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The Development of the Idea of UNESCO Biosphere Reserves*

Rozwój koncepcji rezerwatów biosfery UNESCO

ABSTRACT

From the outset, the concept of biosphere reserves has evolved alongside the drafting of international environmental instruments, both binding and non-binding, overseen by the United Nations. These activities have always been closely interrelated. The consistent purpose of these documents has been to promote the harmonious coexistence of people and the environment – a goal central to the mission of biosphere reserves. They consider technological progress and sustainable development, as well as the need to preserve biodiversity and natural resources for present and future generations. Between 22 and 26 September 2025, policymakers, researchers, entrepreneurs, and conservationists gathered in Hangzhou, China, for the Fifth World Congress of Biosphere Reserves. Together, they determined the future direction of biosphere reserves and the World Network of Biosphere Reserves. The aim of the Congress was to identify the actions required to address today's challenges, particularly those related to climate change, land degradation, desertification, and degradation of marine ecosystems, and to examine the role that biosphere reserves can play in overcoming these processes. At the end of the meeting, participants endorsed the Hangzhou Strategic Action Plan and the Hangzhou Declaration, which emphasise the pivotal role of biosphere reserves in addressing current challenges, such as climate change. Furthermore, these documents place strong emphasis on the human rights aspect of biosphere reserves, recognising the valuable contributions of Indigenous Peoples, local communities, women, and young people to the conservation of natural resources.

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This article contributes to the ongoing discussion on the evolving role of biosphere reserves and the World Network of Biosphere Reserves in relation to global biodiversity conservation and sustainable development. It further argues that biosphere reserves and the World Network of Biosphere Reserves could facilitate the effective implementation of international instruments related to environmental protection and sustainable development.

Keywords: biosphere reserves; biodiversity; Hangzhou Strategic Action Plan; Man and the Biosphere Programme; sustainable development; UNESCO

INTRODUCTION

In recent years, there has been a significant increase in climate change-related cases brought before national and international courts. This trend includes cases relating to the protection of biodiversity and ecosystems.[1] Furthermore, the adverse effects of climate change on human rights and the environment have become a key topic of discussion at numerous international forums, such as the United Nations Educational, Scientific and Cultural Organization (UNESCO) or the United Nations.

Since its inception, UNESCO has addressed environmental issues. It has undertaken a wide range of activities aimed at restoring the balance between humans and nature and fostering a more harmonious relationship between people and the environment. Undoubtedly, UNESCO is unique in its creation and development of standards that address both natural and cultural issues, to preserve biodiversity and ensure sustainable economic and social development. It drafted international instruments[2] such as the Convention concerning Protection of the World Cultural and Natural Heritage, adopted on 16 November 1972,[3] or the Convention on the Protection of the Underwater Cultural Heritage, adopted on 2 November 2001.[4] In addition, UNESCO set a number of initiatives and programmes, including the International Geoscience and Geoparks Programme[5] and the Man and the Biosphere Programme (MAB), together with its network of biosphere reserves.[6] The latter

[1] For example, see The Climate Litigation Database, https://climatecasechart.com (access: 5.5.2026).

[2] The list of binding and non-binding instruments is available at https://www.unesco.org/en/legal-affairs/standard-setting/conventions (access: 5.5.2026).

[3] Convention for the Protection of the World Cultural and Natural Heritage, adopted by the General Conference of the United Nations Educational, Scientific and Cultural Organization at its 17th session, Paris, 16 November 1972, UNTS, vol. 1037, no. 15511, p. 151.

[4] Convention on the Protection of the Underwater Cultural Heritage (with Annex), Paris, 2 November 2001, UNTS, vol. 2562, no. 45694, p. 1.

[5] See UNESCO, *International Geoscience Programme (IGCP)*, 19.1.2026, https://www.unesco.org/en/iggp/igcp?hub=67817 (access: 5.5.2026).

[6] See UNESCO, *Man and the Biosphere Programme (MAB)*, https://www.unesco.org/en/mab?hub=66369 (access: 5.5.2026)..

has been created as a "gold standard for environmental sustainability".[7] Biosphere reserves constitute an important instrument that can make a significant contribution to the implementation of international environmental agreements.[8]

This article analyses UNESCO's activities in the field of biodiversity conservation, with particular emphasis on biosphere reserves. It demonstrates that biosphere reserves and the World Network of Biosphere Reserves can serve as effective tools for achieving the objectives set out in international environmental instruments. To prove the main thesis through legal analysis, the article first defines the term "biosphere" and outlines a brief history of the concept of biosphere reserves. It then analyses the achievements of the biosphere reserves congresses, with particular attention to the main objectives and target actions of the Fifth World Congress of Biosphere Reserves. The article further indicates the links between biosphere reserves and international environmental instruments and shows how biosphere reserves could be a useful tool for implementing the provisions of these legal frameworks.

The article is divided into six main sections. Following the introduction, the second section discusses the notion of biosphere and provides a brief history of the MAB Programme and biosphere reserves. The third and fourth sections review the key documents of international biosphere reserve congresses, focusing particularly on the Fifth World Congress of Biosphere Reserves. The fifth section analyses international initiatives taken by the United Nations in the field of environmental issues, particularly the protection of biodiversity and sustainable development. The final section presents the conclusions.

THE NOTION OF BIOSPHERE AND OUTLINE OF THE MAN AND THE BIOSPHERE PROGRAMME AND BIOSPHERE RESERVES

The term "biosphere" derives from the German word *Biosphäre*, which combines the Greek words *bios* (life) and *sphaira* (sphere).[9] It is sometimes used as a name for the global ecosystem. The term may be understood in three distinct senses. First, the biosphere encompasses all living organisms on Earth. Second, it refers to the zone of the Earth inhabited by living organisms. Third, it concerns all

[7] UNESCO, *UNESCO's Actions for Biodiversity: Making Peace with Nature*, https://www.un.org/climatesecuritymechanism/sites/default/files/2025-07/383600eng.pdf (access: 5.5.2026), pp. 5, 21.

[8] For example, see A.D. Barraclough, I.E. Måren, *The Role of UNESCO Biosphere Reserves in the Implementation of the Convention on Biological Diversity's Post-2020 Global Biodiversity Framework*, https://www.uib.no/sites/w3.uib.no/files/attachments/policy_brief_orientation_eng.pdf (access: 5.5.2026).

[9] M. Engelbauer, *Global Assessment of Recent UNESCO Biosphere Reserve Quality Enhancement Strategies and Interlinkages with Other UNESCO Labels*, Würzburg 2023, p. 21.

of life, together with life-support systems, including the atmosphere, hydrosphere, lithosphere, and pedosphere.[10]

The MAB Programme is one of UNESCO's best-known initiatives.[11] Pursuant to Article 57 of the United Nations Charter,[12] UNESCO is a specialised agency of the United Nations.[13] According to Article I of the UNESCO Constitution, its purpose is to "contribute to peace and security by promoting collaboration among the nations through education, science and culture in order to further universal respect for justice, the rule of law and the human rights and fundamental freedoms". To achieve this goal, UNESCO prepares both legally binding documents, such as conventions, and non-binding documents, including declarations, recommendations, and programmes, which also refer to the protection of biodiversity, such as the MAB Programme.

