. workshops, meetings, consultation with experts)?

1.5.3 How many meetings, workshops, etc. occurred throughout the process of conducting this review?

1.5.4 Were they well attended, with full and balanced representation?

Of course, the form for the periodic review report also contains questions about the place that participation has in the every-day work of the biosphere reserve.

Management plans

Document and process

In section 3, we have extensively presented why a management plan is needed and what elements it should contain. A management plan should be a *comprehensive and ambitious document* – and its elaboration must be a *process*. It is absolutely necessary to develop a management plan together with stakeholders and communities. Such a process will not always be easy and short. Beyond producing a good management plan, this process will provide many additional benefits, especially for community engagement and ownership. *Only through the commitment created in the process* will you later be able to implement the management plan.

Zonation (or rezonation) and mapping - how to proceed

A zonation cannot be decided based on one criterion

In sections 1 and 3, the unique zonation scheme of biosphere reserves has been introduced: Strictly protected *core area(s)*, surrounded by *buffer zone(s)* and the *transition areas*, where the focus is not on restrictions but on promoting sustainable economic and social practices. It has also been said already that this schematic zonation can be implemented in different ways in specific ecosystems. In many cases, a biosphere reserve encompasses several smaller protected areas which are linked through “corridors” (buffer and transition zones) through an overall management approach. Unfortunately, though, too many African biosphere reserves do not yet have a proper zonation in this regard.



In general, a zonation should respect the gradient of human use: Typically, primary forests, unique wetlands and other “untouched wilderness areas” might be the core area, while secondary forests, rehabilitation zones or areas of organic farming might be the buffer zone. However, this is an overly simple guideline. It is insufficient to determine the zonation only on the basis of human use and vegetation. Every patch of land must be discussed separately. Property questions have to be considered, and future-oriented development plans such as for roads, factories, mines, dams or power lines need to be taken into account. Since core areas in general should be legally gazetted, it will often be difficult to have core areas on private property without financial compensation.

Case study: Zonation in Kafa biosphere reserve, Ethiopia

The starting point for the zonation of the Kafa biosphere reserve in Ethiopia has been traditional cultural practices of local communities: sacred places and thanks-giving practices. This approach has been quite easy and very successful, minimizing controversies and conflicts of interests from the outset. To the extent possible, no “artificial zonation” has been created which does not have a basis in traditional cultural practices. “Zonation workshops” have been held at the village level and a “participatory demarcation and endorsement procedure” has been organized at the community, district and regional levels. In the Kafa region, there are very precious remnants of the Afromontane Evergreen Forest Ecosystems. These parts of the forests, which local communities have always regarded as “no touch” sacred places, have been designated as core areas. Eleven such core areas exist, immediately surrounded by buffer zones. The majority of buffer zones also consist of forests which are extensively used, e.g. for harvesting wild coffee. Along the outer interface between buffer and transition zone, 878 hectares of degraded forests have been rehabilitated with indigenous trees. This has been done after extensive consultation with local communities. In these cases, the result is a very well visualized zonation. The resulting functional zonation has been fully GIS-referenced.

Case study: Zonation in the proposed Lake Bosomtwe biosphere reserve, Ghana

For several years, Lake Bosomtwe has been discussed already as a biosphere reserve. The circular lake, the crater of a meteorite impact, is about 8 km in diameter and the only natural lake in Ghana. Some 70,000 people live in 30 villages around the crater, which is situated close to the city of Kumasi and thus a popular recreational area. Environmental challenges due to the growing population include overfishing and inappropriate farming methods. Excessive fishing led to steadily decreasing catches, forcing increased reliance on agriculture, with soil erosion as a subsequent challenge.

Several core areas for the biosphere reserve have been identified near the waterside, but what makes the zonation special is that the center of the lake has been designated as a cultural core area. This is due to the fact that the Ashanti people consider the lake as sacred and in particular fishermen never fish at its centre. This “taboo” is thus translated into a zonation scheme. The resulting zonation is thus almost a set of nested circles.

If your (aspiring) biosphere reserve plans to establish a zonation, get familiar with the concerned area’s history, its cultural traditions and values, and in particular acquire a deep understanding of its land ownership and property rights. Identify the important land owners, important stakeholders and critical opinion leaders. Identify and tentatively map out areas of particular importance for biodiversity and ecosystem functions – for example through reference to species red lists for the continent or the country, also map emerging threats. Identify and tentatively map out areas which are in a good ecological state, but not yet legally protected. Identify natural resources and ecosystem services. Identify potential “ecological corridors” and habitats of migratory species between potential core areas. Also identify “governance regimes” other than strict legal protection that could support effective conservation for potential core areas or buffer zones.

Start with collecting information

Once you have collected this information, you could internally discuss a very sketchy and tentative draft zonation, not to be circulated. Afterwards the management team should discuss *with each individual community, whether and where* each community would like to establish a certain zonation in its territory and neighbourhood. Discussions should be open-ended and its results should be respected.

Enter the dialogue with a draft zonation

In some cases, the goals of a core area can fully coincide with local traditions (e.g. sacred natural sites, “no-touch” or “no-go” areas). In some cases, villagers will be proud to live close to a core area and will propose much larger areas than would be economically viable; in some cases, communities have happily given away communal property for establishing core areas; in other cases, villagers will strictly disapprove a core area in their neighbourhood. The managers need to respect opinions and complaints, but are also able to provide additional arguments and state benefits.

A first map of a zonation should be produced and circulated *only after* the first round of consultations at the local level. All other administrative levels draft must then be consulted as appropriate. Arriving at the final map may require many iterations of consultation.

A first official draft

Zonation is *not only a map* – zonation also needs also to specify what is prohibited/permitted in each zone (zone-specific laws and regulations, cp. section 3.3) and what is promoted; for the latter, cp. as an example [[K2CGUIDELINES]].

The same steps should be followed in cases where there is a zonation already - but which is not appropriate for the tasks of a biosphere reserve. Re-zonation can be done in particular in contexts of periodic reviews.

Land-use planning

What is land-use planning? “Land-use planning” is a term that refers to (typically integrative) governmental policies which seek to efficiently order land-use in line with some overall goals. The objective of land-use planning is to maximize benefits from an area without doing harm, and to prevent conflicts over land-use between different actors. This includes preventing over-usage of resources such as land degradation and soil erosion. Land-use planning systematically assesses the availability of land, water, and other resources, as well as the demand for these resources. It develops scenarios and alternatives for land-use. Land-use plans are mostly not stand-alone, but part of more comprehensive plans, e.g. a biosphere reserve management plan.

Is it “necessary”? UNESCO requires biosphere reserves to establish a management plan. UNESCO does not explicitly require biosphere reserves to establish a separate land-use plan. Yet already in the nomination phase, it is required to document the following: existing and historical land uses, the main users, the rules (including customary and traditional) and the access to and control of women over land. Thus UNESCO requires implicitly a comprehensive overview of existing land-use and of the different actors needed to attain the goals of a biosphere reserve within its territory and beyond.

Typically, many plans exist already Typically, a biosphere reserve management team has to deal with the *existence of several plans and it should try* to make them compatible with the targets of the biosphere reserves. Typically, different plans have been defined at different instances in the past. Typically, plans exist at different administrative levels: some might concern an entire province, while others might only apply to a part of a biosphere reserve (some villages, a town). Different state institutions might have established plans (e.g. for industrialization, tourism, urbanization, agriculture expansion, water infrastructure) and non-state actors might also have established plans. Some plans might be congruent, others very divergent. Some might be legally binding, but could be factually outdated; others might exist only on paper; other plans can currently be in the making, without you being aware.

Establish yourself as moderator and help aligning plans Biosphere reserves are always part of a larger landscape, and thus management needs to address overlapping, and sometimes conflicting plans and jurisdictions, ownership and use-rights. It is wise for a biosphere reserve management to try to establish itself as moderator and coordinator for the region concerned since a “moderating role” is often more successful than a “supervising role”. This can greatly help aligning and streamlining plans across sectors, clarifying roles and responsibilities and in obtaining legal certainty.

Integrate the goals of the biosphere reserve into other plans Biosphere reserve managers should start by engaging with all relevant state and non-state stakeholders to get a good overview of all levels of existing planning. This by itself can help integrating the goals of the biosphere reserve into existing plans, in particular its conservation goals. This can be a negotiation process, because costs and benefits associated with conservation need to be redistributed and shared appropriately. Specific concerns can include maintaining access to needed resources, managing human-wildlife conflicts or receiving an equitable share of the economic benefits generated by the biosphere reserve (e.g. through payments for ecosystem services (PES), the creation of jobs or markets for local products).

Be the advocate of community land-use Local communities have wide knowledge about local biodiversity and have over time developed sustainable strategies and institutions of resource management, based as well on ethical traditions. Make it a priority to involve them into land-use planning.

Determining threats and assessing vulnerability

What is vulnerability? As defined already above (cp. section 2) vulnerability refers to the inability to withstand shocks (e.g. natural disasters) and to the inability to adapt to a hostile environment. “People are more vulnerable if they are more likely to be badly affected by events outside their control.” [[ActionAid]] Communities can be vulnerable, e.g. to

Case study: Addressing vulnerability in Omayed biosphere reserve, Egypt

The biosphere reserve in the coastal desert 80 kilometres west of Alexandria hosts some 6,000 inhabitants. They live from raising herds by grazing, intensive quarrying and rainfed cultivation of grain crops, vegetables and orchards, depending on water availability. The UNESCO international research project “Sustainable Management of Marginal Drylands” (SUMAMAD) investigated possible solutions to combat desertification, including in Omayed. One option identified, based on community discussions and market needs, was to make better economic use of fig trees: Although the fruits are of high quality, they were sold at a low price because of the lack of market access. In-house factory production of jam and dried figs is one of the income-generating activities promoted as a result of the project; dried figs could then be sold at higher prices and transported without loss. Production teams were established including family members and neighbours. Women were provided with sewing machines which generated additional incomes at the household levels. SUMAMAD, among other targets, also assessed the social and biophysical vulnerability of the local community in the Omayed biosphere reserve. As the main drivers of increased vulnerability to climate change, they identified ecosystem degradation and fragmentation and decline in ecosystem services.

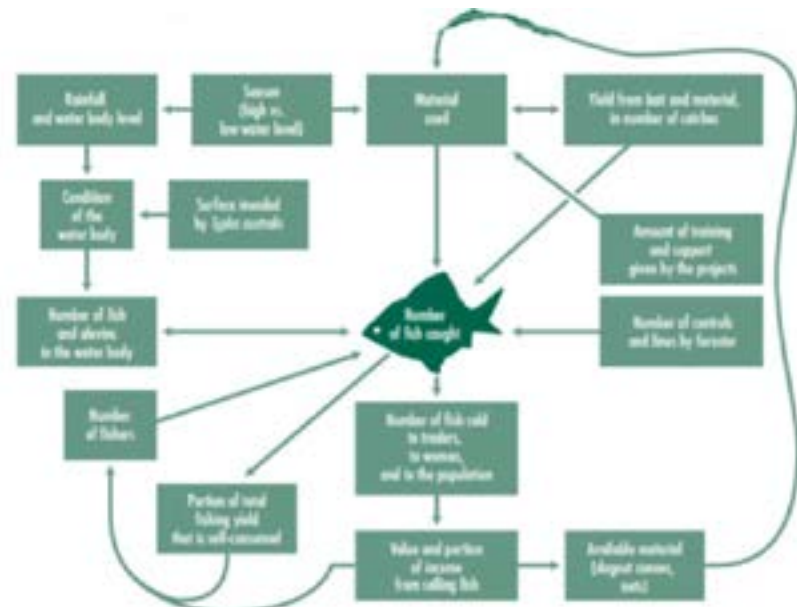
climate change, infectious diseases, social exclusion. Vulnerability is strongly linked to poverty. Ecosystems can be vulnerable, e.g. to rising temperatures, rainfall variability, invasive alien species, or locust swarms. A “vulnerable system/group” is more or less the opposite of a “resilient system/group”. Resilience refers to the ability to absorb shocks and to adapt to change. [[BIOVERSITY]] has proposed indicators for measuring the resilience of socio-ecological landscapes. [[GIZ2014-1]] has published the “Vulnerability Sourcebook” to support standardized vulnerability assessments.

There will be threats – know them

Our world is changing rapidly: Climate change, biodiversity loss, land degradation, urbanization, economic globalization, etc. All world regions are affected by these changes. The world community negotiates to minimize some clearly negative trends such as global warming, but so far with limited success. Therefore, all world regions will have to undergo change and will have to adapt. Determining threats and assessing vulnerability of communities and ecosystems *increasingly becomes a routine management task.*

Rich variety of tools

There is already a rich academic literature on different methodologies of threat/risk analysis and vulnerability assessment. There are also different concepts, indicators and indices used, e.g. comparing disaster risk reduction and climate change adaptation. For a non-expert, it is not easy to identify the differences, the costs and benefits of each method as well as their benefits and shortcomings. This Manual cannot suggest any method, but states some key references: *Participatory Vulnerability Assessment* [[ACTIONAID]], MARISCO [[GIZ2012]] [[IBISCH]], *Participatory Vulnerability Analysis, VAManual* [[NATSOL]]. Maybe draw upon ideas such as “Systems Thinking” [[TRI]].



Analysis of the Mare aux hippopotames Biosphere reserve, Burkina Faso, [[UNESCO2006]]

It is important to note:

- All methodologies require working intensively with stakeholders and local communities.
- All methodologies also recommend working with external knowledge holders such as scientists.
- All methodologies should be used with great care: A method must always *catalyze dialogue* – it should never replace dialogue. A method can never be an end in itself. Methods should never be used manipulatively.
- A vulnerability analysis should be done at least once – depending on the scope of potential threats determined and the size of the area investigated, maybe a repetition at a later stage can be advisable.
- For biosphere reserve managers, it is *not necessary to become an expert* in very specific methods, e.g. on vulnerability assessments that need to be applied maybe only once every few years. Better cooperate with external experts.
- Managers of biosphere reserves should be careful to work only with experts who really know what they are doing. It is not necessarily the more complicated-looking method which is the best – maybe a simpler approach is much more effective: A vulnerability analysis must provide action-oriented insights, not abstract knowledge. *If you are not convinced of a method, do not use it.*

Methodologies are no rocket science

The most important message for managers however is to accept that adaptation to a changing world and the management of new threats and risk is an increasingly important part of their work. This also implies the need for life-long learning during the entire period of professional work of a manager.

Accept risk

Case study: Vulnerability assessment in the Takamandea national park in Cameroon

A vulnerability assessment for communities around Takamandea resulted in economic, social and ecological risks “associated with the shift in livelihood strategies from non-timber forest products harvesting to cash-crop production [because of] the uncertainty of prices and production, the absence of savings facilities, and a gender imbalance in access to income. From a conservation perspective, the major risk is the shift of pressure on natural resources from inside the protected area to the border, with increased deforestation and destruction of key habitats in these areas.” [[VLIET]]

Identifying and prioritizing interventions

Have project ideas up your sleeve

Many biosphere reserves have quite limited funds for their management interventions. This means that funds have to be raised externally for investments such as species conservation measures, building an information centre, improving access to water or energy, training farmers in new techniques, or offering education programmes. In order to address this lack of funding, many biosphere reserves collect portfolios of possible projects and interventions. Such project portfolios can also be helpful in case that a new funding partner or donor appears “unexpectedly”.

Build upon the ingenuity of stakeholders

The portfolio and priority of such interventions may be rather clear if a management plan has been established recently (cp. below). But if this plan is already a bit dated, it may be helpful to regularly organize consultation sessions with stakeholders and the community. Such consultations may help to identify newly emerging projects, to delete outdated project ideas from the portfolio and to re-arrange priorities. Biosphere reserve managers may not expect that stakeholders will actively address them with new ideas – sometimes it is necessary to ask specifically for them.

About prioritization: Do this together with all relevant stakeholders, inspecting each proposed intervention from many perspectives in parallel. Involve the advisory board in the prioritization.

An excellent example of establishing a “regional action plan” for a biosphere reserves based on wide participation with stakeholders and an in-depth analysis has been published for the Kruger to Canyons biosphere reserve in 2012. The authors, Marisa Coetzee and Harry Biggs have received the 2013 Michel Batisse Award [[COETZEE]].

Getting support for government policies and interventions

There are limits to bottom-up

In principle, biosphere reserves should be managed as far as possible in a bottom-up style, involving the communities in the creation of visions, project ideas and decision-making. However, no biosphere reserve is and can be managed only bottom-up. Each biosphere reserve is substantially affected by top-down policies and laws which have been adopted at the provincial, national, or even international level. National governments have to implement global conventions (those which they have ratified); they have to implement national laws across the entire nation.

Cases when bottom-up is indispensable

However, there are interventions which should never take place without *free and prior informed consent*. These are interventions which infringe upon fundamental human rights of communities, including limits to access to fundamental resources, limits to using ones own real estate/property or even resettlements. This is particularly true for vulnerable groups such as indigenous communities. It is especially the case if the intervention aims at setting up a biosphere reserve and its legally protected core areas.

Dialogue must be open, it is not “marketing”

In such cases, a proactive engagement with local communities can help to build consensus, create higher acceptance or even to change local opinion. Interactive and transparent dialogue may improve understanding for the “pros” and “cons” of a policy and why it has been taken; a dialogue may help identify freedom for interpretation and options for adaptation of policies to local needs. It may also identify entirely new arguments which could be fed back to capitals.

Case study: Pastoral units in Ferlo biosphere reserve, Senegal

The concept of “pastoral unit” was developed in Senegal in the 1980s by the project “Development of Livestock in Eastern Senegal” (PDES), followed by several projects in Matam and Ferlo (PRODAM, PAPEL, EFAP, and HPDP). Finally, the project “Integrated Ecosystem Management in Senegal” (PGIES), which had led to the designation of the biosphere reserve Ferlo, has developed the approach of “pastoral units” all around the protected area to mitigate often different anthropogenic stresses. The pastoral unit is defined as “a group of farmers living in villages belonging to the same land, united by a solidarity arising from the neighbourhood, with common interests, exploiting the same resource and especially having opted freely to unite. It is divided into grazing land comprising some nearby villages to ensure greater community involvement in the implementation of the management plan reinforced by the principles defined in the local code of conduct.” In other words, the pastoral unit is a geographical area where populations live that share the same economic interests, the same rangelands, use water from the same ponds and wells, and use the same agricultural areas. Linked by history and neighbourhood, they have the shared ambition to optimize their social and economic welfare. Its operation is based on two main tools: First, the management plan established in a participatory manner; it addresses improved management of the space for agriculture, forestry and livestock, better management of transhumance (policies for reception, respect for established rules, etc.), facilitation of common methods of mine infrastructure management and synergistic action in the fight against bush fires. Second, the local code of conduct, a major innovation, whose main aim is to deepen the implementation mechanisms of the management plan and the recovery of the forest resources. It also embodies the consensus of local communities in relation to access, use and exploitation of shared resources.

Case study: Negotiating compromises in the Pendjari biosphere reserve, Benin

For a long time, the residents of Pendjari had publicly complained about the insufficient availability of arable land. After long discussion, the biosphere reserve management changed its approach, agreeing that this demand was justified and proactively searched for a solution. A strip of land adjacent to the border of the protected zone where farming was deemed acceptable with the conservation goals was allocated after two years of negotiations. Ten years later, the demand for additional arable land has slumped. Agricultural encroachment today is prevented by the community itself, since they stop any individual who farms beyond the agreed limits.

However, such a dialogue *should not be* “marketing” of a policy or political propaganda. Disagreeing voices need to be respected and counter-arguments taken seriously.

Organizing such dialogues requires great care; wherever possible and where skills are available, biosphere reserve managers themselves should be in the role as moderators, not as presenters of external policies.

Be a moderator

Participatory evaluation

In section 2.4, we have introduced “monitoring & evaluation” (M&E) as a normal and necessary element of the management of each project. Stakeholders and communities should be involved into the M&E of implementation

Participation not only for the periodic review, but for project evaluation



of strategies and even in monitoring and evaluating as many individual projects and activities as possible – for the same reasons: to respond to local needs and interests, to improve evidence for actual success of a strategy/project, to draw upon wider knowledge for optimizing follow-up, or to create acceptance.

In “*participatory monitoring and evaluation*”, cp. [[UNDP]] and [[MANDAKINI]], communities are not only asked about the success of a strategy/project, they are involved in the planning of an evaluation, in the design of the process, as well as the collection and analysis of data. As in “conventional monitoring and evaluation”, the success indicators must be defined *before* the implementation of a strategy or project; a “retro-fitting” of data is not acceptable.

Some key messages about evaluation

If you have formulated success indicators for attaining the goals of your management plan (cp. below), then these indicators need monitoring as well – participatory monitoring, according to a coherent methodology.

Change the approach to evaluation

Some feedback such as on effectiveness of your governance, management and gap analyses should be sought regularly. Each of the five steps of project management introduced in section 2.4 can be implemented through community/ stakeholder participation. Relevant tools for participatory monitoring and evaluation include *cost-benefit analyses and SWOT analyses (Strengths, Weaknesses, Opportunities and Threats)* [[QUINCY]] [[CELLINI]].

Evaluation provides evidence of success

Participatory assessments, even of small-scale projects, can positively influence the dynamics of social change in a community. Inversely, a project which is *implemented* participatorily and *not evaluated* (participatory or conventionally), is almost a waste of time.

Evaluation benefits a lot from participation; participation in evaluation and monitoring benefits from participation in project planning and implementation.

Participatory evaluation and monitoring sometimes requires *additional time and funds*; if well-planned, these additional requirements are minimal. For some participants in an evaluation, voicing critical opinions will be new: Reflecting together may lead to transformative ideas and behaviour and to new skills.

Periodic reviews are sometimes facilitated by experienced external *consultants*. This *could be an advantage*, because it can help building trust when stakeholders can voice their concerns more “anonymously”; but it *can also be an important disadvantage* because the managers miss the opportunity to intensively engage with the “learning process” of a review.

Disseminate review results

The results of periodic reviews and project evaluation should be disseminated immediately after adoption; wherever possible, at least the summary in local languages.

Biophysical, socio-economic and cultural surveys

Which data is needed for nomination and review?

The description of the *biophysical characteristics* is a necessary part of the nomination of a biosphere reserve: topography, altitudes, climate, geology, soils, bio-climate, biology, habitats, ecosystem services, and biodiversity. Similarly, *socio-economic and cultural characteristics* need to be described: human populations, settlements, spiritual and cultural values, tourism, heritage, ethics and traditions, religion, education, agriculture and economic benefits. In the periodic review, updates have to be given on significant changes.

Obtaining exact data is often difficult

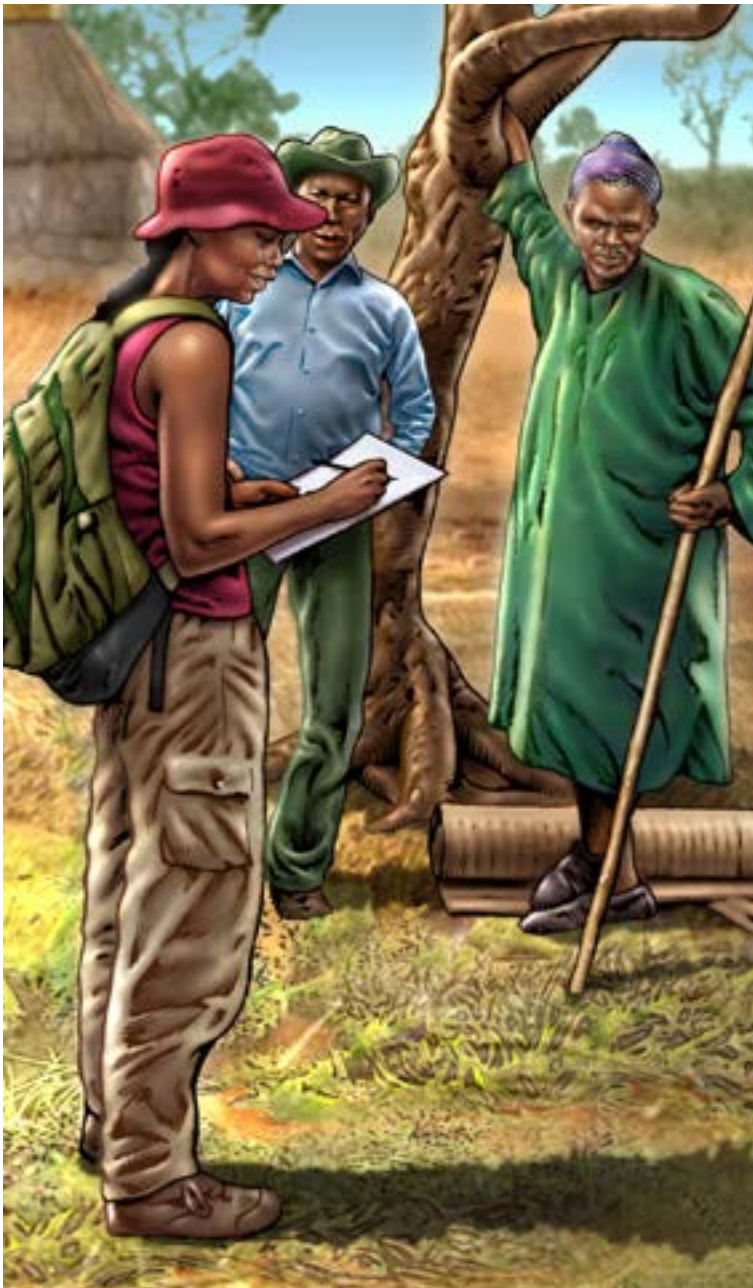
The traditional approach to obtaining original data as well as updating data is to do two things: to look up relevant scientific publications (e.g. on climate or on biodiversity) and to collect data from authorities (e.g. census data or tourism figures). For the case of most biosphere reserves, there is hardly ever exact and up-to-date data available on all these questions. One reason is that typically a biosphere reserve covers an ecosystem and not an administrative unit; this is why data from several administrative offices would have to be combined. Therefore, many biosphere reserves typically state only approximate figures, e.g. for their inhabitants, for their poor or jobless, or for their economic situation. However, there have been successful examples of biosphere reserves which cut across administrative borders *and* which have successfully collected all relevant data in a credible way from authorities in all provinces. These biosphere reserves profit enormously from such efforts. Data collection is not a bureaucratic act. There have been also several cultural studies on the acceptance of biosphere reserves in the population with the surprising result that it is often much higher than what the managers had expected, since they often deal with many conflicts in their daily work [[STOLL2011]].

Citizen science and participatory surveys

There is an emerging and increasingly important third way of collecting data (in addition to scientific research and official authority data). This is *participatory surveys* or *citizen science*. In many states worldwide, such surveys are used, for example, for biodiversity monitoring. Data collected can consist of information on the occurrence of species, about the dates when plants blossom and when animals reproduce. While some surveys are mainly done to raise public awareness about biodiversity, others follow rigorous manuals [[UKEOF]] that indeed result in standardized data. In Africa, more people live in closer contact with nature than in Europe, thus such observations are easier.

Case study: Participatory survey in Kruger to Canyons biosphere reserve, South Africa

The predominant source of medicine for traditional Health Practitioners in South Africa is indigenous plants, with at least 771 plant species recorded in the trade. An estimated 20,000 tonnes of indigenous plants are harvested from grasslands, forests, woodlands and thickets in eastern South Africa every year; only a few tens of tonnes (maximum 50 tonnes per annum) are cultivated. Importantly, 86% of the plant parts harvested will result in the death of the entire plant. This has significant implications for the sustainability of supply. A group of Traditional Healers had been assisted by the biosphere reserve management in drawing up a “Bio-cultural Protocol” to outline who they are, what their role in the community is, what their concerns are, and what is required when needing to initiate interaction with them as regards their Traditional Knowledge together with potential remuneration options that would be required. In order to identify the medicinal plants which are in most urgent demand because of over-harvesting and which are best suited for plantation, long list of plants have been established in Pedi and Shangaan / Tsonga languages; wherever possible, English and botanical equivalents (in Latin) have been sought.



The specific role of traditional knowledge

However, gathering knowledge of local and indigenous people is not only about sharing information – the specific traditional knowledge has a high particular value which is sometimes economically misused by companies. For this reason, in the context of the UN Convention on Biological Diversity, the Protocol on Access and Benefit Sharing” (Nagoya Protocol or ABS) has been established in 2010. As soon as this Protocol is translated into your national law, it can safeguard that international companies and other actors share the benefits (including financial earnings) of accessing genetic resources and traditional knowledge with local communities (cp. also section 2.3).

Promote carefulness with regard to access to local knowledge

Biosphere reserve managers must be fully aware of ABS and also make their communities aware of this issue. They must pay attention that they do not casually give access to third parties to the specific knowledge of communities – specifically not without their consent. The case of the “biocultural community protocols” that have been established in South Africa, including at the biosphere reserve Kruger to Canyons, is a particularly useful example of how the issue can be promoted locally [[NATJUS]]. There are also many participatory survey methods to gather information about social and economic issues, for example about poverty, farming practices, local knowledge, power structures. What is usually meant is a more qualitative and informal data-gathering compared to formal, rigid statistical methods.

An example: Results of a participatory survey of farmers [[FAO3]]. My land is not as fertile as it used to be: During the last five years I have noticed a decrease in land fertility: Decrease in production has been mainly in sweet potatoes: I do not know what the cause is of this fall in production: My land is subject to erosion.

Participatory socio-economic surveys

acquisition. This raises commitment and improves the knowledge basis significantly, especially in Africa, where formal statistics is often still not easily available and scientific research is a precious resource.

Managers of biosphere reserves can benefit much from engaging communities in data

4.2 Organizing consultations and public hearings

This section provides practical information on how to organize one particular form of participatory events – those for large groups. This section is about *information sessions*, *consultation meetings* and *public hearings*. Most managers of a biosphere reserve have participated in many small meetings with the management team and external partners. How to organize a small meeting successfully is therefore assumed as well-known. Organizing successful large meetings with very diverse audiences requires much more preparation.

This section is about meetings with many people

Community entry techniques, including vulnerable groups

Participation is a process of collective learning that changes the way people think and act – both how managers think and act, and how the community thinks and acts. After you read this Manual, we hope that you understand what benefits participation has *for you* (more effective implementation, quality decision-making, legitimacy, etc.).

Case study: Stakeholder support for the proposed Lake Tana biosphere reserve, Ethiopia

In 2014, the Lake Tana biosphere reserve was still in its establishment phase. But there was already strong support by the key stakeholders from the region. This was expressed in two main ways. First, numerous meetings with stakeholders and citizens showed not only awareness of Lake Tana's environmental problems, but that these are a prime concern and that there is strong consensus for immediate action. Thus, there is a background commitment to environmental action. Second, two stakeholders' workshops in the city Bahir Dar about the potential biosphere reserve resulted in strong explicit commitment for addressing the environmental challenges through the instrument of a UNESCO biosphere reserve.

A biosphere reserve is only interesting to people if it affects their lives

Let us now turn to the question: **What benefits are there for the community – how can you convince communities to spend their time listening to you and giving you their ideas?** Think in terms of the economic concept “incentives”: The most important incentive for a community is to participate in decisions that affect their lives. **But for this to be true, the biosphere reserve must indeed affect their lives.**

Inform yourself about the history

Therefore, before you seek a dialogue, *inform yourself really well*, whether a given community knows about the biosphere reserve at all, what the history of interaction has been with the management team, whether there have been conflicts, whether there have been officially recorded benefits. Also go back further: Have there been historical conflicts between local livelihoods and nature conservation (is nature conservation seen as an “enemy”?). Talk with local government officials (e.g. public health officers, teachers).

Inform yourself about concrete conflicts and practices

Inform yourself about local conflicts on resource use, about land-use conflicts, about poverty and job trends, about tourism opportunities and threats. Try to identify as clearly as possible, which topics can be considered sustainable in a certain community and which not. *When you visit the community – talk about the concrete issues only and what the biosphere reserve could deliver on these topics*; don't talk too general about the biosphere reserve. Inform them in particular who you are!

Inform yourself about suitable interlocutors

Get information about suitable times for the first visit (e.g. close to festive occasions), about traditional power relationships and community leaders (religious leaders, heads of prominent families, leaders of women groups). Be informed whether it is wise to meet the local leader first, maybe next some other community representatives and only then the entire community. Recall that in any community there are political conflicts – communities will be reluctant if your efforts to link multiple stakeholders and interests result in new conflicts [[COOKE]].



There is no guarantee that a participatory approach will be effective for you and/or for the community. *Don't raise too high expectations – with you and with the community.*

Maybe for your first visits, not many people will show up. Be happy about that those who did, indeed have shown up at all and see them as catalysts to distribute the information to the rest of the community.

If members of the community continue to be *unwilling to cooperate*, you cannot do much apart from demonstrating excellence in governance: **excellence in cooperation, involvement, inclusiveness, openness and transparency** [[JACKSON]]. Cooperation is to “have each party contribute what they can in order to best serve their needs in a mutually beneficial way”. Involvement is “an ideal of communication and accountability in organizations and communities where motivations, driving factors, and impacts of all decisions and actions are made publicly available”. Inclusiveness is “ensuring the needs of stakeholders are acknowledged and respected even if they do not actively contribute to the process”. Openness is when “a community or organization has the willingness to rethink and review its own values and processes”. Transparency is “an ideal of communication and accountability in organizations and communities where motivations, driving factors, and impacts of all decisions and actions are made publicly available”.

