Local Cross-Sectoral Operational Plan

Kobernausser Forest (Austria)

Part of Output T2.2 "Local Cross-Sectoral Operational Plans"

ENVIRONMENT AGENCY AUSTRIA umweltbundesamt
Environment Agency Austria

September, 2022

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SaveGREEN

Project co-funded by European Union funds (ERDF)
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Citation:
Danzinger, F., Sedy, K., Plutzar, C., Grillmayer, R. (2022) Local Cross-Sectoral Operational Plan. Kobernausser Forest. Part of Output T2.2 “Local Cross-Sectoral Operational Plans”, Danube Transnational Programme DTP3-314-2.3 SaveGREEN Project

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Acknowledgement:
This publication represents part of Output T2.2 Local Cross-Sectoral Operational Plans of the SaveGREEN “Safeguarding the functionality of transnationally important ecological corridors in the Danube basin” project (DTP3-314-2.3, July 2020 – December 2022) funded by the Danube Transnational Programme through the European Regional Development Funds. SaveGREEN built on key results of the DTP projects TRANSGREEN “Integrated Transport and Green Infrastructure Planning in the Danube-Carpathian Region for the Benefit of People and Nature”, ConnectGREEN “Restoring and managing ecological corridors in mountains as the green infrastructure in the Danube basin“, and HARMON – Harmonization of Green and Grey Infrastructure in Danube Region.

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Local Cross-Sectoral Operation Plan Kobernausser Forest (Austria)

Part of Output T2.2 “Local Cross-Sectoral Operational Plans”

SaveGREEN “Safeguarding the functionality of transnationally important ecological corridors in the Danube basin”

Danube Transnational Programme, DTP3-314-2.3

December 2022


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About SaveGREEN

The SaveGREEN project, funded by the Interreg Danube Transnational Programme is focused on the identification, collection, and promotion of the best solutions for safeguarding ecological corridors in the Carpathians and further mountain ranges in the Danube region. Currently, ecological corridors in the region are under threat due to the lack of adequate planning of economic development initiatives. Therefore, basing its work on integrated planning, SaveGREEN will monitor the impact of mitigation measures in 8 pilot areas and derive proper recommendations for follow-up actions and policy design.

www.interreg-danube.eu/savegreen

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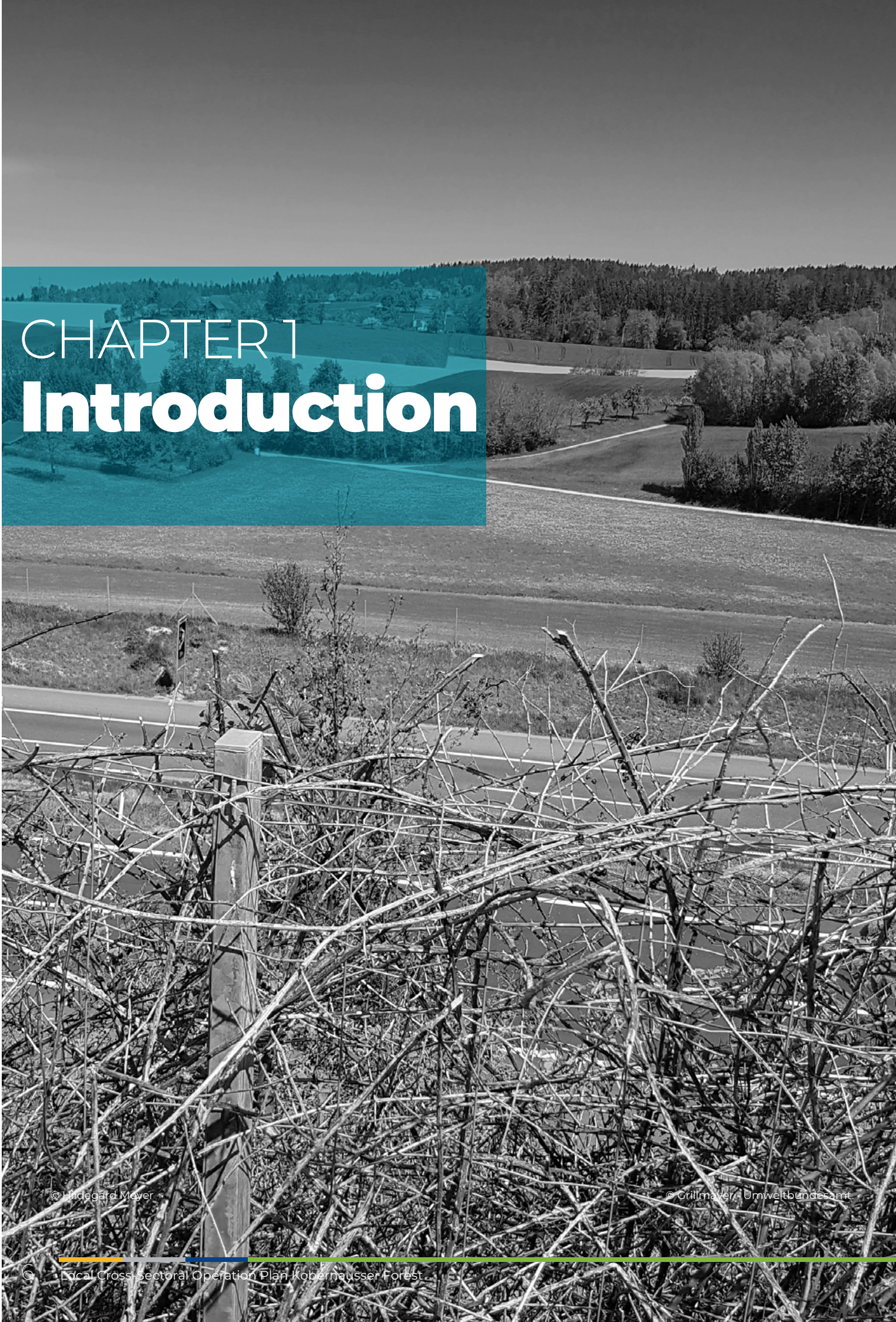
CHAPTER 1
Introduction



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The main objective of the SaveGREEN project was to develop specific solutions to preserve, improve or restore the functionality of key ecological corridors in the Carpathian, Alpine and Bulgarian mountain valleys, where human activities as well as critical points for wildlife migration converge and thus the risk of conflict is the highest.

