

Interreg Alpine Space



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ALPBIONET2030

Recommendations to enhance and
promote ecological connectivity in the EUSALP area

ALPBIONET2030 Integrative Alpine Wildlife And Habitat Management For The Next Generation

Recommendations to enhance and promote ecological connectivity in the EUSALP area

(Deliverable 4.5.1)

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Recommendations to enhance and promote ecological connectivity in the EUSALP area:

We urge governments, administrations, civil society, conservation communities, academia and scientific institutions to:

1. Recognize and **act** on established **policy guidance** from the European Union supplemented by national biodiversity and green infrastructure strategies in order to ensure large-scale, harmonized, trans-sectoral and transnational implementation of ecological connectivity measures;
2. Make use of **existing tools and strategies** to better target action for ecological connectivity in the Alps;
3. Ensure **landscape permeability** for the inner-Alpine Ecological macro corridors;
4. Strengthen **local biotope networks** within and at the periphery of the Alps;
5. Safeguard natural areas **beyond protected areas** both within and outside of the inner Alpine area and identify and secure green crossing spots (**stepping-stones**) between the EUSALP and the Alps through international coordination by the Alpine Convention;
6. Identify and institute ecological connectivity macro corridors and large-scale green infrastructure measures both at the Alpine periphery and to the **neighbouring mountain massifs**;
7. Make green networks and green bridges along pre-existing highways and railway lines in the Alps and in the Alpine periphery a **legal requirement** and stipulate their inclusion in spatial planning legislation;
8. Direct and concentrate touristic impact in ways that limit access to fragile sites and preserve “wild” areas;
9. Integrate and value **metropolitan and suburban areas** as secondary habitats when improving ecological connectivity (EU Urban agenda);
10. Value the current and future **economic benefits** of ecological connectivity via ecosystem services;
11. Establish and dedicate **cross-sectoral funding schemes** to enhance ecological connectivity through partnerships: e.g. agriculture / nature conservation, urban development / ecological connectivity, green economy / protected areas;
12. Expand research regarding the interaction between ecological connectivity and hunting & wildlife or social & societal aspects of nature conservation.

1. Recognize and act on established policy guidance from the European Union, supplemented by national biodiversity and green infrastructure strategies

To ensure large-scale, harmonized, trans-sectoral and transnational implementation of ecological connectivity measures it is necessary to scale up restoration and construction of green infrastructure in the Alpine region and its periphery.

A wide range of policy instruments (conventions, directives, strategies and policies) exists globally and in the European Union that directly or indirectly makes provision for biodiversity conservation and for the associated goal of maintaining ecological connectivity and preserving ecosystem services. Specific to the Alpine region is Article 12 of the Alpine Convention's Nature Protection Protocol, which requires an Alps-wide network of connected protected areas. More recently, provisions for ecological connectivity have also been included in the EU macro-regional strategy for the Alpine Region (EUSALP), which adopted a joint ministerial declaration on Alpine green infrastructure in October 2017.

However, most existing policies are non-binding recommendations. Consequently, there is insufficient action on the ground, and EU Member States often lag behind in implementing policies. Without strengthening environmental laws and requiring Member States to implement existing guiding documents, with financial sanctions for non-compliance, connectivity measures will not be implemented at the necessary scale or with the required urgency.

ALPBIONET2030 strongly recommends strengthening formal ties among all key actors involved in legislating and managing protected areas, landscapes, as well as national and transnational infrastructure. Potential synergies among different sectors (environment, infrastructure, agriculture, tourism) must be systematically considered in planning and implementation processes. For this to happen, transdisciplinary and transnational networks of decision makers from each of these sectors must be formed, and they must take a proactive role in devising and implementing policy measures.

2. Make use of existing tools and strategies to better target action for ecological connectivity in the Alps

Various Interreg Alpine Space Projects have proposed interesting technical, political and communication tools supporting decision making to better target efforts and actions for ecological connectivity in the perimeter of the Alpine Convention and on local levels. These tools have been developed by Alpine experts and are especially tailored to the situations encountered in the Alpine and EUSALP area.

Over the last 15 years, a series of strategic and practical tools have been developed for the Alpine context aiming at supporting political and technical decision makers when elaborating actions to conserve, restore or create ecological connectivity. These tools address political recommendations, communication support, strategic orientation but also include concrete planning tactics.

