International Action Plan on Conservation of Large Carnivores and Ensuring Ecological Connectivity in the Carpathians for 2027-2035

The first edition of the International Action Plan was adopted at the 6th Meeting of the Conference of the Parties to the Framework Convention on the Protection and Sustainable Development of the Carpathians (COP6) in November 2020. The present second edition is an update of the International Action Plan, integrating the current state of knowledge and results of relevant projects. It is intended to be adopted at COP8 in December 2026.

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FOREWORD

The Carpathian Mountains are the backbone of central and eastern Europe, being one of Europe's last great wilderness areas. The Carpathian region is recognised as having ecological and cultural resources of global significance. With its exceptional biodiversity, the Carpathian Mountains are home to one of the largest populations of large carnivores in Europe, including brown bears, wolves and Eurasian lynxes.

However, these emblematic species face multi-dimensional problems: from human-caused mortality and habitat loss to climate-induced changes on ecosystem structure and vegetation. The development of transport infrastructure, intensive agriculture, and production-driven forestry in the Carpathian region has resulted in significant ecosystem fragmentation. Climate change superimposes additional stresses upon water and forage availability, phenology, and more. Together, these limit the dispersal and genetic exchange of wild animals and the long-term sustainability of healthy wildlife populations. Restoring and maintaining large, ecologically-connected suitable habitats is therefore essential to preserve biological diversity and safeguard long-term species persistence.

The International Action Plan on the Conservation of Large Carnivores and Ensuring Ecological Connectivity translates sustainable development goals into concrete actions for better coexistence between humans and large carnivores. With this International Action Plan, adopted at the Carpathian Convention's Sixth Conference of the Parties (COP6) in 2020 and its second edition at the COP8 in 2026, the Parties to the Convention provide an important tool for adequately managing and protecting Carpathian natural heritage and restoring the ecological connectivity across the region.

The Action Plan has been developed within the framework of the Carpathian Convention, with great support from the Convention's Parties, EU-funded projects, researchers, civil society, wildlife managers and many other project partners and experts involved. By setting a unique and innovative example of transboundary coordination and a population-based approach to the conservation of large carnivores, this Action Plan will benefit not only the Carpathian Mountains and the broader Danube Region, but also Europe and beyond.

INTRODUCTION
LEGAL BACKGROUND AND IMPLEMENTATION

The Carpathians are a mountain range in Central and Eastern Europe, stretching across seven countries in the form of an arc, starting in eastern Czech Republic, continuing through the Slovak Republic, southern Poland, northern Hungary, western Ukraine, and Romania, and then going south to the eastern part of Serbia.

The Carpathian region hosts one of the largest and most ecologically significant populations of large carnivores in Europe. Recent assessments estimate approximately 4,000 grey wolves and 2,700 Eurasian lynxes across the Carpathians, while the brown bear population is estimated at more than 9,000 individuals and may substantially exceed this figure following recent genetic monitoring efforts in Romania, which reported between 10,657 and 12,787 bears nationally [8]. The above-mentioned species require extensive, well-connected habitats [7] to establish their large home ranges and to allow long-distance movements, as well as abundant and diverse prey populations to satisfy their biological and ecological needs [12]. However, the area and connectivity of habitat patches are being challenged by increasing pressures of current and future development of transport and other types of infrastructure in the Carpathian region.

Despite being at the top of the food chain and their long-term protection in some countries, large carnivores are both directly threatened by humans and their activities as well as indirectly. The large carnivore species existing in human-dominated landscapes often face multiple threats, ranging from human-caused mortality (i.e. poaching) to habitat loss and fragmentation. Large carnivores are particularly vulnerable because of indirect effects from threats to their prey and depletion of food resources, notably as a result of climate change or land use change [11]. In addition, they typically have few offspring and occur in low densities [5][11]. Bear habituation is further generating and exacerbating conflicts in and around settlements particularly in Romania and Slovakia, reducing the social acceptance of the species. Such conflicts may lead to the disappearance of large carnivores and their natural habitats, resulting in long-term negative effects on important natural ecosystems.

Due to increasingly limited habitats, humans and large carnivores often share the same landscapes within the Carpathians, making it essential to improve and support their coexistence. Coexistence and conflict mitigation can be enhanced through effective prevention and compensation measures, also leading to reduced human-caused mortality of large carnivores [1]. Improving the social acceptance of large carnivores is also critical to promote coexistence and mitigate conflicts, such as through local educational activities, stakeholder consultation processes and community ownership in the conservation of large carnivores. Therefore, intensive education campaigns, conservation efforts and harmonised management measures need to be put into action, especially in transboundary contexts and significant corridors.

In this respect and following the *Guidelines for Population Level Management Plans for Large Carnivores Europe* [10], the Carpathian countries are encouraged to develop a common conservation and population-level management plan for all three large carnivore species of the Carpathian populations. The plans for each species should be used as a reference for the national management plans of each country, which should be aligned and in harmony with the regional plans. Such transboundary conservation and management plans, followed by national implementation actions, will aid the protection of large carnivores and ensure the ecological connectivity across the Carpathians, not just in EU Member States but also beyond the EU borders into Serbia and Ukraine.

