

Case Study: Alpine space

Inputs for the Regional Connectivity Working Group

Planning and implementing Strategic Green and Blue infrastructure networks for ecological connectivity

Reference in AF: D.2.1.2

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ALPARC

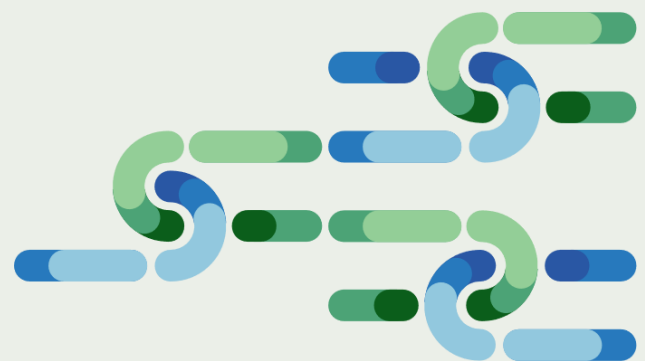


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GLOSSARY

- Ecological connectivity: The concept used in this report refers ecological connectivity as “*the degree to which that landscape facilitates or impedes movement among resource patches*”. (Taylor et al., 1993; Bennett 1999; Tischendorf and Fahrig 2000):
- Ecological Conservation Areas (SACA1): According to the ALPBIONET2030 project definition the SACA1 are areas, where ecological connectivity works quite well, that still have considerable space for connectivity with non-fragmented surfaces and where connectivity should be conserved”.
- Ecological intervention areas (SACA2): The ALPBIONET2030 project defines the SACA2 as areas that represent important links between SACA1 areas (ecological conservation areas). Connectivity is currently working to some extent but would benefit from enhancements.
- Connectivity restoration areas (SACA3): The ALPBIONET2030 project defines the SACA3 as areas that represent important barriers between SACA1 areas (ecological conservation areas).
- Ecological Favourable Areas (EFA): Areas with ecological significance accordingly with their protection scope, topography, ecological connectivity and level of spatial development.
- Potential Planning Areas for Biodiversity Protection: According with the Alpine Parks 2030 project, these areas are a spatial planning proposal of protected areas, distributed in nine categories combining the criteria of low fragmentation, low spatial development, and a high level of ecologically favourable areas creating the framework, along with the identification of already existing areas with strong protection. This facilitates the determination of further potentials of protected areas within the Alpine region.



EXECUTIVE SUMMARY

Biodiversity conservation in the Alps is currently facing different challenges such as landscape fragmentation, lack of coordination in the tools and strategies for nature protection, climate change and in particular for the implementation of ecological networks, among others. The integration of ecological connectivity approach into spatial planning is essential to reach the goal of an effective protection and for the Alpine space case study, to achieve the goal of the COP 15 to protect 30% of biodiversity adapted to the Alps.

The report starts with a description of the PlanToConnect project vision and framework, explaining the use of ecological connectivity as a suitable approach to improve nature protection in the Alps. Subsequently, some of the major challenges regarding biodiversity conservation inside the Alpine space are enunciated and illustrated in different maps. Finally, a description of the analysis process and the expected results from the case study are indicated, the insights provided from this work are expected to be shared with different stakeholders on the macro-regional level



1.1 Introduction

Biodiversity protection in the Alps is being threatened by landscape and habitat fragmentation, land use conflicts and climate change, these factors widen the gaps within the current nature protection system. The integration of ecological connectivity into spatial planning practices and instruments therefore plays an essential role in the development of a coherent system for preserving wildlife and key habitats.



There have been different advancements in the implementation of ecological connectivity in spatial planning systems in the Alpine countries, however there are major differences on the methods, priorities and progress made on the national, regional and local level, which are explained by the high complexity of the ecological dynamics and its integration into spatial planning.

Different zones inside the Alps require protection and restoration measures, mostly in low altitudes and inside the most developed alpine valleys. The spatial planning of the Alpine ecological network requires to develop tools that involves protected areas and areas without a nature protection designation, with an important biodiversity value, this comprehensive approach can enhance landscape connectivity.



1.2 A transalpine vision

The transalpine European project PlanToConnect, brings together the expertise of spatial planners, environmental, protected areas and governmental organisations and the knowledge from previous ASP and other ecological connectivity related projects, to delineate transnational natural corridors and habitat linkages critical for preserving the Alpine biodiversity and providing a strategical framework regarding ecological connectivity in the Alps.