What to do with unwilling people?

To unwilling partners you might also try to show that cooperating is more attractive than non-cooperation; try to show that as a biosphere reserve manager you are not “the advocate of the environment” but a moderator for the region who is as neutral and impartial as possible; emphasize that you will keep looking for a fair solution for them, even without their cooperation.

Vulnerable groups: As a manager of a biosphere reserve, you are not responsible for everything. A biosphere reserve *cannot solve all challenges* of your community, including those of vulnerable and disadvantaged groups. However, you should make all effort to *include the voice and interests* of these vulnerable and disadvantaged groups into important decisions, for example a management plan. A good management plan *can and should improve* the situation of vulnerable groups; it *should never worsen* their situation. If you formulate your management plan with funding from international partners, you might be required anyhow to reach out to vulnerable groups.

How to involve vulnerable people

You should approach the involvement of vulnerable and disadvantaged groups into the formulation of a management plan as a 2-step process: **As a first step**, you may organize *specific consultation events* for one or several of the groups. Always be respectful and do not over-categorize the target groups (e.g. not: “all women in the biosphere reserve” and not: “all indigenous people” – rather “the women of villages A, B, C” and “one group of indigenous people”; be specific to specific people, don't over-categorize people). During such special events, you should first explain the role of the biosphere reserve and the management plan in a way that is comprehensible to the groups; identify their interests and needs to discuss planned goals and priorities.

For vulnerable groups: a 2-step process

The **second step** should be safeguarding that the specific interests and priorities of vulnerable groups which you have jointly identified are *suitably reflected in the final document* of your management plan. Otherwise something typical will happen: The pressure/lobbying of other, more powerful groups leads to the elimination or low prioritization of the goals of vulnerable groups. It still happens far too often that “consultation events” are organized with vulnerable groups, but that nothing happens with the results. If you also fall into this trap, it is bad for the vulnerable groups *and for you*: Your funding sources will not accept “pseudo consultation”, you will lose a lot of credibility locally – and the management plan is simply not what it should be, i.e. a joint vision of a joint future in the biosphere reserve.

You should combine any consultation with targeted interventions to the benefit of vulnerable groups:

- **Strengthen their identity** and make them aware again of important roles that they play regarding the management and conservation of natural resources, in particular the cultural or bio-cultural identity of indigenous peoples and mobile communities.
- Discuss their situation in the language of **rights (including human rights) and responsibilities**, including how traditional rights systems of indigenous and mobile communities can be made compatible with formal legal systems, including those that govern the biosphere reserve; strengthening rights and increasing the compatibility of different systems of rights and responsibilities can be an important component of a management plan.
- If national law foresees conservation instruments for indigenous community areas such as “Co-managed Protected Areas” and “Community Conserved Areas”, discuss such instruments as an additional legal strengthening of the biosphere reserve.
- **Identify concrete priority interventions**, including strengthening capacity for co-management and community conservation.

Try to target multiple benefits

What results can be achieved in which kind of meetings

Community engagement is “practices in which a wide range of people work together to achieve a shared goal, guided by a commitment to a common set of values, principles and criteria” [[SARKISSIAN]].

- Information sessions – not participation** In **information sessions** you present the biosphere reserve or a particular aspect; you lecture and you answer questions. *Don't count this as real participation.* Information sessions keep communities informed, but they might go home frustrated because they were not able to actively contribute.
- Consultations serve exchange** In **consultations** you present a particular problem and maybe different proposals for suitable solutions; you seek the opinion of the community on the problem and on the different proposed solutions. Maybe you are interested in gaining ideas for alternative solutions. Maybe you discuss pros and cons, and/or cause-effect-connections. This is participation, *but in a closed format* – the problem and the way to think about it and about possible solutions have been pre-structured *by you*. Still, if you organize a consultation very openly, a consultation can lead to excellent exchange, dynamic interaction and much motivation and commitment with the participants – whether this suffices, depends on the problem.
- Public hearings are full participation** In **public hearings** (understood as analogous to a hearing in parliament in the early stages of a legislative procedure), you present only an outline for the problem to participants. They should themselves contribute assessments about the severity of the problem; they should contribute arguments, causal connections and prioritizations, pros and cons. The presenter/moderator is a collector, only structuring contributions. This is the most intense form of participation, with a truly open format. The danger of this format is that it can lead to the expectation that all arguments and opinions will be taken care of.

Information sessions, consultations and hearings are all meetings for larger groups of people. In addition, there are many formats for smaller groups (cp. below).

How to inspire open dialogue?

It is not easy to create the conditions for successful open dialogue with large groups. Many theories on how to achieve such dialogue have been developed. For most practical uses it is enough to observe some general recommendations [[UNESCO2008]] which are presented below.

- The audience will have diverse attitudes** Many people feel uneasy to publicly state their opinion. Some are afraid of public spaces, others are afraid to disturb social hierarchies. Some people may never appear at a public event (for reaching out to vulnerable groups, cp. above). Other people attend meetings but do not say one word; still other people may participate, but maybe only aggressively and disturbing procedures.
- How to create a climate of positive cooperation** Biosphere reserve management should be “inclusive” and reach out to the entire community. This is only possible in a “climate of voluntary cooperation”, where the participants feel secure. For successful public meetings (for larger audiences with more than 100 people *and* for small meetings), there are several conditions:
- **Good opening:** The first minutes of a meeting are important. Greet not only external guests and participants with high social status, *all participants should feel personally welcomed.* Unfortunately a round of presentation even only with names will not be possible in a large group. *Clearly state the meeting's objectives* such that nobody has the impression to be there “just to talk”.
 - **Voluntary participation:** Participation in a dialogue must be truly voluntary, no direct or indirect pressure should be exerted. There should *not be any precondition* such as “if you participate, you have to accept the result”. All participants in the dialogue should be *free to accept the results or reject them* if they are not satisfied. Nobody should be forced to contribute explicitly: if someone prefers just to watch, don't force her/him to say something.
 - **Seeking contributions:** In general, a consultation and even more a hearing has the purpose that the *participants provide the content.* The chairperson/moderator provides the goals and the structure, but not the content. Invite the participants to contribute their ideas, problems and interests; invite them to develop new ideas. The collective wisdom and experience of stakeholders and the community is an incredible source of innovation. A “dialogue” which seeks consensus to pre-fabricated ideas – is not participation. Seeking consensus to pre-fabricated ideas leads to feelings of manipulation and distrust. If possible, the participants themselves should *decide the rules* governing the debate at the beginning of the meeting.
 - **Moderator:** The chairperson/moderator and the note-taker of the discussion must carefully and respectfully listen to each participant's intervention, and give proof that *each intervention is taken seriously*, whether it is a brilliant new idea or a standard opinion. Try to *disentangle facts and emotions* – this will lead to much eye-contact and also improves understanding on the side of moderator and note-taker. Only stop interventions that are misusing the open dialogue space: For example if somebody talks disrespectful about other people or if somebody with high social status tries to strongly dominate the dialogue. The chairperson/moderator should help each participant to *feel secure when making an intervention.* Do not immediately judge the factual correctness of a statement or its relevance for the discussion, wrong or irrelevant statements will often be quickly forgotten anyhow. The chairperson/moderator should *refrain from taking strong positions* of his/her own. Paying attention to one's own words as those of the interlocutor is the best option as a good dialogue means mutual care and listening.

- **Meeting closing:** The quality of a meeting also depends very much on its closing, because people will remember vividly the last moment. This can be particularly difficult, because the chairperson/moderator may be already tired and has the impression that “everybody wants to go home”. Close the meeting with a *final synthesis of the main progress made*. If necessary, seek the explicit agreement of the participants on this synthesis. *Recall decisions made*, and actions adopted for implementation. End by communicating up to five key messages and wish everybody a safe trip home. Thank the technical staff, such as translators or catering. Everybody will agree this is important.

Working with a professional moderator

In many cases, it can make sense or even necessary to hire an external, professional moderator to support you in implementing consultations and public hearings. Much depends on the high quality of preparation of the chairperson/moderator. The tasks are identical whether you or an external moderator is doing the job. Most importantly, be absolutely clear about the meeting’s purpose. Envisage major outlines and milestones of the meeting, but allow for flexibility and do not pre-fabricate solutions. Have experts at hand as resource persons; identify participants that you know can support you in consensus building.

Having break-out sessions into groups

At some point in a public hearing, it may be good to conduct discussions in small groups; this would be practical if only to better structure a long day of plenary discussions. More importantly, only smaller group discussions allow everybody to voice her/his opinion. For group discussions, a moderator is helpful who should be selected from the participants. Also in small groups, a moderator should be as neutral as possible, with similar roles as described above. However, moderators in small groups can take a more active own role than in the plenary.

Beyond inclusiveness, meetings must of course be also *effective*. While any dialogue should create trust and support, every dialogue also has a specific purpose and should have concrete results. The following advice can be given:

A stakeholder can be interested in success or in failure

- The chairperson/moderator can support mutual understanding among all participants, if she/he **summarizes or reformulates her/his understanding of concerns** that a specific interlocutor articulates. This can avoid misunderstandings and can focus the dialogue. The interlocutor will feel taken seriously and maybe she/he will even understand better her own argument.
- The chairperson/moderator can try to **synthesize all expressed ideas**; this might happen maybe every 30 to 45 minutes or less frequently, depending on the context. The chairperson/moderator should *summarize the main progress* in mutual understanding achieved during this period. If parties disagree, and if strengths, weaknesses and relevance of some arguments have been clearly voiced, he/she may repeat them for record, but in a neutral way. Whenever sensible, such a summary should try to “finish” some items under discussion. However, it is not wise to insist too strongly that one item has been discussed to a final point, if later in the discussion somebody wishes to open it again, as there may be good reasons to do so.
- The chairperson/moderator will personally be asked many different questions on the topic of the discussion, because she/he is perceived as the centre of debate. It is not always the best idea to provide answers oneself, because then the moderator would be in a double role as moderator and expert – this will make open discussion more difficult. Also any answer which is not fully correct can harm the reputation both as expert and impartial moderator. It is wise to **be assisted by a member of staff with knowledge on the subject**. The moderator later can still add further information. If the best expert on a topic is somebody else in the group/audience, this is not a reason of shame for the chairperson or the staff – this is an opportunity to improve everyone’s knowledge.



How to prioritize key stakeholders and opinion leaders?

We have introduced the term “stakeholder” in sections 1 and 2, as a group or individual that has “stakes” or interests having to do with the biosphere reserve. Typical stakeholders are “the head of the farmers’ association”, “the governor”, and “the chairperson of the tourism board”, or “the local representative of the mining company”. Considering somebody as a stakeholder assumes that

Case study: Three cases of moderating dialogue in Pendjari biosphere reserve, Benin

In the Pendjari biosphere reserve, disagreement between fishermen and the management emerged in 2001 and persisted for two years because the two parties did not have an open dialogue. The fishermen had customarily fished in the Pendjari River for at least 60 years; fishing provided the livelihood for their entire community. Nevertheless, the authorities including the biosphere reserve management asked the fishermen to stop their fishing activities because it was not officially legitimized. They did this without sufficient efforts to understand the community and their customs. After two years of arguments and misunderstanding, the biosphere reserve managers finally organized a meeting based on the attempt of truly listening to each other and to understand the concerns. The result was a compromise: The fishermen maintained their right to fish, but fishing was restricting to certain times and places. The decision was accepted by all and is upheld until today. Today, fishing is monitored, fraud reported and the co-operation has generally improved. Given its success, this approach was extended to Arly in Burkina Faso which shares the river with Pendjari biosphere reserve.

In a different case, there was the challenge to better control poaching, which was only possible if some poachers could be "converted" into rangers. An external moderator was tasked to establish that dialogue. He organized meetings of managers and poachers, both in the administrative office and at the houses of the poachers. Both settings turned out to be inadequate, the meetings were unsuccessful. The moderator then chose a neutral meeting place, which indeed helped to establish the dialogue. After long negotiations and "active listening" of the managers to the concerns of the poachers, trust and later consensus emerged. Today, many former poachers have become defenders of the biosphere reserve and their contribution to the joint work has constantly improved.

A completely different example from the same area: The Association for Ecotourism Development in Pendjari Biosphere reserve (ADEPT) is the result of public-private cooperation bringing together private tour operators and public bodies, including the management of the biosphere reserve. At the beginning of the process of creating ADEPT, tour operators and public bodies were adversaries, focusing on each other's weaknesses and even exaggerating these weaknesses. This situation changed when they did a joint "neutral" diagnosis of the situation in a workshop. This led them to acquire the understanding that both parties are mutually needed for ecotourism development. This enabled the formulation of a common vision and action plan. As a result, there is so much trust today that the public actors could withdraw from the joint endeavor – the first purely privately run structure of its kind in the country.

they are *interested in the success* of a biosphere reserve and that their activeness is important for that success. But you might also specifically consider engaging with people and groups that seem *interested in the failure* of a biosphere reserve. The list of actual stakeholders of your biosphere reserve changes with time – if the biosphere reserve will be successful (economically, ecologically and socio-culturally), then the list of stakeholders will gradually become longer.

Stakeholders can be prioritized

Every manager of a biosphere reserve has limited resources; especially, there is never enough time. Thus, you need to *prioritize your interventions*. While each person living in the biosphere reserve is important, while each stakeholder is important, some will and must be more important than others. Yet it is never easy to determine, which stakeholders are most important. Some stakeholders seem important because they are famous, others may have hidden networks to powerful people, others may have access to foreign donors, and others pronounce their opinion very publicly; cp. also the "stakeholder matrix" in section 2.

Show full respect to everybody, also those with "low" priority

The priority of a stakeholder can only be assessed locally, by you. You need to consider who has direct or indirect influence on the management structure of the biosphere reserve. Then classify all stakeholders into categories of importance (high, medium, low), into categories of activeness and take this into account in decision-making and in prioritising the management attention given to distinct stakeholders. However, *never ignore somebody with "low" priority* because all human beings deserve full respect. Having treated somebody disrespectfully will create dangerous adversaries.

Respect chosen representatives

When working with a group of people, they usually will have chosen a *group leader to be its representative*, leader or spokesperson. The group expects you to work with this representative, since she/he was chosen for that purpose; almost always it would be very unwise to do something else. Shortcutting official representation is the first step to an intrigue.

Be aware of wrong representatives

But also be careful: some people *falsely claim to be representatives* of a group. For example, a CSO might claim to speak on behalf of a village community. This may not necessarily be true. Make an effort to work with community organizations that are closest to your real stakeholder (and tasked with the topic under discussion). Also be aware that within one stakeholders' group, there could be important *subgroups which disagree* with the rest on some issues.

What to do with disorganized groups

There can also be communities and *groups which are not organized at all* and have no representatives. In such cases, identifying an opinion leader is efficient and necessary, because it is not possible to work individually with all members of an unorganized group. Make sure that the opinion leader regularly communicates with the group and indeed seeks its consensus and approval. If she/he does not, consider revising your choice.

Be sure that *important stakeholders* participate in your public hearings and consultations. You might easily fall into the trap to invite important people only to small meetings of steering committees or advisory boards; and that you consult “unimportant people” in public hearings. Never fall into that trap, this does not help consensus in the public hearings and creates a hierarchy which is negative for everybody – soon nobody will turn up at your hearings anymore.

Have the important stakeholders participate in public hearings

“Hard facts” and how to discuss them

A biosphere reserve is normally (but not always) governed by public law and is under government supervision. In these cases, there are pre-defined strategies and purposes governing the work of the management team, imposed by law, by administrative ordinance or by political rule. There will often be a pre-defined budget with rigid budget items. Also in cases of an administration according to private law, there will be pre-defined agreement on objectives and budgets.

Budgets, laws ... - why participation?

Why then at all have a dialogue with communities on objectives, on strategy, on a management plan? And if you have a dialogue, how can you overcome conflicts between the “hard facts” and the expectations of the public?

To each question, there are several answers. *First: Why dialogue at all?*

- First of all, *you need* such dialogue. Almost always, any government policy or strategy will be rather general and not adapted to the specific needs of the biosphere reserve; it may also be outdated and not adapted to today’s needs. In order to further develop specific policies and strategies, you need to include the collective wisdom of stakeholders and the public; you need to understand the issues that really are of concern to the people. If you will be successful in designing a really good strategy that answers to real needs, you are likely to convince your superiors to change the official strategy. Based on good arguments, also laws can be changed – but you first need the good arguments and you need the support by the public.
- Don’t forget (cp. section 3.3) that *UNESCO requires you* to have a management plan, based on participation and community involvement, not based on administrative ordinance.
- A biosphere reserve has the responsibility to act as a model region. This means that new ideas and new approaches have to be developed and tested. *Most ideas will originate from the community* in practical contexts, not on your desk and not by government ordinance. In order to get to know these ideas, you need dialogue. If you are successful in collecting ideas and thus create a space of innovation, you will see that funding may become available – and even national policies can change!
- Dialogue is central in order to *overcome stereotypes*.

Dialogue because you need it, because UNESCO requires it and because it is good in itself for innovation and for less stereotypes

How to manage conflicts of expectations with “hard facts”?

When you work with stakeholders and the general public, you will encounter many different expectations, including unrealistic expectations. Dealing properly with expectations is absolutely critical. The most important lesson is to *avoid generating wrong and unrealistic expectations* in the first place. Companies often speak of *expectation management*. If you invite to a meeting, do not promise anything that you cannot keep. Do not claim that a meeting will result in a new strategy if your superiors have not given you the mandate to design a new strategy. At the same time, it is not wise to explicitly mention all limitations and to narrow the space of brainstorming and negotiation from the outset; this can kill imagination and new ideas.

“Expectation management”

If unrealistic ideas are mentioned in a meeting, do not discard them straight-away. If you have a blackboard or flip-chart available, take positive note of such ideas as “*visionary ideas*” and include them in the minutes of the meeting as “outlook”. If you have to decide between several ideas in a meeting, you may write them down first in a matrix with columns entitled for example “possible in the current budget” and “additional fund-raising needed” – avoid criticizing potential problems of any idea.

Don’t discard visionary ideas

There is one very important challenge of the work of many biosphere reserve managers. On the one hand, many are government-employed with the task to enforce legal and administrative rules, e.g. on land use balance. As such, they are *perceived as an authority* that limits the freedom of the inhabitants of a biosphere reserve. On the other hand, they should organize neutral platforms for participation and *inspire free dialogue and innovation* – i.e. enrich the freedom of the biosphere reserve communities. Overall, managers must constantly *balance rule enforcement with negotiation and participation* [[FISCHER]]. In this sensitive dialogue, they have to provide options for local users while simultaneously keeping them from negative and destructive acts. Balancing these two roles is possible, but requires much mutual understanding and trust [[STOLL2005]]. If necessary, it can be a good idea to split the tasks among the management team, maybe for some period of time. What is even better, as in the case of the Pendjari biosphere reserve, is to involve the population into hands-on work such as monitoring.

Balance rule enforcement with participation



The case of multi-language environments

Local languages are vital for conservation

Traditional knowledge, customary institutions, and the names and uses of species and biodiversity are interconnected and inseparable from local languages and dialects. The vitality and survival of indigenous and local languages is crucial not only for keeping alive bodies of cultural heritage and practices. It is also important for conserving biodiversity, through the associated biological knowledge. Safeguarding endangered languages is thus important to conservation.

Encourage the use of local languages

A biosphere reserve manager can help by encouraging the use of local languages at meetings, in official documents, or in educational programmes. This presupposes that the manager speaks or understands the local language. A simple action of great value for conservation is to respect, to maintain and even to restore the use of local names of places and of species.

Translation is difficult

At the same time, having to work at meetings with several languages is a practical complication. Formal translation is usually expensive, often involves special technology which may be not available, and many subtleties of statements will be lost.

Make real effort to understand each other

Luckily, in many multi-language environments, people understand each other quite well, even if they do not actively speak the other's language. Pretending not to understand each other often has a lot to do with power structures: people pretend not to understand, in order to exert power. Carefully investigate opportunities under which conditions your partners would be willing to discuss without translation in a multi-language environment. Such settings are not ideal for creating trust, but translation does not help too much either in building trust.

If there are people present in a meeting who are native in different languages, allow for at least one phase of working in groups, and allow participants to work for a certain period of time exclusively in their native language.

Reflect local languages in team

In multi-language environments, it is important to have competent and trust-worthy staff members in your team that speak all the languages spoken in the area.

Key logistical questions

Don't let urgency prohibit dialogue

Time devoted: If you plan to organize a dialogue in a biosphere reserve, never think only about *one* meeting. A culture of dialogue and trust, a "dialoguing environment" cannot be created within some days or weeks, *dialogue is incompatible with urgency*. It may take *months or even years* until the parties start to truly listen to each other and jointly arrive at solutions. The setting for a dialogue depends on the issue and on the methodology to address it. But always start from the assumption that a series of meetings might be necessary. Then continue to *carefully plan each individual meeting* – if the first meeting fails, there might be no chance for a second meeting.

Each individual meeting must have clear targets and should produce clear results; but be aware of one danger: Even if you understand that a dialogue needs time to emerge, some stakeholders might call for immediate action because of an urgent problem. It is important not to discourage them to remain part of a longer participatory process (because they will support you to arrive at a solution), while at the same time not to get carried away by the urgency.

The setting is important: Carefully choose the place and the timing of any meeting. The place is relevant to promote cooperation, involvement, openness, and transparency. Stakeholders and communities will behave differently in a neutral place than in a building which they associate with a particular authority. Here is an example: “Fishermen do not feel at home in the office of the County Administrative Board. Therefore we will open up a neutral office dedicated to biosphere reserve activities that will serve as a welcoming space for all stakeholders” [[JACKSON]]. If the meeting is in a room, the acoustics are important (is there loud road traffic?); whether there is air condition and whether people are used to it; whether there are adverse light conditions in the room (e.g. avoid a podium in front of windows or of a very bright sun-lit wall, because then the audience cannot see the faces of the podium). Also avoid a podium in the dark part of a very bright room; avoid very high temperatures and humidity if possible.

The right place and the right timing are crucial

Having a meeting outdoors can be helpful, since the setting is well known to many people, and therefore it helps to promote mutual trust rather than sitting around a table in a boardroom. Do not admonish when participants arrive late or leave early, without protocol. The best option is to have a meeting in the same place where also other community meetings are usually held; it is second best to choose a place that looks very similar. Whatever the chosen place, make sure it provide the best possible conditions for the meeting (chairs? free access? availability of drinks and food?).

Think carefully about the seating arrangement. Usually it will be accepted or even expected that the moderator/ chairperson has a prominent seat – but you can choose otherwise if you think this is good for the meeting. As a chairperson/moderator, never sit too prominently or too far from the rest of the group. Sitting in circles is usually preferable to sitting in rows.

The right seating is important too

Also think carefully at which time people are available to meet. Take into account when people are busy working or busy caring about their families or busy performing their religious duties. For example do not schedule meetings with farmers in times of harvest. If people need to use public transport to come to the meeting, consider possible delays.

The timing is also important

Meeting duration and invitation: How long should a meeting be? The rule “*as short as possible*” is *not* always true. If people took effort to travel for several hours to arrive at your meeting, they can be disappointed if the meeting only takes one hour. However, beyond such extreme cases, you should be as concise as possible. You will exclude many people if a meeting is scheduled such that they have to spend a night away from home or else you will have to cover their accommodation bills.

How to invite people

Case study: Fish farming in the Mt. Kenya biosphere reserve, Kenya

The biosphere reserve at the second highest African mountain was designated by UNESCO in 1978 and in 1997 as a World Heritage site. The Kenya Wildlife Service (KWS) and the Forest Department share management of the Mt. Kenya ecosystem through a joint integrated management plan. Nevertheless, in recent decades, the ecosystem has experienced environmental degradation as a result of poor resource management, population pressure, poverty, and increased dependence on forest resources. These factors have led to shrinking forests, drying up of streams, soil erosion, reduced species diversity and general decline in the capacity of the forest to provide economic and environmental services, and of course human development.

Yet from 2004, UNDP, with funding from GEF and the UN Foundation, has introduced a very successful initiative called COMPACT to counter the degradation of the biosphere reserve. COMPACT in essence consists of setting up community-based fish farms (through competitive grants of up to 50,000 US dollars for 24 months as well as through providing expertise), which both engaged communities in environmental conservation while at the same time improved livelihoods. Since the five pilot projects have been successful in every respect, also other donors such as the Kenyan government and international NGOs have supported similar community enterprises within the biosphere reserve – and beyond.

While private-enterprise fish farms have existed around Mt. Kenya since the 1990s, community fish-farms have been something new altogether. Some of the projects were implemented by women groups and groups of out-of-school youth. How can fisheries avoid environmental degradation? Both trout and tilapia (trout is raised at higher altitudes, tilapia in the lower stretches) require a consistent source of clean water. This implies that communities must actively protect the sources of the water from pollution and avoid any activity that could result in decreased river flow. This has led to communities establishing four tree nurseries (more than 200,000 seedlings planted so far), such as to plant trees within the catchment area to improve water flows and prevent soil erosion. Communities have also assisted in monitoring illegal settlement and pollution. In similar projects mulberry trees were raised to provide food for silkworm rearing. Fish farms have created income for some 2,000 households in the biosphere reserve. The initiative has also facilitated dialogue and exchange of information among stakeholders [[UNESCO2013-1]].



Think about how to best inform the participants about the meeting (Telephone? Oral invitation? Written invitations? Posters? Newspaper? Radio? Flyers? Text messages/SMS? Email? Social media?)

Working with a moderator

The chairperson/moderator should be supported by an expert, either for support in technical questions, in logistical questions or for questions on content. Two people as organizers and resource persons allow a better division of roles, a sharing of responsibility and in general reduce the danger of chaotic meetings and a loss of direction. An external moderator can be helpful because of her/his neutrality.

4.3 Maintaining a dialogue

In this section, we start from the assumption that you have already involved communities and stakeholders in a dialogue; you have established mutual trust. Now we go one step further: We discuss *instruments to keep up the interest of stakeholders and communities in the long run*. How can you strengthen the support networks of your biosphere reserve? How can you establish a more institutionalized collaborative framework?

Focussing on benefits

Don't do participation when there is nothing to participate in

We start with a warning. Of course it is only positive to invest time to maintain a close contact with your stakeholders and communities in “unproblematic” times, when there is “no urgent issue to solve”. But: Any activity to maintain a dialogue and remain in contact should have added value. If there is no such direct benefit, if you visit your stakeholders and communities “just to say hello”, they will rightly think that “you have too much time” and that you are wasting public money on “marketing” and networking without any results.

Plan all your activities and interventions based on the benefit and added value they generate to the biosphere reserve and its communities. Never plan them just because you have read about an idea in this Manual or in another book! Don't set up a hearing or working group if it is not really needed. Don't organize a competition if it does not have a concrete purpose or benefit.

Involving stakeholders and communities in actual work

As stated already repeatedly in the Manual, participation means several things: It does not only mean “being part of discussions and decisions”, it does not also mean “sharing of direct and indirect benefits”, it also means involvement in actual work. Involving communities and stakeholders into the actual work can take multiple forms: You can

involve community members into conservation measures such as anti-poaching patrols or species monitoring, into ecosystem restoration such as mangrove planting, into community infrastructure development such as building schools or water or health services, into setting up support/marketing networks for example for farm produce or for fisheries.

Biosphere reserves can be distinguished from regular protected areas in that their actual work and project portfolio really focuses on (or even is exclusively about) such interventions which are initiated, planned, implemented and evaluated together with local stakeholders and communities.

Organizing your work with and around the needs and interests of the communities will guarantee you the continued interest of communities – dialogue is automatic, if your work is proven to be of relevance.

Annual meetings of stakeholders

We assume that your biosphere reserve has a “standard set-up”: This means a management board, a management plan and a stakeholders’ advisory board (“NGO model” or “authority model”, cp. section 3.1). Typically, maybe up to 40 stakeholders can serve on these boards; otherwise they would be too large. How can you reach out to all other stakeholders? The most obvious choice is to organize an annual meeting, to which you might invite “all” stakeholders, maybe more than 100. Depending on the local situation such a meeting could take place every half year or every two years, but an annual frequency is usually best.

Annual meetings as option to cater to larger groups

Such an annual meeting can be called “meeting”, “round table”, or “conference”. The title and character should not be too formal, but also not too informal. It is important not to raise wrong expectations: Such meetings often do not involve decision-making. This could however be possible: a resolution on some fundamental topic could be adopted or some members of the management or advisory board could be elected.

Don't raise wrong expectations

Let us focus on meetings without decision-making. A well-structured annual meeting with “all” stakeholders, which includes transparent, honest and comprehensive reporting as well as *ample discussion* opportunities, will *normally provide enough benefit* for your stakeholders. Benefits to stakeholders can be improved, if they can propose part of the agenda and if it is ensured that the results of the discussion are properly used (this does not require formal decision-making).

A good meeting is already a benefit

At the beginning, you should honestly and comprehensively inform your stakeholders about the current state of the biosphere reserve and about the results of your work. In your reporting, *clearly distinguish* between the biosphere reserve as a whole, its ecological, social and economic development; *and* the results of projects and activities of the management team and the work of the management board and the advisory board. If you mix up the two things (biosphere reserve and management unit), you will not support commitment of all stakeholders: **Stakeholders need to be reminded that “they” are the biosphere reserve just as much as you are.** The biosphere reserve – this is the entire region and its inhabitants, not only you as managers.

In your reporting about your work, focus on *results* or *outcome* of your activities, not the activities itself. Don't report about meetings, meeting participants and agendas, but about decisions; not about activities but their results. If you can, report on money spent, on priorities and how the priorities have been decided (cp. Appendix 14 for a sample structure of a written annual report).

Results, not activities

Reporting alone is not sufficient. You need to *allow and actively promote discussions*. It is advisable to have at least two rounds of discussion: First, the discussion of your report: Welcome controversial discussion and critical questions; be well prepared for critical questions. Second, discussion of (a) major current theme(s) in the development of the biosphere reserve; either you could propose a varying annual theme (such as “water”, “poverty”, “climate change”) or you ask your stakeholders in advance what theme(s) they suggest. Ensure a proper note-taking through your staff and follow-up to relevant results of the discussion. If there is, for example, a clear majority asking for fighting poaching then take this up as a new priority, as far as is possible.

Promote discussions

Ad-hoc working groups

We again assume that your biosphere reserve has a “standard set-up”. Now, let's focus on situations when such a “standard set-up” may not be enough.

Imagine the following case: An investor company approaches you with the idea of a eucalyptus plantation in the biosphere reserve. You are aware that planting eucalyptus has many negative and few positive consequences, but maybe you are not sure. What do you do? How do you decide? You can be lucky: There might be an expert on eucalyptus in the management board or advisory board.

An illustrative example: “eucalyptus”

Case study: Tourism working groups in Pendjari Biosphere Reserve, Benin

The biosphere reserve developed a code of conduct for ecotourism. The preliminary draft had been written by a consultant. It had a structure corresponding to the main groups of ecotourism partners active in the biosphere reserve. In order to improve the first draft, three small stakeholders working groups were formed: one with representatives of hotels and restaurants, one with guides, and one with the biosphere reserve managers, representatives of the city council and of the association of local residents. All working groups had a second task, of reaching out to all actors of the same field. This “dissemination” strengthened cooperation, and the working group members became partners in promoting and defending the consensus result of the code of conduct towards third parties.

He/She might also know about its impact on the local economy, on water bodies and on biodiversity. But most likely there is no such expert in your management or advisory board.

Use working groups to reach out to the community

We advise you to use such a situation **in a doubly beneficial way: Solve the problem and reach out to your stakeholders**. You could set up an ad-hoc working group which will meet maybe only 1 or 2 times and you might invite 1 representative of your management board and/or advisory board, maybe 5 to 10 other stakeholders and/or active people from the community – who are not members of any board, 2 or 3 experts from the outside, maybe including from the MAB National Committee, the National Commission for UNESCO or the UNESCO field office.

Discussion, not decision

Such an ad-hoc working group will not decide about the case; decisions are the mandate of the official bodies. Such a working group will combine outside and inside knowledge to the extent possible. The expected result could be a short statement on advantages, disadvantages, opportunities and risks of all options.

Respect mandates

Once the working group has performed its task, you should present the result to the official body in charge (probably the management board; you could also involve the advisory board again). In the eucalyptus case, you could invite the investor to the same meeting. The official body could weigh arguments from the analysis of the ad-hoc working group with the arguments of the investor. The final decision will likely be taken by the management board.

Such an ad-hoc working group has two benefits: First, improving access to relevant knowledge. Second, appropriate involvement in the decision making and transparency is increased.

Keep working groups small

The size of a working group is crucial: Bring in as much different expertise as necessary. But keep the group as small as possible in order to allow everyone to participate in the discussion; 15 members is usually the maximum for a fruitful discussion.