As the proposed approach is to foster cross-sectoral and transnational cooperation and building of knowhow for integrated planning at landscape level, general pressures or threats to be considered when landscape connectivity is of concern was coupled with connectivity-specific objectives.

By screening each sector of interest, we highlighted the potential sectoral impacts - an important reference for managers to investigate the current or potential problems that needs to be addressed by targeted measures. At pilot area level, the local experts worked with stakeholders to identify and prioritize these problems and propose measures to overcome them through particular actions, informed also by the situations in the other project pilot areas and by constant collaboration with project partners and external experts.

This common logical framework, which facilitates the logical path from pressures / threats to concrete actions, forms the structure of the Cross Sectoral Operational Plans (CSOPs) which represents the original response of SaveGREEN to threats to connectivity and the basis for implementation of practical measures in the eight pilot areas of the project.

Working directly with stakeholder groups in the pilot areas and involve them actively, in a participatory manner, in the development of the CSOPs of the pilot areas should create long-lasting ownership of the plans and ease the future implementation.

The CSOPs are addressing the complex issue of landscape connectivity and should be considering a medium to long -term effort. While some of the actions have been (partially) implemented during the SaveGREEN project, most of them need to be implemented in the future. Moreover, constant assessment and adaptation of the actions is needed in order to respond to the dynamic of the multitude of factors affecting the landscapes, as well as to the capacity, resources and available knowledge of the stakeholders.

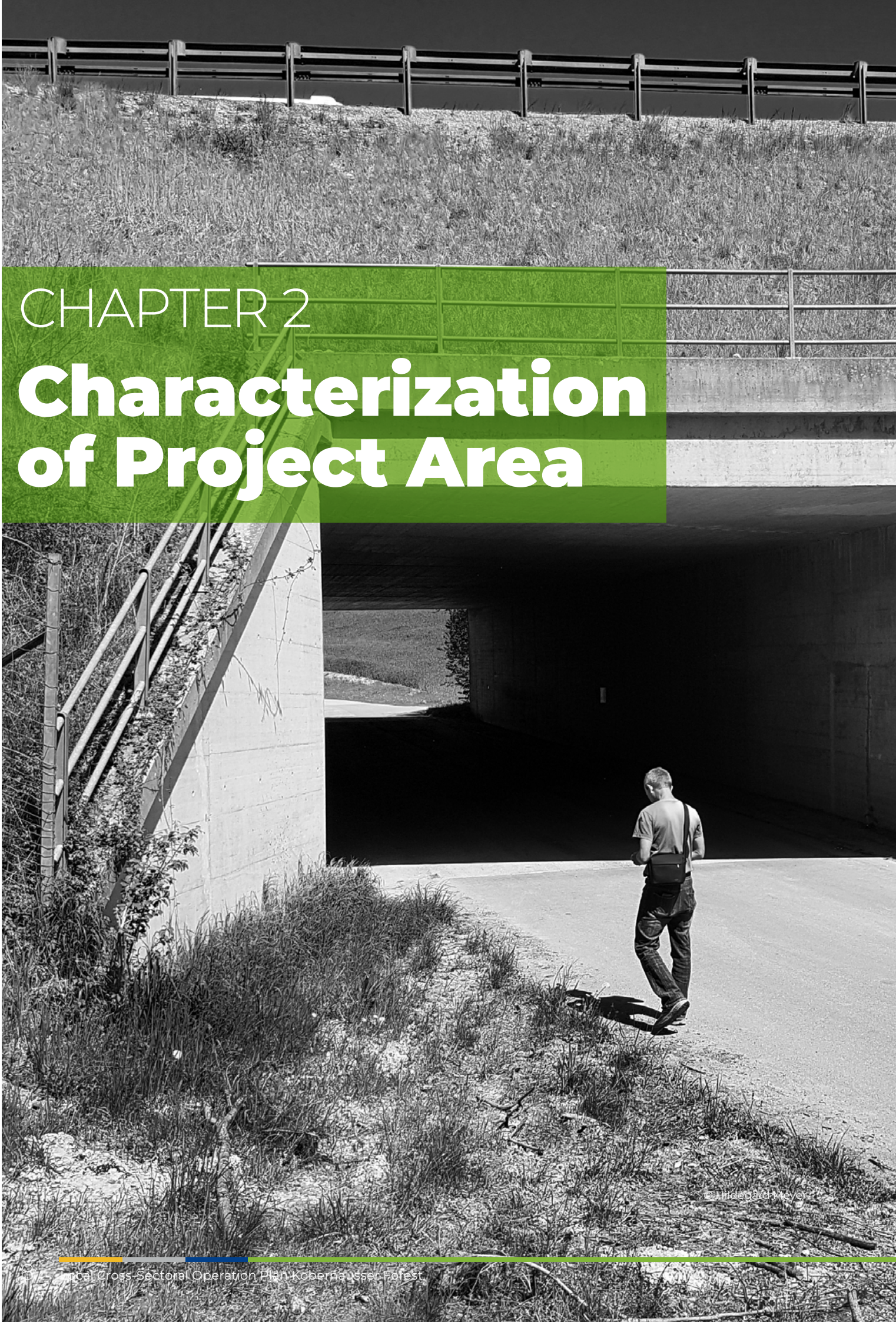
SaveGREEN proposed the CSOPs as an informal tool to foster inter-sectoral cooperation and synchronized concrete actions at landscape level. Working directly with stakeholder groups in the pilot areas and involve them actively, in a participatory manner, in the development of the CSOPs of the pilot areas should create long-lasting ownership of the plans and ease the future implementation, irrespective of the formal agreements.