Table 1 Alpine Space projects with relevance for ecological connectivity

| EC project | Description and main tools |
|----------------|---|
| Econnect | Protection of biodiversity through the promotion of ecological continuum across the Alpine region, to achieve this objective an analysis of geographical and legal frameworks was carried out, stakeholder exchanges inside pilot regions were held, with these inputs a series of political recommendations were elaborated. Jecami (Joint Ecological Continuum Analysis and Mapping Initiative) was developed as a GIS tool dedicated to the Alps to analyse and assess ecological connectivity through a comprehensive and evolutive geodata catalogue. |
| recharge.green | recharge.green aims for a sustainable use of landscapes, the project explored the potential, limits and impacts of the use of renewable energy (wind, hydropower, forest biomass and solar energy) in the Alps. |
| ALPBIONET2030 | The elaboration of Strategic Alpine Connectivity Areas (SACA), this classification of the alpine and EUSALP area in three types of categories offering the possibility to better target actions in favor of ecological connectivity has led to an innovative cartography of the alpine territory. |
| OpenSpaceAlps | The project OpenSpaceAlps analysed the current situation of the remaining natural, semi-natural spaces that haven't been disturbed and fragmented or where infrastructure is not yet widely spread, different tools addressed to spatial planners and decision makers were developed, open spaces mapping, political and implementation recommendations to safeguard the spaces with a low spatial development. |

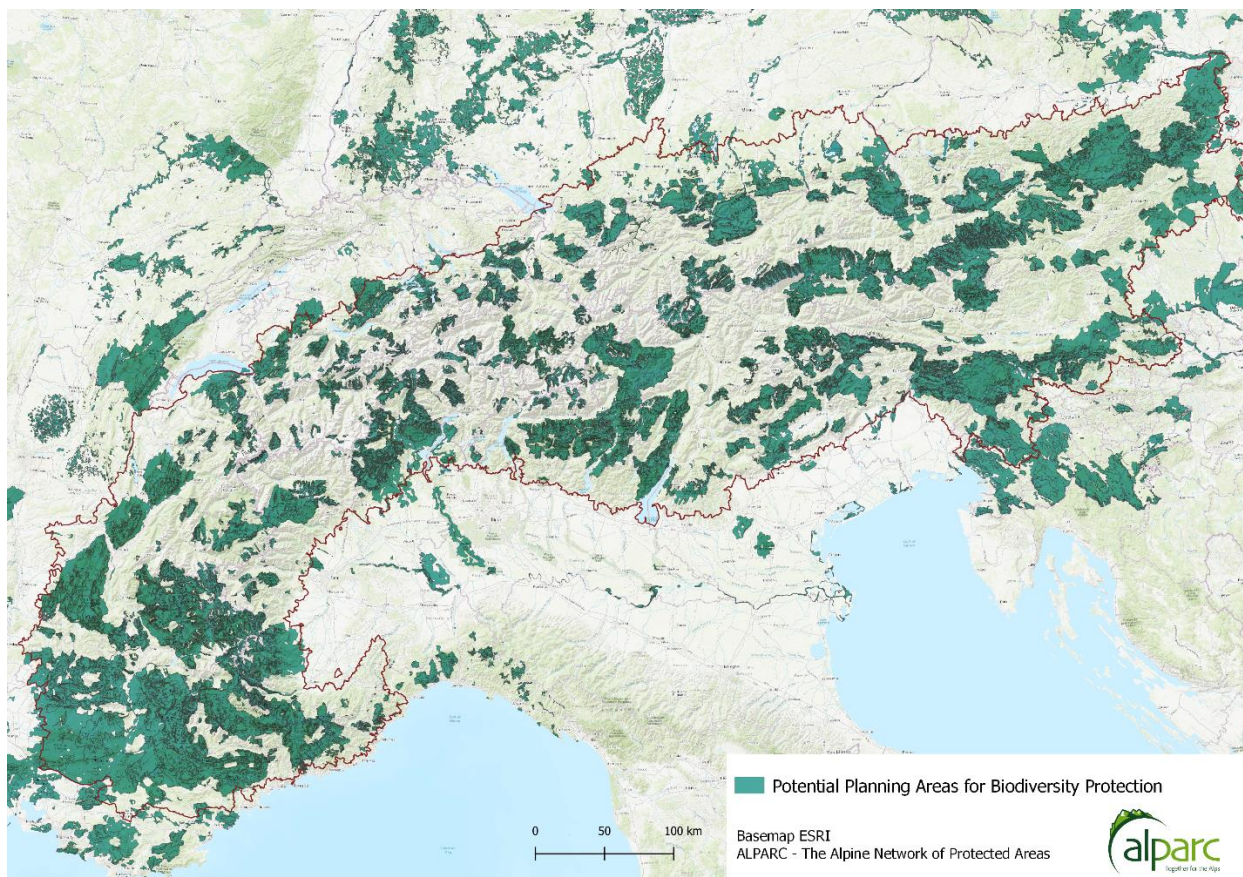
PlanToConnect is interlinked with the targets related to the protection of biodiversity and the promotion of ecological connectivity from the Global Biodiversity Framework and the goal of achieving the 30% of effectively conserved and managed areas from the COP-15, the Alpine Convention spatial and the EUSALP (AG7) orientations for the implementation of ecological connectivity on the macro-regional level.



2 Connectivity planning in Alpine space (Case study)

The case study covers a selection of surfaces within the Alpine Convention perimeter and the interface with the EUSALP area, this selection is based on different criteria selected by ALPARC in order to elaborate a spatial planning proposal that allows to enhance ecological connectivity among landscapes with high relevance for biodiversity conservation considering the 30% goal.