Be transparent about mandate

Clearly define the goal of a working group, the concrete results expected and what will happen with the result. Also be clear about the limited time-frame. Avoid raising wrong expectations about the mandate and especially about decision-making. Such working groups should help solve problems and deepen cooperation; if there are stakeholders with fully incompatible positions, invite them to find a compromise. Identify somebody with good moderation skills as chairperson. Define what happens in case of disagreement (you might for example take note of “minority votes”). To repeat: Only create working groups when they are necessary. They can be necessary for two reasons: either because several different competences need to be combined or because special partners need to negotiate lengthily to arrive at a legitimized solution. *If a working group is necessary, always set it up such that it also fulfils its second benefit, reaching out to the community.*

Visits

Bring in outside stakeholders

Visits to other biosphere reserves or other relevant regions can also have the double benefit of solving a problem and reaching out to stakeholders. Either you can invite a representative from another biosphere reserve to your place, or you go there with 4 or 5 local people. If you assemble such a small delegation, do not only invite members of the management board or advisory board. Invite 1 or 2 additional stakeholders/community members. This will strengthen their commitment to the biosphere reserve and will minimize any suspicion that benefits (such as a trip) are only open to a small “elite group”.

Competitions and flash surveys

Competitions for kids

Competitions can be organized for children and for adults. The best known form of competition for biosphere reserves will be for kids: painting or music or poetry or story-telling competitions. Often biosphere reserve managers invite schools and their kids to express their knowledge, their ideas and expectation about the region, about nature

or about the biosphere reserve proper. The best contributions then receive an award at a ceremony in the school or a public place.

Competitions for children are not only an instrument of “kids’ environmental education”. Children talk to their parents when they participate in a competition; therefore the parents are also reached, including during the award ceremony. What is important is that a kids’ competition is not a stand-alone endeavour. Children must have access to proper information, ideally they receive a presentation about the biosphere reserve; if they are not informed at all, they might draw a painting of the biosphere reserve which depicts human beings and animals behind a fence – this will be counter-productive for communicating your goals.

Kids talk to their parents and they need proper information

Competitions for adults must have more tangible goals than paintings or songs. Competitions can be turned into “idea contests” organized to collect new ideas on how to solve a typical development problem. Idea contests can be very specific (“How can we finance improving sanitation in village X?”) or general (“How can we diversify our communities’ income?”). Examples of large international ideas contests are “Young Farmers” or “Second Chance”, both focused on rural Africa [[PCC]]. The winner of an idea contest needs not be awarded a financial prize; a formal recognition in an award ceremony is usually enough.

Competitions for adults: idea contests

Ideas can also be created through “flash surveys”. In contrast to formal official statistical surveys, these are more informal. Only a very short number of questions are asked to a small sample of local people, either multiple-choice or in open formats. The result of a “flash survey” is not statistically significant with a “high confidence level” because of the small sample size. But a flash survey can provide a trend about public opinion. What is even more important is to use “open questions” well, to collect new ideas. An alternative are focus group discussions: For a quick introduction, cp. Appendix 13.

Flash surveys

Competitions and flash surveys both have two goals: help collecting new ideas and involving the community in order to support commitment.

Establishing a stakeholders’ association

Increased rights and responsibilities for natural resource management affect the decision-making mechanisms within or between communities. Thus it is important to strengthen the community’s capacity to develop and apply effective and equitable local institutions. Often *capacity building* is needed in problem analysis and solution-building techniques, which in turn may also require literacy, numeracy and basic management skills. Capacity building of communities should be step-wise involving also governmental authorities, NGOs and community leaders willing to assist in the process.

Increased responsibilities require increased capacity

An important part of capacity building is “institutions building”. A biosphere reserves is an institution, i.e. a management body and associated boards, associated rules and regulations and networks of people that work together to better achieve common goals. However, the biosphere reserve and its official boards should never be “exclusive” institutions. It should support additional institutionalization wherever possible; this includes institutionalization independently of the biosphere reserve.

Institution building

One example is farmers’ associations or cooperatives. In most biosphere reserves, farmers are the most important land-users. It is positive if all farmers of a region jointly discuss common problems, common needs and interests, purely among themselves. Such associations can have an economic purpose (e.g. joint marketing of their produce), a social purpose (e.g. assisting each other after accidents), and a political purpose (e.g. jointly promoting their interests towards a mayor or governor). In places where there is not yet a farmers’ association, biosphere reserves might consider supporting their creation. Maybe an association exists at the national or provincial level, and the biosphere reserve can help creating a “local chapter”. The same might be considered for example for fishermen, hunters, forest workers, farm workers, craftswomen, or tourism employees. Once such an association is created, it will be much simpler to interact with them as a well-defined group.

Supporting the creation of economic associations and cooperatives

Community representatives

Not only individual professions such as farmers need “institutions” of cooperation, mutual support and to speak up with “one voice”; the same applies to tribes, communities, families and villages. For the case of most communities, there are well-established formal or informal forms of representation, by law and/or tradition. For example, community representatives might be democratically elected, or else, community representatives can be “kings”, “aristocrats” or “elders”, designated by great experience or wisdom, family position or age, capabilities, or noble lineage.

Building social institutions

Case study: Associations in Sahamalaza-iles Radama biosphere reserve, Madagascar

The marine and coastal biosphere reserve of some 150,000 ha is situated on the north-western coast of Madagascar; it was designated by UNESCO in 2001. It is very threatened by progressive destruction of habitats. This is one reason why it has been selected by Madagascar National Parks, which manages the 26,000 ha national park as bulk of the biosphere reserve's core area, as a pilot site for implementing a national new policy: involving the local population in the management of protected areas. The biosphere reserve is thus a pilot for Madagascar in addressing not only biodiversity conservation, but also the socio-economic development of local populations in the context of the Act on Managing Protected Areas. Some 50,000 people live in the biosphere reserve in some 80 villages or hamlets. The region has remained quite isolated for a long time. A recent boom in sea cucumber harvesting attracted immigrants. While the permanent population's traditional way of life is presumed to have little impact on the environment, which is also due to a series of "taboos" (or "fady"), the newcomers' fishing practices seriously impact on many marine species. Also deforestation leads to increased sedimentation with adverse effects on coral reefs.

The biosphere reserve chose four methodologies to involve the populations: raising awareness, creating associations, assigning responsibility and development support. Here the focus is on the associations: In villages and groups of smaller villages, more than 30 Local Grassroots Committees (CLB) were formed since 2006, consisting of fishermen, breeders, farmers, teachers, and traders (on average, 30 members per CLB). They implement "dina commun", or local law, created at the general meeting of CLB members, and support all technical activities, including infrastructure construction and maintenance, surveillance and monitoring. As a joint liaison link to higher authorities at the community and district level, 5 "Communal Dialogue Organizations" (SCC) consisting of officers from the diverse CLBs were created, which again were brought together into one federation. In addition, five "Wise Elders" Associations were founded, with the task of conflict management in all existing associations and even among management and administrative authorities. For example they achieved an immediate stop to illegal fishing in the core area in 2009. As guardians of tradition, they ensure that sacred sites inside and outside the protected area are respected. Even more, to support the managers, an "Orientation and Support Committee for the Protected Area" was created between the communities. The responsibilities of all bodies have been jointly identified in 2008. Through sponsors such as UNDP, the World Bank, or the "Lemurs Association", more than 1,000 micro-projects have been supported. In 2011, an Ecotourism Guides Association was created at the regional level. As a result, human pressure on the ecosystem has declined significantly, with both illegal logging of mangroves and illegal fishing being halved between 2007 and 2011 [[UNESCO2013-1]].

Only where necessary

If any form of community representation works well, there is no cause for a biosphere reserve management to further think about it. However, there are also many cases, where community representation does not work well. There can be conflicts between traditional forms of representation and the representation by democratic standards. There can be conflicts because some parts of a community are excluded from proper representation, for example a nomadic minority, an ethnic minority, or women.

Refrain from too deep conflicts

Certainly, a biosphere reserve management cannot address too complicated conflicts between communities; however, the managers can try to include marginalized groups in the governing boards, through more appropriate



forms of representation and thus facilitate solutions in the community at large. In complex situation, professional help from the outside, e.g. through a moderator, could be advisable.

Effective community involvement often presupposes capacity building. Any capacity building

- Requires a thorough and transparent assessment of joint and individual needs, in particular to improve resilience and to improve conflict-resolution;
- Should happen early in the process of community engagement;
- Should use locally appropriate methods;
- Should be accompanied by strengthened roles and responsibilities as well as strengthened institutional structures; and
- Should be monitored.

Accompany with capacity building

Establishing a network of “Friends of the Biosphere Reserve”

Many biosphere reserves all over the world, from Brazil to Canada to Germany, are supported by formal organizations or informal networks called “Friends of the Biosphere Reserve”. In some cases, this organization/network consists of important local people, e.g. political mandate holders, or business people. In other cases, such an organization/network consists of “ordinary local people” who demonstrate their commitment to the goals of the biosphere reserve. In other cases, it consists of partners from outside the region, including cities nearby, international partners, international scientists who have worked in the biosphere reserve, and tourists who have visited the biosphere reserve.

“Friends” organizations can be very diverse in character

The purpose of this organization/network can be manifold: It can just be symbolic or it can focus on raising funds through a membership fee (especially through outside and international friends). If such an organization/network is about fund-raising, be aware that you have to give something in return “to your friends”, at least a regular electronic newsletter and an annual report with which you state what you have achieved with the funds. You may stay in contact with them also through community radio or social media such as twitter and facebook, to keep the dialogue alive.

Diverse goals

Such an organization/network can also serve as an “operative arm” of the biosphere reserve: Many biosphere reserves are government entities with a lot of administrative restrictions. In a number of cases they are not allowed to participate in calls for project proposals, they cannot process funds from external sources and they are not allowed to implement certain activities. In such a case, a formal “parallel” organization such as “Friends of the Biosphere Reserve” (which in many countries can be wisely set up as a not-for-profit foundation) can serve to implement all additional activities. These organizations then have to be closely associated to the biosphere reserve, in terms of its goals and administratively, to avoid any form of conflicting goals, corruption and embezzlement.

“Friends” as operative arms

4.4 Organizing the process to formulate a management plan

Section 3.3 of this Manual has given arguments, why a biosphere reserve needs a management plan. In general, a management plan is formulated for the next 10 years, until the next periodic review is due. Section 3.3 had already explained that a management plan should be a comprehensive and ambitious document – *and* that its elaboration must be a *process*.

The process is decisive

Particular care should be taken that the management plan is also *implemented*. It is absolutely necessary to develop a management plan together with stakeholders and communities. Such a process will not always be easy and short – however this process will always provide many additional benefits, especially for community engagement and ownership, beyond producing a sophisticated document.

The process has double benefits

Case study: “Friends’ Association” in the Kogelberg biosphere reserve, South Africa

Kogelberg in the outskirts of Cape Town was designated in 1998 as South Africa’s first biosphere reserve, following a nomination by disparate stakeholders. The establishment of the biosphere reserve, being under high urbanization pressure, revealed otherwise latent sectoral conflicts. A management committee was founded, which included almost every person that had expressed an interest, resulting in too large a size and too infrequent meetings – and thus ineffectiveness. Active stakeholders soon founded a non-profit company to administer the biosphere reserve as a replacement; in parallel the “Kogelberg Biosphere Association” was founded as a lobby of landowners – in the beginning branded as a “public arm of the biosphere reserve”. They however soon developed a life of their own and were in constant conflict with the different official mechanisms. [[HYMAN] explains in detail how this conflict evolved and how it could have been avoided.



Securing the mandate for the process

Drafting a management plan needs full support

Because the process is long and needs many resources, the management team of a biosphere reserve should never decide alone to formulate a management plan. The full explicit support from all management and advisory boards is needed, as well as the explicit support from the superiors in government institutions, if applicable. The general support by the larger group of stakeholders might be tested during an annual meeting.

Unambiguous requirement by UNESCO

Before a process is started, sufficient financial funds have to be secured. Since establishing a management plan is a requirement demanded by UNESCO and since the process is “quite an endeavour”, such a process might easily be eligible for ODA funding. The requirement of UNESCO derives from the *Seville strategy*: “Prepare, implement and monitor an overall management plan, or policy that includes all of the zones of biosphere reserves”. At the moment of the nomination, at least a management policy must be in place. The *Statutory Framework* requires in paragraph 7.b) a “management plan or policy for the area as a biosphere reserve”.

YOU need such a plan

Yet as mandate, it is not enough that UNESCO formally requires a plan; your essential partners and your superiors should *fully understand* why a plan *actually is beneficial for everybody*: in order to actually implement the ambitious goals of the biosphere reserve – goals in very diverse fields such as biodiversity conservation, climate change, poverty reduction, research and education.

As a manager you cannot reach these goals alone, you need all stakeholders and communities as partners. Therefore you need to formulate *together* what to do, why to do it and how to do it, and in which priority. If you do this as a written document to which everybody agrees, you can generate high acceptance and commitment. You make tangible for everybody what the biosphere reserve *really* is.

Steering groups

A chance for new methods

Similar to the cases described in section 4.1 above (individual management interventions), formulating a management plan should be seen by itself as an opportunity to reach out to communities and stakeholders. It can also be seen as a chance to experiment with new, more dynamic, more participatory and more efficient working methods.

A steering group can support the process

It can be wise to establish a separate *steering group* for the entire duration of the process of elaborating a management plan (in some biosphere reserves, the process has taken 1 to 2 years). This steering group should be a medium-sized group (10-30) comprising all relevant knowledge and political mandates; other stakeholders should be included who are not members of the management board or advisory board.

Case study: Management plan in Waterberg biosphere reserve, South Africa

The biosphere reserve in the Limpopo province in the northern part of South Africa was designated in 2001 and today covers 1,750,000 ha. The area abounds with wildlife, offers a certain wilderness quality and it is largely devoid of human development. Some 90% of the sparsely populated land is in private hands with freehold title, up to 80% of this land is utilized as game farms or private game reserves. South Africa's richest remaining coalfield, with one of the world's biggest collieries and two of the largest power stations, are right next to the biosphere reserve and impact it heavily, affecting also water supply. Another challenge is unemployment and weak linkages of the leisure-oriented game farming to the local economy. On top come fragmentation of the landscape, land reform consequences and rhino poaching. In order to address these challenges and together with the periodic review and a considerable extension, a management plan was completed in 2011. Since biosphere reserves do not have legal status in South Africa, achieving leverage and impact on land use practices on the ground is of utmost importance. Thus, in the context of the management plan, improved strategic planning was foreseen to go hand in hand with engaging with all competent levels of government, including the formulation of the management plan, which was intended to address spatial planning, development guidelines and the long-term conservation objectives. The management plan spells out a vision and a mission statement, a detailed analysis of lessons learnt and of present and future challenges and specific priority projects (e.g. communication, skills training, tourism development, community tourism, conservation of wetlands, rhino protection and environmental education). The plan also confirms the organizational structure, including a stakeholder committee representing a balance of up to 30 local interest groups; the table of contents of the plan is quoted in Appendix 10 [[UNESCO2013-1]].

If you create a steering group, then let it steer. As described below, the process is complex, involving maybe several workshops, or working groups. The steering group is needed as a supervisor; its tasks would include *to control the progress of the process, to identify gaps, and to revise and adopt texts*. Of course, your biosphere reserve has also its ordinary governing boards – but the work on the management plan will normally exceed the capacity of those boards, because so much detail needs to be discussed. Involve your ordinary governing boards for the final decisions only.

All other details of a steering group have to be decided locally, by you and your partners, depending on the local circumstances: how long the entire process should take, how often the steering group would meet, what its mandate is and which additional committees and forms of participation would be needed. Here we can only give one example of a *very good but very ambitious process*.

All depends on the local circumstances

Recently, a German biosphere reserve established its first management plan. Altogether, the process took 2 years.

- A steering group of 23 members was established which met 6 times.
- In addition, a government supervising committee of 13 persons met 3 times.
- 2 managers and 1 external expert as coordinators met 22 times.
- 12 working groups were established on topics such as education, nature conservation, tourism, forests, agriculture and cultural heritage; altogether these working groups brought together more than 200 people and met 46 times.
- Several competitions for children were carried out, an internet discussion forum was established and 2 large public hearings of more than 300 participants were organized.
- There were 5 additional public hearings on specific topics.
- More than 1,000 participants took part in the process.
- The result: 12 thematic visions were formulated, 55 concrete goals adopted, and 350 ideas for concrete projects selected of which 28 have been prioritized. The management plan itself consists of 3 comprehensive documents of several hundred pages.

The managers really appreciated the results; but now they also have to work hard in order to fulfil the high expectations raised during the process.

The process to formulate a management plan

A management plan will comprehensively describe the goals and priorities of the biosphere reserve in *all its fields of activity* over the next years, *typically 10 years*. To formulate the plan, do you need to consult “everybody” about “everything”? How to combine this with the voice of science for forecasting and scenario-building, how to involve government officials – how should you proceed? cp. Appendix 9 for a “checklist” on how to proceed when starting to draft a management plan.

First step: You cannot and should not consult “everybody” about “everything”, but only about what they *are interested in*. You should start with collecting and structuring the **interests and problems of stakeholders and communities**. This could take place in a series of 1-5 workshops. First have an open brainstorming session:

First step: collect and cluster interests and problems

What is the situation today, what is good, what is bad? What should change, what should change immediately? You might call this a “status-quo analysis”.

You should next *cluster* these interests and problems *according to themes*, for example infrastructure development, conservation, job creation, tourism, forestry, agriculture, conflicts of interests, local identity, participation in decision-making, better cooperation, or capacity development. The cluster themes should not be imposed, but should be a result of workshops. If you repeat such workshops, start all with an open search process, but you can then try to validate the cluster themes identified at previous workshops. Record well all themes, worries and interests, and agree in the steering group about the final clustering of themes.

Second step: develop a vision

Second step: Interests and problems are sometimes short-term. In a management plan, you need to **develop a long-term vision** of maybe 10 years. This should build on the themes identified in the first step. For formulating a vision, it can help to cooperate with scientists and external consultants who can support you in forecasting and scenario-building.

The vision should neither be developed alone by you nor by external consultants, but in a participatory manner by the entire community. You and the external consultants are there to facilitate the process.

The long-term visionary process should not only be driven by an analysis of problems, vulnerabilities, threats and risks, but just as well by an analysis of opportunities and strengths – powerful visions do not emerge from a defensive analysis.

In practical terms, formulating the vision can be done at a large consultation, through a public call for proposals, or a series of smaller consultations. As a text, the vision may consist, for example, of a short “summary statement” (1 to 10 sentences), and/or of more specific visions for each theme cluster (a few sentences, up to 1 page). The overall vision could express how the community and the management team would wish to see an improvement of the natural and the socio-economic environment in ten years. The final decision about the formulation of the vision(s) should be made by the steering group.

Third step, if necessary: Sub-goals, indicators etc.

Third step: You might specify the vision further, by formulating and agreeing on **sub-goals or medium-term goals**. This is needed if your vision is formulated in an abstract, purely long-term form. In this case you need to formulate some other medium-term goals with corresponding *expected results* (tangible output) and *desired impacts* (intangible outcomes). These are the goals that you need to achieve in 3, 5 or 7 years, *such that* in 10 years you can achieve what is formulated in your vision. There should also be a clear and credible causal connection between the sub-goals and the main goals of the vision. In the third step you should formulate *success indicators* that tell you if you have reached your different goals. You could also note your underlying assumptions.

There are many different ways that such sub-goals are called according to the many different management theories in existence and clearly there is not “only one true” theory. Find something which seems okay for you. One example: Maybe one of your 10-year goals is called “Become the most attractive tourist region in the country”; then you need several credible medium-term sub-goals, for



example in tourism marketing, in tourism facility development, or in networking with tourism operators. Otherwise your long-term goal is just “wishful thinking”.

Fourth step: Steps 1, 2, 3 tell you what is important to your stakeholders and communities and what the future in 5 to 10 years should be like, from your diverse points of view. Now, how do you get there, to that future? What should be done next? The final step of developing your management plan is to **identify the projects and interventions whose implementation will help you to reach your goals**. A project or intervention is something really concrete, without wishful thinking, such as “presenting your region at the national tourism fair” or “hiring a tourism consultant”.

Fourth step: collect and prioritize project ideas

Reach out to stakeholders and communities also for collecting ideas for projects and interventions, and for later clustering and prioritizing them. This again could be done through consultation meetings, but also through contests or calls for proposal. The task of clustering projects, of prioritizing them and of ensuring a causal connection of successful projects to reaching your goals – this can only be done through consultation meetings, and it typically requires external support by a moderator.

Once you have formulated a management plan, there needs to be a *process of approval and adoption*. As described earlier in this section, if there is a separate steering group for the process of formulating the management plan, then the final document needs to be adopted by this steering group first.

Approval and adoption

The ordinary governing boards (management board, for example) of the biosphere reserve should, of course, also be involved. If the mandate of the steering group is well formulated, then the management board should *only endorse* its decision, without further debate on the detailed content of the plan. If there is no steering group, then you probably need to present the plan to all relevant authorities and key stakeholders. This can be a messy process, because it will be really unclear what will be the status of additional changes proposed by authorities/stakeholders.

If you need to present the plan to ministries and/or authorities, rather do this before the final endorsement by the management board (NGO model of a biosphere reserve). The date from when the management plan is in force should be clearly recognizable for all partners (through a press release after a meeting, for example).

Ideas on how to organize a condensed interactive planning workshop

A public hearing or consultation meeting (cp. section 4.2) is an oral dialogue with dozens or even hundreds of people. You might use such hearings for the *first step* in the proposal above, also for the *second and/or the fourth step*.

A planning workshop for the *third step*, in order to formulate sub-goals or indicators or causal connections between prioritized projects and goals, needs to be of a different kind, using a more intimate approach with texts written down on paper, on a computer, on a flip chart or on a blackboard. For this step, you might *focus on a smaller group* and maybe select those 15-30 participants from a public hearing who have been very active; also include decision-makers and experts.

For planning a detailed structure of goals and causal interrelations, work in smaller groups

A technical interactive planning workshop cannot be done in 1 day, depending on the size of the biosphere reserve it may take up to a week. Wherever possible, seek support by a technical consultant and/or moderator who has experience in such planning processes.

Below we mention a tentative programme for a very condensed 4-day workshop for a scenario in which money and time are scarce, i.e. a workshop in a smaller group that would implement *together steps 2, 3, and 4* of the list above. This includes even some decisions that in a longer process would be taken by the steering group. Such a 4-day workshop would:

Proposal for a condensed planning workshops

- Recapitulate interests, problems, solutions and opportunities collected at the public hearing
- Cluster and prioritize issues and (if appropriate) locate them on a map
- Forecast and formulate scenarios
- Formulate a vision, sub-goals, indicators and causal connections
- Recapitulate project ideas collected at the public hearing
- Cluster project ideas and prioritize them

What is however fully indispensable in terms of broad participation is to have step 1 and the first part of step 4 as public hearing(s), to collect the interests and problems of communities and stakeholders as well as proposals for solutions. A workshop for steps (a) to (d), i.e. up to the formulation of a vision, need to be performed before the nomination of a biosphere reserve.

a) Recapitulate interests, problems and opportunities (1/4 day)

Why?

Maybe the public hearing has already taken place some time ago, maybe not everybody had participated. Anyhow, *bring everybody to the same level of information* by presenting all the results of the public hearing(s).

Which result?

Supplemented list of the interests, problems and opportunities that stakeholders and communities have presented at the public hearing(s).

How to do it?

The moderator presents the report of the public hearing as basis of all further discussions. Try to identify gaps. Only if truly necessary, workshop participants can add additional interests and problems which have not been mentioned at the hearing. Formulate and display each issue separately, e.g. on one paper card “poaching in the core area”. Clarify the meaning of each issue. Jointly decide on setting aside issues that have clearly no relation with the biosphere reserve. There is no upper limit to the number of issues that can be collected.

b) Cluster and prioritize issues (1 day)

Why?

Clustering and classification helps not only for better problem analysis, but is the key step for formulating a vision.

Which result?

Clustered *list of issues*, including their causal relations, potentially a visualization on a map

How to do it?

- Together, the workshop participants work on finding appropriate “cluster themes” of a limited number (15 cluster themes seem too much, the number can even be as small as 5); the clustering logic should not be communicated, it will differ in each biosphere reserve. For example, you could cluster an issue such as “poaching” together with “slash-and-burn” and “erosion” under “*reducing pressure on natural resources*” – but you could also cluster “poaching” together with “lack of legal basis” and “lack of community institutions” under “*improving governance*”. Identifying the right cluster themes often will be an iterative process during which the workshop participants start with a draft clustering which is later changed.
- This typically involves deeper analysis of the individual issues – why are they a “problem” or an “interest”? Should you think about “poaching” as a phenomenon or from the point of view how to prevent it? Try to keep track of the discussions, in particular of the arguments of causal connections between individual issues. Try to rethink the clustering from different perspectives: Is the “loss of local traditions” an unimportant, nostalgic question or is it the root cause of unsustainable land-use?
- If sensible, *visualize* the web of causal interconnections between issues: as *cause and effect*, as *phenomenon and origin* of a problem, as a *driver* for change, or as a *proposed solution*. If you visualize causes and effects, do this in a coherent way, put root causes on top of the visualization (or on the left), and effects at the bottom (or on the right) and display also causal networks. Themes such as “poverty”, “climate change” or “corruption” have causal interconnection to many other issues. Repeatedly analyze the entire chart together with all participants.
- Not all problems have the same importance and/or urgency. Not all problems can be solved locally. Also, one cannot find immediate solutions to all problems. It is necessary for participants to agree with priorities for a next step. Give to each participant *score cards* with values from 1 to 4 and ask them to identify the problems with high priorities.
- Try to focus on questions that *really can be changed*, especially questions which can be remedied locally. If you do not see solutions in the first moment, this is not a problem, but don’t discard such issues.
- If most of the problems or interests only affect a certain part of the biosphere reserve, you may try to visualize their *location on a map* (make sure that every participant is familiar with the main elements on the map, and can identify on it at least her/his place of origin and major landmarks). Use different colours for markers of issues, for their causes and for proposed solutions. But a map visualization can help only sometimes for better analysis, sometimes it prevents an understanding of true cause-and-effect-relations. A map can help to associate roles and responsibilities to proposed solutions (e.g. city council, provincial administrations).
- Once a draft visualization of causal connections and/or a draft map is finished, you should start to *prioritize* the theme clusters and individual issues. Do not use an absolute ranking; rather assign “high”, “medium” and “low” priority to issues, and/or “urgent” plus “long-term” labels. The number of high priorities should not be too large (maybe up to 5). Agree on joint criteria according to which you associate priority. “High priorities” should be associated with issues and clusters for which solutions are possible, including locally. It does not make sense to prioritize something about which nobody in the biosphere reserve can do anything. Priorities should also be on those issues for which strong, collective efforts are needed. Problems which one staff member could solve within a month should not be among priorities.

c) Forecast and build scenarios (1/2-1 day)*Why?*

Problems and interests concern the near, medium-term future. They also give an indication what should be done in the long-term future. But at the same time, several issues might emerge in a few years (e.g. global trade liberalization and changes in commodity prices), that cannot be deduced from current, immediate interests and problems. For this you need scenario-building and vulnerability analysis (cp. above).

Which result?

A fuller picture of the future in the long-term; an adapted and complemented list of clustered priorities with their causal connections; with additions such as external threats, drivers of change and vulnerabilities.

How to do it?

Depending on the time and money resources available, invite an external scientist or consultant experienced in vulnerability analysis and forecasting techniques.

d) Formulate a vision, sub-goals and indicators (1 day)*Why?*

Without a consensual, long-term overarching objective or vision, individual issues, projects and solutions lack a coherent orientation why all this is done. Limited resources will be used ineffectively.

Which result?

For example, a short “summary statement” (1 to 10 sentences), and/or more specific visions for each theme cluster (a few sentences, up to 1 page).

How to do it?

- Start from the priority theme clusters and rephrase today’s interests and problems from a perspective as if they are already solved. *These are goal statements*. One example: “Our governance will be effective (and inhibit adverse practices like poaching)”.
- Look at all these goal statements together – which are important, which can be understood by everybody, which are “inspiring”, which motivate action? Try to formulate a more overarching global objective or a long term vision that includes all individual goals – maybe this works, maybe not.
- Choose the theme goals that seem most appropriate as a coherent long-term structure of goals and specify them further into sub-goals (which might be achievable in 3, 5, or 7 years), which are more tangible and concrete. Associate, wherever possible, success indicators (e.g. “number of poached game per year”) with benchmarks (e.g. “maximum 10 in 2020”). Make sure that your sub-goals are formulated such that by attaining all sub-goals you will actually attain the main goals. This task could be done in small groups.

e) Recapitulate project ideas collected at the public hearing (1/4 day)*Why?*

Maybe the public hearing has already taken place some time ago, maybe not everybody had participated; anyhow, *bring everybody to the same level of information* by presenting all the results of the public hearing(s).

Which result?

Supplemented list of *project ideas* that stakeholders and communities have presented at the public hearing(s).

How to do it?

A manager should present the report of the public hearing as basis of all further discussions. Add all proposed solutions collected during the workshop so far and identify gaps. Formulate and display each project idea separately, e.g. on one paper card. Clarify the meaning of each idea. Jointly decide on setting aside ideas that have clearly no relation with the biosphere reserve. There is no upper limit to the number of ideas that can be collected.

f) Cluster project ideas and prioritize them (1/2 day)*Why?*

Resources have to be focused on project ideas which help attaining priority goals, which are cost-effective, which help solving priority problems and which can contribute effectively to a solution.

Which result?

Clustered list of project ideas, including their causal relations with goals and issues, potentially a visualization on a map.

How to do it?

- Associate project ideas to the previously established clusters of problems and/or goals. Agree on suitable priority criteria (priority of goals, priority of problems, suitability to contribute to solutions, affordability, political acceptance...).
- You might organize project ideas in a matrix whose columns are the criteria for prioritization and whose rows are the priority goals and/or priority problem clusters. Fill gaps by a new rounds of brain-storming.
- Publish the results in an understandable format. Make the process transparent. Present the results through information meetings and consultations.

Limits of participation, including management constraints

Optimal, not maximal participation

As has been said repeatedly, not every question in a biosphere reserve has to be solved through participation. Some decisions need to be taken quickly (although urgency is also often misused as a pretext to avoid consultation). Some decisions are without alternative because a democratic decision, taken legitimately at the national level, needs to be implemented. Involving communities in every decision also leads to exhaustion and loss of interest in participation among communities. It also raises the question why a management team is necessary at all. “Optimal participation” is needed, not “maximal participation”. Also: Not every argument and detail needs to be discussed in full transparency; but for almost all authorities “too much transparency” certainly is not the problem, but too little transparency.

Some constraints are just pretexts

There are also many “problems” and “constraints” why participation does not take place, even if it should. Some constraints are real and insurmountable. Other problems are just pretexts. Further problems result from previous lack of participation and real community engagement.

Time, money, political support and clarity of vision

Typical management constraints include:

- Lack of financial resources,
- Lack of staff and time,
- Lack of political support from ministries, and lack of legal instruments,
- Lack of clarity of purpose and vision.

Lack of financial resources is maybe the most tangible obstacle to participation. Even if some forms of participation are very cheap: If you do not have 5 \$, then you cannot take the bus to a village. If you only have a few hundred \$, you cannot organize the participatory events needed for a management plan. However, be honest yourself: is there really no budget? Can you change the budget itemization? Can you write a project proposal to your ministry or an external partner? Have you thought about all potential donors?

If **lack of staff and time** is the problem: be aware that your job is to find good solutions to problems. Often it is better to invest time to find the best solution than implement a worse solution and then to remedy it later. Participation helps to find the best solution, as it will be supported by the affected stakeholders.

If **lack of political support** is the problem: don't present participation as something that is opposed to government decisions. In a public authority system, government needs to take the ultimate decision, but participation helps arriving at solutions that are viable and legitimate; such solutions improve the prestige of government.

If **purpose and vision is lacking**: Your job is to serve the communities and the conservation of ecosystems. Bringing both together delivers good compromises and solutions; a real vision emerges only through dialogue.

Other widespread barriers

There are many other common barriers, cp. [[JACKSON]], to effective cooperation with local communities, all of which can be easily overcome *exactly through dialogue and interaction*

- misconceptions about what a biosphere reserve really is, lack of interest in the biosphere reserve designation, and misconceptions about what “sustainable development” is;
- misunderstandings based on differences in vocabulary and terminology used by each stakeholder group;
- concealed consequences of past conflicts and attitudes that inhibit some groups from collaboration;
- lack of a culture of long-term planning;
- decision-making processes that are too much concentrated on authorities, coupled with an inherent distrust in government;
- lack of continuity in leadership and an over-dependence on volunteers as an obstacle to continually re-engage with communities.

4.5 Education and public relations as forms of community involvement

What is environmental education?

Environmental education should have the following result: Children, youth and adults should understand how ecosystems and the environment function. And more importantly, they should adopt suitable behaviour such as to minimize negative impact on the environment. Environmental education is clearly not limited to the school system; in fact, protected areas and *biosphere reserves are ideal places for environmental education*. Environmental education is clearly not limited to materials such as books and brochures; actually, outdoor and experiential education is an ideal form of environmental education.

