

MADRID ACTION PLAN



PLAN STRUCTURE

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BACKGROUND

In 1995 an international conference in Seville, Spain started a new era for the World Network of Biosphere Reserves (WNBR). The actions decided at that meeting were incorporated in the *Seville Strategy* and the *Statutory Framework of the World Network of Biosphere Reserves*, both adopted by the General Conference of UNESCO in 1995. In Pamplona, Spain in 2000, a Seville+5 meeting was held and various actions were decided, following through on the strategic recommendations from Seville.

This Madrid Action Plan was agreed at the 3rd World Congress of Biosphere Reserves. It builds on the Seville Strategy and aims to capitalize on the strategic advantages of the Seville instruments and raise biosphere reserves to be the principal internationally-designated areas dedicated to sustainable development in the 21st century. The biosphere reserve (BR) concept has proved its value beyond protected areas and is increasingly embraced by scientists, planners, policy makers and local communities to bring a variety of knowledge, scientific investigations and experiences to link

biodiversity conservation and socio-economic development for human well-being. Thus the focus is on developing models for global, national and local sustainability, and for biosphere reserves to serve as learning sites for policy professionals, research and scientific communities, management practitioners and stakeholder communities to work together to translate global principles of sustainable development into locally relevant praxis. Individual biosphere reserves remain under the jurisdiction of the States where they are situated, which take the measures they deem necessary to improve the functioning of the individual sites.

A. EMERGING CHALLENGES AND THE POTENTIAL AND ROLE OF BIOSPHERE RESERVES IN ADDRESSING THESE CHALLENGES

During the thirteen (13) years since the adoption of the Seville Strategy, global issues and problems have emerged or intensified, making it an imperative for the MAB Programme to adapt and change so as to effectively respond to these emerging challenges. These major challenges seriously further exacerbate poverty and inequality and include:

- Accelerated climate change with consequences for societies and ecosystems;
- Accelerated loss of biological and cultural diversity with unexpected consequences that impact the ability of ecosystems to provide services critical for human well-being;
- Rapid urbanization as a driver of environmental change.

From these challenges, several opportunities for change arise, through increased awareness at all levels of the need to maintain and secure access to ecosystem services for human well-being, including health, security and justice/equity.

Understanding the issues highlighted in the key challenges, over the period 2008-2013, the MAB Programme will strategically address the relevant Millennium Development Goals (MDGs) through the following:

- Develop mechanisms for support for the sustainable development of areas carried out in partnership with public and private sectors to ensure the well-being of people and their environment;
- Test and apply policies for adaptation and mitigation for climate change in coordination with other intergovernmental programmes;
- Use its thematic networks and transdisciplinary approaches to develop and test policies and practices to address the issues impacting key ecosystem types, namely coastal zones, islands, oceans, mountains, drylands, tropical forests, freshwater ecosystems and areas of increasing urbanization;
- Develop scientific programmes of research to follow on from the Millennium Ecosystem Assessment (MA) to develop approaches that secure ecosystem services into the future.

The Madrid Action Plan (hereafter referred to as MAP or the MAP) articulates actions, targets and success indicators, partnerships and other implementation strategies and an evaluation framework for the WNBR for the period of 2008 to 2013. It takes fully into consideration the recommendations of the Review Committee that evaluated UNESCO's Natural Sciences and Social and Human Sciences Programmes during 2006-2007, and will make specific contributions towards the implementation of those recommendations as proposed by the Director General of UNESCO and approved by the 34th session of the General Conference of UNESCO in October-November 2007.

MAP's overall goals are to:

- (a) anchor the research, training, capacity building and demonstration agendas of MAB at the interface between the interlinked issues of conservation and sustainable use of biodiversity, mitigation and adaptation to climate change, and socio-economic and cultural well-being of human communities;
- (b) enable the active use of places included in the WNBR as learning sites for sustainable development, i.e. demonstrating approaches to enhance co-operation amongst epistemic (academic), political, practitioner and stakeholder communities to address and solve context specific problems to improve environmental, economic and social conditions for human and ecosystem well-being;
- (c) collect, collate, synthesize and disseminate lessons learnt from more than 30 years of the work of the MAB Programme and the WNBR as well as their planned actions during 2008-2013 to benefit international, national and local efforts to meet global targets such as the MDGs, significantly reducing the current rate of biodiversity loss by 2010 (also referred to as the "CBD 2010 target") and others that are part of the UNFCCC and Kyoto processes linked to mitigating and adapting to global climatic change; and
- (d) contribute to the emergence of a new generation of professionals and practitioners who can serve as diplomats, ambassadors and managers/coordinators for linking global environmental agendas to national and local development aspirations.

The MAP builds on past experience in the network and in individual biosphere reserves, and reaches out to scientists, public servants, private corporations, decision makers, resource management practitioners and stakeholder communities to create a new partnership between environmental and development agendas. To this broad community, biosphere reserves should be seen both as a process and as an instrument to understand, and adapt to change. The evolution of the MAB Programme will be guided not only by the community most directly involved in managing biosphere reserves but also by the broader community inspired by the concept and experimenting with it.

