

Best Practices from Biosphere Reserves (BRs) of the EuroMAB Network (Europe & North America)



The Nockberge Region in the Carinthian part of the BR "Salzburger Lungau & Kärntner Nockberge" (Austria). Photo credit: Claudia Köck

Günter Köck

Institute for Interdisciplinary Mountain Research (IGF), Innsbruck (Austria)

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IMPRESSUM

Best Practices from Biosphere Reserves (BRs) of the EuroMAB Network (Europe & North America)

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Institute for Interdisciplinary Mountain Research (IGF)

Innrain 25, 6020 Innsbruck (Austria)

E-mail: guenter.koeck@oeaw.ac.at, guenter.koeck@uibk.ac.at

WWW: <http://www.higharctic-research.at/>

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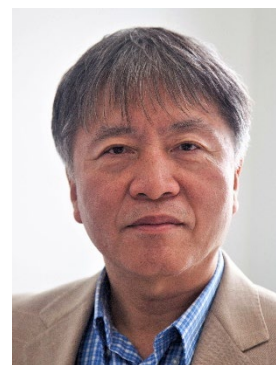
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Best Practices from Biosphere Reserves (BRs) of the EuroMAB Network (Europe & North America)

Foreword

Amid growing global uncertainties and emerging risks, biodiversity loss, climate change, and ecological degradation remain among the most pressing challenges of our time—challenges that demand coordinated, science-based, and inclusive responses worldwide. For decades, UNESCO’s Man and the Biosphere (MAB) Programme and its World Network of Biosphere Reserves (WNBR) have stood at the forefront of efforts to reconcile environmental protection with sustainable development.



In September 2025, at the 5th World Congress of Biosphere Reserves (5th WCBR) in Hangzhou (China), UNESCO launched the *Hangzhou Strategic Action Plan for MAB and WNBR (2026–2035)*. This forward-looking plan positions biosphere reserves as central actors in a renewed global sustainability agenda, closely aligned with the Sustainable Development Goals (SDGs), the post-2030 development framework, and the Kunming–Montreal Global Biodiversity Framework (KMGBF).

It is within this context that Dr. Günter Köck—former Secretary-General of the Austrian MAB Committee—has compiled the report *Best Practices from Biosphere Reserves (BRs) of the EuroMAB Network (Europe & North America)*. Dr. Köck presents a thoughtfully curated selection of case studies from 12 biosphere reserves within EuroMAB, the largest and longest-standing regional MAB network. The communities engaged in EuroMAB—comprising institutions and individuals active in research, conservation, and development—have consistently explored pathways to sustainability, grounded in the geographical, ecological, cultural, social, and economic contexts of Europe and North America.

The thirteen best practices featured in this report address critical themes for all those engaged in the MAB community, including science education; green products, services, and branding as drivers of sustainable livelihoods; entrepreneurship rooted in traditional knowledge; stakeholder-based governance and local participation; innovative climate action financing; and transboundary conservation—exemplified by the five-country Mura–Drava–Danube Biosphere Reserve (Austria, Croatia, Hungary, Serbia, and Slovenia).

The core value of this report lies in its ability to bridge global sustainability principles with grounded, place-based innovation - a vital step toward accelerating progress on the SDGs. As many observers have noted, one key reason for the slow advancement of the global sustainability agenda is the persistent gap between high-level targets and the diverse, dynamic, and interconnected realities on the ground. By showcasing actionable, locally

adapted solutions, this publication offers practical insights that can inform and inspire the implementation of the Hangzhou Strategic Action Plan and its associated targets.

I have had the privilege of knowing Dr. Günter Köck for over two decades. His unwavering dedication to biosphere conservation, sustainable development, and the application of science to real-world solutions has long been a source of inspiration to me. Our friendship—forged through a shared commitment to the MAB mission and the growth of the WNBR—has endured well beyond our formal roles. It was a particular joy to reconnect with him during the preparatory phase of the Hangzhou Congress at the Research Center for Eco-Environmental Sciences (RCEES) of the Chinese Academy of Sciences in Beijing, and again at the 5th WCBR itself in Hangzhou. I am confident that our shared commitment to the MAB vision will continue to foster deeper collaboration across regional and thematic MAB networks in the future.

Biosphere reserves are living laboratories for sustainable development. I am confident that this report will make a meaningful and lasting contribution to that vital mission.

—Han Qunli,

Former Director, UNESCO Division of Ecological and Earth Sciences and the Secretariat of the MAB Programme

Introduction

The EuroMAB network includes all countries in Europe and North America that participate in the UNESCO Man and the Biosphere (MAB) Programme and its World Network of Biosphere Reserves (WNBR). With more than 300 biosphere reserves (BRs) in over 40 countries, EuroMAB is the largest and the oldest of the eight regional and seven thematic MAB networks. The EuroMAB group usually meets every two years. Conferences have so far taken place in České Budějovice (Czech Republic, 1986), Minsk (Belarus, 1997), Cambridge (Great Britain, 2000), Rome (Italy, 2002), Hernstein (Austria, 2005), Antalya (Turkey, 2007), Stará Lesná (Slovakia, 2009), Lundsbrunn (Sweden, 2011), Brockville (Canada, 2013), Haapsalu (Estonia, 2015), Sarlat-la-Canéda (France, 2017), Dublin (Ireland, 2019), Bad Kleinkirchheim (Austria 2022), and Wittenberg (Germany 2024).

This report was prepared in March 2025 during a research visit at the Research Center for Eco-Environmental Sciences (RCEES) of the Chinese Academy of Sciences (CAS) in Beijing, one of the two partners forming the Joint Technical Secretariat of the World Network of Mountain Biosphere Reserves (WNMBR). Prepared at the suggestion of my hosts, Professors Xu Weihua and Zhiyun Ouyang, it presents selected best-practice examples from BRs in Europe and North America, identified on the basis of my extensive professional experience within the MAB Programme.

However, the vast scale of the EuroMAB network makes it impossible to stay fully informed about every remarkable initiative. To overcome this, I reached out to long-time colleagues and experts within the network and asked them to share their personal selections of noteworthy examples, along with any available information. To ensure accuracy and to avoid misinterpretations, my texts were reviewed and verified by these colleagues (see *Acknowledgements*).

I would like to emphasize that this selection of best practice examples is inherently subjective. This does not imply that activities not mentioned here are of lower quality. Given the large number of BRs in the EuroMAB network, many outstanding initiatives do not receive the attention they deserve. This is partly because BR managers often lack the time to publicize their successful approaches, due to the numerous tasks and challenges they face daily.

Thematic MAB networks in particular could play a crucial role in “unearthing this treasure”. It is therefore encouraging that the Technical Secretariat of the World Network of Mountain Biosphere Reserves (WNMBR) has launched an initiative to collect best practice examples in this context.

In my view, best practice examples are among the most effective ways to support BRs in their work. I encourage readers to view this report as a kind of "open-ended manuscript", one that will continue to collect additional examples and make them available to the UNESCO network.

Salzburger Lungau & Kärntner Nockberge BR (Austria)

The Salzburger Lungau & Kärntner Nockberge BR is the largest BR in Austria, covering an area of almost 150.000 hectares across the two Austrian federal provinces of Salzburg and Carinthia. The area is extremely diverse, ranging from marshes and alluvial forests in the valleys to cultivated meadows and woodlands at mid-altitudes, extending up to glacial alpine summits.

The Lungau-Nockberge region exemplifies inner-alpine landscapes characterized by high mountains and deep valleys. Spanning elevations from 600 to 3,000 meters above sea level, it includes typical Central Alpine ecosystems such as mountain meadows and marshes with exceptional biodiversity. For millennia, local populations have benefited from this biodiversity, most recently through sustainable practices such as ecotourism. Human settlement in the Lungau-Nockberge region dates back thousands of years. Its structural diversity and scenic beauty continue to attract visitors from around the globe. National and international interest in the area's unique cultural and natural features forms a cornerstone of the regional economy.

Key data

Year of nomination: 2012

Total population 31,000

Surface 149,421 ha

SCIENCE_LINK Nockberge

SCIENCE_LINK is a long-term, contract-based research and education partnership established in 2013 between the management of the Carinthian part (Nockberge) of the “Salzburger Lungau & Kärntner Nockberge” BR and three academic institutions: Alpen-Adria University Klagenfurt, the Carinthian University of Applied Sciences, and the Teacher Training College Carinthia (Pädagogische Hochschule Kärnten).

This collaboration aims to

- bridge the gap between international research and everyday life in the Nockberge region, a designated “model region for sustainable development”,
- provide scientific support for BR management,
- facilitate access to international trends and the global scientific community,
- stimulate, guide, and scientifically support technical, economic, ecological, and social innovations in the region,
- raise public awareness of the BR's significance and potential.

To achieve these goals, the BR contributes technical, logistical, and financial support to research activities, while academic partners offer their networks and scientific expertise.