At the same time, the logical framework of the CSOPs will ensure an easy integration within local / regional sectoral (management) plans while ensuring synergies between them, which is a significant lack at present. By filtering CSOPs by any of the sector of interest, one will have available a sectoral action plan for connectivity. Of course, whenever the case, the measures of CSOPs could be taken on board by protected areas management plans.

By identifying the specific problems and needed actions on the ground, CSOPs are valuable instruments to pinpoint potential gaps and lacks at legislative, capacity of funding levels which should fundament adaptation at national or European level.

CHAPTER 2

Characterization of Project Area



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The pilot area Kobernausser forest located in Upper Austria and the specifically considered municipality of Aistersheim lies in the middle of a wildlife migration corridor of international importance, connecting the Kobernausser forest with Bavaria and the Czech Republic. The A8 highway runs along the outskirts of the village and represents a major barrier for wildlife; therefore, authorities have decided to build a green bridge in the greater area of the municipality.

The studied bottleneck is, thus, of particular importance for wildlife migration and is highly sensitive due to intensive agricultural use, the proximity to the growing metropolitan areas of Wels and Ried im Innkreis and in addition to the presence of the highway A8 as well as the federal roads B135 and B141 representing important and heavily frequented feeder roads.

2.1 Climate

In terms of large-scale climate, the pilot area of Kobernausser forest is located in the temperate humid zone, influenced mainly by westerly winds. Characteristics of this Central European transitional climate are cool, humid summers as well as mild, snowy winters. This fact results from overlapping of oceanic and continental influence, referred to as sub-oceanic climate. About 65% of the 1,000-1,200 mm of annual precipitation falls in the summer half-year, with the precipitation maximum occurring at the same time as the temperature maximum in July. Beside the main maximum, a smaller precipitation maximum can be observed in February, which repeatedly leads to snowdrifts and downed trees. The precipitation increases from west to east, the temperature tends to decrease. The annual mean temperature is between 7.6 and 7.8°C.

2.2 Topography

Together with the Hausruck forest, the Kobernausser forest is one of the largest contiguous forest areas in Central Europe. As such, the region presents itself as a hilly area divided by shallow, mostly unobstructed stream valleys and mainly covered in spruce forests, with the Kobernausser forest in the west and the Hausruck in the east of the area. In small remnants there are also near-natural forest types (e.g. beech forests and in the Hausruck also oak-hornbeam forests, along streams wetland and gallery forests). In the centre, the proportion of forest is about 90%, in the peripheral cultivated land about 35%. The nutrient-rich meadows at the edges and along the lower reaches of the streams are to be mentioned as part of the grassland, as well as very small areas of boggy forest meadows and other types of neglected grassland. Natural landscape elements (hedges, orchards, etc.) are constantly diminishing in the peripheral areas. Still waters such as ponds and pools are very rare. Small gravel pits are scattered throughout the area. There are a few settlements. The climate is rich in precipitation. The main ridge is flat, with altitudes around 700 to 800 meters.

2.3 Geomorphology

The Kobernausser and the Hausruck forests are geologically located in the so-called molasse zone, in which the ground is mainly composed of silt and gravel. There are deposits of lignite, but mining has ceased. There are also small oil and natural gas deposits, e.g. near Puchkirchen. Small gravel pits are scattered throughout the area, and brickworks can also be found. The Hausruck, like the Kobernausser forest, is formed from Neogene sediments, forming a tertiary foreland molasse.

Morphologically, the area of the molasse zone stands out clearly as more or less flat rolling hills against the backdrop of the

steeper terrain in the flysch and crystalline zones, and also clearly differs from these two neighbouring zones in hydrogeological terms.

2.4 Typical habitats in the Kobernausser forest Area

In light of the overwhelming dominance of spruce, at first glance the flora of the Kobernausser forest appears to be species-poor and monotonous.

According to the EUNIS habitat classification, the relevant classes (and their subclasses) for the Kobernausser forest pilot area are:

J4.2 Road networks

J4 Transport networks and other constructed hard-surfaced areas

I1.1 Intensive unmixed crops

I1 Arable land and market gardens

G4 Mixed deciduous and coniferous woodland

G3 Coniferous woodland

G1 Broadleaved deciduous woodland

E2.6 Agriculturally-improved, re-seeded and heavily fertilised grassland, including sports fields and grass lawns

E2 Mesic grasslands

The dominant CORINE Land Cover (CLC) class in this region is heterogeneous agricultural areas, which represents the landscape matrix. Embedded in these are patches of forest (Figure 1). Furthermore, the urban class 'urban fabric' is relevant for the characterization of landscape connectivity in the pilot area as one of the main factors of disturbance alongside the highway A8 and the federal roads B135 and B141, which act as linear barriers. These roads are party permeable thanks to a number of crossing aids including over- and underpasses. To date, however, there are no green bridges in the region. The analysis should therefore also help validate ideal locations for a newly constructed green bridge, taking into account the surrounding landscape and its features.