The web GIS tools JECAMI (www.jecami.eu) offers the possibility to conduct a small- or large-scale connectivity analysis, adapted to a specific context.

The recently developed Strategic Alpine Connectivity Areas (SACA) approach proposes a classification of the Alpine area into three different categories:

- Ecological Conservation Areas
- Ecological Intervention Areas
- Connectivity Restoration Areas

For each of the categories, recommendations on the most suitable types of action were defined, better focusing efforts when implementing actions for ecological connectivity.

In order to maximize the impacts of implemented actions favouring ecological connectivity in the various Alpine countries, such common tools should be systematically evaluated and when appropriate, integrated into the planning processes, as they contribute to harmonization of efforts across country borders and ensures cohesion between individual initiatives.

3. Ensure landscape permeability for the inner-Alpine ecological macro corridors

Ecological macro corridors ensure long distance links between habitats and less fragmented regions by facilitating North-South and West-East ecological connectivity in (and through) the Alps.

Macro corridors along the North-South axis are highly significant for species migration and constitute an important green-infrastructure and adaptation strategy in the face of climate change. It is of vital ecological importance to conserve areas along these ecological macro corridors, which are often composed of protected areas. There is a need for acute awareness that these macro corridors and the adjacent areas, constitute some of the last non-fragmented sectors of the Alps bridging numerous Ecological Conservation Areas.

Some of the Alpine ecological macro corridors have a very high significance not only for the Alps and the EUSALP area but also for larger parts of Europe by connecting European mountain massifs and different biogeographical regions as well as different cultural landscapes.

Actions for ecological connectivity conservation, restoration or creation should focus on these key areas, which are of critical importance to the Alpes, in order to ensure landscape permeability.

Protected areas are the backbone of the ecological macro corridors. They must be supported in their leadership efforts to act beyond, their mostly hard-defined borders, to allow for permeable linkages between protected areas thereby creating ecological macro corridors in the landscape.

4. Strengthen local biotope networks within and at the periphery of the Alps

The combination of various smaller ecological networks can - if carefully planned and integrated into a larger landscape vision – form a coherent large-scale network of well-functioning and interconnected habitats. Motivated local drivers and funding instruments linked to adapted large-scale planning documents ensure success on local and supra-local levels.

The framework conditions for conserving, restoring or building new ecological networks at the local level with regard to environmental and spatial planning policy, funding possibilities, governance solutions, capacity of different stakeholders, etc differ widely from country to country and even from region to region in the Alpine and EUSALP context.

Nevertheless, these local initiatives are crucial to genuine improvement of ecological connectivity in the field and the support of landscape permeability. However, in order to avoid the development of numerous individual projects that may certainly have a positive impact locally but overlook potential overlap or synergy with neighbouring efforts, a larger scale planning framework and a corresponding landscape vision is necessary.

The transition area between the Alps and their periphery represent a particular challenge as the intensive land uses tend to isolate the Alpine areas from the flatter surroundings. The project ALPBIONET2030 offers tools and visions for responsible local projects to consider larger scale connectivity aspects within their actions and to integrate their efforts into a transalpine approach.

In order to enhance the success of such initiatives, adapted funding instruments are necessary for all concerned sectors (agriculture, forestry, etc), and spatial planning processes must guarantee a long-term consideration of the ecological connectivity efforts provided by the initiatives.

5. Safeguard natural areas beyond protected areas both within and outside of the inner Alpine area

In order to safeguard natural areas beyond protected areas, it is necessary to identify and secure green crossing spots (stepping-stones) between the EUSALP and the Alps through international coordination by the Alpine Convention.

The project ALPBIONET2030 clearly identified the main barriers for ecological connectivity at the interface between the Alpine perimeter (in the sense of the natural space of the Alps) and the outer Alpine periphery. The Alps are indeed surrounded by an important infrastructure and activity belt isolating Alpine nature and species. This belt is characterized by an important concentration of urban and economic infra-structure generating high transport and energy flows.

To overcome this belt and to ensure connectivity from and to the Alps, two things are needed: connectivity from the inner Alps towards the outer Alpine periphery and permeable landscape elements through the intensively used Alpine periphery. As much as protected areas and steppingstones through diverse biotopes and still intact natural sites may help within the Alps, a clear definition and legally binding establishment of so called “green crossing spots” within the Alpine periphery is necessary to preserve the last potential ecological links between the Alps and their periphery in some parts of the EUSALP perimeter.