Knowledge, motivation, attitudes, skills

Environmental education has a component of knowledge transmission: about individual animal and plant species; about entire ecosystems and threats to ecosystems; about global challenges such as biodiversity loss, pollution, water scarcity, climate change; about the role of human beings in causing and preventing these challenges.



Students performing an environmental theatre play in Mare aux hippopotames biosphere reserve, Burkina Faso, Photo: Thomas Schaaf

Beyond transmitting knowledge, environmental education should help building motivation, skills, attitudes and values necessary to make better decisions and take more responsible action to reduce the negative human impact on the environment. Since the late 1960ies UNESCO and UNEP have organized four global conferences on environmental education in 1977, 1987, 1997, and 2007. Environmental education clearly is a high priority for Africa, even though the context, the content and the methods will differ from other continents. But the challenge is similar: Bringing young people closer to nature and questions of the environment, although “nature” is maybe a very low priority in their day-to-day lives. And nowhere globally is there a school subject “nature” – environmental education always has to be addressed in other subjects such as biology or geography. For material on environmental education, cp. for example the PACE project (www.paceproject.net/pace-packs) or the ECO schools (www.eco-schools.org) or the CBD toolkit [[HESSELINK]].

Education for Sustainable Development (ESD) includes environmental education but constitutes a more holistic approach beyond the environmental topics. The main goal of ESD is to allow children, youth and adults to become global citizens, critical of unsustainable practices and to enable and to empower them to contribute to responsibly shaping a more sustainable future. ESD is “rather an umbrella for many forms of education that already exist, and new ones that remain to be created. ESD promotes efforts to rethink educational programmes and systems (both methods and contents) that currently support unsustainable societies” [[ESDWEB]]. Compared to modern and good quality environmental education, ESD rather broadens the focus on other fields such as geography, the teaching of economics, or health education – but also on informal learning. ESD changes the focus from the environment to our attitudes, actions and inactions which are harmful for the environment. ESD emphasizes social and economic themes (such as poverty or world trade), focuses on lifelong learning, and promotes cultural adaptation to local needs and conditions.

UNESCO from 2005 to 2014 has spearheaded the UN decade on ESD. From 2015 onwards, UNESCO will coordinate the Global Action Programme on ESD. In 2009, there was a first ESD world conference in Bonn, Germany; 2014 saw the final conference in Nagoya, Japan. Both conferences had workshops on biosphere reserves and ESD.

Education in biosphere reserves

Education is an irreplaceable, integral task of biosphere reserves. UNESCO uses the term **learning places for sustainable development** for many years already, as a synonym for biosphere reserves. They can ideally make comprehensible the impacts of human economic activity and lifestyles on the environment. The aim is to promote behaviour that fosters the sustainable use of natural resources. In an ESD perspective, the activity of the individual is set into the context of the cultural and social values of the society and the economy.

What is Education for Sustainable Development?

Education is an integral task of biosphere reserves



- Biosphere reserves should conduct environmental education and ESD for
- Its inhabitants, including children and youth,
 - Its visitors, including tourists.

Learning places for sustainable development

But this does *not* mean that biosphere reserve managers should mainly be “teachers” like those at a formal educational institution. Indeed, the management institution should have *some capacity* to provide training, excursions, and information sessions and for working with youth. Depending on the biosphere reserve, between 10% and 50% of staff should work on *education in a wider sense* (such as through visitor centres). Yet the main work of a biosphere reserve in education should be *catalysing educational activities of partners*, using and also improving existing infrastructure, courses and systems. This also implies the cooperation with teachers and education professionals in the creation of didactically professional approaches and material; for two case studies, cp. [[KRIESEL]]. When biosphere reserve managers are themselves actively working with youth groups and adults, they must be serious about evaluation of their education activities; too frequently, the success of education is only claimed and not measured.

Catalysers for quality education

Five different ways to think about education

Biosphere reserves should think about environmental education and ESD in at least the five following different ways [[UNESCO2009]]:

- Education as a pre-defined, “format-based” offer of “formal programmes”, i.e. as pre-defined formats to transmit knowledge, support awareness and develop attitudes and skills. Such formats could be visits of biosphere reserve managers to schools, school excursions, tourist itineraries, or exhibits at a visitor centre. Some formats are established in order to meet an external demand (e.g. by travel agencies or by schools), some formats are established pro-actively by biosphere reserve managers.
- Education as dynamic, needs-oriented learning processes, in which formats are not pre-determined, but follow the educational needs of the target group (children, youth, tourists, etc.). Often such more dynamic learning processes require several days, weeks or months. Organizing such open learning processes requires much experience and expertise; educators or biosphere reserve managers are sometimes only the organizers and not the “knowledge transmitters” – e.g. there have been excellent examples of organized intergenerational learning between elders and children.
- Education as an informal learning process targeted at important stakeholders in a biosphere reserve, including public administration and elected officials, about the importance of sustainable development.
- Education as continuous mutual learning in which the biosphere reserve managers themselves participate as learners. Such an open, participatory understanding is the real meaning of “learning places for sustainable development” – integrating participation, research, implementation and monitoring as a joint search process for sustainable development. Also biosphere reserve managers will only know what “unsustainable development” will mean in their region, much less “sustainable development” (cp. section 2). What it means has to become evident in a process of consciously living and working together.
- Education as your very own learning from the exchange of practices, methods and knowledge with the World Network of Biosphere Reserves, including through partnerships.

Goals of education in biosphere reserves [[KRUSE2013]]:

- To provide *understanding of the biosphere reserve*, its natural and cultural environment and local peculiarities (landscape, human and natural history, water, flora, fauna, cultural heritage, modern cultural practices, cultivation methods, economic and social relationships, or interconnections with the country and the world at large);
- To create *identification, sensitivity, values and respect*, in particular for the value of ecosystems and their services for the survival of human beings;
- To identify *unsustainable ways of living and working and to open up alternative modes of action* on the example of the biosphere reserve, i.e. of one particular region. This requires developing skills, motivation and attitudes and supports an innovative, future-oriented thinking which can better cope with uncertainties.

Three different goals of education in a biosphere reserve

A biosphere reserve can exemplarily present challenges and solutions of sustainable development in their complexity. One approach might be to *study the behaviour and lifestyles of those who participate in an educational process* – in order to assess their sustainability, from an environmental point of view (e.g. ecological footprint), but also from an economic, social and cultural point of view. Such assessments can lead to joint ideas on how to change behaviour and lifestyles; any such process should *never be prescriptive or denunciatory*. A dialogue can result in alternative options, in motivation and commitment. It cannot result in normative prescriptions on how to behave. If an education process about behavioural change is freedom-oriented, it leads to more openness to engage in dialogue on environmental issues and in dispositions to become a partner in spreading the message and the knowledge acquired. The best teachers who can teach parents about saving water may be children who have understood the value of water.

Work on your own behaviour, but don't be prescriptive

Working with youth groups and with schools

In principle, *all inhabitants and visitors* of a biosphere reserve should be involved in learning. When it comes to formal educational offers and their target groups, the biosphere reserve manager has to set priorities because of limited means available. Since children and young people are also used to be the “recipients of education”, it is acceptable to consider them as *primary target group for formal educational programmes*. Try to reach adults primarily through methods of informal learning. In terms of age groups, think comprehensively about young people: from nursery schools to the university.

An obvious target group when resources are limited

Possible offers for children and youth:

- Individual **short-term visits of biosphere reserve managers to schools** (within the biosphere reserve or in the surrounding area), in order to present some knowledge about the biosphere reserve or some environmental education content. Short-term visits are often not very effective, because they don't create any real interaction and commitment; however, such short-term visits may be useful in order to prepare a more serious interaction and networking
- **Short-term visits of school or youth groups** to a particular place in the biosphere reserve, guided by a manager or ranger in order to get some hands-on experience and knowledge. Most typically, such visits have a purely environmental education content. Children often experience these short-term visits as “group adventures” and their value for learning about sustainable development cannot easily be predicted; also these visits should be regarded as an entry point for more intensive interaction;
- **Student contests** (cp. section 4.1)
- Information sessions and **training for teachers** as multipliers
- **Longer-term projects** with local groups of children. An example from a German biosphere reserve is a project in which children (from the age of 8) learn about the food they eat, how it is produced, what environmental impact the production has (locally and globally) and which nutritional value the food has. The project involves the family as well to emphasize the social value of preparing meals and eating together. Another example from Germany involves children into municipal decision making, including through role plays [[KRUSE2007]]
- Work with groups of youth **visiting for up to a week**. An example is the “biosphere school” in the Swiss Entlebuch biosphere reserve or the Rhöniversum, a state-run temporary boarding school in the German Rhön biosphere reserve with its one-week programme providing real-life experience to city children of traditional professions such as butcher, baker or shepherd

Typical offers for children and youth

When working with youth and children, don't present all the administrative and “boring” details of the biosphere reserve (zonation, functions, legal question, United Nations). Also don't use all the abstract concepts and ideas that are used in this Manual (biodiversity, ecosystem services, etc.). Focus what is understandable in their respective age and what illustrates these concepts. Use quizzes and games. Tell stories or invite local people to tell stories (e.g. elders). **Be lively. Be simple. Be exciting.**

Be illustrative and exciting

The same applies to teaching materials which should not focus on definitions and abstract concepts such as zonation maps. Be careful to prepare learning modules (for schools and/or universities) appropriate for the age group and appropriate for contextual teaching programmes. Preferably do it in close co-operation with teachers or university

Teaching material needs to be professional in pedagogy

staff. Ideally, topics are then included also into the curriculum. Do not only consider printed material: electronic tools might also be used, depending on the availability of Internet. Where available, Internet adds the huge benefit of connecting local resources with global resources, often ready-made, as well as with communication opportunities with other groups of the same age, e.g. schools in other biosphere reserves. Teaching material has to be professional in terms of didactics, not necessary in terms of design; therefore home-made multimedia (video, audio, and Internet) can also be useful.

Education can take place everywhere in a biosphere reserve

Too frequently, only the core area with its high biodiversity value is the place that managers of biosphere reserves think about to go to with groups of children and youth. Indeed, the core area is important to communicate some messages: what biodiversity is, why we need it, or how an ecosystem functions. But as has been explained above, this is just one part of the message of sustainable development. In order to communicate all other messages, groups of children and youth need to go to the buffer zone or the transition area.

Be selective and focus on your audience's interests

This is a general rule: Managers need to communicate all of the biosphere reserve and all of sustainable development – but of course not all at the same time. Education contents and methods must be chosen according to:

- How much time is available (if only a few hours or even less, choose a pre-defined format; if longer, combine formats and allow interactive processes)?
- Who should be trained (age, previous knowledge, language, special needs)?
- How large is the group?
- Whether the manager can choose the educational goal or whether it is imposed externally (e.g. because a student group visits the biosphere reserve in the context of one subject).

Don't expect that even if you offer exciting ESD programmes for youth that this will immediately lead to high demand from schools. In practically all countries, the cooperation between the formal educational system and biosphere reserves needs to improve considerably.

A recent extensive guide entitled “Engaging Young People in Conservation and Education: A Toolkit for Site Support Groups” provides hands-on guidance on how to do field visits or do games with young people [[BIRDLIFE2014]]. UNESCO in 2013 has published an extensive resource book for educators in South-Eastern Europe and the Mediterranean, which can also well be used in Sub-Sahara Africa [[UNESCO2013C]].

Learning interventions for adults

Why adult education is more difficult

Adult inhabitants (permanent, seasonal and occasional) as well as visitors of the biosphere reserve should also learn about where they live and what makes this place so special. As described above, it is typically not so easy to reach out to adults, because of several reasons:

- They are not used to “receive” education anymore.
- They have little time.
- With limited resources of biosphere reserve managers, adults are usually a lower priority than young people.

When you could get good access to adults

Thus, “educating adults” should not be regarded under the perspective of “formal learning programmes”. Above it has already been described that informal learning processes are just as important as formal education in a biosphere reserves. Still, adult “formal education programmes” in the *form of information sessions* can successfully be offered, demand-driven or pro-actively:

- In connection with a community gathering, e.g. after a religious ceremony (e.g. Thanksgiving, traditional offerings)
- In connection by a professional gathering, e.g. of the farmers' association
- In connection with one of the many “participatory events” described in this Manual

Don't lecture

Therefore do not “educate” adults, but interact with them in a mutual learning process in which you as manager learn from them – and try to empower them.

Promote good practices in informal learning

Also when working with adults, don't lecture; do not use the administrative and abstract language used in this Manual. Again focus what is understandable and what illustrates your concepts. Tell stories. Be lively. Be simple. Be exciting.

Specific training courses

As regards informal learning, try to work with relevant professional groups in order to promote practices compatible with the biosphere reserve. These include farmers, foresters, tourism professionals, or fishermen. For example, you might be invited as an expert to advise on improving drought resistance of crops in local agriculture: don't misuse such an invitation by lecturing on the abstract concept of the biosphere reserve and theoretically about climate change, but help farmers to understand some causal connections – most important of all, help them to find solutions, their own solutions. Try to offer specific training and/or information sessions for specific target groups, e.g. for

farmers on specific themes such as growing plants for energy production, or new harvesting technologies. If there are training institutions, e.g. rural training schools, try to cooperate with them as “multipliers” of your message.

Also stakeholders, including public administration and elected officials, should be “educated” by you about the importance of sustainable development. Of course, hardly any elected official will attend a formal training session organized by you. You should also not misuse discussions and negotiations with stakeholders to “lecture” them. Instead you should actively use and interpret any discussion and negotiation meeting as an *opportunity for mutual learning*. Let us take an example: a negotiation with the chairman of the fishermen’s association. You might be able to learn a lot about which fish can be sold well on the market and why, when they migrate up the river and which predator is a problem for the fishermen. The chairman might learn a lot from you, for example about ecological balances and overfishing, or new national laws. Even if a negotiation is first of all a negotiation in which each party wants to maximize the results – working together to understand each other’s interests and finding creative and fair solutions can also lead to understanding something larger: about sustainable development.

How to “educate” stakeholders

Case study: Community radio in Songor biosphere reserve, Ghana

In the Songor biosphere reserve west of Accra, radio Ada is Ghana’s first community radio that formally started broadcasting in 1998. Its signals cover a radius of 60km with an estimated population of 600,000. It broadcasts for 17 hours daily exclusively in Dangme, the indigenous language of the Dangme people. The community radio entertains a very close cooperation with the managers of the biosphere reserve and disseminates its main messages.

Media relations as a form of community involvement

Biosphere reserve manager should also work with media, the press and other partners in “public relations” to make better known the biosphere reserve and its concept. The goal is education, but again not “lecturing” – public interest media are not suited to communicate the complex concept of a biosphere reserve in every detail. Therefore, working with the media is an activity and form of communication which requires its own skills.

In what way is public relations “education”?

Everybody knows that “the media” are important. But it is not as clear what “the media” are, what kind of information they want, how you should work with them and what you could realistically expect from engaging with the media.

Why you need public relations

It is important to distinguish between:

- Local newspapers and radio stations that are situated in the biosphere reserve or in a town near-by
- National newspapers, radio stations, TV broadcasters as well as news agencies based in the national or provincial capital
- International media outlets, through correspondents in your country or on specific country missions
- Internet-based news formats (including websites of traditional media, only-internet news outlets, or social media citizen journalists.)
- Journalists interested in “breaking news” vs. journalists working on long formats requiring in-depth research, including journalists working on books.

Differentiate different forms of media

The media (especially local and national media) are important to communicate to your local communities and stakeholders: What is the biosphere reserve really about; also in order to overcome prejudice and misconceptions, to generate interest in on-going activities, to motivate engagement, to clarify benefits and to build trust. Local people might also be interested to learn about employment opportunities. Nationally, the media are important to generate political and financial support in capitals as well as to inform domestic tourists. All your truly interesting stories will be taken up by local media. If you package them right, several of your stories should be taken up by national media.

Focus on local and national media

Your work in media relations should therefore focus on building good contacts especially with local media outlets – and wherever possible also with national media. Identify a staff member or a member of the management board as “media focal point”, and announce her/his contact details. Task one staff member to establish personal contacts with media outlets; these are much more effective than randomly distributing press releases (cp. section 4.5), although you need to formulate your messages of course also in writing – in a concise and understandable language. Your stories should be published on a website. Restrict the number of messages in your story to those that are really crucial and simplify them as much as possible. Repeat these messages as often as necessary. Adapt the messages according to the target audience (e.g. political journal vs. tabloid).

What to do in cooperation with local media.



The most important question is to be clear *why* the media should report about the biosphere reserve. Some typical reasons *for you* could be:

- To secure general visibility and thus overall political and financial support
- To better explain what the biosphere reserve is really about, overcoming prejudice and misconceptions
- To secure visibility for a specific project or activity (maybe because the project's donor requests visibility)
- To build reputation, prestige and "image" as a "quality place", recognized by an international organization
- To attract tourists

You are interesting for the press

Reasons *for the press* to report about you can be much more frequent than you might think – but you are also likely not "top politics" except in times of scandals. Be aware that if you present a new exciting project, it will be globally much more newsworthy if *in a UNESCO biosphere reserve*, than if in a place "without an international label".

Be specific to your target group

The reason *why* you communicate entails *to whom* you communicate (target group – local, national, international? general interest or potential tourist?), in *which media* (newspaper, TV, radio, website, social media?) and with *which messages*. Most importantly: Don't explain abstract concepts, tell exciting stories. Be clear about the concrete reason and benefit of every press activity; do not just send out press releases randomly – journalists will soon stop to listen. In some instances, working with the press amounts to inviting the right journalists to an event. In other instances, it means writing press releases, press dossiers, or offering interview partners.

Working through key messages

Even if the latter is not usual in your case, plan your engagement with media in the form of "key messages". Working with the press can only be effective if you have "simplified" your message and story such that it is understandable to your target audience. Simplifying does not mean falsifying; but "we have the most rhinos" is easy to understand for everybody, while "the concentration of rhinoceros is highest in comparison to all other protected areas" is not. And do not communicate all details; focus on a few key topics.

Use concrete language and examples

If you explain the complexity of a biosphere reserve, be concrete and tangible: Say "Our farmers combine modern and traditional methods; they avoid pesticides and still have a very good harvest", don't say "Agriculture in a biosphere reserve combines the economic and ecologic pillar of sustainable development". Avoid jargon and buzzwords.

Dossiers

It can be wise to produce short (2-page) topic-specific dossiers for the media, e.g. about your work in biodiversity conservation, in improving livelihoods, or in disaster preventions.

Website

Maintain an updated, *professionally designed website*, which provides information in *target-group specific formats*: for the media, for political decision-makers, for tourists, as well as for local stakeholders and communities. For the politicians, describe in a short overview the tangible benefits that the biosphere reserve brings to communities,

voters and investors. For tourists, provide a map with tourist-relevant details, provide an updated list of sights, places to visit and certified tour operators, an updated list of hotels and tourism facilities (wherever appropriate with office hours and directions) and propose itineraries which include respectful interactions with local communities. For local stakeholders, inform them about new developments, contact points, engagement opportunities, planning, etc. In terms of design of the website, use few, large (not large data size) and good photos – avoid many small pictures and animations. You could also consider establishing an article about your biosphere reserve on www.wikipedia.org – or improving the existing article; this is simpler than it seems. Establishing a profile on Facebook or similar social media sites is also not too difficult, but the profile must be updated very regularly and must be monitored every day. You maybe already use other social media such as Twitter for your biosphere reserve, which can reach a wide audience; if you use such media consider carefully your *overall appearance*: Your social media messages, read in combination, should give an adequate idea of your work and of the biosphere reserve; not just of one specific project and also not about you as an individual.

Use photo and film material

Produce information material such as brochures, flyers, banners, and booklets – but only as far as this material has clear-cut goals and target audiences. Whenever you have the opportunity to get access to good quality photos and film material about the biosphere (including all intellectual property rights), use it; good quality photos and film material is rare and expensive – and the communicative power of such material is particularly strong. You may try to obtain good quality pictures from tourists, who may offer them for free. But be careful: If a picture or film shows mostly “wild animals”, then this film will *not* help you communicating the real goals of a biosphere reserve. It is also important especially for film and photo material to be fully respectful of communities, their members, their values and traditions.

Build relationships

Establish good relationships with journalists, but sending press releases anonymously to all media is usually not very effective. Organize press conferences and “visits on the ground”, especially on the occasion of important events, e.g. the designation by UNESCO, the periodic review, the finalization of the management plan, or else the start of a new project.

If you work with international journalists, you might seek external advice, because expectations and needs of journalists from other countries can be very different from your local journalists; you may also read [[IUCN2004-1]].

Public relations not only refer to “the media”. It also means making the biosphere reserve known among potential partners, each with the specific interests:

Work similarly with other important groups

- Investors (e.g. from agriculture, manufacturing, or mining)
- Researchers and academics (nationally and internationally)
- Agencies, charities, foundations and NGOs active in development cooperation and international nature conservation
- Tourism agencies
- Government administrative bodies

All of these partners have different interests and you should be able to formulate some key messages about the attractiveness and benefits of your biosphere reserve for each of these potential partners.

SECTION 5
SPECIAL CASES OF
BIOSPHERE RESERVES



Lee Cohen (Flickr CC), Andrea Moroni (Flickr CC), United Nations Photo (Flickr CC), Príncipe Reserva da Biosfera

SECTION 5

SPECIAL CASES OF BIOSPHERE RESERVES

This section introduces the concept and the reality of Transboundary Biosphere Reserves and the particular opportunities they present. This section also discusses the special needs and approaches of cities in biosphere reserves, as well as coastal and island biosphere reserves. Of course, many other special cases could be proposed such as “first generation biosphere reserves”, post-conflict or post-disaster situations, or the combination of a biosphere reserve with other designations such as World Heritage. However, these special cases have been discussed sufficiently well in other parts of this Manual. Reading this chapter you should understand:

- That transboundary, urban and coastal biosphere reserves are special cases with additional challenges and opportunities, but that everything else in this Manual applies just as well to them.

5.1 Transboundary Biosphere Reserves (TBRs)

TBRs are “ideal” biosphere reserves

TBRs are a useful instrument for the conservation of *shared ecosystems* that cross national boundaries. TBRs are based on agreement by the concerned governments on the need for a more integrative management of these areas. UNESCO, the organization that designates biosphere reserves, is an *intergovernmental organization*; this is a particularly strong reason for designating such *shared ecosystems* as UNESCO biosphere reserves.

UNESCO provides specific support

Since around the year 2000, UNESCO has specifically supported TBRs [[UNESCO2001]] – in particular in order to promote international peace and security. This topic was already discussed in depth in 1999 for Francophone Africa [[UNESCO1999]]. TBRs facilitate the development of joint policies for land-use across borders, the development of joint projects, the exchange of experience and joint involvement of the local communities and of stakeholders. Of course they also entail challenges, e.g. [[GHABBOUR]] and [[LANGE]]. Through all these instruments, TBRs bring people together across borders and raise awareness for the ecosystem as a whole. In 2014, there were 14 TBRs globally and 3 TBRs in Africa (one of them intercontinental with Europe), with many more under preparation.

Additional challenges and additional benefits

The opportunities and challenges presented below are only those that are *specific* to TBR. Everything else said in this Manual about biosphere reserves does apply just as well. It is not surprising that there are additional challenges, since the need for international cooperation adds new complexity to the already difficult task of managing a biosphere reserve, requiring additional skills, including “diplomatic” skills. But: There are also many new benefits.

Benefit: Re-integrating partitioned ecosystems

Overcoming artificial borders

In the 19th and 20th century, the colonial powers have artificially drawn borders across the African continent. In this way, they have artificially divided large contiguous ecosystems, which sometimes critically depend on being large and uninterrupted (e.g. migratory circulation of wildebeest in East Africa or of elephants in West Africa). With the creation of sovereign states, these shared ecosystems received different names and were managed according to different goals, legal frameworks and instruments. This is the strongest reason for establishing a TBR: re-introducing a cooperation framework and re-adjusting the laws, instruments and approaches for managing an ecosystem that had been partitioned before. Establishing a TBR should result in

- A comprehensive vision and policy framework for the region,
- Developing and using joint management tools,
- Combining technical expertise, knowledge, capacity and financial resources for solving shared problems.

While the situation in Africa is thus especially acute in terms of divided ecosystems, the situation in the rest of the world is not very different; almost nowhere do borders follow ecosystems.

Animal migration, fighting pests and fires

If a TBR is effective, it increases the *space available for migratory species*, for example through aligning conservation measures on both sides of the border. If a TBR is effective, it ensures better addressing large-impact problems such as pests and bush-fires. The reason for the latter is obvious: fires can be quicker contained if all capacities, from both sides of a border, are bundled. If a fire cannot be extinguished, good communication channels across borders allow authorities in the neighbouring countries to take precautionary measures. The same applies to pests and natural

Case study: Intercontinental biosphere reserve of the Mediterranean, Morocco-Spain

This first and so far only intercontinental biosphere reserve worldwide has been designated by UNESCO in 2006. On both sides of the Strait of Gibraltar, both in Andalusia, Spain, and in Morocco, there is a great richness in terms of ecosystems. The trans-boundary site has in particular high significance for migratory birds, of which there are 117 species. In both countries, conservation efforts had already been initiated long before the establishment of the biosphere reserve; this is why national parks in both countries are integrated as core areas. The biosphere reserve integrates conservation traditions and approaches from both sides, but also addresses the diversity of traditional lifestyles and artistic expressions through exchange and cooperation projects. In this way, historic relations are re-established and institutionalized and cultural similarities re-discovered. A focal element of concern and of cooperation is also freshwater – both its integrated management for irrigation and its significance for ecosystems, to prevent desertification. Freshwater in its different manifestation is considered as an element of shared local identity in the biosphere reserve – the biosphere reserve being considered itself as a water reservoir in between the Sahara and the Iberian peninsula which itself struggles with desertification. Water is the perfect shared denominator for the biosphere reserve, since it links nature with culture and socio-economic factors. This visionary context has proven to be very helpful to inspire dialogue and exchange of experiences among the neighbours. Communities are also involved in training, management and the monitoring of the reserve. The biosphere reserve has a multi-tiered governance level on both sides as well as a hierarchy of committees that organize the collaboration across the Strait of Gibraltar.

disasters such as flash-floods. There is already considerable evidence that TBR can live up to this high expectation: joint management indeed improves the state of conservation of shared ecosystems.

Benefit: Bringing cultures together

Increasing the contacts across borders is always beneficial. The concrete results depend on the context: If the population on both sides of a border is identical in language and culture, a TBR can rebuild divided communities and result in a new regional identity. This is not to the detriment of national affiliation and identity. If the population on both sides of a border differs in language and culture, a TBR can help overcoming stereotypes, reduce tensions, promote freedom of movement and strengthen peace. For the management teams, exchange across a border will in any way be enriching, improve staff morale and reduce feelings of “isolation”.

Overcoming stereotypes and reducing tensions

Benefit: Long-term cooperation frameworks for peace and integration

TBRs help to strengthen the relationship between managers, administrative authorities, other stakeholders and local communities – within one country, and just as well with the neighbouring country. They are a stepping stone to increased cooperation with authorities of the neighbouring country also in other fields of politics, because they allow identifying joint interests that the countries have; not only in an abstract manner, but in very concrete terms.

Stepping stone for increased cooperation

Of course, governments can and do cooperate in many other ways across a border. Nevertheless, TBRs are special: TBRs are established at least for decades. In contrast to a project with its limited time-frame and its limited scope and effect, TBR enable true cooperation and the building of joint institutions. In contrast to other inter-country agreements, TBRs are special through the designation by UNESCO: a TBR is not only an agreement among governments: it is an agreement “with a neutral solicitor”. If problems occur in a TBR, the international community will notice. Not only within the sector, international investors, ODA partners or international NGOs will be alarmed, but also the international community will be informed through media and diplomatic channels. The UNESCO designation provides an additional “guarantee” to an agreement – not only for TBR. This added “guarantee” may not be evident immediately, it may become evident in times of disagreement and times of conflicts.

A long-term framework, not a project

UNESCO as facilitator

Benefit: Overcoming the disadvantages of the periphery

A TBR, almost by its very definition, will typically be located in the “periphery”, in more marginal and disadvantaged regions of the countries concerned, at least from the perspective of the national capitals. Through the UNESCO designation, a TBR puts a peripheral region closer to the centre; it actually puts the region on the world stage. This will improve socio-economic development, e.g. through a rise in tourism. This in turn will increase political attention to the region, which might also result in infrastructure development such as new roads or electricity; some early examples were already analyzed in [[UNESCO2003]].

From the periphery to the world stage

TBR can also generate new funding opportunities: Managing TBRs requires additional funding; cross-border cooperation requires even more coordination and structures, compared to a biosphere reserve in only one state. But

Access to specific funds

there is good news: Transboundary approaches are very attractive for international donors. Because of TBRs' specific aspect of international peace and integration, and with their aspect of entire-ecosystem management, TBR can get access to funds which are not accessible to ordinary biosphere reserves. Since remote and sparsely populated rural areas along the border often have low priority for governments in capitals, a priority access to international funds can be a real "game changer". In addition, you try tapping into bilateral and multilateral nature conservation funds, "debt-for-nature" swaps, carbon mitigation (including REDD+, the German "International Climate Initiative", etc.), voluntary or obligatory tourist fees, and international NGOs as well as philanthropic foundations.

Special funding needs joint implementation

But be aware that international funders will require project proposals to be fully jointly prepared, agreed, coordinated and jointly submitted to the donors. Cooperatively managing an externally-funded programme is an additional driver for successful integration and cooperation.

Benefit: Pooling expertise and reducing costs

Case study: Transboundary W region biosphere reserve, Benin, Burkina Faso and Niger

From 2001 to 2008, the European Commission financed ECOPAS, a programme for conservation and sustainable use in the TBR "W region", the Pendjari biosphere reserve and the Arly national park (W-A-P). For the support of these measures along the borders of Benin, Burkina Faso and Niger, the EU invested approximately 24 million Euros. These funds allowed addressing many issues, but the results achieved are not optimal in terms of long-term viability. Too much money was invested in a too short period, the collaboration with local stakeholders was insufficient and a few opportunistic stakeholders had too much influence on the implementation. Better results could have been achieved through setting up a trust fund which could have invested the money with less time pressure. The long-term impact of any intervention must be given higher priority. Exactly for this reason, the "West African Savannah Foundation" (FSOA) has been created in Benin with support from IUCN, KfW and the GEF. FSOA also has the task to finance adjacent reserves of Burkina Faso, Niger and Togo. FSOA's working supra-nationally results in a more complex, but much more interesting approach, targeting an entire ecosystem [[MICHELOT]].

Share your facilities

Farmers often buy machines in associations because it is more economical to share costs, to optimize the use of the machines and to mutually help each other. States and authorities can learn this approach from farmers. In TBRs, there are many facilities which can be shared between the countries as well.

Examples of facilities which are cheaper to operate and repair when shared among authorities are: monitoring stations (for weather data), research laboratories, machinery, equipment, data bases, gene and seed banks and tree nurseries. If the language on both sides of the border is identical, education material and capacity-building documents can be produced in a more cost effective way by printing larger numbers. Joint tourism itineraries can be promoted; joint tourism marketing can be initiated as well as joint interpretation of natural and cultural resources. Moreover, joint training of management team staff is cost effective and also mutually instructive.

Mutual learning

Learning from each others' skills (e.g. how to operate a seed bank, how to set up a database, how to repair a traction engine) and from best practice helps to improve (and harmonize) management approaches. Harmonized approaches for data collection, methodologies and protocols are fundamental for replication and comparison across the border, especially if they are practised on a long term basis. The joint implementation of large-scale programmes also benefits from considerable savings by pooling capacities when they are needed. Examples are ecosystem restoration (cp. section 5.2) or species re-introduction, control of pests and invasive alien species.

Benefit: Detectors for quality of good neighbourhood

In our globalized and closely connected world, neighbouring countries can hardly afford not to cooperate. Transboundary cooperation is either based on bilateral agreements or on multilateral agreements and conventions. TBRs are an ideal tool for detecting strengths and weaknesses of cross-border partnerships at all levels of administration.

How to proceed: Nomination

There are two different scenarios of how a TBR can come into existence: Either by extending one or two existing biosphere reserve across a border; or by a government agreement on a TBR in one step. For both scenarios there have been very successful precedents in previous years, the first scenario is strongly recommended by UNESCO today, actually it is not advised to establish a TBR "in one go".

Special nomination
form

The designation of a TBR by UNESCO is based on a joint nomination by all the governments involved. The information is presented in a special nomination form that is based on the [Pamplona Recommendations](#) formulated in the year 2000 [[UNESCO2001]] – a document building upon the Seville Strategy but specifically dedicated to the opportunities and challenges of transboundary cooperation.

Specifically, the nomination has to include an official agreement between the government authorities and a common work-plan. An estimate for a budget for transboundary activities and initiatives including main sources of funds has to be provided. Planned and ongoing activities in all sectors and as regards all functions of the biosphere reserve have to be described for each country and on the overarching transboundary level.

Official government
agreement needed

How to proceed: Coordination mechanisms

The *Pamplona Recommendations* propose to establish a working group of local and national partners “to define the basis and identify key issues for cooperation”. This working group should be the basis for a *joint coordination structure* which might be called “bilateral commission” or “joint steering committee”.