2.5 Typical species in the Kobernausser forest

Large herbivores:

- Red deer (*Cervus elaphus*)
- Wild-boar (*Sus scrofa*)

Medium-sized mammals:

- Roe deer (*Capreolus capreolus*)
- Red fox (*Vulpes vulpes*)
- European badger (*Meles meles*)
- European wildcat (*Felis silvestris*)
- European hare (*Lepus europaeus*)
- Beech marten (*Martes foina*)
- European pine marten (*Martes martes*)

Small size mammals:

- Red squirrel (*Sciurus vulgaris*)
- Polecat (*Mustela putorius*)
- Hedgehog (*Erinaceidae*)
- Stoat (*Mustela ermine*)
- Least weasel (*Mustela nivalis*)
- Dormice (*Gliridae*)
- Common vole (*Microtus arvalis*)

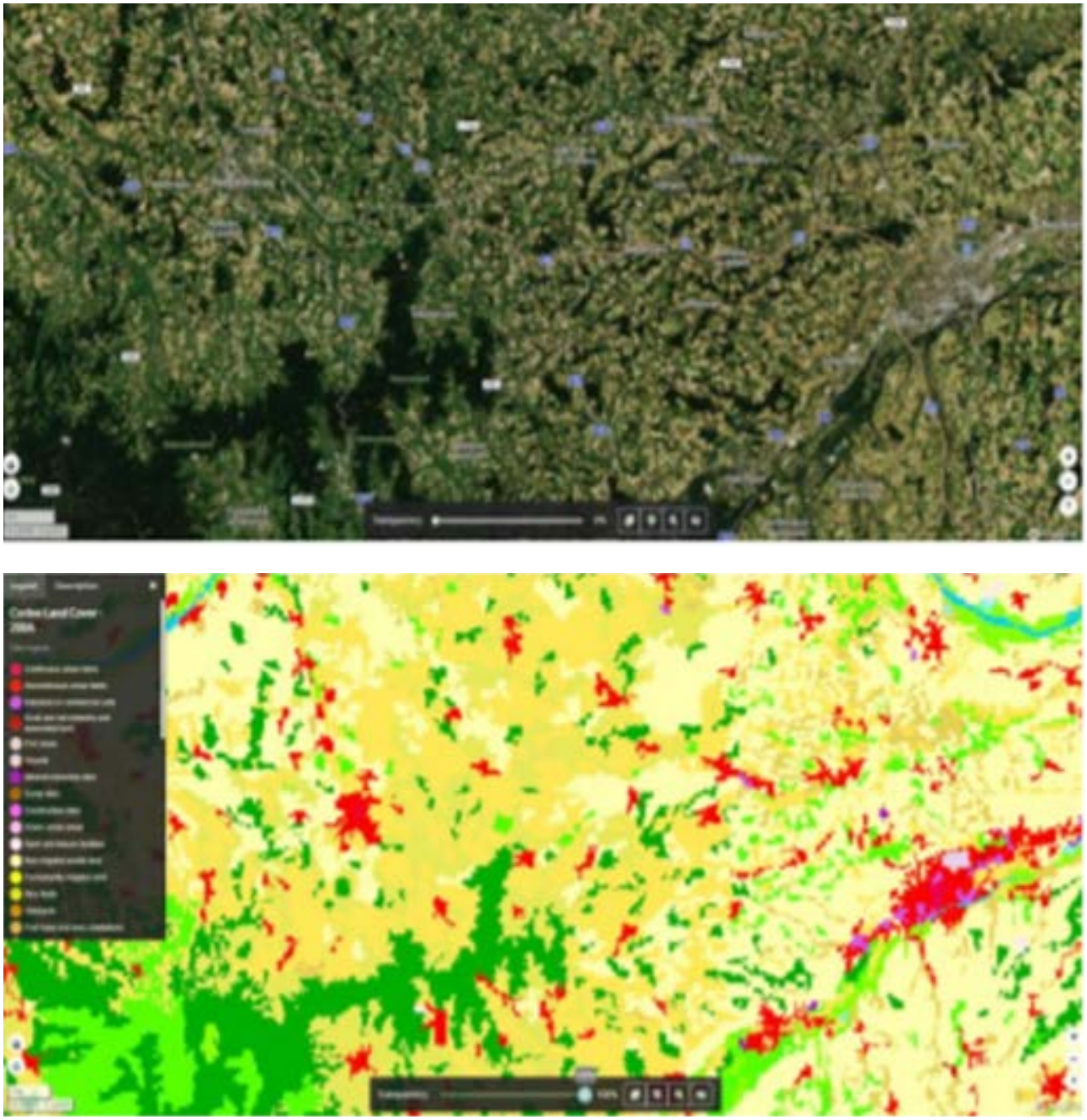
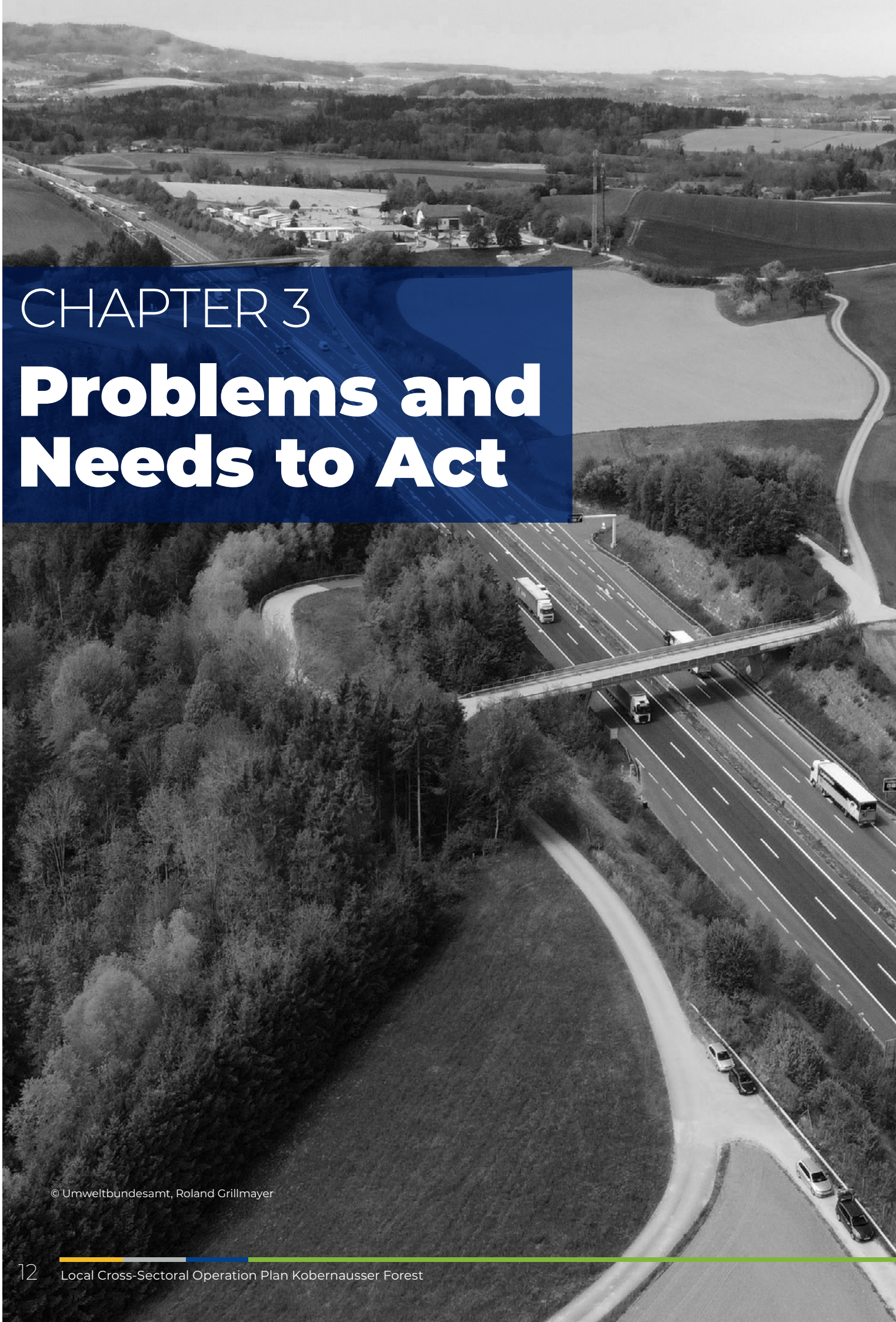


