TECHNICAL GUIDELINES FOR BIOSPHERE RESERVES



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Man and the Biosphere Programme

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The Technical Guidelines are a living document, aiming to be revised to reflect the evolution of the Man and Biosphere Programme.

The Technical Guidelines for Biosphere Reserves (in English and in French) and other documents and information concerning the Man and Biosphere Programme are available from the Programme's Secretariat :

UNESCO
Natural Sciences Sector
Secretariat of the Man and Biosphere Programme
7, place de Fontenoy
75352 Paris 07 SP
France

https://en.unesco.org/mab

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TSG Governance: Chair, Mr Martin Price, United Kingdom. Rapporteur, Ms Mireille Jardin, France. Members, Ms Mamounata Belem Ouedraogo, Burkina Faso; Ms Barbara Engels, Germany; Mr Ahua René Koffi, Ivory Coast; Mr Larry McDermott, Canada; Mr Vongani Nocilus Maringa, South Africa; Mr Juan Pablo Prias, Colombia; Mr Tetsu Sato, Japan.

TSG Policy Management and Business Plans: Chair Mr Lütz Moller, Germany. Rapporteur, Ms Ruida Pool-Stanvliet, South Africa. Members: Mr Rodrigo Antonio Braga Moraes Victor, Brazil; Mr Mikhail Brynskikh, Federation of Russia; Mr Jervis Good, Ireland; Ms Eun-Young Kim, Republic of Korea; Ms Graciela Pien, Argentina; Ms Natallia Rybianets, Belarus; Ms Johanna Thomlinson, Australia.

TSG Zonation: Chair Mr Reinaldo Francisco Ferreira Lourival, Brazil. Rapporteur, Ms Catherine Cibien, France. Members: Mr Benny Robert Bobowski, United States of America; Mr Doo-Soon Cho, Republic of Korea; Mr Purwanto Dea, Indonesia; Mr Ollo Theophile Dibloni, Burkina Faso; Ms Agathe Die, Ivory Coast; Ms Kah Martine Gauze Touao, Ivory Coast; Ms Zuzana Guziova, Slovakia; Mr Daouda Ngom, Senegal; Mr Johannes Pruter, Germany.

TSG Data Management and Monitoring: Chair Mr Sergio Leandro, Portugal. Rapporteur Ms Beth Kaplin, Rwanda. Members: Mr Shadrach Olufemi Akindele, Nigeria; Mr Cristofer Gonzales Baca, Mexico; Mr Sergio Augusto Domingues, Brazil; Ms Kirsten Gallo, United States of America; Mr Gabriel Hirlemann, France; Mr Augustine Isichei, Nigeria; Ms Koco Marie Jeanne Kanga, Ivory Coast; Mr Ze Luo, China; Mr Adama Oueda, Burkina Faso; Ms Maria Pia Gallina Tessaro, Mexico; Ms Tatyana Yashina, Federation of Russia.

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Members of the International Advisory Committee for Biosphere Reserves: Ms Sheila Nana Akua Ashong, Ghana; Ms Vladimira Fabriciusova, Slovakia; Mr Driss Fassi, Morocco; Mr Roman Jashenko, Kazakhstan; Mr Christophe Le Page, France; Mr Clayton Lino, Brazil; Ms Salwa Mansour Abdel Hameed, Sudan; Ms Graciela Pien, Argentina; Ms Lia Rosenberg, Estonia; Ms Suk-Kyung Shim, Republic of Korea; Ms Marja Spierenburg, The Netherlands; Mr Djafarou Tiomoko, Benin.

Members of the ICC MAB Bureau: Chair: Ms Enny Sudarmonowati, Indonesia. Vice-chairs: Mr Adepoju Olatunde Adeshola, Nigeria; Mr Toomas Kokovkin, Estonia; Ms Johanna MacTaggart, Sweden; Mr Carlos Madariaga, Honduras; Ms Salwa Mansour Abdel Hameed, Sudan.

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List of the 70 experts members of the working group on the Technical Guidelines for Biosphere Reserves

As part of the Governance working group: Ms Mamounata Belem Ouedraogo, Burkina Faso; Mr Pavlo Cherinko, Ukraine; Ms Vladimira Fabriciusova, Slovakia; Ms Barbara Engels, Germany; Ms Crisina Irimia; Romania; Ms Mireille Jardin, France; Mr Ahua René Koffi, Ivory Coast; Mr Lazaro Marquez Llauger, Cuba; Mr Larry McDermott, Canada; Mr Vongani Nocilus Maringa, South Africa; Mr Syed Mahmood Nasir, Pakistan; Mr Juan Pablo Prias, Colombia; Mr Martin Price, United Kingdom; Mr Joao Lucilio Ruegger de Albuquerque, Brazil; Mr Sergio Guevara Sada, Mexico; Mr Tetsu Sato, Japan; Mr Wekesa Boniface Wanyama, Kenya.

As part of the Policy Management and Business Plans working group: Mr Frédéric Bioret, France; Mr Rodrigo Antonio Braga Moraes Victor, Brazil; Mr Mikhail Brynskikh, Federation of Russia; Mr Driss Fassi, Morocco; Ms Maritza Garcia, Cuba; Mr Jervis Good, Ireland; Mr Lamoussa Hebie, Burkina Faso; Ms Eun-Young Kim, Republic of Korea; Ms N'dri Marie-Thérèse Kouame, Ivory Coast; Mr Jean Philippe Messier, Canada; Mr Lütz Moller, Germany; Mr Antoine Njiang, Cameroon; Mr Donat Nsabimana, Rwanda; Ms Graciela Pien, Argentina; Ms Ruida Pool-Stanvliet, South Africa; Ms Natallia Rybianets, Belarus; Mr Avelino Suarez Rodriguez, Cuba; Mr Carlos Mario Tamayo Saldarriaga, Colombia; Ms Johanna Thomlinson, Australia; Mr Kentaro Yoshida, Japan.

As part of the Zonation working group: Mr Zoran Acimov, Romania; Mr Benny Robert Bobowski, United States of America; Mr Doo-Soon Cho, Republic of Korea; Mr Purwanto Dea, Indonesia; Mr Nouhou Diaby, Senegal; Mr Ollo Theophile Dibloni, Burkina Faso; Ms Agathe Die, Ivory Coast; Mr Reinaldo Francisco Ferreira Lourival, Brazil; Mr Fidel Hernandez Figueroa, Cuba; Ms Kah Martine Gauze Touao, Ivory Coast; Ms Zuzana Guziova, Slovakia; Mr Daouda Ngom, Senegal; Mr Abgoola Okedeji Okeyoyin, Nigeria; Ms Rubiela Pena Velasco, Colombia; Mr Johannes Pruter, Germany; Mr Samuel Christian Tsakem, Cameroon.

As part of the Data Management and Monitoring working group: Mr Shadrach Olufemi Akindele, Nigeria; Mr Jaro Arero, Kenya; Mr Cristofer Gonzales Baca, Mexico; Mr Sergio Augusto Domingues, Brazil; Ms Kirsten Gallo, United States of America; Mr Salah Hakim, Sudan; Mr Gabriel Hirlemann, France; Mr Augustine Isichei, Nigeria; Ms Koco Marie Jeanne Kanga, Ivory Coast; Ms Beth Kaplin, Rwanda; Mr Sergio Leandro, Portugal; Mr Ze Luo, China; Mr Adama Oueda, Burkina Faso; Ms Jenni Roche, Ireland; Ms Maria Pia Gallina Tessaro, Mexico; Ms Tatyana Yashina, Federation of Russia.

Acronyms and abbreviations

AfriMAB	Sub-Saharan Africa MAB Network
ArabMAB	Arab States MAB Network
ASPnet	UNESCO Associated Schools Network
BR	Biosphere Reserve
CaeMAB	Continental Aquatic Ecosystems MAB Network
CARE	Complementarity, Adequacy, Representation and Efficiency
CAS	Chinese Academy of Sciences
CBM	Swedish Biodiversity Centre
CBRA	Canadian Biosphere Reserve Association
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CREMA	Community Resource Management
CUE	Commission for University Education
EABRN	East Asian Biosphere Reserve Network
EAP	East-Asia-Pacific
EMAN	Ecological Monitoring and Assessment Network
EOLSS	Encyclopedia of Life Support Systems
EPA	Environment Protection Authority
ERAIFT	Regional Post-graduate Training School on Integrated Management of Tropical Forests and Lands
ESD	Education for Sustainable Development
EU	European Union
EuroMAB	Europe and North America MAB Network
GA	Great Apes
GCBR	Gouritz Cluster Biosphere Reserve
GCED	Global Citizenship Education
GEBR	Green Economy in Biosphere Reserves
GEF	Global Environment Facility
GIS	Geographic Information System
GIZ	German Company for International Cooperation
GLOCHAMORE	Global Change in Mountain Regions
GPS	Global Positioning System
HIST	International Centre on Space Technologies for Natural and Cultural Heritages
HNPT	Hustai National Park Trust
IACBR	International Advisory Committee for Biosphere Reserves
IBRM	Intercontinental Biosphere Reserve of the Mediterranean
ICCAR	International Coalition of Inclusive and Sustainable Cities
ICL	International Consortium on Landslides
IHP	Intergovernmental Hydrological Programme

ILTER	International Long-term Ecological Research Network
IMFN	International Model Forest Network
INFOCOOP	Institute for Cooperative Development
IRCK	International Research Centre on Karst
IT	Information Technology
IUCN	International Union for Conservation of Nature
KGUN	Kenya Green University Network
KOICA	Korea International Cooperation Agency
KU	Kyoto University
LMBR	Lower Morava Biosphere Reserve
LTER	Long-term Ecological Research
LTSER	Long-term Socio-Ecological Research
MAB	Man and the Biosphere
MAB-ICC	International Coordinating Council for the MAB Programme
MABR	Mata Atlântica Biosphere Reserve
MABR	Mount Arrowsmith Biosphere Region
MABRRI	Mount Arrowsmith Biosphere Region Research Institute
MARXAN	Marine Spatially Explicit Annealing
MIDA	Multi-Internationally Designated Area
NEMA	National Environment Management Authority
NGO	Non-Governmental organization
NordMAB	Nordic countries MAB Network
ODA	Official Development Assistance
OUV	Outstanding Universal Value
PA	Protected Area
PacMAB	Pacific Biosphere Reserve Network
RAMSAR	Convention on Wetlands of International Importance, especially as Waterfowl Habitat
REDBIOS	East Atlantic Biosphere Reserve Network
RIS	Ramsar Information Sheets
RSCN	Royal Society for the Conservation of Nature
SACAM	South and Central Asia MAB Network
SBR	Shouf Biosphere Reserve
SD	Sustainable Development
SeaBRnet	Southeast Asian Biosphere Reserve Network
SDGs	Sustainable Development Goals
SUMAMAD	Sustainable Management of Marginal Drylands Project
TBR	Transboundary Biosphere Reserve
TGBR	ITechnical guidelines for Biosphere Reserves
TGBR-WG	TGBR-working group

TSG's	Thematic Subgroups
TVET	Technical and Vocational Education and Training
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNITWIN	University Twinning and Networking Programme
VIU	Vancouver Island University
WHS	World Heritage Site
WNBR	World Network of Biosphere Reserves
WWAP	World Water Assessment Programme
WWDR	World Water Development Report
ZIIS	Institute of Earthquake Engineering and Engineering Seismology

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INTRODUCTION

Background and purpose of the Technical Guidelines for Biosphere Reserves (TGBR)

1. Biosphere reserves worldwide operate according to the Statutory Framework of the World Network of Biosphere Reserves (WNBR). This key document embraces the philosophy of the Man and the Biosphere (MAB) Programme and the concept of biosphere reserves. One of its indisputable assets is its flexibility which allows the biosphere concept to be applied worldwide in a broad variety of contexts.

2. Since the adoption of the Statutory Framework in 1995, the WNBR has continued to grow. As the network expands, new challenges emerge giving rise to new technical and practical questions. At the same time, many global institutions are facing increasing pressures to showcase quality management. To address these challenges, in 2017 the International Coordinating Council of the MAB Programme (MAB-ICC) introduced the 'Process of excellence and enhancement of the WNBR as well as quality improvement of all members of the World Network'.

3. Many newly proposed sites, as well as existing biosphere reserves during the periodic review process, have confronted issues that could not be clearly resolved by the Statutory Framework. These matters usually relate to functions (Article 3), criteria (Article 4), the nomination of new biosphere reserves (Article 5), periodic review reports (Article 9), and the management of biosphere reserves already part of the WNBR and its regional and thematic subnetworks (Article 8). Furthermore, implementation of the current MAB Strategy (2015-2025) and the Lima Action Plan (2016-2025) requires detailed guidelines beyond those available in the Statutory Framework. This is also the case for future all Strategies and Action Plans.

4. In order to provide additional support to all WNBR stakeholders (or actors), the MAB-ICC at its 27th session (2017) decided to develop a set of Technical Guidelines for Biosphere Reserves (hereafter referred to as TGBR). The TGBR should enable Member States and other MAB stakeholders to address the various practical challenges and technical questions encountered in the implementation of articles of the Statutory Framework, based on cutting-edge scientific knowledge, state-of-the-art practical expertise and political consensus.

5. The MAB-ICC approved the format of the Technical Guidelines at its 29th session. The TGBR is an open access, web-based, living document compiling contributions and experiences from the MAB community on specific items, including the nomination, revision and review of a biosphere reserve, and the following priority areas: size and zonation; governance; plans, policies and strategies for biosphere reserves; monitoring and evaluation in biosphere reserves; and networks and partnerships to support biosphere reserves. Over time, the TGBR will expand to include additional themes for which guidance is required (e.g. local economic activities, templates with regard to reporting, collaboration with the private sector, participation, etc.) The MAB-ICC agreed to establish thematic working groups, and their contributions constitute the basis of this document. A significant amount of valuable information was also drawn from the Management Manual for UNESCO Biosphere Reserves in Africa (2015); the preparation of which was supported by the German Commission for UNESCO.



6. The purpose of the TGBR is to support the implementation of the articles of the Statutory Framework and subsequent Strategies and Action Plans. It is based on the practical experience of the MAB Programme. As the TGBR cannot respond to all possible questions and needs, its design is purposefully flexible and will be periodically updated. It is also designed to be used in conjunction with the TGBR support webpage, where topics can be shared and discussed in greater detail.

7. The primary target group of this document is stakeholders[1] of existing and prospective biosphere reserves. The term 'stakeholder' is used in this document for reasons of simplicity, as the individuals and groups concerned with, and with a stake in, biosphere reserves (thereafter referred to as BR) are as diverse as the BR themselves. They include all right holders at all levels of society and may have various levels of affiliation to the MAB Programme. It would be impossible to explicitly name all relevant groups here, but they encompass landowners, land users, Indigenous peoples and local communities, civil society organizations, National MAB Committees, biosphere reserve managers, governmental authorities at all levels, private companies, and intergovernmental and international organizations.

[1] The term stakeholders typically refers to both rights holders (an array of rights and an array of holders of such rights), as well as certain interested parties who should be taken into consideration to varying degrees when considering governance and decision-making.

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8. It is important to consider several points before deciding whether to prepare a proposal for a new biosphere reserve. These considerations are linked to specificities of the MAB Programme and its biosphere reserves and help to determine whether to start the process.

1.1. Considerations preceding the nomination

a) Local support and vision

9. A biosphere reserve is a tool to advance the well-being of human beings and nature; it is not merely a title or a synonym for nature conservation. A biosphere reserve should benefit people as well as the environment. Local communities and other key actors should therefore have a clear understanding of why they want to create a biosphere reserve, how they will utilize the biosphere reserve concept in their everyday lives, how they will benefit, and how they will eventually contribute to the goals of the MAB Programme and UNESCO. Local communities especially should have a say in the process, notably regarding the choice to designate their area a reserve and what they aim to achieve once the site has been designated. The term 'local communities' refers not only to stakeholders such as farmers' representatives, local politicians, chiefs and so on – it includes everybody living and working in the territory. Biosphere reserves are sometimes created through a top-down process, but bottom-up processes are preferred. In some cases, a combination of top-down and bottom-up approaches is needed to secure buy-in from a wide range of institutions, as well as to create opportunities for sustainability innovation in terms of governance. Crucially, all stakeholders should participate collaboratively in drafting, approving and supporting the vision for the biosphere reserve.

b) Location

10. Biosphere reserves are areas subject to special recognition and (at least partially) some form(s) of legal protection. However, areas strictly devoted to conservation objectives within a biosphere reserve should not dominate the territory, as the goals, activities and mission of biosphere reserves differ and extend beyond those of regular protected areas (e.g. IUCN Categories I to IV). The area and location need to allow for the implementation of all three functions of biosphere reserves (see below, under Activities). Having a biosphere reserve that is (considerably) larger than the protected areas – and which includes places where people live, sometimes in urban centres – will also avoid confusion among various protection statuses and the biosphere reserve.

11. A biosphere reserve must be 'representative of their biogeographic region and of significance for biodiversity'. Representativity does not necessarily imply that the natural or cultural landscape of the region has an 'outstanding universal value', as defined under the World Heritage Convention. The criterion of representativity aims to avoid biosphere reserves that are too similar, and in turn, to ensure that the WNBR represents all biogeographic regions of the world. Still, biosphere reserves need to be important or "significant" sites, based on their biodiversity value – such value must be present at least in the core area(s). Therefore, both representativity and biodiversity significance are starting points for the work of a biosphere reserve: key factors in the decision as to whether it can be designated by UNESCO. It is

possible that, when the core area includes significant biodiversity, the landscapes of the other zones are “ordinary” – yet they will be a focus of the work of the biosphere reserve in order to make a positive difference, focusing on specific on-site challenges and their solutions in a sustainable and participative manner, and becoming a learning site for sustainable development and a model for other places, with great impact potential.

c) Governance

12. The biosphere reserve governance structure should be effective, efficient and, wherever possible, flexible, democratic and inclusive of the various stakeholders (communities, entrepreneurs, governmental authorities, non-governmental organizations (NGOs), universities, schools, etc.). The structure should, furthermore, guarantee their involvement in decision-making processes, and an equal position in management and even distribution of governance powers across the biosphere reserve. If conditions allow, all biosphere reserve governance participants should be equal in their voice, regardless of their position in the society.

d) Funding

13. Any biosphere reserve needs funding in order to effectively implement sustainable development. The financial sources in question should be diverse to the extent possible, ensure a reliable core budget over the long term, and be identified prior to the nomination process. As well as safeguarding the future of the biosphere reserve, long-term core funding should guarantee the salary of full-time professionals and provide adequate means for critical meetings, especially those involving stakeholders. Projects as well as core funding can be funded, at least in part, through a mix of support from participating stakeholders, tourism levies, marketing, international and local partners, governmental support – as mentioned in the Lima Action Plan (e.g. Goal A5, Action A5.3) – and international sources (e.g. EU funding, bilateral aid, etc.)

e) Activities

14. Biosphere reserves focus on balancing nature conservation with sustainable development for and with communities. They must fulfil three basic, equal and mutually complementary functions: Conservation, Development and Logistical Support.

15. Biosphere reserve management should address stakeholder needs while fulfilling all three basic functions. Such management needs to be laid down in a management plan or policy with relevant activities. It is not necessary to include a full-scale management plan with the nomination dossier for submission to the MAB Secretariat. However, a sufficiently advanced draft management plan or policy should be available, indicating the objectives and main defined lines of action, and the vision and mission of the site.

1.2. Biosphere reserves as learning sites for sustainable development: three integrated functions (Article 3, Statutory Framework)

16. All biosphere reserves must fulfil three basic, equal and mutually complementary functions:
(1) Conservation – conservation of natural and bio-cultural diversity
(2) Development – support for sustainable economic and social development and cultural diversity
(3) Logistic support – support and promotion of model projects, training and education for sustainable development, research and monitoring linked to nature conservation and sustainable development at the local level, while taking into account national and global scales.

17. All three biosphere reserve functions must be integrated and balanced. Favouring some of the functions at the expense of others will compromise the success of the nomination process or the periodic review (a decennial quality control measure), and also usually leads to significantly reduced performance and subsequent unequal impact of biosphere reserve activities. For example, a sole focus on biodiversity conservation will undermine the added value of the MAB Programme and the biosphere reserve designation to the detriment of local communities and the planet at large.

18. It is vital to maintain a broad understanding of the three functions and to exercise flexibility in planned actions. In terms of conservation, it is also important to focus on bio-cultural diversity as well as biodiversity. Support for sustainable development is the main significant distinction between biosphere reserves and other designations or types of protected area. Similarly, logistic support plays a specific role in the integration of the three functions, grounding and underpinning the conservation and development functions. As far as possible, all biosphere reserve activities should be based on carefully adapted, high-quality scientific evidence. If the science is complemented by local or traditional knowledge, or vice versa, the outcomes become more feasible. The utilization of local knowledge is also mentioned in the Lima Action Plan (e.g. Goal B.7). In terms of logistical functions, most biosphere reserves do not possess scientific teams, instead collaborating with various institutions on research and other activities such as education, training and communication. Monitoring also plays a vital role in fulfilling this function, as the knowledge gained through the process constitutes the basis for assessment of the state of the biosphere reserve (important also for Periodic Reviewing) and sound management decision-making. Furthermore, sharing the data improves the impact of biosphere reserves on a larger scale.

1.3. How to nominate a biosphere reserve

19. The nomination procedure for a biosphere reserve process may start as a bottom-up or top-down process, or sometimes a combination of both. Local stakeholders should contact their national MAB representatives – usually the MAB National Committee – to discuss the potential for a biosphere reserve in a particular area. In countries without a MAB National Committee, the relevant information can be conveyed by MAB Focal Points, the National Commission for UNESCO or the national nature conservation authority (www.unesco.de/sites/default/files/2019-12/Policy_brief_1_MAB_2019.pdf). Existing biosphere reserves inside or outside the country can also be a source of information for sound decision-making in terms of biosphere reserve nominations. The decision to proceed towards

nomination should be based on agreement between local stakeholders and appropriate governmental authorities.

20. Case study: **Participatory process for the nomination of Savegre Biosphere Reserve, Costa Rica**

20a. The idea for participatory management of the Savegre River basin was initiated in 2011 with the search for a long-term mechanism that would enable the sustainable management of the basin's natural resources without limiting in any way the daily lives of the local inhabitants.

20b. The ensuing nomination process resulted in the successful designation of a biosphere reserve in 2017. The site includes all the watersheds influencing the Manuel Antonio National Park, with a focus on the Savegre watershed reflecting the connectivity between the mountains, water resources and local communities.

20c. The designation was made possible by a participatory process led by a small NGO and local actors. It included multi-sector workshops, focus groups, technical meetings and subsequent follow-up, as well as hearings with key actors such as local communities, organized groups and municipalities in the different sectors of the biosphere reserve.

20d. At the central government level, the process received the support of all the deputies of the Legislative Assembly of the Republic. The nomination was also endorsed and supported by the Executive Directorate of the National System of Conservation Areas of the Ministry of Environment and Energy, with the Regional Councils of Conservation Areas and the Agricultural Services Agency of the area.

20e. Presentations regarding were made in ordinary sessions of Municipal Councils of the cantons concerned. They then issued municipal agreements in support of the proposal. In addition, a process consisting of citizen consultation and regional and sub-regional workshops clarified concerns in communities concerned by the designation.

20f. The National Ecotourism Network Cooprena R.L. of the Institute for Cooperative Development (INFOCOOP) held seminars on 'Strengthening the cooperative sector through the impact of a Biosphere Reserve designation'. Presentations and discussions on the proposal were held with the Local Councils of the Biological Corridors.

20g. At the community level, different groups, women's associations, agro-industrial associations, Integral Development associations, agro-ecotourism associations and people from the different communities provided support.

20h. Open invitations were issued to all workshops and consultations, and significant efforts were made to include as many participants as possible.

1.4. How to initiate a nomination

21. New biosphere reserves may be proposed by scientists following completion of a research project, a national authority, a community association or others. Regardless, the nomination file must be officially submitted to UNESCO by the relevant national government authority (see section 1.5).

22. In some countries (e.g. Norway, Sweden, United Kingdom), after initial discussions, an initial concept is presented to the MAB National Committee. If accepted, the area can be referred to as a 'candidate biosphere reserve', which helps to build local support and visibility.

23. The nomination process should start by raising awareness about the MAB Programme and biosphere reserves at all levels. These awareness-raising activities should be led by the MAB national authorities and/or knowledgeable stakeholder groups or individuals in accordance with local conditions. Well-informed stakeholders are better able to decide whether the biosphere reserve will help them, or the groups they represent, to achieve sustainable lifestyles and to become a model for others. New nominations may also emerge at the government level when authorities identify a possibility for the establishment of a biosphere reserve and are able to obtain the support of local stakeholder groups. The establishment of a committee to review nominations in a particular country can also be a valuable mechanism in this regard.

24. The key issue at this preliminary stage is to ensure that the area under consideration includes legally protected areas, or areas likely to be protected in the near future, based on their biodiversity value. Such areas would be considered core areas, with potential for buffer zones.

25. If the area under discussion fulfils the basic criteria of a biosphere reserve and an agreement on moving ahead towards a proposal is reached, between the stakeholder groups and authorities in charge of MAB being governmental or not, the preparation process for nomination can commence. The nomination file should be prepared in a participative manner, with the inclusion of all stakeholders and, to the extent possible, the communities themselves in their entirety. The Member State then submits the nomination file, with all necessary supporting documents, to the MAB Secretariat through its respective Permanent Delegation to UNESCO or its National Commission for UNESCO.

1.5. How to prepare a nomination file

26. As noted above, the nomination file should be prepared using a participatory approach. This process will require a coordinating group or at least a coordinating person, familiar with the MAB Programme, its requirements and procedures. This coordination structure often provides a basis for the future management entity of the biosphere reserve. The involvement of representatives of the key stakeholder groups, or a single person appointed and accepted by such groups, speeds up the process and improves the feasibility of the results. A feasibility study and/or a wide consultation process sometimes precedes the nomination process and can provide much useful information and data for the nomination file itself. Visits of key stakeholders to existing biosphere reserves are also very important and valuable. The coordinating group/person should collect the required data, discuss and agree on the drafts of documents, and complete the nomination file for the final approval of all stakeholders. Once the nomination file meets all the requirements and has received the consent of all key

stakeholders, including signatures, it can be officially submitted to the MAB Secretariat. The annual deadline for new submissions is 30 September.

27. The nomination file must use the official form available on the MAB website. All questions should be answered and all annexes included. When describing technical issues (e.g. zonation), the official MAB terminology should be used (see www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/images/biosphere_reserve_nomination_form_2013_en.pdf).

28. The form should be completed in English, French or Spanish. Two copies should be sent to the MAB Secretariat, as follows:

    1. The original hard copy, with the original signatures, letters of endorsement, zonation map and supporting documents. This should be sent to the Secretariat through the Official UNESCO channels (i.e. via the National Commission for UNESCO or the Permanent Delegation to UNESCO);

    2. An electronic version (CD, via electronic transfer, etc.) of the nomination form and of maps (especially the zonation map). This can be sent directly to the MAB Secretariat, possibly with a copy to the Permanent Delegation to UNESCO and National Commission for UNESCO.

29. Some countries have developed a national preparatory process and schedule for biosphere reserve nomination (e.g. Republic of Korea), while others follow less formal preparation procedures during which all the necessary requirements (nomination form, endorsements, supporting data, etc.) must be met.

30. Case study: **Nomination process in Voxnadalen Biosphere Reserve, Sweden**

    30a. For over 20 years, the Ovanåker Municipality, together with the relevant property owners and the Gävleborg County Administrative Board, has coordinated a variety of projects in the fields of nature and heritage conservation and rural development. These projects came to the attention of the Swedish Biodiversity Centre (CBM) at the Swedish University of Agricultural Sciences. Subsequent discussions between the Ovanåker Municipality, the CBM, the Swedish Environmental Protection Agency and the Gävleborg Summer Farm Association led to the idea of establishing a biosphere reserve.

    30b. Two separate preliminary studies were conducted to investigate the potential for establishing a biosphere reserve in parts of the municipality. Alongside the second preliminary study, the Ovanåker Municipality conducted a detailed landscape analysis of the Sässman area in partnership with the relevant farmers and landowners. This analysis proved important for building support during the preliminary study itself; for example, meetings and field visits were arranged with the relevant players, alongside guided field visits for members of the public. The biosphere reserve plans and landscape analysis were presented at two public meetings and to the Gävleborg County Administrative Board. At this stage, the proposal for the biosphere reserve only related to parts of Ovanåker Municipality. Following approval from the Biosphere Programme Sweden, the official candidacy process began in 2014.

30c. A consultation process was subsequently used to prepare the application for biosphere reserve status (Biosphere Candidate Voxnadalen project 2014-2019). The project was coordinated by the Ovanåker Municipality, and a Steering Group was set up to support and lead the work of preparing an application for biosphere reserve status.

30d. Alongside the Steering Group, a Working Group was tasked with writing the application and raising awareness of the proposed biosphere reserve. The Working Group consisted of a coordinator and other officers from the Ovanåker, Ljusdal and Bollnäs municipalities. The biosphere reserve was designated by UNESCO in 2019.

1.6. What is the Designation Procedure? (Article 5, Statutory Framework)

31. The Member State, through its National MAB Committee (where available), forwards the nomination file with supporting documentation to the UNESCO Secretariat, through the Permanent Delegation to UNESCO of the respective Member State. If a MAB National Committee is not yet established, the nomination documents can be presented by the National Commission for UNESCO through the Permanent Delegation to UNESCO of the respective Member State.

32. The UNESCO Secretariat verifies the content and supporting documentation and requests any missing information from the nominating Member State in cases of incomplete nomination forms. The International Advisory Committee for Biosphere Reserves (IACBR) then considers the nomination for recommendation to the MAB-ICC, and the MAB-ICC takes a decision on nominations for designation. The Director-General of UNESCO notifies the state concerned of the decision.

Preparatory process	→	**Submission of the nomination** Usual annual deadline is 30 September, year N	→ Approx. 3-month period for additional inputs if requested	**Examination by the IACBR – recommendations** Approx. 1 month into year N+1. The meeting is held once a year (Jan, Feb).	→ Approx. 2-3 months for additional inputs if requested	**Review by the Bureau of MAB-ICC** The nomination meeting is held before the MAB-ICC session.	→	**Endorsement of the nomination by MAB-ICC** The meeting is held once a year (May, June, July) in year N+1

33. The timeframe may change due to unexpected circumstances.

1.7. How to nominate a transboundary biosphere reserve

34. Transboundary biosphere reserves and the processes of their nomination and periodic review are based on the recommendations of the **Pamplona conference** held in 2000 (hereafter, Pamplona recommendations).

35. Transboundary biosphere reserves provide tools for the common management of a shared ecosystem. They also represent the commitment of two or more countries to engage in an

ecosystem approach for the conservation of biodiversity and the sustainable use of natural resources.

36. The process leading towards the official designation of a transboundary biosphere reserve can include many forms of cooperation and coordination between existing protected areas and authorities on different sides of a border.

37. The nomination process can be implemented in two ways:

    a) A transboundary biosphere reserve can be established as two or more separate biosphere reserves in individual countries, before being designated as a transboundary biosphere reserve.

    b) A transboundary biosphere reserve can be established jointly by the countries concerned in one step when concomitantly designating the national biosphere reserves.

38. The following points should be addressed during the nomination process:

    - The zonation should be defined in line with the general criteria for the designation of biosphere reserves.
    - Local and national partners should be identified, and a joint working/coordination group established to define the basis and identify key issues for cooperation.
    - A joint management structure should be established with clear mandates.
    - Governmental authorities in both (or all) countries should sign an official agreement regarding the transboundary biosphere reserve.
    - A decision must be made as to whether the various parts (i.e. on either side of a border), will be nominated by the respective state authorities in each country, or the concerned state authorities in both/all countries will submit a joint nomination.
    - An indication of the main components of a plan for future cooperation must be provided.

39. Although the biosphere reserve concept provides a general framework for action in a transboundary location, it is important to bear in mind that real-world situations can vary significantly across the world, and flexibility is crucial even more than in a national context.

40. Case study: **The 'W' Region Transboundary Biosphere Reserve, Benin, Burkina Faso and Niger**

    40a. *The 'W' Region Biosphere Reserve is the first transboundary biosphere reserve in Africa. The Niger component of the 'W' complex was designated a biosphere reserve in 1996. After a long process of study and consultation, and strong support from the concerned national authorities, the reserve was extended to Burkina Faso and Benin in 2002. The 'W' Region Transboundary Biosphere Reserve takes its name from the double bend of the Niger River and today covers more than 3 million hectares.*

    40b. The biosphere reserve straddles the borders of the Sudano-Guinean, Sudanese and Sahel biogeographic regions and is home to a wide and varied biodiversity. The 'W' Region also constitutes a barrier against the advance of desertification from the north. The area hosts

one of the largest populations of ungulates in West Africa and also comprises wetlands of international importance recognized under the Ramsar Convention. People have occupied the area since the Neolithic period, and have contributed to the development of the present landscape. Wild plant species continue to play an important role in traditional land use and agriculture. For all these reasons, parts of the biosphere reserve (the core areas) are inscribed on the World Heritage List.

40c. In October 2020, the MAB ICC approved the extension of the W TBR to the Arly BR (Burkina Faso) and Pendjari BR (Bénin); W TBR became the TBR of the Complex W Arly Pendjari (WAP).