The Madrid Action Plan is informed by a consultation process of Member States involving governing bodies such as the MAB Bureau in June and September 2007; the International Advisory Committee for Biosphere Reserves in June 2007; circular letters issued by the MAB Secretariat in July and December 2007 and network meetings held in all regions of the world in 2007. MAP builds on the working documents addressing the five (5) issues defined by the 19th session of the ICC for the preparation of the 3rd World Congress of Biosphere Reserves and the 20th session of the International Co-ordinating Council of the MAB Programme (MAB-ICC) convened in Madrid, Spain, from 4 to 8 February 2008.

A.1 CLIMATE CHANGE

Climate change presents one of the most serious and globally significant challenges to society and ecosystems around the world today. Having filtered out the range of natural causes of climate change, the UNFCCC and its scientific panel IPCC have unequivocally established that the accelerated changes to our climate are anthropogenic. The volume of CO₂ and other greenhouse gases emitted primarily by the industrialized nations and now coupled with the demand from less industrialized parts of the world including emerging market economies means that, if unchecked the problems will multiply. In addition, the rate of deforestation in tropical areas is also contributing to the increase of CO₂ in the atmosphere as well as loss of ecosystem functions.

The rise in mean global temperature will mean that billions of people across the globe will face water shortages and millions more people will be exposed to malaria. Weather events such as droughts and floods will be more extreme, leading to a greater range and frequency of natural disasters. This will in turn lead to people moving from inhospitable areas to more amenable regions. The changes in rainfall distribution will drive changes in agricultural systems.

Most ecosystem services will be put under stress. For example 30 percent of species will be put at risk of extinction, desertification will increase; positive feedback mechanisms in the climate will further reduce tropical forests. Sea level rise and sea warming will impact on the ability of coastal systems, such as mangroves and salt marshes, to cope, and fish distribution will change increasing the fragility of coastal ecosystems and the human use of them.

Societal responses to climate change are centred on adaptation and mitigation, both of which bring their own consequences for current and future generations. Society must practise adaptation to accommodate the changes that are inevitable because of the greenhouse gases already emitted and which will be active until they naturally decay. Based on scientific knowledge, adaptation measures may include land use change to safeguard ecosystem services and functions, such as coastal realignment, and management of river catchments. Mitigation is required by all nations to varying degrees, in an effort to prevent the CO₂ equivalent in the air exceeding 450 parts per million. These will include carbon sequestration, emission reductions, energy efficiency and renewable energy production in a sustainable manner combined with more climate friendly lifestyles. The barriers to these being put in place can be lack of political awareness of solutions and/or the willingness to implement them, inadequate or lack of technical capacity, economic uncertainty as well as the absence of an integrated approach to development planning.

MAB and the WNBR bring added value through the integrated approach which is generally absent elsewhere. The role of biosphere reserves is essential to rapidly seek and test solutions to the challenges of climate change as well as monitor the changes as part of a global network. For the Natural Sciences as well as other Programme Sectors of UNESCO, biosphere reserves can be areas for demonstrating adaptation measures for natural and human systems, assisting the development of resilience strategies and practices. Buffer zones and transition areas of biosphere reserves may also be used to test many mitigation tactics and strategies. In numerous biosphere reserves, carbon can be sequestered as in forest and wetland systems. In all of them capacity can be built for low-carbon economies using a mix of technology- and labour-based social enterprises. From a social sciences point of view, the political dimensions of changing lifestyles can be explored. The range of biosphere reserves and the systems they represent will provide valuable lessons for the rest of the world.

A.2 PROVISION OF ECOSYSTEM SERVICES

The Millennium Ecosystem Assessment (MA) has articulated and described the idea of ecosystem services in a manner that has gained widespread acceptance among public and private sector and civil society organizations. The new MA typology recognizes four distinct categories of services: supporting (nutrient cycling, soil formation and primary production); provisioning (food, fresh water, wood and fibre and fuel); regulating (climate, flood and disease regulation and water purification) and cultural (aesthetic, spiritual, educational and recreational).

Ecosystem services could be a useful conceptual framework to superimpose on the multiple functions ranging from protection to production in biosphere land/seascapes. The essence of biosphere reserves as sustainable development sites could be seen as the effort to design and develop place-specific mixes of supporting, provisioning, regulating and cultural ecosystem services that enable the environmental, economic and social well-being of resident and stakeholder communities.

For example, the various zones of biosphere reserves can serve as places to attract new investments into hitherto neglected services (climate regulation, water purification, biodiversity conservation) and improve environmental and social performance of provisioning (agriculture, forestry, fisheries) and cultural (tourism) services that may have been the principal recipients of investments to-date. Active and continuing consultations between the scientific and research communities, policy and decision makers, resource managers and resident populations in a biosphere reserve are critical in finding the optimal mix of ecosystem services that would illustrate the role of biosphere reserves as models for land/seascape level sustainable development at the national, regional and global levels.

A.3 URBANIZATION AS A PRINCIPAL DRIVER FOR ECOSYSTEM-WIDE PRESSURES

Urbanization is a global multidimensional process that manifests itself through rapidly changing and spatially shifting population densities, land cover and resource use regimes and a diversity of associated cultural practices. Half of the world's population today lives in urban landscapes, a proportion projected to increase to 66-67% over the next 50 years. Most of this growth will occur in countries that constitute the less industrialized and emerging market economies of the world. It is estimated that by 2030 more than two billion people will be living in urban slums with limited access to basic services, facing extreme vulnerability to natural disasters. The rapid increase of large cities and the continuing transformation of urban landscapes represent great challenges to ensure basic human welfare and a liveable environment.