Both the management plans for each species as well as the Action Plan will be in line with national and EU legislation (EU Habitats Directive and the Natura 2000 network) and will also contribute to achieving international goals and commitments of the Parties at both the global level (Sustainable Development Goals, especially SDG 15 Life on land, or Convention on Biological Diversity and its Kunming-Montreal Global Biodiversity Framework) and the regional level (Bern Convention and the Emerald Network).

Furthermore, cooperation across relevant multilateral environmental agreements is encouraged to consolidate and strengthen efforts for the conservation of large carnivores. In this context, the Convention on the Conservation of Migratory Species of Wild Animals (CMS) COP14 (February 2024) adopted the listing proposal for the Eurasian lynx (*Lynx lynx*) together with the related Concerted Action proposal, submitted by the International Union for Conservation of Nature (IUCN) Species Survival Commission (SSC) Cat Specialist Group[1] and the Secretariat of the Carpathian Convention. As a result, the Eurasian lynx has been included in Appendix II of CMS. The associated Concerted Action foresees, in cooperation with Range States, the development of dedicated conservation plans for the European subspecies *L. l. balcanicus* and *L. l. carpathicus*, as well as the preparation of guidelines for the recovery of the Carpathian lynx in mountainous regions of Western and Central Europe.

Building upon this development, a process to elaborate a joint conservation strategy for the autochthonous lynx population in the Carpathians was launched in early 2026. This *Strategy for the Conservation of the Lynx (Lynx lynx carpathicus) in the Carpathians 2027–2036* (Carpathian Lynx Strategy) [4] was finalised and submitted for adoption by the COP8 at the end of 2026, through close cooperation among experts from the Carpathian countries, facilitated by the IUCN SSC Cat Specialist Group and the Secretariat of the Carpathian Convention, and under the auspices of CMS, the Bern Convention, and the Carpathian Convention. The Carpathian Lynx Strategy will be considered an integral part of the Action Plan and will serve as a first example of a species-specific strategy to be applied in the Carpathians, potentially providing a model for similar approaches for other species.

The legal basis for the protection of large carnivores and ensuring ecological connectivity in the Carpathian region is also embodied in the Framework Convention on the Protection and Sustainable Development of the Carpathians (Carpathian Convention), which was adopted and signed by the seven Parties (Czech Republic, Hungary, Poland, Romania, Serbia, Slovak Republic, Ukraine) in May 2003 in Kyiv, Ukraine, and entered into force in January 2006. It is the only multi-level governance mechanism covering the whole Carpathian area and, following the Alpine Convention, the second sub-regional treaty-based regime for the protection and sustainable development of a mountain region worldwide. The relevant provisions regarding large carnivores and ecological connectivity are specified in:
» Article 4 of the Framework Convention on the Protection and Sustainable Development of the Carpathians (Carpathian Convention)
» The Protocol on Conservation and Sustainable Use of Biological and Landscape Diversity[2] (Biodiversity Protocol) (adopted by COP2 in 2008)
» The Strategic Action Plan for the implementation of the Protocol on Conservation and Sustainable Use of Biological and Landscape Diversity 2011-2023[3] (adopted by COP3 in 2008)

[1] https://www.catsg.org/
[2] http://www.carpathianconvention.org/convention/protocols/protocol-on-biodiversity/
[3]

» The Carpathian Biodiversity Framework (adopted by COP7 in 2023) and its Implementation Plan 2027-2035[4] (adopted by the First Carpathian Convention Extraordinary COP in 2026).
»The Protocol on Sustainable Transport[5] (especially Article 8: Transport infrastructure networks and their connectivity) (adopted by COP4 in 2014).

Impetus for intensified implementation of these provisions was given by the Declaration on the Management and Protection of Large Carnivores in the Carpathians[6] issued at the conference in Rožnov pod Radhoštěm, Czech Republic in 2016 calling for the development of an international action plan for the conservation and sustainable management for the Carpathian populations of large carnivores, the framework of which is laid out here. Carpathian Convention's Fifth Conference of Parties (COP5) in Hungary, 2017, gave the mandate to the Working Group on Biodiversity to prioritise its work on large carnivore conservation and initiated the development of the Action Plan. In the framework of the Memorandum of Cooperation between the Secretariat of the Carpathian Convention and the International Council for Game and Wildlife Conservation, signed in Rožnov pod Radhoštěm, a workshop laying the groundwork for achieving the harmonisation of monitoring of large carnivores in the Carpathians was organised in Eger, Hungary in October 2018 as part of the 5th Forum Carpaticum conference. The workshop initiated the preparation of a baseline report on the population status of large carnivores and monitoring methods in every Carpathian country as the basis for the implementation of the Action Plan.

Every six years from the adoption of the Action Plan, a report on the goals achieved and actions completed will be prepared by the Secretariat of the Carpathian Convention, with inputs provided by the Carpathian Convention Working Group on Biodiversity and Large Carnivore Expert Group. Such reports should include a report on the population status and monitoring of large carnivores in the Carpathians to be synchronised with reporting on Art. 17 of the EU Habitats Directive 8, which is mandatory for EU Member States. The first baseline report, the *Large Carnivore Monitoring in the Carpathian Mountains* [6], was published in 2021, and the second report will be initiated within the early period of this Action Plan.

The Action Plan should be implemented taking into account differences in conservation status and management methods between the Parties and with due consideration of the Carpathian Convention Articles, its Protocols and strategic documents.