Figure 1A and 1B Austrian pilot area Kobernausser forest © Environment Agency Austria / basemap.at and CORINE Land Cover Data Sets



CHAPTER 3

Problems and Needs to Act

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Roads, settlements, and other barriers divide the habitats of animals and plants and, thereby, reduce their ability to find food, shelter, and mates. Reduced gene flow between populations decreases the overall resilience of the species and, as their numbers dwindle, the health and resilience of the entire ecosystem begins to degrade.

The integrity and health of ecosystems are key to their ability to provide ecosystem services on which we all depend, such as clean air and water, the production of food and other natural resources - such as timbre - and the regulation of our climate.

It is important to consider both the physical integrity of ecosystems and migration routes between them (structural connectivity) and which species use them and how (functional connectivity). Habitat fragmentation is one of the leading causes of biodiversity loss all around the world. Austria, where only 7 % of the territory remains in a (largely) natural state, is no exception. Land consumption is advancing by 12,9 hectares/day and, between 2005 and 2011, Austria's road network increased by 16 % to 125 000 km.

The pilot area Kobernausser forest is characterised by agricultural and commercial areas in the outskirts of bigger settlements. The focus area, represented by the municipality of Aistersheim, is crossed by the highway A8 to the southwest, one of the busiest motorways in Austria. In total, there are 3 km of highway leading through the municipality of Aistersheim. There is currently no green bridge in this area, so the existing overpasses and underpasses