The geographical scope of the case study is linked with the vision and insights from ALPARC, the proposal considers then Alpine protected areas and non-protected areas with a high ecological significance.



Map 1 Potential Planning Areas for Biodiversity Protection



2.1 Ecological significance of the Alpine space pilot area

The ecological favourable areas (EFA) are the result of the identification of surfaces that constitute a priority for nature protection, the areas were identified by the analysis of the current situation of nature protection inside the Alps, accordingly with four main features: spatial development, topography, connectivity potential and protection scope of the protection system of the Alps, these areas cover around 73.226 km² inside the Alpine Convention perimeter. A further analysis of the EFA resulted on the identification of Potential Planning Areas for Biodiversity Protection covering around 3.828 municipalities and a surface of 72.048 km² inside the Alpine Convention perimeter.

The potential planning areas constitute a proposal to “*increase the global surface of the current protected areas*” in order to achieve the COP15 goal, the pilot area chosen by ALPARC and the analysis from this work that will integrate has different insights to contribute to improve ecological connectivity on the Alpine level.

2.2 Existing conservation investments

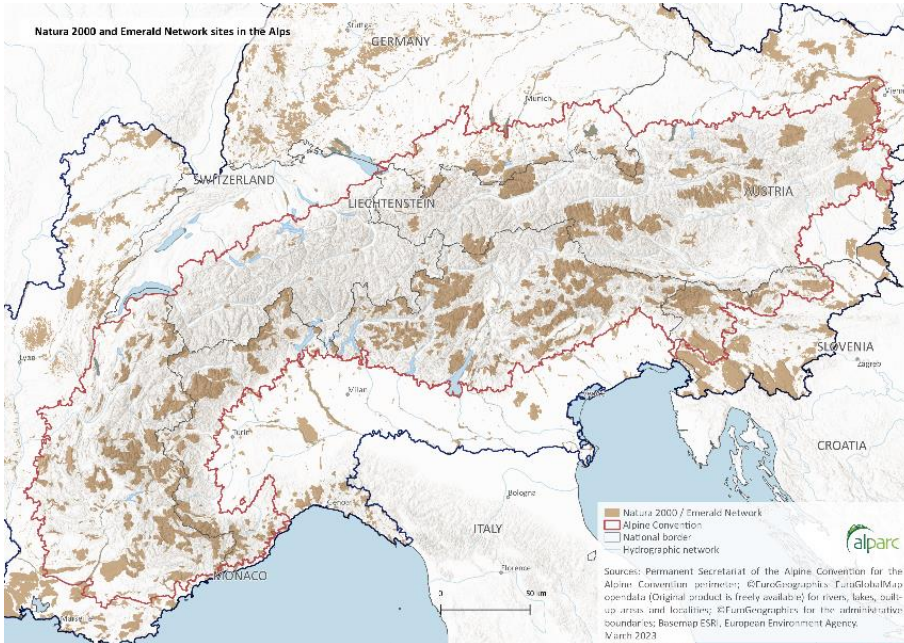
The Nature Restoration Law (NRL) approved by the European Union represents a significant legislative effort aimed at reversing biodiversity loss and restoring ecosystems. This framework has specific implications for biodiversity conservation strategies and actions for the Alps.

Among the key aspects, it is important to enunciate the following points:

- Definition of specific restoration Targets: The NRL sets binding targets for the restoration of degraded ecosystems across the EU (see table 2). These targets are designed to cover a significant portion of Europe's landscapes with the horizon 2030 until 2050.
- Habitat and species: The law prioritizes the restoration of habitats critical for biodiversity, such as wetlands, forests, grasslands, and marine habitats. It aims to restore these habitats to guarantee the conservation status of a selection of species. Different measures should be implemented to reduce and stop the decline of wildlife, a special focus is made on those listed on the Habitats and Birds directive.
- Climate Resilience: The law also addresses the role of ecosystem restoration in enhancing climate resilience as a key measure for mitigation and adaptation.
- Monitoring and Reporting: Member states are required to develop and implement national restoration plans and report regularly on their progress. These reports are essential for assessing the effectiveness of restoration efforts and making necessary adjustments. (European Commission, 2024)