Furthermore, the Action Plan can build on the outcomes of relevant projects, especially but not limited to:
» ConnectGREEN[7] Project, 2018-2021 - Restoring and managing ecological corridors in mountains as the green infrastructure in the Danube basin (Interreg Danube Transnational Programme)
» EuroLargeCarnivores[8] Project, 2017-2022 - Improving coexistence with large carnivores in Europe through communication, cross-border cooperation and knowledge exchange (EU LIFE Programme)
» SaveGREEN[9] Project, 2020-2022 – Safeguarding the functionality of transnationally important ecological corridors in the Danube region (Interreg Danube Transnational Programme)
» TRANSGREEN[10] Project, 2017-2019 – Integrated Transport and Green Infrastructure Planning in the Danube-Carpathian Region for the Benefit of People and Nature (Interreg Danube Transnational Programme)
» UNEP – Eurac Research – WWF Report: Combating Wildlife and Forest Crime in the Danube-Carpathian Region (Schlingemann ed. 2017)[11]
» LECA[12] Project, 2023-2026 - Supporting the coexistence and conservation of Carpathian LargE CArnivores (Interreg Central Europe Programme)
» NaturaConnect[13] Project, 2022-2026 - Building a resilient ecological network of conserved areas across Europe for nature and people (Horizon Europe)
» ForestConnect[14] Project, 2024-2026 - Towards a Climate-smart Forest Connectivity for Large Carnivores in

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http://www.carpathianconvention.org/tl_files/carpathiancon/Downloads/03%20Meetings%20and%20Events/COP/2014_COP4_Mikulov/WORKING%20DOCUMENTS/DOC7_Biodiversity%20Protocol%20SAP_Corrigendum.pdf
[4] http://www.carpathianconvention.org/wp-content/uploads/2026/03/ExCoP1-Decision_CBF-Implementation-Plan_ADOPTED.pdf
[5] http://www.carpathianconvention.org/tl_files/carpathiancon/Downloads/01%20The%20Convention/Protocols%20in%20pdf/Protocol%20on%20Sustainable%20Transport%20and%20Infrastructure_FINAL_adopted.pdf
[6] http://www.carpathianconvention.org/tl_files/carpathiancon/Downloads/03%20Meetings%20and%20Events/Implementation%20Committee/CCIC_Modra%202017/documents/Doc.%205_Declaration%20on%20Large%20Carnivores_Roznov.pdf
[7] http://www.interreg-danube.eu/approved-projects/connectgreen
[8] https://www.eurolargecarnivores.eu/en/
[9] http://www.interreg-danube.eu/approved-projects/savegreen
[10] http://www.interreg-danube.eu/approved-projects/transgreen
[11] https://wedocs.unep.org/rest/api/core/bitstreams/cd5fcb29-5c47-45ff-b867-2a748db5ee21/content
[12] www.interreg-central.eu/projects/leca/
[13] naturaconnect.eu
[14] https://interreg-danube.eu/projects/forestconnect

the Balkan-Carpathian-Dinaric Region (Interreg Danube Region Programme)

Implementation of the Action Plan will be supported by and further contribute to the Carpathian Countries Integrated Biodiversity Information System (CCIBIS), an online platform for collecting and sharing scientific information and data generated in projects within the Carpathian Convention community. In addition, undertaking activities of the Action Plan might contribute to the further development of CCIBIS by providing additional/updated data and relevant information.

Contrary to the Convention and its thematic Protocols, this Action Plan is not a legal act binding the Parties; therefore, it does not require the signature and ratification of the countries, and it is adopted by a decision of the Conference of the Parties.

ACTION PLAN

The following actions aim at the maintenance of the long-term viability of large carnivores' populations in the Carpathians, while ensuring their favourable conservation status[15] in the individual countries through transparent national processes, cross-border cooperation and a transdisciplinary approach.

As a species-specific strategy to be applied in the Carpathians, the *Strategy for the Conservation of the Lynx (Lynx lynx carpathicus) in the Carpathians 2027–2036* (Carpathian Lynx Strategy) [4] will contribute to the implementation of this Action Plan's strategic objectives and actions. The Carpathian Lynx Strategy aims to improve connectivity and gene flow of the Carpathian lynx, increase population trend and expanding range, and coordinate transboundary conservation across the Carpathians. Thus, this Strategy should also be considered when carrying out this Action Plan.

The Parties and relevant actors will undertake the following actions:

STRATEGIC OBJECTIVE 1
Standardise monitoring procedures of large carnivores in the Carpathians

1. Develop and implement standardised monitoring systems for each of the large carnivore species (brown bear, grey wolf, Eurasian lynx) in the Carpathians, including coordinated monitoring of transboundary populations, based on scientifically robust and harmonised methodologies, such as camera trapping, non-invasive genetic sampling, telemetry and SCALP criteria-based data validation. Ensure the monitoring systems are compatible with other relevant existing or future biodiversity monitoring systems, including alignment with monitoring the Essential Biodiversity Variables and the efforts of the European Biodiversity Observation Coordination Centre (EBOCC), while allowing for the use of different national methodologies, provided that the resulting data remain scientifically comparable.