Joint coordination
structure

This necessary joint coordination structure should include representatives of the different management teams, management boards and advisory boards, as well as authorities in charge of the protected areas, representatives of local communities and other stakeholders. This joint coordination structure should meet regularly and might be complemented by ad-hoc thematic working groups. It is strongly suggested to establish a permanent joint secretariat for this coordination structure and a separate budget for its operation.

Being representative
and properly equipped

The official government agreement, whose signature is needed as a basis for the TBR and for the UNESCO nomination, should also provide the legitimacy for the joint coordination structure and describe its mandate and tasks. This government agreement should also make provisions encouraging the different authorities and management teams to *exchange across the border all data and information* necessary for successful management. In order to be fully valid, it might be necessary to “ratify” this international agreement and thus to make it fully legally valid in national law. If no “ratification” is foreseen, great care is needed to ensure that the international agreement is fully in line with all national legal provisions.

Conditions on
the government
agreement

In almost all cases of existing TBRs, each country maintains its own separate management team for its national part of the TBR. It is very important that each separate team designates one person as a focal point for co-operation. The management teams might set up joint staff teams for specific tasks. The different management teams should also define regular means of communication, e.g. by electronic mail, telephone conferences or “joint patrols”. Joint field activities are really important to promote joint conceptual approaches, to share experience, to promote trust and cooperation. Especially suitable for such activities are joint education and capacity building programmes, since

Cooperation
mechanisms among
staff

through awareness-raising the educators understand themselves better, including agreements and disagreements. Joint activities may include research, land-use planning, tourism destination marketing, and border control.

Other initiatives among communities

Other examples of cross-border cooperation mechanisms include associations (e.g. of “friends of the TBR”) that could be set up with the aim of promoting the TBR. Even in situations of political tension, the countries should open their borders for at least one day, once a year, to allow exchanges of the local population. Examples are regular “cross-border farmers’ markets” and joint annual environmental education for exchange of pupils and students.

IUCN’s guideline “Transboundary protected areas for peace and cooperation” [[IUCN2001]] does not cover all responsibilities of UNESCO biosphere reserves, but can give additional inspiration. A revised guideline to be published any moment will address TBR.

How to proceed: Overcoming segmented approaches

Joint zonation to support the conservation goals

The designation of UNESCO stipulates a **joint zonation for the ecosystem in its entirety**. Linking the management approaches for a shared ecosystem across political boundaries in many cases is the only effective way to conserve biodiversity – especially if the ecosystem to be conserved depends on having a certain minimum size. A minimum size may be the result of animals in need of a large territory to roam for prey or seed forage, of migratory animals, or of pollination species. As shown by the biologist Thomas Lovejoy already in the 1970ies and reconfirmed later, biodiversity increases with area because a larger plot will likely have more diverse habitats and niches and thus more species.

Joint concept of zonation

This means that the decision-makers, managers and stakeholders *from both countries* have to find a *joint understanding and agreement on what exactly is a “core area”, a “buffer zone” and a “transition area”*. What is permitted in a core area, what is forbidden? What instruments of legal protection will be used for the core area? How will violations of the law be sanctioned?

You also need to answer the questions: Will you have one overall zonation (*strongly* recommended), or will each country decide its zonation which are then combined? If the latter is the case: Where are the core areas on both sides of the border – are they contiguous (across the border) and are they jointly positioned in a way the core areas can *really* support the purported conservation goals? Arriving at such a common understanding of each zone’s characteristics among the involved governments is not easy. One example: The French-German TBR “Palatinate-North Vosges” has created one joint transboundary core area, whereas overall, the zonation is not yet sufficiently harmonized.

Joint goals and joint action is needed

The need for harmonization does not end with the zonation; it will rather support the authorities on both sides of a border need to agree on **joint goals, a joint vision and joint priorities**. They need to harmonize the management tools and intervention logics implemented on both sides of the border. For example: It would not be effective, if the authorities on one side of the border decide to eradicate invasive species, but the authorities on the other side remain inactive. Approaches to wildfires, reintroduction or re-colonisation of species, fighting poaching, and fighting illegal trade across boundaries also need to be harmonized. Joint monitoring methodologies and joint research programmes save money, lead to better data quality, enlarge the perspective and pool skills.

Benefits beyond the TBR

All these measures, if effectively implemented in cross-border cooperation, will also have an important effect beyond the TBR. For example, a successful joint research framework will lead to a harmonized approach in research methods and data protocols, which might likely be taken up by other actors in all involved countries.

What to do when everything already exists nationally

Typically, every management of an (already) existing protected area has formulated visions, goals, priorities and action plans, based on the relevant national policy framework developed by environmental authorities. Because TBRs (as concept and reality) have emerged only recently, *TBR managers cannot start from scratch in developing visions and goals*. In most cases of new TBRs, managers are confronted with already existing visions and goals of *existing* protected areas on their territory – maybe some of them already developed in a participatory way. Nevertheless, TBR managers are expected to support formulating a common vision and common goals, in a participatory way.

A government agreement is needed to ensure that

This will be difficult to explain to stakeholders and communities who have participated in formulating the vision for a local protected area (which was very close to them, geographically and mentally). But it is just as difficult to try to integrating the diverging existing visions and goals from both sides of a border – which are maybe very strictly in line with national policies (such as conservation of national red species lists). However, there is no alternative to achieving this objective: of agreeing on a common vision, common goals, priorities and action plans – all these have to be implemented through a joint management body or steering committee.

Case study: Monitoring Pendjari biosphere reserve, Benin

In the Pendjari biosphere reserve, on-site monitoring of the outcomes of biodiversity conservation critically depends upon involving local village population, including professional hunters, into mixed patrol teams. Through this involvement, hunters contribute their knowledge and their increased fields of action – and they are much less likely to be complicit with poachers. In the framework of regional cooperation initiatives, the approach of joint patrols has been extended to the contiguous national park Arly in Burkina Faso. There, the same positive results have been obtained. A regional anti-poaching agreement between the states of Benin, Burkina Faso and Niger allows rangers to arrest poachers on the territory of other states without the danger of creating diplomatic incidents.

The harmonization of legal frameworks is an opportunity – abstractly. But from the perspective of a manager, who is far away from parliaments, harmonization can be a huge challenge. The constitutional differences of the involved states can be enormous – as regards the French-German TBR for example, France is a rather centralistic state, while Germany is a federal state. The challenge becomes even harder in cases where the TBR's constituent parts were created at different points in time (the time difference can be decades). This is one main reason, why UNESCO *strongly* recommends establishing a government cooperation agreement among the public authorities concerned at the appropriate political level. Such an agreement might be a rather informal MoU and can turn into an inter-state treaty in the medium term. If there is considerable legal difference among the countries, it can be wise to *start with an inter-state treaty*. An example is the draft MoU for the proposed Mount Elgon TBR [[KENNC]]. The (national or provincial) governments on both sides of a border can also agree on jointly adopting legal documents to address deficiencies and facilitate cross-border cooperation.

harmonization really takes place

No TBR should try to pursue the illusory goal of a full harmonization of the legal and administrative basis. Realistic goals should be pursued, such as coordinating policies for endangered species and ecosystems, migratory species, as well as control of invasive alien species; policies for rehabilitation of degraded areas; the fight against poaching and unauthorised logging; as well as monitoring of success of interventions.

Pursue realistic goals

Addressing diversity of languages and of knowledge

If the neighbouring regions do not have a common language, it is not straightforward under which language regime the “joint coordination structure” should work. Several options are available:

- Adopting the language of one region, with which everybody is familiar, as a working language, clearly agreeing that this choice is purely pragmatic and does not devalue the other language
- Adopting a foreign language, with which everybody is familiar, as a working language
- Adopting one language as a working language for discussion, but translating all (or the most relevant) documents
- Interpreting all meetings and translating all documents

Should you agree on one language or should you translate?

There is no “best option”; the most suitable choice depends on the concrete context of the specific TBR. As an example, meetings between representatives of the proposed Niimi biosphere reserve (Gambia, Anglophone) and Delta du Saloum (Senegal, Francophone) are held in the common local language Wolof. However, there are particularly strong arguments for the option “working in one language in meetings and translating important documents”: if a “coordination structure” cannot be as pragmatic as to use one language, with which everybody is familiar, then it will be difficult to reach pragmatic consensus in practical questions. Important documents should not only be available to the “coordination structure” but distributed widely - this requires using local languages.

Knowledge diversity can exist on several levels:

- Different levels of education and literacy can be overcome through capacity building and life-long learning.
- Different approaches to the valorisation of different forms of knowledge (scientific knowledge including diverse disciplines, traditional knowledge, “common sense” knowledge) need dialogue, consensus-building and developing a joint standard (cp. also section 2).
- Different standards of dealing with data: Attaining a joint standard of data collection, research and monitoring methodologies and protocols is essential for a TBR. Joint decision-making is impossible if two countries use entirely different data (example: if one authority counts the number of 50 antelope individuals annually in autumn on water holes, the other authority counts the number of 30 antelope individuals every two years in spring at the crossing of a migratory path with a road).

Educate, dialogue, find consensus and establish standards

5.2 Cities in biosphere reserves

BR in cities – cities
in BR
“BR in cities” – an
abstract idea

Since biosphere reserves should be representative for all major ecosystems, it is not surprising that many experts have proposed “urban biosphere reserves”, i.e. *biosphere reserves in cities*. This section shortly discusses this topic and the different topic of *cities* or urban areas *in* biosphere reserves.

Biosphere reserves in cities have been discussed for more than 10 years already. However, most discussions have been at a rather abstract level: case studies such as New York City in the USA, Seoul in the Republic of Korea or the Ruhr area in Germany, are actually not much more than re-expressing very valuable initiatives of “urban ecology” in the zonation concept of biosphere reserves. Some cities have applied very abstract “principles” of biosphere reserves within their jurisdictions as a tool for better planning and managing sustainable urban development. This has its own high conceptual interest, but politically and practically, the differences to “proper” biosphere reserves, following the principles of the Seville Strategy, are rather large. For guidelines for urban protected areas, cp. [[IUCN2014]]; an excellent Manual is [[VOIGT]].

“Cities in BR” – almost
the norm today

In 2004, the MAB ICC has discussed urban biosphere reserves using a quite different working definition, as “characterized by an important **urban area within or adjacent to its boundaries** where the natural, socio-economic and cultural environments are shaped by urban influences and pressures, and set up and managed to mitigate these pressures for improved urban and regional sustainability.” This concept of urban biosphere reserves refers to situations which today are almost normal in the World Network of Biosphere Reserves. For example, the Sao Paulo Green Belt in Brazil, Mornington Peninsula in Australia, and Bliesgau in Germany are all regions with habitats which are *also* considerably shaped by significant urban human settlements (not: villages) within the borders of the biosphere reserve.

Biosphere reserves
as valuable planning
framework

Still today a large number of biosphere reserves is very rural, including in Africa. But globally, the existence of cities in biosphere reserves should be considered the norm, not the exception. Recall that the Statutory Framework in 1995 (cp. Appendix 2) defined that there is a “transition area where sustainable resource management practices are promoted and developed”. Such sustainable practices can and should be promoted in cities as well. Biosphere reserves are places to engage people – people, including city planners and inhabitants, who need to learn how they can live well without destroying the environment. This also includes the need to stop urban sprawl. Biosphere reserves close to cities illustrate how people (village and urban dwellers) can live from the resources and ecosystem services of natural habitats; this includes enjoying natural areas during holidays and recreation. The concept of a biosphere reserve can be a very valuable planning space and management framework also for cities and their adjacent natural areas.

Urbanization as a key
global challenge

This seems even more obvious since the adoption of the “Madrid Action Plan” (MAP, cp. Appendix 4), which has defined urbanization as one the three global multidimensional processes to which biosphere reserves should respond. Urbanization can be devastating. According to the MAP, urbanization manifests itself through rapidly changing and spatially shifting population density, including migration from rural to urban zones. Urbanization also increases vulnerability to natural disasters. Urban landscapes can be understood as the most complex mosaic of land cover. There are still large knowledge gaps on urban ecology and on the effects of global change. Yet cities can be also perceived as places offering solutions for humans and for environment as main hubs of knowledge, capital and innovations. This is why the city Tanguiéta in Benin, after long discussions has been included into the Pendjari biosphere reserve; or why cities such as Bad Kissingen want to become part of the German Rhön biosphere reserve.

5.3 Coastal and island biosphere reserves

Coastal and island biosphere reserves in most aspects are fully identical to “inland biosphere reserves” with regard to most aspects presented in this Manual. This short section only highlights some special characteristics.

Enormous pressure on
coastal ecosystems

Marine ecosystems are under enormous pressure, for example from pollution, ocean temperature rise, ocean acidification, over-fishing including bottom trawling, invasive species, unsustainable tourism, and marine extraction of minerals and fossil fuels. Coral reefs are already heavily affected [[REEF]]. Several of these pressures are due to global change and cannot be stopped in the short term, while other pressures such as over-fishing and tourism can be controlled. Therefore, marine protected areas are discussed and implemented increasingly, both along coastlines in the territorial waters, or in the open sea.

Marine protected
areas are needed

The parties to the UN Convention on Biological Diversity have agreed that until 2020, “10 percent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed ecologically representative and well-connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscape and seascape.” By 2012, this target (so called Aichi target 11) has been almost met for coastal waters, but for the global ocean,



protected areas have to become 4 times as large until 2020. Countries use many different types of protected areas, including national parks, marine parks or marine reserves. Many, but not all marine protected areas, are “no-take” for fisheries, extractive industries, and tourism.

In the case of marine protected areas, it is more difficult to designate boundaries against intruders [[AGARDY]], because it is not possible to ‘fence in’ living organisms or ecological processes that support them. Furthermore, it is impossible to ‘fence out’ the degradation of ocean environments caused by land based sources of pollution or oil spills by tankers. The long-distance linkages between habitats in marine ecosystems require even more comprehensive management than on land [[SINCLAIR]].

Special challenges
of marine protected
areas

What is a coastal UNESCO biosphere reserve? In principle the same as a terrestrial biosphere reserve: an area to protect ecologically rich habitats, resolve user conflicts, and to help restore overexploited stocks and degraded areas by sustainable use. A coastal biosphere reserve has a zonation, too, and the core area may again be a strictly protected area such as a national park, for example the Malindi-Watamu biosphere reserve in Kenya. In the buffer zone and in the transition area, sustainable resource use is promoted in line with the overall conservation goals. They can build upon the principles of “Integrated Marine and Coastal Area Management” as established by the CBD [[IMCAM]].

Coastal biosphere
reserves also need
inhabitants

Case study: Príncipe Island biosphere reserve, São Tomé & Príncipe

The biosphere reserve covers the entire surface of the smaller of the two main islands making up the state São Tomé & Príncipe, plus marine areas and tiny neighbouring islands. The island with its 7,500 inhabitants has been designated by UNESCO in 2012. Príncipe Island is politically and administratively an autonomous region, with its own government and parliament – and a clear sustainable development strategy around the development drivers accessibility/transport, tourism, agriculture, education/professional training, and nature conservation. Not only is the island part of the biodiversity hotspot of tropical forests of West Africa, its isolation far out in the ocean adds to the high number of endemic species. Because of the location at the convergence of two ocean currents, the marine fauna of the island has an enormous wealth and diversity. In spite of a long history of settlements, human influence has been surprisingly low. Population growth is mainly due to improved health standards. Fishing and agriculture are practised in subsistence; there are only minor tourism activities. The biosphere reserve will be used to diversify and restructure the island’s economic development in line with sustainability principles. Several information campaigns on environmental legislation were organized. The plastic bottle collection campaign “No plastic” has already achieved international fame, with 24,000 bottles collected on the first day alone – and exchanged for reusable steel bottles [[UNESCO2013-1]].

Case study: Boloma-Bijagós biosphere reserve, Guinea-Bissau

The coastal biosphere reserve Boloma-Bijagós contains 88 islands and islets, as well as extensive stretches of the coast with vast intertidal flats and mangroves. Most of Boloma-Bijagós is sparsely populated: some 25,000 people live on a land area of 90,000 hectares. In spite of rapid change, Bijagós people maintain many of their traditional beliefs and their lives are governed by numerous taboos and rules. A rather strict taboo involves the remote islet of Poilao, which is visited only during rare social and religious ceremonies. This and other social taboos have greatly supported biodiversity conservation. In the year after the UNESCO designation in 1997, the Orango national park was created as its legally protected core area, later followed by the Joao Vieira-Poilao National Park and several community marine protected areas, Formosa, Nago and Chedia, in 2005.

Generally, a “purely marine” biosphere reserves cannot exist – which would be a biosphere reserve without any islands, coast and inhabitants. Most “purely marine” biosphere reserves, which had been created until the early 1990ies outside Africa, are in a phase of extension towards the mainland or islands. The “Gulf of Mannar” biosphere reserve at the southern tip of India, designated in 2001, contains a vast marine area, but also 47 villages. The “Schleswig-Holstein Wadden Sea” biosphere reserve on the German coast has been extended to include small, populated islands. The Marawah biosphere reserve in the United Arab Emirates, designated in 2007, contains towns and settlements along the coast as well as several islands.

What to consider for coastal biosphere reserves

UNESCO has no special nomination form for coastal biosphere reserves. In principle, the same information must be compiled as a rationale for site selection. But in case of coastal biosphere reserves, it is more difficult to formulate convincing strategies on how to effectively preserve pristine ocean or coastal ‘wilderness’ areas under water, on how to resolve conflicts among users (current or future) and on how to restore degraded or overexploited areas. Several steps are advisable [[AGARDY]]:

- Define a zonation and boundaries that reflect actual locations of ecosystems, species territory and ecosystem processes, as well as legal entitlements for use
- Clearly define the goals of the respective zones, together with stakeholders and communities
- Define a realistic and enforceable protection regime for the core area, and if needed, for the buffer zone
- Define a (feasible) management plan, together with stakeholders and communities, and establish a management board that also includes all those stakeholders that have the necessary knowledge to protect and manage the marine core area
- Develop monitoring and evaluation methods that are appropriate to the specific goals
- Disseminate the lessons learnt from the biosphere reserve and its protected core area to other marine protected areas, to contribute to an overall more effective marine conservation policy



Case study: Challenges in Mananara Nord biosphere reserve, Madagascar

The biosphere reserve, designated in 1990 by UNESCO, is located on the north-east coast of the island and covers an area of 140,000 hectares, including a marine part. For a long time already, it has gained international recognition as a pilot project that merges nature conservation, buffer zone development and participation of local communities in management. Managed by Malagasy Protected Areas Association ANGAP since 2002, it has also been funded by the EU. Sustainable development operations in sectors such as agriculture, rural infrastructure, health, education, fishing, animal husbandry, women's organizations, research, conservation, and adventure tourism have been established. A research team from Greiswald University, Germany, has introduced the method of "Balanced Scorecard" for improving management effectiveness in 2008 [[FRITZ]]. In 1999, roundtables were organized in the 35 fokontany (local management level) of the biosphere reserve, in order to identify and prioritize the expectations of the local communities. The result was that education was the priority issue, followed by food self-sufficiency and food marketing. Conservation problems were practically absent [[UNESCO2008]]. Antongil Bay is adjacent to the biosphere reserve in the North; it is the most important breeding spot for humpback whales in the Eastern Hemisphere and the home of 13 shark species. Today the main challenges to the marine environment are soil erosion and sedimentation due to human over-use, unregulated industrial fishing operations and irresponsible whale-watching businesses. The symptoms of climate change - warming water temperature, sea level rise, and increasing cyclones - also imperil the bay, threatening both the natural habitat and communities. The Wildlife Conservation Society Marine Programme has helped establishing a string of "Locally Managed Marine Areas" (LMMA) against the effects of climate change by increasing reef resilience and by strengthening accountability and community participation in the biosphere reserve. In early 2015, this resulted in the foundation of a "shark park" while granting coastal communities exclusive use and management rights for local fishing areas [[WCS]].

Island biosphere reserves: What is special about islands (islands in a freshwater lake or in the sea)? If marine territories are included, then it is a marine or coastal/terrestrial biosphere reserve; if it is on land exclusively, then it is "just a biosphere reserve".

Islands are often self-contained

What makes island biosphere reserves special is that they have a natural outer boundary, the coast. In a way, an island biosphere reserve is more exciting than one on land, because it is an excellent research object. A scientist can very well investigate the effect of a biosphere reserve designation on the ecosystem. But seen in another way, an island biosphere reserve is less exciting because it has no directly surrounding area into which it can disseminate its good experience.

Some examples of biosphere reserves which are fully located on islands: Príncipe, the small island of the state São Tomé and Príncipe; Jeju, a large South Korean island south of the Korean peninsula, a very popular tourist destination; six Spanish biosphere reserves which cover entire islands (Menorca, Fuerteventura, Gran Canaria, Lanzarote, La Palma, El Hierro) or the island Palawan in the Philippines. 20 of these biosphere reserves so far together constitute the "World Network of Island and Coastal Biosphere Reserves". Best practices from this network have been published in 2012 [[UNESCO2012]].

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Appendices

Appendix 1: Definitions and acronyms (glossary)

Definitions and acronym	Meaning
ABS	Access and benefit-sharing (cp. definition in 2.3)
Adaptive management	(cp. definition in 2.4)
AfriMAB	The network of biosphere reserves and related professionals in Africa (3.2)
ArabMAB	The network of biosphere reserves and related professionals in the Arab region (3.2)
AU	African Union
Benefit-sharing	(cp. multiple meanings in 2.3)
BfN	German Federal Agency for Nature Conservation
Biocultural diversity	(cp. definition in 2.1)
Biodiversity	(cp. definition in 2.1)
Biosphere reserve	(cp. definition in 1.5)
BMUB	German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety
Buffer zone	One of the three zones of a biosphere reserve (cp. definition in 1.5)
CBD	United Nations Convention on Biological Diversity (3.4)
CITES	United Nations Convention on International Trade in Endangered Species of Wild Fauna and Flora
Co-management	(cp. definition in 2.3)
Core area	One of the three zones of a biosphere reserve (cp. definition in 1.5)
CSO	Civil Society Organization (equivalent to NGO)
DUK	German Commission for UNESCO
Ecosystem restoration	(cp. definition in 2.1)
Ecosystem services	(cp. definition in 2.1)
Education for sustainable development	(cp. definition in 4.5)
EIA	Environmental Impact Assessment (cp. definition in 3.4)
ESD	Education for Sustainable Development
Exit Strategy	A UNESCO procedure defined in 2013 to improve quality control of biosphere reserves (cp. Appendix 6)
FAO	United Nations Food and Agriculture Organization
First generation biosphere reserve	A non-official term for biosphere reserves which have been designated before the adoption of the Minsk Action Plan for Biosphere Reserves of 1984
GEF	Global Environmental Facility, a World Bank funding body
GIS	Geographic Information System, any standardized system to capture, store, manipulate and analyse geographical data
GIZ	German Federal Enterprise for International Cooperation (formerly GTZ)
Green Economy	(cp. 3.4)
ICC	International Coordinating Council of the MAB programme
IUCN	International Union for Conservation of Nature, global NGO with close ties to UNESCO
Intergovernmental	Characteristic of an organization, if it is exclusively ruled by several governments
kfw	Kreditanstalt für Wiederaufbau, a German public-sector financial institution

Definitions and acronym	Meaning
Livelihood	The means needed for securing the basic necessities of life -food, water, shelter and clothing
Logistic support	One of the three functions of a biosphere reserve (cp. definition in 1.5)
M&E	Monitoring and evaluation (cp. definition in 2.4)
MAB	Man and the Biosphere, a UNESCO programme
MAB national committee	(cp. 3.2)
Management	(cp. 2.2)
MAP	Madrid Action Plan
Monitoring	(cp. definition in 2.4)
MoU	Memorandum of Understanding
ODA	Official Development Aid
OECD	Organization for Economic Cooperation and Development
National Commission for UNESCO	(cp. 3.2)
NEPAD	New Partnership for Africa's Development, development programme of the African Union
NGO	Non-governmental Organization (equivalent to CSO)
Participation	(cp. 2.2)
Periodic review	(cp. 4.1)
PES	Payment for Ecosystem Services (cp. definition in 2.3)
PRSP	Poverty Reduction Strategy Papers (cp. 3.4)
REDBIOS	East Atlantic Biosphere Reserve Network
REDD(+)	(cp. 3.5)
Second-generation biosphere reserve	A non-official term for biosphere reserves which have been designated during the period of the Minsk Action Plan for Biosphere Reserves (1984) and the adoption of the Seville Strategy of 1995 (warning: often used as referring to biosphere reserves designated only after the adoption of the Seville Strategy)
SMART	Acronym for "Specific Measurable Accepted Realistic Timely"
Stakeholder	(cp. definition in 2.2)
SUMAMAD	Sustainable Management of Marginal Drylands, a UNESCO project
Sustainable Development	(cp. definition in 2.1)
SWOT	Acronym for "Strengths, Weaknesses, Opportunities, Threats"
TBR	Transboundary biosphere reserve (5.1)
Traditional knowledge	(cp. definition in 2.4)
Transition area	One of the three zones of a biosphere reserve (cp. definition in 1.5)
UNCCD	United Nations Convention to Combat Desertification (cp. 3.4)
UNDAF	United Nations Development Assistance Framework (cp. 3.4)
UNDP	United Nations Development Programme (cp. 3.4)
UNEP	United Nations Environmental Programme (cp. 3.4)
UNESCO	United Nations Educational, Scientific and Cultural Organization (cp. 3.2)
UNFCCC	United Nations Framework Convention on Climate Change (cp. 3.4)
UNECA	United Nations Economic Commission for Africa
UNHCR	United Nations
WCED	World Commission on Environment and Development
WNBR	World Network of Biosphere Reserves (1.4)
WWF	World Wild Fund for Nature, an international NGO

Appendix 2: Statutory Framework of the World Network

(Source: <http://unesdoc.unesco.org/images/0010/001038/103849Eb.pdf>)

Within UNESCO's Man and the Biosphere (MAB) programme, biosphere reserves are established to promote and demonstrate a balanced relationship between humans and the biosphere. Biosphere reserves are designated by the International Coordinating Council of the MAB Programme, at the request of the State concerned. Biosphere reserves, each of which remains under the sole sovereignty of the State where it is situated and thereby submitted to State legislation only, form a World Network in which participation by the States is voluntary. The present Statutory Framework of the World Network of Biosphere Reserves has been formulated with the objectives of enhancing the effectiveness of individual biosphere reserves and strengthening common understanding, communication and co-operation at regional and international levels. This Statutory Framework is intended to contribute to the widespread recognition of biosphere reserves and to encourage and promote good working examples. The delisting procedure foreseen should be considered as an exception to this basically positive approach, and should be applied only after careful examination, paying due respect to the cultural and socio-economic situation of the country, and after consulting the government concerned. The text provides for the designation, support and promotion of biosphere reserves, while taking account of the diversity of national and local situations. States are encouraged to elaborate and implement national criteria for biosphere reserves which take into account the special conditions of the State concerned.

Article 1 - Definition

Biosphere reserves are areas of terrestrial and coastal/marine ecosystems or a combination thereof, which are internationally recognised within the framework of UNESCO's programme on Man and the Biosphere (MAB), in accordance with the present Statutory Framework.

Article 2 - World Network of Biosphere Reserves

1. Biosphere reserves form a worldwide network, known as the World Network of Biosphere Reserves, hereafter called the Network.
2. The Network constitutes a tool for the conservation of biological diversity and the sustainable use of its components, thus contributing to the objectives of the Convention on Biological Diversity and other pertinent conventions and instruments.
3. Individual biosphere reserves remain under the sovereign jurisdiction of the States where they are situated. Under the present Statutory Framework, States take the measures which they deem necessary according to their national legislation.

Article 3 - Functions

In combining the three functions below, biosphere reserves should strive to be sites of excellence to explore and demonstrate approaches to conservation and sustainable development on a regional scale:

- i. conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation;
- ii. development - foster economic and human development which is socioculturally and ecologically sustainable;
- iii. logistic support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development.

Article 4 - Criteria

General criteria for an area to be qualified for designation as a biosphere reserve:

1. It should encompass a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human interventions.
2. It should be of significance for biological diversity conservation.
3. It should provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale.
4. It should have an appropriate size to serve the three functions of biosphere reserves, as set out in Article 3.
5. It should include these functions, through appropriate zonation, recognising:
 - a. a legally constituted core area or areas devoted to long-term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives;
 - b. a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place;
 - c. an outer transition area where sustainable resource management practices are promoted and developed.
6. Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and carrying out the functions of a biosphere reserve.
7. In addition, provisions should be made for:
 - a. mechanisms to manage human use and activities in the buffer zone or zones;
 - b. a management policy or plan for the area as a biosphere reserve;
 - c. a designated authority or mechanism to implement this policy or plan;
 - d. programmes for research, monitoring, education and training.

Article 5 - Designation procedure

1. Biosphere reserves are designated for inclusion in the Network by the International Coordinating Council (ICC) of the MAB Programme in accordance with the following procedure:

- a. States, through National MAB Committees where appropriate, forward nominations with supporting documentation to the secretar-

- iat after having reviewed potential sites, taking into account the criteria as defined in Article 4;
- b. the secretariat verifies the content and supporting documentation: in the case of incomplete nomination, the secretariat requests the missing information from the nominating State;
 - c. nominations will be considered by the Advisory Committee for Biosphere Reserves for recommendation to ICC;
 - d. ICC of the MAB programme takes a decision on nominations for designation. The Director-General of UNESCO notifies the State concerned of the decision of ICC.
2. States are encouraged to examine and improve the adequacy of any existing biosphere reserve, and to propose extension as appropriate, to enable it to function fully within the Network. Proposals for extension follow the same procedure as described above for new designations.
 3. Biosphere reserves which have been designated before the adoption of the present Statutory Framework are considered to be already part of the Network. The provisions of the Statutory Framework therefore apply to them.

Article 6 - Publicity

1. The designation of an area as a biosphere reserve should be given appropriate publicity by the State and authorities concerned, including commemorative plaques and dissemination of information material.
2. Biosphere reserves within the Network, as well as the objectives, should be given appropriate and continuing promotion.

Article 7 - Participation in the Network

1. States participate in or facilitate co-operative activities of the Network, including scientific research and monitoring, at the global, regional and sub-regional levels.
2. The appropriate authorities should make available the results of research, associated publications and other data, taking into account intellectual property rights, in order to ensure the proper functioning of the Network and maximise the benefits from information exchanges.
3. States and appropriate authorities should promote environmental education and training, as well as the development of human resources, in co-operation with other biosphere reserves in the Network.

Article 8 - Regional and thematic sub-networks

States should encourage the constitution and co-operative operation of regional and/or thematic sub-networks of biosphere reserves, and promote development of information exchanges, including electronic information, within the framework of these sub-networks.

Article 9 - Periodic review

1. The status of each biosphere reserve should be subject to a periodic review every ten years, based on a report prepared by the concerned authority, on the basis of the criteria of Article 4, and forwarded to the secretariat by the State concerned.
2. The report will be considered by the Advisory Committee for Biosphere Reserves for recommendation to ICC.
3. ICC will examine the periodic reports from States concerned.
4. If ICC considers that the status or management of the biosphere reserve is satisfactory, or has improved since designation or the last review, this will be formally recognised by ICC.
5. If ICC considers that the biosphere reserve no longer satisfies the criteria contained in Article 4, it may recommend that the State concerned take measures to ensure conformity with the provisions of Article 4, taking into account the cultural and socio-economic context of the State concerned. ICC indicates to the secretariat actions that it should take to assist the State concerned in the implementation of such measures.
6. Should ICC find that the biosphere reserve in question still does not satisfy the criteria contained in Article 4, within a reasonable period; the area will no longer be referred to as a biosphere reserve which is part of the Network.
7. The Director-General of UNESCO notifies the State concerned of the decision of ICC.
8. Should a State wish to remove a biosphere reserve under its jurisdiction from the Network, it notifies the secretariat. This notification shall be transmitted to ICC for information. The area will then no longer be referred to as a biosphere reserve which is part of the Network.

Article 10 - Secretariat

1. UNESCO shall act as the secretariat of the Network and be responsible for its functioning and promotion. The secretariat shall facilitate communication and interaction among individual biosphere reserves and among experts. UNESCO shall also develop and maintain a worldwide accessible information system on biosphere reserves, to be linked to other relevant initiatives.
2. In order to reinforce individual biosphere reserves and the functioning of the Network and sub-networks, UNESCO shall seek financial support from bilateral and multilateral sources.
3. The list of biosphere reserves forming part of the Network, their objectives and descriptive details, shall be updated, published and distributed by the secretariat periodically.

Appendix 3: Seville Strategy

(Source: <http://unesdoc.unesco.org/images/0010/001038/103849Eb.pdf>)

The following Strategy provides recommendations for developing effective biosphere reserves and for setting out the conditions for the appropriate functioning of the World Network of Biosphere Reserves. It does not repeat the general principles of the Convention on Biological Diversity nor Agenda 21, but instead identifies the specific role of biosphere reserves in developing a new vision of the relationship between conservation and development. Thus, the document is deliberately focused on a few priorities.