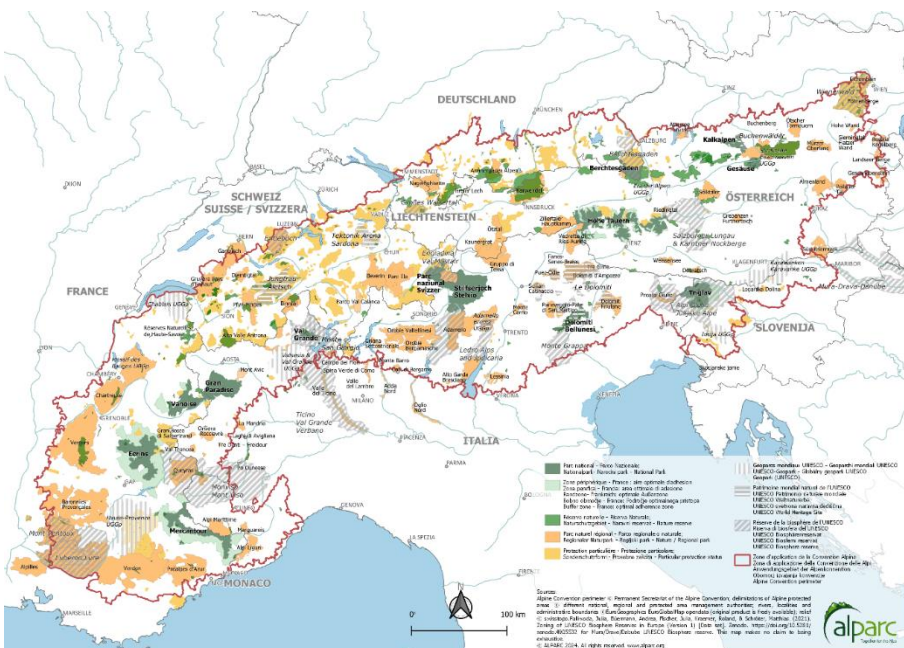
The Potential Planning Areas for Biodiversity Protection include protected areas with different protection status (National parks, Nature Regional parks, Nature reserves, Biosphere reserves and other protection measures) covering around 28.5% of the Alpine

Convention area, Natura 2000 and emerald network areas and also some surfaces that are not under a protection measure.



Map 2 Natura 2000 and emerald network areas

The Potential Areas that are not located within the protected areas are, nevertheless, zones with a low level of spatial development and a high potential for ecological connectivity.



Map 3 Alpine Protected Areas

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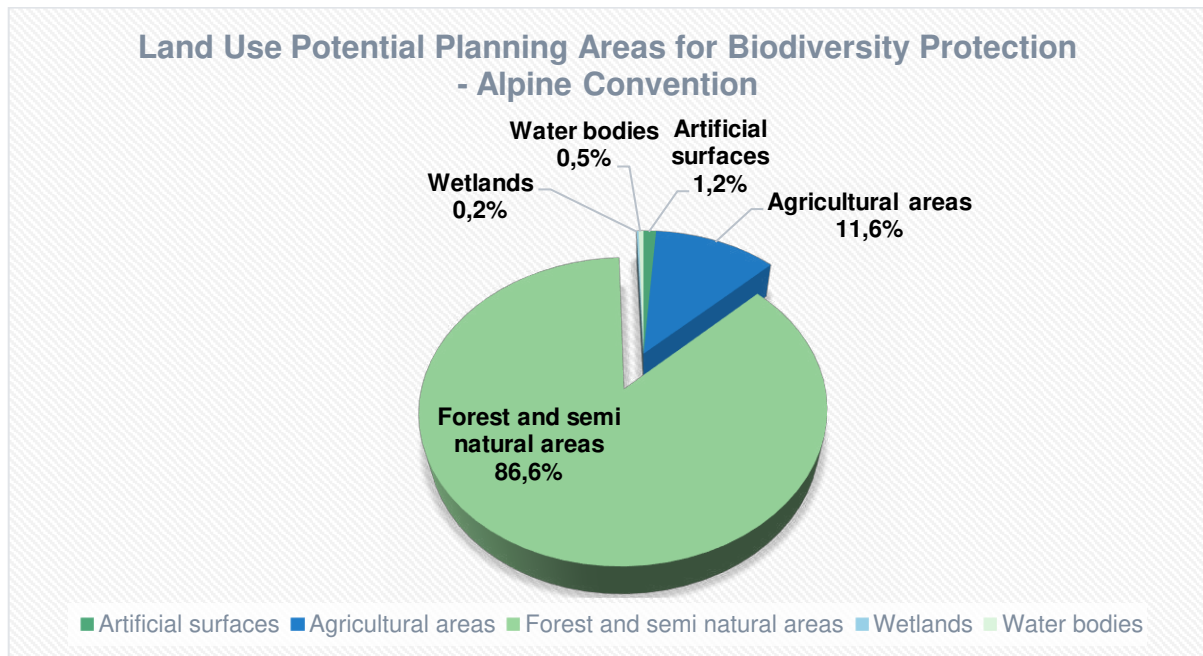
ALPARC, April 2024