RESULT: Improved data collection and spatially explicit information on large carnivore distribution, abundance, population trends, uncertainties, and threats to long-term persistence by using harmonised monitoring protocols across the Carpathians, adopting FAIR (Findable, Accessible, Interoperable, and Reusable) data management principles. Increased comparability and reliability of monitoring data, improved coordination of transboundary monitoring, increased transparency on data acquisition and interpretation, and reduced uncertainties about the status and trend of large carnivore populations.
INVOLVED ACTORS: Parties - governmental bodies responsible for large carnivore management, Carpathian Convention Working Group on Biodiversity (WG Biodiversity), Carpathian Convention Large Carnivore Expert Group, Protected area managers, research institutions, NGOs, Science for the Carpathians[16], Biodiversa+, EuroMammals
SUPPORTING RESOURCES: *Thematic guidance monitoring large carnivores* [27]*;* LECA pilot and reference area results [28][30][32][34]*; Cross-border recommendations for Carpathian border regions* [29]
FUNDING: State budget, project-based
TIMEFRAME: 2035

[15] According to the Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (Habitats Directive): "The conservation status will be taken as "favourable" when:
- population dynamics data on the species concerned indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis".
[16] https://carpathianscience.uj.edu.pl/

2. Continuously assess the population status of large carnivore species and effectively share information among relevant institutions (e.g. governmental bodies, NGOs, academic institutions) and the public, and conduct a report on the population status of large carnivores and monitoring in the Carpathians every six years, following the reporting requirements of the EU, which will be a part of the overall reporting on implementation of the Action Plan.

RESULT: Every six years, regular reports assess the status and trends of large carnivore populations using in-situ sampling and spatially comprehensive data on the distribution, size and trends of large carnivore populations across the Carpathians at a 10x10 km resolution.
INVOLVED ACTORS: Parties - governmental bodies responsible for large carnivore management, Secretariat of the Carpathian Convention, Carpathian Convention Large Carnivore Expert Group, Research institutes, Science for the Carpathians
SUPPORTING RESOURCES: *Large Carnivore Monitoring in the Carpathian Mountains* (2021) [6]
FUNDING: State budget, core budget of the Carpathian Convention
TIMEFRAME: Ongoing

3. Develop interoperable digital tools and data-sharing systems for large carnivore monitoring and adaptive management in the Carpathians, including centralised databases and mobile applications for field data collection, data validation and reporting, to be integrated with conflict databases, connectivity analyses and intervention records. Develop predictive conflict hotspot models incorporating land-use, conflict records, connectivity, attractants and climate change. Ensure that sensitive biodiversity data, such as den locations, breeding sites, and monitoring equipment locations, are only accessible to authorised institutions.

RESULT: Improved efficiency, relevance, interoperability and timeliness of monitoring data collection, sharing and reporting across the Carpathian region. Better conflict forecasting is performed and used for targeting conflicts in vulnerable areas, combined with a better allocation of prevention funding. Sensitive biodiversity data is protected, while data made publicly available is presented in an appropriately generalised spatial format.
INVOLVED ACTORS: Parties - governmental bodies responsible for large carnivore management, NGOs, protected area managers, research institutions, IT and data management experts, Carpathian Convention Large Carnivore Expert Group, Science for the Carpathians
SUPPORTING RESOURCES: Existing national monitoring databases; EU data standards and digital monitoring tools; *Thematic guidance monitoring large carnivores* [27]
FUNDING: State budget, EU funding programmes, project-based
TIMEFRAME: 2030

STRATEGIC OBJECTIVE 2
Prevent habitat fragmentation and ensure ecological connectivity in the Carpathians

1. Identify, map and protect large, connected, suitable habitats for large carnivores within and around conservation areas (Natura 2000 and Emerald sites, OECMs, etc.), especially extensive forest complexes with low levels of human disturbance and roadless areas.

RESULT: Key high-quality habitats that ensure the long-term viability of large carnivores are better identified and preserved, protecting breeding and denning sites. The *Map of ecological networks for large carnivores in the Carpathians* [15] is updated with key habitats identified for restoration and management. CCIBIS as an information platform supports implementation of the Action Plan.
INVOLVED ACTORS: Parties, Partners involved in future EU-funded projects, CCIBIS Administrators, Secretariat of the Carpathian Convention, Large Carnivore Expert Group, WG Biodiversity, NGOs, research institutions, Science for the Carpathians, protected areas
SUPPORTING RESOURCES: *Map of ecological networks for large carnivores in the Carpathians* [15]*; Methodology for Identifying Ecological Corridors in the Carpathian Countries by using Large Carnivores as Umbrella Species* [17]*; Guidelines for the Identification, Conservation, Restoration, and Management of Ecological Corridors in the Carpathian Ecoregion* [16]*; Strategic Action Plan with Adaptation Actions and Climate Resilience-Enhancing Forest Management Practices for Protected Areas* [35]*;* NaturaConnector [25] (policy decision support tool); *Guidelines for connectivity conservation and planning in Europe* [23] (with supporting web-based inventory and databases); *Variants of spatial configurations of European ecological corridors* [22]
FUNDING: Project-based, state budget
TIMEFRAME: 2032

2. Identify, expand and protect key ecological corridors, including movement/migration corridors, between

identified core areas and stepping stones that facilitate dispersal across otherwise unsuitable habitats. Prioritise the improvement of the functionality of current corridors and restoration of key fragmented corridor sections to increase habitat connectivity and support species movement. Complete model-based and field-validated corridor mapping for large carnivores in select cross-border pilot areas.