Urban landscapes represent probably the most complex mosaic of land cover and multiple uses of any landscape. Urbanization and urban landscapes have recently been identified by the MA as priority areas where large knowledge gaps exist. Urban landscapes provide important large-scale experiences of the effects of global change on ecosystems; significant warming and increased nitrogen deposition are already evident and they provide extreme, visible and measurable examples of human domination of "natural" ecosystem processes. However, cities are also perceived as places offering solutions for humans and the environment as main hubs of knowledge, capital and innovations.

A number of urban areas are either considering, or have applied, the biosphere reserve principles within their jurisdictions, with the intention of using the concept as a tool for planning and managing sustainable urban development.

B. VISION STATEMENT FOR THE WORLD NETWORK OF BIOSPHERE RESERVES (WNBR) WITHIN THE MAN AND THE BIOSPHERE (MAB) PROGRAMME

The World Network of Biosphere Reserves of the Man and the Biosphere Programme consists of sites of excellence to foster harmonious integration of people and nature for sustainable development through participation, knowledge sharing, poverty reduction and human well-being improvements, cultural values and society's ability to cope with change, thus contributing to the MDGs.

C. MISSION STATEMENT FOR THE WORLD NETWORK OF BIOSPHERE RESERVES (WNBR) WITHIN THE MAN AND THE BIOSPHERE (MAB) PROGRAMME

To ensure environmental, economic, social (including cultural and spiritual) sustainability through:

- development and coordination of a worldwide network of places acting as demonstration areas and learning sites with the aim of maintaining and developing ecological and cultural diversity, and securing ecosystem services for human well-being;
- development and integration of knowledge including science for advancing our understanding of interactions between people and the rest of nature;
- building global capacity for the management of complex socio-ecological systems particularly though encouraging greater dialogue at the science-policy interface, environmental education and multi-media outreach to the wider community.

D. PROGRESS SINCE SEVILLE

The adoption of the Seville Strategy and the Statutory Framework in 1995 has clearly established the biosphere reserve as the land/seascape level designation conferred by the UNESCO-MAB Programme to places in natural ecosystems as well as those significantly modified by humans. Since 1995 the essence and identity of biosphere reserves has deepened along the following axes: (a) multi-functionality and integration amongst the conservation, development and logistic or knowledge functions that demonstrate context-specific options for local and regional sustainability; (b) the three zone scheme as the basis for the land/seascape level planning and for reconciling stakeholder interests linked to the multiple functions; (c) presence of resident and migrant human settlements within the biosphere reserve; and (d) commitment to review biosphere reserve functioning, including the level of integration amongst the three functions, at least once every ten (10) years after the inclusion of a site in the WNBR.

As much as 98% of the places nominated as biosphere reserves since 1995 have adopted the three-zone scheme. For those biosphere reserves included in the WNBR prior to 1995, this percentage was 23% for those between 1976 and 1984, and 65% for others designated during 1985-1995, respectively. Periodic review of biosphere reserves included in the WNBR has resulted in many pre-1995 biosphere reserves being revised with respect to their zonation schemes and other essential features that define the post-1995 Seville vision of biosphere reserves.

While the Seville Strategy and the Statutory Framework of 1995 enabled the clarification and deepening of the niche of biosphere reserves among internationally-designated places, the MAP aims to demonstrate and emphasize the role of biosphere reserves as learning sites for local and regional sustainable development practices as well as the importance of MAB and of the WNBR as regional and global hubs for exchange of information, ideas, experience, knowledge and best practices in sustainability sciences. Experience in the application of some of the key tools of the 1995 Statutory Framework, such as the periodic review process will be assessed and this process will be further refined for use in tracking changes in the performance of biosphere reserves in contributing to sustainable development outcomes including locally and regionally appropriate expressions of MDGs, CBD 2010 target, EFA, the United Nations Decade of Education for Sustainable Development (UNDESD) and other global commitments made by UNESCO Member States.

E. THE MADRID ACTIONS - THE WORLD NETWORK OF BIOSPHERE RESERVES

In attempting to orient MAB and the WNBR activities during 2008-2013 in the face of new challenges in an ever-changing world, the MAP defines four (4) main action areas, with 31 targets and 65 actions that are critical to achieving the vision and mission of the MAB Programme. Targeted actions help its implementation at the appropriate level, may it be local, national or international, within the time-frame set (2008-2013).

Actions are to be taken at the local level (the individual biosphere reserves), the national level (MAB National Committees/National Commissions for UNESCO) and the international level (regional and sub-regional networks as well as ecosystem-based thematic networks, UNESCO-MAB Secretariat). At all levels, the term biosphere reserve is recommended for use, while respecting the wish of individual MAB National Committees and/or biosphere reserve authorities to use appropriate alternative terminology, such as biosphere regions, areas, territories, etc.

Although the biosphere reserve project is not time limited but has a long-term perspective, goals and targets have been set to be addressed within an appropriate time-frame during 2008-2013, and progress towards meeting those goals and targets will be monitored and evaluated and the findings of such evaluations shared with others contributing to the work of the MAB Programme and the WNBR. A commitment to innovative time-bound socio-ecological and policy actions integrating the three biosphere reserve functions and the willingness to share data, information, experience and knowledge are seen as vital to the role for biosphere reserves to be learning sites during the UNDESD (2005-2014).