2.3 Typologies of barriers and threats to connectivity

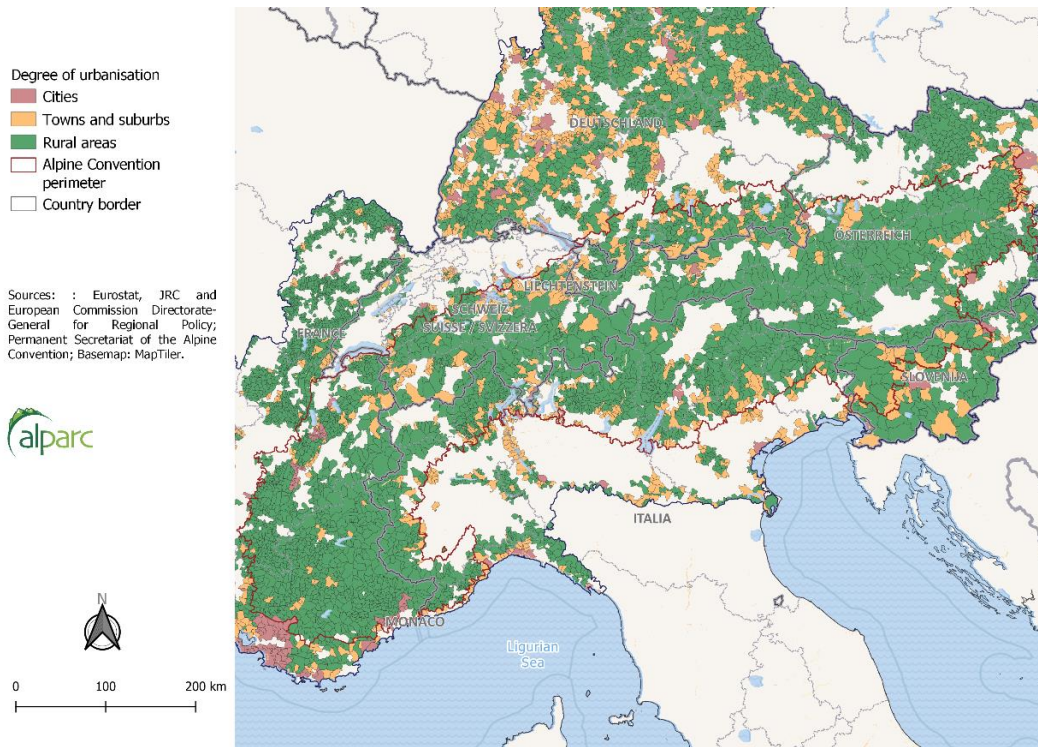
The distribution of the land use illustrated on the Figure 1 shows the value of the areas included on the case study, most of this surface is covered by forests and semi-natural areas and a smaller proportion (11.6%) by agricultural land, which means that at least 98% have a land use that could be compatible with actions to reinforce ecological connectivity.

Figure 1 Land Use Potential Planning Areas for Biodiversity Protection

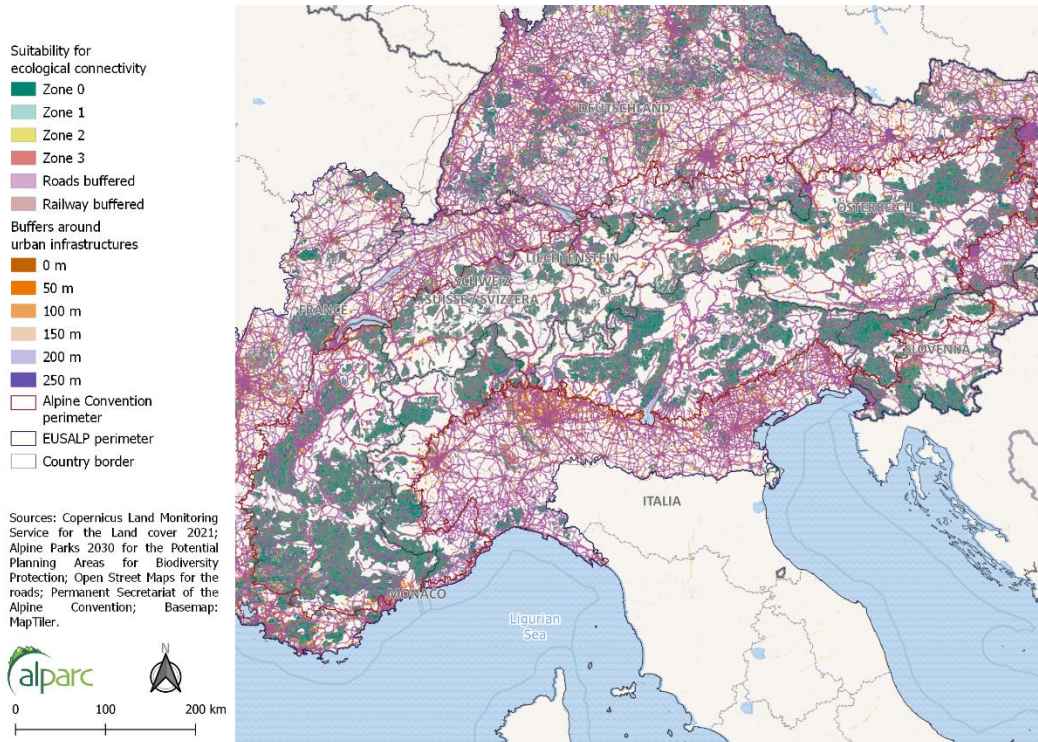


The urban development threatens biodiversity protection inside the Alps, as illustrated on the map 4 and 5, most of the land is categorised as rural areas with a low population density, however the presence of intermediate and densely populated areas in some of the alpine valleys and in the interface between the Alpine convention perimeter and the EUSALP area, increases the development and expansion of disruptive infrastructure and in consequence of landscape fragmentation.