RESULT: Monitoring of ecological connectivity between significant Carpathian ecosystems is enhanced by using identified indicator species and metrics (including large carnivores) for specific habitats. The *Map of ecological networks for large carnivores in the Carpathians* [15] is updated with ecological corridors identified for restoration and management. CCIBIS as an information platform supports implementation of the Action Plan.
INVOLVED ACTORS: Parties, Partners involved in future EU-funded projects, CCIBIS administrators, Secretariat of the Carpathian Convention, Large Carnivore Expert Group, WG Biodiversity, NGOs, research institutions, Science for the Carpathians, protected areas
SUPPORTING RESOURCES: *Map of ecological networks for large carnivores in the Carpathians* [15]; *Methodology for Identifying Ecological Corridors in the Carpathian Countries by using Large Carnivores as Umbrella Species* [17]*; Guidelines for the Identification, Conservation, Restoration, and Management of Ecological Corridors in the Carpathian Ecoregion* [16]*; Strategic Action Plan with Adaptation Actions and Climate Resilience-Enhancing Forest Management Practices for Protected Areas* [35]*; Methodology for Standardised Monitoring of Ecological Connectivity - Guidelines for the Analysis of Structural and Functional Connectivity* [20]*;* NaturaConnector [25]; *Guidelines for connectivity conservation and planning in Europe* [23]*; Variants of spatial configurations of European ecological corridors* [22]
FUNDING: Project-based, state budget
TIMEFRAME: 2033

3. Identify and manage demographic threats, restoring suitable habitats and acting on critical dispersal bottlenecks and on high mortality areas. Monitor and raise awareness of the impacts of existing barriers to ecological connectivity, such as border security fences, for large carnivores and conduct detailed planning to mitigate some of their adverse impacts on their populations, while fully respecting national security requirements and border protection obligations of the Parties.

RESULT: Improved mapping of existing barriers to connectivity. Reduction of barriers to connectivity in current and future infrastructure projects.
INVOLVED ACTORS: Parties, Large Carnivore Expert Group, WG Biodiversity, NGOs, research institutions, Science for the Carpathians, protected areas
SUPPORTING RESOURCES:
FUNDING: Project-based, state budget
TIMEFRAME: 2035

4. Develop a methodology for designating ecological corridors to facilitate their official protection and mainstreaming into spatial planning, restoration policy (including, where applicable, National Restoration Plans and other relevant national restoration instruments), defragmentation strategies, transport planning and development processes. Encourage the construction of wildlife-friendly infrastructure, crossings, warning and monitoring systems and other measures aimed at reducing mortality and allowing for species dispersal in new and existing development projects. Parties should seek to reconcile ecological connectivity objectives with national defence and security needs.

RESULT: Methodology for designating ecological corridors is adopted in all Carpathian countries. The recommendations, tools and practices on improving planning processes are used as a mechanism for mainstreaming biodiversity conservation, better reflecting and integrating ecological networks and connectivity into spatial planning, leading to reduced habitat fragmentation. Wildlife movement across fragmented landscapes is safeguarded, ultimately reducing human-wildlife conflict.
INVOLVED ACTORS: Parties, practitioners, partners involved in future EU-funded projects
SUPPORTING RESOURCES: *Wildlife and Traffic in the Carpathians: Guidelines how to minimize impact of transport infrastructure development on nature in the Carpathian countries* [13]; *Gap Analysis on the Identification of the Needs for Improving the Planning Processes and Tools Related to Ecological Corridors Identification and Preservation* [14]; *Strategic Action Plan with Adaptation Actions and Climate Resilience-Enhancing Forest Management Practices for Protected Areas* [35]*; Biodiversity & Infrastructure: a Handbook for action* [2]*; Toolkit: for Ensuring Sustainable Use and Management of Green Infrastructure in Strategic Environmental Assessments (SEA) and Environmental Impact Assessments (EIA)* [18]; *Handbook of Best Practices for Planning and Implementing Mitigation Measures regarding Landscape Connectivity* [19]; *State of play (Report) on knowledge and capacity related to mainstreaming biodiversity into the transport sector* [36]
FUNDING: Project-based, state budget
TIMEFRAME: Ongoing

5. Address the need for enhanced connectivity with other mountain ranges and neighboring areas, including e.g. the Alps and Balkan mountain regions, to improve wildlife dispersal and the genetic diversity of large carnivore populations, through knowledge exchange and increased cooperation at the regional and European level.

RESULT: Exchange of knowledge between and cooperation with other mountain regions and neighboring areas is improved. Meeting(s) on ecological connectivity in Europe is organised and/or attended.
INVOLVED ACTORS: Parties, Large Carnivore Expert Group, WG Biodiversity, Secretariat of the Carpathian Convention, NGOs, Science for the Carpathians.
SUPPORTING RESOURCES: *Carpathian Lynx Strategy* [4]; *Variants of spatial configurations of European ecological corridors* [22]; *Thematic guidance monitoring large carnivores* [27]*; LECA pilot and reference area results* [28][30][32][34]*; Cross-border recommendations for Carpathian border regions* [29]
FUNDING: Project-based
TIMEFRAME: 2035

STRATEGIC OBJECTIVE 3
Improve coexistence of humans with large carnivores

1. Promote the collection and exchange of best practices on managing and reducing conflicts between humans and large carnivores among the Carpathian countries and other mountain and neighboring regions, including preventive measures, education and information campaigns, conflict-risk assessments, and sharing of strengths and weaknesses in administrative procedures, legislation and practical implementation facilitated through dedicated workshops, stakeholder exchanges and field visits.