As a legally binding instrument is needed, the coordination should be proposed by the Alpine convention as an international treaty which, in article 12 of the Nature protection protocol, envisions the establishment of a national and transboundary network of protected areas, biotopes and other protected or entities “worth protecting”.

6. Identify and institute ecological connectivity macro-corridors and large-scale green infrastructure measures both at the Alpine periphery and to the neighbouring mountain massifs

The Alps are not only increasingly isolated from their periphery but also from the neighbouring mountain ranges. Therefore, it is necessary to restore “vital links” between European mountain ranges surrounding the Alps by adapted spatial planning and green infrastructure measures. The EUSALP perimeter is the appropriate territorial dimension for this fundamental ecological need.

Analysis of the EUSALP area within the project ALPBIONET2030 indicated not only a densely used activity belt around the Alps but also an important fragmentation of landscapes and natural areas towards the neighbouring mountain ranges of the Alps. One of the clearest examples is illustrated by the area between the Alps and the Carpathians bounded by the agglomerations of Vienna and Bratislava. Only the river and the surrounding National Park Donauauen and further nature reserves around the river in this area provide a macro-regional corridor between both mountain ranges. The rest of the terrestrial area is strongly fragmented by a multitude of activities.

Similar circumstances can be found between the Alps and other mountain ranges (Apennine, Jura, Dinaric Arch, Bavarian Forest, Black Forest). It is crucial to restore ecological connectivity through macro corridors (open spaces with high natural and ecological value) and specific green infrastructure measures within agricultural, transport, urban and energy production policies and planning.

The territorial dimension of those macro corridors concerns the EUSALP perimeter and its political stakeholders. The process to achieve more ecological connectivity between mountain ranges in the heart of Europe is one of the most urgent tasks of this strategy, and the Action Group 7 of the EUSALP should be strongly supported in this task by national and regional governments. The challenge is to conserve valuable habitats and Europe’s biodiversity. This also supports a potential adaptation strategy in the face of climate change, since some of those corridors may be used for species migration towards more suitable habitats. The protocol envisions the establishment of a national and transboundary network of protected areas, biotopes and other protected or entities “worth protecting”.

7. Make green networks and green bridges along preexisting highways and railway lines in the Alps and in the Alpine periphery a legal requirement and stipulate their inclusion in spatial planning legislation

Existing laws and guidelines on green networks and green bridges must be reviewed and made mandatory for both current and planned traffic infrastructure projects to ensure functional ecosystems and wildlife migration routes.

In the European Union, green infrastructure is defined as “a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services” (European Commission 2019)¹. Guidance on maintaining and enhancing green infrastructure is included in the EU 2020 biodiversity strategy, as well as in the EU strategy on green infrastructure (2013). In addition to these policy instruments, several national policy documents also include references to green infrastructure.

Such green infrastructure includes the Natura 2000 network, which acts as a backbone, as well as parks, private gardens, hedges, vegetated buffer strips, structure-rich agricultural landscapes, and artificial features (green roofs, green walls, green bridges, fish ladders). Although Member States have made some progress, for example in the construction of green bridges along highways, these efforts are still insufficient, and green infrastructure should be retrofitted along all major highways and railway lines throughout the Alps. This is happening to a limited extent, but should be made mandatory and implemented at an accelerated pace.

In view of the scientifically proven continued decline of biological diversity across the European Union and within the Alpine region and its periphery, ALPBIONET2030 recommends creating and enforcing new laws that mandate the inclusion of green infrastructure in all land use planning processes, focusing particularly on pre-existing infrastructure, within a time-frame of 10 years.

The construction of green bridges should be supplemented by appropriate management measures, such as suitable vegetation strips along all highways that would benefit insect communities. These measures should include preferential support for native flowering plants, ecologically timed mowing schedules, and abstention from the use of pesticides.

¹ European Commission. 2019. 'REPORT FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS. Review of Progress on Implementation of the EU Green Infrastructure Strategy. {SWD(2019)184final}'. European Commission. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52019DC0236&qid=1562053537296&from=EN>.