The MAB Programme originated at the Intergovernmental Conference of Experts on the Scientific Basis for the Rational Use and Conservation of the Resources of the Biosphere, also known as the Biosphere Conference. The Conference was held in Paris from 4 to 13 September 1968[14] and focused on the scientific foundations of the rational use and conservation of biosphere resources. It attracted considerable interest, with over 300 delegates from 60 countries in attendance, as well as representatives from the United Nations and its specialised agencies, including the Food and Agriculture Organization (FAO) and the World Health Organization.[15] Twenty recommendations were adopted during the Conference. The first recommendation, entitled "International Research Programme on Man and the Biosphere", recognised the impact of human activities on the development of the biosphere for human welfare, as well as the detrimental effects of new technologies on the environment and human life. It further emphasised that environmental pollution does not respect state boundaries and that such problems can only be solved through cooperation between the relevant stakeholders. Without action, the present and future welfare of human beings would be seriously compromised. The

[10] R.J. Huggett, *Ecosphere, Biosphere, or Gaia? What to Call the Global Ecosystem*, "Global Ecology and Biogeography" 1999, vol. 8(6), p. 425.

[11] Constitution of the United Nations Educational, Scientific and Cultural Organization, adopted on 16 November 1945, 2022 Edition.

[12] Charter of the United Nations, signed in San Francisco on 26 June 1945, https://www.un.org/en/about-us/un-charter/full-text (access: 5.5.2026).

[13] Agreement between the United Nations and the United Nations Educational, Scientific and Cultural Organization, signed in New York on 3 February 1947, UNTS 1946–1947, vol. 234, no. 11; M. Weibel, *Article 57*, [in:] *The Charter of the United Nations: A Commentary*, eds. B. Simma, D.-E. Khan, G. Nolte, A. Paulus, Oxford 2024, pp. 2107–2119.

[14] R. Pool-Stanvliet, *A History of the UNESCO Man and the Biosphere Programme in South Africa*, "South African Journal of Science" 2013, vol. 109(9–10), p. 1.

[15] UNESCO, *The Biosphere Conference 25 Years Later*, 1993, https://unesdoc.unesco.org/ark:/48223/pf0000147152 (access: 5.5.2026).

recommendation acknowledged the multidisciplinary nature of biosphere-related issues and referred to prior initiatives undertaken within the framework of the International Biological Programme, initiated by the International Council of Scientific Unions and the International Union for Conservation of Nature and Natural Resources (IUCN). It also recommended that UNESCO establish working groups to prepare an implementation plan for the proposed programme.[16]

The concept of biosphere reserves was envisaged as the principal tool for implementing Project 8 of the proposed programme, namely the conservation of natural areas and the genetic resources they contain.[17] The idea first emerged in 1970 and has since undergone significant development.[18] Hence, from the very beginning, the MAB Programme has focused on the relationship between humans and the ecosystem and has supported States in their efforts to halt biodiversity loss.[19] The MAB Programme, initiated in 1971 under the theme "Conservation of Natural Areas and of the Genetic Material They Contain", supports the creation and management of biosphere reserves and its implementation was overseen by the MAB International Coordinating Council.[20] It was within this framework that the concept of biosphere reserves was developed. These reserves contained protected areas linked by common objectives and standards through a coordinated international network. The fundamental principle of the MAB Programme is the involvement of local communities in research projects, training programmes, and practical demonstrations in the field.[21] UNESCO biosphere reserves serve as learning sites for sustainable development and include terrestrial, marine, and coastal ecosystems.[22] The main characteristics of biosphere reserves include their international recognition as protected areas representing significant terrestrial, marine, and coastal environments; their participation in a worldwide network that facilitates the sharing of information; the presence of a core area representative of a particular

[16] Intergovernmental Conference of Experts on the Scientific Basis for Rational Use and Conservation of the Resources of the Biosphere (Paris, France, 4–13 September 1968), Recommendations, SC/BIOS/RECOMMENDATIONS, Paris, 1 October 1968.

[17] N. Ishwaran, A. Persic, N.H. Tri, *Concept and Practice: The Case of UNESCO Biosphere Reserves*, "International Journal Environment and Sustainable Development" 2008, vol. 7(2), p. 119.

[18] M. Batisse, *Biosphere Reserve Throughout the World: Current Situation and Perspective*, [in:] *Conservation, Science and Society: Contribution to the First International Biosphere Reserve Congress, Minsk, Byelorussia, USSR, 26 September – 2 October 1983*, vol. 1, Paris 1984, p. v.

[19] M. Bouamrane, D. Babin, *Man and the Biosphere: A Precursory Program for the Next World*, [in:] *Biosphere Reserves and Sustainable Development Goals 1: Scientific and Practical Educational Issues in the Mediterranean*, eds. A. Barthes, C. Cibien, B. Romagny, vol. 3, London–Hoboken 2023, pp. 7–10.

[20] R. Pool-Stanvliet, *op. cit.*, p. 1.

[21] *Introduction*, [in:] *Conservation, Science and Society…*, p. 1.

[22] UNESCO, *What Are Biosphere Reserves?*, https://www.unesco.org/en/mab/wnbr/about (access: 5.5.2026).

biogeographical region; a sufficient size to ensure effective conservation; opportunities for research, education, demonstration, and training activities; the existence of a buffer zone that fulfils certain requirements; an appropriate framework of long-term legal and institutional protection; and the active involvement of local communities in their management and development.[23]

Furthermore, the implementation of the biosphere reserves network has formed the core of the MAB Programme since its inception. This network provides long--term in situ conservation of representative ecosystems and their constituent plants, animal, and microbial species throughout the world.[24]

In 1979, the functions of the MAB Programme were further defined by the MAB Task Force, established jointly by UNESCO and the United Nations Environment Programme (UNEP).[25] The Task Force identified three interrelated functions of the Programme: (1) the conservation of biodiversity and cultural diversity; (2) the promotion of socio-culturally and environmentally sustainable economic development; and (3) the provision of logistic support through research, monitoring, education, and training.[26] By that time, the concept of biosphere reserves had generated significant scholarly and institutional interest. In this context, the World Congress on National Parks, held in Bali, Indonesia, in October 1982, adopted a set of recommendations and guiding principles to advance the development of protected areas. The Congress recognised that approaches to the management of protected areas differed significantly across regions. It further emphasised that a global network of protected areas could contribute substantially to the creation of a more sustainable society and that enhanced international cooperation was essential for achieving this objective.[27] To support these goals, the Congress adopted a ten-point Action Plan designed to provide guidance and practical assistance to governments, international organisations, and other stakeholders committed to contributing. The plan sought to achieve all objectives related to protected areas.[28]

[23] Action Plan for Biosphere Reserves, "UNESCO Nature and Resources" 1984, vol. 20(4), p. 2.

[24] K.R. Miller, *Biosphere Reserve and Global Network of Protected Areas*, [in:] *Conservation, Science and Society…*, p. 6.

[25] M. Batisse, *Biosphere Reserve…*, p. vi.

[26] UNESCO, *What Are Biosphere Reserves…*

[27] The World National Park Congress, Bali, Indonesia, 11–12 October 1982, UICN, Indonesian Directorate-General of Forestry, Gland; The Bali Action Plan Prepared during the World Parks Congress, 11–22 October 1982, UICN, Gland, Canada 1987.

[28] The Bali Action Plan.

DOCUMENTS OF THE INTERNATIONAL BIOSPHERE RESERVES CONGRESSES

1. Action Plan for Biosphere Reserves (1984)

The First International Congress on Biosphere Reserves was held in Minsk, Byelorussia, from 26 September to 2 October 1983. The event was organized by UNESCO and UNEP in cooperation with FAO and IUCN.[29] The Congress generated significant interest, as evidenced by the participation of more than 250 scientists and conservation experts.