Key tools of the cooperation:

- „NockoThek“: A publicly accessible, regularly updated literature database currently featuring around 460 titles. It compiles final theses, scientific publications, annual reports, and other relevant studies, particularly those focused on the Carinthian part of the BR. The database allows anyone interested to explore the unique features of this habitat free of charge.
- „Research Exchange Platform“: This platform offers a catalogue of more than 50 research questions from different disciplines, that are of interest to BR Management. This gives students from many disciplines the opportunity to choose exciting topics for bachelor's, master's and doctoral theses in the BR. The theses have a strong practical relevance and are therefore very helpful not only for the students, but also for the BR Management. Since the program's inception, approximately 30 scientific theses have been funded, completed and presented in the areas of nature, culture and society in the Nockberge region.
- Joint outreach activities: Public relations activities are coordinated jointly by the BR Management and the scientific institutions. These include events such as the 'Weekend of Research Questions', come-together days at BR and the Universities as well as student workshops. Students also present their research results to experts and the public. A key annual event is the "GEO Day of Biodiversity" (held since 2016), which incorporates elements of citizen science. During this 24-hour event, renowned biologists document regional flora and fauna, accompanied by residents, students, and stakeholders. Additionally, the BR's regular magazine „Meine Biosphäre“ (My Biosphere) features a dedicated SCIENCE_LINK column to showcase ongoing research and outcomes. These initiatives play a significant role in sharing scientific knowledge and engaging the local population.

Conclusions:

Since its establishment, SCIENCE_LINK has been pivotal in supporting both the research and educational missions of the BR management. It also plays a vital role in shaping the public perception of the BR. A key strength of the programme is its direct alignment with the BR Management Plan. A central component of the programme is the Research Exchange Platform. Its unique feature is that BR management can directly communicate its research needs to the universities by formulating specific research questions. This not only helps to close knowledge gaps but also provides valuable support for the management's operational work. In turn, academic institutions benefit by offering students real-world, relevant research opportunities. This synergy makes SCIENCE_LINK a genuine win-win model for all involved.

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Educational programme for all generations in the Nockberge BR

Communicating the interconnectedness of people and nature is one of the core missions of a BR. Only when the population engages with this concept and identifies with it can the "BR idea" truly come to life. For this very reason, the management of the Carinthian part of the "Salzburger Lungau & Kärntner Nockberge" BR considers education and raising awareness about nature conservation among the public as one of its primary tasks and has established a comprehensive education programme for all age groups and social strata. The BR management sees itself as an active mediator, communicating information tailored to diverse target groups. Through this, the management aims to foster understanding of nature, enthusiasm for the BR concept, and regional identification among the population.

The content of the education programme is aligned with the action areas defined in the BR management plan. The goals are to raise awareness about the relationship between humans and nature while providing insight into the key focus areas and responsibilities of a BR. The unique natural and cultural landscapes are brought to the forefront, thereby gaining greater appreciation.

Education Programme for Adults:

This programme specifically targets groups that are rarely reached through daily management activities. It features regular events on various focus topics, such as:

- highlighting the unique features of the cultural landscape to preserve and develop regionally adapted, modern approaches to agriculture, forestry, and alpine farming. This includes lectures on topics like "Alpine Pastures" or cooking courses using regional products.
- protecting and developing valuable natural processes, habitats and species, with focus on core and buffer zones. Examples include lectures on invasive species problems, conservation of mountain meadows and their importance for biodiversity, or soap-making workshops using native herbs and plants.
- emphasizing the importance of science and research within the BR. Since 2016, the "GEO Day of Biodiversity" has been successfully held, offering residents the chance to observe scientists at work and learn about the flora and fauna of the BR (see best practice example "SCIENCE_LINK" above).
- raising public awareness and supporting the ongoing development of the Nockberge BR. This is exemplified by the annual "Biosphere Reserve Day", which provides the public with insights into the BR's work and responsibilities.

In addition to these events and courses, interested residents are regularly invited to take part in specialized excursions to other BRs, with a focus on education and nature conservation. This

“thinking outside the box” approach helps participants better assess and reflect on the situation in their own BR.

The adult education programme naturally requires comprehensive public relations work by BR management, including:

- publishing press articles in various regional media and using social media like Facebook, Instagram etc.
- distributing brochures containing essential information about the BR’s natural and cultural landscapes, as well as its educational initiatives
- sending out event invitations by mail.
- introducing specially designed cotton bags and writing pads for conference materials

An education calendar, published at the beginning of each year on the BR website, allows interested individuals to view upcoming events and register online. The calendar is also made available as a free printed brochure, which is mailed to all BR households at the start of the year.

Education Programme for Children and Youth:

Since the sustainable development of the BR region is only possible with public involvement, it is essential to raise awareness among residents of the four BR municipalities about the interconnection between humans and nature. This foundation must be laid early - starting with children and youth.

Since the BR's establishment in 2012, youth engagement has been a top priority for BR management. Young people not only represent the next generation of the BR but are also future decision-makers and stakeholders who must be meaningfully involved. From the outset, BR management has worked to directly involve schools within and around the BR, establishing long-term partnerships. Today, there are 19 BR Schools and Partner Schools: the former located within the BR’s geographic boundaries, and the latter situated in neighbouring or more distant municipalities that have signed partnership agreements with BR management.

Specially developed, curriculum-aligned teaching materials help students explore the relationship between humans and nature. BR rangers visit participating classrooms twice a year, preparing students for project days in the Nockberge BR, where they train as “Mini” and “Junior Rangers.” These hands-on experiences allow students to bring theoretical knowledge to life. BR management also offers a wide range of programmes for school trips, hiking days, and project weeks. Students who participate in the programme over several years receive certificates of achievement.

To further improve outreach, the "Mobile BR School" was created—a special traveling exhibition titled “Schlaufux on tour” (Smart Fox on Tour; Fig. 1). Trained BR rangers visit schools with this interactive exhibition to inspire students about the BR. In this setting, children

become young explorers, engaging playfully with the Nockberge's wildlife, plant life, and geology. All teaching modules are designed to be interactive and participatory. The mobile school is suitable for all grade levels and typically spans four class periods per group.

The COVID-19 pandemic, during which parts of the BR education programme were delivered online, highlighted the need for new educational formats. In response, BR management has begun offering digital resources, such as videos and online materials, and is enhancing virtual communication between schools and BR management through a dedicated online platform.



Fig. 1: The logo of the mobile BR school "Schlaufux on tour" (Smart fox on Tour)

Teacher education is an integral part of the school programme. An annual "Educators' Forum" provides professional development on current topics related to nature and environment, while also facilitating the exchange of ideas and experiences among educators.

Conclusions:

This project marks a significant milestone in the development of this unique model region. Now in its fifth year, the adult education programme has reached over 2,500 participants, 90% of whom are from the BR region. The programme's success demonstrates that the considerable effort invested is indeed worthwhile. Particularly important to BR management is the fact that the programme successfully engages groups that are otherwise difficult to reach.

The school programme, established in 2019, currently includes 7 BR Schools, 10 Partner Schools, and 2 additional cooperation partners, reaching approximately 4,700 children each year. This reflects meaningful progress in raising awareness of BR-related topics among future generations.

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Five-Country Biosphere Reserve Mura-Drava-Danube (Austria, Croatia, Hungary, Serbia, Slovenia)

The UNESCO „Five-country Biosphere Reserve Mura-Drava-Danube“ (TBR MDD) connects Austria, Croatia, Hungary, Serbia and Slovenia with their individual BRs and 13 major protected areas along the three rivers Mura, Drava and Danube. It is with a length of 700 km, and a size of 930,000 hectares Europe's largest coherent river protected area.

Located in the border area between Austria, Slovenia, Hungary, Croatia and Serbia, the river system formed by the rivers Mura, Drava and Danube, also known as the 'Amazon of Europe', connects unique natural areas and is one of the last widely preserved near-natural river landscapes in Europe. The corridor formed by the Danube and its tributaries, the Mura and Drava, forms a unique biotope network that is the habitat for many rare animal and plant species and thus represents the most valuable contiguous river landscape in Central Europe.

The extensive floodplains provide perfect habitat for a variety of endangered bird species. The area hosts the largest density of white-tailed eagles in continental Europe, with over 140 breeding pairs, and is a resting place for more than a quarter of a million waterfowl. The river system itself is home to rare fish species such as sterlet (*Acipenser ruthenus*) and huchen (*Hucho hucho*). Furthermore, the floodplains are an important drinking water reservoir for the region, provide efficient natural flood protection and are of great importance as an adventure and recreation area for people. Moreover, the charming landscape has great potential for sustainable tourism.

Key data

Year of nomination: 2021

Total population 900,000

Surface 930,000 ha

Transboundary nature conservation activities to overcome political constraints

To better understand the significance of this best practice example, a brief overview of the history of the TBRMDD is helpful.

Interestingly, the region's high ecological value today can be traced back to the long period of the "Cold War". During this period, the sections of the Danube, Drava and Mura rivers located in the border regions were largely isolated for almost five decades and thus spared from intensive human utilisation. For decades, the political situation prevented the construction development of large sections of the Mura, Drava and Danube, allowing the largely free-flowing waterways to shape and alter their courses naturally. As a result, an exceptionally valuable network of biotopes—comprising islands, steep clay and sand banks, river branches, and riparian forests—was preserved, providing vital habitats for numerous rare plant and animal species (Fig. 2).

The fall of the Iron Curtain in 1989 brought major political changes to the region, which also affected the use of the rivers. Areas that had been inaccessible for over 40 years suddenly became open to human activity, often with negative consequences for nature. For example, gravel extraction and river engineering projects led to significant damage to river branches, riparian forests, and gravel banks. In response to plans for new hydropower plants on the Mura and Drava rivers, NGOs began advocating for the protection of this unique river landscape as early as 1990.

When the idea of establishing a 5-country transboundary BR emerged in 2009, it quickly became clear that the Balkan crisis of the 1990s had left behind resentments that made it politically impossible for many years to negotiate a solution to the border disputes between some of the countries involved, which would have been absolutely necessary for the establishment of the 5-country BR. Several activities and factors finally led to the five existing national BRs being merged into one large joint cross-border BR in 2021.