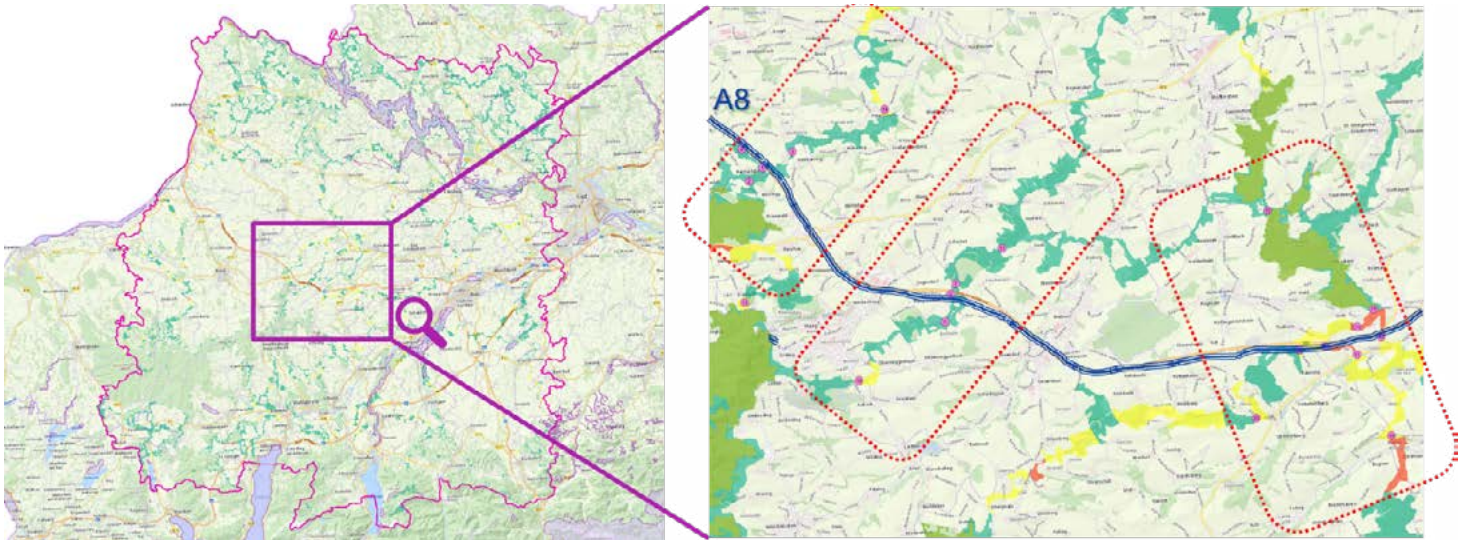


Figure 2 Overview of the pilot area Kobernausser forest indicating highway A8 (blue) as well as the main wildlife crossing aids © Environment Agency Austria / basemap.at / OpenStreetMap

play a particularly important role for the migration of wild animals to support the supra-regional corridor. ASFINAG, the national motorway authority, is planning a green bridge close to Aistersheim, so the existing functionality of the crossings on site is of particular interest. In addition to the situation in Aistersheim, two further side branches of the corridor are of interest. One of them crosses the A8 northeast of Rampersdorf, where an underpass exists. The other is northwest of Haag am Hausruck near Renhartsberg, where there are two underpasses whose functionality seem to differ.

The undulating terrain rises from north to south. In the section analysed during SaveGREEN, the A8 has a slightly low profile, whereby the southern slopes have heights of up to 20 m, the northern slopes up to 6 m. In addition to the three main underpasses in the closer surroundings, there are narrow service road bridges crossing the A8. Around the entrances to the underpasses, quite pronounced wooded creeks and ditches extend on both sides of the highway.

The planned green bridge is to be implemented in this area in the coming years - but the exact positioning is still subject to negotiations and the present analysis (Figure 3). The site was chosen to ensure a close forest connection on the southern side.

For noise protection reasons, the municipality of Aistersheim does not allow any extensions of the existing settlements in the direction of the A8 – this also applies in particular to the district of Thalheim. There are no plans for the designation of industrial estates or new industrial settlements, as there are already suitable locations in the Haag and Meggenhofen areas with direct access to the A8.

Assuming the creation of connecting landscape features, especially on the northern side of the focus area, a high probability of adoption can be assumed. This is underpinned by the occurring abundance of wildlife approaching the existing underpass of the A8 from the north.

When analysing the structural connectivity, corridor segments highlighted in green (Figure 3) indicate high structural values, while yellow and red segments show reduced connectivity due to less permeable areas or barriers. Especially in these zones of limited permeability, the landscape structure should be improved and further barriers and disturbance patterns avoided. Therefore, the goal must be to prevent further disturbances through spatial planning measures. Especially north of the focus area, in the vicinity of the municipalities of Rottenbach, Neumarkt im Hausruckkreis, Pötting, Taufkirchen, Trattnach and Grieskirchen, the corridors are restricted by extensive housing development and linear infrastructures. Impermeable zones are not present in the corridor. Therefore, it is very important to maintain or improve this condition.

Regarding protected areas, there are no Natura2000 sites located in the pilot area.