The objective sought to assess the status of biosphere reserves, evaluate the progress that had been made, and identify measures and instruments that could be employed to plan and manage them effectively. Furthermore, the aim was to explore how an international network of biosphere reserves could be developed. Three workshops covered the main discussions. The first referred to the World Network of Biosphere Reserves and its biogeographical coverage. The second addressed scientific research and monitoring within biosphere reserves. The third examined their social, cultural, and economic functions.[30]

The Minsk Congress led to the formal adoption by the International Coordinating Council of the Programme on Man and the Biosphere of the Action Plan for Biosphere Reserves in December 1984. The Action Plan was conceived as a strategic programme framework comprising three pillars designed to promote and implement the biosphere reserves. The first pillar aimed to improve and expand the network of biosphere reserves. The second aimed to gather and disseminate knowledge for the conservation of ecosystems and biodiversity. The third sought to demonstrate the value of conservation and development in biosphere reserves effectively. The Action Plan outlined nine objectives and thirty-five actions necessary to achieve them.[31]

2. The Seville Strategy and the Statutory Framework of the World Network (1995)

The decade between 1985 and 1995 has often been described as a missed opportunity for the development of biosphere reserves.[32] During this period, the withdrawal of United States, the United Kingdom, and Singapore from UNESCO

[29] *Introduction…*, p. 1.

[30] M. Batisse, *First International Congress on Biosphere Reserves, Held in Minsk, USSR, during 25 September – 2 October 1983*, "Environmental Conservation" 1984, vol. 11(1), pp. 84–85.

[31] Action Plan for Biosphere Reserves…, pp. 4–12.

[32] P. Bridgewate, *The Man and Biosphere Programme of UNESCO: Rambunctious Child of the Sixties, but Was the Promise Fulfilled?*, "Current Opinion in Environmental Sustainability" 2016, vol. 19, p. 3.

significantly reduced the Organization's budget. At the same time, researchers began to question the value of their participation in the Programme, and IUCN decided to exclude biosphere reserves in its classification of protected areas.[33] Nevertheless, important conceptual developments took place during this period. At the Fourth World Congress on National Parks and Protected Areas, held in Caracas in February 1992, participants embraced concepts related to biosphere reserves, such as societal engagement and the connection between conservation and development. New categories of biosphere reserves have emerged, including cluster reserves and transboundary reserves, while many others have evolved. The Advisory Committee for Biosphere Reserves, established in 1991, decided to evaluate the 1984 Action Plan.[34] For this purpose, the Second International Congress on Biosphere Reserves, organized by UNESCO, was convened in Seville, Spain, from 20 to 25 March 1995. Described as a celebration of the achievements of biosphere reserves, the Congress was dedicated to "setting Biosphere Reserves on the course for the 21st century". It brought together 378 participants from 102 countries and representatives of 15 regional and international organizations.[35] The Congress took a twofold approach: to analyse the experience and look into the future to identify what emphases should be given to biosphere reserves' functions.[36] The outcome was the adoption of new regulations that redefined the MAB Programme as a contemporary tool for achieving a balance between natural conservation and sustainable development,[37] namely the Seville Strategy and the Statutory Framework of the World Network of Biosphere Reserves.[38]

The Seville Strategy identified ten key areas that constitute the new approach. These included strengthening the role of the biosphere in implementing international conservation and sustainable development agreements; developing biosphere reserves; enhancing biosphere reserve networks at various levels; reinforcing scientific research; monitoring, training, and education in biosphere reserves; taking a more holistic approach to the human dimension; and investing in the future. It also provided recommendations for developing effective biosphere reserves and setting the conditions necessary for the proper functioning of the World Network of Biosphere Reserves.[39]

[33] M. Engelbauer, *op. cit.*, p. 23.

[34] Biosphere Reserves: The Seville Strategy and Statutory Framework of the World Network, UNESCO, Paris 1996, pp. 5–6.

[35] D. Poore, *UNESCO International Conference on Biosphere Reserves, Held in Seville, Spain, during 20–25 March 1995*, "Environmental Conservation" 1995, vol. 22(2), p. 186.

[36] Biosphere Reserves: The Seville Strategy…, p. 5.

[37] M. Engelbauer, *op. cit.*, p. 23.

[38] UNESCO General Conference, 28th Session, Paris 1995, 28 C/29, Annex I, 17 August 1995.

[39] *Ibidem*, p. 5.

The Strategy was structured around four principal goals: (1) conserving natural and cultural diversity; (2) promoting biosphere reserves as models of sustainable land management and sustainable development; (3) strengthening their role in research, monitoring, education, and training; and (4) ensuring the effective implementation of the biosphere reserve concept.[40] To facilitate implementation, the Strategy included a set of indicators as a checklist to help evaluate its implementation on various levels.[41]

The Statutory Framework of the World Network of Biosphere Reserves was adopted to enhance the effectiveness of individual biosphere reserves and to facilitate communication and cooperation at local, national, and international levels. Recognising the diversity of national and local contexts is crucial for achieving these objectives.[42] It consists of ten articles that define biosphere reserves. It also refers to the World Network of Biosphere Reserves, defined as a tool for conserving biological diversity and using its components in a sustainable manner (Article 2). Articles 3 and 4 set out the functions and requirements for classifying an area as a biosphere reserve. The designation procedure is outlined in detail, step by step. Article 5 states that National MAB Committees have the power to nominate, but the final decision lies with the International Coordinating Council, which informs the relevant state of the decision via the UNESCO Director-General. The designation process should be given appropriate publicity (Article 6). The Statutory Framework also regulates participation in the Network (Article 7), regional and thematic sub-networks (Article 8), and the periodic review process, which takes place every ten years (Article 9). Finally, Article 10 outlines the functions of the Secretariat.

3. Madrid Declaration (2008) and Action Plan for Biosphere Reserves (2008–2013)

Following the Seville Congress, the concept of biosphere reserves was broadened to encompass both protected areas and ecosystems, thereby integrating conservation with sustainable development.[43] In 2000, the Seville+5 Meeting was held in Pamplona, Spain, to review progress in the implementation of the Seville Strategy. Participants adopted a number of recommendations aimed at strengthening the effectiveness of biosphere reserves and the World Network of Biosphere Reserves. These included enhancing regional and thematic networks, establishing transboundary reserves, and creating the Checklist for Action to outline the specific tasks that biosphere reserves should implement to fulfil the objectives of the Seville

[40] *Ibidem*, pp. 5–15.
[41] *Ibidem*, pp. 16–18.
[42] *Ibidem*, Annex II, p. 1.
[43] N. Ishwaran, A. Persic, N.H. Tri, *op. cit.*, p. 124.

Strategy. The meeting also aimed to encourage collaboration and partnerships between stakeholders.[44] Then, during the MAB International Coordinating Council meeting in March 2002, it was decided that the main tools for implementing the MAB activities would be grouped into two Main Lines of Action. The first focused on the management of natural resources and sustainable development, while the second aimed to enhance the scientific basis, human resources capacity, and communication.[45]

The Third World Congress of Biosphere Reserves was held in Madrid, Spain, from 4 to 8 February 2008. Building upon the achievements of the Seville Strategy and the outcomes of the Seville+5 process, the Congress adopted two key documents: the Madrid Declaration[46] and the Madrid Action Plan for Biosphere Reserves.[47] These instruments established the strategic priorities for the subsequent phase of development of the MAB Programme and the World Network of Biosphere Reserves.