41. The **Pamplona Recommendations** propose the establishment of 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 a 'bilateral commission' or 'joint steering committee' if more than two countries are involved. This necessary structure should include representatives of the different management teams, management boards and advisory boards, as well as the authorities in charge of the protected areas, representatives of local communities and other stakeholders of the biosphere reserve. 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 structure and a separate budget for its operation.

42. A signed official government agreement is required as a basis for the transboundary biosphere reserve and the nomination document. This agreement should also provide legitimacy for the joint coordination structure and describe its mandate and tasks. In addition, it should include provisions encouraging the different authorities and management teams to exchange across borders all data and information necessary for successful management and governance. In order for this international agreement to be legally valid in the national law of the countries involved, it might be necessary for the respective national authorities to 'ratify' the agreement. If no 'ratification' is foreseen, great care is needed to ensure that the international agreement is fully in line with all national legal provisions.

43. In almost all cases of transboundary biosphere reserves, each country maintains its own separate governance structure for its national biosphere reserve. It is essential that each of these teams designates one person as a focal point for cooperation. In addition, joint staff teams can be set up for specific tasks. Regular means of communication (e.g. e-mail, conference calls, face-to-face meetings, etc.) should also be defined and implemented.

44. Joint field activities are important to promote joint conceptual approaches, share experiences, and promote trust and cooperation. Especially suitable for such activities are joint education and capacity building programmes, since awareness-raising enables educators to understand themselves better, including through agreements and disagreements. Joint activities may include conservation including the protection of species and restoration of degraded areas, research and training, land-use planning, agricultural and silvicultural practices, cultural events, tourism with marketing of destination

45. Transboundary biosphere reserves can connect not only countries, but also continents.

46. Case study**: The Intercontinental Biosphere Reserve of the Mediterranean (IBRM), Morocco/ Spain**

46a. This first intercontinental biosphere reserve was 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 transboundary site is of particular significance for migratory birds, of which there are 117 species. In both countries, conservation efforts were initiated long before the establishment of the biosphere reserve, which is why national parks in both countries are integrated as core areas.

46b. The biosphere reserve integrates conservation traditions and approaches from both sides of the Strait, but also addresses the diversity of traditional lifestyles and artistic expressions through exchange and cooperation projects. This approach allows for the re-establishment and institutionalization of historic relations and the rediscovery of cultural similarities. A focal element of concern and cooperation is freshwater – both its integrated management for irrigation and its significance for ecosystems to prevent desertification. Freshwater in its different manifestations is considered an element of shared local identity in the biosphere reserve – the biosphere reserve being considered a water reservoir situated 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.

46.c The most outstanding feature of this biosphere reserve is its willingness to promote a sustainable development model within a framework of institutional collaboration. This approach is evident in the IBRM Action Plan, implementation of which began shortly after designation. The Plan emphasizes four areas of work: the three functions of biosphere reserves and the site's specificities as an intercontinental reserve, the strengthening of the reserve, the promotion of sustainable development, and the improvement of environmental conditions and governance.

46d. This visionary context has inspired dialogue and the exchange of experiences among the neighbouring countries. Communities are also involved in training, management and the monitoring of the reserve. The biosphere reserve enjoys multi-tiered governance on both sides as well as a hierarchy of committees that organize collaboration across the Strait of Gibraltar.

Source: UNESCO. 2001. *Seville +5: International Meeting of Experts on the Implementation of the Seville Strategy for Biosphere Reserves, Pamplona, Spain, 23-27 October 2000; proceedings*. Paris, UNESCO. https://unesdoc.unesco.org/ark:/48223/pf0000123605?posInSet=4&queryId=f54d1923-0188-461d-b765-be6a9dd3978e.

1.8. What are multi-designated sites?

47. Multiple designations of a site as a biosphere reserve and as one or more other international designations (Ramsar site, World Heritage Site, UNESCO Global Geopark, etc.) generally do not present any real obstacles in terms of biosphere reserve functions. Some difficulties could

occur due to different management regimes and the different goals and objectives of the relevant international designations; however, these can be resolved by negotiations or even eliminated before they appear, if appropriately addressed during the nomination process. Collaborative adaptive management can be a good way of dealing with various management aspects within the biosphere reserve entity when different administrations are responsible for the different designations.

Designation	Objectives	
Biosphere reserve	Fostering the harmonious integration of people and nature for sustainable development through participatory dialogue, knowledge sharing, poverty reduction, human well-being improvements, respect for cultural values and by improving society's ability to cope with climate change. Biosphere reserves represent a unique tool for international cooperation through the exchange of experiences and know-how, capacity-building and the promotion of best practices.	https://en.unesco.org/mab/about
World Heritage Site	International recognition of sites that have cultural, historical, scientific or other form of international significance and outstanding universal value.	http://whc.unesco.org
UNESCO Global Geopark	Promotion and conservation of the planet's geological heritage, as well as encouragement of sustainable research and development by the communities concerned.	www.unesco.org/new/en/natural-sciences/environment/earth-sciences/unesco-global-geoparks
Ramsar site	Provision for national action and international cooperation regarding the conservation of wetlands of international importance (especially those providing waterfowl habitats), and wise sustainable use of their resources.	https://rsis.ramsar.org/about

48. Usually, the presence of other designations can help to emphasize the synergetic effect of the biosphere reserve and raise awareness among various groups of the importance of diversity. Many official MAB documents, including related MAB strategies, encourage and offer advice on site cooperation with similar UNESCO programmes or comparable networks and initiatives outside UN structures. Multi-designation provides opportunities to follow these recommendations.

Source: Schaaf, T. and Clamote Rodrigues, D. 2016. *Managing MIDAs: Harmonising the Management of Multi-Internationally Designated Areas: Ramsar Sites, World Heritage Sites, Biosphere Reserves and UNESCO Global Geoparks*. Gland, Switzerland: IUCN www.iucn.org/content/managing-midas-harmonising-management-multi-internationally-designated-areas.

1.9. How to extend an existing biosphere reserve

49. An existing biosphere reserve can be extended at any time if the procedural conditions are met. Proposals for extension follow the same procedure as those for new designations, or can be included within the periodic review of a biosphere reserve.

50. The Advisory Committee has discussed simplified procedures for extension in cases where current core areas remain the same. However, no change in procedure has yet been approved.

51. Case study**: Extension of Cibodas Biosphere Reserve, Indonesia**

51a. Cibodas Biosphere Reserve, located in the Indonesian province of West Java, was first designated in 1977 and extended in 2012. This reserve is an example of an ecosystem situated in the humid tropics facing intense pressure from human habitation. The Gunung Gede Pangrango National Park constitutes the reserve's core area, which encompasses two volcanoes (Mount Gede and Mount Pangrango) and mountain rainforests that are home to many species endemic to the island of Java. Mt. Gede and Mt. Pangrango have both become significant sites for the region's conservation and biological and ecological research, especially with regard to botanical studies.

51b. The Cibodas Biosphere Reserve was extended in 2012, bringing the total area of the site to 167,000 hectares (ha), necessitating a new zonation. The transition zone was reduced from 80,104 ha to 54,800 ha, with part of this area becoming integrated into the buffer zone and core area of the reserve. The core area was expanded to 22,851 ha through the inclusion of a nature reserve (373.25 ha) and the Telaga Warna Nature Recreational Park (5 ha) as well as the Jember Nature Park (50 ha). The buffer zone was expanded to include land dominated by estate crop plantations and local community plantations.

51c. Prior to its extension in 2012, the national park authorities were solely responsible for the management of the Cibodas Biosphere Reserve. With the expansion in 2012, however, management authority was transferred to the newly established Cibodas Biosphere Reserve Forum, which was formed in accordance with a 2010 decree issued by the West Java Governor. Forum members include officials from the national government as well as provincial and local governments, together with representatives from universities, NGOs and local community groups. The Cibodas Biosphere Reserve Forum is operated with guidance provided by the Indonesian National MAB Committee.

1.10. How to rename a biosphere reserve

52. A biosphere reserve can be renamed upon request from the responsible authorities. The request should be completed in English, French or Spanish and sent to the MAB Secretariat through the Official UNESCO channels (i.e. via the National Commission for UNESCO and/or the Permanent Delegation to UNESCO).

53. The documents should include the main reasons for the change of name, as well as the consent of biosphere reserve stakeholders and the Member State authorities to the name change. The MAB Secretariat verifies the content and supporting documentation and requests any missing information from the proposing Member State, if necessary. The proposal is then

considered by the Advisory Committee for Biosphere Reserves for recommendation to the MAB-ICC, which makes the decision regarding the change of name.

1.11. Review of a biosphere reserve

54. The status of each biosphere reserve is subject to a periodic review every ten years on the basis of the criteria of Article 4 of Statutory Framework of the WNBR. A report is prepared by the concerned authority and forwarded to the MAB Secretariat by the Member State concerned. The periodic review process is described in detail in section 5 of the TGBR.

55. Aside from this compulsory review, other more frequent reviews should be used as site-management tools, as part of an ongoing process. These reviews are usually performed by the biosphere reserve management entity and provide, inter alia, a performance assessment and an understanding of the condition of the site and the awareness of stakeholders as a basis for adopting relevant management measures and sound decision-making. Some countries have introduced mid-term reviews which monitor biosphere reserve performance at the national level every five years.

1.12. How to voluntarily withdraw a biosphere reserve (Article 9, Statutory Framework)

56. Over time, the biosphere reserve concept has evolved, and some biosphere reserves, designated long before adoption of the Seville Strategy, no longer fit the criteria of the Statutory Framework of the WNBR, particularly with regard to zonation and/or the involvement of local communities. In some cases, local communities or other stakeholders, or the authorities responsible for managing the biosphere reserve, may decide that they no longer wish their area to remain a biosphere reserve. These situations typically occur during a periodic review process.

57. In other cases, a periodic review report is submitted, and the IACBR, after examining the periodic review report, recognizes that the biosphere reserve does not fulfil the criteria in the Statutory Framework. In such cases, the Committee points out the weaknesses and proposes and requests necessary actions to remedy the situation. If these requests are not or cannot be met, the Committee can recommend voluntary withdrawal.

58. The reasons for voluntary withdrawal can include inability to ensure balanced fulfilment of the three functions of the biosphere reserve (e.g. favouring nature conservation), failure to establish adequate zonation, inability to guarantee proper stakeholder participation in the biosphere reserve coordination and management, change of priorities in a particular site, and so on.

59. The procedure of voluntary withdrawal takes the form of simple announcement submitted by the authorities of the respective Member State to the MAB Secretariat. The MAB Secretariat informs the MAB-ICC, which takes note.

60. Case study**: Voluntary withdrawal of the Untere Lobau Biosphere Reserve, Austria**

60a. The commitment of the Austrian MAB National Committee to strengthening the quality of biosphere reserves in Austria led to an evaluation process of Austrian biosphere reserves and their standing within the WNBR.

60b. The Untere Lobau Biosphere Reserve was established in 1977 as a result of the initiative of researchers, who tried to maintain an internationally relevant research site for nature protection at this particular section of the Danube River. In 1996, the area became part of the Donau-Auen National Park. The area is also protected under the Ramsar Convention and has Natura 2000 EU status. For many years the ecological importance of the area led to numerous research projects on water fauna, bird life, forest vegetation and visitor management. However, despite its importance, the criteria of the Statutory Framework of WNBR have not been implemented in this 'first generation' (pre-Seville) biosphere reserve.

60c. In 2006, the Austrian MAB National Committee published the 'National Criteria for Biosphere Reserves in Austria' and granted a five-year transition period for such non-compatible sites to be transformed into modern style biosphere reserves. As a result, the National Committee started discussions on re-zonation strategies with the Authorities of the City of Vienna, who were in charge of the biosphere reserve.

60d. However, after comprehensive discussions, it became clear that the stakeholders prioritized the nature protection provided through the existing IUCN Category II national park. In consequence, the transition process to meet the criteria of the Statutory Framework stopped, as requested by the Authorities of the City of Vienna.

60e. Reviews and consultation with stakeholders and local authorities confirmed that this biosphere reserve would not meet the criteria for accreditation, as the stakeholders preferred national park status. The Austrian MAB National Committee accepted their decision and in 2016 recommended the voluntary withdrawal of the Untere Lobau Biosphere Reserve from the WNBR.

61. If there is commitment among stakeholders and a strong reason for the continuation of the site as a biosphere reserve, following withdrawal from the WNBR, a new nomination may be proposed after necessary improvements have been made and the criteria are met.

SIZE AND ZONATION



© Falasorma Dul Sevi Biosphere Reserve, France

62. According to the Statutory Framework, a potential biosphere reserve should encompass **'a mosaic of ecological systems representative of major biogeographic regions, including a gradation of human interventions. It should be of significance for biological diversity conservation. It should also provide an opportunity to explore and demonstrate approaches for sustainable development on a regional scale'** (Article 4. paragraphs 1, 2, 3).

63. Each biosphere reserve contains a variety of ecosystems. Examples include natural ecosystems found in conservation areas and bio-cultural ecosystems found in production areas, residential areas and industrial estates. These may be located on land and/or in the sea. Each landscape or seascape ecosystem possesses distinctive biophysical characteristics and thus requires different approaches to management in accordance with their functions and uses. The zoning system for biosphere reserves classifies areas based on their designation, spatial system, regional status and functions; ecological, biophysical and administrative characteristics; and sometimes societal aspects associated with the development of facilities. The zonation also helps stakeholders learn about and practise nature conservation and sustainable development and provides an opportunity to contribute to achieving sustainable development.

2.1. Size

64. There is no global recommendation for the minimum or maximum size of a biosphere reserve. The Statutory Framework (Article 4) only states that '**the site should have an appropriate size to serve the three functions of biosphere reserves**'. This statement sets the extent very liberally, providing an opportunity to apply the recommendation worldwide while considering diverse environmental and geo-political conditions. However, the nomination should clearly demonstrate that the proposed area is capable of fulfilling all three biosphere reserve functions and meeting the criteria.

65. Biosphere reserves vary widely in terms of size. The smallest is the Samba Dia Biosphere Reserve, Senegal, which covers 764 ha, while the largest is the Mata Atlântica Biosphere Reserve, Brazil, which extends over 89,686,749 ha (as of 2020).

2.1.1. How to determine if a biosphere reserve has the appropriate size to serve the three functions (Statutory Framework, Article 4, paragraph 4)

66. Determining whether the size of a biosphere reserve is appropriate is not a simple task. However, a few basic guidelines can assist in this endeavour:

- The area usually includes protected or similar specially/legally designated areas, a contractual protection area and a non-protected territory in order to meet the zonation criteria.
- The cultural or historical background should be considered, particularly in terms of 'regional identity', in order to encourage acceptance by inhabitants and enhance their willingness to contribute to sustainable development.
- When determining the size, it is useful to consider the landscape approach (watershed protection, the main flows that provide essential services, migration routes, larvae dispersion pathways, etc.).

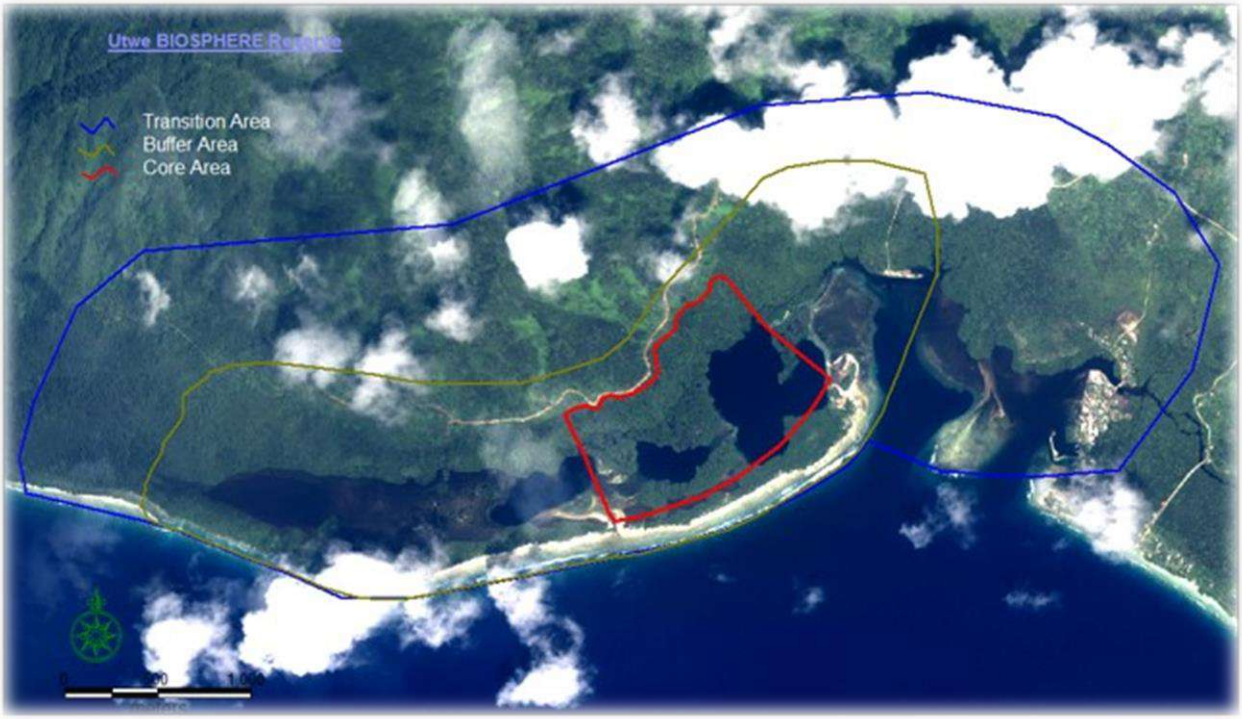
- The area should be large enough to generate some value (monetary, cultural, ecosystem services, scientific data, etc.) and also to examine the effect of ongoing climate change, which should be considered as part of a sustainable management plan.
- The area must host a human population large enough to study human-nature interactions.
- The area must be sufficiently large to offer the potential to contribute to problem-solving processes.
- The extent of the area should consider the given or proposed governance system for the biosphere reserve.
- Any opportunity for the creation of a transboundary biosphere reserve in the future should be considered.

67. Case study**: Utwe Biosphere Reserve, Federated States of Micronesia**

67a. Along with Ngaremeduu in Palau and And Atoll in the neighbouring state of Pohnpei, the recognition of Utwe as a biosphere reserve in 2005 broke new ground in terms of its small size (1,773 ha) and associated spatial organization, as well as its origin in a local community movement. Utwe is located on the island of Kosrae in the central Pacific Ocean, one of the four states of the Federated States of Micronesia. The site comprises marine areas, mangroves, upland tropical forest as well as the Utwe community itself. Management arrangements and spatial organization are devised, implemented and monitored by community authorities supported by a local non-government entity, the Kosrae Conservation and Safety Organization.

67b. While Utwe ranks among the world's smaller biosphere reserves, its size and close association with the local community has allowed for the integration of biosphere reserve planning and development with that of the community as a whole.

67c. While Utwe's zonation follows a classical concentric pattern with the core area at the centre of the biosphere reserve, it is distinguished by its small size and the close proximity of the population centre of Utwe to its core area. The reserve was designated with the specific objective of establishing and maintaining a locally protected area that in turn would help minimize and eventually completely halt illegal fishing and associated practices in Utwe's marine areas.



2.2. Zonation (Statutory Framework, Article 4, paragraph 5)

68. The Statutory Framework provides a very brief description of zonation, in order to provide sufficient flexibility for biosphere reserves worldwide. A biosphere reserve must have three zones:

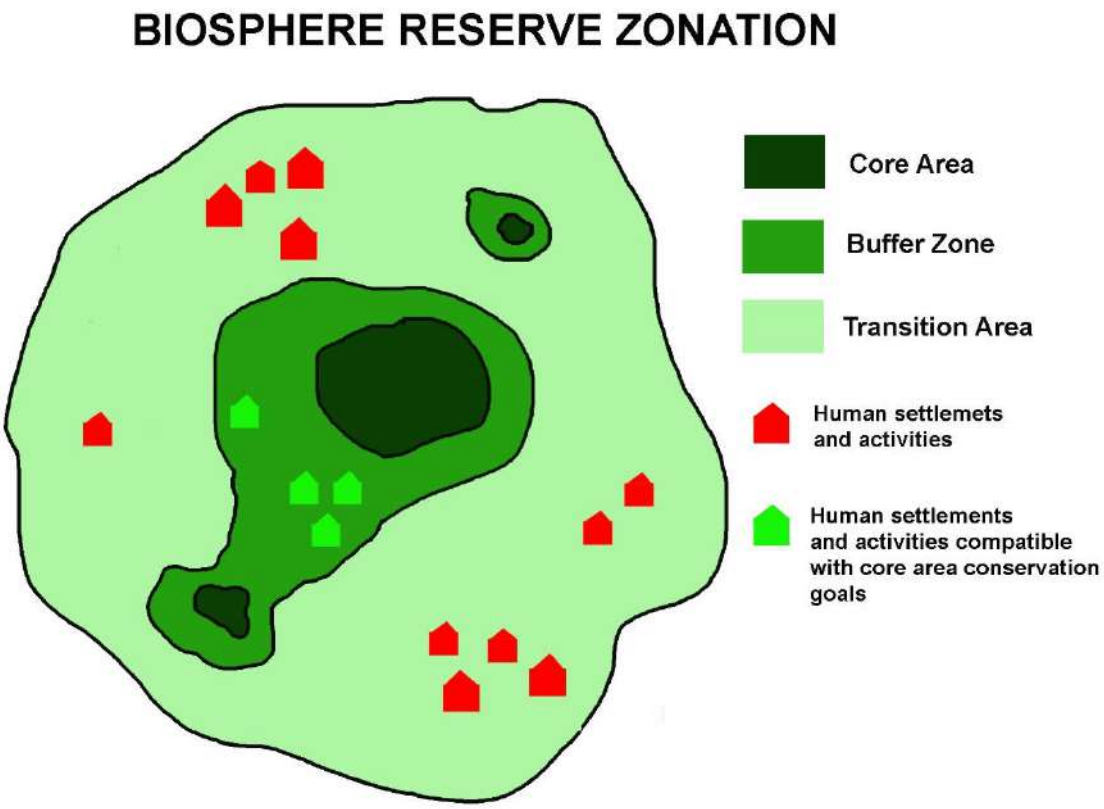
a) **A legally constituted *core area* or areas devoted to the long-term protection of biodiversity, according to the conservation objectives of the biosphere reserve, and of sufficient size to meet these objectives**. The main focus of the core area is to provide information about ecosystem functions and processes.

b) **A *buffer zone* or zones clearly identified as fulfilling buffering functions, surrounding or contiguous to the core area or areas, where only activities compatible with the conservation objectives can take place.** The main focus of the buffer zone is to allow management techniques to be developed, explored and learned about, in order to maintain semi-natural ecosystems, including their biodiversity.

c) **An outer *transition area* where sustainable resource management practices are promoted and developed.** The main focus of the transition area is to support and encourage local communities, enterprises and/ communities in maintaining sustainable social-economic and land use systems.

69. These zones are designed to help fulfil all the basic biosphere reserve functions. Thus, gradational levels of nature conservation, as seen in other designations, have to be defined as necessary and helpful instruments rather than as predominant zoning criteria. While some flexibility is granted within the MAB Programme, none of the zones can be omitted, as the site would then not meet the criteria of the Statutory Framework.

70. Zonation plans need to be agreed upon by all stakeholders. Designation of the biosphere reserve zonation may follow existing national protection systems. However, it is imperative that a biosphere reserve contains both areas with strict protection (core areas) and those dedicated to livelihood activities and development (buffer zones and transition area).



2.2.1. What components are required in the zonation of a biosphere reserve?

71. Considerable knowledge of the biosphere reserve is necessary in order to establish the zonation. To this end it is important to prioritize the factors influencing zonation. A zonation plan should take into account:

a) Territories with very high biodiversity value;
b) Territories with minimum anthropogenic disturbances, 'primary forests' and 'wilderness areas';
c) Ecosystem health and minimum size for ecosystems to actually deliver their services;
d) The connectivity of ecosystems and corridors;
e) The settings of the physical environment (e.g. coastal and marine ecosystems, watersheds, mountain ranges, valleys, etc.);
f) Property rights, including common lands;
g) Historical and recent land use and trends;
h) Agricultural lands, grazing areas, mining sites and other 'anthropogenic pressures and their direction';

i) Locations where ecological restoration activities and agro-ecological practices are being implemented;
j) 'Ecological pressures and their direction' and other threats such as desertification-prone lands, overfishing or alien invasive species, etc. based on a threat analysis;
k) Towns, villages, linear infrastructure (roads, power lines, canals, etc.), other places and corridors of disturbance;
l) Socio-cultural traditions, including heritage sites, sacred sites and existing and planned administrative structures;
m) Designated protected areas; and
n) Administrative regions.

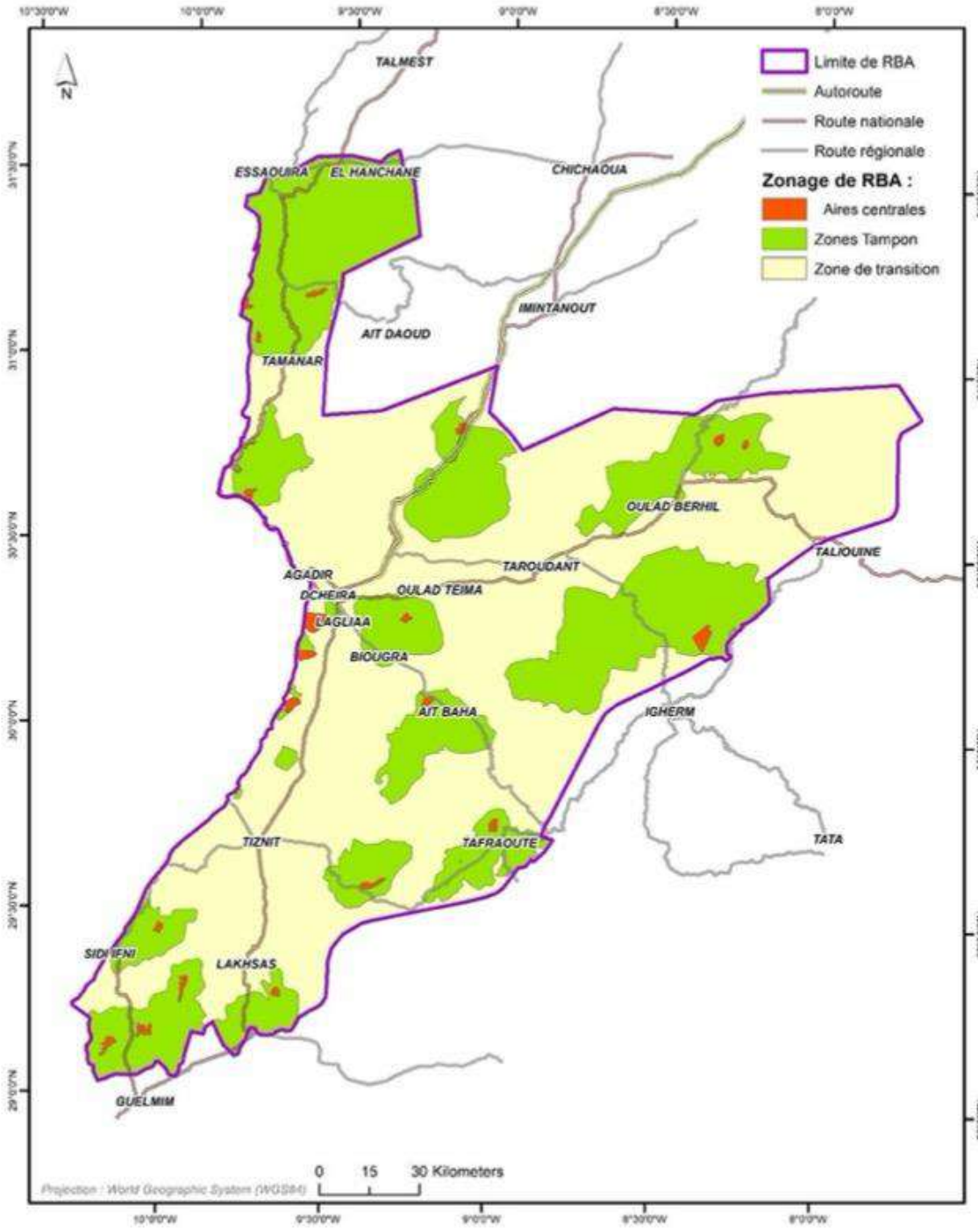
72. Case study**: Ecosystem approach to zonation: Arganeraie Biosphere Reserve, Morocco**

72a. Located in the southwest of Morocco, this biosphere reserve covers a vast intramountain plain of more than 2,560,000 ha, bordered by the High Atlas and Anti-Atlas Mountains and open to the Atlantic in the west. The area is known for its endemic species, the Argan tree (Argania spinose), which is not only important in terms of conservation, but also for research and socio-economic development. Argan oil has multiple uses in cooking, medicines and cosmetics. The Arganeraie (the Argan tree and its ecological system) is unique in the world, as it has adapted to a particularly arid climate, creating an ecosystem for various species. The region is also home to various endemic flora species. Arganeraie has a population of 3.5 million inhabitants, 60% of whom live in the countryside. Most of them make a living from sheep herding and agriculture, including fruit production and the cultivation of the Argan tree and the production of its oil. The cities of Agadir and Essaouira, which have a substantial hospitality infrastructure, and small historical villages within Arganeraie, attract hundreds of thousands of tourists every year.

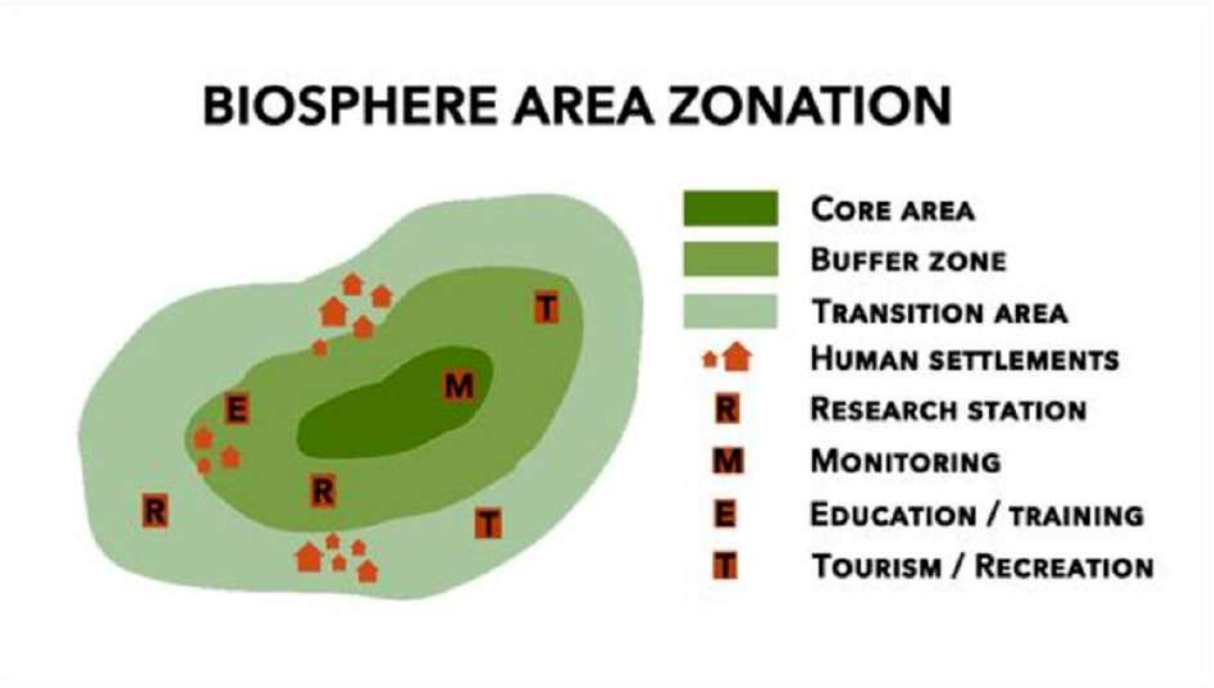
72b. The 18 core areas make it possible to conserve biological diversity, monitor the least disturbed ecosystems and conduct scientific research. Together they cover 16,620 ha. The 13 buffer zones with a cumulative area of around 560,000 ha adjacent to the core areas are managed for production compatible with ecologically sustainable practices. The transition zone contributes to the realization of harmonious and coherent development. Overall, the biosphere reserve covers the entirety of the Arganeraie.

72c. By taking a holistic ecosystem approach to zonation that effectively considers the ecological, socio-economic, cultural and urban features of the Arganeraie as an integrated system, the biosphere reserve zonation has, since its designation in 1988, contributed to the overall success of the biosphere reserve. This fact was reconfirmed by the IACBR in February 2020 as part of the periodic review of the biosphere reserve.

72d. Morocco has successfully implemented the same holistic ecosystem approach in the establishment of other biosphere reserves, the Oasis du sud marocain (2000), the Intercontinental Biosphere Reserve of the Mediterranean (Spain/Morocco, 2006) and Atlas Cedar (2016), each of which covers vital ecosystem regions of the country.
Source: https://rbarganeraie.ma.