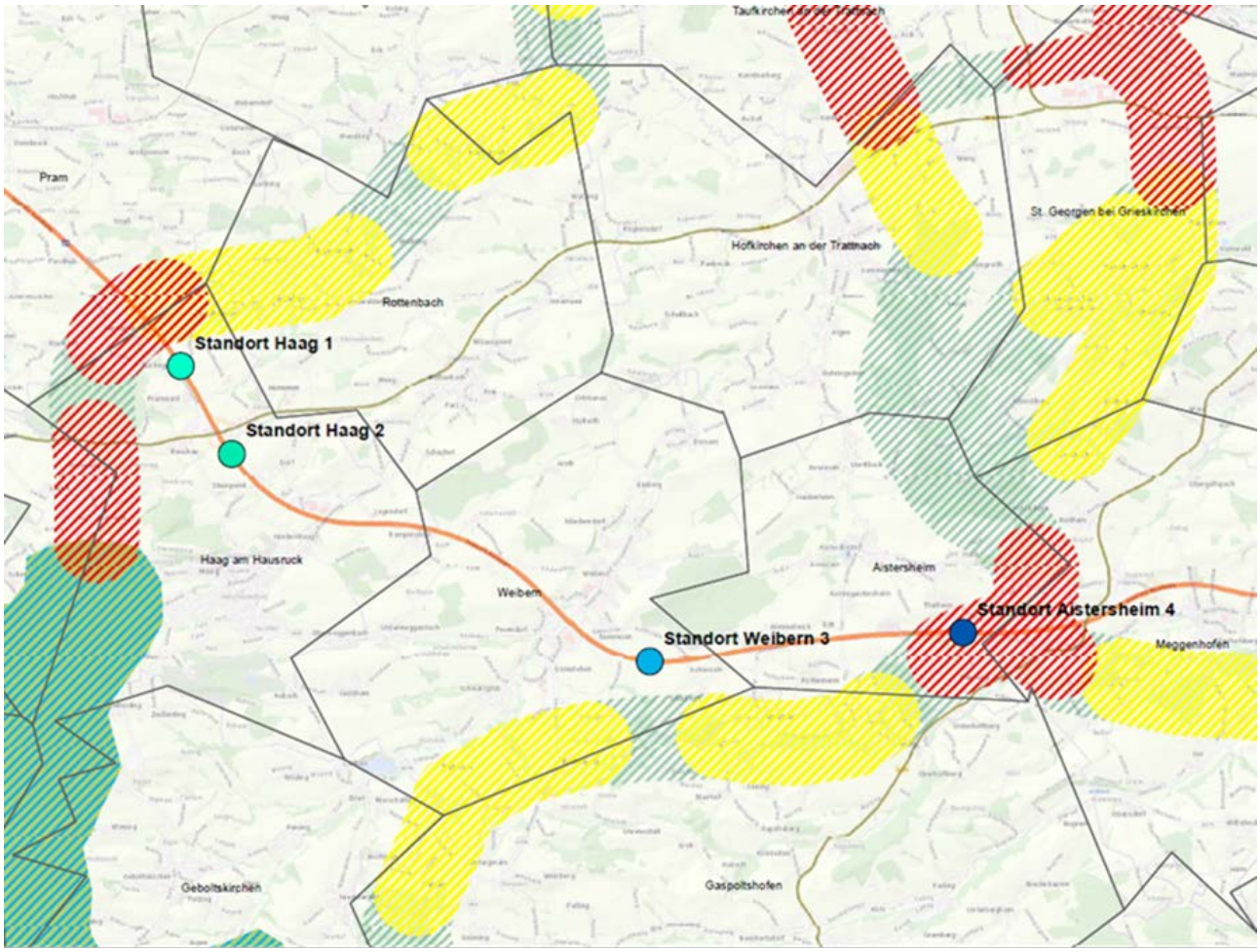
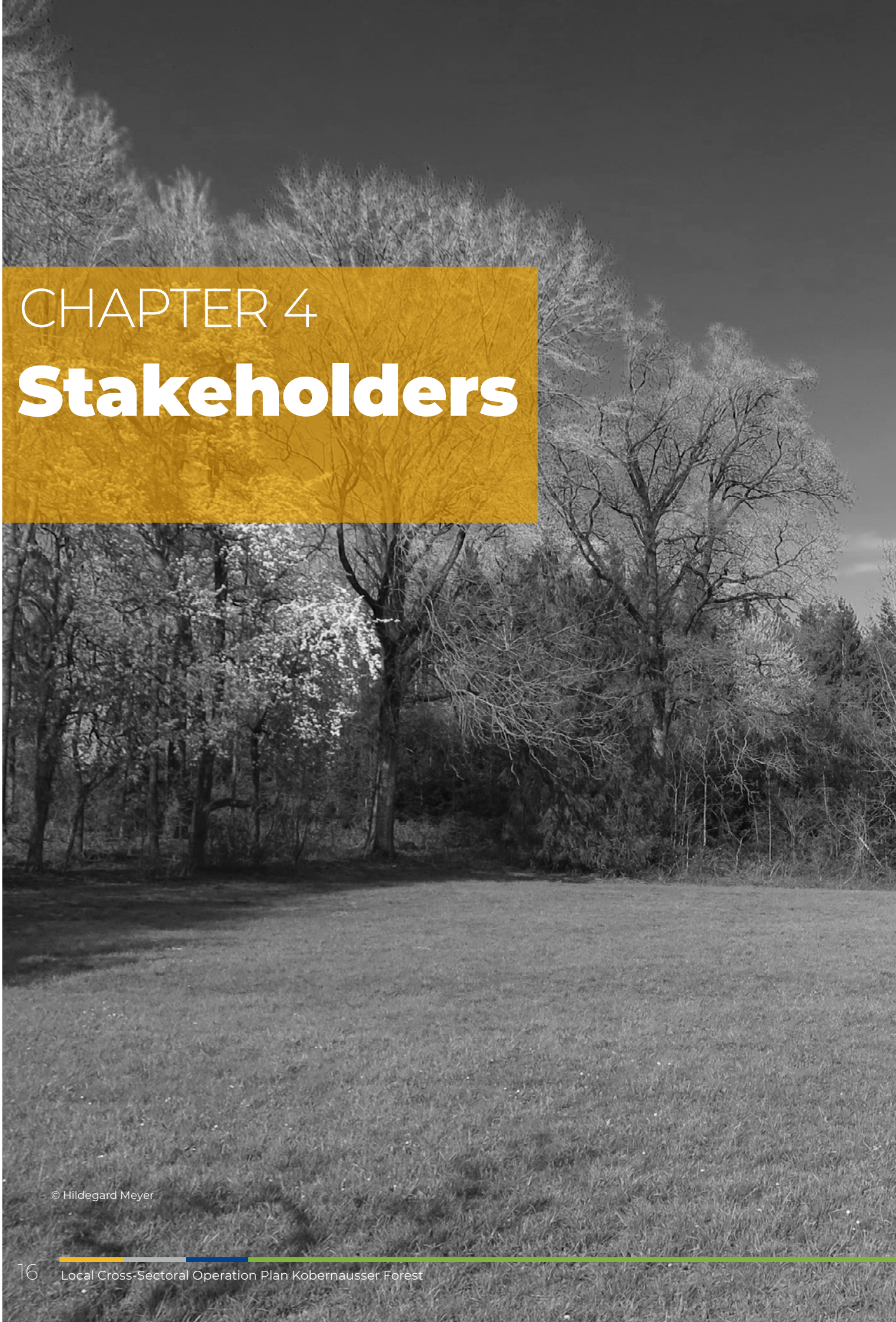