The Madrid Declaration called upon States and the MAB Secretariat to utilise biosphere reserves to promote sustainable development. It encouraged the use of the World Network of Biosphere Reserves, regional, sub-regional, and national networks. The Declaration also emphasised the formation of effective partnerships and the advancement of the MAB Programme and its networks.[48]

The Madrid Action Plan built upon the foundations established by the Seville Strategy while responding to emerging global challenges, such as climate change, the provision of ecosystem services, and rapid urbanisation, which were identified as major drivers of environmental change. The Plan also highlighted the potential role of biosphere reserves in addressing these changes. It also contained a vision and mission statement for the World Network of Biosphere Reserves, explicitly recognising the Network as a tool for developing and implementing sustainable development approaches in various areas.[49]

Furthermore, the Action Plan took into account the recommendations formulated by the Review Committee responsible for evaluating UNESCO's Natural Sciences and Social and Human Sciences Programmes during the period 2006–2007. Its main objective was to guide the work of the MAB Programme and the World Network of Biosphere Reserves in responding to the challenges of the 21st century. To achieve this objective, the Plan identified four main areas of action to be implemented at the international, regional, and national levels: (1) cooperation, management, and

[44] M. Engelbauer, *op. cit.*, pp. 126–127. See also Seville + 5 Recommendations addressed to the Secretariat (of the MAB), SC-02/CONF.201/4, 21 January 2002.

[45] Y. Purwant, H. Nugrohro, A. Setiawan Achmadi, E. Munawaroh, *Biosphere Reserve Concept Implementation for Creating Sustainability*, "Journal of Tropical Ethnobiology" 2020, vol. 3(1), p. 45.

[46] Madrid Declaration on the UNESCO and the Biosphere (MAB) Programme and the World Network of Biosphere Reserves (WNBR), Madrid, 8 February 2008.

[47] Madrid Action Plan for Biosphere Reserves (2008–2013).

[48] *Ibidem*.

[49] *Ibidem*.

communication; (2) integrated zoning systems; (3) scientific research and capacity-building; and (4) strengthening of partnerships. The implementation framework comprised thirty-one targets and sixty-five specific actions designed to realise the vision and mission of the Programme.[50]

A mid-term evaluation of the Madrid Action Plan was conducted in 2010.[51] Subsequently, in 2013, the International Coordinating Council of the MAB Programme identified a list of high-priority and low-priority evaluation-related actions.[52] The final evaluation, undertaken in 2014, served two purposes: first, to assess progress on implementing the Madrid Action Plan; and second, to gather information for developing a further strategy and the World Network of Biosphere Reserves.

It was established that progress has been achieved in all four action areas of the Programme.[53] However, the evaluation also emphasised areas of improvement, including strengthening the value of the World Network of Biosphere Reserves for biosphere reserves and the active involvement of the latter in the network's activities; enhancing the Network's clearing-house function; developing its global role as a laboratory of ideas; raising the profile of the Network; and reinforcing its financial and human-resource capacities.[54] It should also be highlighted that, during the United Nations Conference on Sustainable Development,[55] also known as the Rio+20, biosphere reserves were recognised as practical models of sustainable development, which are connected to the main functions of environmental protection and development.[56] This recognition further reinforced the role of biosphere reserves as instruments for implementing the objectives of sustainable development at multiple governance levels.

4. The MAB Strategy (2015–2025) and the Lima Action Plan (2016–2025)

The Fourth World Congress of Biosphere Reserves was held in Lima, Peru, from 14 to 17 March 2016. The event brought together more than 1,100 participants from over 115 countries. The Congress aimed to evaluate the implementation of the Madrid Action Plan, the Seville Strategy, and the 1995 Statutory Framework. Issues relating to the Sustainable Development Goals, the Paris Agreement,[57] and the

[50] *Ibidem*.

[51] Final Evaluation of the Madrid Action Plan for Biosphere Reserves, OS/EVS/PI/139REV, May 2014, p. 1.

[52] Evaluation of the Madrid Action Plan (MAP), SC-13/CONF.225/5, Paris, 10 April 2013.

[53] OS/EVS/PI/139REV, May 2014, p. 2.

[54] See *ibidem*, para 3.4.

[55] United Nations Conference on Sustainable Development, Rio+20, Rio de Janeiro, 20–22 June 2012. All documents are available at https://sustainabledevelopment.un.org/rio20 (access: 5.5.2026).

[56] E. Ruoss, *Biosphere Reserves as Model Sites for Sustainable Development*, [in:] *Protected Areas in Focus: Analysis and Evaluation. Proceedings in the Management of Protected Areas*, eds. M. Jungmeier, M. Getzner, vol. 4, Klagenfurt 2013, p. 101.

[57] Paris Agreement, Paris, 12 December 2015, UNTS, vol. 3156, no. 54113, p. 79.

post-2015 development agenda were addressed, including education for sustainable development, the economic viability of nature conservation systems, human migration, and the protection of natural resources.[58] The outcomes of the Congress were the new Strategy, Action Plan, and Declaration.[59] The new Strategy was aligned with the UNESCO Medium-Term Strategy 2014–2021, whose fundamental objectives were peace, as well as equitable and sustainable development.[60] It also builds upon and is consistent with the Seville Strategy and the Statutory Framework of the World Network of Biosphere Reserves. The MAB Strategy (2015–2025) for the UNESCO MAB Programme and its World Network of Biosphere Reserves includes vision and mission statements, strategic objectives, action areas, and an implementation plan. The Strategy's vision is to build a world in which people are more aware of their interactions with the environment and act collectively and responsibly to foster a society in harmony with the biosphere. Its mission for 2015–2025 is to develop and strengthen sustainable development models within the World Network of Biosphere Reserves, share best practices and experiences, and support the evaluation of sustainable development strategies and policies. The Strategy also aims to help states achieve the Sustainable Development Goals.[61] Furthermore, the Strategy contains four objectives and expected results: (1) conserving biodiversity; (2) restoring and enhancing ecosystem services; (3) promoting the sustainable use of natural resources; and (4) contributing to the development of societies that are sustainable, healthy and equitable, and in harmony with the biosphere. It also aims to facilitate biodiversity, sustainable science and education, and support the mitigation and adaptation of climate change.[62] In addition, the Strategy identifies five strategic action areas for 2015–2025, along with their respective lines of action. Action Area A relates to the World Network of Biosphere Reserves, which aims to serve as effective models for sustainable development. Action Area B focuses on fostering effective collaboration within the MAB Programme and the World Network of Biosphere Reserves, contributing to the achievement of the Sustainable Development Goals. Action Area C focuses on effective partnerships, which are crucial for strengthening biosphere reserves. Action Area D focuses emphasises open communication and the exchange of data and knowledge – all of which are

[58] Report by MABR & Co., 4th World Congress of Biosphere Reserves in Lima, Peru, 14–17 March 2016.

[59] A New Roadmap for the Man and the Biosphere (MAB) Programme and its World Network of Biosphere Reserves: MAB Strategy (2015–2025), Lima Action Plan (2016–2025), Lima Declaration, UNESCO, Paris 2017.

[60] Medium-Term Strategy including the Revised Operational Strategy for Priority Africa, the revised UNESCO Priority Gender Equality Action Plan for 2014–2021, and the Operational Strategy on Youth, 2014–2021, 37 C/4.

[61] A New Roadmap…, p. 16.

[62] *Ibidem*, pp. 17–20.

essential for the proper implementation of the MAB Programme. Finally, Action Area E addresses effective governance within the MAB Programme and the functioning of its World Network.[63]

The Strategy is implemented through an Action Plan containing a set of targeted actions, expected outcomes, and outputs aimed at ensuring the effective implementation of the MAB Strategy (2015–2025). In addition, the Action Plan specifies the entities responsible for implementation, the timeframe for action, and relevant performance indicators.[64] As in previous implementation cycles, a mid-term evaluation was subsequently conducted. Its purpose was to provide stakeholders with an understanding of the progress made in implementing the MAB Strategy (2015–2025) and the Lima Action Plan to date, while also strengthening the evaluation process. The teams assessed the MAB Programme Strategy in terms of its relevance, efficiency, effectiveness, impact, and sustainability.[65]

5. Lima Declaration (2016)

The Lima Declaration on the UNESCO MAB Programme and its World Network of Biosphere Reserves, consisting of thirty paragraphs, emphasises the mission of the MAB Programme and the development of biosphere reserves since its inception. It also acknowledges the outcomes of the Inter-Ministerial Conference entitled "Biosphere Reserves in Caribbean Small Island States: Tools for Sustainable Development and Growth", held on 27 March 2013.