Fig. 2: Wild river landscape of the Mura in the Slovenian-Croatian border area. Photo credits: Arno Mohl

A very important step in the continuation of the unification process was the shift of the discussion from the political to the purely technical expert level. This process was made possible above all by the very constructive role of the NGOs involved. They very quickly began to work actively on the implementation of transboundary scientific cooperation projects. For example, two major projects funded by the EU and coordinated by WWF (“coopMDD”, “lifelineMDD”), which aimed to develop joint measures for all five countries in cooperation with stakeholders from all five riparian states, have contributed significantly to the joint submission as a transnational confidence-building measure. Another transboundary cooperation project to strengthen mutual trust was the Interreg project “Amazon of Europe

Bike Trail”, in which a cross-border bike trail was established along the rivers Mura, Drava and Danube, running through all five countries.

The ongoing, decades-long cooperation between scientists and practitioners in the field of nature conservation has been instrumental in depoliticizing the process as a kind of “science diplomacy” or “nature diplomacy”. It is very likely that these successful projects arguably provided evidence that cross-border cooperation was working and ultimately paved the ground for political decision-makers to agree to the joint submission and make TBR MDD a reality. The new EU project "LIFER4MDD", launched in 2023, is further evidence of the success of this type of diplomacy.

Conclusions:

Strengthening trust through transboundary cooperation and promoting good neighbourly relations through joint environmental management are key factors for transboundary BRs. Shared concern for habitat and the resulting close cooperation in nature conservation and sustainable development can help to strengthen trust between countries and resolve conflicts amicably.

The long way from the idea to the recognition has shown that there are definitely factors on the way to the transboundary BR that can positively influence the process and whose consideration can therefore be helpful in the planning of further transboundary BRs.

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Wienerwald BR (Austria)

The Wienerwald BR covers an undulating landscape in the area between the Northern Alps and the Pannonic Basin, to the west of the city of Vienna. On the east slopes of the Wienerwald (Vienna Woods) there is a geological rupture zone, with hot springs and impressive marine terraces of a former sea. The limestone part of the Wienerwald is dominated by steep and rugged limestone and dolomite rock formations and sharply cut gullies. The region is a remarkable biodiversity hot spot in Central Europe. In its territory several biogeographical regions come together. Various geological conditions, a considerable altitudinal range (from approx. 160 m to almost 900 m), different climatic zones, and finally human impact have led to the emergence of a great variety of habitats. The Wienerwald region boasts the most extensive area of beech forests in Europe. This forest type dominates the Wienerwald but is only one of 26 forest communities in the area.

Other internationally remarkable features are the open-land habitats of the cultural landscape. Extensive meadows and pastures, which are the result of centuries of cultivation, alternate with woodlands and dominate major parts of the landscape. Traditionally managed semi-natural dry grasslands are another characteristic of the region. Old-growth vineyards and orchards, fields (cereals, potatoes), a dense system of rivers and watercourses, small landscape elements such as hedgerows or solitary big trees crisscross or dot the landscape and contribute to the outstanding ecological diversity including a high diversity of species and stable populations of rare and endangered European.

A special feature of the BR is its immediate proximity to the Austrian capital Vienna. It is the only BR in Europe part of which is located in a megacity with millions of inhabitants.

Key data

Year of nomination: 2005

Total population 855,000

Surface 105,645 ha

How to behave in our BR?

The unique location of Wienerwald BR on the edge of the large city of Vienna provides easy access for the urban population and makes for complex challenges, such as high visitor pressure and habitat fragmentation. Nowhere else in Central Europe is a protected area exposed to such pressure and dynamics from an urban area (e.g. suburbanization, fragmentation of habitats, recreational use) as in the Wienerwald region. Two railway lines and two motorways cross the area or come close to it. Furthermore, the highly developed public transport network of Vienna makes it extremely easy to get to the area.

The exceptional diversity of natural and cultural landscapes makes Wienerwald BR very attractive as a recreational space for both inhabitants and visitors. Activities range from

walking to cycling, mountain biking (MTB), jogging, horse-riding, hunting, climbing, cross-country skiing to geocaching (Fig. 3).

Inevitably in a protected area with such different and heavy uses, conflicts arise between individual user groups as well as with land-owners and the BR management. One of the reasons is the size of the area and the large number of inhabitants and visitors who need to be informed about the three zones of the BR zones and the related regulations for their use. Successful coexistence of different user groups can only work if there is mutual regard, for instance, expressed in compliance with certain rules of behaviour.

It was therefore a major concern of BR Management to develop rules and proposals for appropriate behavior in BR and to inform the population about them. It was clear from the outset that this had to be done together with key players and interest groups, such as representatives of municipalities, land-owners, authorities, Wienerwald Tourism Association, interest groups such as the Austrian Alpine Club, and scientists.



Fig. 3: Mountain biking the the Wienerwald BR. Photo credits: Wienerwald Tourismus GmbH/Markus Frühmann

The outcome of this intense process was a 39-page booklet *The Rules the Game of the Wienerwald - Correct behavior in the forests of the Wienerwald BR*, presenting the substance and aims of the BR, explaining the three zones of the BR in easily understandable form and lists the respective restrictions, requirements and usage options as well as the underlying regulatory framework. The free brochure is distributed by the participating stakeholders and BR partner organizations in the education sector as well as via the partner network. It is also available at various mountain huts, popular hiking destinations and information points and can be downloaded from the BR website. Experience has shown that the booklet not only provides general information for the public but can also be used as a helpful instrument of de-escalation in certain cases.

Another information activity of BR Management relates specifically to mountain biking, which has developed rapidly in recent years and has also gained a new status in society.

This poses new challenges for landowners as well as mountain bikers and other user groups (e.g. hikers). Here too, an elaborate participatory process was chosen to find joint solutions. The “Mountain biking in the Vienna Woods” platform was set up over 10 years ago, involving key actors such as land-owners, mountain biker representatives, Wienerwald Tourism Association and the BR Management. The aim of the platform is to further develop the existing MTB offer in the Vienna Woods BR into a contemporary, nature-friendly, legal and accepted MTB route network based on attractive, sustainable MTB trail concepts and contractual solutions. This ongoing process takes place with the involvement of all stakeholders in a consensus-oriented dialog and aims to create a long-term solution that is supported by all stakeholders. Ultimately, legal MTB should be possible for all interested parties at different levels of difficulty.

Conclusions:

This example shows how the management of a BR can successfully resolve conflicts of use through broad-based participatory processes that involve as many interest groups as possible. Such an exemplary participation process not only helps to make the BR and its rules and opportunities better known to the public but also ensures that they are better accepted by visitors. This example shows that broad-based participatory processes involving as many stakeholders as possible are essential for resolving conflicts in BRs.

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Entlebuch BR (Switzerland)

The Entlebuch BR is located at the foot of the Alps in the central part of Switzerland and reaches an altitude of 2,350 meters above sea level. Few regions in Switzerland have natural and cultural landscapes that are as intact as those in Entlebuch. The region is home to Switzerland's largest and most numerous moor landscapes and striking karst terrain as well as flora and fauna of national and international importance.

The inhabitants of Entlebuch BR have set themselves the goal of promoting regional products, managing natural resources (grass, wood and landscape) and developing ecotourism.

Key data

Year of nomination: 2001

Total population 17,000

Surface 39,450 ha

BR products and regional branding

The creation of a regional brand is certainly an outstanding opportunity for a BR to increase the added value of a region.

An excellent example of successful brand development is the *Echt Entlebuch (Genuine Entlebuch)* brand owned by the *Association of Municipalities* within the Entlebuch BR (Fig 4). When developing the "Echt Entlebuch" product brand, the focus on the resources available in the region was an important part of the BR's sustainable economic development from the very beginning. Traditionally, milk and meat have been the region's most important agricultural resources, from which numerous regional culinary products have developed over the course of time. Today, they are complemented by many other delicacies made from fruit, berries, cereals, vegetables and herbs. Products made from wood round off the range of certified products.



Fig. 4: The logo of the "Echt Entlebuch" brand

The quality label is awarded to products that are produced in the BR according to strict guidelines and offer consumers the guarantee of a high-quality regional product. A prerequisite for the certification of products is a partnership agreement between the

manufacturer and the Entlebuch Biosphere. It is a matter of course that all products bearing the Echt Entlebuch label are inspected and certified by an independent body.

Products bearing the label are sold both inside and outside the Entlebuch BR. The quality label guarantees the customers that the harvesting and processing of the resources takes place in the region. Customers are prepared to pay a higher price for innovative products of known origin and/or quality. In the BR itself, this strategy not only leads to additional sales volumes and thus to higher added value (two thirds of the added value of more than six million Euros is generated in the region) and the preservation of jobs but also stimulates further innovative product development. The brand, under which more than 500 products are now certified, is therefore a successful culinary ambassador far beyond the BR's borders.

Conclusions:

The development of a successful brand label is time-consuming, requiring a participatory bottom-up process involving the largest possible number of people and companies; it also requires trust and constructive cooperation between the BR's management and producers. The Entlebuch BR has created an excellent example of the implementation of such a regional branding process. The BR products contribute to the preservation of the natural and cultural landscape, promote jobs and apprenticeships, maintain added value and form an important backbone for social and cultural development in the BR.

Other good examples can be found in numerous other BRs in Europe, for example in Germany, Austria (Nockberge BR, BR Großes Walsertal) and Sweden.