Limite de RBA
Autoroute
Route nationale
Route régionale
Zonage de RBA :
Aires centrales
Zones Tampon
Zone de transition
TALMEST
ESSAOUIRA
EL HANCHANE
CHICHAOUA
IMINTANOUT
AIT DAOUD
TAMANAR
OULAD BERHIL
TALIOUINE
AGADIR
TAROUDANT
OUED TEIMA
OUED TEIMA
LAGUIAA
BIOUGRA
AIT BAHA
IGHERM
TIZNIT
TAFRAOUTE
TATA
SIDI IFNI
LAKHSAS
GUELMIM
0 15 30 Kilometers
Projection : World Geographic System (WGS84)

73. The biosphere reserve management policy or plan should reflect the zonation, addressing all zones of a biosphere reserve in an equal and appropriate manner.



74. The management policy or plan, the zonation and, if available, the legal documents related to individual zones collectively establish what activities are permitted and not permitted in the core area and the buffer zone. Examples include the number of tourists allowed into the core area each day, or the traditional farming techniques allowed in the buffer zones during specific seasons, and so on.

75. The zonation for each biosphere reserve should be mapped using satellite/GPS coordinates in the form of shapefiles. The data should also be maintained in the form of a publicly accessible electronic map.

2.2.1.1. Core area: legally constituted core area(s) devoted to long-term protection

76. A biosphere reserve must have one or more core areas. These are legally protected sites for conserving biological diversity, monitoring minimally disturbed ecosystems, and undertaking non-destructive research and other low-impact uses (e.g. education), and so on. Core areas are generally natural or near natural areas, or areas with a high level of biodiversity. They provide an example of what a specific ecosystem would look in the absence of – or with only minimal – human interference, or the result of a long-term specific human-nature relationship. Such areas are usually biodiversity hotspots with very high conservation values. As these areas may be scarce, especially in very densely populated regions, other types of ecosystems – even those created by people – might be considered for core areas, as long as they have the necessary legal protection and are considered important for biodiversity conservation. One such example is the hedges in cultural landscapes of the Maasheggen Biosphere Reserve (Netherlands), which provide important habitats for plants and animals and serve as vital bio-corridors.

a. Degree and type of protection

77. The degree of protection follows national, provincial, local and customary law and regulations on nature conservation, land-use and other factors. The core areas should have appropriate legal protection ensuring that nature conservation is a priority.

b. Size

78. The size of the core area depends on local and/or national conditions but it should be large enough to include appropriate habitats and ecosystems. Continuity of the core area with the buffer zone is crucial, including accessibility for animals (migration, nesting, etc.) and plants (seeds, spores, fruits, pollen, etc.).

79. There is no globally valid minimum size for a core area. However, countries (e.g. Austria or Germany) can adopt national criteria for core areas which specify a minimum percentage of the entire area of the biosphere reserve.

c. Role of conservation, sustainable development, research, monitoring, education and training

80. The focus of management in the core area is biodiversity conservation including through control of human activities. In the core areas of some biosphere reserves no human activity is permitted (except for non-destructive scientific research, monitoring and low-impact education). Other biosphere reserves allow tourists to walk, while some allow specific human activities that contribute to the conservation objective. Core areas play a crucial role in providing ecosystem services.

81. Monitoring also plays an important role in core areas, enabling managers to observe their state and consequently adopt (where allowed) appropriate management measures to maintain biodiversity values (e.g. to determine whether grazing or hedge management is necessary, etc.).

82. The decision as to whether to delineate the borders of the core area with clear signs or even specific access areas will depend on the country’s regulations. conditions.

d. Performance standards

83. Generally, the number or size of core areas is not considered a biosphere reserve performance criterion. Of greater importance is the quality of management of the core areas and how they contribute to ensuring biological and/or bio-cultural diversity conservation and the overall fulfilment of the main biosphere reserve functions..

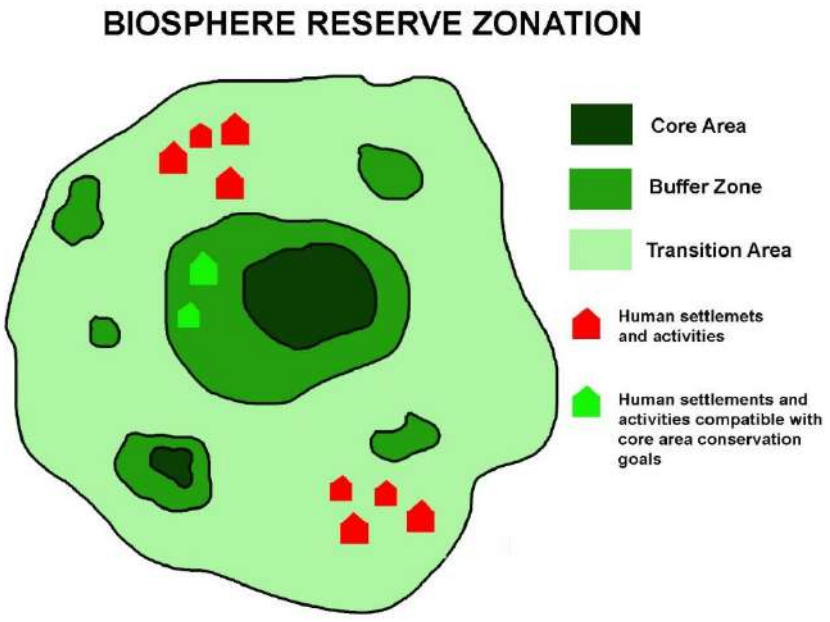
2.2.1.2. Buffer zone: clearly identified zone(s) surrounding or contiguous to the core area(s), geographical definition

84. The buffer zone should surround or adjoin the core area(s) as a protective belt. At the same time, it should allow for a degree of sustainable use of the natural resources. There is no globally valid minimum size for the buffer zone. However, countries (e.g. Austria or Germany) can adopt national criteria for buffer zones which specify a minimum percentage of the entire area of the biosphere reserve. The buffer zones should have clear boundaries and be large enough to mitigate human impact on the core area(s). They should also have legal status or specific regulations or arrangements (e.g. agreement with landowners, etc.).

85. Sometimes buffering functions can be provided by means other than formally delineating buffer zones. These circumstances (e.g. natural conditions in the form of steep mountain cliffs, canyon or river course) can be acceptable. Sometimes an international (in the case of transboundary biosphere reserves) or state border can fulfil the buffering functions. The same applies to agreements made with land owners who retain ownership but agree to use their land in such a way as to fulfil buffering functions. In such cases, the lack of a formal buffer and the manner in which the buffering function is fulfilled must be explained in the nomination form.

86. In particular cases, an artificial structure that has appropriate qualities can assume the role of buffer zone. For example, in the Wadden Sea of Hamburg Biosphere Reserve (Germany) buffer zone functions are operationalized by the dike, which was built against sea flooding. The dike has appropriate permanent legal protection status (Natura 2000 and others), fits with the ecosystem conditions and serves its zonation purpose as it protects the marine core area.

87. Sometimes, buffer zones can stand alone without any common limit with a core area. These are exceptional cases. Such buffer zones are designated in areas that have high biodiversity value, but for various reasons do not have strict protection status, and therefore cannot be included as core areas. Such situations must be explained in the nomination form.



88. Case study: **Buffer zones in Wienerwald Biosphere Reserve, Austria**

88a. The Wienerwald, located on the border of Lower Austria and the City of Vienna, is an important European biodiversity hotspot. Diverse types of habitats have developed here due to numerous factors such as the meeting of different bio-geographical and climatic regions, a variety of geological conditions, considerable differences in altitude and – last but not least – human influence. The Wienerwald Biosphere Reserve is close to the agglomeration of Vienna, Austria's most important economic area. In Lower Austria, 51 communities with about 282,000 inhabitants are either completely or partly within the biosphere reserve. Parts of seven municipal districts of Vienna with a population of about 477,000 are also part of the reserve.

88b. Habitats in the open-land cultivated area of the Wienerwald are of outstanding international importance. Vast meadows and pastures, which are the result of centuries of cultivation, dominate large parts of the region. Dry grasslands are particularly characteristic of this region.

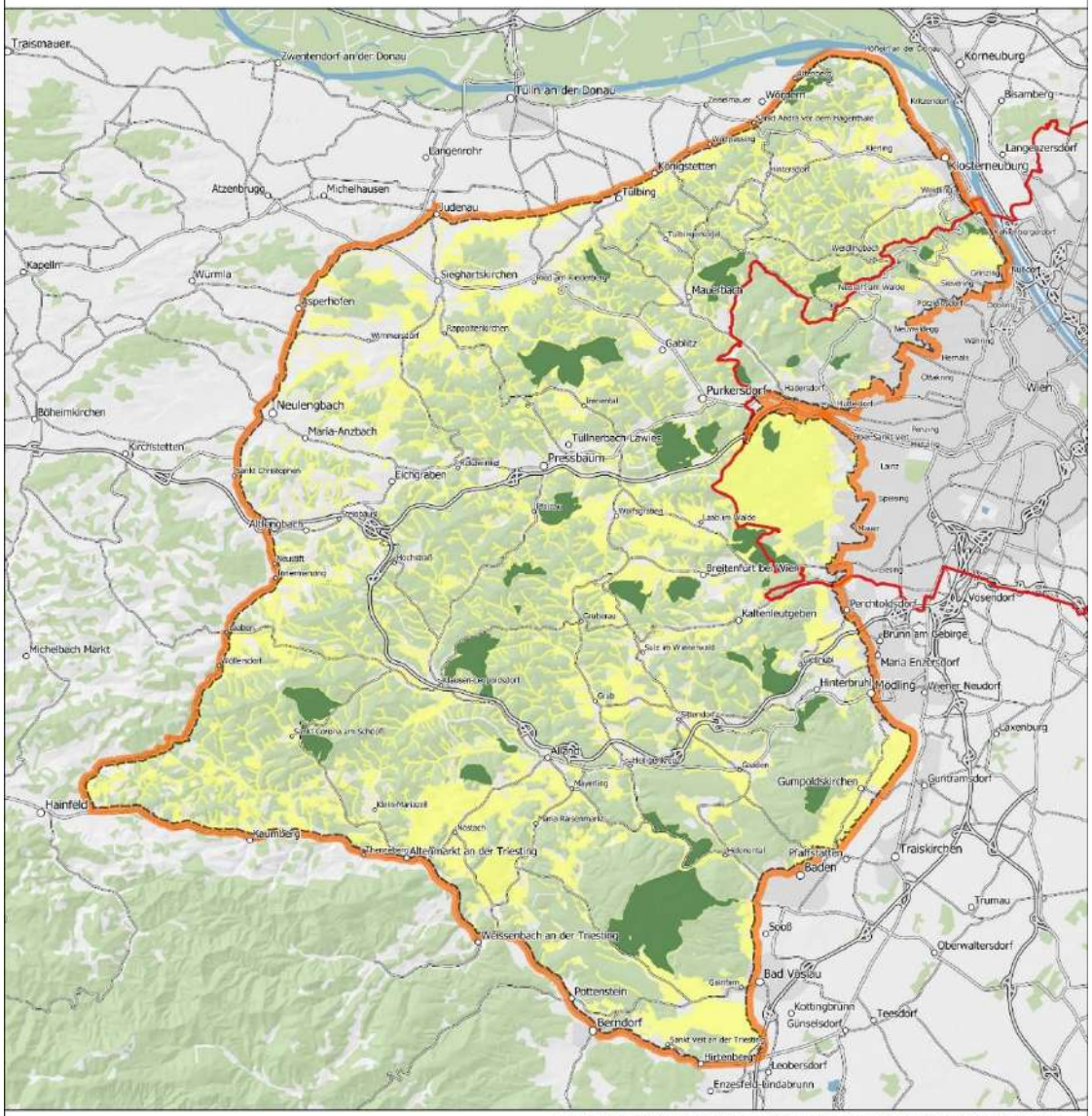
88c. There are also a few unimproved grasslands found on moist and wet sites, with moor grass meadows and calcareous fens. Ancient vineyards and fruit orchards, areas dominated by agriculture, rich sources of water and numerous structural elements enrich the landscape diversity of the Wienerwald. Large areas are covered by forests (more than 60%).

88d. The core areas in Lower Austria are designated as nature reserves and in Vienna as protected landscapes. Approximately 80% of the buffer zones are located in Natura 2000 designated areas, and are maintained and looked after by their managers and landowners. All relevant legal issues are covered by core area legislation and/or buffer zone legislation as decreed by the Federal States concerned. Some of the buffer zones have been established without direct connection to a core area. For instance, watercourses are important spaces for nature, recreation and commercial activities, and form an ecological network spanning the entire area. Because of their great importance they are designated as buffer zones in many parts of the biosphere reserve.

88e. The biosphere reserve management regularly monitors and reviews the zonation, using mapping to provide a basis for optimizing buffer zoning. This process enables valuable open space areas not designated as buffer zones to be proposed for this purpose.

BIOSPHÄRENPARK WIENERWALD

Lebensregion Biosphärenpark Wienerwald



0 5 10 km

Es wird keine Gewähr für die Richtigkeit und Vollständigkeit der angebotenen Informationen übernommen.
© BPWW 2019

- Biosphärenpark Grenze
- Kernzone
- Pflegezone
- Wald

Datengrundlage Basiskarte © BEV 2018



Eine Initiative der Länder Niederösterreich und Wien

United Nations Educational, Scientific and Cultural Organization

Wienerwald Biosphere Reserve since 2005 Man and the Biosphere Programme

a. Regulation of activities and resource use

89. Management must ensure that all human activities in the buffer zone are compatible with biodiversity conservation. In addition to the activities allowed in the core area, low-impact activities such as ecotourism and low-impact grazing are typically allowed, as well as (ecologically acceptable) renewable energy and water infrastructure. Some states may require the imposition of restrictions and quotas, if necessary. In some countries, renewable energy installations that can have negative impacts – such as wind turbines on birds and bats, or water turbines on fish – are only allowed in the transition area.

b. Role of conservation, sustainable development, research, monitoring, education and training

90. An important objective of the buffer zone is to ensure that human activities contribute to the conservation of the core area without resulting in any negative impacts. In many ecosystems, however, the buffer zone has a different purpose, such as the restoration of degraded environments (e.g. through afforestation). The buffer zone is also ideally suited to preserve traditional forms of land use that have resulted in a particular, human-induced ecosystem. In order for this to happen, it is necessary to evaluate the ecosystem impact of the traditions and their economic output, and assess their long-term viability on the basis that these systems are maintained or are changed.

91. Buffer zones frequently allow stakeholders to develop and implement suitable modern techniques to maintain values related to traditional land uses. Accordingly, buffer zones are important locations for learning.

c. Performance standards

92. The performance of a buffer zone is assessed by its capability to protect the core area. Other performance standards include the ability to contribute to other functions of the biosphere reserve, such as research, education and the sustainable use of natural resources, as well as to monitor the succession of ecosystems.

93. Parts of the buffer zone comprising traditional cultural landscapes with high biodiversity can function as a model for sustainable land use targets, which are also applicable to the transition area during the transformation process normally initiated by the implementation of a biosphere reserve.

2.2.1.3. Transition area: an outer transition area where sustainable resource management practices are promoted and developed, geographical definition

94. The parts of the biosphere reserve that are not core areas or buffer zones fall into the category of transition areas, so termed because they function as ‘transition’ spaces between the surrounding areas. The transition area distinguishes biosphere reserves from protected areas, as they allow for explicit interactions between people and the environment, with a focus on sustainable development. Many different types of human activities may take place, including settlements, agriculture, livestock breeding, tourism or industry. Typically, there are no legal

restrictions related to the transition area, but all activities should eventually become sustainable with the help of the site's designation as a biosphere reserve.

a. Level of development, activities (industry, mining, power stations, cities)

95. As with the other parts of the biosphere reserve, transition areas include sites with a gradation of human interventions and interactions. Even though biosphere reserves (in their entirety) are not protected areas, experience across the WNBR shows that destructive mining or polluting industries may not be admissible in a transition area due to their unsustainable impacts. However, mining activities that meet high environmental safety standards are common in many biosphere reserves, and their representatives should be included, if possible, in the biosphere reserve governance structure alongside other relevant stakeholders. Furthermore, it is important for the authorities to undertake environmental and social impact assessment for each particular case.

96. In the past, the presence of nuclear facilities within a biosphere reserve has been considered unacceptable. However, some nuclear research facilities (e.g. at universities or hospitals) might be assessed on a case-by-case basis.

97. In addition, the presence of towns or even large cities in the biosphere reserve transition area is not exceptional. For example, parts of capital cities are situated within Dublin Bay Biosphere Reserve (Ireland) and the Wienerwald Biosphere Reserve (Austria).

b. External limits of the transition zone

98. The external limits of the transition area can be formed by natural phenomena (e.g. rivers, lakes, steep slopes, forest edges, etc.) or created artificially in the form of roads, railroads, state borders, administrative boundaries, municipality cadastres, territorial entities, watersheds, etc.). Whenever feasible, the outer border should be clearly marked with biosphere reserve signage.

c. Role of conservation, sustainable development, research, monitoring, education and training

99. At the time of nomination not all activities need to be sustainable. It is the task of biosphere reserve managers to work with stakeholders to increase the sustainability of the entire region, for example through pilot projects on employment, product marketing, ecological restoration, renewable energy, and water and waste disposal and cleaning. The communities need to be able to recognize the real benefits they gain from the biosphere reserve and its efforts to promote sustainable development, and accordingly, these benefits must be distributed equitably. Communities should furthermore be a key focus of the biosphere reserve in particular in the transition area as well as in the other zones.

d. Performance standards

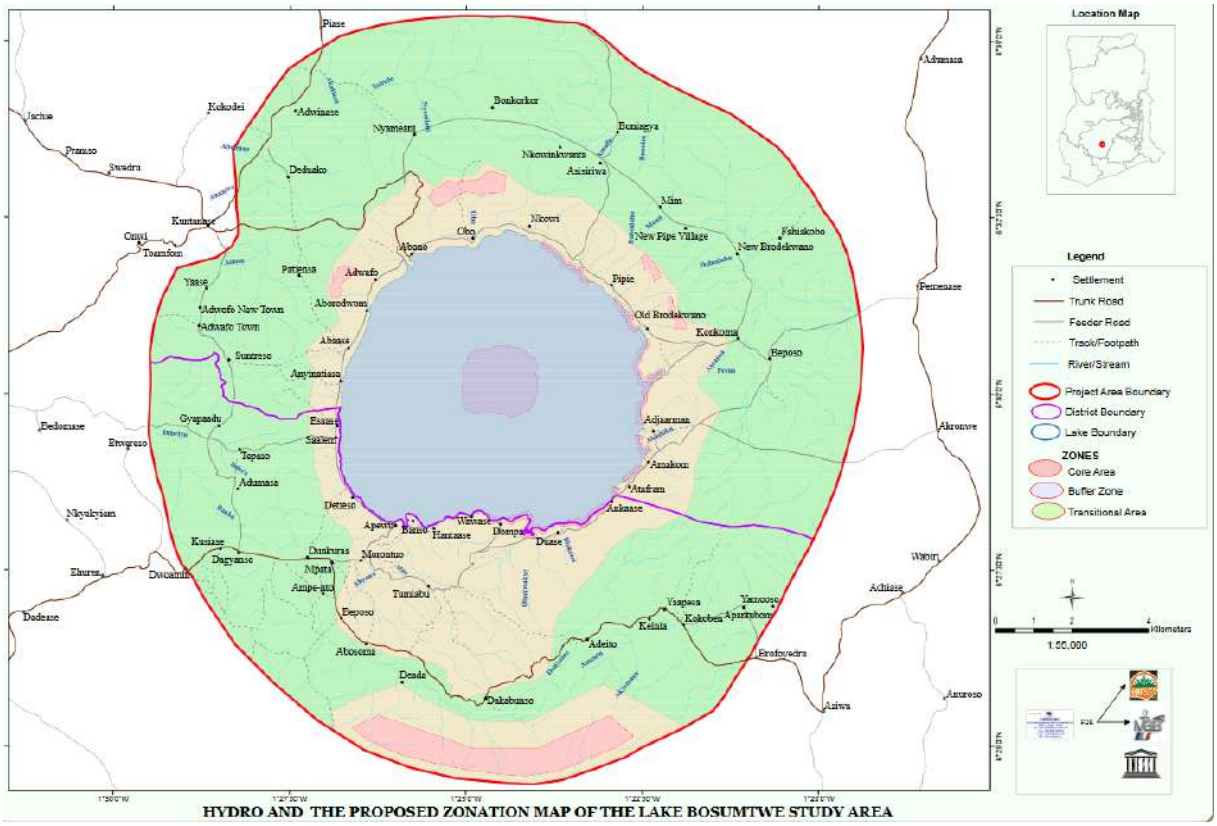
100. The transition area functions as the 'display window of the biosphere reserve' – the area viewed by the public both within and beyond the biosphere reserve. All activities and positive changes achieved in the transition area help to promote sustainable development. There is no fixed set of management and stakeholder performance standards for the transition area.

Accomplishments can be assessed not only in terms of their compatibility with other areas of the zonation, but also by the ability to develop model solutions and new approaches to the sustainable use of natural resources, improve livelihoods and care for the environment through everyday human activities. An important signal of good performance in the transition area (as well as the buffer zones) is the potential for conflict resolution.

101. Case study: **Specific zonation application and model under different ecological and socio-economic development in Lake Bosomtwe Biosphere Reserve, Ghana**

101a. Lake Bosomtwe was designated as a biosphere reserve in 2018. 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 is thus a popular recreational area. Environmental challenges due to the growing population include overfishing and inappropriate farming methods. Excessive fishing has led to steadily decreasing catches, resulting in increased reliance on agriculture and consequent soil erosion.

101b. Several core areas have been identified around the lake, but the zonation is particularly notable because the centre of the lake has been designated as a cultural core area. This is due to the fact that the Ashanti people consider the lake to be sacred and never fish at its centre. This taboo is respected in the zonation scheme, and the resulting zonation resembles a set of nested circles.



HYDRO AND THE PROPOSED ZONATION MAP OF THE LAKE BOSUMTWE STUDY AREA

2.3. Transboundary biosphere reserves

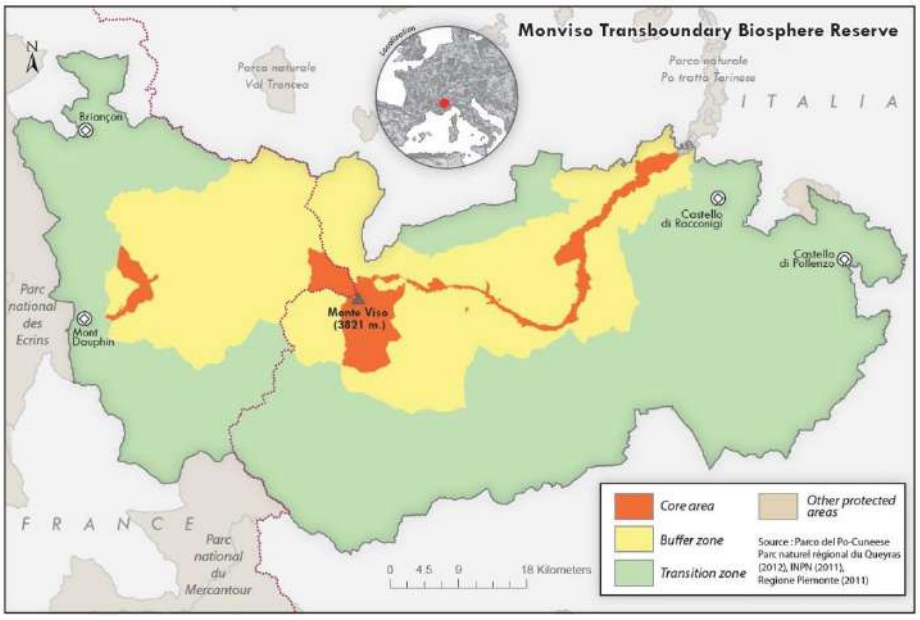
102. It is desirable that a joint zonation cover shared ecosystem(s) to the extent possible. Linking management approaches for one or more shared ecosystems across state boundaries is often the only effective way to conserve biodiversity, especially if the ecosystem to be conserved depends on a certain minimum size. This size may relate to animals that require a large territory in order to roam for prey or seek forage, migratory animals or pollination species.

103. Accordingly, decision-makers, managers and stakeholders from the countries involved must reach a joint understanding and agreement on what exactly constitutes the 'core area(s)', 'buffer zone(s)' and 'transition area', with limitations and purposes assigned to each zone.

104. It is recommended that any transboundary biosphere reserve have one overall zonation. However, each country may determine its own zonation, with the results then combined. In such cases, if the core areas are adjacent on the two sides of the border, they should be connected in a way that supports common conservation goals. The same applies for the buffer zones. Arriving at a mutual understanding of each zone's characteristics is not always easy when two or more governments are involved. Nevertheless, the main goal is to harmonize the overall zonation of the transboundary biosphere reserve.

105. Case study: **Mont-Viso Transboundary Biosphere Reserve, France/Italy**

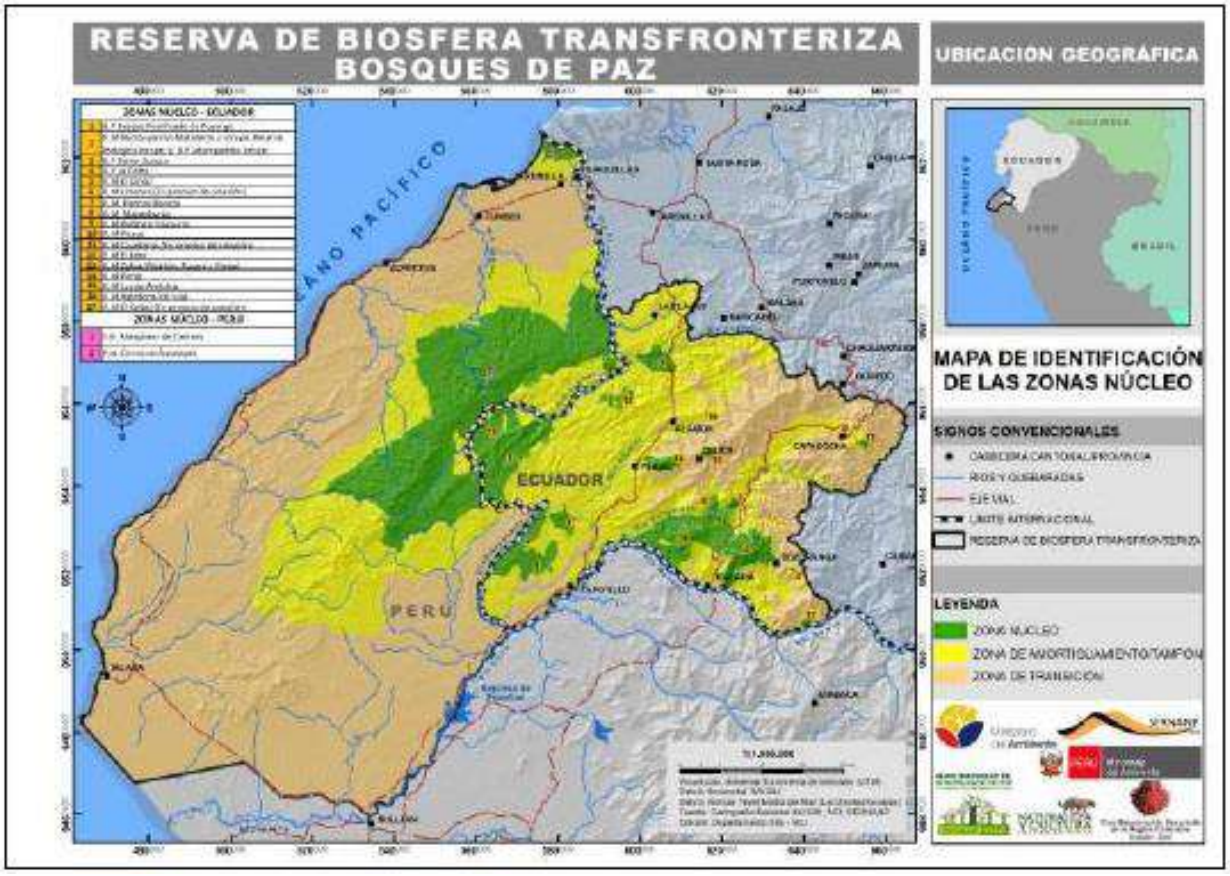
105a. The Mont-Viso Transboundary Biosphere Reserve is a glacial cirque situated between the Alpine mountains and the Mediterranean. It is surrounded by river valleys and high-altitude lakes and enjoys a dry and sunny climate. This transboundary biosphere reserve is shared between France and Italy. The total area exceeds 427,000 ha (France: 133,164 ha; Italy: 293,916.7 ha). The core areas together cover 17,913.5 ha (France: 4,558 ha; Italy: 13,355.5 ha), the buffer zones 135,404.8 ha (France: 54,425 ha; Italy: 80,979.8 ha) and the transition areas 273,762.4 ha (France: 74,181 ha; Italy: 199,581.4 ha). Each zone adjacent to the border connects with the corresponding zone in the neighbouring country.



106. Case study**: Zonation in the Bosques de Paz Transboundary Biosphere Reserve, Ecuador/Peru**

106a. Located in the southwest of Ecuador and the northwest of Peru, this transboundary biosphere reserve consists of the Noroeste Amotapes-Manglares Biosphere Reserve in Peru (originally designated in 1977 and extended in 2016) and the Bosque Seco Biosphere Reserve in Ecuador (originally designated in 2014). Its establishment is the result of efforts by both countries to strengthen their fraternal ties, trust and cooperation on diverse topics over the two decades since they signed a peace agreement in 1998. It was the first transboundary biosphere reserve established in South America, and the 17th in the world.

106b. The Bosques de Paz Transboundary Biosphere Reserve covers areas of the Tumbes and Piura regions of Peru, and part of the provinces of Loja and El Oro in Ecuador. It also includes parts of the western foothills of the Andes, with altitudes reaching up to 3,000 metres and a high degree of biodiversity endemism, the seasonally dry forests of Ecuador and Peru, which form the heart of the Endemic Region of Tumbes, one of the most important biodiversity hotspots in the world, and the mangroves of Tumbes.



106c. The whole transboundary biosphere reserve covers a total area of 1,616,998 ha (Ecuador: 501,040.63 ha, Peru: 1,115,947.79 ha). The core areas encompass 237,638.76 ha, the buffer zones 478,165.28 ha and the transition areas 901,184.38 ha.

2.4. Multi-designated sites

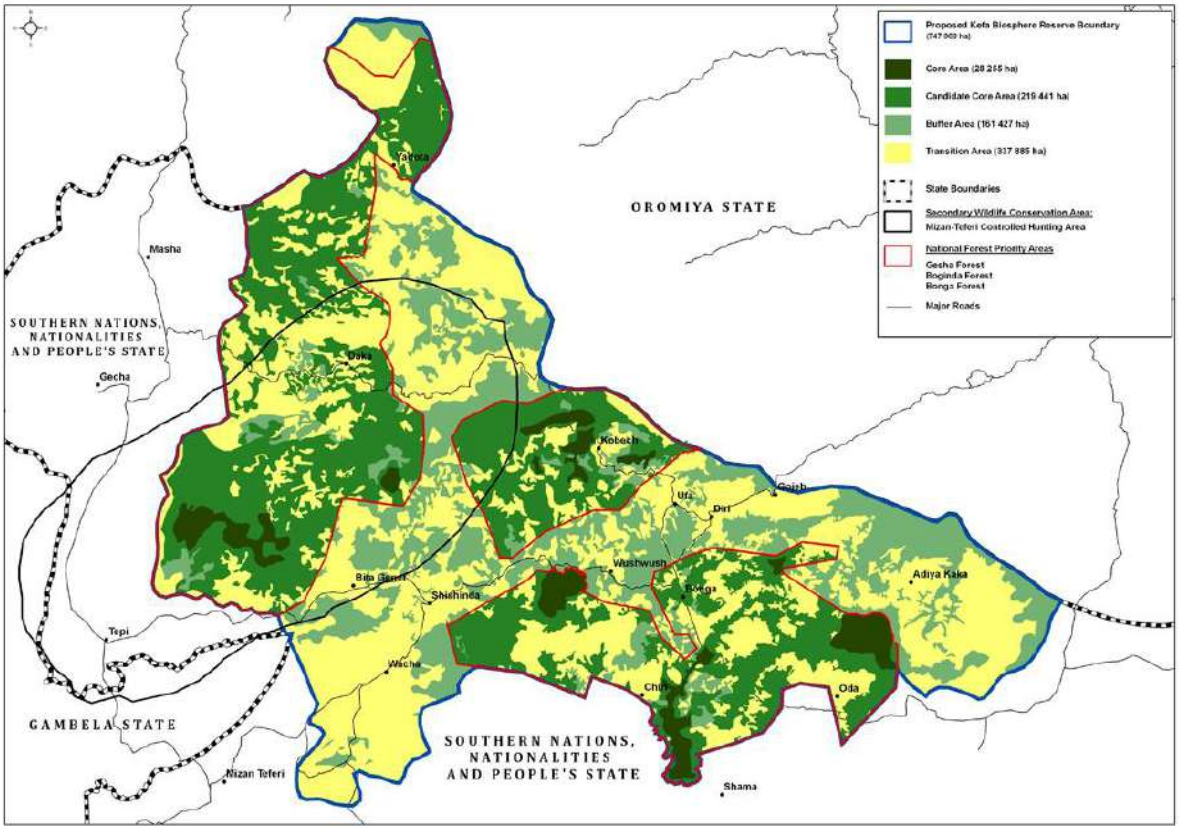
107. While zonation has been popularized by UNESCO's MAB Programme, the approach has also been adopted by other national and international designations. Modern national parks and Ramsar sites often employ a certain zonation approach, and World Heritage Sites also have buffer zones. Sometimes the fact that a biosphere reserve also has other designations leads to misinterpretation of zones and possible conflicts of interest. Biosphere reserve coordinators must address such conflicting zonations, which involves differentiating between two aspects: ascribing a specific purpose to each zone, and publicly communicating these zones and their specific purpose.