E.1. COOPERATION, MANAGEMENT AND COMMUNICATION

Biosphere reserves are the principal means for achieving the objectives of the MAB Programme and the visible instrument through which UNESCO as a whole could demonstrate its commitment to sustainability through policy-relevant site-based research, capacity enhancement and demonstration. In order to respond to new and emerging environmental and economic challenges at all scales, the management of the programme and the co-ordination of the work of the WNBR must be revised in light of thirteen (13) years' experience of the implementation of the Seville Strategy and the Statutory Framework. Necessary adaptations in the operation and outreach dimensions of WNBR need to be introduced in order to ensure that biosphere reserves effectively serve as learning sites for sustainable development at global, regional, national and local levels.

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
1. Effective implementation of the Seville Strategy	<p>1.1 Assess the achievements of the Seville Strategy, in order to feedback into the Madrid Action Plan.</p> <p>1.2 Compile and synthesize first-hand information on the functioning of BRs, which should then be shared inter-regionally and globally with the help of the MAB Secretariat.</p>	2010	Assessment document of the Seville Strategy	MAB Secretariat	MAB Bureau, MAB Networks, BRs, IUCN, UNDP and TNC

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
	<p>1.3 Create and implement a system of recognizing performance of the Seville Strategy.</p> <p>1.4 Update the nomination and periodic review forms for BRs.</p>	2010	<p>Performance recognition system reviewed, adopted by MAB-ICC, implemented and disseminated.</p> <p>Use of updated forms</p>	Secretariat in co-operation with Regional Networks	MAB Bureau, MAB Networks, BRs, IUCN, UNDP and TNC
2. Increased cooperation and coordination of biosphere reserves with existing international programmes and initiatives	<p>2.1 UNESCO utilizes BRs in intergovernmental scientific programmes in addition to MAB</p> <p>2.2 Work closely with the authorities responsible for the implementation of relevant biodiversity and environmental multilateral agreements to ensure coordination between international designations at the national level.</p>	2010	<p>Number of BRs working together with UNESCO programmes (IHP, DESD, IOC, IGCP, MOST, IBSP, etc).</p> <p>Number of BRs working with international initiatives (CBD, CMS, UNCCD, UNFCCC, IGBP, MA follow-up, etc.)</p> <p>Number of activities in UNESCO incorporating BRs as a tool for linking WH site conservation with sustainable development of the broader region; levels of financial and human resources to developing and implementing joint projects linking WH sites, Ramsar sites and BRs</p>		<p>MAB Bureau, UNESCO programmes (IHP, IOC, IGCP, MOST, IBSP, etc.).</p> <p>International initiatives (CBD, CMS, ISDR, UNCCD, UNFCCC, IGBP, etc.)</p> <p>UNESCO Science Sector, WHC and Ramsar Convention, Executive Board of UNESCO.</p> <p>All UNESCO intersectoral programmes such as DESD, EFA, UNESCO Chairs, Associated Schools Network, TWAS, Executive Board of UNESCO.</p>
3. Integrated information & communication strategy	3.1 Creation of a web-based information clearinghouse and information centre, to exchange	2013	Functioning information clearinghouse	MAB Secretariat	Regional, sub-regional, country and thematic

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
	<p>and share technology, research & cooperation opportunities, findings and experience, to help to solve problems at local, regional and international levels.</p> <p>3.2 Produce regional, sub-regional, country- and ecosystem-specific publications on biosphere reserves, MAB and other related themes.</p> <p>3.3 Elaboration of a map presenting the WNBR according to ecosystem types, including human-impacted ecosystems such as rural and urban areas.</p> <p>3.4 Creation of a journalism award directed at the mass communication media for their role on promoting the importance of BRs.</p>	<p>2009</p> <p>2010</p>	<p>mechanism.</p> <p>Number and variety of publications (print, web-based etc.) and communications in UN as well other regional and nationally important languages.</p> <p>Current template of WNBR map adapted to produce region and ecosystem specific maps as and when needed.</p> <p>Number of awards provided</p>	<p>UNESCO Member States</p>	<p>networks in co-operation with MAB National Committees and BR administrations as appropriate, and PALNet-IUCN, and other relevant information networks.</p> <p>Regional networks</p> <p>UNESCO Member States</p>
<p>4. Participatory regional networks that are managed in a manner assuring adequate representation of biosphere reserve managers/ coordinators</p>	<p>4.1 Develop a structure, strategy and action plan for each regional network to meet their responsibilities within the MAB Programme and regularly report to MAB National Committees and individual BRs.</p> <p>4.2 Ensure that each network has partnerships and long-term financing mechanisms from within its membership to ensure sustainability of its operations and activities</p>	<p>2009</p> <p>2010</p>	<p>Number of regions completing and implementing structure, strategy and action plan.</p> <p>Number of individual BRs participating in regional network activities.</p>	<p>Regional Networks</p>	<p>UNESCO Field Offices National Commissions for UNESCO MAB National Committees and individual BRs.</p>