The Strategy suggests the level (international, national, individual biosphere reserve) at which each recommendation will be most effective. However, given the large variety of different national and local management situations, these recommended levels of actions should be seen merely as guidelines, and adapted to fit the situation at hand. Especially note that the 'national' level should be interpreted to include other governmental levels higher than the individual reserve (e.g., provincial, state, county, etc.). In some countries, national or local NGOs may also be appropriate substitutes for this level. Similarly, the 'international' level often includes regional and inter-regional activities.

The Strategy also includes recommended Implementation Indicators, i.e. a check-list of actions that will enable all involved to follow and evaluate the implementation of the Strategy. Criteria used in developing the Indicators were: availability (Can the information be gathered relatively easily?), simplicity (Are the data unambiguous?), and usefulness (Will the information be useful to reserve managers, National Committees, and/or the Network at large?). One role of the Implementation Indicators is to assemble a database of successful implementation mechanisms and to exchange this information among all members of the Network.

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

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

Recommended at the international level:

1. Promote biosphere reserves as a means of implementing the goals of the Convention on Biological Diversity.
2. Promote a comprehensive approach to biogeographical classification that takes into account such ideas as vulnerability analysis, in order to develop a system encompassing socio-ecological factors.

Recommended at the national level:

3. Prepare a biogeographical analysis of the country as a basis, inter alia, for assessing coverage of the World Biosphere Reserve Network.
4. In light of the analysis, and taking into account existing protected areas, establish, strengthen or extend biosphere reserves as necessary, giving special attention to fragmented habitats, threatened ecosystems, and fragile and vulnerable environments, both natural and cultural.

OBJECTIVE I.2: Integrate biosphere reserves into conservation planning

Recommended at the international level:

1. Encourage the establishment of transboundary biosphere reserves as a means of dealing with the conservation of organisms, ecosystems, and genetic resources that cross national boundaries.

Recommended at the national level:

2. Integrate biosphere reserves in strategies for biodiversity conservation and sustainable use, in plans for protected areas, and in the national biodiversity strategies and action plans provided for in Article 6 of the Convention on Biological Diversity.
3. When applicable, include projects to strengthen and develop biosphere reserves in programmes to be initiated and funded under the Convention on Biological Diversity, and other multilateral conventions.
4. Link biosphere reserves with each other and with other protected areas, through green corridors and in other ways that enhance biodiversity conservation, and ensure that these links are maintained.
5. Use biosphere reserves for in situ conservation of genetic resources, including wild relatives of cultivated and domesticated species, and consider using the reserves as rehabilitation/re-introduction sites, and link them as appropriate with ex situ conservation and use programmes.

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

Recommended at the international level:

1. Prepare guidelines for key aspects of biosphere reserve management, including the resolution of conflicts, provision of local benefits, and involvement of stakeholders in decision-making and in responsibility for management.

Recommended at the national level:

2. Incorporate biosphere reserves into plans for implementing the sustainable-use goals of Agenda 21 and the Convention on Biological Diversity.
3. Establish, strengthen or extend biosphere reserves to include areas where traditional lifestyles and indigenous uses of biodiversity are practiced (including sacred sites), and/or where there are critical interactions between people and their environment (e.g. peri-urban

areas, degraded rural areas, coastal areas, freshwater environments and wetlands).

4. Identify and promote the establishment of activities compatible with the goals of conservation, through the transfer of appropriate technologies which include traditional knowledge, and which promote sustainable development in the buffer and transition zones.

Recommended at the individual reserve level:

5. Survey the interests of the various stakeholders and fully involve them in planning and decision-making regarding the management and use of the reserve.

6. Identify and address factors that lead to environmental degradation and unsustainable use of biological resources.

7. Evaluate the natural products and services of the reserve, and use these evaluations to promote environmentally sound and economically sustainable income opportunities for local people.

8. Develop incentives for the conservation and sustainable use of natural resources, and develop alternative means of livelihood for local populations, when existing activities are limited or prohibited within the biosphere reserve.

9. Ensure that the benefits derived from the use of natural resources are equitably shared with the stakeholders, by such means as sharing the entrance fees, sale of natural products or handicrafts, use of local construction techniques and labour, and development of sustainable activities (e.g. agriculture, forestry, etc.).

OBJECTIVE II.2: Ensure better harmonization and interaction among the different biosphere reserve zones

Recommended at the national level:

1. Ensure that each biosphere reserve has an effective management policy or plan and an appropriate authority or mechanism to implement it.

2. Develop means of identifying incompatibilities between the conservation and sustainable-use functions of biosphere reserves, and take measures to ensure that an appropriate balance between the functions is maintained.

Recommended at the individual reserve level:

3. Develop and establish institutional mechanisms to manage, co-ordinate and integrate the biosphere reserve's programmes and activities.

4. Establish a local consultative framework in which the reserve's economic and social stakeholders are represented, including the full range of interests (e.g. agriculture, forestry, hunting and extracting, water and energy supply, fisheries, tourism, recreation, research).

OBJECTIVE II.3: Integrate biosphere reserves into regional planning

Recommended at the national level:

1. Include biosphere reserves in regional development policies and in regional land-use planning projects.

2. Encourage the major land-use sectors near each biosphere reserve to adopt practices favouring sustainable land-use.

Recommended at the individual reserve level:

3. Organize forums and set up demonstration sites for the examination of socio-economic and environmental problems of the region, and for the sustainable utilization of biological resources important to the region.

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

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

Recommended at the international level:

1. Use the World Biosphere Reserve Network to conduct comparative environmental and socio-economic research, including longterm research that will require decades to complete.

2. Use the World Biosphere Reserve Network for international research programmes that deal with topics such as biological diversity, desertification, water cycles, ethnobiology and global change.

3. Use the World Biosphere Reserve Network for co-operative research programmes at the regional and inter-regional levels, such as those existing for the Southern Hemisphere, East Asia and Latin America.

4. Encourage the development of innovative, interdisciplinary research tools for biosphere reserves, including flexible modelling systems for integrating social, economic and ecological data.

5. Develop a clearing-house for research tools and methodologies in biosphere reserves.

6. Encourage interactions between the World Biosphere Reserve Network and other research and education networks. Facilitate the use of biosphere reserves for collaborative research projects of consortia of universities and other institutions of higher learning and research, in the private as well as public sector, and at non-governmental, as well as governmental levels.

Recommended at the national level:

7. Integrate biosphere reserves with national and regional scientific research programmes, and link these research activities to national and regional policies on conservation and sustainable development.

Recommended at the individual reserve level:

8. Use biosphere reserves for basic and applied research, particularly projects with a focus on local issues, interdisciplinary projects incorporating both the natural and the social sciences, and projects involving the rehabilitation of degraded ecosystems, the conservation of soils and water and the sustainable use of natural resources.

9. Develop a functional system of data management for the rational use of research and monitoring results in the management of the biosphere reserve.

OBJECTIVE III.2: Improve monitoring activities**Recommended at the international level:**

1. Use the World Biosphere Reserve Network, at the international, regional, national and local levels, as priority long-term monitoring sites for international programmes, focused on topics such as terrestrial and marine observing systems, global change, biodiversity and forest health.
2. Encourage the adoption of standardized protocols for meta-data concerning the description of flora and fauna, to facilitate the interchange, accessibility and utilization of scientific information generated in biosphere reserves.

Recommended at the national level:

3. Encourage the participation of biosphere reserves in national programmes of ecological and environmental monitoring, and development of linkages between biosphere reserves and other monitoring sites and networks.

Recommended at the individual reserve level:

4. Use the reserve for making inventories of fauna and flora, collecting ecological and socio-economic data, making meteorological and hydrological observations, studying the effects of pollution, etc., for scientific purposes and as the basis for sound site management.
5. Use the reserve as an experimental area for the development and testing of methods and approaches for the evaluation and monitoring of biodiversity, sustainability and quality of life of its inhabitants.
6. Use the reserve for developing indicators of sustainability (in ecological, economic, social and institutional terms) for the different productive activities carried out within the buffer zones and transition areas.
7. Develop a functional system of data management for rational use of research and monitoring results in the management of the biosphere reserve.

OBJECTIVE III.3: Improve education, public awareness and involvement Recommended at the international level:**Recommended at the international level:**

1. Facilitate the exchange of experience and information between biosphere reserves, with a view to strengthening the involvement of volunteers and local people in biosphere reserve activities.
2. Promote the development of communication systems for diffusing information on biosphere reserves and on experiences at the field level.

Recommended at the national level:

3. Include information on conservation and sustainable use, as practiced in biosphere reserves, in school programmes and teaching manuals, and in media efforts.
4. Encourage participation of biosphere reserves in international networks and programmes, to promote cross-cutting linkages in education and public awareness.

Recommended at the individual reserve level:

5. Encourage involvement of local communities, school children and other stakeholders in education and training programmes and in research and monitoring activities within biosphere reserves.
6. Produce visitors' information about the reserve, its importance for conservation and the sustainable use of biodiversity, its sociocultural aspects, and its recreational and educational programmes and resources.
7. Promote the development of ecology field educational centres, within individual reserves, as facilities for contributing to the education of school children and other groups.

OBJECTIVE III.4: Improve training for specialists and managers**Recommended at the international level:**

1. Utilize the World Network of Biosphere Reserves to support and encourage international training opportunities and programmes.
2. Identify representative biosphere reserves to serve as regional training centres.

Recommended at the national level:

3. Define the training needed by biosphere reserve managers in the 21st century and develop model training programmes on such topics as how to design and implement inventory and monitoring programmes in biosphere reserves, how to analyze and study socio-cultural conditions, how to solve conflicts, and how to manage resources co-operatively in an ecosystem or landscape context.

Recommended at the individual reserve level:

4. Use the reserve for on-site training and for national, regional and local seminars.
5. Encourage appropriate training and employment of local people and other stakeholders to enable their full participation in inventory, monitoring and research in programmes in biosphere reserves.
6. Encourage training programmes for local communities and other local agents (such as decision-makers, local leaders and agents working in production, technology transfer and community development programmes) in order to enable their full participation in the planning, management and monitoring processes of biosphere reserves.

GOAL IV: IMPLEMENT THE BIOSPHERE RESERVE CONCEPT**OBJECTIVE IV.1: Integrate the functions of biosphere reserves****Recommended at the international level:**

1. Identify and publicize demonstration (model or illustrative examples of) biosphere reserves, whose experiences will be beneficial to others at the national, regional and international levels.
2. Give guidance/advice on the elaboration and periodic review of strategies and national action plans for biosphere reserves.
3. Organize forums and other information exchange mechanisms for biosphere reserve managers.
4. Prepare and disseminate information on how to develop management plans or policies for biosphere reserves.
5. Prepare guidance on management issues at biosphere reserve sites, including, inter alia, methods to ensure local participation, case

studies of various management options and techniques of conflict resolution.

Recommended at the national level:

6. Ensure that each biosphere reserve has an effective management policy or plan and an appropriate authority or mechanism to implement it.
7. Encourage private sector initiatives to establish and maintain environmentally and socially sustainable activities in appropriate zones of biosphere reserves and in surrounding areas, in order to stimulate community development.
8. Develop and periodically review strategies and national action plans for biosphere reserves; these strategies should strive for complementarity and added value of biosphere reserves, with respect to other national instruments for conservation.
9. Organize forums and other information exchange mechanisms for biosphere reserve managers.

Recommended at the individual reserve level:

10. Identify and map the different zones of biosphere reserves and define their respective status.
11. Prepare, implement and monitor an overall management plan, or policy, that includes all of the zones of biosphere reserves.
12. Where necessary, in order to preserve the core area, re-plan the buffer and transition zones, according to sustainable development criteria.
13. Define and establish institutional mechanisms to manage, co-ordinate and integrate the reserve's programmes and activities.
14. Ensure that the local community participate in the planning and management of biosphere reserves.
15. Encourage private sector initiatives to establish and maintain environmentally and socially sustainable activities in the reserve and surrounding areas.

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

Recommended at the international level:

1. Facilitate provision of adequate resources for implementation of the Statutory Framework of the World Network of Biosphere Reserves.
2. Facilitate the periodic review, by each country of its biosphere reserves, as required in the Statutory Framework of the World Network of Biosphere Reserves, and assist countries in taking measures to make their biosphere reserves functional.
3. Support the functioning of the Advisory Committee for Biosphere Reserves and fully consider and utilize its recommendations and guidance.
4. Lead the development of communication among biosphere reserves, taking into account their communication and technical capabilities, and strengthen existing and planned regional or thematic networks.
5. Develop creative connections and partnerships with other networks of similar managed areas, and with international governmental and non-governmental organizations with goals congruent with those of biosphere reserves.
6. Promote and facilitate twinning between biosphere reserve sites and foster transboundary reserves.
7. Give biosphere reserves more visibility by disseminating information materials, developing communication policies and highlighting their roles as members of the World Network of Biosphere Reserves.
8. Wherever possible, advocate the inclusion of biosphere reserves in projects financed by bilateral and multilateral aid organizations
9. Mobilize private funds, from businesses, NGOs and foundations, for the benefit of biosphere reserves.
10. Develop standards and methodologies for collecting and exchanging various types of data and assist their application across the Network of Biosphere Reserves.
11. Monitor, assess and follow up on the implementation of the Seville Strategy, utilizing the Implementation Indicators and analyze the factors that aid in attainment of the indicators, as well as those that hinder such attainment.

Recommended at the national level:

12. Facilitate provision of adequate resources for implementation of the Statutory Framework of the World Network of Biosphere Reserves.
13. Develop a national-level mechanism to advise and co-ordinate the biosphere reserves; and fully consider and utilize its recommendations and guidance
14. Prepare an evaluation of the status and operations of each of the country's biosphere reserves, as required in the Statutory Framework, and provide appropriate resources to address any deficiencies.
15. Develop creative connections and partnerships with other networks of similar managed areas, and with international governmental and non-governmental organizations, with goals congruent with those of the biosphere reserves.
16. Seek opportunities for twinning between biosphere reserves and establish transboundary biosphere reserves, where appropriate.
17. Give biosphere reserves more visibility by disseminating information materials, developing communication policies and highlighting their roles as members of the Network.
18. Include biosphere reserves in proposals for financing from international and bilateral funding mechanisms, including the Global Environment Facility.
19. Mobilize private funds, from businesses, NGOs and foundations, for the benefit of biosphere reserves.
20. Monitor, assess and follow up on the implementation of the Seville Strategy, utilizing the Implementation Indicators and analyze the factors that aid in attainment of the indicators, as well as those that hinder such attainment.

Recommended at the individual reserve level:

21. Give biosphere reserves more visibility by disseminating information materials, developing communication policies and highlighting their roles as members of the Network.
22. Mobilize private funds, from businesses, NGOs and foundations, for the benefit of biosphere reserves.
23. Monitor, assess and follow up on the implementation of the Seville Strategy, utilizing the Implementation Indicators and analyze the factors that aid in attainment of the indicators, as well as those that hinder such attainment

Appendix 4: Madrid Action Plan (abridged)

(Source: <http://unesdoc.unesco.org/images/0016/001633/163301e.pdf>)

A. EMERGING CHALLENGES AND THE POTENTIAL AND ROLE OF BIOSPHERE RESERVES IN ADDRESSING THESE CHALLENGES

During the thirteen (13) years since the adoption of the Seville Strategy, global issues and problems have emerged or intensified, making it an imperative for the MAB Programme to adapt and change so as to effectively respond to these emerging challenges. These major challenges seriously further exacerbate poverty and inequality and include:

- Accelerated climate change with consequences for societies and ecosystems;
- Accelerated loss of biological and cultural diversity with unexpected consequences that impact the ability of ecosystems to continue to provide services critical for human wellbeing;
- Rapid urbanization as a driver of environmental change.

From these challenges, several opportunities for change arise, through increased awareness at all levels of the need to maintain and secure access to ecosystem services for human well-being, including health, security and justice/equity.

Understanding the issues highlighted in the key challenges, over the period 2008–2013, the MAB Programme will strategically address the relevant Millennium Development Goals (MDGs) through the following:

- Develop mechanisms to encourage the sustainable development of biosphere reserves carried out in partnership with all sectors of society (i.e. public and private institutions, NGOs, stakeholder communities, decisionmakers, scientists, local and indigenous communities, land owners and users of natural resources, research and education centres, media) to ensure the well-being of people and their environment;
- Test and apply policies for adaptation and mitigation for climate change in coordination with other intergovernmental programmes;
- Use the experience of the WNBR, the MAB Thematic Networks and interdisciplinary approaches to develop and test policies and practices to address the issues impacting key ecosystem types, namely coastal zones, islands, oceans, mountains, drylands, tropical forests, freshwater ecosystems and areas of increasing urbanization;
- Develop scientific programmes of research to follow on from the Millennium Ecosystem Assessment (MA) to define approaches that secure ecosystem services into the future.

The Madrid Action Plan (hereafter referred to as MAP or the MAP) articulates actions, targets and success indicators, partnerships and other implementation strategies, and an evaluation framework for the WNBR for the period of 2008 to 2013. It takes fully into consideration the recommendations of the Review Committee that evaluated UNESCO's Natural Sciences and Social and Human Sciences Programmes during 2006–2007, and will make specific contributions towards the implementation of those recommendations as proposed by the Director General of UNESCO and approved by the 34th session of the General Conference of UNESCO in October–November 2007.

MAP's overall goals are to:

- a) anchor the research, training, capacity building and demonstration agendas of MAB at the interface between the interlinked issues of conservation and sustainable use of biodiversity, mitigation and adaptation to climate change, and socio-economic and cultural well-being of human communities;
- b) enable the active use of places included in the WNBR as learning sites for sustainable development, i.e. demonstrating approaches to enhance co-operation amongst epistemic (academic), political, practitioner and stakeholder communities to address and solve context specific problems to improve environmental, economic and social conditions for human and ecosystem well-being;
- c) collect, collate, synthesize and disseminate lessons learnt from more than 30 years of the work of the MAB Programme and the WNBR as well as their planned actions during 2008–2013 to benefit international, national and local efforts to meet global targets such as the MDGs, significantly reducing the current rate of biodiversity loss by 2010 (also referred to as the "CBD 2010 target") and others that are part of the UNFCCC and Kyoto processes linked to mitigating and adapting to global climatic change; and
- d) contribute to the emergence of a new generation of professionals and practitioners who can serve as ambassadors and managers/coordinators for linking global environmental agendas to national and local development aspirations.

The MAP builds on past experience in the network and in individual biosphere reserves, and reaches out to all sectors of society to create a new partnership between environmental and development agendas. To this broad community, biosphere reserves should be seen both as a process and as an instrument to understand, and adapt to change, as well as a catalyst of new ideas and territories to test out innovative development approaches. The evolution of the MAB Programme will be guided not only by the community most directly involved in managing biosphere reserves but also by the broader community inspired by the concept and experimenting with it. The MAP is informed by a consultation process of Member States involving governing bodies such as the MAB Bureau in June and September 2007; the International Advisory Committee for Biosphere Reserves in June 2007; circular letters issued by the MAB Secretariat in July and December 2007 and network meetings held in all regions of the world in 2007. MAP builds on the working documents addressing the five (5) issues defined by the 19th session of the ICC in 2006 for the preparation of the 3rd World Congress of Biosphere Reserves and the 20th session of the International Co-ordinating Council of the MAB Programme (MAB-ICC) convened in Madrid, Spain, from 4 to 8 February 2008.

A.1 CLIMATE CHANGE

Climate change presents one of the most serious and globally significant challenges to society and ecosystems around the world today. Having filtered out the range of natural causes of climate change, the UNFCCC and its scientific panel IPCC have unequivocally established that the accelerated changes to our climate are anthropogenic. The volume of CO₂ and other greenhouse gases emitted primarily by the industrialized nations and now coupled with the demand from less industrialized parts of the world including emerging market economies means that, if unchecked the problems will multiply. In addition, the rate of deforestation in tropical areas is also contributing to the increase of CO₂ in the atmosphere as well as loss of ecosystem functions.

The rise in mean global temperature will mean that billions of people across the globe will face water shortages and millions more people will be exposed to malaria. Weather events such as droughts and floods will be more extreme, leading to a greater range and frequency of natural disasters. This will in turn lead to people moving from inhospitable areas to more amenable regions. The changes in rainfall distribution will drive changes in agricultural systems.

Most ecosystem services will be put under stress. For example 30 percent of species will be put at risk of extinction, desertification will increase; positive feedback mechanisms in the climate will further reduce tropical forests. Sea level rise and sea warming will impact on the ability of coastal systems, such as mangroves and salt marshes, to cope, and fish distribution will change, increasing the fragility of coastal ecosystems and human use of them.

Societal responses to climate change are centred on adaptation and mitigation, both of which bring their own consequences for current and future generations. Society must practise adaptation to accommodate the changes that are inevitable because of the greenhouse gases already emitted and which will be active until they naturally decay. Based on scientific knowledge, adaptation measures may include land-use change to safeguard ecosystem services and functions, such as coastal re-alignment and management of river catchments. Mitigation is required by all nations to varying degrees, in an effort to prevent the CO₂ equivalent in the air exceeding 450 parts per million. These will include carbon sequestration, emission reductions, energy efficiency and renewable energy production in a sustainable manner combined with more climate-friendly lifestyles. The barriers to these being put in place can be lack of political awareness of solutions and/or the willingness to implement them, inadequate or lack of technical capacity, economic uncertainty as well as the absence of an integrated approach to development planning.

MAB and WNBR bring added value through the integrated approach which is generally absent elsewhere. The role of biosphere reserves is essential to rapidly seek and test solutions to the challenges of climate change as well as monitor the changes as part of a global network. For the Natural Sciences as well as other Programme Sectors of UNESCO, biosphere reserves can be areas for demonstrating adaptation measures for natural and human systems, assisting the development of resilience strategies and practices. Buffer zones and transition areas of biosphere reserves may also be used to test many mitigation tactics and strategies. In numerous biosphere reserves, carbon can be sequestered as in forest and wetland systems. In all of them capacity can be built for low-carbon economies using a mix of technology- and labour-based social enterprises. From a social sciences point of view, the political dimensions of changing lifestyles can be explored. The range of biosphere reserves and the systems they represent will provide valuable lessons for the rest of the world.

A.2 PROVISION OF ECOSYSTEM SERVICES

The Millennium Ecosystem Assessment (MA) has articulated and described ecosystem services in a manner that has gained widespread acceptance among public and private sector and civil society organizations. The new MA typology recognizes four distinct categories of services: supporting (nutrient cycling, soil formation and primary production); provisioning (food, fresh water, wood and fibre and fuel); regulating (climate, flood and disease regulation and water purification) and cultural (aesthetic, spiritual, educational and recreational).

Ecosystem services could be a useful conceptual framework to superimpose on the multiple functions of biosphere reserves ranging from protection to production in land/seascapes. The essence of biosphere reserves as sustainable development sites could be seen as the effort to design and develop place-specific mixes of supporting, provisioning, regulating and cultural ecosystem services that enable the environmental, economic and social well-being of resident and stakeholder communities. For example, the various zones of biosphere reserves can serve as places to attract new investments into hitherto neglected services (climate regulation, water purification, biodiversity conservation) and improve environmental and social performance of provisioning (agriculture, forestry, fisheries) and cultural (tourism) services that may have been the principal recipients of investments to-date. Active and continuing consultations between the scientific and research communities, policy and decision makers, resource managers and resident populations in a biosphere reserve are critical in finding the optimal mix of ecosystem services that would illustrate the role of biosphere reserves as models for land/seascape level sustainable development at the national, regional and global levels.

A.3 URBANIZATION AS A PRINCIPAL DRIVER FOR ECOSYSTEM-WIDE PRESSURES

Urbanization is a global multidimensional process that manifests itself through rapidly changing and spatially shifting population densities, in particular migration from rural to urban zones, land cover and resource use regimes and a diversity of associated cultural practices. Half of the world's population today lives in urban landscapes, a proportion projected to increase to 66–67% over the next 50 years. Most of this growth will occur in countries that constitute the less industrialized and emerging market economies of the world. It is estimated that by 2030 more than two billion people will be living in urban slums with limited access to basic services, facing extreme vulnerability to natural disasters. The rapid increase of large cities and the continuing transformation of urban landscapes represent great challenges to ensure basic human welfare and a liveable environment.

Urban landscapes represent probably the most complex mosaic of land cover and multiple uses of any landscape. Urbanization and urban landscapes have recently been identified by the MA as priority areas where large knowledge gaps exist. Urban landscapes provide important large-scale experiences of the effects of global change on ecosystems; significant warming and increased nitrogen deposition are already evident and they provide extreme, visible and measurable examples of human domination of 'natural' ecosystem processes. However, cities are also perceived as places offering solutions for humans and the environment as main hubs of knowledge, capital and innovations.

A number of urban areas are either considering, or have applied, the biosphere reserve principles within their jurisdictions, with the intention of using the concept as a tool for planning and managing sustainable urban development.

B. VISION STATEMENT FOR THE WORLD NETWORK OF BIOSPHERE RESERVES (WNBR) WITHIN THE MAN AND THE BIOSPHERE (MAB) PROGRAMME

The World Network of Biosphere Reserves of the Man and the Biosphere Programme consists of a dynamic and interactive network of sites of excellence. It fosters harmonious integration of people and nature for sustainable development through participatory dialogue, knowledge sharing, poverty reduction and human well-being improvements, respect for cultural values and society's ability to cope with change, thus contributing to the MDGs. Accordingly, the WNBR is one of the main international tools to develop and implement sustainable development approaches in a wide array of contexts.

C. MISSION STATEMENT FOR THE WORLD NETWORK OF BIOSPHERE RESERVES (WNBR) WITHIN THE MAN AND THE BIOSPHERE (MAB) PROGRAMME

To ensure environmental, economic, social (including cultural and spiritual) sustainability through:

- development and coordination of a worldwide network of places acting as demonstration areas and learning sites with the aim of maintaining and developing ecological and cultural diversity, and securing ecosystem services for human well-being;
- development and integration of knowledge including science for advancing our understanding of interactions between people and the rest of nature;
- building global capacity for the management of complex socio-ecological systems particularly through encouraging greater dialogue at the science-policy interface, environmental education and multi-media outreach to the wider community.

D. PROGRESS SINCE SEVILLE...

E. THE MADRID ACTIONS – THE WORLD NETWORK OF BIOSPHERE RESERVES...

E.1 COOPERATION, MANAGEMENT AND COMMUNICATION...

E.2 ZONATION – LINKING FUNCTIONS TO SPACE...

E.3 SCIENCE AND CAPACITY ENHANCEMENT...

E.4 PARTNERSHIPS...

F. APPROVAL, IMPLEMENTATION AND EVALUATION...

Appendix 5 A: Dresden Declaration

(Source: www.unesco.de/fileadmin/medien/Dokumente/Wissenschaft/MAB_Dresden_Proceedings.pdf)

We, the participants of the international conference „For life, for the future: Biosphere reserves and climate change“, held in Dresden on 27 and 28 June 2011, issue the following declaration:

Climate change mitigation, adaptation to climate change and the conservation of biological diversity are among today's key environmental challenges. Rising to these challenges requires strong political commitment and decisive action worldwide. In many cases we already have the knowledge and technology to change our development path. We now have to mobilise our resources and creativity in order to further intensify action towards sustainable development - including changes in our behaviour.

The International Coordinating Council of the UNESCO „Man and the Biosphere“ (MAB) Programme convened for the first time in 1971 and laid the foundations for a new type of conservation area - biosphere reserves. It declared the harmonious development of man and nature to be its key goal. The idea of biosphere reserves has met with growing approval worldwide and over the past four decades has become a great success. Biosphere reserves represent a global network of model regions in which sustainable forms of use and options for adaptation to changing ecological, economic and social conditions can be tested, involving all stakeholders.

The world network of over 560 biosphere reserves in more than 100 countries, established in the framework of the UNESCO MAB Programme, adds the wealth of experience gathered over 40 years in and with model regions for sustainable development to climate change mitigation and adaptation, and aims to make a substantial contribution to these processes as well as to the conservation of biological diversity. We expect current global climate protection measures to also satisfy the urgent necessities of biodiversity conservation and its sustainable use.

Since its establishment the MAB Programme has pursued innovative approaches in research, monitoring, education and capacity building, management and in implementing model projects. These approaches go far beyond nature conservation and are suitable as

models for a sustainable way of life. Biosphere reserves are thus an important element of safeguarding a liveable earth for the future of generations to come.

Biosphere reserves are an effective instrument for mitigating climate change and serve as models for adaptation to the impacts of this change. This applies particularly in the domains of sustainable land use, green economies, safeguarding ecosystem services, energy efficiency and the use of renewable energies. Biosphere reserves are learning sites for sustainable development.

With reference to the goals of the Seville Strategy (1995) and the Madrid Action Plan (2008), the conference participants call on the States represented in the MAB Programme to give greater weight to biosphere reserves in their strategies on climate change mitigation and adaptation, and to transfer approaches developed in biosphere reserves to other regions.

On this basis we consider the following measures to be required:

At policy level in the Member States

- (1) Place greater focus on the capacities of the MAB Programme and biosphere reserves for mitigating and adapting to the impacts of climate change, and improve integrating their contributions into national and international climate strategies and policies,
- (2) Incorporate the idea of biosphere reserves into development cooperation to a greater degree, and support corresponding projects that link poverty eradication, biodiversity conservation and climate protection in developing countries,
- (3) Establish adequate legislative, administrative and institutional frameworks at national and/or local level for biosphere reserves, equip these with appropriate competences, and provide adequate funding and staff for the administration of biosphere reserves and their functions,
- (4) Further develop biosphere reserves as model regions for sustainable development, and deploy good practices and experience gained as widely as possible,
- (5) Support problem-oriented, interdisciplinary and applied research, monitoring and evaluation, including traditional knowledge, in relation to climate change and its impacts on biosphere reserves, and incorporate the outcomes of these activities into national and international research programmes and projects,
- (6) Support innovative economic instruments and activities that combine climate change mitigation and adaptation, with maintenance of the integrity of ecosystems and biodiversity as well as social development, including the needs of local and indigenous communities, in particular in the context of extraction of natural resources and the generation of energy,
- (7) Promote the role of land use in carbon sequestration, in particular in forests through implementing and assessing the voluntary carbon programme REDD+ in biosphere reserves, to improve learning about impacts, markets, and practices, as well as to develop improved methodologies and disseminate the lessons learned,
- (8) Promote more understandable communication of the concept of biosphere reserves and the processes required to that end.

At practical level in the biosphere reserves

- (9) Intensify efforts to develop innovative approaches for climate change mitigation and adaptation (including financing models), implement these approaches, adapt management plans accordingly and integrate these with existing sustainable development approaches, and use these to strengthen the regions,
- (10) Draw up and implement management plans to adapt to a changing climate, based on a vulnerability analysis, taking into account the conservation and sustainable use of biological diversity and involving the local population,
- (11) Integrate traditional, indigenous and local knowledge and modern scientific findings to strengthen climate change research,
- (12) Intensify efforts to use biosphere reserves as learning sites for sustainable development, that communicate how biodiversity conservation sustains the flow of ecosystem services and supports the creation of economic opportunities,
- (13) Further develop and reinforce international cooperation on sharing experience, effective methods, and joint projects - including in the framework of partnerships,
- (14) Develop and strengthen partnerships with the private sector in order to identify, develop and promote local, national and international markets for sustainably produced products and services, and to advance climate-friendly economic practices in these areas.

At UNESCO level

- (15) Comprehensively support and use the MAB Programme and biosphere reserves in line with the UNESCO Strategy for Action on Climate Change and the UNESCO Climate Change Initiative, not only as reference sites for a better understanding of the impacts of climate change, in particular in regions specifically targeted by UNESCO, priority Africa and SIDS,
- (16) Further develop the World Network of Biosphere Reserves as one of UNESCO's key assets: as reference regions for a better understanding of the impacts of climate change on human societies, cultural and biological diversity, ecosystem services and the world's natural and cultural heritage, and consider including biosphere reserves into global, coordinated interdisciplinary research programmes on climate change,
- (17) Foster international exchange on best practices and promote South-South and North-South-South partnerships on technology sharing and best practice through twinning,
- (18) Cooperate with other UNESCO and UN intergovernmental programmes and conventions, in particular the three Rio conventions, the UN Decade of Education for Sustainable Development, the UN Conference on Sustainable Development Rio+20, and other relevant international and national organisations and agencies so that they make greater use of these biosphere reserves as research, learning and pilot regions for sustainability processes,
- (19) Support Member States, politically and financially, in the designation and successful management of new biosphere reserves, particularly transboundary reserves.

Conclusion

The conference participants call for the provision of adequate financial, organisational and staff capacities to implement the recommendations contained in this Declaration.

The conference participants invite the International Coordinating Council of the MAB Programme to endorse this Declaration at its 23rd session and to present it to the 36th session of the UNESCO General Conference in autumn 2011.