Map 4 Degree of urbanisation - Spatial Planning Areas for Biodiversity Protection



Map 5 Settlement and infrastructure barriers inside Spatial Planning Areas for Biodiversity Protection

D.2.1.2 Planning instruments and processes for GBI network planning and implementation in PPs territories – Alpine space

2.4 Connectivity conservation and restoration objectives and linkage design goals

The Spatial Planning Areas include multiple habitats, with favourable conditions for biodiversity conservation including surface, protection, spatial development and topography criteria. ALPARC case study is not based on a single species approach but addresses the gaps in nature protection and overall connectivity inside the alpine space.

The objective of the case study is to analyse and provide recommendations to improve the current situation concerning ecological connectivity of the Spatial Planning Areas, different GIS analysis regarding identification of main barriers and key areas where action is necessary will be conducted.

2.5 Connectivity planning in pilot area

The Alps are a biodiversity hotspot, an extensive legal and strategic framework has been developed in order to protect landscapes, restore habitats and provide tools to address the increasing degradation of nature caused by artificialization and climate change. Ecological connectivity is a keystone for nature conservation and emerges as a solution to biodiversity loss.

The Alpine Convention has elaborated different protocols related to ecological connectivity: Spatial planning and sustainable development, Nature protection and landscape conservation.

Each alpine country has also different dispositions regarding the goals and spatial planning tools to develop ecological connectivity, the implementation of these strategies is nevertheless heterogeneous, the approaches, priorities, competences and responsibilities on different territorial levels varies from one country to another. The analysis will be focused on the elaboration of indicators applicable for the identification of areas and possible actions for improvement of ecological connectivity on the Alpine level.



Table 2 Overview of European and Alpine Space framework with relevance for ecological connectivity

| Territorial level | Main provisions - ecological connectivity | Framework |
|-------------------|--|---|
| EU | <p>The Global Biodiversity Framework (CoP-15) adopted in December 2022 includes ecological connectivity as one of the main elements to preserve biodiversity</p> <ul style="list-style-type: none"> • Ecosystems are safeguarded by maintaining, enhancing or restoring its integrity, connectivity and resilience. (Goal 1) • Effective restoration, enhancing among others, connectivity (Target 2) • Effective conservation and management of areas of particular importance for biodiversity - well-connected systems of protected areas (Target 3) • Green and blue spaces - improvements on surface, quality and connectivity. (Target 12) | Convention on Biological Biodiversity (CBD) ¹² |
| EU | <ul style="list-style-type: none"> • Enlargement of the existing Natura 2000 areas, with the identification of non-protected areas with a <i>"very high biodiversity and climate value"</i> • Elaboration of concrete commitments integrated into the EU nature restoration plan. | European Commission Biodiversity strategy for 2030 ³ |
| EU | <p>The Nature Restoration Law of the European Union (EU) aims to address the ongoing degradation of ecosystems and biodiversity loss and to achieve the objectives regarding climate change adaptation among other measures to meet other UE international commitments.</p> <p>The law sets out a series of restoration targets to fulfil on the 2030, 2040 and 2050 horizon, these measures apply to habitats where improvements need to be done, the measures apply to different landscapes:</p> | European Commission EU Nature restoration law ⁴ |

¹ Convention on Biological Biodiversity (CBD) 2022; Global goals for 2050; <https://www.cbd.int/gbf/goals>

² Convention on Biological Biodiversity (CBD) 2022; Global targets for 2030; <https://www.cbd.int/gbf/targets>

³European Commission; 2020; Biodiversity strategy for 2030; https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en#:~:text=Media-Objectives,people%2C%20climate%20and%20the%20planet

⁴ European Commission; 2024; Nature Restoration Law; <https://data.consilium.europa.eu/doc/document/PE-74-2023-INIT/en/pdf>

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| Territorial level | Main provisions - ecological connectivity | Framework |
|-------------------|---|---|
| | <ul style="list-style-type: none"> - Terrestrial, coastal and freshwater ecosystems: Restoration measures implemented on at least 30% of the surface of the identified habitats by 2030, at least 60% by 2040 and at least 90% by 2050. - Marine ecosystems: Restoration measures implemented on at least 30% of the surface of a selection of marine habitats by 2030, at least 60% by 2040 and at least 90% by 2050. - Urban ecosystems: Increase of urban green space. - Agricultural ecosystems: Includes measures for enhancing biodiversity, restoration of organic soils and high-diversity landscape features. - Forest ecosystems: Addresses restoration measures and establishes a set of indicators to evaluate the enhancement of biodiversity on forest ecosystems. <p>Ecological connectivity is a crucial aspect enunciated in the Nature Restoration Law, the efforts in nature restoration enhances ecological connectivity, the framework promotes the establishment and maintenance of ecological corridors to facilitate the movement of wildlife and creates dedicated measures to monitor, evaluate and improve the ecological integrity and connectivity of ecosystems.</p> | |
| Alps | The contracting parties make the commitment to adopt measures to ensure to create a network of protected areas and other landscapes, connectivity between natural elements - network of biotopes is mentioned among these measures. | Alpine Convention Protocol on the implementation of the Alpine Convention relating to nature protection and landscape conservation ⁵ |
| Alps | The Alpine Green Infrastructure Network aims to secure the provision of services and functions from nature including urban and rural areas by enhancing and enhancing links between protected and non-protected areas to ensure " <i>structural and functional landscape connectivity</i> " | EUSALP - Action Group 7 Political declaration ⁶ |