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
5. Enhanced cooperation between experts and practitioners in relevant key issues	5.1 Create and strengthen existing regional and interregional thematic networks formed around key issues such as mountains, freshwater, oceans, drylands, forests, urban areas, small islands.	2010	Number of networks and extent of regional and thematic coverage.	MAB Secretariat, Regional Networks, individual BRs, other institutions	Diverse stakeholders at multiple scales
6. Communication strategies for each biosphere reserve, integrated with national and higher levels	6.1 Implement a communication strategy on environmental, economic, social, spiritual, cultural and political importance and benefits of BRs and the WNBR, directed to national governments, policy makers, journalists, local communities and other target groups.	2010	Number of BRs that have developed and launched a communication strategy.	Regional Networks and individual BRs	UNESCO Communication and Information Sector, Bureau of Public Information, UNESCO Field Offices MAB Programme
	6.2 Create an incentive programme to recognize the efforts of communities, individuals, institutions, networks and nations in creating, managing and promoting BRs	2010	Number of incentives created.		
7. Functional MAB National Committees in each country, managed in a manner assuring adequate representation of biosphere reserve coordinators and other key stakeholders	7.1 Create or restructure MAB National Committees. 7.2 Develop a structure, strategy and action plan for each MAB National Committee to assist BRs meet their responsibilities within the MAB Programme, and support the planning phase for new nominations.	2008	Number and composition of functioning MAB National Committees.	Member States, UNESCO National Commissions and other national Government authorities concerned with BRs	Diverse stakeholders at multiple scales
8. Increased linkages between biosphere reserve activities and sustainable development initiatives at multiple scales	8.1 Encourage and enable individual BRs to collaborate with UN-led policies, strategies and action plans towards sustainable development, as well as other initiatives outside the UN-system.	2010 & 2013	Number of BRs contributing to in-country UN and other initiatives on sustainable development.	MAB National Committees, individual BRs	Regional Networks and MAB Secretariat
9. All biosphere reserves undertake periodic review & related actions to update zonation, management and other changes to their BRs to meet Seville & MAP requirements and recommendations	9.1 Screen new BR proposals as well as devise schemes to support periodic review processes that include field-visits by teams of regional and national experts, in cooperation with the UNESCO regional, cluster and national offices as appropriate.	2010 & 2013	Number of BRs that have undertaken necessary steps to update themselves to a post-Seville and MAP vision.	National, with support from Regional Networks	

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
10. Open and participatory procedures and processes for sharing authority in the designation, planning and implementation of their biosphere reserve	<p>10.1 Every BR should carry out a participatory planning process, such as Local Agenda 21, to guide BR implementation assuring “participatory management” especially for traditional, local and indigenous communities.</p> <p>10.2 Every BR should establish a management committee comprising stakeholders representing different sectors of all three zones of the BR.</p>			Biosphere Reserve	
11. Enhanced legal recognition of biosphere reserves where appropriate	11.1 Acknowledging that individual BRs remain under national jurisdiction, encourage States to include BRs in their own legislation.				

E.2. ZONATION - LINKING FUNCTIONS TO SPACE

According to the Statutory Framework, biosphere reserves should contain one or more core areas, buffer zones, and a transition area to accommodate their multiple functions.

Facing new challenges, it is important to shift towards a more integrated understanding of zoning. Thus the transition area, in addition to the development function, can also consider conservation/environmental goals and elements. Equally the core area, in addition to its conservation function, contributes to a range of ecosystem services which, in terms of the development functions, can be calculated in economic terms (e.g. carbon sequestration, soil stabilization, supply of clean water and air, etc.). Employment opportunities can also complement conservation goals (e.g. environmental education, research, environmental rehabilitation and conservation measures, recreation and eco-tourism). While education, research, monitoring and capacity enhancement are seen as components of the logistic or knowledge generation function of biosphere reserves, they are also integral to the conservation and development functions.

Special attention is to be given to the buffer zones. Their role is to minimize negative and external effects of human-induced activities on the core areas. In addition to the buffering function related to the core areas, buffer zones can have their own intrinsic, ‘stand alone’ functions for maintaining anthropogenic, biological and cultural diversity. Buffer zones can also have an important connectivity function in a larger spatial context as they connect biodiversity components within core areas with those in transition areas/areas of cooperation.

People live and make a living in transition areas which are characterized by multiple land uses. Transition areas have a central function concerning socio-economic development. In the past, a

shortcoming of the transition area was that its outer boundary was not required to be delineated or spatially-defined. But the establishment of cooperation plans and concepts, implementation of co-operation projects and fostering of committed citizenship need clear boundaries that are easy to accept and to understand. Furthermore, the inclusion of the total area of a biosphere reserve in the WNBR needs to be clearly specified; hence, while acknowledging the arbitrary or fuzzy nature of transition area boundaries, they nevertheless must be specified. Cooperation, however, can extend beyond those boundaries, for sharing best practices, solutions and approaches with the wider region, thus fulfilling the role of biosphere reserves as learning sites for regional sustainable development.