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Karst BR (Slovenia)

At present, the Karst BR still encompasses the Škocjan Caves Regional Park with its core and buffer areas, as well as the remaining part of the Divača Municipality, which is included as a transitional area. However, the zoning will be revised in the near future. The Škocjan Caves are designated both as a World Heritage site and a Ramsar Wetland of International Importance.

The specific underground ecosystems, typical of the Karst, are well known for their geomorphological, geological, and hydrological formations that are due to the limestone bedrock. The latter is the main reason for the constant lack of running surface water in the Karst and the creation of conditions for cave formation. The Škocjan Caves are composed of a system of eleven interconnected underground caves, flat-floored valleys extending over collapsed dolines, natural bridges and sinkholes. They are adorned with stalactites, stone curtains and broad rimstone pools. This site is the reference for all Karst studies worldwide.

The diversity of plant and animal species and their habitats is an important asset of the Karst BR. In particular, the dry Karst meadows, wet grasslands along watercourses and extensive forests are home to many rare and endangered species of flora and fauna. Caves are a special habitat where researchers have discovered many endemic animal species, including the iconic cave salamander (*Proteus anguinus*). The hard-to-reach and relatively undisturbed forests also provide a habitat for three of the largest predators, the bear (*Ursus arctos*), the wolf (*Canis lupus*) and the lynx (*Lynx lynx*). The BR is home to 27 of Slovenia's 31 known bat species.

The area has a rich cultural heritage with many archaeological, ethnological and historical monuments and traces of the tradition of milling and sawmilling. Local people are encouraged to use old organic farming techniques, especially in food production, with emphasis on apple and honey production and sheep breeding.

Key data

Year of nomination: 2004

Total population 12,492

Surface 59,778 ha

Preservation and popularisation of Karst dry stone walling

This outstanding example of the transfer of traditional knowledge to the present time is dedicated to the protection and preservation of the dry stone architecture characteristic of the classic Karst. By caring for the Karst landscape over the centuries, the locals have maintained the dry Karst meadows, edged with dry-stone walls, as well as multiple ponds, whereas in the hilly areas terraced orchards featuring high trees are still cultivated.

Visitors to the Karst region notice the multitude of dry stone walls separating the fields, meadows and pastures and, many times, also edging the forest paths. These proportionately structured and very solid walls create unique patterns in nature and are a wonderful

peculiarity of the Karst cultural landscape. The reason for this construction is simple: The Karst landscapes are quite stony. To be able to raise livestock and cultivate crops, people first had to remove all the stones from the agricultural land and pastures. These stones were an important building material in the Karst for a long time. Over the millennia, the Karst inhabitants have perfected their building skills without the use of binding agents. By collecting the available local stones that were removed from the farmland and through good knowledge of stone stacking techniques, people created various types of buildings from solid stone.



Fig. 5: A typical stone shelter (Stršinkov hiška) built in a pile of small stones (griza). Photo credits: Eda Belingar

For example, shepherd's corbelled huts were also built, true architectural masterpieces, made of stone without using any binding or other materials (Fig. 5). Nevertheless, these huts have solid walls and roofs, and in the past offered shelter to shepherds, farmers and stone-cutters. Most of these huts were built on the pastures, which is why they are now named shepherds' corbelled huts. Similar dry-stone wall huts were also made in other areas in Europe, especially in the Mediterranean, as nature provided plenty of stone. Today, about 400 dry-stone huts are preserved in the classic Karst, most being built in the second half of the 19th and first half of the 20th centuries.

By caring for the Karst landscape over the centuries, the locals have maintained the dry Karst meadows, edged with dry-stone walls, as well as multiple ponds, whereas in the hilly areas terraced orchards featuring high trees are still cultivated. The stone and the art of dry stone walling therefore make the cultural landscape of the Karst so distinctive.

For this reason, the BR management decided to launch an initiative to preserve the dry stone wall construction method. In 2015, on the occasion of the 10th anniversary of the establishment of the BR, these activities were extended cross-border to Italy to promote this unique example of the coexistence of man and nature.



Fig. 6: Completion of the renovation of a demolished stone shelter (hiška). Photo credits: Darja Kranjc

For this purpose, a consortium consisting of several scientific, research and educational institutions, municipalities, civil society groups, architectural studios and other stakeholders (also from Italy) was established in 2015. The cross-border partnership between Slovenia and Italy, currently consisting of 70 members and 2 allies, was established as an informal non-profit association of organizations and individuals committed to actively promote, research, protect, preserve drystone walling and take care of the passing on the traditional knowledge and skills of the cross-border Karst region to the next generation of the area as well as share professional information on the subject (Fig. 6). In addition to the cross-border Karst area, the partnership is expanding its cooperation with organizations, associations and clubs with similar activities in other BRs such as Ordino BR (Andorra) and Wienerwald BR (Austria).

The BR management was actively involved in Slovenia's joint work with Andorra, Austria, Belgium, Croatia, Cyprus, France, Greece, Italy, Ireland, Luxembourg, Spain, Switzerland on the nomination of „Art of dry stone construction, knowledge and techniques“ for inclusion in UNESCO's Representative List of the Intangible Cultural Heritage of Humanity, which was approved in November 2018 and extended in December 2024. In March 2025, the Consortium for Dry Stone Walls was honoured by the Slovenian Minister of Culture for its outstanding achievements in the preservation of cultural heritage on the 10th anniversary of its foundation.

Conclusions:

By caring for the Karst landscape over the centuries, the locals have maintained the dry Karst meadows, edged with dry-stone walls, as well as multiple ponds, whereas in the hilly areas terraced orchards featuring high trees are still cultivated. This successful, now cross-border initiative not only preserves the skills, know-how and techniques of dry stone wall construction, but also the character of the cultural landscape in BR for future generations.

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Großes Walsertal BR (Austria)

Six villages within a single alpine valley form the Großes Walsertal BR, situated in the western part of Austria. The valley is a prime example of a living cultural landscape, where, since its occupation by the Walser people in the 13th and 14th centuries, a system of highly adapted mountain farming, pasture and extensive forestry has been developed.

The Große Walsertal is a steep notch valley with a sparse valley floor, the altitude ranges from 580 to 2,704 m above sea level. Due to its geological and morphological variety with Forests, meadows, ravines, springs, streams, hills, cliffs, mountain tops, alps and karst formations the entire valley is a single huge biotope rich in flora and fauna. In the Gadental core zone, for example, there are eight completely different types of forest within just four kilometers.

In the BR, great importance is attached to nature-friendly agriculture with dairy farming and livestock breeding. Around 40% of all farms are organic.

Key data

Year of nomination: 2000

Total population 3,415

Surface 19,200 ha

Traditional knowledge as the basis for innovative entrepreneurial ideas

Over the centuries, a system of highly adapted mountain farming, pasture farming and extensive forestry have developed in this mountain valley. As livestock farming was the most important source of income for centuries, species-rich meadows and pastures characterize the landscape of the valley. The inventive population is used to developing innovative ideas to generate income from local resources in a sustainable way so that they can continue to live in the valley.

Since the foundation of the BR, people in the region have repeatedly succeeded in living, appreciating and preserving the tradition of land use through various measures, at the same time using it as a source of inspiration for sustainable development. Four projects, all of which are very closely related to the landscape, nature and traditional knowledge about the use of resources, will be presented here.

One success story of this region is the founding of the “Walserstolz” cheese brand. Typical of the region are the many high-altitude alpine dairies, which are difficult to manage and have considerably higher production costs compared to their competitors. In the 1970s and 1980s, the situation was exacerbated by low milk prices, so there was a risk that many of these small farms would be abandoned. In 1998, a cooperation between farmers and dairies from the valley and a large cheese producer from outside the valley (Emmi Österreich Company) led to the creation of the common regional brand "Walserstolz", under which three alpine dairies now produce high-quality mountain cheese from silage-free hay milk. The construction of a

modern cooperative dairy in the village of Sonntag has greatly facilitated independent milk processing, with milk being bought at a reasonable price, and ensuring lower production costs and thus higher added value. The involvement of a larger company (Emmi Österreich GmbH) increased the supra-regional sales opportunities, such that many products have been available throughout Austria for a number of years. This has also increased the level of awareness of the BR throughout Austria. As a result, both jobs and traditional agricultural practices have been preserved. Traditionally, the summer months in the high alpine pastures play a major role in mountain farming (Fig. 7). In the BR, 47 such pastures are currently being farmed, and on 20 of these the milk is transformed into various products directly on site during the summer.

Another project is the herbal initiative *Alchemilla*, founded in 2006 by women who love and are knowledgeable about herbs, which aims to impart herbal knowledge and the special value of the region's plant diversity. The members of the initiative offer seminars on local herbal knowledge that has been handed down over centuries and convey the sensitive interactions between man and nature during herbal walks. The women also produce high-quality handcrafted products made from local herbs and raw materials, including body-care products and culinary delicacies such as herbal tea, herbal syrups and wild herbal salt.



Fig. 7: Dairy cows on a high alpine pasture in the Großes Walsertal BR. Photo credits: Thomas Schwarz

Another project related to the species richness of the meadows and pastures in the valley is the “Bergtee” (Mountain Tea) project. This successful project creates awareness of the abundance of herbs in nature and in the herb garden and refines this treasure into herbal mountain tea. As the collectors emphasize, this is not a product, but a story. The aim is to consciously pass on the knowledge of the power of plants from generation to generation. The mountain tea is offered alongside other regional products in numerous BR businesses, which

are certified according to criteria developed in a broad participatory process and are important multipliers of the BR concept for the BR Management.