⁵ Alpine Convention; 1994; Protocol on the implementation of the Alpine Convention relating to nature protection and landscape conservation;
https://www.alpconv.org/fileadmin/user_upload/Convention/EN/Protocol_Conservation_of_Nature_EN.pdf

⁶ EU strategy for the Alpine region. EUSALP; 2017; "Alpine Green Infrastructure – Joining forces for nature, people and the economy, Joint declaration of Alpine States and Regions 2017"

2.6 Case study implementation

ALPARC will conduct an analysis of the current situation of ecological connectivity inside the Spatial planning areas for Biodiversity Protection, this step includes land use and barrier identification, priority areas analysis and the elaboration of recommendations based on the results of the analysis. The elaboration of a dedicated analysis of these areas aims to improve the current state of the ecological network and overall ecological connectivity with an emphasis on the possible measures to implement inside zones more suitable for achieving the nature protection COP15 goal.

The results will be addressed and discussed with different stakeholders present on the different platforms where ALPARC participates (Alpine Convention, EUSALP Action Group 7 and Action Group 6) and Alpine Protected Areas.



3 Bibliography

- ALPARC. (2023). *Alpine Parks 2030*. Chambéry. Retrieved from https://alparc.org/images/alpineparks/AlpineParks2030_LD.pdf
- ALPBIONET 2030 project. (2019). *Spatial analysis and perspectives of ecological connectivity in the wider Alpine areas - ALPBIONET2030 Alpatlas*.
- Alpine Convention. (n.d.). *PROTOCOL on the Implementation of the Alpine Convention of 1991 Relating to Spatial Planning and Sustainable Development*. Retrieved November 2015, from http://www.alpconv.org/en/convention/protocols/Documents/Protokoll_Raumplanun_gGB
- Convention Alpine. (2020). Retrieved from <https://www.alpconv.org/fr/home/convention/protocoles-declarations/>
- Convention on Biological Biodiversity (CBD). (2022). *Global goals for 2050*. Retrieved from <https://www.cbd.int/gbf/goals>
- Convention on Biological Biodiversity (CBD). (2022). *Global targets for 2030*. Retrieved from <https://www.cbd.int/gbf/targets>
- Convention on Biological Biodiversity. (2011). *Strategic Plan for Biodiversity 2011–2020 and the Aichi Targets*. Retrieved from <https://www.cbd.int/doc/strategic-plan/2011-2020/Aichi-Targets-EN.pdf>
- Convention on Biological Biodiversity. (2022). *Nations Adopt Four Goals, 23 Targets for 2030 In Landmark UN Biodiversity Agreement*. Montreal. Retrieved from https://prod.drupal.www.infra.cbd.int/sites/default/files/2022-12/221219-CBD-PressRelease-COP15-Final_0.pdf
- Econnect project. (2011). *Econnect presentation*. Retrieved from http://www.econnectproject.eu/cms/?q=download_area/de#Econnectpresentation
- European Commission. (2020). *Biodiversity strategy for 2030*. Retrieved from https://environment.ec.europa.eu/strategy/biodiversity-strategy-2030_en#:~:text=Media-Objectives,people%2C%20climate%20and%20the%20planet
- European Commission. (2024). *Nature Restoration Law*. Brussels. Retrieved from <https://data.consilium.europa.eu/doc/document/PE-74-2023-INIT/en/pdf>
- EUROSTAT. (2018). *DEGRÉ D'URBANISATION (DEGURBA)*. Retrieved from <https://ec.europa.eu/eurostat/fr/web/gisco/geodata/reference-data/population-distribution-demography/degurba>



Kohler, Y. (2016). Alpine Protected Areas and their contribution to the Alpine ecological network. In G. Plassmann, Y. Kohler, M. Badura, & C. Walzer, *Alpine Nature 2030* (pp. 51-53).

OpenSpacesAlps. (2022). *Guide to project main results*.

Swiss National Park. (2020, December). *Joint Ecological Continuum Analysing and Mapping Initiative 2.0*. Retrieved from <https://www.jecami.eu/viewer/saca/>

Taylor, P. F. (1993). *Connectivity is a vital element of landscape structure*. Oikos.