108. Importantly, zonations linked to different designations must be conceptually and legally coherent. If a certain zone exclusively supports conservation, it should be the core area of the biosphere reserve. If two different zones of a national park support only conservation, these can be combined into the single 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, but if the biosphere reserve buffer zone needs to be larger, it should extend beyond the World Heritage buffer zone.

109. In principle, there is significant flexibility at the conceptual and legal level. Biosphere reserves need exactly three categories of zones. These can be established by utilizing existing designations and their zoning. This also applies to informal designations (e.g. sacred places).

110. Case study: **Zonation in the Kafa Biosphere Reserve, Ethiopia**

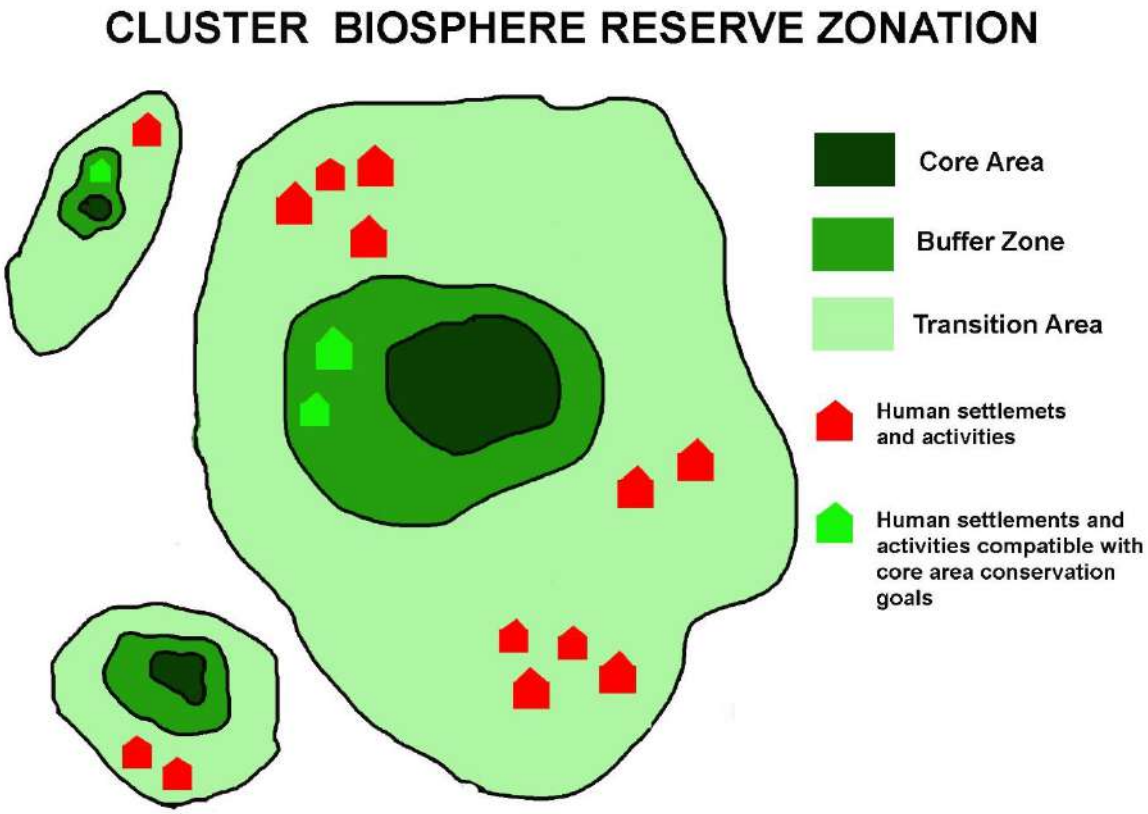
110a. The starting point for the zonation of the Kafa Biosphere Reserve in Ethiopia has been the traditional cultural practices of local communities, which consist of sacred places and thanksgiving practices. This approach has proven quite easy and very successful, minimizing controversies and conflicts of interests from the outset. To the extent possible, no 'artificial zonation' that does not have a basis in traditional cultural practices has been employed. 'Zonation workshops' have been held at the village level and a 'participatory demarcation and endorsement procedure' has been organized at community, district and regional levels. The Kafa region hosts precious remnants of Afromontane Evergreen Forest Ecosystems. These forest areas, which local communities have always regarded as sacred places not to be touched, have been designated as core areas. Eleven such core areas exist, and are 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 the buffer and transition zone, 878 ha of degraded forests have been rehabilitated with indigenous tree species. This process was implemented after extensive consultation with local communities. In such cases, the outcome is a visual zonation using 3D maps. The resulting functional zonation has been fully GIS-referenced.


Proposed Kefa Biosphere Reserve Boundary
(147 063 ha)
Core Area (28 255 ha)
Candidate Core Area (219 441 ha)
Buffer Area (151 427 ha)
Transition Area (317 885 ha)
State Boundaries
Secondary Wildlife Conservation Area:
Mizan-Teferi Controlled Hunting Area
National Forest Priority Areas
Gesha Forest
Boginda Forest
Bonga Forest
Major Roads
OROMIYA STATE
SOUTHERN NATIONS, NATIONALITIES AND PEOPLE'S STATE
GAMBELA STATE
SOUTHERN NATIONS, NATIONALITIES AND PEOPLE'S STATE
Yayoo
Masha
Gecha
Kobech
Uts
Dirl
Goirb
Wustwush
Bita Gamo
Shishinda
Bonga
Adiya Kaka
Tepi
Wacha
Chiri
Oda
Nizan Teferi
Shama

2.5. Cluster type biosphere reserve

111. Certain specific conditions may not permit the proposal of a biosphere reserve in the form of a single unit. In such cases, the available option is a cluster type biosphere reserve. The structure resembles a cluster of small-scale biosphere reserves, where all the units must meet the basic criteria listed in the Statutory Framework. Such sites should have a common management, with all units cooperating within the designation. However, in some cases, it may be necessary to define specific management for sub-units corresponding to different ecosystems or to different units of a cluster biosphere reserve.

112. Any proposal for this type of biosphere reserve must explain clearly why the cluster is the preferred option.



2.6. Special case: overlapping biosphere reserves

113. There is one example of overlapping biosphere reserves within the WNBR. This **very special case** is found in Brazil and, while this structure is possible, it can create various challenges.

114. The expert-based (ad hoc) nature of the processes of designing biosphere reserves, allied to the diverse sizes of countries and the temporal differences between designation cycles of biosphere reserves, have led to overlaps between biosphere reserves. Often, the processes leading to spatial design and zone definition of neighbouring biosphere reserves are conducted by different sets of experts and regional stakeholders over time. Therefore, the ‘end maps’ produced for reserve nominations show some degree of zone classification incongruences,

particularly for transboundary reserves (between Brazilian states) and multi-designation sites. However, large-scale biosphere reserves, such as the ones in Brazil which aimed to harmonize development at ecosystem scales, show some degree of overlap, often due to ecotone transition area between two adjacent ecosystems) importance for both biosphere reserves and their ecosystem services and biological processes. Harmonizing the zoning categories in such cases is a practice that requires attention in biosphere reserve review processes.

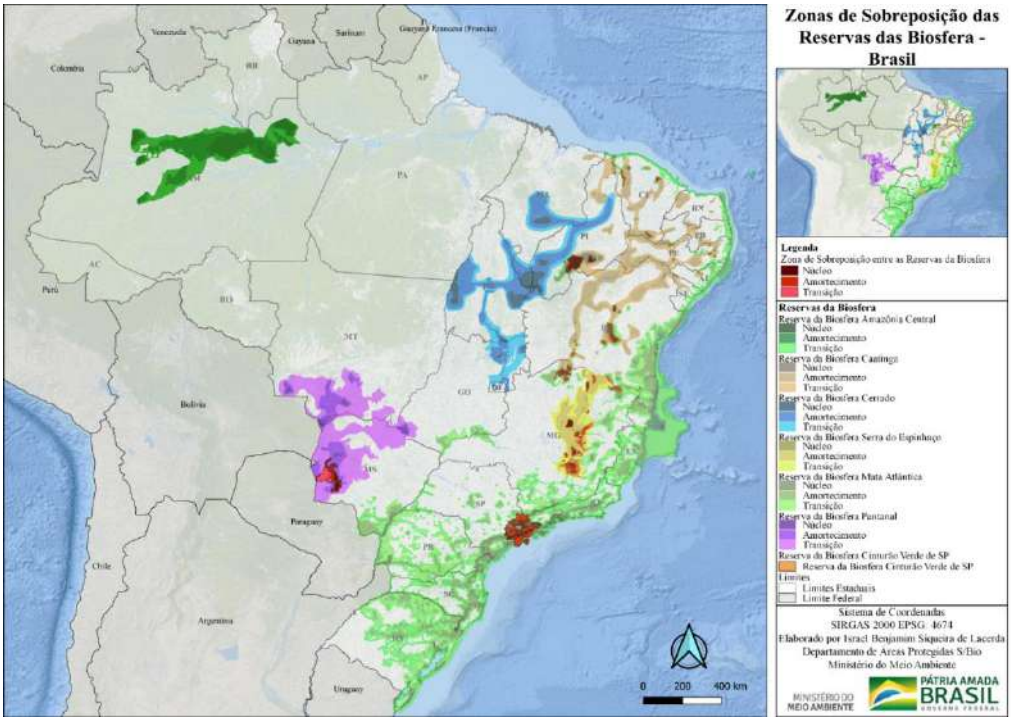
115. Case study: **Overlapping biosphere reserves in Brazil**

115a. Seven Brazilian biosphere reserves are among the largest in the WNBR. Most of them were conceived to be integrated into the management frameworks for the national biomes, thus encompassing huge territories. For instance, the Mata Atlântica Biosphere Reserve, designated in 1991 by UNESCO, has been extended in stages to cover nearly 90 million ha in 2018, and spans 17 Brazilian states.

115b. In four cases, the Mata Atlântica Biosphere Reserve, which is the largest and oldest of the reserves, partially overlaps with other biosphere reserves (see the map below). These cases can be differentiated as follows:

1. Transition between ecosystems: the Atlantic Forest biome extends from southern to north-eastern Brazil along most of its coast, but also extends further toward the west in many regions of the country, especially in the south-southeast. For this reason, the Atlantic Forest connects with the Cerrado, Caatinga, Pantanal and Pampa biomes. Areas that represent important transitions from the Atlantic Forest to other ecosystem types were double-designated as the Mata Atlântica and Espinhaço Range, Caatinga or Pantanal Biosphere Reserves. With further planned expansion of the Cerrado and Espinhaço Range Biosphere Reserves, other reserves will also overlap. However, the areas of overlap are very small compared to the total area of each biosphere reserve, and represent opportunities of mutual cooperation.

2. Contemporary initiatives: in the late 1980s, two initiatives at different scales (but partially involving the same territory) championed the designation of biosphere reserves. One of the initiatives originated at Consórcio Mata Atlântica, an interstate effort to protect and manage the entire Atlantic Forest (see above). At the same time, in São Paulo Metro Area, a huge ring road project proposed to cross the metropolitan green belt, potentially affecting the city's water supply and a range of other important urban and peri-urban ecosystem services. This project led to a major grassroots movement arguing for the designation of a biosphere reserve on the green belt. This movement collected nearly 150,000 signatures – in the pre-internet era. Stakeholders from both legitimate initiatives developed a pioneering arrangement of a smaller biosphere reserve, at a metropolitan scale, inside another one at a national scale, the world's largest. After further discussions within the National MAB Committee and UNESCO, the São Paulo City Green Belt Biosphere Reserve was designated in 1994 as an integral part of the Mata Atlântica Biosphere Reserve, then in its third phase. This quite uncommon arrangement has proven to be very productive and cooperative over the years, allowing both biosphere reserves to act at their own scales while joining efforts for a number of common projects. They shared a common zonation but developed their own action plans. For technical reasons, São Paulo City Green Belt was separately designated by UNESCO in 2017.



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GOVERNANCE



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116. The governance of biosphere reserves will vary from region to region and even within individual countries. This diversity of management approaches is a consequence of the peculiarity of each region and national approaches to biosphere reserves, and represents an asset of the MAB Programme. Biosphere reserves also vary in terms of biodiversity from landscape to landscape, as well as from ecosystem to ecosystem. As a consequence, differences are also found in natural resources, the constitution of stakeholder groups, the governance of the reserves and the institutions concerned.

117. The term 'governance' refers to the structures and processes that determine how decisions about a biosphere reserve are taken and how stakeholders are included. Effective governance is key to implementing and coordinating all activities in a biosphere reserve. Differences in attitudes, governments and culture all influence the necessary actions taken in each area.

3.1 Governance structure

118. The MAB Programme emphasizes the importance of exploring and maintaining such diversity, including in management approaches. The entire governance of biosphere reserves varies substantially at the national, regional (sub-national) and biosphere reserve level.

119. Some biosphere reserves are recognized at the national level according to specific legislation and form part of a national or regional administration. In others, only the core area is legally designated. Governance approaches – in particular, regarding the mode of engagement of communities and stakeholders – frequently vary substantially even within a single country, as well as from one biosphere reserve to the other.

120. Every biosphere reserve is envisaged to have a structure responsible for operations. The title of manager(s), coordinator(s), director(s) and so on varies depending on local conditions and/or rules. The organization which leads/facilitates the management of a biosphere reserve and employs such people is typically referred to as the biosphere reserve management entity. This structure is responsible for the implementation of the management plan/policy.

3.1.1. Why is a governance structure necessary for biosphere reserves?

121. Biosphere reserves are instruments for the integrated management of socio-ecological systems or cultural landscapes. Their managers/coordinators have to deal with/manage many different interventions at numerous and different levels, simultaneously targeting, for example, the protection of individual species and habitats, improvements in the water cycle, support for marketing agricultural products, training of local communities and environmental monitoring.

122. Managers/coordinators of biosphere reserves need a team that combines a vast array of skills and knowledge (especially in transboundary biosphere reserves);, while they play the role of a moderator and/or coordinator rather than of a ranger. It is always easier to start a project than maintaining a long-term dynamic. Managers also need specific skills to maintain a biosphere reserve beyond the initial nomination. In some cases, the individuals responsible for launching the biosphere reserve may not have the requisite skills to manage it over an extended period. In addition, financial resources are often more readily available at the start of an initiative than to institutionally support biosphere reserves in the long term. Whatever the context, biosphere reserve management is essentially about empowering Indigenous peoples and local

communities, not about restricting them. The most important tasks are to coordinate, motivate, moderate and negotiate, and to interact with local communities in order to inspire sustainable forms of life and work.

123. The diversity of management and governance approaches represents a value in itself and should be promoted, provided that approaches are based on the underlying values and objectives of biosphere reserves, as stated in the Statutory Framework. The MAB Programme encourages international exchange through its various networks of the advantages and disadvantages of such management/governance approaches. Each biosphere reserve represents an opportunity for institutional innovation, while drawing from a wealth of global experience. Every biosphere reserve is also, primarily, a framework to create opportunities to involve various stakeholders, notably the people who live and work in the transition areas and/or buffer zones, and to promote sustainable socio-economic development, thereby creating the 'wealth' of the WNBR.

3.1.2. What is a governance structure and how does it work?

124. The Statutory Framework does not specify or prescribe a specific kind of governance structure to implement the concept of a biosphere reserve. It only requires that appropriate structures are proposed or functional at the time of nomination (Statutory Framework Article 4, paragraphs 6 and 7).

125. Governance structures are tools to enable stakeholders to participate in the management of a biosphere reserve, and to achieve their goals in a sustainable manner, as defined within a management policy or plan. They also function as an impartial platform for resolving problems, managing nature conservation tasks, promoting sustainable development and so on. Over time, the role of participation has evolved to become essentially the fourth function of biosphere reserves. Local communities and stakeholders should participate in, if not all, then at least most aspects of biosphere reserve management and decision-making. Participation is conceptually important and pragmatically beneficial both for the managers/coordinators of the biosphere reserve as well as for stakeholders and communities – and for the environment on which they depend. Participation increases the support of stakeholders and makes management more effective. It also leads to empowerment and builds capacities as well as credibility and trust concerning the practices implemented. For stakeholders and communities, participation equals an improved role in decision-making and a say in vital issues that affect their lives.

126. Partnerships within the framework of a biosphere reserve can also be perceived as a method rather than a mere function. This broader perception is, for example, supported by a study performed by the Stockholm Resilience Centre, explaining how biosphere reserves contribute to the 2030 Agenda and their interconnectedness with the Sustainable Development Goals (SGDs). The study showed that the biosphere reserves are producing results by implementing SDG 17: partnerships (www.stockholmresilience.org/publications/artiklar/2018-07-02-swedish-biosphere-reserves-as-arenas-for-implementing-the-2030-agenda.html).

127. There are many occasions for participation in the management of a biosphere reserve, starting with the process of site nomination and continuing through ongoing management and the periodic reviews. Furthermore, for participation to be successful, suspicion and other forms of prejudice often will need to be overcome.

128. There are no universally applicable solutions for participation, which instead can take many forms. These include: 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, and electronic consultation (email, social media such as Facebook or Twitter, survey websites, 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.

129. The Management manual for UNESCO biosphere reserves in Africa (2015), supported by the German Commission for UNESCO, separates governance structure into two main categories: the authority model and the NGO model.

- In the authority model, the management entity is dependent on a ministry or another authority, and the approach is top-down. The entity is primarily responsible for nature conservation and is often only in charge of the core area. It is therefore difficult for this management entity to be active in other fields, especially those concerned with sustainable development. However, decisions can be implemented directly and a devoted budget is available.
- In the NGO model, the management committee is composed of several private and public institutions and acts like a platform to bring together interests and communities. It is well adapted to collaboration but does not, in general, responsible for direct implementation and is often obliged to negotiate with other institutions to implement decisions made by the platform. In addition, the committee tends to be project- rather than management-oriented. Integrated management with the core area may be more difficult under this model.

130. Case study: **NGO governance model in the Dana Biosphere Reserve, Jordan**

130a. The Dana Biosphere Reserve was established in 1993 and covers a relatively large area of 300 km^2. Its boundaries encompass the rugged landscape along the Great Rift Valley, characterized by a series of mountain ridges, plateaus and desert plains. The biosphere reserve also features Jordan's four diverse bio-geographical zones: Mediterranean, Irano-Turanian, Saharo-Arabian and Sudanian (tropical penetration).

130b. The authority in charge of the biosphere reserve is the Royal Society for the Conservation of Nature (RSCN). The RSCN consists of two bodies. The first is the General Assembly, which is composed of all individuals who belong to the RSCN's membership programme. Members acquire the right to elect the board of directors after two years of membership, and are eligible to run for board election after four years of membership. The second body is the Board of Directors. This governing body is elected by the general assembly to oversee the management of the RSCN, and consists of nine elected members and two appointed members. The Board is elected once every four years, and the right to vote is confined to Jordanians.

130c. The governance structure is completed by the Executive Team, which consists of RSCN's employees who are appointed to manage the day-to-day operations and programmes of the society according to approved policies and systems.

131. Case study: **Local government-driven governance in biosphere reserves of the Republic of Korea**

131a. In terms of governance structure, the biosphere reserves of the Republic of Korea fall under the authority model category. Provincial/local governments create and operate the management committees of biosphere reserves, in which (vice-)mayors/governors are chairpersons, and other government and non-government stakeholders, including representatives of local communities, are members. Based on the administrative authority vested in the provincial/local governments, they support and manage biosphere reserve activities for sustainable development (e.g. labelling and marketing of quality local products, eco-tour village programmes) and community participation (e.g. ecosystem monitoring by local people). Core areas are managed by the concerned nature conservation authorities – local or national – which vary according to the protected area category.

131b. In particular, Gochang Biosphere Reserve and Jeju Island Biosphere Reserve created separate management units within provincial/local government administrative structures for the biosphere reserve. Gochang Biosphere Reserve, designated in 2013, established a Gochang Biosphere Reserve Management Office, which undertook relevant government tasks, such as environment management and National Geopark management. After a few years of operation, the office was dissolved and the task of biosphere reserve management was absorbed by another department. In contrast, Jeju Island Biosphere Reserve, designated in 2002 and extended in 2019, is managed under a more stable governance system. The Department of Biosphere and Geopark within the Jeju Provincial Government has remained in charge of the biosphere reserve as well as the UNESCO Global Geopark.

132. Another distinction can be proposed between pre-existing structures and ad hoc structures established for the biosphere reserve at the time of its creation.
    - The first category relates to the body in charge of protected areas incorporated into the biosphere reserve (e.g. National Park, Regional Nature Park, etc.). This body will have direct power of implementation, but arrangements must be made to respond to the needs of the biosphere reserve, especially for buffer zones and transition areas where the body has no authority, and a management committee will have to be added for consultation purposes. This category also includes a public governing body adapted to the needs of the biosphere reserve, such as a municipality with the addition of a management committee and associations, or the governing body of an island (Isle of Man, Minorca) in which special provisions are foreseen to deal with biosphere reserve objectives.
    - The second category relates to a grouping of institutions and municipalities (*syndicat mixte* in France, public structure) or a grouping of partners, including associations (private structure). In the latter case, the role of the structure will be purely consultative. This category can also include public/private partnerships.

133. These basic models may be combined, which is the case in many biosphere reserves. Other models/principles also exist.

134. Ideally, an effective governance structure should have three main components:
    a) A *management/coordination team* for the biosphere reserve consisting of professional staff employed full-time to work on concrete activities, with an associated budget made available.

    b) A *management committee, steering committee* or *executive committee* consisting of key stakeholders. This management entity has decision-making power and cooperates closely with the management/coordination team. The committee is responsible for proposing actions to implement the management policy or plan. It is also in charge of evaluating implementation.

    c) An *advisory board*, which may have a specific, oversight and/or consultation mandate.

135. Sometimes a wider board and a smaller executive committee adopt the roles of the latter two governance components.

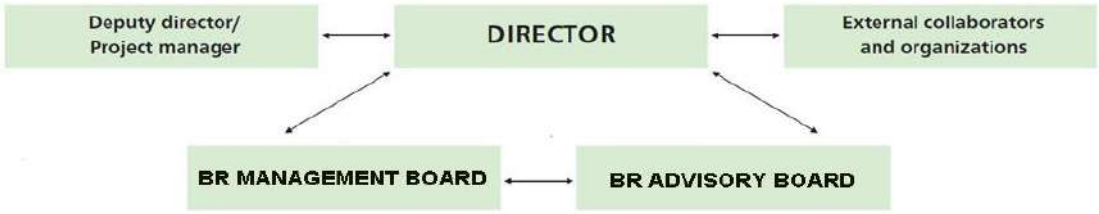
136. It is crucial to ensure a strong balance of interests in the governance structure of the biosphere reserve. Good governance involves not only listening to the majority, but also taking care of the needs of minorities, especially if they are vulnerable.

137. Case study: **Stakeholder-based governance structure of the Lower Morava Biosphere Reserve, Czech Republic**

    137a. The philosophy of the Lower Morava Biosphere Reserve (LMBR) is based on the idea that the management of a biosphere reserve should function essentially as a treaty between local communities and society as a whole. The management of the LMBR is based on the equal participation of local communities, government authorities, business representatives, the NGO sector and a scientific panel. The governance structure takes the form of an NGO, the LMBR Public Benefit Company, which was founded as the administrative organization of the biosphere reserve in August 2004 by Forests of the Czech Republic (a state enterprise), the Ministry of the Environment, MND (a Moravian oil-drilling joint-stock company), the Breclav County Chamber of Commerce and the Czech Union for Nature Conservation. In 2012, the Ministry of the Environment waived its founder status for internal and organizational reasons, and withdrew from its positions in all biosphere reserve bodies. Thereafter, the Ministry's cooperation with the biosphere reserve took the form of an informal partnership, with its interests assured through a 'permanent guest position' assigned for representatives of nature conservation authorities.

    137b. The administrative bodies of the Public Benefit Company comprise: the management board, the advisory board and the director (see figure below). The management structure is based on the broad participation of major stakeholders in the LMBR. The management board is a nine-member management entity and includes representatives of the current four founders mentioned above, three representatives elected by the communities of the three regions covered by the biosphere reserve, one representative elected by the farming community, and one from Mendel University in Brno, who also acts as the main scientific consultant of the

LMBR. The advisory board is a six-member supervisory body. It includes representatives of the founders, one member representing all the communities within the biosphere reserve and one from Mendel University.



137c. The staff consists of two to three full-time employees who take care of administration, projects and fundraising. The management bodies meet every two months, or more frequently if necessary. Funding comes mainly from stakeholder donations, the biosphere reserve's own activities and through various projects. In 2014, the MAB-ICC recommended that the LMBR be used as a model for a stakeholder-based management structure.

138. Case study: **The seven Brazilian biosphere reserves management and integration system, decentralized and participative management**

138a. With hundreds of core areas, large buffer zones protecting or linking these core areas and supporting the ecological corridors, protected area mosaics and green belts around urban areas, the shape of the Mata Atlântica Biosphere Reserve (MABR) is more complex than the original concept of biosphere reserves designed by UNESCO.

138b. Considering its huge dimensions and territorial complexity, one of the main challenges of the MABR was to build a specific management system to guarantee its institutional consolidation, the decentralization of actions, the field development of biodiversity conservation projects, knowledge sharing and sustainable development promotion.

138c. In 1993, a National Council was created with the Executive Secretariat, and its own staff, in Sao Paulo City. The following years saw the creation of State Committees and Subcommittees of the MABR. These bodies worked to locate pilot areas, define priorities to implement the field projects and create Advanced Sites – institutions that function as centres to promote MABR principles and projects. In 1999, the NGO 'Instituto Amigos da RBMA' (the MABR Friends Institute) was created to run projects and partnerships for the MABR. This inclusive structured network consisted of institutions working to conserve a biome in Brazil and, in part thanks to its diverse partnerships and autonomous management system, was truly representative, balanced and decentralized. All decision bodies are collective, with simultaneous and balanced participation among governments (national, state and local) and representative sectors from society, notably NGOs, science, business and local populations.

138d. As consequence of its role, the Mata Atlântica Biosphere Reserve transcended its function as a special protected area, becoming a vital institution that inspires other Brazilian biosphere reserves managed under the same management system. This model was recognized by a Federal Law in 2000.

3.1.3. How to plan and implement a governance structure for biosphere reserves

139. Biosphere reserves are designated because an entire region, including all of its communities, aspires to become a model region, or a 'site of excellence' for sustainable development of global importance. The governance structure should therefore be designed to meet this vision. Accordingly, the structure should be inclusive, participatory and reflect the stakeholder groups in the area.

140. The planning of the governance structure usually starts during the nomination process, with the formation of a steering group. If this group has wide support and a mandate, it might be become a permanent governance structure once UNESCO designates the biosphere reserve.

3.2. Participatory planning

141. ***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 of the functions of a biosphere reserve.*** *(Statutory Framework, Article 4, paragraph 6)*

142. Planning (and implementation) of the governance structure is a key issue in the nomination process, and provides an indication of the strength of stakeholder participation. Some biosphere reserves build on direct local stakeholder participation, while other sites adhere to a modern 'authority model' with true participation (e.g. in Germany).

143. Participation requires time and resources but is usually cost-effective in the long run, as it reduces conflicts and harnesses innovative ideas from communities.

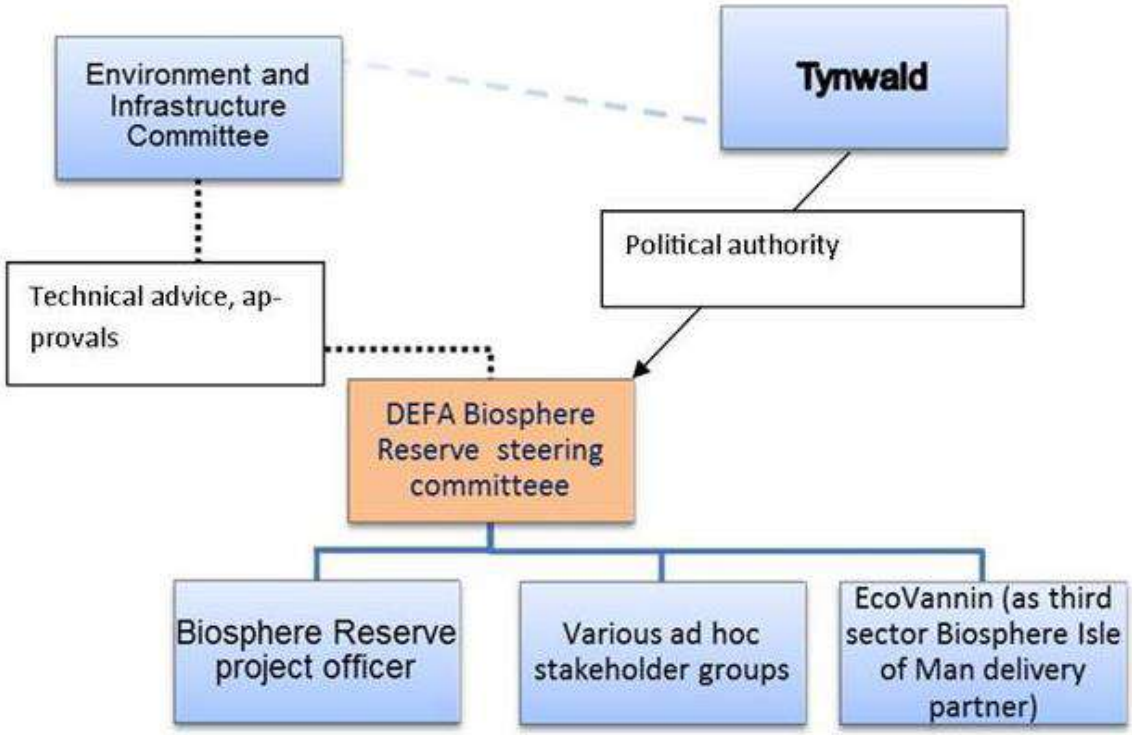
144. Different types of stakeholders – for example, public authorities, local communities, traditional authorities, civil society, the private sector and the scientific community – may jointly develop and implement various types of participatory planning.

3.2.1. Public authority

145. In many biosphere reserves, a single public authority (e.g. a park or forest administration, or a local or regional government) is in charge of governance. In such cases, it is necessary to ensure that stakeholders can participate effectively in governance through complementary structures that have the power to influence biosphere reserve activities and site management.

146. Case study: **Isle of Man Biosphere Reserve**

146a. The biosphere reserve includes the area of the Isle of Man and the Manx Territorial Sea, and fully involves local communities, as the entire population of the island, some 84,500 residents, live within the terrestrial buffer zone and transition area.



146b. The Tynwald is the democratically elected decision-making political body for the Isle of Man as a whole, and to whom progress is ultimately reported. The Tynwald approved the decision to pursue biosphere reserve status, and is ultimately responsible for ensuring the implementation of the biosphere reserve functions as set out in the nomination. Other organizations represented in the UNESCO Biosphere Isle of Man Steering Group include the Department of Environment Food and Agriculture (lead organization), the Centre for Manx Studies, the Children's Centre, Culture Vannin (formerly the Manx Heritage Foundation), the Department of Economic Development, the Department of Education and Children, the Department of Infrastructure, EcoVannin (third sector partner), the Institute of Directors, thee Manx Fish Producers Organisation, the Manx National Farmers Union, Manx National Heritage and the Manx Wildlife Trust.

146c. *Detailed information on individual entities involved can be found at:* www.biosphere.im/who-involved.

3.2.2. Local communities

147. Local communities are the essence of biosphere reserves, and should be directly involved in governance for several reasons. Local inhabitants are able to act as the landscape's 'guardians' – the people who use the landscape and protect its values. They frequently possess traditional knowledge, which is central to sound management decision-making. As

the people directly dependent on the area, they also represent the main target group for a majority of the biosphere reserve's activities.

148. In some cases, local communities take charge of a biosphere reserve by setting up their own institutions. In other cases, groups of communities assume this role, for example, through a structure that involves multiple municipalities. Some cases involve mixed approaches, where multiple local or regional administrations work with different stakeholders in a formal structure.

149. Case study: **Multiple municipality involvement in Nordhordland Biosphere Reserve, Norway**

149a. Nordhordland Biosphere Reserve is located on the coast of western Norway and encompasses the coastal landscape between Bergen and Sognefjorden. The biosphere reserve was proposed as a project under the Nordhordland Regional Council. Its organization was based on a collaboration agreement signed in 2013 by Nordhordland Regional Council and the University of Bergen to prepare an application for biosphere reserve status and for research cooperation in the biosphere reserve.