8. Direct and concentrate touristic impact in ways that limit access to fragile sites and preserve “wild” areas

‘Tourists tend to destroy the locations they are looking for’ – this well-known statement may become true for the last wild and untouched areas in the Alps, if limits are not imposed. Education, awareness raising and restrictions, if needed, are the instruments to achieve this goal.

On one hand, tourists are essential for the Alpine economy particularly in remote or rural areas where other sources of income are difficult to establish. On the other hand, they are dangerous for fragile natural areas. The trend towards spending leisure time out in the wild is widespread and increasing. Refuges for wildlife in protected areas or outside are under increasing pressure from the increasing number of hikers, bikers and ski touring visitors. This particularly refers to those who disregard restricted areas as they seek an exceptional experience in nature or aim to take the ultimate picture for their social media account. Beyond the direct impact on nature by tourists, the need for space and territories to build infrastructure and access roads is another aspect. This infrastructure has a considerable impact on the surface and quality of natural areas, too.

Therefore, guiding of tourist flows, sustainable tourism offers and education of tourists is urgently needed to preserve wild areas in and around the Alps. There must be zones of ‘non-construction’ of infrastructure, as otherwise the technical feasibility of more and more spectacular installations will override every good reason to stop in areas where valuable nature still exists. There is always an investor who looks for economic benefit to be squeezed out of the mountain areas, no matter what the real ecological price for it may be.

In some cases, only legislative restrictive measures imposed by governments will be successful in order to conserve the most valuable and wild areas of the Alps. Sustainable tourism offers that generate income for the local and regional population need greater support. The tourism industry should be made aware of the need to transform to a green economy. A clear focus on this type of tourism development should be integrated in the future Alpine Space Programme for the whole EUSALP territory.

9. Integrate and value metropolitan and suburban areas as secondary habitats when improving ecological connectivity (EU Urban agenda)

The Alpine valleys and the metropolitan areas around the Alps tend to be increasingly urbanized. This challenge for ecological connectivity must be faced by raising awareness among citizens and decision makers and by using the instruments provided by the European Union and the national or regional governments to increase biodiversity and to make cities greener.

The inner Alpine valleys and the metropolitan areas around the Alps belong to the most densely populated areas of the Alps, with an ever-increasing population trend. As this trend has been the same throughout Europe, in 2017, the EU renewed the Urban Agenda, which proposes a concept and many different measures regarding how to make European cities worth living in. The measures proposed apply both for Alpine cities and cities in the EUSALP territory (or beyond). The Urban Agenda of the EU suggests 12 partnerships to improve life in urban areas – the most relevant ones for ecological connectivity in the Alps are Sustainable Use of Land and Nature-Based Solutions, Climate Adaptation, Circular Economy, Urban Mobility and partly Energy Transition. The main players in the urban partnerships are cities, Member States, the Commission and stakeholders such as NGOs or businesses, all of them on a voluntary and equal basis. Together with the Green Infrastructure initiative urban areas have a multitude of possibilities to improve ecological connectivity within their territory.

For the Alpine cities, permeability for wildlife, both plants and animals, is even more crucial due to the topographic situation, with lower and warmer areas being only partly available and the need for migration up or downhill due to climate change. Although the main focus of the Urban Agenda refers to social and economic integration, environmental protection in cities plays an important role as well. Green spaces, sustainable mobility corridors for humans and wildlife, ecologically interesting gardens and roof tops or living rivers are key elements for ecological connectivity in urban areas. These elements should be made obligatory for urban planning and respected by all responsible government levels, as they benefit both humans and nature.

To achieve this, innovative and participative movements should be supported which target improvement of ecological connectivity and networks in urbanized areas of the EUSALP

territory. The 'Metropolitan Alpine City Network', a coalition of urban and metropolitan authorities committed to working with stakeholders is a first and promising step. Its goal is to enhance the green areas and develop green infrastructure in the Alpine metropolitan areas. 'The network serves as a political representation of the local level within the multilevel governance of EUSALP.

10. Value the [future] economic benefits of ecological connectivity via ecosystem services

Simply put, preserving ecosystem services means preserving the integrity of ecosystems. Human wellbeing depends on ecosystem services, and the majority of these services cannot be replaced. Therefore, their preservation and maintenance are a crucial challenge for a sustainable future in the Alps.