While countries maintain flexibility at the national levels with regard to the definition of zones, the following actions are to be taken in order to make biosphere reserves more effective in combining conservation, sustainable use of resources and knowledge generation through integrated zonation and collaborative management:

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
12. Analysis of zonation of all biosphere reserves	12.1 Carry out a survey on the present zoning system of the WNBR (including the proportions of the different zones) and investigate how well they fulfil the three functions in each zone.	2010	Outcome of analysis submitted to ICC, and results and ICC recommendations published.	MAB Secretariat and Regional Networks	
13. Functional zonation in all biosphere reserves established, particularly with regard to the transition area and the development function	<p>13.1 Develop and apply practical tools and guidelines for zoning at the national level.</p> <p>13.2 Use BRs to manage large biome as a BR system and for extensive terrestrial and marine areas as a series of units linking up relatively small protected core areas with significantly larger buffer zones and transition areas.</p> <p>13.3 Determine the most suitable zonation patterns and define performance standards for each zone. Ensure sufficient size of each zone for the BR functions and identify the contribution of each zone to the whole BR.</p> <p>13.4 Clearly define the outer boundary of the BR in determining the transition area ('area of co-operation') through stakeholder consultation. The BR should consider natural, e.g. watershed, ecosystem, etc., as well as political and administrative boundaries in defining its delimitation, and clearly explain the rationale behind that determination in the nomination/ periodic review forms.</p>	2013	100% sites have functional BR zonation.	National MAB Committees and Regional Networks	

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
	13.5 Encourage national recognition of BR zonation schemes as an important planning tool for programmes linked to protected areas in production landscapes.				
14. Co-operative conservation and development strategies for biosphere reserves	14.1 Use appropriate tools such as the Ecosystem Approach, gap analysis, the concept of corridors, ecological networks, etc. for (a) a better connectivity of ecologically-important sites and elements in the landscape, (b) a better inter-linkage of areas/zones and enhanced buffering, and (c) a better consistency in planning.	2013	25 BRs have well-designed plans with sufficient conditions for assuring financial and operational sustainability	Individual biosphere reserves	

E.3. SCIENCE AND CAPACITY ENHANCEMENT

Ecosystems provide goods and services to all humanity, but the sustainable use of these benefits is challenging in the face of rapid climatic, environmental, social, and political changes. To cope with these changes, biosphere reserves play a crucial role in generating knowledge on how natural systems work and how to maintain ecosystem services and resilient ecosystems while at the same time using these systems to create income, employment and wealth. Wide cooperation from institutions and stakeholders is needed within biosphere reserves to foster communication among scientists, policy makers, private companies and others. In order to achieve this there is a need for a significant strengthening of both science and capacity in the WNBR also with a view to applying scientific expertise to global biodiversity management and conservation.

Both scientific as well as traditional knowledge from indigenous people is needed for adaptation to change and building resilience.

Since 2004 the MAB-ICC has encouraged all countries to support the UNDESD (2005-2014) of which UNESCO is the leading agency. Biosphere reserves provide an excellent opportunity to play an active role as learning sites for sustainable development in order to implement national policies and strategies on the MDGs, implement the WSSD Plan and strategies for the DESD. Relevant national, regional and global authorities should be encouraged to use biosphere reserve management issues and problems as research questions for multi-disciplinary institutes of higher learning.

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
15. Communication of biosphere	15.1 Undertake a critical analysis and synthesis of existing data based on experience of implementing the	2013	Number of BRs providing information to	National Commissions for UNESCO and MAB	CBD, CSD, UNCCD, UNFCCC &

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
reserve experiences on management and stakeholder participation of ecosystem services to relevant policy constituencies within the UN bodies, regional development banks, national governments and others	<p>management plans/cooperation plans of BRs around the world, including their relationship to ecosystem services.</p> <p>15.2 Promote the Programme's global network function through the systematic recording of policy-relevant case studies and ensuring their availability and dissemination.</p> <p>15.3 Develop actions to increase synergies among international, regional and national programmes currently developed and executed in parallel, such as CBD, Agenda 21 and One-UN activities.</p>		global fora	National Committees	others
16. A series of site-based policy-relevant research programmes	<p>16.1 Coordinate with UNESCO Intergovernmental Science Programmes (ISPs) and other relevant international, regional and national authorities to promote policy and implementation programmes.</p> <p>16.2 Improve access to information and new ways to communicate knowledge to a large variety of non-scientific target groups.</p> <p>16.3 Strengthen the role of science in decision-making through problem-oriented, applied research in order to increase the availability of funding for both science and management, and ensure good science-informed participatory and collaborative management.</p>	2012	Numbers of scientific articles, books on sustainability referring to BR or using the concept. Number of MS and Ph.Ds on BRs or related topics	MAB Secretariat	Universities and research centres associated with BRs. Collaboration with ISPs, UNU
17. Trained biosphere reserve managers and other relevant stakeholders	<p>17.1 Provide training to BR managers on science-policy-practice interaction and participatory management for science and other relevant areas.</p> <p>17.2 Promote capacity enhancement programmes for BR administrators and managers, such as on adaptive management, including conflict resolution and negotiation skills.</p>	2010	Number of regions with completed or active courses	Regional Networks	Research institutes and higher education centres
18. UNESCO Member States use BRs in their work	18.1 Work with other ISPs to include the use of BRs as research and demonstration sites in their programmes.	2010	Number of ISP activities and initiatives focusing on	Regional Networks National Committees and MAB Secretariat	IOC, IHP, IGCP