149b. Nordhordland Region Council is the executive body of the biosphere reserve, but all local authorities, representing communities linked to Nordhordland Regional Council, also participate. The authorities in question represent Austrheim, Fedje, Gulen, Lindås, Masfjorden, Meland, Modalen, Osterøy and Radøy. In addition to these, Øygarden, Vaksdal and parts of Askøy, Bergen, Voss, Vik and Høyanger also form part of the biosphere reserve.

149c. Local communities played a vital role during the nomination process. The highest formal body that led the establishment of the biosphere reserve was a broadly composed steering committee comprised of 10 members. The committee had representatives from the local communities in the region (three mayors), Nordhordland Development IKS, the County Governor's Office in Hordaland, Hordaland County Council, the University of Bergen, an environment organization, and representation from business and industry.

149d. The steering committee has supreme economic and strategic responsibility for all activity in the biosphere reserve. It meets approximately four times each year.

149e. The project manager reports to the chairperson of the steering committee, who is one of the mayors in the region. Decisions in the steering committee are made by simple majority.

150. Another good example of the involvement of local communities in site management can be found in Kenya. Kiunga Biosphere Reserve and Malindi Watamu Biosphere Reserve both have community-managed forests with forest associations, similar to the Community Resource Management Areas (CREMA) system in Ghana. The National Forest Service signs agreements with Indigenous communities for forest management and other activities including benefit sharing.

3.2.3. Traditional authorities

151. Traditional authorities are the key stakeholders of many biosphere reserves worldwide. They are the holders of traditional knowledge and represent a vital link between the history and the present of sites. In many areas, traditional authorities have great power and must be consulted on every issue related to a biosphere reserve, from initial discussions on the proposal for a biosphere reserve through to its ongoing management. Whenever feasible, traditional authorities should be explicitly included within biosphere reserve governance structures.

152. Case study: **Tsá Tué Biosphere Reserve, Canada**

152a. Located in Canada's Northwest Territories, the Tsá Tué Biosphere Reserve comprises the last large pristine arctic lake and its watershed. Boreal forest and taiga cover much of the watershed and provide habitats for wildlife including muskox, moose and caribou.

152b. The human residents of the site are the Sahtuto'ine, the 'Bear Lake People', the First Nation Dene community, which have a longstanding spiritual and cultural connection to the land and lake. The community established a Stewardship Committee in 2013 and led a designation process for Tsá Tué to become part of the WNBR.

152c. The biosphere reserve was designated in 2016, and shortly thereafter the Canadian government granted the Deline First Nation (part of the Sahtu Dene Council) self-government. Tsá Tué is the first biosphere reserve in the world designed and managed by First Nations.

3.2.4. Civil society

153. In many cases, civil society not only conceives of the idea of nominating a biosphere reserve, but also takes on a large role in its governance once the site is designated. A governance structure built on civil society involvement is usually highly participative and inclusive in character. However, one potential weakness is lack of financial stability, while another is lack of direct decision-making and implementation power. These weaknesses can be eliminated through transparent partnerships with businesses or feasible business plans, or via negotiation with competent authorities.

154. Case study: **The Gouritz Cluster Biosphere Reserve, South Africa**

154a. The Gouritz Cluster Biosphere Reserve (GCBR) is located in southern South Africa, across parts of the Western, Southern and Eastern Cape. The GCBR also refers to a non-profit company registered as an 'association incorporated not for gain' to manage the biosphere reserve according to the requirements of the MAB Programme. The GCBR is a membership organization governed by an elected non-executive board of directors. A lean management team is responsible for direction, strategy implementation and day-to-day operations. Project leaders are appointed on a project-by-project basis, coupled with partnerships as a preferred way of delivering on the ground.

154b. The GCBR's organizational culture and methods of working are characterized by the principle of enabling and informing others through:

- *partnerships and networks with champions across the domain (e.g. local action and youth groups, innovative farmers and associations, non-governmental organizations, faith-based organizations such as church groups);*
- *active mobilization, hosting and facilitating multiple stakeholders to work together for ecological sustainability, with stakeholders including business, government, communities, educational establishments, foundations, farmers, para-statals, corporates and associations;*
- *influencing public opinion, perceptions and behaviours, with special attention to youth and tomorrow's leaders.*

154c. The GCBR depends largely on donor financing for its operations. Gouritz Enterprises Pty Ltd, a for-profit company, was registered in 2016 with the GCBR as its sole shareholder. The intention of this company is to develop business opportunities from which surplus can be derived. Profits will be paid to the GCBR to build up an unrestricted fund to further support delivering on the GCBR's mandate.

3.2.5. Private sector

155. It is highly desirable to include representatives from the private sector in the biosphere reserve governance structure, in order to help to improve the feasibility of actions by providing different and valuable perspectives on biosphere reserve activities. Private interests should therefore be considered when planning strategies to implement these actions. Sustainable production and consumption are essential elements in a biosphere reserve, and private sector involvement is often necessary to achieve the goals of the site. The private sector can also help support the biosphere reserve management through sharing its resources (financial, information, etc.). Incorporating the private sector into the governance of a biosphere reserve does not imply 'greenwashing' and requires clear rules and benchmarks. Documents or directives concerning UNESCO's partnership with NGOs and business partners can be used as general guidelines (https://en.unesco.org/partnerships, https://unesdoc.unesco.org/ark:/48223/pf0000370506/PDF/370506eng.pdf.multi).

156. Other stakeholders involved should monitor the involvement of the private sector in biosphere reserve management in order to avoid conflicting situations.

157. Case study: **Private sector involvement in Pendjari Biosphere Reserve, Benin**

157a. The Pendjari Biosphere Reserve is located in north-western Benin, near the border with Burkina Faso. The site is characterized by a diversity of ecosystems including grass, shrubs, woodland and forested savannahs, as well as open forests and gallery forests. It is renowned for its rich fauna and a great variety of bird species.

157b. Private safari hunting companies operate in the buffer zone of the biosphere reserve. These companies are responsible for anti-poaching activities, and making arrangements (tracks, water points, salt works, etc.) with a view to the optimum development of wild animal populations and their tourist exploitation without compromising wildlife capital. This form of exploitation provides substantial income, thus contributing to the sustainable financing of the conservation of the entire biosphere reserve, and covering recurrent costs of managing core

areas as well as economic and social benefits for local communities, in particular, the creation of gainful employment and the provision of meat from hunting.

157c. The biosphere reserve management committee has also partnered with several cooperatives, such as the public-private partnership Cotton ALAFIA, which focuses at organic and sustainable cotton production. One of the project's goals is to guarantee fair compensation for local actors.

3.2.6. Scientific community

158. Universities, research centres or individual scientists usually do not possess the resources to create an entire biosphere reserve governance structure alone, and such an approach would not be in line with the Statutory Framework of the WNBR. However, the scientific community is an excellent partner for site co-management, and the inclusion of scientific representatives in biosphere reserve governance is desirable.

159. While some biosphere reserves have embedded the scientific community directly into their governance scheme, others have established a special scientific committee or scientific advisory board as an important component in meeting the needs of the logistic function and informed evidence-based decision-making. Regardless of the form this cooperation takes, all activities must remain balanced and extend beyond the logistic function.

160. Many examples exist of good partnership between the scientific community and biosphere reserves. For example, the Austrian Academy of Sciences has a special grant programme for Austrian biosphere reserves. Each year, selected biosphere reserves receive financial support to work on local, national and international projects. In Norway, the University of Bergen and Nordhordland Biosphere Reserve have signed a Memorandum of Understanding allowing scientists and students from the university to undertake projects in the biosphere reserve. Another good example is Mendel University in Brno (Czech Republic), which participates directly in the governance of the Lower Morava Biosphere Reserve, combining research and education activities with the biosphere reserve agenda.

161. Case study: **Co-management of the Mount Arrowsmith Biosphere Region, Canada**

161a. This biosphere reserve, designated in 2000, is located on the east coast of Vancouver Island in British Columbia. The Mount Arrowsmith Biosphere Region (MABR) includes the entire watershed draining the area. Management focuses on the maintenance of healthy aquatic, coastal estuarine and intertidal ecosystems. The administrative authority for the biosphere reserve *is the Mount Arrowsmith Biosphere Foundation, originally established in 1996 to raise awareness of the biodiversity of watersheds on Vancouver Island's Mount Arrowsmith and adjacent marine areas. Members of the Foundation voted in 2013 to dissolve the society and hand over management of the MABR to Vancouver Island University (VIU) and the City of Parksville. They signed a Memorandum of Understanding to co-manage the MABR and to create a roundtable involving First Nations, municipal and senior levels of government, private industry, conservation groups and others regional representatives. In 2014, VIU established the Mount Arrowsmith Biosphere Region Research Institute (MABRRI). MABRRI's purpose is to connect the expertise and experience of university researchers with the*

brainpower and energy of students and the priorities and concerns of the community, in order to develop a collaborative research agenda for the MABR.

3.3. Transboundary biosphere reserves

162. The governance of transboundary biosphere reserves can be challenging. Normally, national governance structures are responsible for the respective national parts of the site, while a joint governance structure coordinates and plans transboundary activities.

163. Case study: **The Vosges du Nord-Pfälzerwald Transboundary Biosphere Reserve, France/Germany**

163a. The Natural Park of Vosges du Nord (France) was designated as a biosphere reserve in 1988, and the Pfälzerwald Natural Park (Germany) in 1992. Subsequently, these two parks collaborated on a nomination for a transboundary biosphere reserve. In 1998, this goal was achieved. Administration of this site is provided by the Parc Naturel Regional des Vosges du Nord, Verein Naturpark Pfälzerwald, and the Ministry of Nature Protection and Forest Management. The coordinating structure of the Vosges du Nord-Pfälzerwald Transboundary Biosphere Reserve, was established when the site was designated. The structure was reaffirmed and further defined by a protocol of agreement signed in February 2017 by the Chairs of the two entities and representatives of the French and German authorities.

163b. Concerning the objectives of the transboundary biosphere reserve, the agreement lists 11 fields for transboundary cooperation and development: conservation of biodiversity, sound forestry, agro-ecology, quality tourism, education on sustainable development, support of innovations, support to sustainable energy, climate change, cultural heritage, intercultural communication and participation in MAB networks.

163c. The structure consists of a coordinating Committee with the following composition: heads of the two parks, four members of the steering committee of each park, representatives of the regional governments (two each from the French departments Bas-Rhin and Moselle, two from the French region Alsace, and two from the Land Rhénanie Palatinat) and the chair and vice-chair of the scientific Council of the Transboundary Biosphere Reserve.

163d. The scientific Council comprises three representatives of each of the two scientific boards of the French and German parks. It is consulted by the coordinating Committee on any issue regarding management of the site.

163e. The Committee has no legal status, which means that it has no financial autonomy and cannot establish its own Secretariat. However, the Committee approves and recommends future orientations and projects for the Transboundary Biosphere Reserve. Its decisions are made on the basis of a three-quarters majority.

163f. The Committee meets at least twice a year and adopts its own rules of procedure. It elects one chair and one vice-chair for two years, and can create thematic working groups when considered appropriate. Such groups have, for instance, been created for eco-renovation, green and blue networks, environmental education, short channels and

biodiversity. The Committee can also invite any expert who could assist with its discussions, depending on the agenda.

3.4. Multi-designated sites

164. Biosphere reserves with multiple international designations may face a slightly more difficult situation in terms of governance, as different designations have different objectives, leading to challenges to cooperation among representatives of various designations. In such situations, it is essential to create a platform capable of managing the different designations jointly or coordinating them effectively. The biosphere reserve manager may then take on the role of coordinating multiple interests.

165. In most cases, the different designations cover different areas, but there are also examples of various designations sharing a common area.

166. Case study: **Jeju Island Biosphere Reserve, Republic of Korea**

166a. Jeju Island Biosphere Reserve was designated in 2002, and expanded to cover the whole island in 2019. In 2007, part of the island was inscribed on the World Heritage List thanks to its geological value. In 2010, the entire island was also designated as a Global Geopark. Initially, the multiple designations resulted in complicated management structures. Management of the biosphere reserve and the Global Geopark fell under the Department of Environment Policy of the Jeju Provincial Government, which is responsible for the conservation of biodiversity and management of the national park. However, management of the World Heritage Site fell under the Department of Cultural Policy of the Jeju Provincial Government. To address this situation, the Jeju government established a specialized authority, the Jeju World Natural Heritage Centre, to undertake the integrated management of the biosphere reserve, World Heritage site and Global Geopark. The Centre set up a comprehensive management committee of UNESCO designated sites, composed of 30 people from the central government, academic institutions, civil society, local communities and local governments, all of whom are involved in the three UNESCO sites. The Committee has three sub-committees – focused on the biosphere reserve, the World Heritage site and the Global Geopark – which meet biannually and advise on management issues.

167. Other examples of functional multi-designated sites are the Wudalianchi Biosphere Reserve (China), the Malindi Watamu Biosphere Reserve (Kenya) and the Delta du Saloum Biosphere Reserve (Senegal).

3.5. The role and structure of National MAB Committees

168. Government-appointed National MAB Committees play a fundamental role in the coordination of activities related to the MAB Programme at country level. In order to ensure maximum national participation in this international programme and to define and implement its national participation, every Member State is invited to establish a permanent and fully functioning national committee. The committee should work closely with its UNESCO National Commission and Permanent Delegation.

169. The National MAB Committee serves as a relay between the different institutions and ministries concerned by the MAB Programme and UNESCO (i.e. MAB Secretariat, Division of Ecological and Earth Sciences, etc.). Even though these committees are not a crucial part of the governance structure of biosphere reserves, they play an important role in overall coordination by the MAB Programme at the national level, as well as a critical role in implementing the vision and mission of the MAB Programme.

170. To ensure that the interests of the scientific community and the administrative authorities are taken into consideration, the National MAB Committee should be composed of representatives of the main scientific research centres and the universities and ministries concerned, and be interdisciplinary. The authority in charge of each biosphere reserve should also be represented on the MAB National Committee. For example, membership of the Indonesia MAB National Committee (2016-2019) involved four ministries (the Minister of Education and Culture, the Minister of Environment and Forestry, the Minister of Marine and Fishery, and the Minister of Internal Affairs) as an Advisory Board, and the Chairman of the Indonesian Institute of Sciences, as well as representatives of all local governments and heads of national parks or conservation areas of the biosphere reserves, universities, private sectors and NGOs. This period was the first to include numerous ministers who provided official letters of commitment.

171. The importance of trans-disciplinary membership in National MAB Committees is underlined in the Lima Action Plan (Outcome E2 Action E 2.1).

172. The guidelines for establishing a National MAB Committee can be found at https://unesdoc.unesco.org/ark:/48223/pf0000111527.

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PLANS, POLICIES AND STRATEGIES FOR BIOSPHERE RESERVES



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173. This chapter explains several strategic documents that are necessary (and/or suggested) for effective management of a biosphere reserve. The Statutory Framework (Article 4, paragraph 7) requires that every biosphere reserve have a 'management policy or plan' (section 4.1.2), envisioned as an overall framework for all stakeholders to collaborate towards achieving the goals defined for the biosphere reserve and to address emerging challenges.

174. Other documents discussed in this chapter are optional. For example, a business plan can be developed as a supplement to a management plan. This would focus not on the collective action of all stakeholders, but rather on the action of the main management entity itself (sometimes the authority responsible for a protected area that forms part of a biosphere reserve). Even if the management entity of a biosphere reserve operates in a not-for-profit manner and/or is a government authority, it is wise to apply certain proven management principles of commercial businesses.

175. The marketing strategy and the communication strategy can be separate documents or integrated with other documents. Their main purpose is to orient the biosphere reserve towards its stakeholders, and/or to position the products and services of commercial businesses within the biosphere reserve for tourists and other customers, in order to generate income for local communities.

176. Managing a biosphere reserve according to such strategic documents provides many benefits. These include clear direction and strategy for all stakeholders; the smooth transition/retention of knowledge between staff, directors and volunteers, committees and board members; monitoring, record-keeping and evaluation of progress; management of possible donor expectations; and compliance with government regulation.

4.1. Management plan

177. All biosphere reserves should have a management policy or management plan. This is understood as an official document covering a multi-year period, formulated through a participative process and adopted by the relevant decision-making body. It serves to achieve the declared objectives of the biosphere reserve in a structured, measurable way.

178. A management plan is mandatory and required by the Statutory Framework of the WNBR (Article 4.7.b). Biosphere reserves should involve all the various stakeholders in planning and decision-making, and provide training to enable meaningful participation. As a management plan should also accommodate the principles of adaptive management, it should be updated at regular intervals. The nomination form, periodic review form and Lima Action Plan 2016-2025 (Actions A2.2, A3.2, A4.5) all request a management policy or plan.

179. The MAB Programme refers to both 'management policy' and 'management plan' in the mentioned statutory documents. This double terminology reflects the different concepts and different management styles used in different countries. At present, the term *management plan* is preferred. To be clear, the MAB Programme *requires only one* multi-year strategic document from each biosphere reserve, *not two.* Typically, a management plan will address a (plus/minus) ten-year period (in line with the frequency of the periodic review), although sometimes its duration is shorter (e.g. five years).

180. A management plan needs to address all zones of a biosphere reserve equally. However, while conserving biodiversity is necessary in all three areas, the different zones provide a variety of instruments to this end. Likewise, promoting sustainable economic and social development is mandatory in all three zones, but means something different in each zone. Research and education should be promoted in all three zones. Some biosphere reserves also have face challenges related to multiple designations (e.g. national parks, Ramsar sites, World Heritage Sites. etc.) with possibly diverging zonations.

181. For biosphere reserves, UNESCO specifies three categories of zone (core area, buffer zone, transition area). However, sub-categories of these zones may be defined for management and spatial planning purposes, in accordance with national law or local specificities (e.g. core 1, core 2, buffer 1, buffer 2, zone of influence, etc.). However, all official biosphere reserve documentation provided by authorities to the MAB Programme (nominations, periodic reviews, etc.) must restrict itself to the three-category classification and terminology. If a site holds several designations and corresponding zonations, the zonations must be legally and conceptually compatible. All these different zones must be addressed by the management plan.

4.1.1. Why is a management plan necessary (i.e. what are its crucial benefits)?

182. A management plan is necessary because:

a) It is a requirement of the statutory texts of the MAB Programme.
b) The biosphere reserve management entity (like all organizations) needs a basic document to guide its actions.
c) National government will most likely require such a document for accountability purposes and as a prerequisite for provision of funding.
d) Any potential donor will likely require a management plan in order to understand how an individual project fits into the biosphere reserve's overall approach.
e) Local partners might expect a written document that outlines goals, priorities and main lines of action.
f) Management without a plan is ad-hoc and not effective, and can lead rapidly to strategic shifts away from key goals.
g) Formulation of a management plan represents a key opportunity to engage with stakeholders and communities in depth and to secure support and buy-in.

4.1.2. What should a management plan include?

183. A management plan should contain several main items. The following list is only indicative and the final plan might contain additional or fewer items:

a) an organizational/governance structure responsible for implementation of the plan;
b) status quo analysis of strengths, weaknesses, opportunities and threats (SWOT);
c) status quo analysis of priorities for the biosphere reserve, including from a stakeholder perspective;
d) scenario development, including an analysis of external pressures and internal vulnerabilities;

e) a long-term vision (either a short summary statement or visions for several priority themes, possibly in the form of a mission statement);
f) medium-term goals that need to be attained to make the vision a reality, accompanied by indicators and benchmarks; and
g) priority projects whose implementation will lead to attainment of the medium-term goals.

184. Case study: **Management plan of Waterberg Biosphere Reserve, South Africa**

184a. The Waterberg Biosphere Reserve located in the Limpopo province in the northern part of South Africa was designated in 2001. A management plan was completed in 2011, together with the first periodic review and the successful application for a considerable extension of the biosphere reserve. The main goals of the plan are to address various challenges such as mining, hunting, unemployment and fragmentation of the landscape, as well as spatial planning, development guidelines and long-term conservation objectives. Since biosphere reserves do not have a legal status in South Africa, achieving leverage and impact on land use practices on the ground is of the utmost importance. Thus, in the context of formulating the management plan, improved strategic planning was foreseen in conjunction with engagement with all responsible levels of government. The management plan spells out a vision and a mission statement, a detailed analysis of lessons learnt and of present and future challenges, as well as 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 comprising representatives from up to 30 local interest groups.

4.1.3. Issues to be addressed by a management plan

185. The management plan needs to address all issues of *relevance* for the *specific* biosphere reserve. For coastal or marine biosphere reserves, the topics will differ from those for mountain or dryland biosphere reserves, while the topics for very rural areas will be different from those of densely populated and semi-urban biosphere reserves. Such topics should be defined not only according to their current relevance, but should also integrate ‘upcoming issues’.

186. The issues to be addressed will need to be defined by the established or interim biosphere reserve governance structure (including the management entity), through a participatory approach involving stakeholders and local communities to the maximum extent possible. For most biosphere reserves, the following issues will likely form part of management plans:

- biodiversity and ecosystem services and their conservation and use;
- sustainable land and resource use;
- improving livelihoods and generating benefits for communities;
- promoting green economies;
- infrastructure development;
- ecosystem restoration;
- disaster reduction and risk management;
- tourism;
- climate change; and

- research and education.

187. Depending on the specificities of the biosphere reserve, issues such as mining or local/traditional/Indigenous knowledge might also be high priorities.

4.1.4. How to plan and draft a management plan

188. The process of formulating a management plan can be long and may require considerable resources (in some biosphere reserves the process takes one to two years). The management entity of a biosphere reserve should therefore seek full and explicit support from all relevant partners, including government institutions and communities. Essential partners should have a good understanding of why a plan is beneficial for all stakeholders, beyond the requirement of the MAB Programme.

189. Before the process starts, sufficient funding has to be secured. The process of. creating a management plan might be eligible for funding from international donors. If the biosphere reserve management entity lacks necessary funds, it has a duty to create a feasible management plan utilizing whatever resources it has available, in collaboration with as many stakeholders as possible.

190. Formulating a management plan should be viewed as an opportunity to reach out to communities and stakeholders. It can also be seen as a chance to experiment with new, more dynamic, participatory and efficient working methods.

191. Suggestion for possible steps to be taken when drafting a comprehensive management plan are as follows:

Step 1. Establishing a steering group and its working methods
A steering group is helpful and should be established for the entire duration of the process of elaborating a management plan. The steering group must have experienced leadership and be under the coordination of the biosphere reserve management entity. Ideally, the steering group should be multidisciplinary, and needs to include key stakeholders and political mandates according to the dynamics of the specific biosphere reserve. The steering group needs to agree on ways of collaborating, on a schedule of meetings and on its decision-making process and power. The steering group's tasks typically include controlling the progress of the process, identifying gaps, and revising and finally adopting the plan.

Step 2. Collecting information and priorities from stakeholders and communities
Communities and stakeholders should be consulted on their specific interests and problems. This could take place through a series of workshops. An initial step could take the form of an open brainstorming session on a 'status quo analysis': What is the situation today? What should change, and when? Interests and problems could be clustered – although cluster themes and priorities should not be imposed in advance. If a series of workshops is organized, subsequent workshops can validate or adapt the results of previous workshops.

Step 3. Developing a vision

A management plan should contain a long-term vision for the biosphere reserve. The vision should be developed in a participatory manner by the entire community. It should be driven not only by an analysis of problems, vulnerabilities, threats and risks, but also by an analysis of opportunities and strengths. Cooperation with scientists and external consultants can support scenario-building. The steering group should make the final decision about the exact formulation of the vision.

Step 4. Formulating goals and objectives aligned with the vision

The management plan should include goals to be achieved in three, five or seven years (as an example), with a view to achieving the overall vision in 10 years. There should also be a clear and credible causal connection between issues to be addressed and objectives. Measurable success indicators that provide insight about reaching the goals should be formulated. Some of the goals can also relate specifically to the current **WNBR Action Plan** (e.g. Lima Action Plan 2016-2025).

Step 5. Projects and interventions

The final step in developing a management plan is to identify projects and interventions whose implementation is expected to lead to achievement of the goals. A project or intervention is a concrete action, such as 'representing the region at the national tourism fair' or 'hiring a tourism consultant'. It is helpful to reach out to stakeholders and communities to collect ideas for projects and interventions, and to later cluster and prioritize them. These activities again could be undertaken through consultation meetings, as well as through competitions or calls for proposals. Projects should bear in mind practicalities and likely budget scenarios, as these could otherwise limit the success of implementation.

192. Once the management plan is formulated, a process of approval and adoption follows. If a steering group has been created to formulate the management plan, the final document should be adopted first by this steering group (and possibly later by local and/or national authorities).

193. Case study: **Elaborating a management plan in the Swabian Alb Biosphere Reserve, Germany**

193a. From 2011 to 2012, the Swabian Alb Biosphere Reserve (designated in 2009) established its first management plan through a highly participatory process. More than 1,000 individuals were involved (the population of the site is about 150,000 inhabitants). Twelve working groups worked 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. A steering group of 23 members met 6 times; in addition, an accompanying government supervising committee of 13 persons met 3 times. Two managers and one external expert as coordinators met 22 times. Several competitions for children were carried out, an internet discussion forum was established and two large public hearings with more than 300 participants were organized. There were five additional public hearings on specific topics. The result was the formulation of 12 thematic visions, the adoption of 55 concrete goals, and the selection of 350 ideas for concrete projects, of which 28 were prioritized. The management plan itself consists of three comprehensive documents of several hundred pages.

194. The above case study presents a sophisticated and demanding approach for the elaboration of a top-quality biosphere reserve management plan. However, other approaches are available to fit local or regional conditions and resources. It should be emphasized that the common goal in all cases should be to produce a feasible and assessable management plan, generated in a participative manner.

4.1.5. How to implement a management plan

195. The following elements are central to successful implementation of the management plan:

- establishing precise responsibilities for implementation of the different parts of the plan, to be clearly shared between the management entity and other relevant stakeholders;
- establishing precise responsibilities for seeking financial support for funding the priority projects and interventions agreed in the plan;
- ensuring that other projects and interventions beyond the scope of the plan, possibly implemented by third parties, are in line with the stated vision and goals, to the extent possible; and
- monitoring implementation success.

196. Management entities of biosphere reserves with a history of long-term success have proper strategies, acquire the funds needed and have the right staff to implement their strategies. In addition, they listen constantly to the needs and wishes of stakeholders and communities and set priorities accordingly; they create support, commitment and shared values; and they involve stakeholders in implementation processes. Participatory management means collaboration with all stakeholders and includes community involvement and community engagement.

197. With regard to funding, it is helpful to try to integrate the biosphere reserve and its goals into national laws, policies and/or strategies. In the long run, each biosphere reserve has to be funded at least in part from national, and/or provincial or municipal sources. If this is not possible, as is the case in some developing countries, the UNESCO biosphere reserve designation should be used as a ‘quality label’ to attract a wide variety of funding from national, international and private sources. This is indeed possible, as has been done through the Global Environment Facility (GEF). It is the specific combination of various factors (environmental, economic and social) that make biosphere reserves attractive for donors.

198. Through a diversified funding portfolio, and in addition to national sources, biosphere reserves can acquire funding for individual projects, for example from scientific institutions, official development assistance (ODA) donors, intergovernmental institutions, international non-governmental organizations (NGOs) and charitable foundations.

199. Management plans will not succeed, however, if implementation and its results are not monitored. Management is based on a continuous cycle of planning, implementation, monitoring and evaluation. Monitoring and evaluation should form an integral part of the management plan and should be adequately resourced. Indicators (data collected as part of monitoring) should be quantified and accompanied by benchmarks. The indicators need to be linked to the goals and objectives to give an indication as to whether the medium and long-term goals of the biosphere reserve are likely to be achieved. Monitoring of the management

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

4.2. Policies and legislation

200. The MAB Programme and biosphere reserves need visibility, recognition and acknowledgement in the legal system of any country. Consequently, Action A3.1 of the Lima Action Plan (2016–2025) states that biosphere reserves need to be recognized in legislation and policies. This is not a straightforward action, as some countries provide a legal basis for the implementation of the MAB Programme, whereas others opt for other ways and means to implement biosphere reserves. Some examples include a royal decree in the case of Tonle Sap Biosphere Reserve in Cambodia; formal legislation with regard to biosphere reserves in Germany, Ghana and Brazil; a voluntary non-profit organization in Canada; and a government focal point assisted by the National Commission for UNESCO in Australia.

201. Case study: **The South African Biosphere Reserve Strategy**

201a. The MAB Programme in South Africa is not referenced in national legislation, thus biosphere reserves are implemented through a soft-law approach. The national Department of Environment, Forestry and Fisheries facilitated the first ever relevant South African strategy: the South African Strategy for the Biosphere Reserve Programme (2016–2020) (Government of South Africa, 2015). The aim of this strategy is to provide a shared direction to the different components of the MAB Programme regarding the interlinked objectives of biodiversity conservation and sustainable socio-economic development, thereby supporting the achievement of national priorities and international obligations. The strategy is supported by an implementation plan and a related monitoring and evaluation framework. The explicit vision for the MAB Programme is that: 'South African biosphere reserves are recognized as special landscapes where socio-ecological land management is practised towards a more sustainable future for all.' The Department reports on progress in implementation of the Strategy during annual national MAB Committee meetings and expects all biosphere reserves to provide input towards this process.

202. Case study: **Biosphere reserves in German Federal Environmental Law**

202a. Article 25 of the German Act on Nature Conservation reads (unofficial translation, excerpt):
'(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, (...) 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.'

4.3. Business plan

203. The Lima Action Plan (2016–2025) foresees, in its 'outcome A5' (financial sustainability of biosphere reserves), the development of biosphere reserve business plans. While this clause encourages the development of business plans, it is not a statutory requirement (i.e. of the Statutory Framework). Although some biosphere reserves refer to business strategies, the term 'business plan' is preferable.

204. A business plan is a written plan stating the goals of a specific organization (profit or non-profit), with a focus on how and when these goals will be achieved financially.

205. A business plan is more limited in scope than the management plan of a biosphere reserve, which typically addresses the collective work of all stakeholders of a region in a combined manner, detailing how to achieve their collective goals, defined based on wide participation (with the management entity as the main actor).

206. In contrast, the business plan is an operative plan for the management entity, as a well-delineated organization. It can be a document for the short term (typically one year) or the longer term. It is also more focused on fundraising. It will include sources of funding, how the organization will raise (additional) money, how many staff will be required, the details of how they will operate, the criteria used for allocating funds and, if applicable, how any capital investment will be repaid.

207. Case study: **Business plan for the restoration of income generation in the Shouf Biosphere Reserve, Lebanon**

207a. The Shouf Biosphere Reserve (SBR) was declared a UNESCO Biosphere Reserve in 2005. It comprises the Al-Shouf Cedar Nature Reserve (established in 1996), the Ammiq Wetland Protected Area, and 24 villages around the biosphere on the eastern and western sides of the Barouk and Niha mountains.

207b. The SBR has become a popular destination for ecotourism activities (hiking, snowshoeing, bird watching, etc.). Ecotourism is a field that is very dependent on effective and efficient planning.

207c. The SBR Ecotourism Strategy, as part of the SBR Management Plan, emphasizes the role of ecotourism as an effective step in reconciling conservation of biodiversity with economic development. The Revised Business Plan prepared by Conseil et Développement in January 2004 for the Al-Shouf Cedar Nature Reserve aimed at helping the reserve reach self-sustainability by developing an appropriate marketing strategy.

207d. The methodology adopted in the SBR Ecotourism Strategy was based on field work and a series of meetings, discussions and workshops held by the SBR coordination team with different stakeholders (local communities and key persons from different backgrounds). This approach helped to analyse the current situation and formulate a strategic plan to improve income by increasing visitor numbers, and at the same time minimize threats to the environment and biodiversity.

207e. The steps in the preparation of the ecotourism strategy were as follows:

- *assessment of the current situation (natural resources, tourism demand and facilities available, relation with the surrounding local communities, etc.);*
- *establishment of goals (to improve management, upgrade the tourist experience, minimize the negative impact of tourists, enhance benefits to local communities, develop future tourism/conservation scenarios, etc.);*
- *strategic planning (identification and prioritization of tasks to decide the level and type of tourism activities desired, time, etc.);*
- *partnerships (redefining partnership between the management team and tour operators, other NGOs, local communities, government and local authorities, etc.);*
- *monitoring and new guidelines (defining the appropriate types of tourism in the protected area, minimizing the impact of tourism activities, establishing the appropriate carrying capacity levels, creating new guidelines based on what we have, etc.); and*
- *implementation (establishing solid coordination between planning and management processes, ecological and scientific values, economic and social consideration, recreational and conservation concerns, etc.).*

207f. The purpose of the Ecotourism Strategy is to become an effective tool for conservation in and around the protected areas, and to enhance economic opportunities for local communities, thereby improving their quality of life. To achieve this objective, a number of goals needed to be set (providing financial support to protected areas, supporting the sustainable use of natural and cultural resources, linking practice to conventions/guidelines, fostering attachment to heritage, working with local stakeholders and industry). Implementing these goals required national recognition and support for the protected areas, and encouragement of tourism opportunities that benefit conservation. However, tourism can have a negative impact if not well controlled, so the design of ecotourism activities needs to become a top priority in the management of the SBR.