The “Bergholz” (Mountain timber) project is a successful initiative aimed at utilizing the timber available in the valley. In addition to meadows and pastures, forests play a major role in the BR region. They fulfil an important function for the villages and settlements, especially as protective forests on steep slopes. As a special natural feature, there are around 80 different types of forest in the BR, which contribute significantly to biodiversity. The forest also provides an important resource in the form of timber, which has a significant influence on architecture, craftsmanship and heating. From traditional building culture to modern architecture, timber is one of the most important building materials in the valley.

The “Mountain Wood Project” was created in 2000 on the initiative of a carpenter, a joiner, a sawmill and a forestry company at a time when timber (especially that of the fir tree, which is common in the protection forests) had a low market value. A concept was developed to harvest high quality local mountain timber, use it ecologically, process it into high-quality end products in the valley and market it themselves. In this way, it has been possible to close the production chain from the mountain forest to the finished timber construction (e.g. award-winning eco timber houses), which has greatly improved the added value. Today, all municipalities in the valley and 15 craft businesses are involved in this project.

In addition to its economic relevance for the businesses, this project also has great social significance for the entire valley. It not only secures the existence of the businesses but also keeps qualified jobs in the valley and even creates new ones. In addition, the maintenance of the mountain forests will be continued, thus ensuring the functionality of the protective forest.

Conclusions:

These successful examples from the BR Großes Walsertal show how innovative ideas can be used to establish regional production cycles and ensure the continued existence of traditional extensive mountain farming in the region. The local added value creates jobs in the region and thus secures the living space for future generations. In addition, the use of regional crops also contributes to the preservation of traditional food, drinks and customs, which in turn encourages production of the traditional crops. This ensures the transfer of traditional knowledge in relation to the natural environment as well as agriculture and forestry.

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Dolni Morava BR (Czech Republic)

The Dolni Morava (Lower Morava) Biosphere Reserve (DMBR) is located in the southeast corner of the Czech Republic next to the borders with Austria and Slovakia. Covering nearly 350 km², the area includes sites of great natural and cultural value, and of national and international importance. Among the sites are numerous protected areas such as Special Protection Areas and Special Areas of Conservation (Natura 2000 network categories), two Ramsar sites (Wetlands of International Importance) and the Lednice-Valtice Cultural Landscape World Heritage Site. The whole region is known for its rich folklore traditions, wine production and intensive agriculture.

The area is unique in being located on the borders of two European bio-geographic provinces: Central- European broad-leaved forests and Pannonian steppes. The diverse habitats include outcrops of the outer Western Carpathians, which form calcareous cliffs and karst that host several rare plant species. Caves present some of the most important hibernacula for bats within the Czech Republic. Other habitats include primary and secondary dry grasslands, and thermophilous oak forests. Very rich in biodiversity are hard-wood and soft-wood floodplain forests, while floodplain meadows have an abundance of unique plants. The landscape mosaic also includes fishponds and other standing water habitats, rivers, saline meadows and marshlands and vineyards and other agricultural land.

The local people mainly work in agriculture, viticulture, fish farming, forestry and small-scale industry. However, tourism and leisure activities have increasingly become an alternative source of income.

Key data

Year of nomination: 1986 (extended 2003)

Total population 20,513

Surface 34,930 ha

Stakeholder-based governance structure of the Dolni Morava BR

The Dolni Morava BR is the most recent and the smallest of the six Czech BRs, and the only one not situated completely within a National Park or Protected Landscape Area.

The DMBR Management strives to combine various protection goals with sustainable development. Over the last two decades the BR Management has successfully implemented many projects. It initiated and managed some of these and was actively involved in other cooperative initiatives. These included numerous research projects in the BR region, but also abroad, as well as active participation in partnerships within and outside the region, international cooperation and very active engagement in the international MAB Programme. In the region, BR management has played an important role in sensitizing the younger generation to pressing nature conservation, communal and social issues.

The BR's current, highly successful administrative structure has a history that must be briefly outlined here.

In 2002, the Ministry of the Environment submitted a proposal to UNESCO to enlarge the area of the existing Palava Biosphere Reserve (established 1986). This proposal stipulated that the management of the area would be the sole responsibility of the nature conservation authorities. The proposal, which was prepared without the involvement of key local stakeholders such as the state-owned Forests of the Czech Republic, one of the most important stakeholders in the region, or of other key important stakeholders representing businesses and the farming community. The proposal was promptly rejected by the International Coordinating Council of the UNESCO's MAB Programme (MAB-ICC).

The stakeholders not included in the original proposal subsequently prepared their own proposal, which involved a much larger area than originally anticipated by the authorities. They proposed a form of site management that involved direct participation, and in which nature conservation authorities would be just one of many stakeholders. This proposal, supported by the Czech Ministry of the Environment, was accepted by the MAB-ICC in 2003. The original BR grew from 83 km² to 349 km², the enlarged site received a new name of DMBR, and the administrative body took the form of an NGO - a Public Benefit Company.

The DMBR operates on the principle that its management should be essentially a 'treaty' between local communities and society as a whole. The BR takes care of the area in line with popular demand that follows the MAB philosophy. The governance approach involves direct equal participation from local communities, government authorities, business representatives, the NGO sector, and a scientific panel.

The governance structure is embodied in the DMBR Public Benefit Company, which was established as the BR's administrative organization in August 2004 (Fig. 8). The current founding entities are Forests of the Czech Republic (a state enterprise), MND (Moravian oil-drilling company), and the Breclav County Chamber of Commerce. One of the original founders was the Ministry of the Environment, which withdrew from its founder status and all positions in the BR bodies in 2012 due to potential conflicts of interest and the Czech Union for Nature Conservation, an environmental civic association, that waived its founding status in 2022.

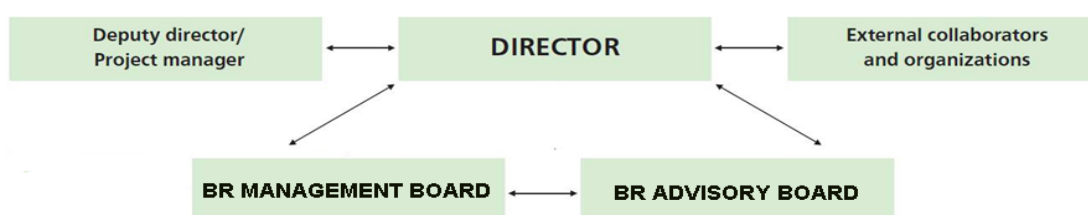


Fig. 8: The governance structure of the DMBR

The Ministry's cooperation with the BR now takes the form of an informal partnership, and the BR's Management Board has created a permanent guest position for representatives of nature conservation authorities.

The management structure is based on the broad participation of major stakeholders in the DMBR. The Public Benefit Company's administrative bodies include the Management Board, Advisory Board, and Director. This structure ensures broad participation from major stakeholders in the DMBR. The eight-member BR management board comprises representatives from the founding entities, three representatives elected by the communities of the three regions covered by the BR, one representative elected by the farming community, and one from Mendel University in Brno, who also serves as the primary scientific consultant for the DMBR. The Management Board is responsible for providing core funding to the BR.

The Advisory Board is a five-member supervisory body, including founders' representatives, one member representing all the communities within the BR, and one from Mendel University.

The Director is a statutory authority, leading the BR implementation team. The total staff consists of 2-3 full-time employees who handle overall coordination, BR administration, projects, communication, and partly fundraising.

The management bodies meet every three months or more frequently if necessary. Funding is primarily sourced from stakeholder donations, the activities of the BR, and various projects.

Conclusions:

The DMBR has become a sought-after partner at local and international level. The staff and partners have proven that BRs can be active agents in nature and landscape conservation as well as in the process of finding the limits of the sustainable use of natural resources. The BR was developed thanks to understanding that participation in the UNESCO MAB Programme does not depend on authoritative power wielded by civil servants or their seals of approval.

The DMBR illustrates that, for a BR to be regarded as offering a meaningful participatory landscape management tool, its philosophy must be grounded in the equality of stakeholders, mutual respect, a willingness to learn, acceptance of responsibility for the environment and human well-being, and a shared determination to address problems collaboratively. Only under these conditions can a BR function as a genuine "Sustainable Development Agency."

In 2014, the MAB-ICC recommended using the DMBR as a model for a stakeholder-based management structure within UNESCO's World Network of BRs.

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The network of 55 Spanish BRs (Spain)

Spain is the country with the highest number of BRs the world. The first two BRs in Spain were designated in 1977 with the “Ordesa” and “Grazalema” regions. With the BRs “Val d’Aran” and “Irati” approved in 2025, Spain has a total of 55 BRs. In addition, there are four cross-border BRs: three with Portugal and one intercontinental with Morocco. In total, the BRs account for more than 13% of the national territory and are home to around 2.3 million people.

„Spanish Biosphere Reserves Brand“ for BR products and services

In 2016, the National Parks Autonomous Agency (OAPN) together with the Board of Directors of the Spanish Committee of the MAB Programme created the “Spanish Biosphere Reserves Brand” (Reservas de la Biosfera Españolas RBBE) for products and services, aiming at promoting the concept of BRs and supporting the sustainable economic development of the BRs in the network (Fig. 9). The application of the brand is governed by a Royal Decree (RD), which regulates the licence to use the RBBE brand, RD 1022/2022 is currently in force.

The brand is conceived with the idea of highlighting and differentiating those artisanal and natural products from the territories recognized as BRs, as well as the products made and services of the local municipalities that contribute to fulfilling the basic functions (conservation, development and logistical support) of the BR, always in accordance with the management plan of the corresponding BR, thus respecting the singularities of each of them.