The Declaration encourages States to establish MAB National Committees or MAB Focal Points, as well as biosphere reserves, in countries where such structures do not yet exist. It promotes the use of biosphere reserves as models for sustainable national and/or regional development, and as key sites for biodiversity conservation, ecosystem research, and climate change monitoring, including mitigation and adaptation activities. It encourages cooperation and enhanced effectiveness between the MAB Programme and various stakeholders, as well as the exchange of information and best practices. The Declaration also supports the development of new partnerships between the MAB Programme and scientific institutions, and recognises the important role of the private sector in the conservation and sustainable use of biodiversity.

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[63] *Ibidem*, pp. 21–26.

[64] Lima Action Plan for UNESCO's Man and the Biosphere (MAB) Programme and its World Network, endorsed by the 4th World Congress of Biosphere Reserves on 17 March 2016, adopted by the 28th MAB ICC on 19 March 2016, Lima, Peru, and approved by the 200th session of the Executive Board of UNESCO on 11 October 2016.

[65] C. Salaün, M. Morel, B. Valfrey, *Mid-Term Evaluation of the MAN and Biosphere (MAB) Programme Strategy (2015–2025) and Its Lima Action Plan (2016–2025)*, June 2020, paras iii, vi.

Through their National Commissions, States are called upon to strengthen the World Network of Biosphere Reserves and to implement the updated MAB Strategy and its Action Plan.[66]

THE FUTURE OF UNESCO BIOSPHERE RESERVES IN THE PERSPECTIVE OF THE FIFTH WORLD CONGRESS OF BIOSPHERE RESERVES

1. The road to the Fifth World Congress of Biosphere Reserves and its Agenda

The process leading to the Fifth World Congress of Biosphere Reserves began at the 35th session of the MAB International Coordinating Council in June 2023. The aim was to strengthen the Programme's role in promoting sustainability and biodiversity conservation, as well as encouraging harmonious interactions between humans and nature. During the session, the International Advisory Committee on Biosphere Reserves announced its contribution to the preparations for the 2025 Congress.[67] China also presented a report on the preparatory process.[68]

At the end of January 2024, the MAB Bureau endorsed the preparation process and established a Drafting Group composed of two Co-Chairs and twelve members. The Group began its work in April 2024. The drafting process involved observers and stakeholders, as well as representatives from MAB National Committees, biosphere reserves, and partner organizations from 107 Member States. More than 620 submissions were received.[69] The final draft of the Hangzhou Strategic Action Plan was developed on the basis of the MAB Strategy (2015–2025), the Lima Action Plan, and the outcomes of the mid-term evaluation of both documents, conducted in 2020.[70]

The Fifth World Congress of Biosphere Reserves was held in China from 22 to 26 September 2025. The event attracted over 2,000 participants, includ-

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[66] Lima Declaration on the UNESCO Man and the Biosphere (MAB) Programme and its World Network of Biosphere Reserves (WNBR), adopted on 17 March 2016 at the 4th World Congress of Biosphere Reserves in Lima, Peru, S.C.16/CONF.228/12.

[67] International Coordinating Council of the Man and the Biosphere (MAB) Programme, 35th Session, SC-23/CONF.235/15, Paris, 15 June 2023, para 47.

[68] *Ibidem*, item 12.

[69] UNESCO, *The New Strategy and Action Plan*, https://www.biosphere2025.org.cn/content/content_8860105.html (access: 5.5.2026).

[70] International Coordinating Council of the Man and the Biosphere (MAB) Programme, 37th Session, Lin'an, Hangzhou, China, 26–28 September 2025, SC-25/CONF.237/11, Paris, 26 August 2025, para. 3.

ing politicians, scientists, and entrepreneurs. The Congress theme was "Shaping a Sustainable Future for People and Nature".[71] Discussions were organised into five thematic panels.

On the first day, there was a ministerial session followed by the first panel, which focused on evaluating progress under the MAB Strategy (2015–2025) and the Lima Action Plan within the current global context. It also presented the Hangzhou Strategic Action Plan (2026–2035) and its linkages with biodiversity-related conventions and international organizations.[72] In this context, the Deputy Permanent Delegate of Denmark to UNESCO drew attention to the Global Initiative for Information Integrity on Climate Change and the role of biosphere reserves in combating disinformation at the local level.[73]

The second panel addressed issues related to biodiversity, science, and education. Particular attention was given to UNESCO's Category 2 Centres (a global network of institutions of excellence within the Organization's fields of competence),[74] UNESCO Chairs, and research institutions. The panel analysed how these entities could contribute to the implementation of Objective C of the new Strategic Action Plan. This objective involves developing research and sharing knowledge and lessons learned from the World Network of Biosphere Reserves to facilitate living in harmony with nature and inspire sustainable futures. It also discussed their role in implementing international instruments concerning environmental issues, such as the Kunming–Montreal Global Biodiversity Framework,[75] the Paris Agreement, and the 2030 Agenda for Sustainable Development.[76]

During the third panel, participants discussed how to enhance collaboration across sectors, such as forming partnerships with the private sector and other stakeholders, and raising funds for biosphere reserves through bilateral and multilateral cooperation.[77]

In the fourth panel, experts examined the role of global, regional, and thematic networks in fostering collaboration, knowledge exchange, and capacity-building among biosphere reserves. It also explored ways to enhance these networks.[78]

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[71] Summary of the Fifth World Congress of Biosphere Reserves, 22–25 September 2025, "WCBR Bulletin", 29 September 2025, p. 1.

[72] See Annotated Agenda of the Fifth World Congress of Biosphere Reserves at https://www.biosphere2025.org.cn/node_209576.html?day=3 (access: 5.5.2026).

[73] Summary of the Fifth World Congress of Biosphere Reserves…, p. 6.

[74] UNESCO, *Institutes and Centres*, https://www.unesco.org/en/partnerships/institutes?hub=180061 (access: 5.5.2026).

[75] Kunming–Montreal Global Biodiversity Framework, adopted during the 15th Meeting of the Conference of the Parties (COP 15), CBD/COP/DEC/15/4, 19 December 2022.

[76] Transforming Our World: The 2030 Agenda for Sustainable Development, A/RES/70/1, 21 October 2015.

[77] See Annotated Agenda…

[78] *Ibidem*.

The final panel addressed dialogue within biosphere reserves, as well as the rights, contributions, and vulnerabilities of marginalised groups in biosphere reserve governance. These groups included Indigenous Peoples, local communities, women, and young people.[79]

On the last day, regional network meetings were held, followed by the closing session.[80] A review of the previous decade of activities was conducted, resulting in the approval of the Hangzhou Strategic Action Plan for 2026–2035[81] and the adoption of the Hangzhou Declaration.[82]

2. Hangzhou Strategic Action Plan (2026–2035) and Declaration (2025)

The new Strategic Action Plan is closely linked to various international initiatives, including the 2030 Agenda for Sustainable Development, the Kunming–Montreal Global Biodiversity Framework, and the Pact for the Future,[83] but mostly to human rights instruments such as the United Nations Declaration on the Rights of Indigenous Peoples.[84] For the first time, the new Plan places strong emphasis not only on preserving biodiversity and achieving sustainable development, but also on human rights. It highlights the need to promote equitable and sustainable societies that include Indigenous Peoples, local communities, youth, and women.[85]

The Hangzhou Strategic Action Plan is crucial for implementing the human rights-oriented UNESCO Medium-Term Strategy for 2022–2029. It is a roadmap for adapting UNESCO to new challenges. The Medium-Term Strategy identifies two global priorities (Africa and gender equality), as well as four strategic objectives and cross-cutting themes: equitable and inclusive education; sustainable societies and environmental protection; inclusive, just and peaceful societies; and a technology-driven environment. It also underscores the importance of collaboration, particularly within the United Nations system, and the need to strengthen and expand partnerships, and to promote the work of National Commissions for UNESCO.[86]

The Strategic Action Plan articulates a vision of a world in which we live up to our collective understanding of our shared future on a finite planet and acknowledge

[79] *Ibidem*.