208. Case study: **Project Green Economy in Biosphere Reserves (GEBR): a means to biodiversity conservation, poverty reduction and sustainable development in Ghana, Nigeria, sub-Saharan Africa and Tanzania**

208a. The Korea International Cooperation Agency (KOICA) provided financial and human resources for a project (2013-17) in the Bia Biosphere Reserve (Ghana), the Omo Biosphere Reserve (Nigeria) and the East Usambara Biosphere Reserve (Tanzania). The project's goal was to conserve biodiversity, reduce poverty and contribute to sustainable development in sub-Saharan Africa through biodiversity businesses in biosphere reserves. The specific objectives of the project consisted of diversifying the economy through improved alternative biodiversity-related livelihoods, reducing the pressure on forest resources due to overexploitation, and building the capacity of communities to ensure the sustainability of biodiversity businesses and to conserve resources.

208b. The project covered activities such as bee-keeping, palm oil production, snail rearing and production, mushroom production, fish farming, wildlife (grasscutter, Thryonomys swinderianus) domestication, charcoal production, butterfly production and spice production.

These livelihoods helped to reduce poverty among community members. However, as a pilot phase, the scale of the project impact remained limited in terms of the percentage of beneficiaries reached: the GEBR covered only about 2%, 2% and 4% of the estimated population of the three sites.

208c. One important issue was the development of a management strategy, customized to the context of each country, to aid project implementation. The most efficient management strategy seemed to be an adaptive one. There is a high possibility that the registered farmers' associations and the project impact will be sustained because most of the strategies used provided an opportunity for farmers to obtain some income.

208d. A vital prerequisite of the project was the strong involvement of stakeholders such as village Chiefs, the District Chief Executive and other community leaders.

209. Case study: **Self-funded trust to protect endangered species and increase local income resources in the Hustai Nuruu Biosphere Reserve, Mongolia**

209a. The Husta National Park Trust (HNPT) is dedicated to protecting and reintroducing Przewalski's Horse (Equus ferus) to the wild. Following its extinction in the wild in the 1960s, the horse was reintroduced to Hustai Nuruu in the 1990s. It remains the last wild horse species and remains rare and endangered. The fund also aims to protect the many other endangered fauna and flora species present in the Hustai Nuruu Biosphere Reserve.

209b. HNPT provides soft loans to local people to help them generate new income, and training for herders and the local community in and around the Hustai Nuruu Biosphere Reserve. Several ongoing research projects aim to understand the effects of climate change on the ecosystem.

209c. This fund, which was established through sustainable tourism activities, is slowly increasing due to the financial generated interest and reached 700,000,000 Mongolian Tughrik *(MNT) equivalent to $US246, 486.00 (*www.hustai.mn/wp/language/en).

4.3.1. Why is a business plan necessary?

210. Any business plan for the management entity of a biosphere reserve must be aligned to the management plan or, even better, be a consequence of that plan.

211. A business plan is often a prerequisite for funding agencies to invest in the biosphere reserve's main management entity. It can also often play a critical role in monitoring how the organization is performing compared to its objectives, and provides a clear understanding of its goals and performance. The details of a business plan will vary with the type of management entity. Some will be government authorities, while others will be NGOs relying almost completely on government funding, charities or semi-commercial businesses. However, even governmental entities are often required or expected to raise third-party funds, and in such cases, a business plan can then be helpful or even necessary.

4.3.2. What should a business plan address?

212. A business plan should seek to address at least the following questions:

- What are the top goals and objectives of the management entity within the time frame of the business plan?
- What resources are necessary to fulfil these goals and objectives?
- How will the management entity fill the budget gap between current available funding and the resources necessary to achieve the goals and objectives?

The business plan should also seek to define the funding and fundraising strategies.

4.3.3. How to start writing a business plan

213. In order to begin developing a business plan for a management entity, write (and map) the following:

a) State the objectives of the biosphere reserve as contained in the management plan. Refer to the Lima Action Plan (2016–2025) and any applicable international or national other sources that legitimize your work. State briefly the current status of the biosphere reserve in terms of sustainable development, conservation and community involvement, and what improvements are expected over the lifetime of the business plan, and what resources will be realistically required to achieve them. See the guidance manual Planning and Management of a Biosphere Reserve, Urtans, A.V. and Seilis, V. (eds.) (2009).
b) State clearly the importance of the biosphere reserve for its region and how this importance is communicated, especially to people who may think that it is unimportant, peripheral, a restriction on development, or a waste of money (if available, refer to the biosphere reserve communication strategy). This is a critical part of the business plan, as it will form the basis of efforts to convince people that the biosphere reserve is worth their investment. Cite successful examples in other countries.
c) List the activities that are needed during the duration of the business plan in order to achieve the goals.
d) Propose realistic expected sources of income and/or funding for one year. Predict the expected costs for the activities.
e) Explain the fundraising strategy and the likelihood of income sources. Explain potential co-benefits to donors. It is preferable to verify and document the intent to secure funds from different sources, in order to show that the business plan will work financially.

4.3.4. How is a business plan structured?

214. The structure can vary, but the following provides an example:

(1) Executive summary
(2) Vision, objectives and legal status of the biosphere reserve as stated in the management plan
(3) Objectives and activities of the management entity, as derived from the management plan
(4) Expected impact, environmentally and socially, and why that impact is expected
(5) Sources of funding and criteria for funding
(6) Communication strategy for funding sources (see below)
(7) Resources, staffing and assets required to achieve objectives
(8) Details of management, including staff skills
(9) Performance monitoring and adaptive management
(10) Financial budget
(11) Cash-flow and basis for cost estimates
(12) Assessment of financial, operational and governance risk.

215. Items that could be included in an income and expenditure budget are as follows:

Sources of income

- central government funding
- local government funding
- industrial sponsorship
- donations
- endowment funds
- ecotourism levy
- natural resource use levy
- sales of merchandise
- sales of labelled local produce
- partnership in funded projects
- subsidized loans.

Expenditure (and/or assets obtained without costs, and from which partner)

- full-time and part-time staff (incl. taxes, social security)
- consultants
- rangers
- office facilities (hired or owned, including water, electricity, telephone, internet)
- equipment
- travel
- expenses for community consultations, workshops and/or board meetings
- expenses for monitoring and evaluation, and possibly for research and studies
- expenses for projects (nature conservation, community benefits, education, etc.)
- services such as IT, printing of brochures/flyers, exhibitions, website
- miscellaneous expenses.

4.3.5. Funding models for biosphere reserves

216. There are many funding models for biosphere reserves reflecting local, regional, national and even international conditions and resources. The common goal in all cases should be reliable, long-term funding, preferably generated from multiple sources to ensure the financial resilience of the biosphere reserve.

217. Case study: **Biosphere reserve funding models in South Africa**

217a. In South Africa, government funding to biosphere reserves is channelled through the nine provinces of South Africa, which receive annual fiscal allocations from the National Revenue Fund. Provinces with biosphere reserves allocate a small amount of funding annually to each biosphere reserve. These allocations differ greatly between provinces. Each biosphere reserve has to secure additional financial support, including for operational expenses and project implementation. For this reason, all biosphere reserves in the country have adopted the model of a non-profit private organization as their management entity.

217b. Biosphere reserves go to great lengths to source funding support from national as well as international donors. A few biosphere reserves have been extremely successful in facilitating and securing donor partners, mostly from European countries. In these cases, the biosphere reserves sign funding agreements through which money is made available for operational and project costs for several years, subject to adherence to regulating and reporting procedures. Such relations with funding partners have resulted in highly successful and effective biosphere reserve implementation.

217c. One South African biosphere reserve is currently experimenting with the new funding model of a social enterprise. Such an enterprise will implement profit-driven activities in order to fund the core costs of the non-profit biosphere reserve company. This novel idea, if implemented successfully, will assist the biosphere reserve in having its core costs fully self-funded in the future.

218. Case study: **Funding of the Mbaracayú Forest Biosphere Reserve, Paraguay**

218a. The Mbaracayú Forest Nature Reserve is a protected area covering 64,400 hectares, located in north-eastern Paraguay. It is a continuous block composed of the few remaining parts of the Inner Atlantic Forest. The site was the first private protected area in the country and forms the core zone of the Bosque Mbaracayú Biosphere Reserve (about 340,000 hectares, designated in 2000). The following steps have been undertaken to fund the nature reserve and its surrounding biosphere reserve: 1. In Paraguay, the Moisés Bertoni Foundation was created as an umbrella organization for all activities. 2. The Foundation initiated an international fundraising campaign to purchase the property and land rights of the nature reserve and convert it into a private reserve in perpetuity. 3. Income was generated by selling carbon credits for avoided deforestation on the international voluntary market. Carbon credits were sold to the order of US$ 2 million, inter alia, to the American electricity production company AES to offset their carbon emissions. 4. A trust was established to enable a stable and permanent flow of income to the nature reserve and the biosphere reserve. For legal reasons, the trust was established in the United States. The trust today provides around 50% of all the income required for the integrated programme management of the nature reserve.

Such management mainly addresses the need to generate sustainable social value and rural development in the peasant and Indigenous communities around the nature reserve. They are allowed to continue entering the nature reserve to hunt and collect, as long as they use their own traditional methods for this purpose.

219. Case study: **Funding models for biosphere reserves in Brazil**

219a. In Brazil, management and funding structures vary considerably between biosphere reserves and across time. Their secretariat and basic operational costs can be provided by governmental, non-governmental organizations or universities. In most cases, additional project funding is raised from different institutions.

219b. For example, in 2019, 90% of the funding sources for the Pantanal Biosphere Reserve were non-governmental, while 100% of São Paulo City Green Belt's sources were provided by the state government. For both the Caatinga and Mata Atlântica biosphere reserves, 30% of their costs were covered by state governments and funding agencies, with Mata Atlântica obtaining another 50% from the private sector, and Caatinga receiving another 30% from non-governmental (non-private sector) sources. The Espinhaço Range Biosphere Reserve is supported by a local NGO and the Catholic University, plus in-kind contributions from several institutions. Funding for the Central Amazon Biosphere Reserve originates from federal and state governments, NGOs and the university.

4.4. Marketing strategy

220. The majority of not-for-profit actors think of 'marketing' as a term to be used in relation only to commercial businesses, where it is almost universally understood as a core function associated with the sale of products and services.

221. However, marketing refers to more than sales – it is about identifying your partners (or customers), their interests and needs, what they might expect from you, and how you can best orient what you have to offer to their interests and needs. The outcome of marketing is not necessarily the sale of a good or service; it can also be a strengthened partnership. Marketing enables partners to understand better what they want and how they can benefit from each other.

4.4.1. Why is a marketing strategy sensible or even necessary?

222. This conception of marketing as a tool for strengthening partnerships takes into account the fact that all human interactions include to some extent 'competition for attention'. This applies equally to biosphere reserves. The biosphere reserve designation is rarely the only designation applied to a region. Within the same area there might be a National Park, a government priority area for a specific purpose, a 'research testing site' and so on, all of which might not be well integrated with the biosphere reserve. There will also be many partners whose role is not based on a spatial context. All of these partners will compete for the attention of local stakeholders. A biosphere reserve and its management entity thus cannot avoid competing with other partners for attention. This is why a marketing strategy can be helpful.

223. The MAB Programme inspires a positive future by connecting people and nature. To this end, a biosphere reserve needs to understand its stakeholders and the relevance of the biosphere reserve to them, in order to create awareness and build relationships. Developing and implementing a marketing strategy can support and guide this process.

224. There is a difference between marketing and communication. Marketing focuses on identifying partners, while communication is concerned with how messages can best be delivered to the various stakeholders. Increasingly, not-for-profit organizations are realising the value of marketing for developing a strong understanding of their stakeholders in order to achieve their strategic objectives. This is also true for the management entities of biosphere reserves in seeking to implement their management plans.

225. A marketing strategy can also be used, however, to identify the customers for the commercial products and services of a biosphere reserve and its commercial business partners.

4.4.2. What is a marketing strategy and what should it include?

226. Key objectives of a marketing strategy might include improving awareness, understanding and collective action in the biosphere reserve, geared towards the objectives of the management plan; and optimizing engagement with as many stakeholders as possible, with a focus on the key stakeholders. Such stakeholders could be government representatives, elders, landowners, community leaders, local businesses, tourism agencies, children and youth, local residents and tourists.

227. Key components of a marketing strategy:

a. **Introduction and background.** Link the marketing plan to other documents (e.g. management plan, business plan), and reiterate the vision, objectives, etc.

b. **Internal analysis.** The following steps can help understand the current situation in relation to stakeholders:

1) Undertake a SWOT (strengths, weaknesses, opportunities, threats) analysis or similar internal review (compare with the management plan).
2) Identify who are the stakeholders, which among them are the key stakeholders, and what are their interests and needs? Do they fit ‘market segments’ (e.g. landholders can be grouped into segments by their landholding size, with obvious segments being small landholders compared to commercial farming operations) and particular trends?
3) Analyse how stakeholder relations can be developed and maintained.
4) Identify which products and services the biosphere reserve can/does provide to its stakeholders (e.g. additional income to local communities, research support for national/international research projects, etc).
5) Consider key competitors, their profile and how to manage the risk associated with their presence.
6) Determine the biosphere reserve’s unique selling point or point of difference from a market perspective, and why the biosphere reserve is the relevant framework for stakeholders engagement.

7) Establish the existence of branding and current knowledge of its use and uptake by stakeholders.
8) Explore how the organization can achieve greater buy-in and engagement in actions to achieve the biosphere reserve's objectives. For example, consider the area of operation and expansion of the stakeholder base.
9) Encourage every employee, committee/board member, volunteer and contractor in the organization to influence and become involved in 'marketing'. Policies and procedures are also extremely important in managing how the organization markets itself and to what standard.

c. Marketing strategy:

1) The objectives of the strategy may be financial or marketing-focused (i.e. building awareness of biosphere reserve stakeholders). An effective and accountable way to build your objectives is for them to be SMART (specific, measurable, achievable, realistic and time bound).
2) Develop a Marketing Action Plan that details the marketing activities and links them to marketing objectives, that identifies audiences, and defines clear actions with nominated responsible people, timelines, costs and success indicators.

d. Marketing finances/budget:

A marketing budget can be integrated into the organization's business plan.

e. Monitoring and evaluation:

To ensure ongoing improvement, it is essential to test and measure the results of any marketing activities.

228. Case study: **Marketing activities in the Volcanoes Biosphere Reserve, Rwanda**

228a. The Volcanoes Biosphere Reserve is located in north-western Rwanda on the border between Rwanda, the Democratic Republic of Congo and Uganda, and is composed of five volcanoes: Karisimbi, Muhabura, Bisoke, Sabyinyo and Gahinga. It has a surface area of 160 km² covered by rainforest and bamboo. It is home to 30% of the global population of mountain gorillas (Gorilla beringei beringei), and also hosts 115 mammal species, 187 bird species, 27 reptile and amphibian species, 33 arthropod species and 3 endangered reptile species. In addition, the site features 245 plant species, 17 of which are threatened and included on the IUCN Red List, and 13 orchid species protected by CITES.

228b. The most important economic sector in the region is tourism. At the national level, tourism activities provided revenue estimated at US$ 33 million in 2006, US$ 100 million in 2010, US$ 367.7 million in 2015 and US$ 404 million in 2016. The numbers of tourists increased from 10,495 in 2005 to 27,885 in 2014. After tea and coffee, tourism represents the third most important source of income in Rwanda.

228c. The Volcanoes Biosphere Reserve runs successful marketing activities focused on sustainable tourism based on the presence of gorillas. Visitors from across the world enjoy gorilla tours, treks and safaris. Other marketed activities include bird-watching trips, golden

monkey treks, guided nature walks and cultural visits. For cultural tours or cultural safaris, visitors can visit any of the cultural centres within Rwanda, such as the Iby'iwacu Cultural village which is operated by a non-profit organization that helps repentant poachers.

228d. Kwita Izina, the annual Rwandan ceremony of naming new-born baby gorillas, is the most famous activity in the country, and attracts worldwide-known scientists, artists, athletes, business men/women, politicians and so on. The event is named after the ancestral baby-naming ceremony which takes place after the birth of a new-born. The ceremony's main goal is to help monitor each individual gorilla and their groups in their natural habitat. It was created as a means of bringing both local and international attention to the importance of protecting the mountain gorillas and their habitats.

4.4.3. How to develop a brand for biosphere reserves

The UNESCO Biosphere Reserve logo

229. In 2007, the General Conference of UNESCO adopted the '**Directives on the use of the name, logo, acronym and domain names of UNESCO**' (https://unesdoc.unesco.org/ark:/48223/pf0000144183).

230. The goal of these Directives is to ensure coherent use of the name and logo of UNESCO by all authorized entities, and to prevent misuse both by any unauthorized entity as well as by authorized entities. They also aim to ensure the avoidance of any misunderstanding, for example that a site/entity is connected to UNESCO and/or a National Commission for UNESCO in manner other than 'designation'. In addition, the Directives are designed to prevent the impression that UNESCO certifies the quality of products or services.

231. Authorization of the use of the name and logo of UNESCO is a privilege of the General Conference and Executive Board as well as the Director-General. The National Commissions for UNESCO are the competent body to deal with questions at the national level, and to a certain extent are regulated by the Directives. No other entities are entitled to authorize the use of the name and logo of UNESCO.

232. The sale of goods or services with the name and logo of UNESCO chiefly for profit are regarded as 'commercial use' and must be expressly authorized by the Director-General of UNESCO, under a specific contractual arrangement.

233. The logo of UNESCO consists of the 'temple' plus specific graphical elements (the full name of the Organization and a 'dotted line'. Programmes of UNESCO such as the Man and the Biosphere (MAB) Programme have their own specific emblem. The emblem of the MAB Programme (the letters 'MAB' in a specific design) must be used together with the UNESCO logo in all contexts; it is not possible to use the MAB emblem without the UNESCO logo or vice versa, or to graphically alter/adapt the logo. Following the request of a Member State, UNESCO will produce the logo featuring the name of the biosphere reserve with its date of designation and the MAB emblem, as shown in the example below.



234. For the management entities of UNESCO biosphere reserves, this arrangement entitles them to use this 'UNESCO Biosphere Reserve logo' consistently in all **non-commercial** contexts (on flyers, panels, exhibitions, websites, etc.). They are also entitled to use the name and logo on general tourism marketing and advertising, as long as such marketing and advertising is not connected to specific commercial offers (tour operators, hotels, transport, etc). They are not entitled to authorize their partners (museums, guides, municipalities, schools, companies, 'associations of friends', etc.) to use this 'UNESCO Biosphere Reserve logo'. For example, municipalities or districts within a biosphere reserve are not entitled to use the UNESCO logo on their letterheads or their general websites. The designation of a biosphere reserve by UNESCO means receiving a title, not a new name.

Own brand and logo

235. Because of the legal restrictions on usage of the 'UNESCO logo', many biosphere reserves have developed their own brand logos, as in the example below. Such logos only contain the term 'biosphere reserve', a term which is not legally protected by UNESCO. Many biosphere reserves have registered their own logo at the national trademark office. This is fully supported by UNESCO, as long as such a logo does not contain the acronym 'UNESCO'. Biosphere reserves are completely free to use and authorize such logos, including in commercial contexts. Where biosphere reserves have their own logo, they employ it in commercial contexts and the UNESCO Biosphere Reserve logo in non-commercial contexts (often combined with their 'own logo').



Branding of partners of the biosphere reserve and their products/services

236. If a biosphere reserve has its own logo and brand, this can be used to create a 'network of partners'. These can be non-commercial partners (schools, museums, etc.) and commercial partners (tour operators, farmers, hotels, gastronomy, guides, etc.), as shown in the examples here.





237. Usually, such partners are selected through a process with ambitious sustainable development criteria (e.g. organic farming, decent work conditions, offering specific information about the biosphere reserve, etc.) and/or improvement criteria. Typically, partners are selected for a time-bound period only and the selection is understood as a 'certification'. The partners then receive the 'own logo' for the biosphere reserve for a time-bound period (see the examples below). In some cases, they are entitled by the biosphere reserve concerned to use the 'own logo' on product labels as well (the acronym 'UNESCO' may never appear on product labels).







238. Different concerns and scenarios should be considered when developing an effective labelling plan. These should include branding and packaging, the value of promoted products and their image, for example through the use of mapping for marketing and branding (e.g. see the Google Earth package developed for the Lebanese Shouf Biosphere Reserve, www.shoufcedar.org/maps/index.html). The unique values of the place should also be reflected when branding is based on the terms 'environmental, social or economic'. Furthermore, the brand is supposed to be built on the unique characteristics of the biosphere reserve, but in a manner that conserves them.

4.4.4. Communication plan

239. Communication is more than just the materials produced, awareness campaigns about the MAB Programme, and reports published of activities in biosphere reserves. It relates to the ways in which we engage stakeholders meaningfully to inspire them, share in the pride of collective achievements, and empower people to take responsibility and action. All involved participants in the MAB Programme and its WNBR are also communicators in a sense. Without making and sustaining connections in our communities, we cannot fulfil our purpose. Communication is essential to the collaborative nature of what biosphere reserves do, and who they are as a global network.

4.4.4.1. Why is a communication strategy and plan necessary?

240. Much of the success of the MAB Programme and its individual biosphere reserves depends on communication. One of the five Strategic Action Areas of the MAB Strategy (2015-2025) is: 'Comprehensive, modern, open and transparent communication and data sharing'. Consequently, Action A2.4 of the Lima Action Plan (2016–2025) includes the following directive: 'Ensure that biosphere reserves have clear communication plans and mechanisms to implement these'. Biosphere reserve business plans are also strongly recommended, but are not a statutory requirement.

241. During its 30th session in 2018, the MAB-ICC adopted a global MAB communication strategy (UNESCO, 2018), which may be downloaded here: www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SC/images/SC-18_CONF_210_12_MAB_Comm_Strategy-ANNEX_1-EN.pdf.

242. The biosphere reserve marketing strategy focuses on target groups for communication. A communication plan is relevant for a fixed time and answers the question of 'how'.

4.4.4.2. What is a communication plan and what should it include?

243. A communication plan is a tool to assist the biosphere reserve in spreading its core messages to all relevant stakeholders and target audiences in order to meet its goals and objectives.

244. According to the official MAB Communication Strategy, biosphere reserves should aim to avoid 'technical' communication. For example, previously, technical terms such as zones or functions were often used. The new approach inspires a biosphere reserve to create a story, a message and maybe a slogan, starting with the vision adopted by all stakeholders. It is generally accepted that simple ideas are easier to understand. As stated in the UNESCO MAB Global Communication Strategy and Action Plan, biosphere reserves connect people and nature to inspire a positive future today. Two examples of memorable slogans come from the Vhembe Biosphere Reserve in South Africa – 'We celebrate Life in the Land of Legend' – and from Dana Biosphere Reserve in Jordan – 'Caring for Nature, Caring for People'. Other inspirational slogans include: 'About people, by people, for people'; 'A vehicle for people to organize around'; 'Connect people across the world'; 'Connecting culture, nature and economy'; 'Understand heritage, create future'; 'Explore better solutions in practice'; 'Share values and language'; and 'Fuelled by passion'.

245. A communication plan is time-bound and includes deadlines. It is crucial to engage with audiences in a meaningful way to inspire them and to empower people to take responsibility and action.

246. The global MAB Communication Strategy proposes six key elements for communication plans (for further inspiration, see www.odi.org/publications/5186-planning-tools-how-write-communications-strategy):

    1. Objectives (align all communication activity to engagement outcomes);
    2. Foundation (a framework for storytelling);

3. Target audiences (get specific information on who you are engaging with and what they care most about, in order to connect with them – this should be identical with the audiences for the marketing strategy, if one exists);
4. Create messaging (consider inspirational messages, storytelling and narratives to which the target audiences will listen, and consider 'who' will tell the message);
5. Choose activities (select the best method to deliver the message to the target audiences with impact, and include resources, timescales and expectations);
6. Measure communication impact (increased awareness), reach (number of people), investment (money spent) and effectiveness according to proven methods. Monitoring and evaluation also includes adaptation and improvement.

247. Communication tools and activities could include (among others) a website to host publicly available information about the biosphere reserve and its activities (e.g. newsletters, press releases, public information days and meetings, biosphere reserve-related festivals and family events, youth competitions, regular meetings with stakeholders, forums for knowledge exchange and conflict resolution, etc.). The website should present and represent the entire biosphere reserve and its activities, rather than just parts of the site (as sometimes seen for core areas).

248. Other communication means may include online social media such as blogs, Instagram, Facebook or Twitter feeds. The production of promotional materials such as T-shirts, banners, hats, leaflets and brochures, and biosphere reserve branded merchandise is also effective.

249. Case study: **Communication in the political landscape of South Africa**

249a. Biosphere reserves in South Africa, individually and collectively, have to secure buy-in and support for their long-term survival from all stakeholders, in particular politicians – including local, provincial and national ministers, parliamentarians, mayors and councillors. Thus, they need to create awareness of the local benefits of the MAB Programme, communicate with partners, educate the public and secure financial resources. Elections in South Africa follow a five-year cycle, with national and provincial elections held simultaneously and municipal elections held two years later. This results in a continual cycle of new officials entering office. Biosphere reserves therefore have to constantly enter into communication with these officials. Communication with national ministers is facilitated through the Department of Environment, Forestry and Fisheries. Communication at provincial level is mostly undertaken by the relevant government department. However, communication with local government officials is the task of biosphere reserves. Mayors and relevant officials should be invited to biosphere reserve meetings and events on a regular basis. It is also advisable to request the mayor or municipal manager to designate a specific person to attend biosphere reserve meetings as a municipal representative in order to reinforce relationships. Biosphere reserves could opt to strengthen the biosphere reserve message through making use of existing platforms for communication, such as municipal websites, municipal newsletters and so on.

4.4.4.3. How to draft and implement a communication plan

250. Drafting a communication plan is not overly complicated, but it does require a shift in perspective. There are different ways of approaching this task. The process should start with the creation of a working group, coordinated by the management entity of the biosphere

reserve, which should include, or have access to, communication experts. The working group should manage the drafting of the plan as a two-way process, both vertically and horizontally, across all audiences, levels and spheres. The working group can start by making a situation analysis to evaluate the current state of communication. Subsequent actions could include workshops with external stakeholders, timelines for gathering information, drafting of responsibilities and the process of adopting the communication plan.

251. Implementation of the communication plan is the responsibility of the biosphere reserve management entity. Accordingly, the entity should ensure that capable consultants and/or service providers are appointed in cases where there is a lack of relevant expertise. The management entity should also facilitate monitoring and evaluation of the communication plan, whether the work is performed internally or by appointed service providers.

4.5. Transboundary biosphere reserves

252. The establishment of transboundary biosphere reserves is a complicated task that requires effective coordination among the countries to ensure the functioning and sustainable development of the site, and, if possible, harmonized inter-state approaches. Existing practice also includes the creation of management plans.

253. In general, cooperation and activities plan for a transboundary biosphere reserve should take into account the following considerations:

    a) Stakeholders on all sides of the border(s) should engage in as much dialogue as possible while drafting the plan, to ensure an integrated vision, objectives and priority projects.
    b) The plan should refer to both short-term and long-term cross-border cooperation programmes in the transboundary biosphere reserve.
    c) The plan should foresee harmonization of approaches across the border(s) taking into account as many aspects as possible (e.g. integrated databases and monitoring systems, the preparation of regular reviews and forecasts containing operational materials and proposals for regional governmental bodies).
    d) The plan should also foresee integrated communication (e.g. the creation of a unified website).

254. In each case, there is one management entity on each side of the border for the national biosphere reserve. Each management entity would develop its own business plan, based on an integrated management plan. However, the two management entities must agree on a joint business plan in order to strengthen the transboundary biosphere reserve. The following points are important:

    a) Move towards a fully integrated transboundary biosphere reserve secretariat with sustained funding for operations and a dedicated staff.
    b) Develop and implement cross-border pilot projects.
    c) Establish short-term and long-term cooperation programmes in the transboundary biosphere reserve.
    d) Engage with stakeholders, local enterprises and entrepreneurs, including to produce and label local products with a transboundary biosphere reserve label.

e) Raise awareness of the transboundary biosphere reserve among residents and visitors.

4.6. Multi-designated sites

255. Biosphere reserves may have other national and international designations such as World Heritage Site, Ramsar site and UNESCO Global Geopark, which can present specific challenges (e.g. regarding zoning). In such cases, management plans can also be potentially challenging. A landmark report on multi-internationally designated areas (MIDAs), was published by IUCN in 2016. While Jeju Island Biosphere Reserve in the Republic of Korea is the only site in the world where the World Heritage, Ramsar and Geopark designations directly overlap, many biosphere reserves incorporate at least two or three of these designations.

256. In some cases, different national authorities oversee the management of different designations. The above-mentioned report includes management recommendations for site managers as well as national authorities, which includes the revision and update of management plans. It is advisable to reflect all different international and national designations, registrations and agreements one overall management plan and to integrate them into a single management entity. Specific aspects to be clarified include (but are not limited to) spatial extent, management responsibilities, collaborative management arrangements, reporting responsibilities, values and benefits, marketing, communication and branding. This approach will facilitate collaborative management, monitoring, reporting and review, and prevent duplication of tasks and efforts. It will also contribute to knowledge sharing and the pooling of resources when it comes to awareness raising, educating the communities and stakeholders, showcasing benefits and report writing.

257. With regard to using a specific brand for the biosphere reserve, care should be taken to facilitate a joint branding exercise with other designations. The alignment between all designations, as well as the role and value of each, should be explicitly communicated to all involved communities and other stakeholders.

258. Case study: **Comoé Biosphere Reserve, Côte d'Ivoire**

258a. The Comoé Biosphere Reserve is located in the north-east of the Côte d'Ivoire between the Comoé and the Volta River. It comprises an interfluvial peneplain and a series of ridges and granite inselbergs.

258b. Its core area has been designated as a World Heritage Site. The North-East Direction of the Ivorian Office of Parks and Reserves is the management authority of the core area. In addition, the entire biosphere reserve has a local management committee comprising the manager of the core area and representatives of local communities, the prefectural body, regional technical structures, universities and research structures, NGOs and the private sector.

258c. The development and management plans, as well as the reports on the state of conservation of the World Heritage Site, periodic reviews of the biosphere reserve, and studies covering the entire biosphere reserve, are based on the initiative of the manager of the core

area. All the documents are subject to consultation, exchange and sharing within local management committee.

259. Case study: **Multi-designation in Brazilian biosphere reserves**

259a. Aside from the São Paulo Green Belt Biosphere Reserve, all other Brazilian biosphere reserves share different international designations inside their huge territories.

259b. Almost the entire area of the Central Amazonia Biosphere Reserve is designated as a Natural World Heritage Site and partially as a Ramsar site. The Mata Atlântica Biosphere Reserve hosts five Natural World Heritage sites – and several other Cultural and one mixed World Heritage sites – and some Ramsar sites. The Caatinga Biosphere Reserve shares its territory with a World Heritage Site and a GeoPark. The Serra do Espinhaço Biosphere Reserve hosts several Cultural World Heritage sites. The Cerrado Biosphere Reserve has one Natural World Heritage Site and several Cultural World Heritage sites, with one Ramsar site. The Pantanal Biosphere Reserve hosts a Natural World Heritage Site and some Ramsar sites.

259c. These designations are in perfect harmony, including with regard to aspects such as zoning and management, because the Ramsar sites, the GeoPark and the World Heritage Site (apart from the older Cataratas do Iguaçu World Heritage Site) were nominated after the designation of the biosphere reserves, and were studied by the same team during the preparation of nomination, under the supervision of the Ministry of the Environment. This synergy has strengthened the conservation and tourism development of many important core zones of the Brazilian biosphere reserves.

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MONITORING AND EVALUATION IN BIOSPHERE RESERVES



© Seaflower Biosphere Reserve, Colombia

260. Biosphere reserves are known as ‘learning sites for sustainable development’, places for exploring approaches to sustainable development and setting standards for knowledge generation. They generate significant volumes of data, and are therefore favoured by many scientists for research due to the ready access to data and knowledge collected over previous years and decades. Monitoring and long-term research projects (over decades) may be conducted in biosphere reserves better than anywhere else, even if the data are sometimes held by different authorities.

261. In addition, effective planning and management of a biosphere reserve requires significant knowledge about its biophysical (landscape, climate, biodiversity, etc.) and socio-economic features (livelihoods, power structures, culture, conflicts, etc.).

262. A key difference between biosphere reserves and typical protected areas is the conscious approach to ‘management based on knowledge’. Many of the first biosphere reserves were established around world-class monitoring stations and environmental research laboratories. Today’s biosphere reserves excel in bringing together different forms of knowledge and data. In this sense, biosphere reserves can be regarded as ‘custodians of knowledge’ for a particular region. They recognize that knowledge can emerge from Indigenous/traditional sources, from common-sense experiences and ‘citizen science’, and from scientific research – and they bring these sources together as needed.

263. Each biosphere reserve should possess and maintain a database, including geolocated data (in a geographic information system), linked to other relevant databases. The knowledge and data used by biosphere reserves must be appropriately validated, and intellectual property rights must be respected.

5.1. What data should biosphere reserves monitor?

264. In many cases, biosphere reserve managers/coordinators, in their quest for knowledge, focus only on natural resources (endangered species, water cycle, etc.) and on the biophysical description of their biosphere reserve. However, this area forms only a part of the data portfolio that should be monitored by biosphere reserve managers.