Fig. 9: The “Reservas de la Biosfera Españolas” logo

The aim is to promote the BR concept, distinguishing those products and services from their territories as long as they contribute to fulfilling the BR’s basic functions.

Further goals of the RBBE brand are to strengthen the integrated action of public and private actors to mutually support the concept of BRs and to provide a tool to showcase the commitment of productive actors to the objectives of the BR.

Numerous measures are taken to promote the brand, such as advertising via various media (trade fairs, social networks), posters, products to increase the visibility and dissemination of the brand (seminars/conferences). In addition, a new website is being created that advertises products and links to the manufacturer's web shop.

BRs that want their tourism products or services to carry the "Spanish Biosphere Reserves" label must have:

- A functioning management body.
- A valid management plan.
- A proprietary branding system for tourism products and services.
- A system for controlling and monitoring their own brand.

For obtaining a license to use the RRBE brand applicants require to have applied the requirements and to be adhered to solvent certifications of tourist services, environmentally sustainable and that recognise the objectives of the BR and the MAB Programme of UNESCO, such as the own marks of the BR, the system of requirements of the Spanish Biosphere Reserves Tourism Product, or to be adhered to the System of Recognition of Sustainability of Nature Tourism in the Natura 2000 Network, or in possession of the European Charter for Sustainable Tourism.



Fig. 10: The RRBE brand certificate

At present, more than 60 licenses are granted under the RRBE brand (Fig. 10).

The brand offers a range of benefits to producers and brand owners:

- Visibility and Recognition: Being a member of the BR network offers a competitive advantage, as products and services are differentiated from competing products on the market.
- Access to New Markets: The brand facilitates entry into markets interested in sustainable high-quality products, both at national and international level.
- Support and Training: The BRs and OAPN offer technical support and training to local producers and entrepreneurs to improve their production and working practices and adapt them in line with sustainability standards.

Conclusions:

The presence of the logo on products and services symbolizes the connection between nature and humans, and its use is regulated to ensure that it is only associated with products and services that respect the values of the BR network.

The logo guarantees the consumers an outstanding product quality. It is easy to imagine that this brand is not only a great honour for the BR products and services that bear it but also gives them an enormous competitive advantage over other products. The outstanding feature that makes this brand of products and services unique is that it is a national quality mark for products and services that contribute to the sustainable development of BRs.

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“Biosphere for Baltic” - network of BRs in the Baltic region

Biosphere for Baltic provides a unique opportunity for BRs in the Baltic Sea Region to network and share experiences and results from local initiatives and projects and to find new areas for collaboration. The aim of this network is to facilitate learning and disseminate good practices from BRs in the Baltic Sea region, within and beyond the network of BRs. Also, to highlight the contribution of biosphere reserves to the UN Sustainable Development Goals and the 2030 Agenda.

Eleven BRs from eight countries are members of the network:

- Møn BR (Denmark)
- West Estonian Archipelago BR (Estonia)
- Archipelago Sea Area BR (Finland)
- Southeast Rügen BR (Germany)
- North Vidzeme BR (Latvia)
- Žuvinto BR (Lithuania)
- Słowiński BR (Poland)
- Kristianstads Vattenrike BR (Sweden)
- Nedre Dalälven BR (Sweden)
- Blekinge Archipelago BR (Sweden)
- Vindelälven-Juhtatahka BR (Sweden)

Supported by Nature - nature based solution learning sites for a sustainable Baltic Sea

The project “Supported by Nature” is a joint outcome of *Biosphere for Baltic*, a network of BRs in the Baltic region.

The Baltic Sea region has significant natural and cultural value and is of strategic importance for the economy and cooperation between the countries in the region and beyond. However, the Baltic Sea is one of the most polluted and heavily trafficked water bodies in the world and faces complex environmental challenges. The unique characteristics of the Baltic Sea make it extremely sensitive and vulnerable. Almost 90 million people live in the area, and the way they live and operate has a profound impact on the Baltic Sea. The network partners have identified Nature-Based Solutions (NBS) as a suitable instrument of preserving this valuable cultural and living space and submitted an EU Interreg project application for this in 2022, which was granted € 4,5 million.

The aim of the project “Supported by Nature” is to increase the understanding of Nature Based Solutions and their contribution to improving environmental conditions in the Baltic Sea. The long-term goal is that this increased knowledge will lead to more frequent and effective use of NBS in planning processes, as well as in land and seascape management.

The project brings together 12 partners from six Baltic states (Denmark, Estonia, Finland, Germany, Poland, Sweden). The cooperation includes six BRs and two Universities from across the Baltic Sea Region, as these institutions are dedicated to developing sustainable solutions (Fig. 11).

Project partners are

- Estonian University of Life Sciences (Estonia)
- Kristianstad Municipality - Kristianstads Vattenrike BR (Sweden)
- Marine Education Center (Sweden)
- Nedre Dalälven BR (Sweden)
- Ronneby Municipality (lead partner) – Blekinge Archipelago BR (Sweden)
- Słowiński BR (Poland)
- Southeast Rügen BR (Germany)
- Turku University of Applied Sciences – Archipelago Sea Area BR (Finland)
- Vordingborg Municipality - Møn BR (Denmark)



Fig. 11: Learning sites for the Interreg project Supported by Nature, with different focus and participating BRs (including one aspiring BR).

The project partners engage a wide range of local stakeholders to enhance sustainability and increase ocean literacy, though they require demonstration areas and opportunities for knowledge generation.

To achieve the project goals, 17 NBS learning sites for local authorities and education- and research institutions are being developed to present best practices. Special focus is on multifunctional wetlands, coastal water habitats, and watercourse restoration.

The project deals on the one hand, on methods of establishing NBS Learning Sites through collaborative multi-stakeholder approaches (“learning by doing”) and on the other hand with methods to increase understanding of NBS through activities at Learning Sites (“learning by experiencing”). The development of learning sites involves stakeholders who actively participate in and influence the establishing process, e.g. municipal technical staff, University programmes focused on landscape approaches, students, NGOs, and interest groups. To increase understanding of NBS, activities will be organized at the learning sites once they are completed.

Conclusions:

This project is an excellent example of how a BR network can work together to develop an idea for its region and achieve the approval of a prestigious and well-funded EU Interreg project for the benefit of the environment, the region and its people. As the end users of the project results, the BRs ensure the long-term sustainability of the project.

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Appennino Tosco-Emiliano BR (Italy)

The Biosphere Reserve is situated in the Tuscany and Emilia-Romagna regions of north-central Italy, encompassing 80 municipalities across five provinces: Parma, Reggio Emilia and Modena in Emilia-Romagna, and Lucca and Massa Carrara in Tuscany. It covers the Tuscan-Emilian Apennine ridge from Passo della Cisa to Passo delle Forbici, which forms the geographical and climatic boundary between continental and Mediterranean Europe.

The area hosts nearly 70% of all species found in Italy, including 122 species of birds, amphibians, reptiles, mammals and fish, along with at least 260 aquatic and terrestrial plant species. Agriculture serves as the primary economic activity, while tourism and recreational activities also contribute significantly to the local economy. The permanent population includes 1,300 inhabitants in the buffer zone and 100,000 in the transition area, with an additional 68,500 seasonal visitors and second-home owners.

Key data

Year of nomination: 2015 (expanded 2021)

Total population 380,000

Surface 498,613 ha

SUSTAINABILITY CREDITS – A Pioneering Corporate Social Responsibility Project to mitigate climate change

The effects of climate change on forests are becoming increasingly dramatic. More than ever, forests need human support to withstand rising temperatures, drought, extreme weather events, and forest pests. At the same time, humans depend on forests more than ever to combat climate change.

Within the territory of the Appennino Tosco-Emiliano BR there are 250.000 hectares of forests that are home to about 500 million trees. These forests consist primarily of downy oak, turkey oak, black hornbeam, ash, beech, white spruce, and centuries-old chestnut trees, many of which possess significant natural and cultural-historical value and thus should be protected. Forests managed according to responsibilities and strict sustainability criteria are able to provide humans with a high number of ecosystem services, e.g. material and intangible benefits such as support for life, procurement, regulation and culture.

The Tuscan-Emilian Apennines National Park, which manages the BR, has developed an innovative sustainable forest management system called Sustainability Credits (Crediti di Sostenibilità) in collaboration with local forest managers. This voluntary certification system incentivizes businesses, farms and communities to adopt eco-friendly practices while supporting local economic resilience. The project represents a new, more sustainable forest management method that protects forests from the effects of climate change and enables

them to absorb CO₂, compensate for hydrogeological instabilities, create beauty and recreation and provide a home for hundreds of animal and plant species.

The Sustainability Credits System

This market-based mechanism rewards sustainable actions with tradable credits. Inspired by carbon offset systems, it quantifies and certifies sustainability efforts, creating a circular economy within the reserve. Key stakeholders include farmers, tourism operators, artisans and public institutions, all contributing to the region's ecological and socio-economic goals.

The credits assign market value to ecosystem services from certified sources in the BR, with one ton of absorbed CO₂ equivalent serving as the primary quantitative indicator. The credits result from rigorous quantification, evaluation and certification of sustainable forest management's positive impacts on ecosystem services provided by the forests belonging to the Tuscan-Emilian Apennine Forest Certification Group for the benefit of the community.