Appendix 5 B: Rhön Communiqué

(Source: www.bfn.de/2011_ws_br_afrika+M52087573ab0.html)

We, participants of the International Expert Workshop on “Managing Challenges of Biosphere Reserves in Africa” held in Dresden and the Rhön Biosphere Reserve (Germany) from 27th June to 2nd July 2011, issue the following communiqué:

Acknowledging the German Federal Agency for Nature Conservation (BfN) for conceptualizing, initiating and organizing this workshop for managers of Biosphere Reserves in Africa with financing from the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU); Recognizing the role of the German National Commission for UNESCO, AfriMAB and the support of the UNESCO-MAB Secretariat in facilitating and organizing the workshop;

Acknowledging the efforts being made by African Governments in establishing and managing Biosphere Reserves in their respective countries;

We note with appreciation the important role played by the Rhön Biosphere Reserve in hosting the participants during their study trip and facilitating the field exposure of participants and sharing practical experience of a well managed and a functioning Biosphere Reserve;

We are convinced that Biosphere Reserves, as model units for sustainable development, can play an important role in facilitating both socio-economic development and the conservation of ecosystems in Africa;

To date, under the UNESCO MAB programme there are 75 Biosphere Reserves located in 33 countries in Africa, two of which were approved during the 23rd session of the International Coordination Council (ICC) of the MAB Programme meeting held in Dresden from 28th June to 1st July 2011;

Further, we are convinced that the experience acquired from the workshop and the field exposure in the Rhön Biosphere Reserve will give impetus to managers of African Biosphere Reserves to tackle some of the challenges facing those Reserves in Africa.

With reference to the goals of the Seville Strategy, the Madrid Action Plan, and the Dresden Declaration we, the workshop participants, call upon the UNESCO MAB membership to give special attention to the following:

1. We note that some UNESCO member states in Africa have not established MAB National Committees and urge them to expedite the process of establishing MAB National Committees and for those with existing MAB National Committees to facilitate their effective functioning.
2. We urge those African states with Biosphere Reserves designated before the set up of the Seville Strategy in 1995 to review the zoning and functioning as well as effective participation of local communities as per the Strategy. In that respect, we request the UNESCO-MAB Secretariat to support that process so that such Reserves are not deregistered from the World Network of Biosphere Reserves.
3. We urge the UNESCO member states to facilitate and expedite the nomination process of proposed transboundary Biosphere Reserves in Africa.
4. Having noted how in the Rhön, partnership with private enterprises can enhance the functioning of Biosphere Reserves, we urge the Biosphere Reserve managers in Africa to explore ways of engaging in public/private partnerships within their Biosphere Reserves.
5. We request the UNESCO member states to mobilize and establish sustainable financing mechanisms for the sustainable management of Biosphere Reserves in Africa.
6. We observed the need for capacity building in all sectors of Biosphere Reserve management in Africa and urge for concerted effort from all concerned to ensure enhanced capacities in the management of Biosphere Reserves.
7. We note the important role AfriMAB plays in fostering cooperation and communication among Biosphere Reserves in Africa and request that the network be supported to play that role more effectively.
8. We note with appreciation the participation of Egypt in this workshop and urge for partnerships and networking not only with Arab-MAB countries in Africa but also with countries in other regions.
9. We note our concern about the impacts of climate change in Africa and appeal to the international community to partner with AfriMAB in developing a system of monitoring the effects of climate change on Biosphere Reserves and implementing a concrete program of action in mitigation of these effects.

Appendix 6: Biosphere reserve exit strategy

The 25th session of the MAB ICC took momentous decisions in May 2013 in Paris. Among the most important decisions was the exit strategy, which is quoted in full below from the final report of the session (paragraph 65):

a) A biosphere reserve of the MAB Programme is an attractive designation that not only serves to enhance conservation but also sustainable development and research throughout the world. As a consequence, the number of biosphere reserves has increased considerably from 391 sites in 94 countries in the year 2000 to 621 biosphere reserves in 117 countries (including 12 transboundary sites) in 2013. The MAB Programme as a scientific programme has also evolved since its inception in 1971, and so have methods, competencies, experience, and knowledge developed on how to apply the biosphere reserve concept in practice. In this context the MAB Programme has started a process to ensure the continued adherence of the sites established as biosphere reserves to the objectives of their establishment and to ensure the credibility and coherence of the World Network of Biosphere Reserves, and to meet Targets 9 and 10 of the Madrid Action Plan.

b) Therefore, the Council decided on a three step process to manage the periodic review process as a tool to assess, monitor and improve the quality of the World Network of Biosphere Reserves:

1st step: The MAB Secretariat sends a letter to the relevant MAB National Committees with a copy to the individual biosphere reserve concerned, the UNESCO National Commission and the Permanent Delegation requesting submission of periodic review reports for those sites that have not yet submitted a periodic review report. In a similar manner, the MAB Secretariat sends a letter with regard to those sites which have not yet submitted information on the actions taken as recommended by the MAB-ICC on periodic review reports submitted earlier;

2nd step: If no periodic review reports nor comprehensive reports on the implementation of the recommendations are received after three months, the MAB Secretariat sends a reminder letter to the relevant MAB National Committees with a copy to individual biosphere reserves, the UNESCO National Commission and the Permanent Delegation of the country concerned stating the consequences of nonaction. If appropriate, the MAB Secretariat sends the reminder letter directly to the Permanent Delegation and Ministry concerned;

3rd step: If a reply has still not been received after an additional period of three months by the MAB Secretariat, the Secretariat will recommend to the MAB-ICC Bureau that its Chair should issue a last “warning” to the MAB National Committee and the biosphere reserve concerned with copies to the UNESCO National Commission, concerned ministries and the Permanent Delegation of the country concerned consisting of a request for an official statement whether the biosphere reserve wishes to remain in the World Network of Biosphere Reserves and if so, accompanied with a clear statement which actions, including timeframe, will be taken.

c) In case a reply is still not received from the MAB National Committee or the UNESCO National Commission concerned within a further period of three months, the MAB-ICC Bureau shall recommend to the MAB ICC that the biosphere reserve in question be withdrawn from the World Network of Biosphere Reserves. The MAB-ICC may then decide to remove the site from the World Network of Biosphere Reserves.

d) In case a reply is received from the MAB National Committee or the UNESCO National Commission, the MAB Secretariat puts the biosphere reserve concerned on an internal pending list of “Biosphere Reserves which do not fulfil the criteria” and provides a new deadline of one year for the submission of a periodic review report, and/or additional information.

e) If the respective national authorities wish to retain the site as a member of the World Network of Biosphere Reserves but if the site is not fulfilling the criteria of the Seville Strategy for Biosphere Reserves and its Statutory Framework, or if the site only partially fulfils the criteria, the MAB Secretariat, UNESCO field offices and MAB regional networks should offer guidance and help (e.g. by providing examples of “model periodic review reports” on the MAB website).

f) One year after a site has been put on the list mentioned in paragraph (d) above and then every year, the MAB Secretariat should identify and reward the willingness of biosphere reserves to comply with the criteria of the Seville Strategy and the Statutory Framework so that the biosphere reserves concerned will be removed from this list.

g) In case a biosphere reserve is not able to fully comply with the criteria within a period of thirty months since the periodic review process was started (i.e. first step – first demand of periodic review report), the MAB-ICC should consider that the area will then no longer be referred to as a biosphere reserve which is part of the Network (as per Article 9, para 6 of the Statutory Framework of the World Network of Biosphere Reserves).

h) For the sites that have provided periodic review reports and/or follow up information on the recommendation on the report by the MAB-ICC prior to this exit strategy and that are not meeting the criteria, the Secretariat sends a letter to the relevant MAB National Committees with a copy to the individual biosphere reserve concerned, the UNESCO National Commission and the Permanent Delegation, indicating that a report must be submitted by the end of 2015 clearly indicating how the site is fulfilling the criteria. In case, the site is still not meeting the criteria after examination of the report by the Advisory Committee, the Bureau shall recommend to the MAB-ICC that the biosphere reserve in question be withdrawn from the World Network of Biosphere Reserves. The MAB-ICC may then decide that the area will then no longer be referred to as a biosphere reserve which is part of the Network (as per Article 9, para 6 of the Statutory Framework of the World Network of Biosphere Reserves).

i) The Council also recommends that the MAB Secretariat, UNESCO field offices and MAB regional networks provide guidance such

as additional information on training for biosphere reserve managers, and functioning biosphere reserves that may help other biosphere reserves to comply with biosphere reserve criteria.

Appendix 7: Biosphere reserve nomination form (abridged)

Over several years, the official “Biosphere reserve nomination form” has been revised and updated in 2013. The full WORD document is available from www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/related-info/publications/mab-official-documents/. The subsequent excerpt highlights issues of particular importance for this Manual.

PART I: SUMMARY

1. PROPOSED NAME OF THE BIOSPHERE RESERVE:

2. NAME OF THE COUNTRY:

3. FULFILLMENT OF THE THREE FUNCTIONS OF BIOSPHERE RESERVES:

3.1 „Conservation - contribute to the conservation of landscapes, ecosystems, species and genetic variation“.

3.2 „Development - foster economic and human development which is socio-culturally and ecologically sustainable“

3.3 „Logistic support - support for demonstration projects, environmental education and training, research and monitoring related to local, regional, national and global issues of conservation and sustainable development“.

4. CRITERIA FOR DESIGNATION AS A BIOSPHERE RESERVE:

[7 general criteria according to Article 4 of the Statutory Framework]

4.1 „Encompass a mosaic of ecological systems representative of major biogeographic region(s), including a gradation of human interventions“. (The term „major biogeographic region“ is not strictly defined but it would be useful to refer to the Udvardy classification system (http://www.unep-wcmc.org/udvardys-biogeographical-provinces-1975_745.html)).

4.2 „Be of significance for biological diversity conservation“.

4.3 „Provide an opportunity to explore and demonstrate approaches to sustainable development on a regional scale“.

4.4 „Have an appropriate size to serve the three functions of biosphere reserves“

4.5 Through appropriate zonation:

„(a) a legally constituted core area or areas devoted to long term protection, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives“.

„(b) a buffer zone or zones clearly identified and surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place“.

(c) an outer transition area where sustainable resource management practices are promoted and developed“.

(d) Please provide some additional information about the interaction between the three areas.

4.6 „Organizational arrangements should be provided for the involvement and participation of a suitable range of inter alia public authorities, local communities and private interests in the design and the carrying out of the functions of a biosphere reserve“.

4.6.1 Describe arrangements in place or foreseen. (Describe involvement of public and/or private stakeholders in support of the activities of the biosphere reserve in core, buffer and transition areas (such as agreements, protocols, letters of intent, protected area(s) plans)).

4.6.2 Have any cultural and social impact assessments been conducted, or similar tools and guidelines been used?

4.7 Mechanisms for implementation:

Does the proposed biosphere reserve have:

„(a) mechanisms to manage human use and activities in the buffer zone or zones“?

„(b) a management policy or plan for the area as a biosphere reserve“?

„(c) a designated authority or mechanism to implement this policy or plan“?

“(d) programmes for research, monitoring, education and training“?

4. ENDORSEMENTS:

PART II: DESCRIPTION

6. LOCATION (COORDINATES AND MAP(S)): ...

7. AREA (see map): ...

8. BIOGEOGRAPHICAL REGION: ...

9. LAND USE: ...

10. HUMAN POPULATION OF PROPOSED BIOSPHERE RESERVE: ...

11. BIOPHYSICAL CHARACTERISTICS: ...

12. ECOSYSTEM SERVICES:

13. MAIN OBJECTIVES FOR THE BIOSPHERE RESERVE'S DESIGNATION:

13.1 Describe the main objectives of the proposed biosphere reserve, integrating the three functions (conservation, development and logistic), presented below (sections 14 to 16), including components of biological and cultural diversity. Please specify the indirect pressures and/or organizational issues.

13.2 Describe the sustainable development objectives of the biosphere reserve.

(If appropriate, please refer to Agenda 21, Rio+20 and SDG post 2015).

13.3 Indicate the main stakeholders involved in the management of the biosphere reserve.

- 13.4 What consultation procedure was used for designing the biosphere reserve?
- 13.5 How will stakeholder involvement in implementing and managing the biosphere reserve be fostered?
- 13.6 What are the expected main sources of resources (financial, material and human) to implement the objectives of the biosphere reserve and projects within it?

14. CONSERVATION FUNCTION:...

15. DEVELOPMENT FUNCTION:

- 15.1. Potential for fostering economic and human development which is socio-culturally and ecologically sustainable:
- 15.1.1 Describe how and why the area has potential to serve as a site of excellence/model region for promoting sustainable development.
- 15.1.2 How do you assess changes and successes (which objectives and by which indicator)?
- 15.2. If tourism is a major activity:
- 15.2.1 Describe the type(s) of tourism and the touristic facilities available. Summarize the main touristic attractions in the proposed biosphere reserve and their location(s).
- 15.2.2 How many visitors come to the proposed biosphere reserve each year? (Distinguish between single-day visitors and overnight guests, visitors only visiting the proposed biosphere reserve or only passing on the way to another place). Is there an upward or downward trend, or a particular target?
- 15.2.3 How are tourism activities currently managed?
- 15.2.4 Indicate possible positive and/or negative impacts of tourism at present or foreseen and how they will be assessed (linked to section 14)?
- 15.2.5 How will these impacts be managed, and by whom?
- 15.3. Agricultural (including grazing) and other activities (including traditional and customary):
- 15.3.1 Describe the type of agricultural (including grazing) and other activities, area concerned and people involved (including men and women).
- 15.3.2 Indicate the possible positive and/or negative impacts of these activities on biosphere reserve objectives (section 14).
- 15.3.3 Which indicators are, or will be used to assess the state and its trends?
- 15.3.4 What actions are currently undertaken, and which measures will be applied to strengthen positive impacts or reduce negative impacts on the biosphere reserve objectives?
- 15.4 Other types of activities positively or negatively contributing to local sustainable development, including impact/influence of the biosphere reserve outside its boundaries.
- 15.4.1 Describe the type of activities, area concerned and people involved (including men and women).
- 15.4.2 Indicate the possible positive and/or negative impacts of these activities on biosphere reserve objectives (section 14). Have some results already been achieved?
- 15.4.3 What indicators are, or will be used to assess the state and its trends?
- 15.4.4 What actions are currently undertaken, and which measures will be applied to strengthen positive impacts or reducing negative ones on the biosphere reserve objectives?
- 15.5 Benefits of economic activities to local people:
- 15.5.1 For the activities described above, what income or benefits do local communities (including men and women) derive directly from the site proposed as a biosphere reserve and how?
- 15.5.2 What indicators are used to measure such income or other benefits?
- 15.6 Spiritual and cultural values and customary practices:
- 15.6.1 Describe any cultural and spiritual values and customary practices including languages, rituals, and traditional livelihoods. Are any of these endangered or declining?
- 15.6.2 Indicate activities aimed at identifying, safeguarding, promoting and/or revitalising such values and practices.
- 15.6.3 How should cultural values be integrated in the development process: elements of identity, traditional knowledge, social organizations, etc.?
- 15.6.4 Specify whether any indicators are used to evaluate these activities. If yes, which ones and give details.

16. LOGISTIC SUPPORT FUNCTION: ...

17. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION:

- 17.1 Management and coordination structure:
- 17.1.1 What is the legal status of the biosphere reserve?
- 17.1.2 What is the legal status of the core area(s) and the buffer zone(s)?
- 17.1.3 Which administrative authorities have competence for each zone of the biosphere reserve (core area(s), buffer zone(s), transition area(s))?
- 17.1.4. Clarify the respective competence of each of these authorities. Make a distinction between each zone if necessary and mention any decentralized authority.
- 17.1.5 Indicate the main land tenure (ownership) for each zone.
- 17.1.6 Is there a single manager/coordinator of the biosphere reserve or are several people in charge of managing it? If one manager/coordinator, who designates and employs him/her (national authorities, environmental administrative agency, local authorities)?
- 17.1.7 Are there consultative advisory or decision-making bodies (e.g., scientific council, general assembly of inhabitants of the reserve) for each zone or for the whole biosphere reserve? ...
- 17.1.8 Has a coordination structure been established specifically for the biosphere reserve? ...
- 17.1.9 How is the management/coordination adapted to the local situation?
- 17.1.10 Is there a procedure for evaluating and monitoring the effectiveness of the management?

17.2 Conflicts within the biosphere reserve:

17.2.1 Describe any important conflicts regarding the access or the use of natural resources in the area considered (and precise period if accurate). If the biosphere reserve has contributed to preventing or resolving some of these conflicts, explain what has been resolved or prevented, and how this was achieved for each zone.

17.2.2 If there are any conflicts in competence among the different administrative authorities in the management of the biosphere reserve, describe these.

17.2.3 Explain the means used to resolve these conflicts, and their effectiveness.

17.3 Representation, participation and consultation of local communities:

17.3.1 At what stages in the existence of a biosphere reserve have local people been involved: design of the biosphere reserve, drawing up of the management/cooperation plan, implementation of the plan, day to day management of the biosphere reserve? Give some specific examples.

17.3.2 Describe how the local people (including women and indigenous communities) have been, and/or are represented in the planning and management of the biosphere reserve (e.g., assembly of representatives, consultative groups).

17.3.3 Describe the specific situation of young people in the proposed biosphere reserve (e.g., potential impacts of the biosphere reserve on youth, consideration of their interests and needs, incentives to encourage them to participate actively in the governance system of the biosphere reserve).

17.3.4 What form does this representation take (e.g., companies, associations, environmental associations, trade unions)?

17.3.5 Are there procedures for integrating the representative body of local communities (e.g., financial, election of representatives, traditional authorities)?

17.3.6 How long-lived are consultation mechanisms (permanent assembly, consultation on specific projects)? Make a complete description of this consultation. What are the roles of involved stakeholders compared to the role of the biosphere reserve?

17.3.7 What consultation mechanisms have been used, and who has been involved? Are they for specific purposes or long-term? What impacts have they had on decision-making processes (decisional, consultative or merely to inform the population)?

17.3.8 Do women participate in community organizations and decision-making processes? Are their interests and needs given equal consideration? What incentives or programmes are in place to encourage their representation and participation (e.g.: was(were) a “gender impact assessment(s)” carried out)?

17.4. The management/cooperation plan/policy:

17.4.1 Is there a management/cooperation plan/policy for the biosphere reserve as a whole?

17.4.2 Which actors are involved in preparing the management/cooperation plan? How are they involved?

17.4.3 Do local authorities formally adopt the management/cooperation plan? Are local authorities making reference to it in other policies and/or plans? If so, please provide details.

17.4.4 What is the duration of the management/cooperation plan? How often is it revised or renegotiated?

17.4.5 Describe the contents of the management/cooperation plan. Does it consist of detailed measures or detailed guidelines? Give some examples of measures or guidelines advocated by the plan?

17.4.6 Indicate how this management/cooperation addresses the objectives of the proposed biosphere reserve (as described in section 13.1).

17.4.7 Is the plan binding? Is it based on a consensus?

17.4.8 Which authorities are in charge of the implementation of the plan, especially in the buffer zone(s) and the transition area(s)? Please provide evidence of the role of these authorities.

17.4.9 Which factors impede or help its implementation (e.g.: reluctance of local people, conflicts between different levels of decision-making).

17.4.10 Is the biosphere reserve integrated in regional/national strategies? Vice versa, how are the local/municipal plans integrated in the planning of the biosphere reserve?

17.4.11 Indicate the main source of the funding and the estimated yearly budget.

17.5 Conclusions:

17.5.1 In your opinion, what will ensure that both the functioning of the biosphere reserve and the structures in place will be satisfactory? Explain why and how, especially regarding the fulfilment of the three functions of biosphere reserves (conservation, development, logistic) and the participation of local communities.

18. SPECIAL DESIGNATIONS: ...

19. SUPPORTING DOCUMENTS: ...

20. ADDRESSES: ...

Appendix 8: Biosphere reserve periodic review forms (abridged)

Over several years, the official “Biosphere reserve periodic review form” has been revised and finally updated in 2013. The full WORD document is available from www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/related-info/publications/mab-official-documents/. The subsequent excerpt highlights issues of particular importance for this Manual.

PART I: SUMMARY: ...

PART II: PERIODIC REVIEW REPORT

1. BIOSPHERE RESERVE:

- 1.1 Year designated:
- 1.2 Year of first periodic review and of any following periodic review(s) (when appropriate):
- 1.3 Follow-up actions taken in response to each recommendation from the previous periodic review(s) (if applicable), and if not completed/initiated, please provide justifications.
- 1.4 Other observations or comments on the above.
- 1.5 Describe in detail the process by which the current periodic review has been conducted:
 - 1.5.1 Which stakeholders were involved?
 - 1.5.2 What methodology was used to involve stakeholders in the process (e.g., workshops, meetings, consultation with experts)?
 - 1.5.3 How many meetings, workshops, etc. occurred throughout the process of conducting this review?
 - 1.5.4 Were they well attended, with full and balanced representation?

2. SIGNIFICANT CHANGES IN THE BIOSPHERE RESERVE DURING THE PAST TEN YEARS:

- 2.1 Brief summary overview: Narrative account of important changes in the local economy, landscapes or habitat use, and other related issues. Note important changes in the institutional arrangements for governance of the biosphere reserve area, and changes (if any) in the coordinating arrangements (including the biosphere reserve organization/coordinator/manager) that provide direction for the biosphere reserve. Identify the role of biosphere reserve organization/coordinator/manager in initiating or responding to these changes.
- 2.2 Updated background information about the biosphere reserve: ...
- 2.3 The authority/authorities in charge of coordinating/managing the biosphere reserve: (Comment on the following topics as much as is relevant).
 - 2.3.1 Updates to cooperation/management policy/plan, including vision statement, goals and objectives, either current or for the next 5-10 years
 - 2.3.2 Budget and staff support, including approximate average annual amounts (or range from year-to-year); main sources of funds (including financial partnerships established (private/public), innovative financial schemes); special capital funds (if applicable); number of full and/or part-time staff; in-kind contribution of staff; volunteer contributions of time or other support.
 - 2.3.3 Communications strategy for the biosphere reserve including different approaches and tools geared towards the community and/or towards soliciting outside support.
 - 2.3.4 Strategies for fostering networks of cooperation in the biosphere reserve that serve as connections (“bridging”) among diverse groups in different sectors of the community (e.g. groups devoted to agricultural issues, local economic development, tourism, conservation of ecosystems, research and monitoring).
 - 2.3.5 Particular vision and approaches adopted for addressing the socio- cultural context and role of the biosphere reserve (e.g. promotion of local heritage resources, history, cultural and cross-cultural learning opportunities; cooperation with local population; reaching out to recent immigrant groups, indigenous people etc.).
 - 2.3.6 Use of traditional and local knowledge in the management of the biosphere reserve.
 - 2.3.7 Community cultural development initiatives. Programmes and actions to promote community language, and, both tangible and intangible cultural heritage. Are spiritual and cultural values and customary practices promoted and transmitted?
 - 2.3.8 Specify the number of spoken and written languages (including ethnic, minority and endangered languages) in the biosphere reserve. Has there been a change in the number of spoken and written languages? Has there been a revitalization programme for endangered languages?
 - 2.3.9 Management effectiveness. Obstacles encountered in the management/coordination of the biosphere reserve or challenges to its effective functioning.
- 2.4 Comment on the following matters of special interest in regard to this biosphere reserve:
 - 2.4.1 Is the biosphere reserve addressed specifically in any local, regional or/and national development plan? If so, what plan(s)? Briefly describe such plans that have been completed or revised in the past 10 years.
 - 2.4.2 Outcomes of management/cooperation plans of government agencies and other organizations in the biosphere reserve.
 - 2.4.3 Continued involvement of local people in the work of the biosphere reserve. Which communities, groups, etc.? How are they involved?
 - 2.4.4 Women’s roles. Do women participate in community organizations and decision-making processes? Are their interests and needs given equal consideration within the biosphere reserve? What incentives or programmes are in place to encourage their representation and participation? (e.g. was a “gender impact assessment” carried out?) Are there any studies that examine a) whether men and women have different access to and control over sources of income and b) which sources of income do women control? If so, provide reference of these studies and/or a paper copy in an annex.
 - 2.4.5 Are there any changes in the main protection regime of the core area(s) and of the buffer zone(s)?
 - 2.4.6 What research and monitoring activities have been undertaken in the biosphere reserve by local universities, government agencies, stakeholders and/or linked with national and international programs?
 - 2.4.7 How have collective capacities for the overall governance of the biosphere reserve (e.g. organization of new networks of cooperation, partnerships) been strengthened?
 - 2.4.8. Please provide some additional information about the interaction between the three zones.
 - 2.4.9 Participation of young people. How were young people involved in the organizations and community decision-making processes? How were their interests and needs considered within the biosphere reserve? What are the incentives or programs in place to encourage their participation?

3. ECOSYSTEM SERVICES: ...

4. THE CONSERVATION FUNCTION: ...

5. THE DEVELOPMENT FUNCTION:...

6. THE LOGISTIC FUNCTION:...

7. GOVERNANCE, BIOSPHERE RESERVE MANAGEMENT AND COORDINATION:

- 7.1 What are the technical and logistical resources for the coordination of the biosphere reserve?
- 7.2 What is the overall framework for governance in the area of the biosphere reserve? Identify the main components and their contributions to the biosphere reserve.
- 7.3 Describe social impact assessments or similar tools and guidelines used to support indigenous and local rights and cultural initiatives (e.g. CBD Akwé:Kon guidelines, Free, Prior, and Informed Consent Programme/policy, access and benefit sharing institutional arrangements, etc.).
- 7.4 What (if any) are the main conflicts relating to the biosphere reserve and what solutions have been implemented?
- 7.4.1 Describe the main conflicts regarding access to, or the use of, resources in the area and the relevant timeframe. If the biosphere reserve has contributed to preventing or resolving some of these conflicts, explain what has been resolved or prevented, and how this was achieved for each zone?
- 7.4.2 Describe any conflicts in competence among the different administrative authorities involved in the management of the area comprising the biosphere reserve.
- 7.4.3 Explain the means used to resolve these conflicts, and their effectiveness. Describe its composition and functioning, resolution on a case-by-case basis. Are there local mediators; if so, are they approved by the biosphere reserve or by another authority?
- 7.5 Updated information about the representation and consultation of local communities and their participation in the life of the biosphere reserve:
- 7.5.1 Describe how local people (including women and indigenous people) are represented in the planning and management of the biosphere reserve (e.g., assembly of representatives, consultation of associations, women's groups).
- 7.5.2 What form does this representation take: companies, associations, environmental associations, trade unions (list the various groups)?
- 7.5.3 Indicate whether there are procedures for integrating the representative body of local communities (e.g., financial, election of representatives, traditional authorities).
- 7.5.4 How long-lived is the consultation mechanism (e.g., permanent assembly, consultation on specific projects)?
- 7.5.5 What is the impact of this consultation on the decision-making process (decisional, consultative or merely to inform the population)?
- 7.5.6 At which step in the existence of a biosphere reserve is the population involved: creation of the biosphere reserve, drawing up of the management plan, implementation of the plan, day to day management of the biosphere reserve? Give some practical examples.
- 7.6 Update on management and coordination structure:
- 7.6.1 Describe any changes regarding administrative authorities that have competence for each zone of the biosphere reserve (core area(s), buffer zone(s) and transition area(s))? If there are any changes since the nomination form/last periodic review report, please submit the original endorsements for each area.
- 7.6.2 Update information about the manager(s)/coordinator(s) of the biosphere reserve including designation procedures.
- 7.6.3 Are there any changes with regard to the coordination structure of the biosphere reserve?
- 7.6.4 How has the management/coordination been adapted to the local situation?
- 7.6.5 Was the effectiveness of the management/coordination evaluated? If yes, was it according to a procedure?
- 7.7 Update on the management/cooperation plan/policy:
- 7.7.1 Are there any changes with regard to the management/cooperation plan/policy and the stakeholders involved? If yes, provide detailed information on process for involvement of stakeholders, adoption and revision of the plan.
- 7.7.2 Describe contents of the management/cooperation plan (provide some examples of measures and guidelines). Is the plan binding? Is it based on consensus?
- 7.7.3 Describe the role of the authorities in charge of the implementation of the plan. Describe institutional changes since the nomination form/last periodic review report. Please provide evidence of the role of these authorities.
- 7.7.4 Indicate how the management plan addresses the objectives of the biosphere reserve.
- 7.7.5 What are the progresses with regard to the guidelines of the management/cooperation plan/policy?
- 7.7.6 Were there any factors and/or changes that impeded or helped with the implementation of the management/coordination plan/policy? (Reluctance of local people, conflicts between different levels of decision-making).
- 7.7.7 If applicable, how is the biosphere integrated in regional/national strategies? Vice versa, how are the local/municipal plans integrated in the planning of the biosphere reserve?

6. THE LOGISTIC FUNCTION:

8. CRITERIA AND PROGRESS MADE: ...

9. SUPPORTING DOCUMENTS: ...

10. ADDRESSES: ...

Appendix 9: Exemplary structure of a management plan

The following list is the actual Table of Contents of the management plan of the South African Waterberg Biosphere Reserve, published in 2010 (compare cp. <http://www.waterbergmeander.co.za/Management+Plan+%2526+Maps.html>).