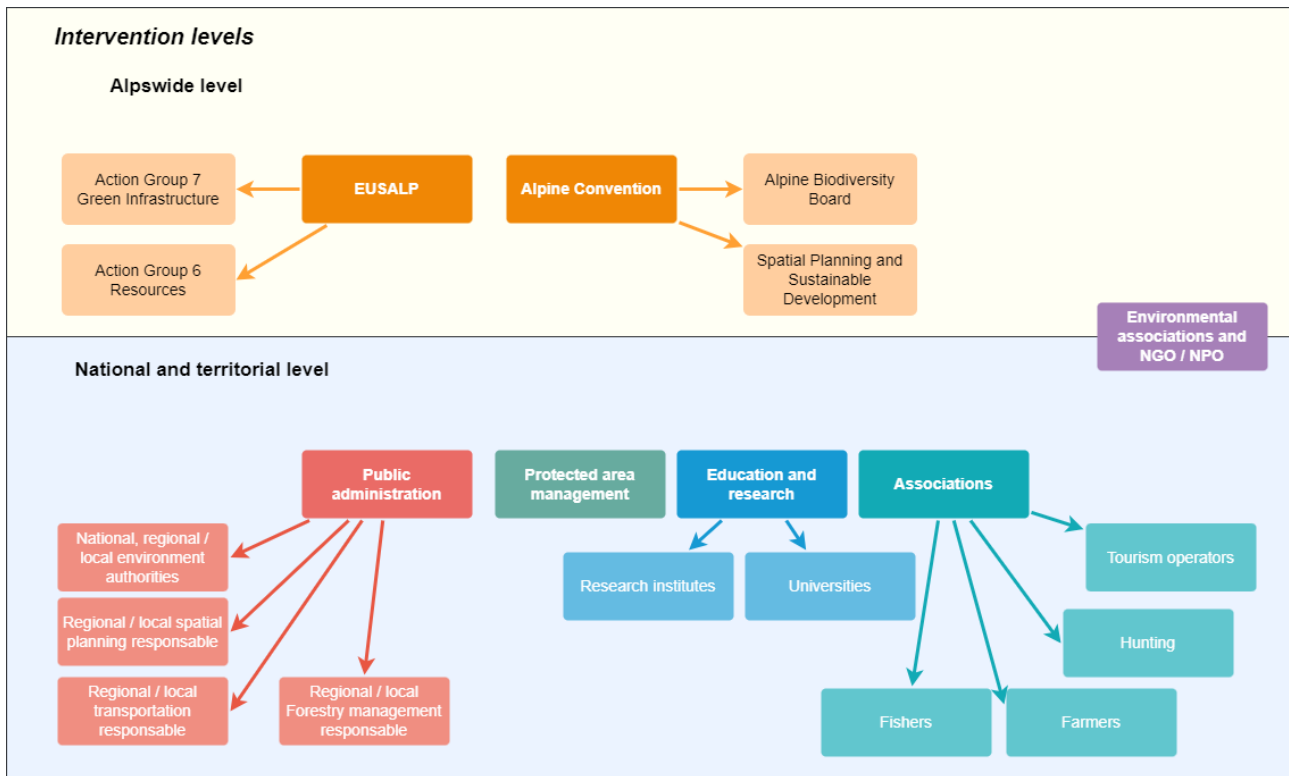
ANNEXES

Annex 1 Targeted stakeholders

| No | Organisation name | Role / Contribution |
|----|------------------------|--|
| 1 | EUSALP | Action group 7 – Green infrastructure |
| 2 | EUSALP | Action Group 6 - Resources |
| 3 | Alpine Convention | Spatial Planning and Sustainable Development Group |
| 4 | Alpine Convention | Alpine Biodiversity Board |
| 5 | Alpine Protected Areas | |



Annex 2 Stakeholder analysis Alpine Space



D.2.1.2 Planning instruments and processes for GBI network planning and implementation in PPs territories – Alpine space



Annex 3 RCWG programme

Part 1: Introduction and context

- Objective: The objective of the exchanges is to provide tools and information, to develop and share implementation recommendations for improving the current state of ecological connectivity with the case study territory.
- Composition: The information is addressed to stakeholders involved into the elaboration of strategies and directives regarding Ecological Connectivity and nature protection within the Alps. The organisations involved are listed on the Annex 1.
- The participants will receive the latest updates, insights and results from the case study, this information can be discussed, improved or adapted accordingly to the remarks elaborated by any representative from the selected stakeholders.

Part 2: Working programme

| Working programme – Alpine space | |
|----------------------------------|--|
| 1 | Introduction to the PTC project – Informative session |
| | Presentation of PTC project aims and vision |
| | Description of the expected results from the project |
| 2 | Introduction to the Alpine Space case study – Informative session |
| | Presentation of Alpine Space case study |
| | Description of the expected results from the case study |
| | Open discussion about the case study and consideration of relevant feedback and analysis data suggestions. |
| 3 | Alpine Space case study- status report |
| | Presentation of Alpine Space case study main results |
| | Open discussion about the results and consideration of relevant feedback and analysis data suggestions. |
| 4 | Alpine Space case study- status report |
| | Presentation of Alpine Space case study main results |
| | Discussion about the recommendations elaborated for the case study |

D.2.1.2 Planning instruments and processes for GBI network planning and implementation in PPs territories – Alpine space

D.2.1.2 Planning instruments and processes for GBI network planning and implementation in PPs territories

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