The Forest Certification Group

Established in 2022, this group currently comprises 34 members managing nearly 30,000 hectares within the BR. Currently the Group, coordinated by the Tuscan-Emilian Apennines National Park, includes:

- 40.8% regional state forests
- 34.6% collectively owned forests (Civic Uses or Social Heritage)
- 21.3% provincial or municipal forests
- 3.3% company and private citizen consortium forests

The sustainability credits are generated exclusively through the use of specific management solutions that go beyond traditional practices and exclusively in forests that are certified according to the *Forest Stewardship Council (FSC)* and the *Programme for Endorsement of Forest Certification (PEFC)* schemes.

Management options that can currently be used by the Group members to generate Sustainability Credits in certified forests include:

- increasing in biomass in the forest
- extending minimum rotation periods of coppice forests
- converting coppice to high stem
- post-disaster reforestation
- afforestation/reforestation activities
- fire risk reduction
- biotic damage protection

Some of the management actions to demonstrate a positive impact on the quality of ecosystem services generated by the forests include:

- tree forestry, creating dendro-microhabitats that favour saproxylic insects, birds, micromammals and amphibians)
- activities to protect forest renewal
- naturalization of the structure and composition of the forest
- creation of ecological corridors to increase ecological connectivity
- soil and water conservation engineering
- lentic water (lakes/ponds) and peat bog maintenance/restoration
- pollinator support initiatives (realisation of green infrastructures, installation of shelters and breeding nests)
- habitat conservation research and monitoring
- promotion, improvement and rationalization of the use of certified forests and cultural/recreational activities

Goals

The overall aim of the project is to help increase the climate resistance of forests within BR in an attempt to minimize the negative effects of climate change to enable future generations to continue to benefit from their important ecosystem services. The main objectives are to

- promote Sustainable Forest Management over wide areas in order to enhance biodiversity and climate adaptation
- improve climate change mitigation action through increased carbon storage and CO₂ absorption
- provide companies (not only within the BR boundaries) with a rigorous, transparent tool to offset unavoidable environmental impacts and to demonstrate their climate and social commitment and to affirm their engagement in climate change mitigation.

Sustainability credit calculation and purchase

Sustainability Credits are calculated based on additional CO₂ absorption compared to standard regional forest management. The scientifically validated methodology was developed with universities and research institutes.

The Tuscan-Emilian Apennine National Park exclusively sells Sustainability Credits to companies demonstrating serious commitment to sustainable development:

1 Sustainability Credit (corresponds to 1 ton of CO₂ absorbed) and costs € 33 + VAT 22%. A minimum purchase of 30 credits is required.



Fig. 12: Scheme of the procedure and timeline for the acquisition and use of sustainability credits.

Benefits for companies are:

- strengthen corporate social responsibility
- offset CO₂ emissions related to its own organization or product/service (also for the purposes of UNI ISO 14064 and 14067 certifications)

Since the first sale of Sustainability credits in 2023, 9725 certificates have been purchased by 43 companies to date (Fig. 12). In 2024, sustainable management of 28,869 hectares of certified forests increased annual CO₂ storage by 17,428 tons. Since the start of the project, the sale of certificates to Italian companies has raised more than € 300,000, all of which has been used for sustainable forest management in the BR.

Conclusions:

The Sustainability Credits system offers exceptional credibility, fairness and transparency, adhering to international principles with scientific monitoring. Independent experts verify ecosystem services, which are documented in an online register that can be reviewed on the platform's website. This initiative successfully promotes sustainable forest management across extensive areas, enhancing ecosystem services including climate change mitigation through carbon storage. As traditional methods have proven inadequate against modern challenges like drought, pests and fire risk, this transition to sustainable management arrives at a critical time.

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UNESCO 2025. WNBR Website <https://www.unesco.org/en/mab/appennino-tosco-emiliano> (accessed 08/05/2025).

Niagara Escarpment Biosphere Reserve (Canada)

The Niagara Escarpment Biosphere represents a 725 km long stretch of forested land in south-central Ontario which includes two major biomes, boreal needleleaf forests and temperate broadleaf forests.

The BR includes the greatest topographic variability in southern Ontario, with habitats ranging over more than 430 m in elevations and including Great Lakes coastlines, cliff edges, talus slopes, wetlands, woodlands, limestone alvar pavements, oak savannahs and conifer swamps. These habitats collectively boast the highest level of species diversity among Canadian BRs, including more than 300 bird species, 55 mammals, 36 reptiles and amphibians, 90 fish and 100 varieties of special interest flora.

The BR is one of Ontario's most scenic landscapes and offers a mix of both natural and urban environments. The main goals of the BR are to preserve the region's ecological diversity, to encourage stakeholders to use sustainable practices, and to uphold socio-cultural relationships through educational programmes and tourism.

Key data

Year of nomination: 1990

Total population 200,000

Surface 194,555 ha

Two-Eyed Seeing: Bridging Indigenous and Western Knowledge Systems for Holistic Conservation

Beyond its ecological significance, the Niagara Escarpment holds profound cultural value as it traverses traditional territories of the Anishinaabe and Haudenosaunee Nations, containing numerous sacred sites and areas of spiritual importance that have been central to Indigenous ways of life for countless generations.

Recognizing the need to honour both these natural and cultural dimensions, the BR Management seeks to better incorporate Indigenous knowledge better into the Management of the BR.

The *Two-Eyed Seeing* (Etuaptmumk in Mi'kmaw) project, conceptualized by the two Indigenous Elders Elders Albert and Mudena Marshall as an innovative approach to environmental stewardship that intentionally weaves together Indigenous Traditional Ecological Knowledge (TEK), accumulated through generations of intimate relationship with the land, with Western scientific methodologies, with the specific aim of enhancing conservation outcomes and sustainable management practices within the ecologically and culturally significant Niagara Escarpment BR which holds profound spiritual and practical importance for Indigenous peoples who have inhabited and cared for this territory since time immemorial.

Project partners are the BR Management, Indigenous communities (with particular involvement of Anishinaabe and Haudenosaunee nations), academic institutions, and local non-governmental organizations.

Objectives

The project established four primary objectives:

1. to create meaningful pathways for integrating Indigenous wisdom systems, including oral tradition-based ecological understanding and traditional land management practices, with Western scientific approaches to strengthen biodiversity conservation efforts;
2. to actively support Indigenous communities in their efforts to revitalize, preserve, and intergenerationally transmit their traditional knowledge systems;
3. to develop and implement collaborative governance models that ensure Indigenous leadership and equitable participation in decision-making processes related to the biosphere reserve's management, and
4. to design and deliver comprehensive educational programming that would effectively communicate the principles and benefits of *Two-Eyed Seeing* to diverse audiences through workshops, youth engagement initiatives, and the development of interpretive resources.

Implementation and Key Activities

The project's implementation involved multiple interconnected components, such as

- land-based learning programmes where Indigenous Elders and knowledge holders conducted immersive educational experiences such as guided walks through significant ecological areas to demonstrate traditional uses of medicinal plants, sustainable harvesting techniques, and the importance of understanding seasonal cycles in ecosystem management.
- collaborative research initiatives that brought together Indigenous knowledge keepers and Western scientists to jointly study species of conservation concern, such as white cedar populations and culturally important medicinal plants, using methodologies that respected both knowledge systems.
- policy advocacy efforts that successfully influenced BR management plans to incorporate Indigenous perspectives, particularly in the designation of protected areas that aligned with culturally significant sites, and
- creative knowledge-sharing projects including the production of community murals, documentary films, and digital archives that served to document and broadly disseminate Indigenous narratives and relationships with the BR landscape.

Challenges, outcomes and Impacts

The project achieved significant outcomes including the strengthening of trust-based relationships between Indigenous communities and the BR management. The tangible improvement of conservation strategies through the incorporation of Indigenous knowledge,

such as the use of culturally informed prescribed burning techniques that successfully restored degraded oak savanna ecosystems; the successful engagement of Indigenous youth through mentorship programmes that increased participation in environmental stewardship activities; and perhaps most importantly, the establishment of a replicable model for *Two-Eyed Seeing* application that has since inspired similar approaches in other Canadian BRs.

Challenges in the implementation of the project included ongoing concerns regarding the protection of Indigenous peoples' intellectual property rights in relation to traditional knowledge. In addition, the persistent power imbalance in the partnership structures needs to be addressed to create a truly equitable framework for cooperation between project partners from different cultural traditions.

Conclusions

The Two-Eyed Seeing project is a compelling example of how BRs can act as living laboratories for reconciliation and innovative conservation practices, successfully reconciling indigenous and Western knowledge systems to achieve enhanced protection of both cultural heritage and biodiversity, while their participatory, community-driven approach offers a transferable concept for inclusive environmental governance that respects different forms of knowledge and could be adapted to different contexts worldwide.

References used:

BR Niagara Escarpment 2025. Homepage of the „Niagara Escarpment Biosphere Network“, <https://nebnetwork.org/> (accessed 08/05/2025).

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“Appennino Tosco Emiliano”, “Po Grande” and “Po Delta” BRs (Italy)

The three Italian BRs “Appennino Tosco-Emiliano”, “Po Grande”, and “Po Delta” are all situated in northern Italy, forming a natural corridor that extends from the Apennine Mountains to the Adriatic Sea. They are connected by the Po River basin, which serves as a unifying geographical and ecological feature. This landscape transitions from mountainous and forested areas in the Apennines, through the agricultural lowlands of the Po Valley, to the wetlands and coastal ecosystems of the Po Delta. Together, they represent a continuum of diverse habitats and land uses that reflect the strong interdependence between nature and human activity (Fig. 13).