The Alpine region is subject to a multitude of anthropogenic pressures such as climate change, land-use conversion, and mass tourism. The Alps provide essential ecosystem goods and services to the resident (14 million inhabitants, 190,000 km²) and the urban populations in the EUSALP perimeter (80 million inhabitants, 441,006 km²). These ecosystem services include: Food and fodder production, provision of raw materials, pollination, energy, climate- and water regulation, water supply [water tower of Europe], erosion control, soil formation, nutrient cycling, carbon sink, green-house gas cycling, biological control, genetic resources, recreation and cultural values. The state of ecosystems and the services they provide are fundamentally linked to the health and well-being of people that depend on them. However, these links are often obscured – economic development, trade and consumers are separated across time, geographies and the complexity of competing socio-economic and cultural influences. Current land-use and management practices often lead to a loss of ecosystem functions. Habitat fragmentation, the loss of ecological connectivity and land conversion are but a few of a multitude of anthropogenic pressures that negatively impact Alpine biodiversity, recreational value and the diversity of cultural identities.

Generally speaking, the value of ecosystem services is disregarded in the economic - political decision-making process. Benefits supplied by nature have no market value and tend to be public goods, and as such, are perceived as "free for all". Their real value not obvious to users. In the absence of market price and trading, the economic value of these benefits is not defined. In reality, the benefits of ecosystem service provision are very high when accounted for. Decision makers must drive effective strategies that preserve the environment and future provisioning of ecosystem services while concurrently allowing for necessary and sustainable development in the Alps. In order to overcome these neglected linkages, economic valuation methods must be integrated and applied to the decision-making processes across the Alpine and EUSALP region.

11. Establish and dedicate cross-sectoral funding schemes to enhance ecological connectivity through partnerships: e.g. agriculture & nature conservation, urban development & ecological connectivity, green economy & protected areas

Funding ecological connectivity measures in general occurs along sectoral environmental budget lines of a state or region. The most promising actions, however, are many times those which cross over these sectoral funding lines integrating partners from other sectors. Sustainable ecological connectivity is mainly dependent on the good will and cooperation of all other sectors.

Ecological connectivity necessitates the cooperation between different interest groups when it comes to implementation at local or regional level. This is in many cases based on the fact that land necessary for implementing measures is not available. Land use change and conversion has increased massively over the past few years and, as a result, natural areas have been reduced in size, intactness and quality. Therefore, frameworks and initiatives are needed which cross-link and harmonize the interests of economic sectors with the preservation of natural areas on which all life ultimately depends. Local or regional circular economic processes have to be created by integrating economic interests with the actual environmental costs. The most necessary, but still largely neglected integration in the Alps would be the trans-sectoral cooperation between municipalities, agriculture and tourism with nature conservation. Multi-sectoral-funding schemes are already available, but these are not sufficient. Moreover, more money must be invested into framing, organizing and accompanying local and regional processes and training potential economic players in sustainable economic topics throughout the EUSALP territory. This refers both to rural as well as to urban areas. Targeted funding initiatives should be created by the Alpine Space Programme, the European Agricultural Fund and green investment lines of the EU and national states or regions.

12. Expand research regarding the interaction between ecological connectivity and hunting & wildlife or social & societal aspects of nature conservation

The Alps urgently need a dynamic, inclusive and trans-sectoral cooperative population management concept for wildlife.

More and more users have joined the 'traditional' Alpine land-users: Agriculture, forestry and hunting. As demands from agriculture and forestry grow, additional tourism and recreational activities in nature further impact the finite Alpine multi-use landscapes. Expanding human activities stand in conflict with wildlife and ecosystems. Addressing and mitigating these conflicts is complicated as wildlife does not adhere to administrative borders. All countries in the EUSALP perimeter generally agree that hunting is an important element in managing wildlife. However, the practice, culture and legislative framework for the hunting varies widely throughout the Alps and the EUSALP perimeter impacting a cohesive and sustainable approach to wildlife management.

There is an urgent need for the development of a common multi-disciplinary wildlife management strategy between neighbouring states and regional administrations. This necessarily needs a holistic approach that bridges multiple levels of administration and sectors. Additionally, the process must be paired with coordinated long-term monitoring efforts, to ensure a shared knowledge base of species distributions, movements, changes in habitats and ecosystems. Actors responsible for wildlife management need to understand, and when appropriate, promote wildlife corridors and ecological connectivity in regional spatial planning processes to facilitate adaptive wildlife movements in a rapidly changing world.