265. The basic answer to the question of what kind of data should be gathered and monitored can be obtained from the Periodic Review Form that every biosphere reserve has to submit every ten years (see Section 5.4). In order to answer all the assessment questions listed in the review, crosscutting data from different fields about the biosphere reserve are required. As an example, the questions on socio-economic aspects require the following data: How many people live in a biosphere reserve? Where do they live? What are the main sources of incomes? What are the job opportunities and forms of land use? Who are the stakeholders, and 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?

266. It has to be emphasized, that the Periodic Review Form does not cover all possible topics for data monitoring. Therefore, the data that a biosphere reserve gather and monitor might be much broader and should reflect the individual needs of each site, as the local challenges might be very specific (e.g. based on Indigenous knowledge and citizen science, data to assess implementation of the biosphere reserve management plan and other plans/strategies if they exist etc.). However, their monitoring might enrich the knowledge generation potential of the WNBR.

5.2. Quality control

267. Quality control is a normal and necessary element of the work of every manager, in particular in the context of project management. Quality control for the biosphere reserve should lay out the process intended to meet the management goals and expectations. Such exercises do not necessarily have to follow scientific standards – although in order to demonstrate real achievements and societal change, the impact of a project needs to be measured systematically or employ a scientific approach (e.g. in projects targeting society through surveys with test groups).

268. Quality control has to be based on the definition of goals, expected outcomes and associated success indicators; these must be measurable and accompanied by appropriate success indicators and associated data requirements and benchmarks (generic or situation-specific indicators). It has to be clear what exactly is being evaluated, by whom, according to which standards and why. There need to be clear guidelines on what will be done with the results, including how the results can be used for the benefit of the biosphere reserve and its communities.

269. Evaluation should be regarded as the most important learning opportunity for improving the biosphere reserve management.

5.2.1. How to track the performance of a biosphere reserve

270. The main performance indicators are reflected in the Periodic Review form, including in particular an ecosystem services inventory and an analysis of the contribution of the biosphere reserve to sustainable development. However, each site is welcome to create its own performance scheme. The management entity, through frequent performance reports and annual reports, should track performance of the biosphere reserve. These documents should be used for communication with the biosphere reserve stakeholders, National MAB Committees, MAB Secretariat and the general public.

271. According to the attributes and specificities of a biosphere reserve, it is necessary for managers to choose, from the time of nomination, a set of data for progressive monitoring. The choice of data to be measured allows managers to create their own monitoring system. It is also important to note the justification for choosing the data to be collected.

272. Workshops are a valuable means to present findings to stakeholders, including community members, government and non-governmental institutions, and to provide opportunities for the discussion of results and observations from participants.

5.2.2. What tools can you use to monitor biosphere reserves?

273. There are many tools to monitor a biosphere reserve. The choice depends greatly on local conditions, human and financial resources, and/or ability to obtain appropriate partners and engage stakeholders who have access to relevant databases and monitoring tools, and are willing to use them for biosphere reserve purposes. The monitoring can be based on the assessment of results generated by small or large dedicated research projects implemented by specialists of one scientific discipline, interdisciplinary research projects bringing together many scientific disciplines, long-term monitoring (e.g. at a weather station or by the national statistics office), specific projects of valorisation of traditional knowledge, joint brainstorming of all stakeholders, or a combination of all these approaches. Cooperation within specific networks such as Long-term Ecological Research (LTER) or Long-term Socio-Ecological Research (LTSER) can also be used as a tool for monitoring biosphere reserve. Developing and nurturing close affiliations between biosphere reserves and universities and/or research institutes has proven to be very valuable for monitoring. The ideal situation is for these institutions to have a position in the biosphere reserve governance structures, thereby ensuring that their research goals coincide with the goals of the biosphere reserve.

274. The use of new technologies that facilitate data collection (drones, camera trap networks, acoustic monitoring, etc.), and citizen science to monitor species such as birds and butterflies, can improve access to the data.

275. Case study: **Use of drones for ecological monitoring of great apes and their habitat in Dja Biosphere Reserve (Cameroon), Luki Biosphere Reserve (Democratic Republic of Congo), Niokolo Koba Biosphere Reserve (Senegal) and Badiar Biosphere Reserve (Guinea) in collaboration with the National Museum of Natural History (France) and the Sebitoli Chimpanzee Project (Uganda)**

275a. Through its internationally designated areas, UNESCO contributes to the conservation of Great Apes and their habitat. There are currently 34 UNESCO designated areas with Great Apes (17 biosphere reserves, 11 Natural World Heritage Sites and 6 Mixed Sites). The World Heritage Sites represent between 4% and 8.6% of the range of the chimpanzee, gorilla or orangutan; and the biosphere reserves between 3% and 35% (for orangutan) of the range of the chimpanzee, gorilla or orangutan. UNESCO has also established a network including all the African Biosphere Reserves (19 out of 79) which are habitats for Great Apes.

275b. Biosphere reserves with their zonation are of particularly relevance for monitoring wildlife as well as their interactions with humans. Therefore, a monitoring system with a strong community of practice must be utilized. Accordingly, a monitoring project was proposed in Dja Biosphere Reserve (Cameroon), Luki Biosphere Reserve (Democratic Republic of Congo), Niokolo Koba Biosphere Reserve (Senegal) and Badiar Biosphere Reserve (Guinea). The reference site for development of the monitoring protocol is Kibale National Park in Uganda.

275c. The objective of the project is to establish a harmonized protocol using drones coupled with well-designed monitoring protocols to monitor the forested habitat of Pan species (chimpanzees) and Gorilla species of targeted sites. The goal is to provide data which could be systematically collected and compared over seasons:

- *on the food resources present inside the forests but also at the edge (e.g. to monitor the crops around them, in order to better understand crop-feeding behaviour and better plan how to prevent it);*
- *to monitor the illegal activities related to forest degradation (charcoal, fire, agriculture inside the protected area, illegal tree cutting, etc.); and*
- *to monitor the distribution of Great Apes.*

275d. This project should eventually expand to cover 21 African biosphere reserves that are home to Great Apes.

5.2.2.1. Systematic zoning and biosphere reserves

276. Looking towards the near future, biosphere reserves will need to organize themselves more systematically. Systematically zoned biosphere reserves allow for more objective design methods and accountability. Transparent measuring of the contribution of each zone against the objectives and goals of the biosphere reserve is key to enhancing public views and opinions of this internationally recognized category and its sustainability pathways.

277. This process and the toolboxes that support systematic conservation planning include the use of large datasets, computational techniques and decision support software, which together enable planners and stakeholders to make better choices and minimize avoidable conflicts in biosphere reserve design.

278. The use of CARE (Complementarity, Adequacy, Representation and Efficiency) principles in designing biosphere reserves can and will produce more robust sites. In addition, the use of zone compatibility and juxtaposition measures allow incompatible land use forms to be spatially organized. Existing optimization algorithms such as Simulated annealing using Decision Support Software tools (e.g. MARXAN with Zones and Zonation software) was used in the Pantanal Biosphere Reserve in Brazil to determine the contribution of biosphere reserve zones, and to monitor and measure the achievement of economic/socio-cultural and environmental objectives, proving that systematic zoning in a biosphere reserve contributes to enhancing the accountability, efficiency and robustness of the Brazilian national biosphere reserve network.

5.3. What does a functioning model of a biosphere reserve look like?

279. Some assessment is necessary to answer the question of what a functioning model of a biosphere reserve looks like. Such assessment can take various forms. It can be a one-off action, or a periodical or continual process. Reasons for such assessment can also vary. It may be requested by the stakeholders, funding donors, the MAB Secretariat (as in the case of a Periodic Review) or others. This procedure also allows for feedback on the biosphere reserve management and can lead to better decision-making.

280. Assessing the functionality of a biosphere reserve requires a comprehensive overview. However, in practice, a small number of features can provide an insight into functionality. These can be divided into several groups (technical compliance, usefulness for people as well as the environment, and contribution to the WNBR). When making such an assessment, any evaluator has to focus mainly on how a biosphere reserve:

a) fulfils the technical requirements of the Statutory Framework of thee WNBR (zonation in line with the criteria, equal execution of the three functions in compliance with a management plan/policy, functional and participative governance);
b) provides added value for local communities (i.e. whether the communities are actively utilizing the means provided by the biosphere reserve to reach sustainable lifestyles and use natural resources, enhance biodiversity, protect cultural diversity and/or cope with varied challenges);
c) works with various stakeholders within and beyond the biosphere reserve, and cooperates with other biosphere reserves and similarly oriented networks. Special attention is given to actively sharing good and bad experiences within the WNBR.

281. In the end, a biosphere reserve assessment should provide an answer to a simple question: Would the impact observed be achieved without the designation of the biosphere reserve? If the answer is clearly negative, on the basis of real empirical and not just anecdotal evidence, this is the sign of an effectively functioning biosphere reserve.

282. Case study: **System of Indicators for the effective functioning of biosphere reserves (SIRBA) in Argentina**

282a. The Working Group on Protected Areas of the National Directorate of Planning and Environmental Management of the National Secretariat of the Environment and Sustainable Development from Argentina has put together a System of Indicators that will evaluate the effective functioning of Argentina's biosphere reserves, based on the criteria of the Statutory Framework of the world network and the strategic lines of the Lima Action Plan.

282b. The System was developed together with the biosphere reserves managers and regional representatives who reviewed different international experiences. Indicators and variables were then examined, and the feasibility of their application was analysed according to local realities. Eight priority indicators were selected and defined, according to criteria that respond to biosphere reserve functions and zonation:

Indicator 1: Degree of compliance with the Zoning of a Biosphere Reserve

Indicator 2: Initiatives to fulfil the Conservation Function

Indicator 3: Management Committee

Indicator 4: Availability of a Management Plan for the entire Biosphere Reserve

Indicator 5: Available Financing Mechanisms

Indicator 6: Participation in Networks

Indicator 7: Initiatives to fulfil the Logistic Support Function

Indicator 8: Initiatives to fulfil the Development Function

282c. Each variable that makes up an indicator is assigned a percentage contribution, which is the weight of this variable in the final value of the indicator according to its importance.

282d. The result of the indicator is classified in intervals, which try to synthesize five situations, from the least favourable to the most favourable: null, insufficient, average, adequate or excellent. These intervals are represented graphically (by means of colours, from green to red) which facilitates their interpretation.

282e. Once the situation that best describes the variable has been identified, it is assigned a value, from most unfavourable to most favourable (from 0 to 3), and the indicator is calculated according to the actual contribution made by each variable.

282f. This system will help to provide in an objective manner a clear idea of the situation of the biosphere reserve and to take the necessary measures to reinforce the weakest aspects.

5.4. Periodic review (Article 9, Statutory Framework)

283. The Statutory Framework of the World Network of Biosphere Reserves stipulates the obligation to provide a periodic review of the status of each biosphere reserve every ten years, based on a report prepared by the concerned authority (i.e. the biosphere reserve management entity). The original hard copy, with the original signatures, letters of endorsement, zonation map and supporting documents should be sent to the MAB Secretariat through the official UNESCO channels (i.e. the National Commission for UNESCO and/or the Permanent Delegation to UNESCO). An electronic version (on CD, sent by e-mail, etc.) of the periodic review form and associated maps (especially the zonation map) can be sent directly to the MAB Secretariat, with possible copy to the Permanent Delegation and National Commission for UNESCO.

284. The report is examined by the International Advisory Committee for Biosphere Reserves, which then makes recommendations. These recommendations are scrutinized by the Bureau of the MAB-ICC to assess if and how each biosphere reserve fulfils the criteria of the Statutory Framework and the three functions in particular. The final assessment on the compliance of the biosphere reserve with the Statutory Framework is then endorsed by the MAB-ICC.

285. There is a standard form, available online (https://en.unesco.org/sites/default/files/periodic_review_form_english_2013.pdf) for biosphere reserves to use to prepare their reports and to update the data available to the MAB Secretariat.

286. The periodic review preparation process should be done in participative manner, with as many biosphere reserve stakeholders involved as possible. The information provided in the document should be as sincere and accurate as possible, and all requests should be addressed. If the documents describe any weaknesses, it is helpful if the authorities in charge briefly indicate a procedure to take to improve the situation.

287. This system of 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). Conversely, if the periodic review is not done or if a periodic review reveals major shortcomings, a biosphere reserve risks its status (Article 9, paragraphs 5 to 7 of the Statutory Framework). If the MAB-ICC considers that the biosphere reserve no longer satisfies the criteria contained in Article 4 of the Statutory Framework, it may recommend that the state concerned take measures to ensure conformity with the provisions, taking into account the cultural and socio-economic context of the state concerned. In such cases, the MAB-ICC indicates to the MAB Secretariat the actions that it should take to assist the state concerned in the implementation of such measures. Should the MAB-ICC find that the biosphere reserve in question still does not satisfy the criteria contained in the Statutory Framework within a reasonable period, the area will no longer be referred to as a biosphere reserve.

288. Requirements included in the periodic review may influence day-to-day monitoring and data collection within the biosphere reserve, as it is usually built on the results of such processes. They can also provide topics for project themes or one-off surveys.

289. The information presented in the periodic review is used not only for evaluation of the state and performance of a biosphere reserve, but also as a source for publications, facilitating communication and interaction among persons interested in biosphere reserves throughout the world.

5.4.1. What is the Process of Excellence?

290. The situation within the WNBR varies significantly. Many biosphere reserves designated in the early days of the MAB Programme, prior to 1995, were oriented mainly towards conservation, with little or no integration of the function of sustainable development and engagement of local communities. They therefore did not meet the functions and criteria now currently in force, as defined in the Statutory Framework of the WNBR. In other cases, the authorities concerned did not provide sufficient information to allow the MAB-ICC to assess the situation of a biosphere reserve.

291. From 2013 onwards, at the request of Member States in the MAB-ICC, emphasis has been placed on improving the quality of the Network and helping Member States to enable their biosphere reserves to become fully functional and to comply with the criteria defined in the Statutory Framework. This ‘exit strategy’ aimed to re-establish communication within the sites and with the MAB Secretariat, to help non-compliant sites identify and address challenges, and to ensure that all biosphere reserves in the WNBR meet the required criteria. The MAB-ICC set the year 2020 as the deadline for the exit strategy, so that all biosphere reserves should be fully functional and report to MAB-ICC if they wish to remain in the Network. Sites that do not meet the criteria are recommended for removal from the WNBR. An exception to the deadline is made for biosphere reserves located in areas of international or national conflicts or major disasters.

292. Since the adoption of the Process of Excellence, encouraging results have been achieved. A large number of biosphere reserves improved their zonation, governance and management aspects. Others have been voluntarily withdrawn from the WNBR.

293. From 2017, the exit strategy evolved into the 'Process of excellence and continuous improvement of the World Network of Biosphere Reserves', based on cooperation and exchanges between sites and the strengthening of regional networks, and will also concern future biosphere reserves.

5.4.2. How to prepare a report for the periodic review

294. The periodic review is a useful tool to inspire biosphere reserve stakeholders to engage more deeply in the activities of a biosphere reserve. It improves acceptance of the biosphere reserve and enhances the sense of belonging. It also helps to create a good vision for the future direction of the biosphere reserve and to assess if the objectives have been reached. Therefore, the review process should be inclusive and not a purely administrative task.

295. There are several ways to prepare a periodic review report. In the majority of cases, the report is prepared by the manager/coordinator, as a result of team work. But it can also be provided by an external agency or through a peer review. However, regardless of the approach used, stakeholder participation is essential.

296. The involvement of stakeholders is important for several reasons. It provides a forum to voice support for the biosphere reserve – or concern about problems. If the result of consultations is that communities do not believe that the biosphere reserve is beneficial, then the biosphere reserve faces a serious challenge. It is only during this period of reporting to UNESCO that substantial changes to address such problems can be easily legitimized. There are also many pragmatic reasons for seeking participation. The various stakeholders have a wealth of information at their disposal (including traditional knowledge) on changes in species and ecosystems and other matters (e.g. local economies, etc.) related to a biosphere reserve. 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 and throughout the life of a biosphere reserve.

297. The means to produce a periodic review report include meetings, workshops, public hearings with face-to-face discussions, working groups, surveys and questionnaires, electronic consultations, meetings with specialists and so on.

298. Case study: **Periodic review in the Rhön Biosphere Reserve, Germany.**

298a. This biosphere reserve covers the Rhön, a low mountain range in the centre of Germany. In contrast to other German low mountain ranges, which are covered by forests on mountain tops, the Rhön is also known as the 'land of open vistas', with its open cultural landscape a result of sheep grazing over many centuries. The Rhön was designated by UNESCO as a biosphere reserve immediately after the reunification of Germany, with parts in three federal states on both sides of the former East-West border.

298b. About 210,000 inhabitants live in this rural area, which has 66 municipalities. While agriculture is important, only about 1% of the population are fully employed. Most inhabitants work in manufacturing and are out-commuters, although organic agriculture has greatly increased in significance. Local livelihoods are mostly related to small businesses and tourism. The biosphere reserve has been successful in creating robust corporate partnerships among hotels, restaurants, farmers, artists and so on. There is longstanding marketing of branded products from the biosphere reserve, including the direct marketing of products from Rhön sheep, a formerly endangered breed, and apple products from regional orchards. Several visitor centres have been established, which provide exemplary education for sustainable development to the public.

298c. Two periodic review reports so far have been submitted to UNESCO, in 2003 and 2013. Recommendations dating from the 2003/04 cycle, provided by the MAB-ICC and the German MAB National Committee, were largely implemented by 2013, and included an improved zonation. The report with two dozen annexes was produced by the biosphere reserve managers (there are three management entities, one for each federal state), with the full participation of all stakeholders, as well as scientific support. A similar participatory process with 300 stakeholders and 11 working groups was undertaken in 2014-17 for the second management plan. The significant efforts invested in the periodic review process, which was followed closely by the MAB National Committee, with several meetings on the ground, has led to considerable improvements to the biosphere reserve, in and after 2013, including improvement in staffing of management entities and formal cooperation structures across the three states. All periodic reviews documents are available freely in English and German at www.biosphaerenreservat-rhoen.de*. The MAB-ICC in 2014 referred to the periodic review report 'as a model for the WNBR'.*

5.5. Web-based information clearing house and information centre

299. A fundamental resource of the WNBR is in the availability of diverse information and the potential for sharing this information. The Biosphere Smart initiative (http://portal.biospheresmart.org/en) provides a web-based platform linked to the UNESCO-MAB website. It offers instruments for all those interested in voluntarily sharing information, ideas, knowledge, best practices and experience on all issues related to the green economy and sustainable development.

300. The UNESCO website also provides a space for sharing good practices created in biosphere reserves (https://en.unesco.org/mab/strategy/goodpractices).

301. Case study: **Guidelines for web-based information clearing houses and information centres in Chinese biosphere reserves**

301a. A special approach is used in China, where the Computer Network Information Centre of the Chinese Academy of Sciences provides guidelines explicitly designed for Chinese biosphere reserves in relation to their web-based information clearing house and information centres. The overall architecture consists of data acquisition, network transmission, data resource, support, application and user layers. In order to ensure the standardization of data resource construction and management, it is also necessary to build a standard and specification system and a security protection system. An integrated space-sky-earth data

monitoring system has been built to acquire timely dynamic data covering meteorology, hydrology, soil, flora and fauna, and personnel activities in biosphere reserves. Conventional reserve-based surveys, various types of sensor monitoring networks, video monitoring systems, mobile intelligent terminals, remote sensing satellite, and unmanned aerial vehicles are used to monitor and manage resources and protection conditions of biosphere reserves in a real-time and dynamic manner.

302. Case study: **The Scientific Research Monitoring Information Platform for Chebaling Biosphere Reserve in Guangdong Province, China**

302a. Under the guidance of the Chinese National Committee for the Man and the Biosphere Programme and the International Society of Zoological Sciences, the Guangdong Chebaling National Nature Reserve Administration, the Institute of Zoology of the Chinese Academy of Sciences (CAS), the Computer Network Information Centre of the CAS, and the Institute of Remote Sensing and Digital Earth of the CAS have developed 'space-earth' key and integrated standardized evaluation technologies for comprehensive biodiversity monitoring in the Guangdong Chebaling Biosphere Reserve. They have formulated the technical specifications for the inventory and evaluation of large and medium-sized terrestrial animals and their habitats in the reserve, with the establishment of a 700M communication network platform for research and monitoring. They have also developed technologies such as wireless uploading of field images from infrared cameras, artificial intelligence identification, cloud storage and automatic data analysis, and cloud services for automatic display of remote sensing monitoring image models. These technologies have been applied to perform the functions of automatic image acquisition, intelligent identification, processing and analysis, storage and display, and data sharing, improving the output efficiency of scientific research and popular science achievements. Over 300,000 photos and videos have been collected by the Chebaling Biosphere Reserve, capturing 68 species of wild animals belonging to 31 families in 15 orders.

302b. Visual, intelligent and standardized management of biodiversity resources in the reserve has been conducted, providing scientific and technological support for the effective protection and assessment of important species.

303. The above case study presents a highly sophisticated and demanding approach to designing a complex biosphere reserve scientific research monitoring information platform. However, other approaches are possible to fit local or regional conditions and resources. It is important to emphasize that the common goal in all cases should be the production of some form of biosphere reserve web-based information clearing house and information centre.

5.6. Transboundary biosphere reserves

304. The situation in relation to data management and monitoring, as well as periodic review reporting, is the same as for any other aspects of transboundary biosphere reserve management and functions. Coordination is crucial in transboundary biosphere reserves, more than anywhere else. The national teams should collect the data and share them in order to improve joint management, uncover trends and create model solutions at a larger scale. In terms of the periodic review process, where separate biosphere reserves are designated in each country, it is expected that each national biosphere reserve will submit its own report,

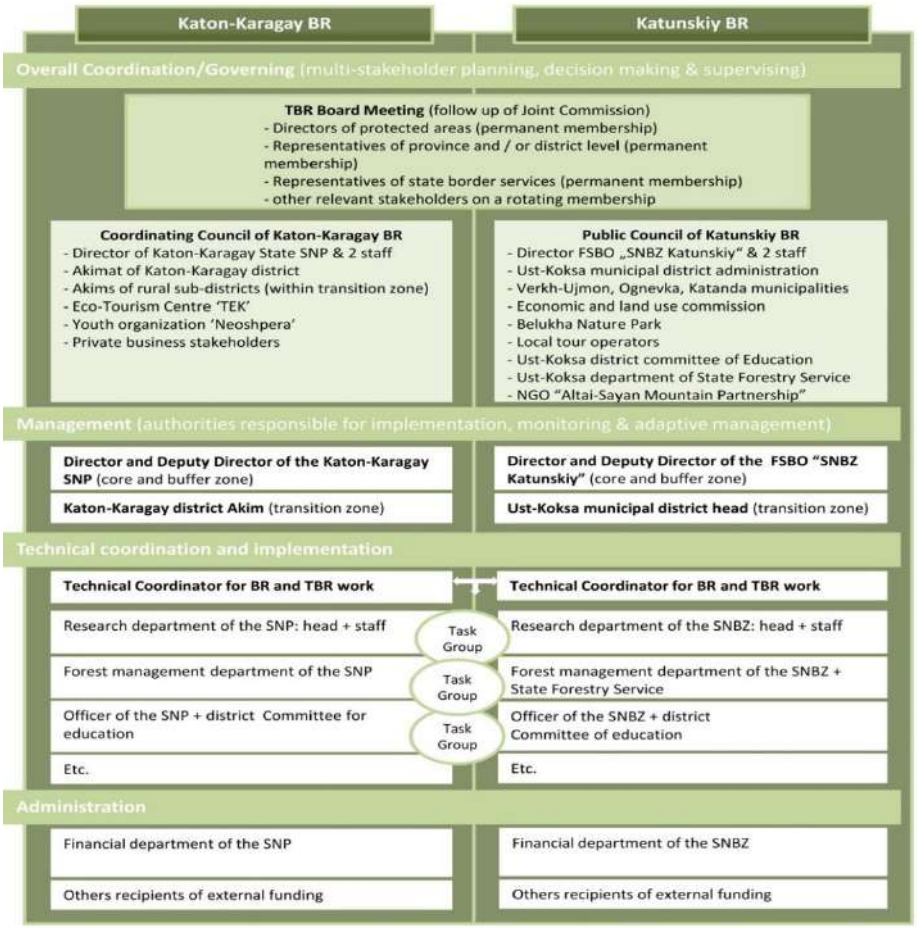
and will contribute to the transboundary biosphere reserve periodic review. These reports should be synchronized to minimize workload.

305. Case study: **Data Management in the Great Altai Transboundary Biosphere Reserve, Russian Federation/Kazakhstan**

305a. The Great Altai Transboundary Biosphere Reserve was designated between the Russian Federation and Kazakhstan in 2017. The designation followed 12 years of joint meetings and projects, which resulted in a joint management plan. In order to provide coordination within the *transboundary biosphere reserve, a Joint Management Commission was established, with the participation of the national biosphere reserve authorities, national ministries, regional authorities, MAB committees and relevant experts from both countries on a parity basis. During annual meetings, the Commission develops plans, adopts reports and discusses other issues related to management.*

305b. The management plan of the transboundary biosphere reserve was developed in a participatory manner, involving managers and staff of national biosphere reserves, local stakeholders, scientific experts and external facilitators. After completion, the Joint Management Commission adopted the plan. Developed along with the transboundary biosphere reserve nomination, the management plan contains a set of management strategies and performance indicators, aligned with the Lima Action Plan. These strategies not only help to assess the performance of the management plan, they are also useful for preparing MAB periodic reporting.

305c. The Transboundary Biosphere Reserve Great Altai management structure is shown in the figure below.



305d. According to this figure, data obtained by individual national teams working on the same methodology at the same time are managed through periodic joint meetings. In the future, during joint Task Group meetings, data will be discussed, analysed and agreed upon for the preparation of a joint report to national authorities and international organizations, and for presentation at the annual meeting of the Transboundary Biosphere Reserve Great Altai Joint Commission.

305e. The institutional basis and formal frameworks of the data exchange are described in the Intergovernmental Agreement on the Establishment of the Transboundary Reserve, which provides a legal mechanism for international exchange and cooperation.

5.7. Multi-designated sites

306. Multi Internationally Designated Areas (MIDAs), which may include Ramsar sites, World Heritage Sites, biosphere reserves or UNESCO Global Geoparks, also face some challenges in terms of monitoring and evaluation. Differing reporting requirements in terms of depth of information and time cycles required by the designating bodies impose a heavy workload on site managers and national authorities.

307. The Ramsar Convention uses the web-based Ramsar Sites Information Service where site information is uploaded into a database and can be publicly accessed through site maps and

Ramsar Information Sheets (RIS) for each listed site. A RIS has 35 chapters and is accompanied by explanatory notes and guidelines, as well as annexes.

308. The World Heritage Convention places great emphasis on reporting with a view to assessing the application of the Convention at the national level and ensuring the state of conservation of World Heritage properties at the site level. The reporting process is complemented by regional capacity-building and networking activities among sites. Periodic Reporting on the Application of the World Heritage Convention is required every six years. Periodic Reporting under the World Heritage Convention is complemented by Reactive Monitoring, which entails reporting to the World Heritage Committee on the state of conservation of specific World Heritage properties that are under threat. The State Parties submit State of Conservation reports whenever requested to do so by the World Heritage Committee, on an ad hoc basis, when a specific threat to the properties' Outstanding Universal Value (OUV) emerges. The World Heritage Committee decided on a standard format for the submission of State of Conservation reports as part of the Reactive Monitoring Process.

309. For revalidation of a UNESCO Global Geopark and its maintenance within the Global Geopark Network, the site manager must complete a nine-page Excel form. An on-site evaluation mission, by two external UNESCO Global Geopark experts who record their observations in a separate Excel form, complements this self-evaluation.

310. For biosphere reserves, a Periodic Review Form must be completed (plus various annexes relating to the MABnet Directory of Biosphere Reserves, promotion and communication materials, and the Statutory Framework). The periodic review questionnaire for biosphere reserves is the most detailed among the four international designating instruments.

311. When comparing the content of the required reporting, some information is obviously similar such as the name of a site, its state of conservation (or changes in conservation), and on-going educational and scientific programmes. Other requested information, however, can differ quite substantially from one international designation to another. UNESCO Global Geoparks, for example, require detailed evidence on how the sites and their managers have contributed to the work of the Network. On the other hand, the Periodic Review Form for biosphere reserves requires a detailed and analytical spectrum of information to assess whether a biosphere reserve is still fulfilling its conservation and sustainable development functions, as well as to evidence its governance status and management system.

312. Any reporting takes time and effort, since various data for monitoring have to be collected and summarized, and achievements in sustainable development efforts have to be detailed. One or several staff members need to be allocated to this important task. Many site administrations are understaffed and underfunded, given the considerable requirements for a site's appropriate management and monitoring, outreach to local communities and reporting. While this is particularly true for developing countries, many site administrations in developed countries are confronted with the same challenge since the public sector is usually requested to keep expenditures as low as possible. Therefore, adequate funding should be allocated to site management teams when an area receives multiple international designations, so that they can cope with the additional workload that accompanies the requirements of the international designating bodies.

313. Case study: **Challenges of multiple designations of the Socotra Archipelago, Yemen**

*313a. The Socotra Archipelago is located in the north-western Indian Ocean, between the Horn of Africa and the coast of Yemen. It is recognized as a regional centre of biodiversity, with spectacular endemic species such as the Dragon Blood Tree (*Dracaena cinnabari*). Socotra also has a rich cultural heritage, including the unique Soqotri language. Isolated from the rest of the world, traditional land and sea uses remained little changed until the 1970s. The archipelago was designated a biosphere reserve in 2003. One year later, part of the site – the Detwah Lagoon (Ditwah Protected Area) – was listed as a Ramsar site. In 2008, the Socotra Archipelago was inscribed as a natural World Heritage Site, encompassing over 75% of the total land area. All international designations are managed by the Environment Protection Authority (EPA), an administrative body of the Ministry of Water and Environment. The main reason for the listing of the site under different international designations was to address and reverse several anthropogenic pressures and threats (e.g. uncontrolled development, invasive species, over-exploitation of resources and loss of valuable traditional knowledge, etc.). International designations have enhanced the visibility of the Socotra Archipelago and attracted sponsor organizations or funding facilities (e.g. UNEP, UNDP, GEF, GIZ, etc.) to fund local projects on environmental conservation, sustainable development, and information and knowledge exchanges at the global and regional level. However, the onset of war and the unstable situation in Yemen have heightened the risk to Socotra. Funding for site management is a challenge, and national and international projects to support the protection and sustainable development of the Socotra archipelago remain scarce. It can only be hoped that national and external support for Socotra will resume when peace returns to Yemen. Moreover, it is essential to reinforce the role of local communities in environmental management and ecotourism activities in the area.*

314. Biosphere managers/coordinators are rarely trained in handling multiple international designations. Therefore, for monitoring and evaluation in multi-designated biosphere reserves it is important to organize regular joint meetings of the respective authorities (at least on an annual basis). These meetings can help to assess the state of various designations overlapping the biosphere reserve and improve information and data exchange, ease reporting processes, and allow work on joint management measures and the planning of new projects.

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NETWORKS AND PARTNERSHIPS TO SUPPORT BIOSPHERE RESERVES



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315. Active participation in the WNBR and other networks is one of the features of a successful biosphere reserve. Cooperation should take place at various levels (the immediate surroundings, national, regional and international) and in different fields. It is important that the biosphere reserve not only draw information from the networks, but that it is willing to share its own experiences (positive and negative) to keep the networks alive and viable.

6.1. Scientific research

316. The MAB Programme is an intergovernmental scientific programme that aims to establish a scientific basis for enhancing the relationship between people and their environments. It combines the natural and social sciences with a view to improving human livelihoods and safeguarding natural and managed ecosystems, thus promoting innovative approaches to economic development that are socially and culturally appropriate and environmentally sustainable.

317. Close links with the scientific research staff of regional or national universities are highly valuable for biosphere reserves, and are foreseen in the Lima Action Plan (Action A4). Cooperation with these universities can provide access to existing scientific networks (national and international) through which the biosphere reserve can benefit from access to available data, share their own experiences, or offer research opportunities for students and scientists.

318. Biosphere reserves can also make a substantial difference in scientific research by engaging with sites and MAB Committees in neighbouring countries. This approach improves the prospects for scientists seeking to work on research in new areas with increased possibilities for experience exchange.

319. While scientific cooperation at the global level may seem demanding, there are ways to achieve this goal through simple means (e.g. online exchanges). If the biosphere reserve has favourable conditions for scientific cooperation, actions such as the twinning of sites can be a feasible option.

320. Case study: **International Long-term Ecological Research (ILTER) Networks**

320a. ILTER consists of networks of scientists engaged in long-term, site-based ecological and socio-ecological research. They aim to improve the understanding of global ecosystems and thereby provide the necessary data for knowledge-based solutions to many current and future environmental problems.

320b. ILTER members are mostly national networks of scientists engaged in long-term, site-based ecological and socio-economic research (known as LTER or LTSER). They have expertise in the collection, management and analysis of long-term environmental data. Together they are responsible for creating and maintaining a large number of unique long-term datasets.

320c. The specific purpose of ILTER is to provide a globally distributed network and infrastructure of long-term research sites (many are designated as biosphere reserves), for use in relation to ecosystems, biodiversity, critical zones and socio-ecological research, and

to secure the highest quality interoperable services, in close interaction with related regional and global research infrastructures and networks.