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
with other ISPs, including IOC and MOST	18.2 Enhance the widespread use of BRs by IHP, IOC, IGCP and MOST for research, information generation and policy advice.		BRs		
19. Biosphere Reserves to have research programmes on analyses of ecosystem services and their management through stakeholder participation	19.1 Mobilize scientific and non-scientific actors combining all knowledge systems in order to strengthen the scientific functions of BRs.	2012	Number of BRs having research programmes	BRs and MAB National Committees	GEF, UNDP, EU, international NGOs, etc.
20. Biosphere reserves have research programmes linked to the development of the management plan and zoning	20.1 Ensure stakeholder involvement in the production of a research agenda to be incorporated in the management plan for the whole BR. 20.2 Use BRs as sites for applied, problem-oriented research for sustainable development linked to the zoning and management plan. Incorporate the results of applied ecological and socio-economic research into ecosystem management of all areas and link educational activities to the different functions in all zones of BRs.	2013	Number of BRs with defined and operational research programmes.	Individual biosphere reserves	
21. Decade of Education for Sustainable Development (DESD) programmes with educational and research institutions	21.1 Promote the BR as a learning site of excellence for sustainable development, for demonstrating trade-offs and balance amongst ecosystem services and functioning, human-environment interactions and well-being, in the framework of DESD.	2010	Number of schools associated with BRs through joint classes, school camps, curriculum development	Individual biosphere reserves	Associated Schools Project Network, UNESCO Education Sector
22. Exchange of educational resources for widespread adaptation and application	22.1 Improve capacity of the WNBR with the aim of building strong learning organizations, alliances and empowering all stakeholders at each BR. 22.2 Provide appropriate staff and funding (a) to enable BR managers/coordinators to actively	2010 & 2013	Number of education programmes; number and range of awareness and educational materials produced.	Individual biosphere reserves	

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
	contribute to the WNBR, i.e. translation of best practices report into local languages, and (b) to feed this information into the Internet website of UNESCO-MAB.				
23. A mechanism for biosphere reserves to address urban issues in a regional context	23.1 Facilitate the integration of urban areas into BRs.	2010 & 2013	Number of BRs integrating urban areas.	MAB Urban Group, Regional Networks,	City Authorities, ICLEI, professional planning institutions universities and research centres associated with BRs
24. Biosphere reserves used as learning sites for research, adaptation, mitigation in relation to climate change	<p>24.1 Mountain BRs used as field observatories of global change impacts on the environment, economy and human well-being, based on the GLOCHAMORE Research Strategy.</p> <p>24.2 Use of research results to assist countries in developing and implementing policies for sustainable mountain development.</p> <p>24.3 Develop strategies for other ecosystems in collaboration with relevant national and international organizations.</p> <p>24.4 Carry out training courses for different ecosystem types related to climate change, in particular using the ERAIFT regional flagship project for tropical forests and certified forestry as a climate change mitigation approach.</p>		<p>Number of mountain BRs with active research and capacity enhancement programmes.</p> <p>Number of countries with policies for sustainable mountain development.</p>	Individual biosphere reserves, MAB National Committees, regional networks	MRI

E.4. PARTNERSHIPS

At all times, the strength and opportunity of partnerships should be drawn upon to cooperatively develop the functions of a biosphere reserve. There is a need to focus efforts on building and improving upon existing partnerships and alliances, championing new initiatives, and creating new partnerships and projects that involve many stakeholder groups. Cooperative activities range from biodiversity conservation to ecosystem management and sustainable use of environmental goods and services.

The ‘added value’ of partnerships is improved effectiveness of management strategies, change of attitude within the stakeholders themselves, better mutual understanding, informed decision making, increased awareness, and technical and financial support of the management of the biosphere reserve.

The long-term functionality of a biosphere reserve requires long-term financing for both planning and implementation. Generating funds falls primarily under the responsibility of individual biosphere reserve managers/coordinators with support and assistance from the MAB National Committees, Regional Networks, UNESCO-MAB Secretariat solicited as and when needed.

Economic activities provide potential benefits for biosphere reserves:

- Contributions to economic development in terms of strengthening the role of the private sector, revenue generation for the maintenance of natural areas e.g. through tourism;
- Corporate Social Responsibility (CSR) schemes of leading multi-nationals as well as national and regional private sector institutions provide funds for development or maintenance of sustainable practices.

There are already very good examples of economic benefits of biosphere reserves and the feasibility of integrated conservation and development in and around biosphere reserves. They will indeed improve their performance at the operational level if they have sufficient and well trained personnel, equipment, project budget and capabilities to fulfil all three functions in all zones.

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
25. Improved financial mechanisms for biosphere reserves and regional networks	<p>25.1 Establish partnership agreements with relevant institutions/organizations to carry out Payment for Ecosystem Services (PES) projects.</p> <p>25.2 Establish partnership agreements, such as for water, forest and carbon funds.</p> <p>25.3 Seek national and international support for BRs and Regional Networks with the organizations responsible for projects on biodiversity conservation, international waters, climate change, poverty reduction, etc.</p>	2013	Number of regions launching PES projects	MAB-ICC, Regional Networks	GEF, UNDP, EU, international NGOs, etc.
26. Improved generation of profits and livelihood benefits in biosphere reserves through sustainable production, harvesting, processing and marketing of	<p>26.1 At least one pilot BR in each Regional Network chosen to carry out an assessment of the economic contribution of BRs to local economies with the active involvement of local communities.</p> <p>26.2 Further the work of the Task Force on Quality Economies by creating or strengthening partnerships with businesses to identify, develop</p>	2013	Number of BRs developing assessments in each region	Regional Networks	Private sector