[80] *Ibidem*.

[81] Hangzhou Strategic Action Plan for the UNESCO's Man and Biosphere (MAB) Programme and its World Network of Biosphere Reserves (2026–2035).

[82] Hangzhou Declaration on the UNESCO Man and the Biosphere Program and World Network of Biosphere Reserves, https://indico.un.org/event/1016809/attachments/21002/64612/Hangzhou%20Declaration_Draft.pdf (access: 5.5.2026).

[83] A/RES/79/1, 22 September 2024.

[84] United Nations Declaration on the Rights of Indigenous Peoples, adopted by the General Assembly on 13 September 2007, A/RES/61/295, 2 October 2007.

[85] Hangzhou Strategic Action Plan…, p. 2.

[86] UNESCO Medium-Term Strategy for 2022–2029, 41 C/4, Paris 2022.

our interdependence with nature. Transformational change is essential to achieving this. As part of the Plan, biosphere reserves will facilitate this transformation. This vision will be realised through four main approaches: (1) facilitating the achievement of existing objectives and targets of multilateral environmental agreements and the Sustainable Development Goals; (2) strengthening the MAB Programme and its World Network of Biosphere Reserves; (3) promoting biosphere reserves as engines of innovation; and (4) leveraging the knowledge and practices of the Network to guide post-2030 global agreements and transform policies and practices.[87]

The Plan defines three main objectives. The first is to contribute to the implementation of multilateral environmental agreements and the 2030 Agenda for Sustainable Development and beyond. The second is to strengthen the MAB Programme and its World Network of Biosphere Reserves, including human, institutional, and financial capacities, while enhancing research, knowledge-sharing, and the application of lessons learned to foster living in harmony with nature. The third is to reinforce the role of biosphere reserves as centres of excellence, inspire sustainable futures, and support post-2030 international agreements.[88]

The thirty-four target actions were set up to ensure the implementation of the Plan and to realise its vision and mission. Although these actions are voluntary for States, they require funding and capacity building, particularly in developing countries, such as Small Island Developing States.[89] The first objective contains thirteen target actions, including support for the 2030 Agenda, contribution to the Kunming–Montreal Global Biodiversity Framework, promotion of ecosystem restoration, pollution mitigation, and reform of incentive structures.[90] Under the second objective, actions include ensuring the full and effective participation of Indigenous Peoples and local communities in the designation, governance, and management of biosphere reserves; strengthening data collection, monitoring, and assessment systems; improving the encouragement of effective MAB National Committee operation and representation; developing the MAB Youth Network; and enhancing solidarity and communication within the World Network.[91] The third objective includes eight target actions, which cover topics such as enhancing the participation of national scientific institutions and scientific collaborations in the implementation of the MAB Programme, overcoming obstacles to intra- and intergenerational peace, equity, gender equality, and justice within the World Network, combining Indigenous and local knowledge with science and technology for sustainability, and synergising education, science and culture for sustainability.[92] The UNESCO

[87] Hangzhou Strategic Action Plan…, p. 7.
[88] *Ibidem*, p. 8.
[89] *Ibidem*, p. 9.
[90] *Ibidem*, pp. 11–14.
[91] *Ibidem*, pp. 17–20.
[92] *Ibidem*, pp. 22–24.

Secretariat is responsible for monitoring and evaluation the implementation of the Hangzhou Strategic Action Plan in compliance with principles of participation, learning, usefulness, transparency, and the incorporation of lessons learned.[93]

The Hangzhou Declaration consists of twenty-three paragraphs. In it, representatives of UNESCO Member States recognise that the World Network of Biosphere Reserves facilitates the coordinated implementation of global objectives set out in international environmental instruments at the local level. The Declaration further emphasises that biosphere reserves have become a vital foundation for both global biodiversity and cultural diversity. They also serve as models and catalysts for sustainable development across all levels of governance. The Declaration also acknowledges the challenges facing biosphere reserves, affirming that the rational use of regional resources and proactive local community engagement are vital to promoting global sustainable development. Particular attention is given to the crucial role of Indigenous Peoples and local communities in biodiversity conservation, as well as to the significant contributions of women, girls, and young people to the sustainable development of biosphere reserves.[94]

The Declaration calls upon UNESCO Member States to establish MAB National Committees where they do not yet exist and to promote the designation of transboundary biosphere reserves. It further encourages the implementation of the Kunming–Montreal Global Biodiversity Framework and the Sustainable Development Goals, including through the establishment of interdisciplinary mechanisms to support and monitor their implementation. In addition, it urges the promotion of multilateral environmental agreements and sustainable development objectives, alongside effective measures to prevent the loss of natural habitats within biosphere reserves.

The Declaration also promotes environmentally-friendly management of production and operations within biosphere reserves, including the mitigation of pollution and the strengthening of synergies between climate change action and biodiversity conservation. It encourages the application of advanced technologies and digital tools, including artificial intelligence, in biosphere reserves management, and supports the launch an International Mega-Science Cooperation Research Initiative integrating education, science, and culture. Finally, it calls for the establishment of an exchange mechanism between Member States and UNESCO-recognised regions to facilitate the sharing of experiences.[95]

[93] *Ibidem*, pp. 25–26.
[94] Hangzhou Declaration…, paras 1–11.
[95] *Ibidem*, paras 12–23.

BIOSPHERE RESERVES AS A TOOL FOR IMPLEMENTING INTERNATIONAL ENVIRONMENTAL INSTRUMENTS

1. Non-binding instruments

The concept of biosphere reserves has evolved over time in response to environmental changes, new challenges, and new global threats. International initiatives in this field, particularly those undertaken within the framework of the United Nations, have played a significant role in this development. Both processes are closely interconnected, and the new Strategic Action Plan exemplifies this interaction perfectly. However, this process began much earlier.

In July 1968, the United Nations General Assembly adopted a resolution on the human environment. The resolution drew attention to the deteriorating state of the natural environment and its impact on everyday life. It emphasised the need for action at various levels to limit or eliminate harmful environmental factors that adversely impact individuals' lives. The resolution also focused on the measures already taken within the framework of the IUCN, the International Biological Programme, and UNESCO, including preparations for the Intergovernmental Conference of Experts on the Scientific Basis for the Rational Use and Conservation of the Resources of the Biosphere.[96] These developments culminated in the United Nations Conference on the Human Environment, held in Stockholm in 1972. The Conference resulted in the adoption of the Stockholm Declaration and the Action Plan for the Human Environment, both of which were groundbreaking and closely aligned with the emerging concept of biosphere reserves. The Stockholm Declaration consisted of 26 principles, including the protection of natural resources and the sustainable management of wildlife and its habitats. The Action Plan outlined three main types of action: (1) a global environmental assessment programme (Earthwatch); (2) environmental management activities; and (3) international measures to support national and international assessment and management activities. It also included 109 recommendations for action at various levels.[97] The Stockholm Conference also led to the establishment of UNEP, which has since played a central role in promoting transformative responses to major environmental challenges of our time, including climate change, biodiversity loss, land degradation, pollution, and waste.[98] Another key milestone prior to the Seville Congress was the United Nations Conference on Environment and Development (UNCED), also known as

[96] Question of convening an international conference on the problems of human environment, A/RES/1346 (XLV), 30 July 1968.