RESULT: The Carpathian stakeholders benefit from and contribute to international knowledge exchange on managing and reducing human-large carnivore conflicts. The sharing and implementation of preventive measures, methodologies, and best and less effective practices are enhanced.
INVOLVED ACTORS: Parties, Large Carnivore Expert Group, WG Biodiversity, research institutions, international organisations, NGOs, Science for the Carpathians
SUPPORTING RESOURCES: *Thematic guidance conflict prevention* [31]*;* LECA pilot and reference area results [28][30][32][34]*; Cross-border recommendations for Carpathian border regions* [29]*; Carnivore Damage Prevention Newsletter* [3]
FUNDING: State budget, project-based
TIMEFRAME: Ongoing

2. Develop, test and promote effective preventive and mitigation methods to minimise human-large carnivore conflicts according to diverse territorial systems and socioeconomic conditions. Establish a joint methodology and best practices with species-specific prevention and response standards for protecting livestock and reducing their depredation, restoring and enhancing valuable forest and non-forest habitats, improving waste and beehive management, and reducing anthropogenic food attractants.

RESULT: Conflicts between humans and large carnivores are substantially minimised through effective prevention and mitigation measures. Verified incidents of livestock depredation, the emergence of conflict individuals, and recurring damage events (per protected farm or livestock unit) are reduced. Compliance with technical prevention and management standards is improved, including measures to reduce access to anthropogenic food attractants, maintain habitat connectivity and establish Bear-Smart Communities, as evidenced by an increased number of municipalities and protected areas implementing such methods and infrastructure.
INVOLVED ACTORS: Parties, Large Carnivore Expert Group, WG Biodiversity, research institutions, international organisations, NGOs, protected area managers, farmers and livestock breeders
SUPPORTING RESOURCES: *Strategic Action Plan with Adaptation Actions and Climate Resilience-Enhancing Forest Management Practices for Protected Areas* [35]*; Thematic guidance conflict prevention* [31]*;* LECA pilot and reference area results [28][30][32][34]*; Cross-border recommendations for Carpathian border regions* [29]*; Carnivore Damage Prevention Newsletter* [3]
FUNDING: State budget, project-based
TIMEFRAME: 2035

3. Establish and build institutional and operational capacities of professional intervention teams to respond quickly to negative human-large carnivore interactions, using preferably non-lethal methods where applicable, and support the development of protocols, conflict hotspot identification and targeted response measures for ensuring consistent and effective interventions.

RESULT: Human–large carnivore conflicts are properly addressed and responded to in a timely, coordinated and effective manner, particularly in areas with recurrent conflicts.
INVOLVED ACTORS: Parties - relevant governmental agencies, local authorities
SUPPORTING RESOURCES: *Strategic Action Plan with Adaptation Actions and Climate Resilience-Enhancing Forest Management Practices for Protected Areas* [35]*; Thematic guidance conflict prevention* [31]*;* LECA pilot and reference area results [28][30][32][34]*; Cross-border recommendations for Carpathian border regions* [29]
FUNDING: State budget, project-based
TIMEFRAME: 2035

4. Develop and implement impactful common national and Carpathian-wide public awareness campaigns, communication materials and environmental education projects, including monitoring and measuring public attitudes and social acceptance of large carnivores and their management through periodic surveys, interviews and social research. Co-create community coexistence plans through stakeholder consultation processes.

RESULT: A harmonised system for monitoring public perceptions of large carnivores is established across the Carpathian countries, generating comparable and regularly updated data on awareness, attitudes, risk perception, and knowledge. Evidence-based communication and education initiatives improve public understanding of large carnivore conservation needs and coexistence measures. Community participation in coexistence planning is strengthened, resulting in increased awareness and public engagement.
INVOLVED ACTORS: Parties, Large Carnivore Expert Group, research institutions, international organisations, NGOs, local authorities, farmers and livestock breeders, general public, protected area managers, Science for the Carpathians
SUPPORTING RESOURCES: *Strategic Action Plan with Adaptation Actions and Climate Resilience-Enhancing Forest Management Practices for Protected Areas* [35]*; Thematic guidance conflict prevention* [31]*; Carnivore Damage Prevention Newsletter* [3]*; Carpathian Lynx Strategy* [4]
FUNDING: State budget, project-based
TIMEFRAME: 2035

5. Develop and implement conflict mediation mechanisms and community-based approaches to assess and improve trust, institutional legitimacy and perceived fairness of large carnivore management measures, including compensation systems, prevention programmes and intervention responses.