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EUROPEAN REGIONAL DEVELOPMENT FUND



DANUBE PARKS
network of protected areas



ALPBIONET2030

Recommendations and Action Plan
ALPS-DANUBE-CARPATHIANS cooperation for ecological connectivity

The case of the pilot area "Alpine-Carpathian ecological corridor"

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1. Introduction

The coordinators of ALPARC, DANUBEPARS and the CNPA decided to strengthen their cooperation on the basis of a Memorandum of Cooperation and to focus primarily on the establishment of ecological networks within and between all three regions. The **area between the Alps and the Carpathians and especially between the agglomeration of Vienna and Bratislava** is a highly significant region for ecological connectivity. This region is also an interface between the Alpine macro-regional strategy (EUSALP) and the macro-regional strategy of the Danube region (EUSDR) and therefore constitutes an interesting pilot site. The project ALPBIONET2030 engendered cooperation between stakeholders through the proposal of projects, measures and recommendations for the improvement of ecological connectivity within this pilot area.

Why focus especially on ecological connectivity in this area?

- The links between the three regions are hotspots of biodiversity for Europe
- Here, there are important migration movements linking more biogeographical regions (six) than in any other part of Europe
- Ecological connectivity is part of a climate change adaptation strategy
- Hydrological and geological phenomena are linked between the regions (e.g. the water, gravel and sediments from the Alps and Carpathians are transported to the Danube)
- Seasonal migrations involve this region
- Large carnivores migrate from the Carpathians towards the Alps
- In this region, diverse species exist whose population maintenance requires joint efforts
- etc.

From an ecological point of view, numerous interfaces and interdependencies exist in this area. Therefore, cooperation for the realisation of an ecological network is logical and would provide a major contribution to the preservation of Europe's biodiversity.

For this reason, stronger ecological connectivity is a major consideration for the region. This can be notably realized through ecological macro-corridors in an area that is highly fragmented by anthropogenic activities, such as agriculture, energy production, tourism, industry, urbanization and grey infrastructure, especially highway, railway and other transport infrastructure.

Ecological macro-corridors ensure long distance links between habitats and less fragmented regions by providing the opportunity not only for north-south but also east-west ecological connectivity in (and through) the Alps. North-south "corridors" are highly significant for species migration and constitute an important "green-infrastructure" and adaptation strategy to climate change. It is of high ecological interest to conserve areas along these macro-corridors, which are often composed of protected areas. Furthermore, the east-west macro-corridor between the Alps and the Danube space also has a very high importance, as it links both major mountain ranges in the heart of Europe.

2. Recommendations for cooperation between the Alpine and Danube Spaces within the pilot area:

- **Define and harmonize common procedures**
For the issue of ecological connectivity, it is crucial to employ comparable methodologies and analytic tools adapted to the different local or regional situations. A very sophisticated yet pragmatic approach was developed for the Alps and was updated during the project ALPBIONET2030 (JECAMI 2.0). The tool is on-line and can be adapted and transferred to other regions.
- **Establish an experience and knowledge base**
The three networks (ALPARC, DANUBEPARKS and CNPA) face similar questions, opportunities and challenges. Exchange of experiences, amalgamation of learnings and creation of a common knowledge base strengthens each network facing supra-regional issues, like EU programmes and EU policies, and contributes to the implementation of policies linked to the Alpine Convention, Carpathian Convention, Bern Convention or Ramsar Convention and the macro-regional strategies (Alps and Danube).
- **Form a common team of competent experts for ecological connectivity**
The three networks should foster a team of experts for questions of ecological connectivity. The experts of the three networks will exchange their knowledge and experience regularly and launch common projects.
- **Promote a stakeholder and cooperation platform**
Cooperation is an essential platform for effective coordination between networks and associated partners. In collaboration with one of the three protected area organisations, additional networks may join different projects and support common positions like the Carpathian Wetlands Initiative (CWI) or national protected area networks. Raising capacity could also involve other transnational protected area networks.
- **Integrate Europe wide strategies and policies (EUSALP, EUSDR)**
Cooperation between the three networks allows for meaningful involvement in transnational European strategies such as the Alpine and the Danube macro-regional strategies. This is also true within the existing common treaties of international law, such as the Alpine Convention and the Carpathian Convention, or the Ramsar Convention on Wetlands and other relevant conventions and programmes. For all these strategies and policies, ecological connectivity is a crucial issue contributing to their biodiversity conservation goals.
- **Define priorities in interest of activities**
Cooperation allows for sharing of common interests, such as the research of funding possibilities for concrete actions in areas of concern, the establishment of a collaborative policy approach and of a combined network of competence. A list of activities prioritized by efficiency should be defined.
- **Focus on the connectivity area between the Alps (EUSALP) and the Danube/Carpathian region (EUSDR)**
The Alpine-Carpathian connectivity area defined by the project ALPBIONET2030 (number XVII on the connectivity map) is of high interest for ecological connectivity between both mountain ranges and the Danube region. For this reason, efforts should be concentrated on the area south of Vienna to Bratislava.
- **Analyze different funding possibilities**
To realize concrete outcomes, in concert with the responsible institutions of the EUSALP and EUSDR strategies and the ALPINE and CARPATHIAN Conventions, the stakeholders of the three networks should analyze all possibilities for common funding to restore ecological connectivity in this border area between the two macro-regional strategies.