320d. ILTER comprises 44 member networks each of which has established a formal LTER programme nationally. These networks are grouped into four major regions: Americas, East-Asia-Pacific (EAP), Africa and Europe.

6.2. Education and training

321. Education and training falls under the logistic function of the biosphere reserve. In this field, it is crucial for the biosphere reserve to cooperate with relevant stakeholders (municipalities, schools, universities, professional associations, etc.). Each biosphere reserve should have at least a basic framework in place to organize education and training activities.

322. At the national and local levels, education and training could be reinforced by support from local civil society organizations, schools and universities. Their engagement can provide target groups and assist with the design and implementation of education and training programmes. One good practice is for biosphere reserves to offer internships to the students of cooperating education facilities.

323. Regional impact of education and training programmes can be enhanced through twinning programmes between biosphere reserves or the utilization of international contacts of civil society organizations, schools and universities. Such an approach was used successfully in Slovenia, where the Karst Biosphere Reserve established the International Schools Network with the involvement of several primary schools.

324. Participation in appropriate networks used or operated by relevant biosphere reserve stakeholders (e.g. university networks, professional networks, etc.) is also useful. These networks can provide access to target groups or offer new ideas and approaches in education and training at various levels and in different fields.

325. One notable asset to education and training is cooperation with relevant UNESCO networks, such as the UNESCO Associated Schools Network (ASPnet). ASPnet links primary and secondary schools, kindergartens and teacher training centres in more than 180 countries worldwide. These schools are pioneers in advancing quality education, in particular Global Citizenship Education (GCED) and Education for Sustainable Development (ESD). Many Partnerships between ASPnet schools and biosphere reserves have been established as a standard means of cooperation, with many ASPnet schools located within biosphere reserves.

326. Case study: **Kenya Green University Network**

326a. The United Nations Environment Programme (UNEP) launched the Kenya Green University Network (KGUN) in 2016 to promote environmental and sustainability practices among Kenyan students. The network serves as a knowledge and innovation hub and supports the sharing of best practices to promote achievement of the Sustainable Development Goals (SDGs) and commitments under the Paris Agreement on climate change, both of which are relevant to the MAB Programme and biosphere reserves.

326b. UNEP launched KGUN in cooperation with Kenya's National Environment Management Authority (NEMA) and the Commission for University Education (CUE). The network brings together over 70 universities with the aim of incorporating environmental and low-carbon strategies into Kenyan higher education, fostering student innovations in environmental sustainability, catalysing the need for more sustainable universities, and promoting the adoption of green schools and universities and the Greening Universities Toolkit.

6.3. National biosphere reserve networks

327. In cases where a country has multiple biosphere reserves, any site can contact others within the country to exchange experience and initiate joint activities. Formal or informal national networks can have a significant impact, especially in regard to the use of scientific evidence and the creation of useful databases relevant to decision-making at the national level.

328. National networks of biosphere reserves so far exist in only a few countries. For example, in Germany, the managers of all biosphere reserves have met twice per year for more than 20 years to discuss implementation of the MAB Programme in the country.

329. Case study: **Canadian Biosphere Reserve Association (CBRA)**

329a. In 1980, Canada's national committee for the UNESCO/MAB Programme convened a Biosphere Reserves Working Group. The goal was to foster cooperation among the existing biosphere reserves and to facilitate the development of new Canadian reserves. Under the stewardship of the Working Group, six areas in Canada received biosphere reserve designation by 1990. From the early 1990s onwards, Parks Canada and Environment Canada's Ecological Monitoring and Assessment Network (EMAN) supported the Working Group in their initiatives. Among other projects, the EMAN facilitated the development of biodiversity monitoring plots in biosphere reserves across the country. In 1996, the Working Group, together with representatives from existing biosphere reserves, formed the Canadian Biosphere Reserves Association to enhance the scope of support and programme activities beyond prior arrangements. The CBRA was incorporated in 1997 and received official charitable status in 1998.

6.4. Twinning of biosphere reserves

330. One way to encourage the sharing of information and experience is to promote the pairing or twinning of biosphere reserves in different countries which often, but not always, have similar ecosystems and challenges. Examples of such twinning of biosphere reserves exist between the Malindi-Watamu Biosphere Reserve (Kenya) and the North Devon Biosphere Reserve (United Kingdom); the Kruger to Canyons Biosphere Reserve (South Africa) and the Rhön Biosphere Reserve (Germany); and the Schaalsee Biosphere Reserve (Germany) and the Lake Bosomtwe Biosphere Reserve (Ghana).

331. Twinning partnerships among biosphere reserves, such as those between Kruger to Canyons, South Africa and Rhön, Germany, and Malindi-Watamu, Kenya and North Devon, United Kingdom, are not 'donor partnerships', but rather 'partnerships of mutual learning'. However, they can facilitate access to various donors.

332. Case study**:** **The Malindi-Watamu Arabuko Sokoke (Kenya) and North Devon (United Kingdom) Biosphere Reserves twinning project**

332a. Sharing experiences and understanding is an important function for the world network of biosphere reserves. The North Devon Biosphere Reserve has twinned with Malindi-Watamu Biosphere Reserve in Kenya to enable the two sites to learn from one another's experience of adapting to climate change, sea level rise and coastal erosion. The intention is to twin the communities, not just the coordinators or management groups. Representatives from Malindi have visited North Devon and vice versa. The twinning process has strengthened the profile of biosphere reserves in Kenya, and helped the formation of a Management Committee for Malindi-Watamu, which is working hard to encourage community participation in the decision-making process. The twinning also helped communities in the North Devon Biosphere Reserve understand the shared challenges of adapting to the impacts of climate change in the United Kingdom and in Kenya. One of the tangible outcomes was a TV documentary, 'Rising Tides', about adaptation to climate change in the two biosphere reserves. Commissioned by UNESCO, it has been shown on BBC World and at local screenings in a number of arts venues across North Devon. The documentary was produced by the TV Trust for the Environment (TVE).

6.5. Regional and thematic networks

333. Over time, various international networks have been created within the MAB Programme, through which each biosphere reserve can contribute, draw experience and find support. These networks are built on regional affiliations or ecosystem specifics of the participating biosphere reserves and often also include MAB National Committees.

334. The following regional and sub-regional networks have key roles to play in the exchange of information, best practices and experience, sharing research programmes and developing training activities at the regional level:

- Sub-Saharan Africa: AfriMAB
- Latin America and the Caribbean, Portugal and Spain: Ibero-American MAB Network (IberoMAB)
- Europe and North America: EuroMAB and NordMAB (Nordic countries)
- Arab States: ArabMAB
- Asia and the Pacific: East Asian Biosphere Reserve Network (EABRN), Pacific Biosphere Reserve Network (PacMAB), South and Central Asia MAB Network (SACAM) and Southeast Asian Biosphere Reserve Network (SeaBRnet)
- Inter-regional: East Atlantic Biosphere Reserve Network (REDBIOS).

335. Regional and sub-regional networks are active and meet regularly.

336. Case study**:** **The African Biosphere Reserves Network**

336a. The African Biosphere Reserves Network (AfriMAB) was created in 1996 and includes 33 African countries. The network aims at promoting regional cooperation in the fields of biodiversity, conservation and sustainable development through transboundary projects, which are based primarily in biosphere reserves.

336b. To increase efficiency, five thematic sub-networks were created which focus on:

- *zoning and improving biosphere reserve functioning;*
- *biosphere reserves and local communities, and stakeholders/social actors;*
- *participation and income-sharing;*
- *transboundary biosphere reserves; and*
- *the logistic support function of biosphere reserves.*

337. Case study**:** **The Pacific Man and the Biosphere Network**

337a. The Pacific Man and the Biosphere Reserve Network (PacMAB) was established for the Pacific region in December 2006 at the network's first meeting in Pohnpei, Federated States of Micronesia. PacMAB is open to any Pacific state with an identified MAB focal point, all existing Pacific Biosphere Reserves, and any site authorities actively working towards the establishment of a biosphere reserve. The network was a necessity following the successful nominations of the region's first two biosphere reserves in 2005: Utwe in the Federated States of Micronesia and Ngaremeduu in the Republic of Palau.

337b. The network serves as a vehicle for exchange and cooperation among new and emerging biosphere reserves and national MAB focal points in the Pacific. Small islands in the Asia-Pacific region are highly vulnerable to climate change, the impacts of which result in poverty, natural disasters, depopulation, loss of traditional culture and the detrimental effects of invasive species. Biosphere reserves have an enormous potential to address climate change, particularly as places for learning about sustainable development and for experimenting on mitigation and adaptation measures.

338. Case study**:** **The network of the National MAB Committees in Arab Countries**

338a. The network of the National MAB Committees in Arab Countries (ArabMAB) was officially launched in 1997 in Amman through the Amman Declaration and represents 18 Arab countries. The overall objective of ArabMAB is to promote cooperation between Arab National MAB Committees in order to strengthen the MAB programme in the Arab Region, including through the establishment of biosphere reserves and the implementation of common research and public awareness projects.

338b. ArabMAB also helps to:

- *coordinate and enhance collaboration in various disciplines related to the MAB Programme;*
- *establish principles of a common Arab Programme including the creation of biosphere reserves and other types of protected areas;*

- *assist member committees in adhering to relevant international conventions; and*
- *undertake collaborative research projects and other activities according to proposals from member committees.*

338c. Members of ArabMAB constitute the ArabMAB Coordinating Council, which meets every two years to elect a Bureau and adopt a work programme for the biennium. Council meetings are also usually the venue for expert meetings and technical workshops.

338d. ArabMAB Council meetings have been held in Agadir, Morocco (1999); Damascus, Syria (2001); Beirut, Lebanon (2004); Sharm El-Sheikh, Egypt (2007); El-Chouf Cedar Biosphere Reserve, Lebanon (2010), Dana Biosphere Reserve, Jordan (2013); and Algeria (2017).

339. Case study**: The Ibero-American MAB Network**

339a. The Ibero-American MAB Network (IberoMAB) was created in 1992. It comprises 22 countries from Latin American and the Caribbean, Portugal and Spain. IberoMAB aims at strengthening the MAB Programme in these countries, notably by consolidating their MAB National Committees and cooperative links, and promoting the creation of new biosphere reserves.

339b. The IberoMaB objectives include: promoting the role of the Ibero-American and Caribbean Biosphere Reserves in sustainable development at a regional scale as well as recovering the premises of the biosphere reserves, fostering a sustainable balance between conserving biological diversity, promoting economic development, and maintaining the associated cultural values and adaptive territorial organization. IberoMAB helps to preserve biological and cultural diversity and the services provided by ecosystems and landscapes, and to strengthen the main lines of work which make biosphere reserves laboratories for sustainable development and adaptation to global change in Ibero-America and the Caribbean.

339c. Each IberoMaB member country acts independently in adopting the measures considered necessary to improve management of the biosphere reserves in its territory. The MAB Programme, through the IberoMaB network, orientates the biosphere reserves such that they will prosper through their contribution to people's sustainable development and the conservation of the existing natural and cultural heritage, and by reinforcing coordinated work and networking between the biosphere reserves of Ibero-America and the Caribbean.

340. In the past, some ecosystem and theme-specific networks supported by dedicated projects have provided valuable insights into sustainable development models and climate change mitigation and adaptation possibilities through research, capacity-building and educational collaborations. This is the case for Global Change in Mountain Regions (GLOCHAMORE), a worldwide network established in 2003 to study global change processes in mountains, and Sustainable Management of Marginal Drylands (SUMAMAD, 2002-2011), which studied sustainable management and conservation of marginal drylands in Africa, the Arab States, Asia and Latin America.

341. Established in 2012, the World Network of Island and Coastal Biosphere Reserves aims to study, implement and disseminate island and coastal strategies to preserve biodiversity and heritage, promote sustainable development, and adapt to and mitigate the effects of climate

change. Its two technical headquarters coordinate the network and work together at the global level. The office in the island of Jeju (Republic of Korea) focuses on climate change issues while the other in Menorca (Spain) specializes in sustainable development. This network is composed of the representatives of 20 islands and coastal biosphere reserves around the world and is open to all island and coastal biosphere reserves that wish to join.

342. Detailed information about the MAB Programme networks can be found on the UNESCO MAB website: (www.unesco.org/new/en/natural-sciences/environment/ecological-sciences/man-and-biosphere-programme/networks).

343. Smaller networks in the form of working groups have also emerged within the MAB Programme. These networks are theme based. They include CaveMAB, a network of biosphere reserves around the globe that treasure natural and cultural phenomena related to caves (https://cavemab.com); the Continental Aquatic Ecosystems MAB Network, which started as a working group on 'watercourse and catchment management' (https://cae-mab-network.com) and others. In September 2019, a network of biosphere reserves that are home to Great Apes was established.

6.6. Other relevant networks of UNESCO, including UNESCO designations

344. UNESCO hosts many diverse networks. Biosphere reserves are invited to connect to members of these networks (and vice versa), both in their immediate neighbourhoods and further afield, for mutual benefit and in order to combine forces to contribute to UNESCO's objectives of peace, sustainable development, innovation and the conservation of important heritage. In some parts of the world, such as Uruguay, Scotland in the United Kingdom and the Lausitz region in Germany, 'UNESCO routes' are being established to visibly connect different UNESCO designations.

a) UNITWIN/UNESCO Chairs

345. Since 1992, the UNITWIN/UNESCO Chairs Programme has promoted global inter-university cooperation and networking to enhance innovation, institutional capacities, international knowledge sharing and collaborative work, in particular North-South-South cooperation. There are more than 700 UNESCO Chairs and dozens of UNITWIN Networks (as of 2020) in key priority areas related to UNESCO's fields of competence, in particular on global sustainable development challenges. These networks and chairs serve as think tanks and bridge builders between academia, civil society, local communities, research and policy-making. There are at least five UNESCO Chairs dedicated to work in and for biosphere reserves, and many more with relevant academic interests. The following table provides a list of these Chairs.

Region	Member State		Themes	Name of Chair
	No	Country		
LAC	1	Argentina	Environment	Chaire UNESCO-COUSTEAU d'écotechnie
LAC	2	Brazil	Sustainable Development	UNESCO Chair in South-South Cooperation for Sustainable Development
LAC	3	Chile	N/A	UNESCO-EOLSS Chair in Natural Resource Management, Land Planning and Environmental Protection
LAC	4	Chile	Ecotechnie	Chaire d'Ecotechnie UNESCO-Cousteau en 'Formation de spécialistes en aménagement et développement durable de la zone côtière'
LAC	5	Costa Rica	Biodiversity, sustainable development	UNESCO Chair on Biosphere Reserves and Natural and Mixed World Heritage Sites
LAC	6	Cuba	Environment	UNESCO Chair in Environment and Development
LAC	7	Cuba	Agriculture	UNESCO Chair on Agroecology and Sustainable Development
LAC	8	Ecuador	N/A	UNESCO Chair on Sustainable Development
LAC	9	Mexico	Environment	UNESCO Chair on Biosphere Reserves and Urban Environment
LAC	10	Mexico	Climate change	UNESCO Chair on Climate Change and Sustainable Development in Latin America
LAC	11	Uruguay	N/A	UNESCO Chair on Coastal and Continental Shelf Geoscience
AFR	12	Benin	Environment	Chaire UNESCO en sciences, technologies et environnement
AFR	13	Kenya	N/A	UNESCO Chair on Higher Education Development for a Green Economy and Sustainability
AFR	14	Mali	Environment	Chaire UNESCO-EOLSS d'enseignement et de recherche sur l'environnement
AFR	15	South Africa	N/A	UNESCO Chair in Biotechnology
ASPAC	16	China	Ecotechnie	UNESCO/COUSTEAU Ecotechnie Chair
ASPAC	17	China	Technology	UNESCO Chair in South-South Cooperation on Science and Technology to Address Climate Change
ASPAC	18	India	Climate change	UNESCO Chair in Climate Science and Policy
ASPAC	19	Iran, Islamic Republic of	Climate change	UNESCO Chair on Natural Disasters Management in the Islamic Republic of Iran and Countries in the Region

ASPAC	20	Japan	Geosciences	UNITWIN-UNESCO/KU/ICL Landslide, Earthquake and Water-related Disaster Risk Management for Society and the Environment Cooperation Programme
ECE	21	Russian Federation	Environment	UNESCO Chair in Environmental Dynamics and Global Climate Change
ECE	22	Russian Federation	Ecology	UNESCO Chair in the protection of Biodiversity of Forest Ecosystems in the Context of Sustainable Development
ECE	23	Russian Federation	Ecotechnie	UNESCO-Cousteau Ecotechnie Chair in the Conservation and Sustainable Use of the Biodiversity of the Steppe and Wetland Ecosystems
ECE	24	Russian Federation	Climate change	UNESCO Chair in Social and Human Adaptation of the Arctic regions to Climate Change
ECE	25	Russian Federation	Environment	UNESCO Chair in the Study and Preservation of the Ecosystems' Biodiversity in the Volga River Basin
ECE	26	Slovakia	Sustainable development	UNESCO Chair in Sustainable Development and Ecological Awareness
ARB	27	Sudan	Desertification	UNESCO Chair in Desertification
ARB	28	Sudan	Ecology	UNESCO-Cousteau Ecotechnie Chair
ARB	29	Syrian Arab Republic	Environment	UNESCO Chair in Environmental Protection
ENA	30	Belgium	N/A	UNESCO Chair in Eremology
ENA	31	Canada	Environment	UNESCO Chair for Dialogues on Sustainability
ENA	32	Canada	N/A	UNESCO Chair on Biocultural Diversity, Sustainability, Reconciliation, and Renewal
ENA	33	France	Biodiversity	Chaire UNESCO 'Parcours MAB'
ENA	34	Germany	Biodiversity, environment, World Heritage	UNESCO Chair on World Heritage and Biosphere Reserve Observation and Education
ENA	35	Greece	Climate change	UNESCO Chair on Natural Hazards in the Geosphere, the Hydrosphere and the Atmosphere
ENA	36	Greece	Geosciences	UNESCO Chair on Solid Earth Physics and Geohazards Risk Reduction
ENA	37	Greece	Ecology, sustainable development	UNESCO Chair on Conservation and Ecotourism of Riparian and Deltaic Ecosystems
ENA	38	Israel	Agriculture	UNESCO Chair in Plant-Water Relationships in Desert Sand Dunes
ENA	39	Italy	Ecology	UNESCO Chair in Sustainable Development and Territory Management

ENA	40	Italy	Biodiversity and land management	UNESCO Chair on New paradigms and instruments for bio-cultural landscape management
ENA	41	Italy	N/A	UNESCO Chair on Intersectoral Safety for Disaster Risk Reduction and Resilience
ENA	42	Italy	N/A	Prevention and Sustainable Management of Geo-Hydrological Hazards
ENA	43	Norway	Environmental management	UNESCO Chair on Sustainable Heritage and Environmental Management-Nature and Culture
ENA	44	Portugal	Biodiversity	UNESCO Chair on Biodiversity Safeguard for Sustainable Development
ENA	45	Portugal	Biodiversity	UNESCO Chair on Geoparks, Regional Sustainable Development and Healthy Lifestyles
ENA	46	Portugal		UNESCO Chair on Life on Land
ECE	47	Russian Federation	Environment	UNESCO Chair in Environmental Education in Siberia
ECE	48	Russian Federation	Environment protection	UNESCO Chair in Ecologically Safe Development of Large Regions: The Volga Basin
ECE	49	Russian Federation	Ecology	UNESCO Chair in Marine Ecology
ECE	50	Russian Federation	Environment	UNESCO Chair on the Application of the Fundamental Principles of the Earth Charter for a More Sustainable Society
ECE	51	Slovenia	Geosciences	UNESCO Chair on Karst Education
ENA	52	Spain	Coastal areas	UNESCO Chair in Environmental and Marine Resources Management
ENA	53	Spain	Environment	Chaire UNESCO d'étude de l'environnement
ENA	54	Spain	Environmental management	Chaire UNESCO-SA NOSTRA en Gestion d'Entreprise et Environnement
ENA	55	Spain	N/A	Chaire UNESCO de Développement durable et éducation environnementale
ENA	56	Spain	Ecology	UNESCO Chair in Life Cycle and Climate Change
ENA	57	United Kingdom of Great Britain and Northern Ireland	Sustainable development	UNESCO Chair in Sustainable Mountain Development
ENA	58	United Kingdom of Great Britain	Environment	UNESCO Chair in the Development of a Sustainable Geo-environment

		and Northern Ireland		
ENA	59	United Kingdom of Great Britain and Northern Ireland	N/A	UNESCO Chair on Geoscience and Society
ENA	60	United States of America	N/A	UNITWIN Network for Improving Biological Sciences Education through the Development and Use of Information Technologies in some Arab States Universities
ECE	61	Belarus	N/A	UNESCO Chair in Science Education with Emphasis on Natural Sciences (2011)-Belarusian State University, Minsk (919)
LAC	62	Ecuador	N/A	UNESCO Chair on Sustainable Development (2018), Universidad Técnica Particular de Loja (1290)
ASPAC	63	India	N/A	UNESCO Chair in Climate Science and Policy (2012), TERI University (999)
ASPAC	64	Kazakhstan	N/A	UNESCO Chair on water resources management in Central Asia (2016), German-Kazakh University, Almaty (1187)
ENA	65	Spain	N/A	Chaire UNESCO d'Etude de l'environnement (2001), Université Rey Juan Carlos, Madrid (560)
ENA	66	Spain	N/A	Chair UNESCO-SA NOSTRA en Gestion d'entreprise et environnement (2001) Université des Illes Balears, Palma de Mallorca (566)

346. Other Chairs related to water resource management also cooperate with the MAB Programme and biosphere reserves (e.g. in Sudan).

b) Category 2 Centres and institutes

347. Category 2 Centres and institutes are academic/research institutes that contribute to the execution of UNESCO's programme through capacity-building, the exchange of information in a particular discipline, theoretical and experimental research, and advanced training. While under the auspices of UNESCO, they are not legally part of UNESCO or financed by the Organization. Some 100 centres and institutes (as of 2020) are in existence, the majority in the fields of freshwater and heritage. There are also centres and institutes dedicated to renewable energy, geosciences and remote sensing.

348. The two Category 2 Centres devoted to biosphere reserves are the Regional Post-graduate Training School of integrated management of tropical forests and lands (École régionale post-universitaire d'aménagement et de gestion intégrés des forêts et territoires tropicaux) (ERAIFT), established in 1991 in Kinsasha, DRC, and the International Centre for the Mediterranean Biosphere Reserves, established in 2014 in Castellet i Gornal (Spain.

349. Among other Category 2 Centres that can support international designations, including biosphere reserves, are the International Centre on Space Technologies for Natural and Cultural Heritage (HIST), established in 2011 in Beijing, China, and the Global Research and Training Centre for Internationally Designated Areas, in Jeju Island, republic of Korea approved in 2019. The table below provides a list.

Region	Country	Themes	Name of centre
ASPAC	**China**	Environment	International Centre on Global-scale Geochemistry,
	China	Space and World Heritage	International Centre on Space Technologies for Cultural and Natural Heritage (HIST)
	China	Ecology	International Research Centre on Karst (IRCK)
ASPAC	**Republic of Korea**		Global Research and Training Centre for Internationally Designated Areas
AFR	**Democratic Republic of Congo**	Education	Ecole régionale post-universitaire d'aménagement et de gestion intégrés des forêts et territoires tropicaux (ERAIFT)
ENA	**Spain**	Environment	International Centre on Mediterranean Biosphere Reserves
ENA	**Macedonia**	Education, earthquake engineering and seismology	International Institute of Earthquake Engineering and Engineering Seismology (IZIIS), 'Ss. Cyril and Methodius' University
ENA	**Iceland**		International Centre for Capacity Development – Sustainable use of Natural Resources and Societal Change

c) UNESCO Associated Schools Network (ASPnet)

350. Established in 1953, the UNESCO Associated Schools Network (ASPnet) today links more than 11,500 (as of 2020) primary and secondary schools, as well as kindergartens and teacher training centres in more than 180 countries worldwide. These schools are pioneers in advancing peace, intercultural dialogue and sustainable development through the daily practice of quality education. The network is a driver for innovation and quality in education, notably, Global Citizenship Education (GCED) and Education for Sustainable Development (ESD). Many ASPnet schools have international partner schools. There are also ASPnet schools located in and close to many biosphere reserves. In several cases, formal partnerships have been established between ASPnet schools and biosphere reserves. These can be mutually beneficial in particular for promoting state-of-the-art GCED and ESD in schools and biosphere reserves, both acting as part of a global network.

d) Education for Sustainable Development (ESD) networks

351. UNESCO's global leadership in ESD has been reaffirmed throughout the UN Decade for Education for Sustainable (2005-2014), the subsequent Global Action Programme (2015-2019) and the current Global Framework of UNESCO 'ESD for 2030' (2020-2030). Through ESD, the Organization seeks to support transformative action and structural change towards sustainable development in and through education. The goal of ESD is to 'learn the values, behaviour and lifestyles required for a sustainable future and for positive societal transformation'. It should also be noted that ESD is not 'knowledge-driven', even though knowledge is an important part of ESD. UNESCO operates at the level of ESD policies, promoting learning environment transformation, capacity-building, youth empowerment 'accelerating sustainable solutions at the local level'. This alignment of goals and approaches has enabled the WNBR to formally join the UNESCO 'ESD Partner Network' for promoting sustainability locally, alongside dozens of other partners in five 'ESD Partner Networks'.

e) UNEVOC centres for technical and vocational education and training (TVET)

352. UNEVOC is an International Centre based in Bonn, Germany, that forms part of the UNESCO Secretariat. UNEVOC coordinates a global network of 290 Technical and Vocational Education and Training (TVET) centres in 167 countries (as of 2020), encouraging lifelong learning and promoting access to quality training. UNEVOC and its network promotes increased opportunities for productive work, sustainable livelihoods, personal empowerment and socio-economic development, especially for youth, women and the disadvantaged. 'Greening TVET' is one of the key UNEVOC thematic areas. Biosphere reserves have the opportunity to partner with the Bonn UNEVOC Centre and the global centres, some of which are located close to biosphere reserves, in order to share experience and offer opportunities while fulfilling their development and logistic functions.

f) International Coalition of Inclusive and Sustainable Cities (ICCAR)

353. ICCAR is a global network of cities launched by UNESCO in 2004. More than 500 ICCAR cities (as of 2020) collectively and individually undertake a wide range of initiatives ranging from policy-making and capacity-building to awareness raising. The network, its seven sub-networks and the individual cities advocate for global solidarity and collaboration to promote inclusive urban development free from all forms of discrimination. ICCAR has established a common voice for cities striving to fight against societal ills that result from social transformations including rapid urbanization, human mobility and rising inequalities. In addition to ICCAR, UNESCO hosts seven additional networks and programmes at the level of cities, such as the 'Learning Cities' network and the 'Creative Cities' network, all of which are integrated into the 'UNESCO Cities platform'. In cases where biosphere reserves include urban areas, their experience can be an asset to these networks, and vice versa.

g) UNESCO Global Geoparks Network

354. UNESCO Global Geoparks are areas with and landscapes of international geological significance that are managed with a view to promoting protection, education and sustainable development. UNESCO Global Geoparks use their geological heritage, in connection with all other aspects of the area's natural and cultural heritage, to enhance awareness and understanding of key issues facing society, such as sustainable use of the Earth's resources, mitigating the effects of climate change and reducing natural disaster-related risks. UNESCO Global Geoparks give local communities a sense of pride in their region and strengthen their identification with the area. They support the creation of innovative local enterprises, new jobs and high-quality training, in particular through geotourism, while protecting the geological resources of the area. First established as a UNESCO programme in 2015, the network now consists of more than 161 UNESCO Global Geoparks in 44 Member States (as of August 2020). They form a closely cooperating global network, with global meetings every two years, fostering the exchange of ideas and information sharing. There share similarities in approach and goals with biosphere reserves, and in many cases, overlaps or close proximity provide opportunities to combine forces.

h) The World Heritage Convention and its properties

355. The World Heritage Convention of 1972 is the best-known of UNESCO's many conventions of international law. A highly significant feature of the Convention is that it integrates nature conservation and the preservation of cultural properties, both conceptually and legally. Within the framework of the Convention, the World Heritage Committee, since 1978, has inscribed cultural, natural and mixed 'properties' or sites onto the World Heritage List. More than 1,100 properties of 'outstanding universal value' in 167 countries have been inscribed (as of August 2020). Since the 1990s, Cultural Landscapes have also been inscribed. Hundreds of additional sites are currently inscribed on national 'tentative lists' as a prerequisite of inscription by the World Heritage Committee. The Convention is accompanied by Operational Guidelines and other authoritative texts. World Heritage sites reflect the cultural and natural diversity of the planet, and function as a powerful instrument for conservation. They are both irreplaceable sources of life and inspiration, in particular for global and inter-generational responsibility. World Heritage sites also require the participation of the local population and encourage

international cooperation. Increasingly, World Heritage sites work together across the world. Many biosphere reserves contain such sites, both natural and cultural, and integrated management and partnerships are strongly recommended.

i) Intangible heritage

356. Intangible heritage, as defined by the UNESCO Convention of 2003, which seeks to contribute to its safeguarding, covers oral traditions, performing arts, social practices, rituals, festive events, knowledge and practices concerning nature and the universe, or the knowledge and skills to produce traditional crafts. Intangible cultural heritage is an important factor in maintaining cultural diversity, supporting intercultural dialogue and encouraging mutual respect for other ways of life. Within the context of the UNESCO Convention, certain intangible heritage 'elements' can be inscribed by countries/State Parties onto three lists, as one of the means of transmitting the wealth of knowledge and skills of one generation to the next. This transmission of knowledge carries a high level of social and economic value, both for minority and mainstream social groups, in all countries at all stages of development. More than 500 'elements' have been inscribed on the three lists, ranging from highly localized practices in a village or city, to practices covering wide regions, and often extending across countries and sometimes continents. In order for a country to inscribe an element, it must already be included on a national register. Many intangible heritage elements recognized by UNESCO, on a national register or awaiting inscription are highly relevant for biosphere reserve management and offer interesting possibilities for partnership. Such elements are not restricted to 'knowledge and practices concerning nature'.

j) UNESCO Water Family

357. The Intergovernmental Hydrological Programme (IHP) is an intergovernmental programme of UNESCO that promotes international scientific cooperation in water research, water resource management, education and capacity-building. Since its foundation in 1975, IHP has created a UNESCO 'water community' of academic and research institutions, governmental bodies, individual experts and 'implementation sites' that operate as a global network. IHP has National Committees, very much like MAB, yet is more focused on research. As such, its implementation sites have less permanence than biosphere reserves. IHP has many sub-programmes, for example on drought and floods, or on permanent monitoring. UNESCO, through the UN World Water Assessment Programme (WWAP), publishes the *World Water Development Report* (WWDR) annually. IHP and its water community, can be an ideal partner to address if a biosphere reserve seeks to better understand and improve its water management approaches.

6.7. Other networks and initiatives

358. Biosphere reserves as learning sites for sustainable development have the potential to become an asset to other networks of similar focus, including outside UNESCO structures. As stated in the Lima Action Plan, it is desirable for biosphere reserves to create opportunities for collaboration and partnerships with international programmes and relevant conventions (Action C 2.2.). By participating in these partnerships, biosphere reserves enhance information and experience exchange and may improve their own performance.

359. Case study: **International Model Forest Network (IMFN)**

359a. The International Model Forest Network (www.imfn.net) is a voluntary global community of practice whose members and supporters work toward the sustainable management of forest-based landscapes and natural resources through the 'Model Forest' approach.

359b. A Model Forest can be described as a large-scale landscape encompassing many different land uses, a specific partnership-based approach to sustainable forest management and a long-term process that adheres to a broad set of principles to promote sustainability. The partnership is voluntary and made up of stakeholders – such as biosphere reserve coordinators, local community associations, Indigenous peoples, governments, academia and industry – representing the environmental, social and economic forces at play within the landscape. The partnership works to define a shared, locally relevant operational vision of natural resource management and then collaborates to achieve it in concrete terms for the benefit of all stakeholders. Model Forests bring joint solutions and innovative strategies to shared challenges such as climate change, governance, land degradation, food security, wildfires, markets and livelihoods, health and well-being, and land-use conflicts.

359c. Through the network structure and a commitment to knowledge-sharing and capacity-building, best practices and lessons learned in one Model Forest can be shared with others to accelerate learning and collectively make lasting progress to realize sustainable development, both locally and globally.

359d. Biosphere reserves have a very similar approach to sustainable development with a focus on large landscapes and broad stakeholder participation. There are a number of biosphere reserves whose boundaries overlap those of Model Forests, and both groups work cooperatively to achieve common objectives (e.g. the Dja Biosphere Reserve/Dja et Mpomo Model Forest, Cameroon; the Huai Tak Teak Biosphere Reserve/Ngao Model Forest, Thailand; the Yungas Biosphere Reserve/Jujuy Model Forest, Argentina; and the Lower Morava Biosphere Reserve/Model Forest, Czech Republic). In some cases, a Model Forest has facilitated the establishment of a biosphere reserve (e.g. the Eastern Ontario Model Forest/Frontenac Arch Biosphere Reserve, and the Fundy Model Forest/Fundy Biosphere Reserve, both in Canada).

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United Nations Educational, Scientific and Cultural Organization

Man and the Biosphere Programme

Sustainable Development Goals



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