RESULT: Effective conflict resolution and mediation mechanisms are operational at national and local levels, enabling the early identification and management of disputes related to large carnivore management. Trust in responsible institutions, perceived fairness of management measures, and stakeholder cooperation are improved. Conflicts among stakeholders are reduced and management decisions increasingly benefit from collaborative and socially-accepted solutions.
INVOLVED ACTORS: Parties, governmental authorities, research institutions, NGOs, local authorities, Large Carnivore Expert Group, livestock associations, hunting organisations, protected area managers
SUPPORTING RESOURCES: *Thematic guidance conflict prevention* [31]*; Carnivore Damage Prevention Newsletter* [3]*;* IUCN Human-Wildlife Conflict resources
FUNDING: State budget, project-based
TIMEFRAME: 2035

STRATEGIC OBJECTIVE 4
Improve law enforcement with respect to illegal killing of large carnivores

1. Establish and build institutional and operational capacities of law enforcement agencies to improve the effectiveness of poaching prevention and law enforcement with respect to illegal killings of large carnivores by researching and understanding local causes and patterns of illegal killings, harmonising investigation and forensic protocols, systemically collecting and analysing wildlife crime data, and investing more resources into investigation and activities preventing illegal killings.

RESULT: Illegal killings of large carnivores are considered a serious violation of law, institutional capacities for investigation and prosecution are strengthened, and awareness concerning the penalties and legal consequences for killing illegally throughout the society is improved. Improved availability of wildlife crime data, evidence and reporting support law enforcement efforts.
INVOLVED ACTORS: Parties - relevant national law enforcement agencies and governmental bodies responsible for nature conservation, research institutions, local authorities
SUPPORTING RESOURCES: *Thematic guidance conflict prevention* [31]*; Thematic guidance poaching investigation* [33]*;* LECA pilot and reference area results [28][30][32][34]*; Cross-border recommendations for Carpathian border regions* [29]

FUNDING: State budget
TIMEFRAME: 2034

2. Promote and enhance cross-border cooperation of law enforcement agencies among the Carpathian countries, including regular exchange of information, training, seminars and best practices on investigating and prosecuting illegal killings.

RESULT: Communication and exchange among the relevant law-enforcement agencies from the Carpathian countries is established and functioning from increased number of trainings and information exchanges.
INVOLVED ACTORS: Parties - relevant national law enforcement agencies, research institutions, NGOs
SUPPORTING RESOURCES: *Thematic guidance conflict prevention* [31]*; Thematic guidance poaching investigation* [33]*;* LECA pilot and reference area results [28][30][32][34]*; Cross-border recommendations for Carpathian border regions* [29]
FUNDING: State budget, project-based
TIMEFRAME: Ongoing

STRATEGIC OBJECTIVE 5
Improve communication and cooperation between all relevant stakeholders

1. Maintain and further broaden the Carpathian Convention Large Carnivore Expert Group to ensure comprehensive representation of all relevant stakeholders for the implementation of the Action Plan and encourage regular communication and cooperation among them.

RESULT: Carpathian Convention Large Carnivore Expert Group is improved and functioning. Regular communication and exchange among the relevant stakeholders are ensured through online exchange and physical meetings (subject to the availability of funds).
INVOLVED ACTORS: Parties, Large Carnivore Expert Group, Secretariat of the Carpathian Convention, key stakeholders identified
SUPPORTING RESOURCES: *Thematic guidance conflict prevention* [31]*; Thematic guidance monitoring large carnivores* [27]*; Thematic guidance poaching investigation* [33]
FUNDING: State budget, project-based
TIMEFRAME: Ongoing

2. Ensure cross-sectoral cooperation in implementing the Action Plan by involving representatives of different sectors, such as environment, transport, forestry, hunting, agriculture, tourism, and spatial planning, in generating and implementing viable solutions and measures to address the conservation of large carnivores at local, national and Carpathian levels.

RESULT: Cross-sectoral cooperation is ensured through thematic and cross-sectoral working group meetings and consultation processes under the Carpathian Convention to address complex issues related to large carnivore conservation. Regular and structured dialogue between authorities, landowners, farmers, hunters, foresters, tourism operators, conservation organisations, researchers and other local and relevant stakeholders is ensured. The Action Plan is implemented in consultation and cooperation with other relevant sectors, reducing polarisation, avoiding isolated or opposite approaches, and strengthening broader ownership of management decisions.
INVOLVED ACTORS: Parties, relevant Carpathian Convention Working Groups, Secretariat of the Carpathian Convention, local authorities, research institutions, hunting organisations, NGOs, Science for the Carpathians, protected area managers, livestock associations, tourism organisations
SUPPORTING RESOURCES: *Thematic guidance conflict prevention* [31]*; Thematic guidance monitoring large carnivores* [27]*; Thematic guidance poaching investigation* [33]
FUNDING: State budget, project-based
TIMEFRAME: Ongoing

3. Develop and implement periodic governance assessments of large carnivore management systems to evaluate effectiveness, transparency, accountability, cross-sectoral cooperation and stakeholder participation in governance processes at the national and transboundary levels.

RESULT: Every six years, governance strengths, weaknesses, opportunities and barriers are systematically identified via a report, facilitating adaptive improvements of national and transboundary management systems. Increased transparency and accountability contribute to improved trust among stakeholders and society.
INVOLVED ACTORS: Parties, Secretariat of the Carpathian Convention, Large Carnivore Expert Group, research institutions, NGOs, international organisations

SUPPORTING RESOURCES: *Cross-border recommendations for Carpathian border regions* [29]*;* LCIE guidance and recommendations on coexistence and governance [9]
FUNDING: State budget, project-based
TIMEFRAME: Ongoing, synchronised with Action 1.2

STRATEGIC OBJECTIVE 6
Strengthen institutional capacity building

1. Ensure adequate resource availability and technical capacity of responsible authorities to conduct efficient large carnivore management and monitoring (from planning to implementation of effective measures, species monitoring, evaluation of management effectiveness, and timely assessment and resolution of conflicts), stakeholder dialogue and communication, and law enforcement. Capacity building shall include trained duty rosters, recurring practical exercises, appropriate equipment, veterinary support and documented operating procedures necessary to maintain an effective conflict response system.