3. ADC Network mission and cooperation statement within the framework of the EUSALP and DANUBE macro-regional strategies:

Establish permeable landscapes and ecological connectivity between the EUSALP and the EUSDR space and contribute to their management by:

- Creating large non-fragmented areas ensured by linking protected areas and Natura 2000 sites and equivalents
- Ensuring the conservation of European biodiversity by including relatively small protected areas and hotspots of biodiversity (reducing the “island” effect) and by creating links (ecological corridors) to strengthen the significance of these sites
- Minimizing the negative effects of fragmentation of habitats
- Ensuring capacity building for protected area managers and other stakeholders in the field of ecological connectivity
- Contributing to the efficiency of ecological connectivity initiatives through cooperation between the three regions within the framework of the macro-regional strategies (EUSALP, EUSDR)
- Enabling and promoting closer cooperation between both macro-regions in the field of ecological connectivity

4. Actions for the coordination of ecological connectivity within the pilot “Alpine-Carpathian ecological corridor” area:

Level of activities:

- International harmonization of approaches and methods (mapping) in cooperation with international policies (Alpine Convention, Carpathian Convention, Ramsar Convention, Danube and Alpine macro-regional strategies)
- National programs about ecological connectivity (involving different levels of decision makers)
- Local implementation (based on local and regional planning of the defined pilot area)

Main fields of activities:

- Common policy work
- Exchange of know-how, methodologies and tools
- Establishment of a competence network
- Identification of requirements for ecological connectivity within the entire area
- Implementation of ecological connectivity within the entire area
- Communication about ecological connectivity and the cooperation needed to achieve it

Framework for proposed actions in the pilot area

Exchange, methods and training

- Elaborate on common tools and methodologies (e.g. JECAMI 2.0)
- Define approaches to establish and manage ecological corridors in the area
- Exchange ideas regarding existing strategies and new concepts
- Exchange regarding projects about ecological connectivity, especially between Austria and Slovakia

Pilot area

- Define the exact perimeter of this pilot area as part of a networks of pilot areas for ecological connectivity
- Define the priorities of this pilot area concerning ecological connectivity
- Consider the special situation of agglomerations in this pilot area and determine adapted connectivity measures. Define the role of this pilot area for species and habitat protection

Implementation actions for connectivity and green infrastructure (pilot area)

- Interlink small protected areas (steppingstones) by connectivity measures and policies
- Promote the Alpine-Carpathian river corridors (Austria-Slovakia)
- Verify declared ecological corridors (site visits)
- Identify special measures for connectivity that favor threatened species

Communication and policy actions

- Communicate the need for ecological connectivity in the pilot area
- Refer to national laws, strategies of biodiversity and the international conventions of the Alps and the Carpathians (legal framework)
- Refer to competent action groups and decisions of EUSALP and EUSDR
- Share species success stories of ecological connectivity in this pilot area

Actions

Preserve and restore the Alpine-Carpathian river corridor

The Alpine-Carpathian river corridor is a central element of ecological connectivity in this region, as this is one of the last non-fragmented riverine habitats including both aquatic and terrestrial habitats surrounding the river Danube and tributaries.