EXECUTIVE SUMMARY

1. purpose of the waterberg biosphere reserve

- 1.1 unique features
- 1.2 vision
- 1.3 mission
- 1.4 core values
- 1.5 objectives
- 1.6 challenges

2. reserve management strategies

- 2.1 organisational development
 - 2.1.1 background & context
 - 2.1.2 desired state
 - 2.1.2.1 funding
 - 2.1.2.2 organisational structures
 - 2.1.2.3 personnel
 - 2.1.2.4 initiatives
 - 2.1.3 strategies
 - 2.1.3.1 funding
 - 2.1.3.2 institutional structures and relationships
 - 2.1.3.3 personnel
 - 2.1.3.4 initiatives
- 2.2 organisational procedure
 - 2.2.1 background & context
 - 2.2.2 desired state
 - 2.2.3 policies
 - 2.2.4 guidelines
 - 2.2.4.1 chairperson
 - 2.2.4.2 secretary
 - 2.2.4.3 treasurer
 - 2.2.4.4 non-office bearers as members of the committees

3. resource protection strategies & instruments

- 3.1 strategic environmental assessment
 - 3.1.1 background & context
 - 3.1.1.1 the seville strategy and biosphere zonation
 - 3.1.1.2 boundaries of the waterberg biosphere reserve
 - 3.1.2 desired state
 - 3.1.3 methodology
 - 3.1.3.1 evaluation criteria
 - 3.1.3.2 status of the ecology
 - 3.1.3.3 conservation priorities
 - 3.1.3.4 development pressures
 - 3.1.3.5 zonation process
 - 3.1.4 biosphere zonation
 - 3.1.4.1 proposed zonation
 - 3.1.4.2 core area
 - 3.1.4.2.1 definition
 - 3.1.4.2.2 description
 - 3.1.4.2.3 land use
 - 3.1.4.3 buffer zone
 - 3.1.4.3.1 definition
 - 3.1.4.3.2 description
 - 3.1.4.3.3 land use
 - 3.1.4.4 transition zone
 - 3.1.4.4.1 definition
 - 3.1.4.4.2 descriptions
 - 3.1.4.4.3 land use
 - 3.1.4.5 potential future core zones
- 3.2 spatial development framework and development guidelines
 - 3.2.1 background & context
 - 3.2.1.1 provincial regulations for the waterberg biosphere reserve
 - 3.2.1.2 district and local municipal land use management
 - 3.2.2 desired state
 - 3.2.3 objectives
 - 3.2.4 strategies
 - 3.2.4.1 provincial regulations for the waterberg biosphere reserve
 - 3.2.4.2 district and local municipal land use management
 - 3.2.5 guidelines

4. sustainable and equitable development promotion strategies

- 4.1 development strategies
 - 4.1.1 background & context
 - 4.1.2 desired state
 - 4.1.3 strategies
 - 4.1.3.1 integrated conservation strategy
 - 4.1.3.1.1 conservation strategy guidelines
 - 4.1.3.1.2 tourism development strategy
 - 4.1.3.1.2.1 tourism development guidelines
 - 4.1.3.1.3 socio-economic development strategy
 - 4.1.3.1.3.1 empowerment strategy in support of emerging landowners
 - 4.1.3.1.3.2 community tourism development strategy
 - 4.1.3.2 alternative income strategy
 - 4.1.3.2.1 strategy
 - 4.1.3.2.2 guidelines
 - 4.2 investment promotion strategy
 - 4.2.1 background & context
 - 4.2.2 desired state
 - 4.2.3 strategies
 - 4.2.3.1 branding and marketing
 - 4.2.3.2 endorsement of the spatial development framework
 - 4.2.3.3 implementation of the spatial development framework
 - 4.2.3.4 toolkit
 - 4.2.3.5 promoting priority focus areas
 - 4.2.3.6 integration
 - 4.2.4 guidelines
 - 4.3 marketing strategy
 - 4.3.1 background & context
 - 4.3.2 desired state
 - 4.3.3 strategies
 - 4.3.3.1 market research programme
 - 4.3.3.2 marketing plan
 - 4.3.3.3 marketing of the destination
 - 4.3.3.4 promotion of investment opportunities
 - 4.3.3.5 promotion and facilitation of partnerships
 - 4.3.3.6 establishment of a partnership programme
 - 4.3.3.7 positioning and branding
 - 4.3.3.8 co-operative marketing
 - 4.3.3.9 eventing
 - 4.3.3.10 communication & information dissemination
 - 4.3.4 guidelines
- 4.4 social benefit strategy
 - 4.4.1 background & context
 - 4.4.2 desired state
 - 4.4.3 strategies
 - 4.4.4 guidelines

5. education, training and research promotion strategies

- 5.1 environmental education
 - 5.1.1 background & context
 - 5.1.2 desired state
 - 5.1.3 strategies
 - 5.1.4 guidelines

- 5.2 skills training
 - 5.2.1 background & context
 - 5.2.2 desired state
 - 5.2.3 strategies
 - 5.2.4 guidelines
 - 5.2.4.1 optimal use of local infrastructure
 - 5.2.4.2 maximum use of local knowledge and networks
 - 5.2.4.3 expedient use of external professional expertise
- 5.3 research
 - 5.3.1 background & context
 - 5.3.2 desired state
 - 5.3.3 strategies
 - 5.3.4 guidelines
- 6. endorsement system development**
 - 6.1 background & context
 - 6.2 desired state
 - 6.3 objectives
 - 6.4 strategies
 - 6.4.1 international endorsement
 - 6.4.2 national endorsement
 - 6.4.3 provincial endorsement
 - 6.4.4 local endorsement
 - 6.4.5 endorsement system for members, stakeholders and service providers
 - 6.5 guidelines
- 7. implementation and monitoring**
 - 7.1 implementation plan
 - 7.1.1 nine point action plan
 - 7.1.1.1 endorsement action plan
 - 7.1.1.1.1 background
 - 7.1.1.1.2 specific objective
 - 7.1.1.1.3 specific standards
 - 7.1.1.1.4 responsible entity
 - 7.1.1.1.5 critical success factors
 - 7.1.1.1.6 recommended start and completion dates
 - 7.1.1.1.7 way forward
 - 7.1.1.1.8 activities
 - 7.1.1.1.9 budget
 - 7.1.1.2 organisational structures action plan
 - 7.1.1.2.1 background
 - 7.1.1.2.2 specific objective
 - 7.1.1.2.3 specific standards
 - 7.1.1.2.4 responsible entity
 - 7.1.1.2.5 critical success factors
 - 7.1.1.2.6 recommended start and completion dates
 - 7.1.1.2.7 way forward
 - 7.1.1.2.8 budget
 - 7.1.1.3 personnel appointments action plan
 - 7.1.1.3.1 background
 - 7.1.1.3.2 specific objective
 - 7.1.1.3.3 specific standards
 - 7.1.1.3.4 responsible entity
 - 7.1.1.3.5 critical success factors
 - 7.1.1.3.6 recommended start and completion dates
 - 7.1.1.3.7 way forward
 - 7.1.1.3.8 budget
 - 7.1.1.4 organisational procedures action plan
 - 7.1.1.4.1 background
 - 7.1.1.4.2 specific objective
 - 7.1.1.4.3 specific standards
 - 7.1.1.4.4 responsible entity
 - 7.1.1.4.5 critical success factors
 - 7.1.1.4.6 recommended start and completion dates
 - 7.1.1.4.7 way forward
 - 7.1.1.4.8 budget
 - 7.1.1.5 funding action plan
 - 7.1.1.5.1 background
 - 7.1.1.5.2 specific objective
 - 7.1.1.5.3 specific standards
 - 7.1.1.5.4 responsible entity
 - 7.1.1.5.5 critical success factors
 - 7.1.1.5.6 recommended start and completion dates
 - 7.1.1.5.7 way forward
 - 7.1.1.5.8 budget
 - 7.1.1.6 incorporation of legal systems action plan
 - 7.1.1.6.1 background
 - 7.1.1.6.2 specific objective
 - 7.1.1.6.3 specific standards
 - 7.1.1.6.4 responsible entity
 - 7.1.1.6.5 critical success factors
 - 7.1.1.6.6 recommended start and completion dates
 - 7.1.1.6.7 way forward
 - 7.1.1.6.8 budget
 - 7.1.1.7 project initiatives action plan
 - 7.1.1.7.1 background
 - 7.1.1.7.2 specific objective
 - 7.1.1.7.3 specific standards
 - 7.1.1.7.4 responsible entity
 - 7.1.1.7.5 critical success factors
 - 7.1.1.7.6 recommended start and completion dates
 - 7.1.1.7.7 budget
 - 7.1.1.8 social benefit programme action plan
 - 7.1.1.8.1 background
 - 7.1.1.8.2 specific objective
 - 7.1.1.8.3 specific standards
 - 7.1.1.8.4 responsible entity
 - 7.1.1.8.5 critical success factors.
 - 7.1.1.8.6 recommended start and completion dates
 - 7.1.1.8.7 way forward
 - 7.1.1.8.8 budget
 - 7.1.1.9 marketing and communication
 - 7.1.1.9.1 background
 - 7.1.1.9.2 specific objectives
 - 7.1.1.9.3 specific standards
 - 7.1.1.9.4 responsible entity
 - 7.1.1.9.5 critical success factors
 - 7.1.1.9.6 activities
 - 7.1.1.9.7 recommended start and completion dates
 - 7.1.1.9.8 budget
 - 7.1.2 implementation programme
 - 7.1.3 implementation budget and potential funding sources
 - 7.1.4 wbr management plan implementation roadmaps
 - 7.1.4.1 management committee roadmap
 - 7.1.4.2 the incorporation into planning instruments
 - 7.2 evaluation and reporting standards and systems
 - 7.2.1 standards
 - 7.2.2 systems

Appendix 10: Exemplary checklist for drafting management plans

- Which plans and strategies address our biosphere reserve already (e.g. previous management plans, provincial plans, or land-use plans)? What can we learn from them?
- Who asks us to draft a management plan, with which legitimacy and urgency? Are we as managers capable of designing a plan? Do the stakeholders, do the communities want a management plan?
- Have we identified the benefits and added value of a management plan?
- What mandate do we have that we as managers draft a management plan? Does the local, the provincial, the national government support it? Do assemblies or parliaments support it?
- What time-frame is available? What deadlines are required by UNESCO, by our government, and/or our communities? Are there external pressures that imply deadlines?
- What financial resources are available for drafting a management plan?
- What financial resources could be made available; from which agencies/donors?
- Do we have the expertise and the time to draft a management plan ourselves? Do we need to outsource the drafting of the plan, partially or fully?
- How can we optimize participation of stakeholders and communities? Given the time available and given the financial resources, how many workshops, consultations, hearings, etc. can we organize? Can we cover the entire area of the biosphere reserve? Can we find cheaper forms of participation to further increase participation? Can we specifically reach out to vulnerable groups such as to optimize their participation, do we have the expertise?
- What should be the fundamental structure of the management plan (vision, objectives, indicators, activities...)? What should be its time-frame (for example such that it coincides with relevant national or provincial planning and budgeting cycles)?
- What “governance” do we need for the process of drafting the plan? A separate steering group?
- Through which formats can we bring in scientific and other relevant knowledge into the process such that we can properly analyse challenges, opportunities, risks, external threats and pressures and develop appropriate scenarios, from which to deduce our vision and objectives?
- How can we ensure creative and visionary thinking in the process – while taking care of adequate consistency with relevant existing strategies and plans?
- Who will do the moderation of workshops, consultations, hearings? External consultants, managers or third parties?

Is the resulting plan relevant for our biosphere reserve? Is it clearly formulated? Is it SMART (Specific, Measurable, Achievable, Realistic and Timely) and result-oriented? Do the objectives and activities match with the proposed budget?

Appendix 11: Sample agenda for a public hearing

In the main text of this Manual, we have introduced “public hearing” as a very open format to acquire input from the community, as a full-fledged form of participation. A very open format does of course not imply, that a hearing should not have a structure or agenda – it should have a formal agenda to enable this kind of open and participatory interaction. Of course, it should not have a political agenda through which you as manager or as some other “high-level” stakeholder impose any content or decision.

It is proposed that the agenda contains the following items:

- Short welcome by a local person with a certain authority, demonstrating that this meeting will be taken seriously (compare cp. the recommendations in section 4.2 on how to inspire open dialogue)
- Explaining briefly the context: Why are we here, what will happen today, what will happen with the follow-up; manage expectations: generating commitment while avoiding unrealistic promise; allow questions for clarification
- Explain the concrete goals of the hearing and the “rules of the hearing”; allow questions for clarification.
- If you choose an entirely open “brainstorming” discussion (e.g. “what are our main challenges?”), a moderator and facilitator, or an external resource person, can still interfere if there are questions, or if there is need for some structuring, such as clarifying whether a contribution is a “challenge” or a “cause” or a “solution”. But avoid any interference which comes too quickly – in general, there is more wisdom in the audience than you think.
- If you choose a structured discussion (e.g. moving from identification of problems to possible solutions), try to avoid any implicit guidance. Let the audience itself provide inputs.
- If a structure is not yet visible towards the second half of a hearing, invite the audience to propose a structuring. You might also propose a prioritization scheme.
- If your hearing is about problems and challenges, always spend considerable time as well in the second half focusing on solutions.
- At some point (not at the beginning, not at the very end), it might be wise to present “hard facts” (compare cp. the recommendations in section 4.2)
- Towards the end, invest sufficient time for a thorough summary. Summarize main results and main progress made. If sensible or necessary, seek the explicit agreement of the participants on this synthesis. Recall decisions made, and actions adopted for implementation. End by communicating 2 to 5 key messages and wish everybody a safe trip home. Thank technical staff, such as translators or catering services. Close the meeting by credibly thanking the audience.

Appendix 12: Survey techniques

Since the 1970ies techniques for cost-effectively doing “quick and dirty” research have been developed. “Rapid Rural Appraisal” claimed to provide better evidence than classic large-scale quantitative social-science survey techniques, since it was believed that people in the field (e.g. managers or researchers) have better situational local knowledge and thus could faster understand the really important aspects, than outsiders or urban professionals. “Rapid Rural Appraisal” was a style of listening research, and a creative combination of iterative methods and verification, including “triangulation” of data from different sources - using two different methods to view the same information, conducted by a multi-disciplinary team. The combination of techniques included e.g. interviews with key informants, group interviews, workshops, participation in activities, mapping, case studies, short simple questionnaires, rapid report writing in the field. “Rapid Rural Appraisal” can be effective, but it remains fundamentally an extractive, externally-driven process. “Participation“ is often claimed but not done, and restricted to provision of information to the researcher.

“Participatory Rural Appraisal”, which emerged in the 1980ies, takes up from Rapid Rural Appraisal and most of all demands a change of perspective of the researcher. If she/he is more the humble, learning outsider and tries to empower stakeholders and communities, then it is “Participatory Rural Appraisal”. A typical result are local graphic representations created by the community that legitimize local knowledge and promote empowerment. The essential question whether an approach really is participatory is: Is there value added to the community or the stakeholders, and do they have intellectual property rights on the product. If the community draws a map because you ask them to, it is “Rapid Rural Appraisal”. If they realize that the map belongs to them, and want to keep it for their own use, then it’s “Participatory Rural Appraisal”. In such participatory settings, “hijacking” of topics has to be avoided as well as overly formalistic approaches, or raising too high expectations. “Participatory Action Research” is very similar, even more geared towards empowerment. [[IISD]]

In this line, you as manager should strongly promote that any form of community research such as household surveys should not be done top-down and only to obtain knowledge, but that it follow a differentiated agenda, including empowerment and also “public relations” for the biosphere reserve.

The format has to respond to the purpose of the survey. There are reasons for doing random samples or for covering entire communities. There are reasons for doing full-fledged scientific studies, or for doing more group-based interview techniques. However: If you ever decide to do a survey of at least minimal ambition, make sure that it is done such that the results are really meaningful and that you respect basic procedural rules. Respect data privacy. Don’t give answers implicitly. Respect “randomness” of samples. Be aware that the timing of a survey can twist the sample (women or men might be off working). Make sure that you use any survey to the extent possible for several purposes (combine data on education, health, fertility, labour market outcomes, savings, assets, shocks, social capital, opinions, attitudes, and perceived well-being). Consider whether you set up a survey such that you note location data to allow easy revisit, and consider whether you should also collect data which you might need for later in-depth analysis, including language, religion, sect, kinship structures, demographic composition of households, gender, migrant status, household livelihood and non-employment income, current and past labour force participation, unemployment, self-employment, occupation, industry and earnings, consumption expenditure, asset ownership (land and animals), borrowing and saving, education, health, disability, well-being and attitudes, membership of networks.

Appendix 13: Focus group discussions

A focus group is a method to achieve rather quickly an impression of what a group of people think about a concept or a problem. The method has a history of many decades. Questions are asked in the setting of a group with up to ten participants who are free to talk with other group members. The facilitator or moderator starts of the conversation, keeps it alive and takes notes. The small number of participants gives everybody the chance to provide a diversity of perceptions. In order to be as representative as possible, the focus group should be heterogenous, e.g. in terms of gender and age (Jungho, 2002).

The facilitator or moderator should use open-ended questions in order to start conversations, not to impose answers on the participants and to keep conversations going (e.g. “What are the biggest challenges in your community?”). In contrast, closed questions impose answers and limit expression – they would be useful if you would like to know, e.g. “How many people in your community agree with a certain measure?” – But this is not sensible for focus groups. As facilitator or moderator, you should start with an open-ended question, listen to the discussion, then follow-up (“How serious is this issue?”, “What is its cause?”), ask whether the meaning of statements is really understood (“What does that mean?”, “Please give me an example.”, “Please tell me more.”) and dig deeper into relevant answers, probing certain beliefs and opinions, asking about causes and consequences. Collect some typical follow-up questions in advance (your “questionnaire” or rather your “guidebook”), but improvise in the discussion itself. Take notes.

Appendix 14: Sample format of an annual report

Most organizations are legally required to submit annual reports, in particular if they receive “institutional” multi-year funding or if they implement multi-year projects. Formulating an annual report is too often considered either an overwhelming task, especially when doing it the first time, or an inconvenient routine of listing activities (often “department” by “department” or “sector” by “sector”).

Actually, you should consider your annual report as a communication exercise. You should structure it in such a way that even a superficial reader is guaranteed to understand that your work makes a difference, that taxpayers’ or donors’ money is well invested. Don’t use abstract language, focus on concrete tangible results. If a certain format is not required: the shorter the better. Even if each of your staff or individual stakeholders would love to see her/his contributions reported – look for other ways of making these contributions recognized – the annual report is for the organization as a whole. This implies that the report should also not be about the director of the team and her/his personal accomplishments. Read the report “from an outsider’s perspective”.

The following is a suggestion:

- If sensible: Message of greeting from the minister or chairperson (1 page)
- Summary of main tangible results and accomplishments, with a focus on benefits for the community (2 pages)
- If sensible: Table of Contents (1 page)
- In short, the context: The biosphere reserve and UNESCO; major international/national trends (e.g. economic development and tourism in the country, ecologic trends, disasters,...) and how they impacted the biosphere reserve (1 or 2 pages)
- Major changes in terms of structure of the biosphere reserve or of policies, compared with the previous year (1 page)
- Contributions of the biosphere reserve towards implementing international and/or national policies (1 or 2 pages)
- List of activities and their results, in particular activities with and for communities and stakeholders, maybe with an explanation why these activities were chosen (prioritization)
- Public relations and their effect (how well known is the biosphere reserve among your communities, among tourists, among policy makers, etc.) (1 or 2 pages)
- Financial issues, if applicable, including revenues and expenses, including graphical charts
- Up-to-date organizational chart, including staff table

If you have bad news to communicate, address it directly, but surrounded by good news. You might address it directly in the Message of greeting or Summary. As an alternative to printed multi-page documents, if legally allowed, you might consider PDF or website only.

Appendix 15: Legal texts on biosphere reserves

Some 20 years ago, [[BONNIN2009-2]] have proposed a model law on biosphere reserves. The actual situation today is very diverse. Some countries refer to biosphere reserves in their laws, without any further specification. Others devote one article of an overarching nature conservation law to this particular scheme. Article 25 of the German nature conservation law is a typical example (Germany is a federal state, the federal states having the authority on nature conservation issues):

„Biosphere reserves

(1) Biosphere reserves are areas that are to be protected and developed in a consistent way and that

1. are large and are typical representatives of certain landscape types,
2. fulfil the requirements for nature conservation areas in essential parts of their territory, and the requirements for landscape protection areas throughout the greater part of the rest of their territory,
3. serve the primary purpose of conserving, developing or restoring landscapes shaped by traditional, diverse forms of use, along with their species and biotope diversity as evolved over time, including wild varieties and formerly cultivated varieties of commercially used or usable animal and plant species, and
4. illustrate ways of developing and testing forms of economic activity that are especially conserving of natural resources.

(2) To the extent permitted by their protection purpose, biosphere reserves also serve purposes of research, of observation of nature and landscape and of education for sustainable development.

(3) Biosphere reserves are to be developed via a system of core zones, maintenance zones and development zones, with due regard for the exceptions required as a result of biospheres’ large size and inclusion of populated areas, and are to be protected in the same manner as nature conservation areas or landscape protection areas.

(4) Biosphere reserves may also be referred to as „biosphere areas“ or „biosphere regions“.

In other cases, an individual law is passed to set up one specific biosphere reserve. [[ELBAKIDZE]] compared the legal frameworks of biosphere reserves of Sweden and Ukraine.

Appendix 16: Main messages of the five workshops leading to this Manual

18 – 20 February 2013, Mombasa, Kenya

26 experts from 13 countries from Africa and Germany agreed that the target group of the Manual should be mainly biosphere reserve managers and key stakeholders – but at the same time taking into account specifically the perspectives of all relevant stakeholder groups and also being relevant to the community at large. The experts unanimously agreed that the Manual must be targeted at a non-academic audience and that the style of presentation must be lively and readable. There was broad agreement as well on the most important issues to be dealt with at the thematic level, which will be illustrated by case studies from Africa to be selected according to replicability. Two of the most important issues must be that biosphere reserve management must become much more inclusive and the “added value” of biosphere reserves must be clearly elaborated, vis-à-vis other types of protected areas.

13 – 16 May 2014, Accra, Ghana

30 experts from 9 countries from Africa and Germany discussed almost all sections of the draft Manual in great detail and suggested considerable changes in the structure and the contents. In particular, it was observed that the current draft seemed more like a textbook than a Manual. Its target-group orientation, its visual attractiveness and usability are in need of improvement. The participants welcomed however, that the language of the draft already was quite appropriate for its non-academic target-group. Several issues were suggested to be added, while other topics should be presented in a more condensed and less duplicative way. More illustrative case studies from Africa would be needed. The topic of conflict management needs to be addressed in a more balanced fashion, differentiating between internal conflicts and external pressures.

29 – 31 July 2014, Dar es Salaam, Tanzania

32 experts from 8 countries from Africa and Germany, after extensive discussions, proposed the following additions, among many other items: how to reduce human-wildlife conflicts and how to compensate unavoidable losses, how to better differentiate between direct and indirect benefit-sharing, how to ensure non-donor funding, how to address invasive species, reasons for conserving nature, rezonations due to climate change, the approval process of a Management Plan and whether it should or shouldn't be an integrated plan, how to address differing zonations due to differing designations, as well as monitoring and evaluation as a separate sub-section of the Manual. The annexes should contain a glossary, the key messages as well as the participants' lists of the four workshops. As in the previous workshop in Accra, it was again suggested to produce a very short “field version” of the Manual. More case studies from Africa would be needed. Participants agreed to share more case studies and examples of management plans.

6 – 10 October 2014, Tunis, Tunisia

26 experts from 10 countries from Africa and Germany thoroughly discussed the MAB exit strategy, including from the perspective of possibly focussing only maintaining viable biosphere reserves in Africa – and revising all existing biosphere reserves altogether, in terms of sustainable management and zonation. Among the most salient points discussed were: how to integrate different management schemes for the different zones; how to reconceptualise sustainable development and protected areas in terms of locally understood ideas; how to legitimize, also financially, the preparation of a management plan ahead of the designation of a site as a biosphere reserve; how to deal with mining; how to address population growth; how to address resistance to the biosphere reserve concept from a small but mighty group such as land-owners; how to overcome the impression that a protected area has impoverished a community when the opposite is the case.

3 – 7 November 2014, Tunis, Tunisia

17 experts from 8 countries from Africa and Germany, discussed the entire Manual and added only some detail. Among the more important items were the following: the definition of “conflict” and “conflict solution”; how to translate management plans into annual plans; how to address rezonation as an opportunity; better reflecting that biosphere reserves have residents, not “riparian communities”; how to effectively deal with transhumance/pastoralism, including the participation of pastoralists; how to bring together different sector ministries such as forestry and nature conservation; how to create legitimacy for buffer zones decreed in colonial times only; how to convince local mayors that argue for unsustainable progress; how to choose “proper” community representatives; whether to raise entrance fees; how to differentiate PES with the state as recipient and local communities as recipient; where and how to store research and monitoring data; how to address organized crime. It was also proposed that UNESCO should better enable direct communication with individual biosphere reserves, and that UNESCO formulates a “standard protocol for governing research in biosphere reserves”.

Appendix 17: List of participants of the five workshops

Name	Institution
Mr Abadir Abagisa ABAJOBIR	Kafa Biosphere Reserve, Ethiopia
Mr Nassirou ABDOU	Air et Ténéré Biosphere Reserve, Niger
Ms Florence AGYEI-MARTEY	Environmental Protection Agency, Ghana
Mr Dickson Yaw AGYEMAN	Songor Biosphere Reserve, Ghana

Name	Institution
Mr Olukayode AKINYEMI	Omo Biosphere Reserve, Nigeria
Prof Gabriel AMEKA	University of Ghana, Ghana
Prof Dr Wafaa AMER	Author of the Management Manual, Cairo University, Egypt
Mr William AMONOO	UNESCO Office Accra, Ghana
Mr Ebenezer APPAH SAMPONG	Environmental Protection Agency, Ghana
Mr Apollonius ASARE	Ghana National Commission for UNESCO
Ms Sheila ASHONG	Author of the Management Manual, AfriMAB Secretariat, Ghana
Prof William ASOMANIN	University of Ghana
Mr Tchagou AWITAZI	Oti-Keran/Oti-Mandouri Biosphere Reserve, Togo
Mr Slimane AZIKI	Arganeraie Biosphere Reserve, Morocco
Mr Rubert BABER	Waterberg Biosphere Reserve, South Africa
Mr Alkaly BANGOURA	Massif du Ziama Biosphere Reserve, Guinea
Mr Bonaventure T. BAYA	Chairman National MAB Committee & Director General NEMC, Tanzania
Ms Nabiha BEN M'BAREK	Ichkeul Biosphere Reserve, Environmental protection agency, Tunisia
M. El Moncef BENDJEDID	El Kala Biosphere Reserve, Algeria
Mr Dereje Jenbere BEYENE	Yayu Biosphere Reserve, Ethiopia
Mr Jocelyn BEZARA	Mananara Nord Biosphere Reserve, Madagascar
Dr Kamukasa Adonia BINTOORA	Mount Elgon Biosphere Reserve, Uganda
Mr Kaïs BLOUZA	Director, Environmental Protection Agency, Tunisia
Mr Carl BRUOSSOW	Mount Mulanje Biosphere Reserve, Malawi
Mr Wilson BUSIENEI	National Environment Management Authority, Kenya
Mr Ali Shebwana BWANA	Kiunga Biosphere Reserve, Kenya
Mr Florian CARIUS	Federal Agency for Nature Conservation, Germany
Ms Nancy CHEGE	UNDP-GEF SGP, National coordinator, Kenya
Mr Cécé Papa CONDE	Monts Nimba Biosphere Reserve, Guinea
Mr Saidou CONDE	Haut Niger Biosphere Reserve, Guinea
Mr Ramdane DAHEL	Chr�a Biosphere Reserve, Algeria
Mr Adisalem DAKITO	Sheka Biosphere Reserve, Ethiopia
Mr Ibrahima DIALLO	Badiar Biosphere Reserve, Guinea
Mr Abdoulaye DIARRASSOUBA	Ta� Biosphere Reserve, C�te d'Ivoire
Mr Ibrahima DIOP	Delta du Fleuve S�n�gal Biosphere Reserve, Senegal
Mr Modou DIOUF	Samba Di Biosphere Reserve a, Senegal
Mr Nutefe DRA	Environmental Protection Agency, Ghana
Ms Muanalo DYER	Vhembe Biosphere Reserve, South Africa
Mr Ekramy EL-ABASSERY	Wadi Allaqi Biosphere Reserve, Egypt
Mr Driss FASSI	Institut Agronomique et V�t�rinaire Hassan, ArabMAB Bureau, Morocco
Mr Carl FIATI	Environmental Protection Agency, Ghana
Mr Yasser Galal EL SAMAN	Omayed Biosphere Reserve, Egypt
Dr Alan GARDINER	Kruger To Canyons Biosphere Reserve, South Africa
Ms Peace GBECKOR-KOVE	Environmental Protection Agency, Ghana
Ms Aradhna GOURY	Macchabee / Bel Ombre, Mauritius
Mr Nelson GUMA	Queen Elizabeth Biosphere Reserve, Uganda
Mr Mark HEISTEIN	Cape Winelands Biosphere Reserve, South Africa
Mr Albert INGATI	Kenya National Commission for UNESCO
Mr Raymond ISAIA	Sahamalaza Biosphere Reserve, Madagascar
Mr Abdalla Khalifa Haroun ISHAG	Dinder Biosphere Reserve, Sudan
Mr Ousmane KANE	Niokolo-Koba Biosphere Reserve, Senegal
Mr Justin Kitsao KENGA	Malindi-Watamu Biosphere Reserve, Kenya
Mr Tayeb KERRIS	Gouraya Biosphere Reserve, Algeria
Ms Amina KIBOLA	National Environment Management Council, Tanzania
Ms Mwanaidi KIJAZI	East Usambara Biosphere Reserve, Tanzania
Dr Moshi KIMIZI	National Commission for UNESCO, Tanzania
H.E. Mr Egon KOCHANKE	German Embassy, Tanzania
Mr Yao Roger KOUADIO	Como� Biosphere Reserve, C�te d'Ivoire
Mr M�ryas D�gb�mabou KOUTON	Pendjari Biosphere Reserve, Benin
Mr Noman Abdl Kirrem KPOORE	Radom Biosphere Reserve, Sudan
Mr Janvier KWIZERA	Volcans Biosphere Reserve, Rwanda
Dr Mostafa LAMRANI-ALAOUI	Intercontinental Biosphere Reserve of the Mediterranean, Morocco
MS Sigrun LANGE	ECO.nslt (previously E.C.O. Germany), Germany
Mr Titus LEOKOE	Mount Kulal Biosphere Reserve, Kenya

Name	Institution
Mr Kwilasa LUSHANGA	National Environment Management Council, Tanzania
Prof Christopher MAGADZA	Zimbabwe Academy of Science, Middle Zambezi Biosphere Reserve, ex AfriMAB Bureau
Dr Paul Mutua MAKENZI	Egerton University, Chair Kenyan MAB Committee, AfriMAB Bureau (ex Chairman)
Ms Claudia MARGGRAF	German Commission for UNESCO
Mr Ben Naibei MASIBO	Mount Elgon Biosphere Reserve, Kenya
Ms Estrela MATILDE	Island of Principe Biosphere Reserve, Sao Tomé and Principé
Ms Chimwemwe MAWAYA	Lake Chilwa Wetland Biosphere Reserve, Malawi
Mr Jean Paul Kevin MBAMBA MBAMBA	Benoué Biosphere Reserve, Cameroon
Dr Mohamed Elhacene MEKIYOUN	Delta du Fleuve Sénégal Biosphere Reserve, Mauritania
Mr Achile MENGAMENYA	Dja Biosphere Reserve, Cameroon
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Mr James MWANG'OMBE MWAMODENYI	Head Biodiversity Management, Forest Service, Kenya
Mr Joshua MWANKUNDA	Ngorongoro-Serengeti Biosphere Reserve, Tanzania
Ms Angela MWATUJOBE	National Environment Management Council, Tanzania
Mr Ali A. MWINYI	Jozani Chwaka Bay National Park (prospective BR), Tanzania
Mr André NDJIDDA	Waza Biosphere Reserve, Cameroon
Mr Assane NDOYE	Delta du Saloum Biosphere reserve, Senegal
Dr Daouda NGOM	University of Ziguinchor, Senegal, former MAB focal point
Mr Pierre NGOUEMBE	Odzala Kokuoua Biosphere Reserve, Congo
Mr Bourama NIAGATÈ	Boucle du Baoulé Biosphere reserve, Mali
Mr Domician NJAU	Lake Manyara Biosphere Reserve, Tanzania
Dr James NJOGU	Head of Conventions, Biotechn. & Inf.Mgmt, Kenya Wildlife Service
Mr Laurent NSENGA	Luki Biosphere Reserve , AfriMAB Bureau until 2013, Dem. Rep. Congo
Ms Beatrice Yawingi NTAMBI	Saadani National Park (prospective BR), Tanzania
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Mr Youssouf SANOU	Biosphere reserve Région du W, le Burkina Faso
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Appendix 18: The authors

Prof Dr Wafaa Mahrous AMER

is Professor of Plant Taxonomy and Flora at the Faculty of Science, Cairo University, since 2005, working there previously since 1982 and receiving her MSc and PhD. In parallel, for six years until 2014, she has been Director of the Scientific Heritage Center, Cairo University, and vice president of the Arab Federation for Wildlife Protection, Arab League. She has wide experience both as academic biodiversity expert with more than 60 scientific papers published and more than 20 MSc and PhD theses supervised, as well as working in field projects and with professional associations. She has worked for the Egyptian Environmental Ministry, for UN organizations and the League of Arab States. She has prepared nominations files for three protected areas in Egypt, participated in 35 Environmental Impact Assessments, and is member of the IUCN wild crop relative group. She has received several awards in the field of environmental studies.

Sheila ASHONG

is Secretary of AfriMAB since September 2013. She is also the Secretary of the MAB National Committee of Ghana since 2005. She works at the Environmental Protection Agency of Ghana since 2004, since 2012 as Principal Programme Officer. She had studied Natural Resource Management at the Kwame Nkrumah University of Science and Technology, Kumasi, and then acquired an MSc in fisheries management from the University of Tromsø, Norway, in 2003. Her scientific interests include Environmental Impact Assessment, biodiversity and aquatic ecosystem management. She has been instrumental in achieving the successful designation by UNESCO of the Sogor biosphere reserve and is currently engaged in the nomination of Lake Bosomtwe as a biosphere reserve.



Dr Djafarou TIOMOKO ALI

is focal point of the MAB National Committee of Benin. From 1999 until 2011, he has been the director of the Pendjari biosphere reserve; in this position he has implemented a multi-donor project financed by Germany, France and GEF, as well as a UNESCO/UNEP regional capacity building project. In Pendjari, he has initiated and implemented a co-management scheme, a communication strategy and also a BIOTA research and education project with Burkina Faso, Côte d'Ivoire and Germany. He has worked repeatedly as trainer. He has acquired his MSc in 1983 from the Forestry and Technical Academy of Leningrad, with subsequent studies at the University of Abomey Calavi in Benin, where he was also awarded his PhD in 2014.

Coordinator of the project: Dr Lutz MÖLLER

is Deputy Secretary-General of the German Commission for UNESCO. Since 2004 he has been coordinating the division on sciences at the German Commission for UNESCO, among which MAB is of particular importance. He has been the coordinator of the global conference on MAB's 40th anniversary in 2011, as well as of more than 10 international conferences or workshops on MAB; he has edited some 10 publications on MAB in German, English and French, including the two most recent editions of the world map of biosphere reserves. In 2014, he also coordinated the inaugural session of the Scientific Advisory Board of the UN Secretary-General.



UNESCO biosphere reserves balance nature conservation with socio-economic development and poverty alleviation, in particular by engaging with local communities and using a knowledge-based approach. Biosphere reserves are model regions for sustainable development, designated by UNESCO according to binding global criteria. At least every 10 years, biosphere reserves have to conduct an obligatory periodic review. Through this system of designation and evaluation, they can be developed into very stable and globally visible institutions.

This Manual gives guidance to managers, their key partners and stakeholders, with a focus on the theme of why and how to work with local communities. This Manual focuses on practical aspects such as how to address and manage conflicts, how to share benefits or how to elaborate a management plan. It presents options for legal and administrative frameworks and how to organize consultations and hearings.

Managers can use this Manual to introduce new staff to the concept and the work in a UNESCO biosphere reserve. They can also use it to make their work better understood by stakeholders and superiors, politicians and other decision-makers. The Manual also provides arguments for potential donors and other supporters and decision-makers.

This Manual has been elaborated by African experts and managers of UNESCO biosphere reserves in a series of five workshops 2013/2014. The authors are Professor Dr Wafaa Amer, Sheila Ashong and Dr Djafarou Tiomoko. This Manual is edited by the German Commission for UNESCO in collaboration with AfriMAB, ArabMAB and the UNESCO MAB Secretariat. It is supported by the German Federal Agency for Nature Conservation, with funds from the German Federal Ministry for the Environment, Nature Conservation, Building, and Nuclear Safety.