[97] Report of the United Nations Conference on the Human Environment, A/CONF.48/14/Rev.1, Stockholm, 5–16 June 1972.

[98] See UN Environment Programme, *Safeguarding the Environment for Future Generations*, https://www.unep.org/who-we-are/about-us (access: 5.5.2026).

the Earth Summit, held in Rio de Janeiro, Brazil, from 3 to 14 June 1992. It led to the adoption of Agenda 21, the Rio Declaration,[99] the Declaration on the Principles of Forest Management,[100] as well as to the establishment of the Commission on Sustainable Development.

Agenda 21 refers to the social and economic dimensions of sustainable development, including the promotion of international cooperation to accelerate sustainable development, the conservation and management of resources for development, and the strengthening of the role of major groups, such as local authorities, women, Indigenous Peoples, researchers, and other civil society actors, as well as means of implementation.[101] The Rio Declaration set out 27 principles in line with the concept of a biosphere reserves. These principles included, inter alia, the recognition of the right of human beings to a healthy and productive life in harmony with nature. The Declaration also emphasises the need to maintain a balance between the right to sustainable development and the preservation of the natural environment.[102] The Declaration on the Principles of Forest Management is a non-binding international instrument that establishes global principles relating to the management, conservation, and sustainable development of all types of forests. The Commission on Sustainable Development was established in 1992 following the United Nations Conference on Environment and Development. At the United Nations Conference on Sustainable Development (Rio+20) Member States decided to replace it with a High-level Political Forum on Sustainable Development.[103]

The year 2015 was groundbreaking for many reasons, not least the Seville Strategy. It was the year in which the Paris Agreement was adopted, alongside the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals and 169 associated targets. The 2030 Agenda constitutes a global action plan for people, prosperity, and the planet. It aims to protect the planet from environmental degradation by promoting sustainable consumption and production patterns, ensuring the sustainable management of natural resources, and addressing climate change as an urgent global priority. The Agenda and its Sustainable Development Goals are consistent with the concept of biosphere reserves and the objectives of the World Network of Biosphere Reserves.

[99] The United Nations Conference on Environment and Development, A/CONF.151/26 (Vol. I), Annex I, Rio de Janeiro, 3–14 June 1992.

[100] The United Nations Conference on Environment and Development, A/CONF.151/26 (Vol. I), Annex III, Rio de Janeiro, 12 August 1992.

[101] See United Nations, *Sustainable Development Goals*, https://sustainabledevelopment.un.org/outcomedocuments/agenda21 (access: 5.5.2026).

[102] The United Nations Conference on Environment and Development, A/CONF.151/26 (Vol. I), Annex I, Rio de Janeiro, 3–14 June 1992.

[103] See https://sustainabledevelopment.un.org/csd.html (access: 5.5.2026).

Furthermore, the United Nations Biodiversity Conference (COP15), held in Montreal and concluding on 19 December 2022, resulted in the adoption of the Kunming–Montreal Global Biodiversity Framework. The Framework enables States, regions and local authorities to halt and reverse biodiversity loss while contributing to the objectives of the relevant biodiversity conventions. It sets out a vision for 2050, a mission for 2030, and four global goals and twenty-three targets aimed at restoring and protecting ecosystems and endangered species worldwide. Notably, it contains the very ambitious goal of protecting 30% of the planet's land and marine areas. Moreover, the Pact for the Future was adopted at the Summit of the Future in September 2024. Consisting of fifty-six actions, the Pact includes measures to achieve sustainable development, including the restoration, protection, and conservation of environmental resources and the promotion of their sustainable use (Action 10). The latter is also one of the guiding principles and commitments set out in the Declaration on Future Generations.[104]

2. International agreements

The most significant international legal instrument adopted under the auspices of the United Nations is the United Nations Framework Convention on Climate Change (UNFCCC),[105] which aims to stabilise greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. The Convention establishes a framework for international cooperation and includes general commitments related, inter alia, to sustainable development, climate system protection, and the promotion of education, training, and public awareness of climate change. Under the UNFCCC framework, States Parties adopt decisions and policy directions at annual Conferences of the Parties (COPs) and report periodically on their progress in implementing their obligations. The Convention has also led to the adoption of other international instruments based on its principles and provisions, including the Convention on Biological Diversity (adopted on 5 June 1992),[106] the Kyoto Protocol (adopted on 11 December 1997),[107] and the Paris Agreement (adopted on 12 December 2015).

The Convention on Biological Diversity is a landmark international agreement which sets out three key objectives: the conservation of biological diversity, the sustainable use of its components, and the fair and equitable distribution of benefits

[104] A/RES/79/1, Annex II.

[105] United Nations Framework Convention on Climate Change (with Annexes), concluded at New York on 9 May 1992, UNTS, vol. 1771, no. 30822, p. 107.

[106] Convention on Biological Diversity (with Annexes), concluded at Rio de Janeiro on 5 June 1992, UNTS, vol. 1760, no. 30619, p. 79.

[107] Kyoto Protocol to the United Nations Framework Convention on Climate Change, New York, 9 May 1992, UNTS, vol. 2303, no. 30822, p. 162.

arising from the utilisation of genetic resources. The Convention sets out general measures for the conservation and sustainable use of biological diversity, including the development of national strategies, plans and programmes. In this regard, it takes into account the capabilities and conditions of states. It also emphasises the importance of environmental impact assessment for proposed projects that are likely to have significant adverse effects on biological diversity. Moreover, the Convention establishes a connection between the conservation of biological diversity and human rights, affirming that the conservation of biological diversity is a shared responsibility of humanity. It also reaffirms the dependence of many indigenous and local communities, who embody traditional lifestyles, on biological resources, and highlights the important role of women in the conservation and sustainable use of biological diversity. Overall, the Convention provides a global framework for the protection of ecosystems, species, and genetic resources.

The Kyoto Protocol was the first step in global emissions reduction. It aimed to reduce greenhouse gas emissions by 5.2% in 37 industrialised countries between 2008 and 2012 compared to 1990 levels. The Protocol sets binding emission reduction targets for these countries and the European Union (Annex B). Furthermore, it recognises the importance of international collaboration to achieve this purpose, and emphasises States common but differentiated responsibilities, and their specific national and regional development priorities, objectives and circumstances (Article 10). To enable such cooperation, the Protocol set up mechanisms, including International Emissions Trading, Joint Implementation, and the Clean Development Mechanisms, through which the countries can achieve their targets.[108] The Kyoto Protocol laid the foundation for subsequent developments in international climate governance and ultimately paved the way for the adoption of the Paris Agreement.