Fig. 13: BRs in Italy (in blue: the BRs included in the project)

“School & Biosphere” (Scuola & Biosfera)

The "School&Biosphere" project, coordinated by Italy's Emilia-Romagna Region, promotes educational trips for primary and secondary schools to three UNESCO Biosphere Reserves “Appennino Tosco-Emiliano”, “Po Grande”, and “Po Delta”. These regions are areas of great naturalistic value, real treasure-troves of biodiversity, but also sites to promote new models of sustainable development together with their local communities. The initiative aims to foster environmental and sustainability education through immersive, hands-on experiential learning in these ecologically and culturally significant landscapes.

The catalogue enables teachers to design tailored excursions that include guided visits to natural reserves, archaeological sites, museums, and monuments, as well as interactive workshops, meetings with local experts, and in-depth explorations of sustainability initiatives, all structured to align with different educational levels and regional focuses.

The key feature of the project is a comprehensive catalogue of 245 curated “experiences”, developed through collaboration with diverse stakeholders involved in environmental and sustainability education across the three BRs. This collection of “experiences” is meant to bring students closer to the main values and benefits that were decisive for the recognition of these sites as UNESCO BRs. The experiences presented in the catalogue cover both the scientific and historical-cultural fields and offer encounters with the main themes of the local community.

This catalogue empowers teachers to design tailored excursions that encompass guided visits to natural reserves, archaeological sites, museums, and monuments, along with interactive workshops, meetings with local experts, and in-depth explorations of sustainability initiatives, all aligned with various educational levels and regional focuses (Fig. 14).

The catalogue is divided into three dossiers, each one dedicated to a different school order and grade (primary school, 1st grade secondary school and 2nd grade secondary school), within which it is possible to consult schedules subdivided by the BR of interest and type of activity:

Primary school: 87 experiences

(43 in the Tuscan-Emilian Apennines BR, 25 in the Po Grande BR, 19 in the Po Delta BR)

Secondary school 1st grade: 92 experiences

(47 in the Tuscan-Emilian Apennines BR, 25 in Po Grande BR, 20 in the Po Delta BR)

Secondary school 2nd grade: 66 experiences

(38 in the Tuscan-Emilian Apennines BR, 16 in the Po Grande BR, 1 in the Po Delta BR)



Fig. 14: Front cover of the Catalogue for Primary Schools

By exposing students to the unique natural and cultural heritage of these UNESCO-designated sites, the initiative not only deepens their understanding of biodiversity and sustainable development but also strengthens collaboration among local stakeholders, including park authorities, educators, and community representatives, ensuring a multidisciplinary approach to environmental learning.

In order to encourage educational trips and exchanges between students living in these territories, the Emilia-Romagna Region allocated specific funding for its schools, to support travel expenses.

The catalogues are available online at <https://ambiente.regione.emilia-romagna.it/it/parchi-natura2000/aree-protette/riconoscimenti-unesco/programma-mab/scuola-biosfera>.

Conclusions:

The School & Biosphere catalogue serves as a dynamic resource for educators and a model for similar initiatives across UNESCO sites, reflecting the region's investment in youth-focused sustainability education and underscoring the growing recognition of experiential learning and BRs as key drivers of environmental stewardship.

The project holds strong potential for international expansion by inviting schools from other countries to participate, fostering cross-cultural learning. Its scalable framework offers a replicable model for other UNESCO sites, aiming to promote cross-border educational exchanges and enhance global awareness of BRs as living laboratories for sustainability.

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BR Appenino Tosco-Emiliano 2025. Homepage of the „Riserva di Biosfera Appenino Tosco-Emiliano“, <https://www.mabappennino.it/scuola-biosfera/> (accessed 08/05/2025).

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Conclusions - Recommendations

The 13 examples of best practice from 12 BRs in the EuroMAB network described in this report are exemplary of the high level of innovation in BRs and the strong commitment of the local population. Of course, the compilation only shows a very small selection of the many outstanding projects in this network. However, they all present very innovative approaches to nature conservation, sustainable development and social commitment. In my view, it is therefore possible to filter out some key takeaways from these 13 projects that can serve as a model for existing and future BRs:

- **Strategic collaboration between BRs and academic institutions** enhances research relevance, strengthens BR governance, and increases public engagement and trust. This is particularly relevant in an era of growing public scepticism toward scientific research and its findings.
- **Inclusive, participatory governance** is essential to balance conservation objectives with sustainable human use. Stakeholder involvement must begin early and be as comprehensive as possible.
- **BRs can stimulate regional development** through strategic branding and market-based incentives. Coordinated, large-scale branding increases visibility and generates tangible economic benefits.
- **Sustainable livelihoods in BRs** are fostered by integrating traditional knowledge with modern entrepreneurial practices.
- **Targeted initiatives within BRs** protect both biodiversity and cultural heritage, reinforcing the socio-ecological value of these areas.
- **The incorporation of traditional knowledge** facilitates BR management across sectors such as conservation, agriculture, and land use. BRs also serve as platforms for biocultural diversity and post-conflict reconciliation.
- **Stakeholder-based governance models** have demonstrated effectiveness in BR management. Equitable local participation improves decision-making and implementation outcomes.
- **Cooperation within BR networks** significantly amplifies impact. Regional and thematic collaborations enhance access to transnational funding (e.g., the European “Interreg” program) and foster knowledge exchange.
- **Innovative market mechanisms**, such as carbon trading, offer viable funding streams for BR conservation initiatives. BRs are therefore ideal places to test these mechanisms.

- **BRs serve as dynamic “living laboratories/classrooms”** for sustainability education, playing a critical role in promoting environmental stewardship. Educational outreach must target all age groups to cultivate a culture of sustainability.
- **Transboundary BRs can help overcome political barriers through “science diplomacy”** and collaborative conservation initiatives, thereby contributing to peacebuilding and cross-border environmental governance.

During my two decades as the representative of the Austrian MAB National Committee to the MAB International Coordinating Council (MAB-ICC) at UNESCO in Paris, I participated in countless discussions where the lack of connectivity between BRs and the official bodies of the MAB Programme - both internationally and nationally - was criticized. In particular, the absence of a quick, direct, and uncomplicated way to access experts who could provide immediate support in case of issues was a common concern. Given the size of the organization and its intergovernmental nature, this situation is challenging to improve. The intergovernmental approach usually involves numerous bodies (e.g. MAB National Committees, national UNESCO Commissions, multiple ministries, the MAB Secretariat, MAB-ICC) responsibilities and formal procedures, making it difficult for BRs to connect to the appropriate office to resolve their concerns. However, regional and thematic MAB networks offer more direct access to support.

Many of the issues faced by BRs arise from day-to-day management tasks. Given the vast number of members in the World Network of Biosphere Reserves (WNBR), it is likely that a similar problem has already been addressed elsewhere.

This is why I believe an (online) collection of best practice examples from the WNBR – covering a wide range of topics - would be invaluable for BRs. Examples of best practice provide BR managers and stakeholders not only with a quick way to find a possible solution to a problem, but also with role models for future initiatives and strategies in their own BR.

Of course, not all examples can be implemented one-to-one in another BR. Depending on the social, cultural and legal context of the individual regions, the approach will probably have to be adapted. Therefore, it would be highly beneficial to have multiple best practice examples for each issue, where available.

To conclude, I would recommend establishing an open-access database of best practices from BRs to serve as a **“digital knowledge hub”** for BR managers and stakeholders engaged in sustainable development. Such a resource would have an exemplary impact extending well beyond the WNBR. By showcasing proven strategies, the MAB Programme could significantly influence national policies and institutional actions in support of future sustainable development.

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About the Author

Günter Köck (born 1959) studied biology at the University of Innsbruck (Austria). His professional career is based on two pillars: environmental research and protected areas.

From 2002 to 2024, Köck served as Coordinator of the international research programs of the Austrian Academy of Sciences in Vienna (Austria). In this role, he was Secretary-General of the Austrian National Committee for UNESCO's "Man and the Biosphere" (MAB) Programme. He represented Austria on the International Coordinating Council of the MAB Programme (MAB-ICC) and was elected four times as a member of the MAB Bureau. Over the two decades of his involvement in the MAB Programme, Günter Köck played a central role in promoting the understanding and management of biosphere reserves (BRs).

In addition, Köck was a founding editor of the scientific journal *eco.mont*, a peer-reviewed journal focusing on research and management practices in mountain protected areas (<https://ecomont.mountainresearch.at/>).

In addition to his work with UNESCO, Günter Köck is also renowned for his outstanding expertise as an Arctic researcher. The Austrian–Canadian long-term monitoring study *HIGH-ARCTIC 1997–2025* on Arctic lake ecosystems, which he initiated, has provided important insights into the impacts of climate change on these sensitive habitats

Since his retirement about two years ago, Köck continues to be actively involved in the MAB Programme as a long-standing research associate at the Institute for Interdisciplinary Mountain Research (IGF) in Innsbruck, for example as an advisor to the "World Network of Mountain Biosphere Reserves (WNMBR)" and in supporting the establishment of the first biosphere reserve in the Kingdom of Bhutan.

In October 2025, Austrian President Alexander Van der Bellen awarded him the "Grand Decoration of Honor for Services to the Republic of Austria."



Contact address:

Institute for Interdisciplinary Mountain Research (IGF)

Innrain 25, 6020 Innsbruck (Austria)

E-mail: guenter.koeck@oeaw.ac.at, guenter.koeck@uibk.ac.at

WWW: <http://www.higharctic-research.at/>