Foster permeability of the landscape through an integrated management plan

The territory of the pilot area is strongly impacted by all kinds of anthropogenic activities, such as agriculture, energy production and distribution, urbanization and transportation. An integrated management plan to preserve open spaces with natural features and concrete measures to allow migration corridors for species is essential for biodiversity. This should build on results from transnational projects (e.g. ConnectGREEN).

Interlink small protected areas by connectivity measures at local level

Link small protected areas and steppingstones, such as small biotopes, wetlands, hedges and other landscape elements, through protection, agro-environmental measures, adapted spatial planning and other measures, thereby ensuring a continuous network connecting habitats.

Expand a strategy for communication with the local population

Develop strong identification with biodiversity protection through the communication of success stories, illustration with flagship species and examples of other regions succeeding in ecological connectivity approaches and realizations.

Launch the project Danube WILDisland Corridor

Islands are threatened hotspots of biodiversity, providing habitats that various species depend on. The initiative of DANUBE parks CONNECTED emphasizes the need for protection of these vital river sites ensuring both aquatic and terrestrial connectivity.

Establish Green Infrastructure to improve Ecosystem Services in the area

While protected areas preserve some of the most valuable natural sites, habitat fragmentation limits efforts to preserve a cohesive ecosystem. Human infrastructure, extensions of urban areas, the establishment of new transport

routes and energy infrastructure as well as the ongoing intensification of land-use place increasing pressure on natural treasures. Often, protected areas are too small to cover home-ranges of certain organisms or to host sustainable populations of species (in: Ecological Connectivity in the Danube River Basin. Future Perspectives and Guiding Principles, 2019), so it is also important to support identification and establishment of other effective area-based conservation measures in the region. These will play an important role in the post-2020 biodiversity framework of the Convention on Biological Diversity (CBD).

Create new mechanisms for cooperation, dialogue and participation supporting an ecological connectivity area between the Alps and the Carpathians

It is crucial to establish a large partnership of stakeholders and decision makers to realize better ecological connectivity in the pilot area between the Alps and the Carpathians. Adapted mechanisms and formats need to be defined to achieve this goal.

Foster Permeability among macro-regions (through concrete activities at local level)

The Danube River floodplain, as well as the mountain regions in the Alps and the Carpathians, represent the most important natural and semi-natural areas in central and south-east Europe. Economic pressure is increasing constantly in the Alps, Carpathians and in the DRB regions, increasing the strain on their natural treasures. Therefore, in the EU macro-regions, significant efforts are being made to strengthen ecological connectivity. Both the EU Strategy for the Danube Region (EUSDR) Priority Area 6 and the Action Group 7 of the EU Strategy for the Alpine Region consider ecological corridors and Green Infrastructure as key elements in their respective action plans. Hydrological and geological phenomena are linked between the regions (e.g. the water from mountains flows to the Danube, gravel and sediments from the Alps and Carpathians are transported to the Danube), large carnivores migrate from the Carpathians towards the Alps, and various species exist in respective regions whose population maintenance require joint efforts. Consequently, the interface between the EU macro-regions along the Danube and in the Alps can offer excellent opportunities for ecological connectivity and cooperation between these two EU macro-regional strategies to trigger good practice initiatives and pilot projects (such as the ADC Net and the Alpine Carpathian (River) Corridor). Possible synergies need to be identified and concerted efforts are required with other neighbouring macro-regions, with the Danube as an important link (in: Ecological Connectivity in the Danube River Basin. Future Perspectives and Guiding Principles, 2019).

5. Conclusion

Different activities and projects have been discussed and evaluated within the partnership of the ADCnet concerning cooperation between the two macro-regional strategies and especially proposals based on riverine systems linking both mountain ranges and macro-regions. Some projects have been submitted (e.g. WILDIsland), and others are still in preparation.

Cooperation regarding ecological connectivity has existed for over 15 years. Methodologies, approaches, tools and experiences have been exchanged, and ALPBIONET2030 advanced the common understanding of how to harmonize and to meet common goals of both mountain regions of the EUSALP and DANUBE strategies.

The pilot area between the Alps and the Carpathians including the Danube River is highly significant for ecological connectivity for a variety of reasons, but it is also highly symbolic for the cooperation between both mountain ranges, both conventions and both macro-regional strategies on this specific topic.