The primary objective of the Paris Agreement is to strengthen the global response to the threat of climate change. Article 2 establishes a long-term temperature goal of holding the increase in the global average temperature to well below 2°C above pre-industrial levels while pursuing efforts to limit the increase to 1.5°C. The Agreement also recognises the need to enhance the ability to adapt to the adverse impacts of climate change and to foster climate resilience. To achieve these objectives, the Parties intend to reach a global peak in greenhouse gas emissions. The Agreement establishes binding commitments for all Parties to prepare, communicate, maintain, and periodically update nationally determined contributions, as well as to implement domestic measures to achieve these. The Agreement prioritises adaptation to enhance States' ability to adapt to the adverse impacts of climate change and foster climate resilience. Furthermore, the Agreement is relevant in the context of human rights law. Adopting a human-centred approach, it recognises

[108] N. Maamoun, *The Kyoto Protocol: Empirical Evidence of a Hidden Success*, "Journal of Environmental Economics and Management" 2019, vol. 95, pp. 227–256.

that climate change impairs the full enjoyment of human rights, including the right to life, health, food and water.[109]

In early September 2025, the executive secretaries of the three Rio Conventions (the UNFCCC, the Convention on Biological Diversity, and the United Nations Convention to Combat Desertification[110]) met in Bonn to discuss key actions for 2025–2026 and how to enhance collaboration in addressing climate change, biodiversity loss, and land degradation. On 17 September 2025, a new synergies platform was launched to address these challenges and help humanity live in harmony with nature.[111]

CONCLUSIONS

The concept of biosphere reserves has evolved through various initiatives, including the Minsk Action Plan, which expanded and strengthened biosphere reserves; the Seville Strategy and the Statutory Framework, which set out the network's foundational criteria and functions; the Pamplona Recommendations that emphasised transboundary cooperation; the Madrid Action Plan, which aligned with the Millennium Development Goals; and the Lima Declaration and Action Plan focused on achieving the Sustainable Development Goals and addressing climate change. Building upon these developments, the Hangzhou Strategic Action Plan highlights the role of biosphere reserves as agents of transformation and their contribution to advancing United Nations instruments and enhancing multilateral cooperation.[112]

The evolution of these instruments also demonstrates that biodiversity and climate change are interconnected. Biodiversity is responsible for providing us with food, water, air and weather, to name a few. However, it is shrinking every year due to climate change and illegal wildlife trafficking. It is estimated that over 58% of the 46,337 species listed as endangered on the IUCN Red List in 2024[113] were flowering plants. Furthermore, around 11,400 of the 63,700 known vertebrate species were at risk of extinction. Additionally, over 6,000 invertebrates, as well

[109] For example, see S. Duyck, E. Lennon, W. Obergassel, A. Savaresi, *Human Rights and the Paris Agreement's Implementation Guidelines: Opportunities to Develop a Rights-based Approach*, "Carbon & Climate Law Review" 2018, vol. 12(3), pp. 191–202.

[110] Convention to Combat Desertification in those Countries Experiencing Serious Drought and/or Desertification, particularly in Africa (with Annexes), opened for signature at Paris on 14 October 1994, UNTS, vol. 1954, no. 33480, p. 3.

[111] Available at https://rioconventions.org (access: 5.5.2026).

[112] Hangzhou Strategic Action Plan…, p. 2.

[113] Now includes 169,420 species, of which 47,187 are threatened with extinction. See IUCN, *IUCN Red List Update: Global Impacts, Regional Statuses, and the Way Forward*, 9.4.2025, https://iucn.org/news/202504/iucn-red-list-update-global-impacts-regional-statuses-and-way-forward (access: 5.5.2026).

as 300 fungi and protists, are endangered worldwide.[114] Moreover, the illegal trade in 162 countries and territories during 2015–2021 affected around 4,000 plant and animal species, approximately 3,250 listed in the CITES Appendices.[115]

Biosphere reserves, the World Network of Biosphere Reserves, and international environmental protection instruments aim to strike a balance among protection and conservation of biodiversity and sustainable development. The aim is to find a middle ground that enables people to live in harmony with nature. This approach considers human needs alongside the importance of preserving biodiversity for the benefit of present and future generations.

However, the biggest obstacle to achieving this goal is the States themselves. Although they make specific international commitments or obligations through non-binding and binding instruments, these often turn out to be empty promises. A lack of effective mechanisms to sanction such behaviour certainly does not incentivise States to fulfil their obligations or commitments. Simply being aware of the negative impact of climate change and associated biodiversity loss on individuals' lives is not enough. Furthermore, legal proceedings brought before national and international courts are insufficient to change States' behaviour. This is why enhancing international cooperation among relevant stakeholders at various levels, particularly regional and local, is so important.

Local communities should put pressure on their governments, and the international community should do the same on international organizations and their member states, to change course of action. This is why the establishment of MAB National Committees and an increase in the number of biosphere reserves, particularly transboundary ones, is so important. This would enable better coordination of activities and facilitate the exchange of experiences and best practices between all stakeholders. Most importantly, it will enable us to respond swiftly to threats. Only then will biosphere reserves, together with the World Network of Biosphere Reserves, be able to effectively implement international environmental obligations stemming from international instruments.

[114] E. Burgueño Salas, *Global Share of Living Species Threatened with Extinction 2024, By Type*, 10.7.2025, https://www.statista.com/statistics/1262806/threatened-species-global-extinction/?srsltid=AfmBOoq21NyXvyoj6LWFe_au6HuR8At3cpcN2Kdp8eg2lLCptd2BCeup (access: 5.5.2026).

[115] United Nations Office on Drugs and Crime, *World Wildlife Crime Report 2024: Trafficking in Protected Species*, https://www.unodc.org/cofrb/uploads/documents/ECOS/World_Wildlife_Crime_Report_2024.pdf (access: 29.5.2026), p. 22.

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ABSTRAKT

Od samego początku koncepcja rezerwatów biosfery ewoluowała wraz z opracowywaniem dokumentów międzynarodowych, zarówno wiążących, jak i niewiążących, przyjętych w szczególności pod auspicjami Organizacji Narodów Zjednoczonych. Działania te zawsze były ze sobą ściśle powiązane. Ich celem była promocja harmonijnego współistnienia ludzi i środowiska – celu kluczowego dla misji rezerwatów biosfery. Uwzględniają one postęp technologiczny i zrównoważony rozwój, a także potrzebę zachowania różnorodności biologicznej i zasobów naturalnych dla obecnych i przyszłych pokoleń. W dniach 22–26 września 2025 r. decydenci polityczni, naukowcy, przedsiębiorcy i ekolodzy spotkali się w Hangzhou w Chinach na V Światowym Kongresie Rezerwatów Biosfery. Wspólnie ustalono przyszły kierunek rozwoju rezerwatów biosfery i Światowej Sieci Rezerwatów Biosfery. Celem Kongresu było określenie, jakie działania należy podjąć w odpowiedzi na aktualne wyzwania, zwłaszcza te związane ze zmianami klimatu, degradacją gleby, pustynnieniem, degradacją środowiska morskiego, a także sprecyzowanie roli rezerwatów biosfery w pokonywaniu tych trudności. Na zakończenie Kongresu uczestnicy zatwierdzili Strategiczny Plan Działania z Hangzhou oraz Deklarację z Hangzhou, w których podkreślono kluczową rolę rezerwatów biosfery w odpowiedzi na dzisiejsze wyzwania. Co więcej, mocno akcentują one prawnoczłowieczy element rezerwatów bios-

fery, uwzględniając ich szczególną rolę w zachowaniu zasobów przez ludność tubylczą, społeczności lokalne, kobiety oraz młodzież. Artykuł stanowi wkład w trwającą dyskusję na temat ewoluującej roli rezerwatów biosfery i Światowej Sieci Rezerwatów Biosfery w odniesieniu do zachowania globalnej różnorodności biologicznej i zrównoważonego rozwoju. Ponadto zasugerowano, że rezerwaty biosfery i Światowa Sieć Rezerwatów Biosfery mogłyby służyć efektywnej implementacji postanowień dokumentów międzynarodowych odnoszących się do zagadnień związanych z ochroną środowiska i zrównoważonym rozwojem.

Słowa kluczowe: rezerwaty biosfery; bioróżnorodność; Strategiczny Plan Działania z Hangzhou; Program Człowiek i Biosfera; zrównoważony rozwój; UNESCO