RESULT: Effective institutions that can work proactively to reduce conflicts and ensure the viability of species under their jurisdiction.
INVOLVED ACTORS: Parties – relevant governmental bodies responsible for large carnivore management, law enforcement agencies
SUPPORTING RESOURCES: *Thematic guidance conflict prevention* [31]*; Thematic guidance monitoring large carnivores* [27]*; Thematic guidance poaching investigation* [33]
FUNDING: State budget
TIMEFRAME: Ongoing

2. Build the technical capacities of key stakeholders in planning a Trans-European Nature Network of natural protected and connected areas and a Trans-European Network of Transport, mainstreaming ecological connectivity into spatial planning, design, construction and maintenance of transport infrastructure, facilitating the exchange of expertise, best practices, research activities, and stakeholder engagement opportunities.

RESULT: Professional competences for conservation planning are enhanced, and nature conservationists use the NaturaConnect outcomes covering various frameworks and technical tools for policy, financial instruments, stakeholder engagement, scenarios and models, ecological connectivity, and spatial conservation planning.
INVOLVED ACTORS: Parties, relevant governmental bodies responsible for nature conservation and/or transportation, protected area managers, NGOs, and other relevant professional bodies
SUPPORTING RESOURCES: NaturaConnect Learning Platform [24]; *Wildlife and Traffic in the Carpathians: Guidelines how to minimize impact of transport infrastructure development on nature in the Carpathian countries* [13]
FUNDING: NaturaConnect Learning Platform's self-paced courses are freely available, state budget
TIMEFRAME: Ongoing

3. Make all relevant documents available on the Carpathian Convention website and/or CCIBIS, including the reports on the population status of large carnivores and monitoring in the Carpathians.

RESULT: Information on large carnivore populations' status available for stakeholders and the general public.
INVOLVED ACTORS: Secretariat of the Carpathian Convention, CCIBIS Administrators
FUNDING: Project-based, core budget of the Carpathian Convention
TIMEFRAME: Ongoing

STRATEGIC OBJECTIVE 7
Decrease impacts of climate change on large carnivores and their habitats

1. Predict and prevent demographic and conservation threats from climate change by identifying, protecting, effectively managing, and restoring climate-resilient ecological corridors. Discuss and develop, if possible, an assessment of climate change effects on large carnivores, their prey species and their habitats, including related recommendations, adaptation measures and nature-based solutions, utilising results and data from existing projects examining accelerating exposure of European areas to climate change.

RESULT: Assessment of ongoing and projected future climate change effects on the Carpathians' large carnivores, their food webs, and their habitats and related recommendations and adaptation measures are developed. Priority areas identified that enhance functional connectivity between current and future climatically suitable habitat patches for large carnivores and their prey.

INVOLVED ACTORS: Parties, relevant governmental bodies responsible for climate policies, Large Carnivore Expert Group, WG Biodiversity, WG Climate Change, WG Forest, Secretariat of the Carpathian Convention, Science for the Carpathians network and research institutions, international organisations, NGOs
SUPPORTING RESOURCES: *Maps of conservation and restoration value for corridors under different scenarios* [21]; *Energetic Constraints Reshape Climate-Tracking Opportunities for Large Mammals Across European Protected Area Networks* [26]
FUNDING: Project-based
TIMEFRAME: 2032

2. Once the assessment is developed, support the implementation of its recommendations and adaptation measures, as appropriate.

RESULT: Current and potential future effects of climate change on Carpathian large carnivore populations and their habitats are known, recognised and reduced through recommended land conservation and wildlife management actions. Recommendations are included, where applicable, into mapping and planning of key regional ecological corridors. Climate refugia for large carnivores and their prey are identified and prioritised for conservation and/or restoration.
INVOLVED ACTORS: Parties, Large Carnivore Expert Group, WG Biodiversity, WG Climate Change, WG Forest, Secretariat of the Carpathian Convention, Science for the Carpathians network, international organisations, NGOs
FUNDING: State budget, project-based
TIMEFRAME: 2035

3. Promote knowledge exchange to identify local targeted actions aimed at reducing impacts of climate change on large carnivores and their habitats within Carpathians and with other mountain and neighbouring regions.

RESULT: Knowledge and management tools to reduce impacts of climate change on large carnivores and their habitats are generated and applied in the region.
INVOLVED ACTORS: Parties, Large Carnivore Expert Group, WG Biodiversity, WG Climate Change, WG Forest, Secretariat of the Carpathian Convention, international organisations, NGOs
SUPPORTING RESOURCES: *Strategic Action Plan with Adaptation Actions and Climate Resilience-Enhancing Forest Management Practices for Protected Areas* [35]*; NaturaConnect Learning Platform* [24]
FUNDING: State budget, project-based
TIMEFRAME: Ongoing

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