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
biosphere reserve products	and promote markets and fair trade for goods using the BR brand. 26.3 Creation of sustainable and alternative livelihoods primarily targeting vulnerable populations within BRs such as local communities, minorities, indigenous and ethnic groups.	2013	Number of BRs implementing sustainable alternative livelihoods to ensure ease of poverty	UNESCO Member States, individual BRs	
27. Increased involvement, support and buy-in of private sector	27.1 Create or strengthen partnerships with businesses to identify, develop and promote markets and fair trade for goods and services in BRs and to support management and communication relating to BRs. 27.2 Promote incentives for product labeling in BRs.	2013	Number of businesses actively involved in implementing the BR idea/ BR management. Number of businesses actively involved in supporting activities indirectly in BRs.	BRs and MAB National Committees	
28. Exchanges between biosphere reserves	28.1 Support study tours/site visits between stakeholder groups in BRs. 28.2 Encourage and enable twinning programmes between BRs sharing specific issues. 28.3 Encourage South-South cooperation and triangular South-North-South cooperation.	2010 & 2013	Number of exchanges	Regional and interregional networks, thematic networks, individual biosphere reserves	
29. Partnerships	29.1 Establish partnerships with local governments and sectors, such as education, to champion cooperative activities ranging from education and research to sustainable use of environmental goods and services. 29.2 Establish partnerships with regional economic and financial institutions.	2010	Number of partnerships established	Individual biosphere reserves	
30. Trans-boundary biosphere reserves	30.1 Support the development of new and strengthen existing transboundary BRs as well as other forms of transboundary cooperation.				

TARGET	ACTIONS	TIME	SUCCESS INDICATOR	RESPONSIBILITY FOR ACTION	PARTNER
31. Biosphere reserves for peace, security and conflict management	31.1 Use BRs as mechanisms for peace and security.				

F. APPROVAL, IMPLEMENTATION AND EVALUATION

The Madrid Action Plan (MAP) has been adopted at the 20th session of the MAB-ICC also in view of implementing effectively UNESCO's Mid-Term Strategy. In light of the rolling character of that strategy, possible adaptations of the MAP may be discussed at the next MAB-ICC Meeting in 2009. The MAP will then become an integral part of UNESCO's strategy working towards the achievement of internationally-agreed goals and targets including the MDGs, EFA, DESD as well as emphasizing UNESCO's contributions towards One UN, UNDAF and other in-country co-ordination frameworks promoted under UN reform at the country level. The MAP will contribute towards the Director-General's implementation plan to integrate the recommendations of the Review Committee that evaluated the Natural Sciences and the Social and Human Sciences Programmes of UNESCO during 2006-2007.

The implementation of MAP will be carried out during the six-year Strategic Planning Framework of UNESCO, i.e. 2008-2013, which is the same as that of the MAP under the responsibility of the UNESCO Division of Ecological and Earth Sciences which hosts the Secretariat for MAB and WNBR. Before end of August 2008, countries with biosphere reserves should inform the MAB Secretariat of the specific methods and schedules of the actions that these countries decide to implement within the framework of the MAP.

The **MAB-ICC**, the **MAB Secretariat**, the **Regional Networks** and the **MAB National Committees** through result-oriented partnerships with public and private sector and civil society organizations will provide the leadership for the successful implementation of the MAP.

The **MAB-ICC**, **National Commissions for UNESCO** and **MAB National Committees** will be critical to the effectiveness of the implementation of the MAP through deep involvement in communicating the importance of, and gaining support for the MAB Programme and the WNBR with national governments, donors and development cooperation agencies, private sector and civil society organizations at all levels.

MAP will be evaluated in 2010 and 2013. The mid-term evaluation will be carried out by a team, whose composition and terms of reference (TOR) will be set by the MAB-ICC at its 21st session 2009. The timing, team composition and TOR for the final evaluation due in 2013 will be determined by the ICC at its 22nd session.

ACRONYMS

AC	International Advisory Committee for Biosphere Reserves
BPI	UNESCO Bureau for Public Information
BR	Biosphere Reserve
CI	UNESCO Communication and Information Sector
CBD	Convention on Biological Diversity (1992)
CO₂	Carbon dioxide
COP	Conference of the Parties to the CBD
CSD	Commission on Sustainable Development
CYTED	Ibero-American Programme of the Development of Science and Technology
DESD	UN Decade of Education for Sustainable Development (DESD)
EFA	UNESCO - Education for All
EU	European Union
GEF	Global Environment Facility
GLOCHAMORE	UNESCO Project "Global Change in Mountain Regions"
ICC	International Coordinating Council for the MAB Programme
ICLEI	International Council for Local Environmental Initiatives
IPCC	Intergovernmental Panel on Climate Change
ISP	UNESCO's Intergovernmental Scientific Programmes
IUCN	World Conservation Union
MA/MEA	Millennium Ecosystem Assessment
MAB	UNESCO's Man and the Biosphere Programme
MRI	Mountain Research Initiative
MDG	Millennium Development Goals
One UN	Experiments to rationalize programmatic, managerial and budgetary structures of various UN Programmes and Agencies and co-ordinate their inputs to national development planning
NGO	Non-Governmental Organizations
PES	Payments for Ecosystem Services
SD	Sustainable Development
TWAS	The Academy of Sciences for the Developing World
UN	United Nations
UNCCD	United Nations Convention to Combat Desertification
UNEP	United Nations Environment Programme
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNFCCC	United Nations Framework Convention on Climate Change
UNU	United Nations University
WH	World Heritage
WHC	World Heritage Centre
WNBR	World Network of Biosphere Reserves
WSSD	World Summit on Sustainable Development in 2002