Figure 3 Permeability of the designated corridors and possible locations for the construction of green bridges © Environment Agency Austria / OpenStreetMap



CHAPTER 4
Stakeholders

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Within the project, we focused on awareness raising regarding the importance of ecological connectivity for local communities, representatives of different relevant sectors and decision makers, and sought for the implementation of measures outlined in this document. We provided scientific maps of ecological corridors to be taken into account for future strategic planning. This was done through activities addressing different stakeholders, which are presented below:

- **ASFINAG**, the federal road building and management company
- **BMK** (Ministry for Climate Action, Environment, Energy, Mobility, Innovation and Technology)
- **Municipality** of Aistersheim
- **Hunters Association of Grieskirchen**
- **Landowners**
- **Consultant** (unspecified)
- **Primary school**

Due to the preparatory activities of ASFINAG, which were commissioned by the Ministry of Climate to identify the ideal location for a green bridge, it was already clear to many local stakeholders that such a structure would be built and why its construction is feasible. ASFINAG conducted different meetings with local stakeholders, worked together with experts on the feasibility study and implemented first planning steps.

Nevertheless, it was difficult to give voice to the concern of habitat connectivity. Especially when measures and restrictions for landowners were addressed, their willingness to cooperate was low.

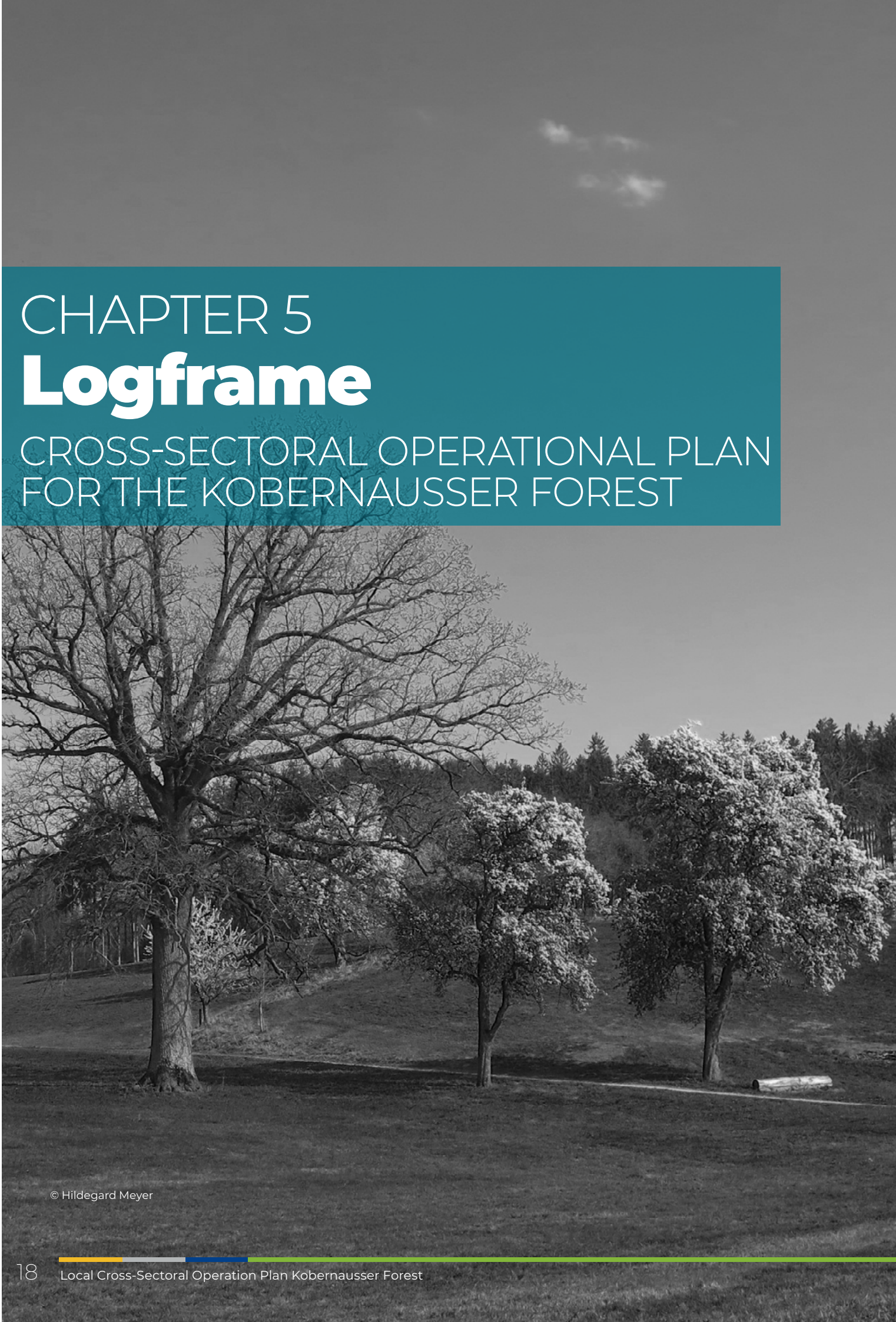
When landowners were asked to give their consent to wildlife monitoring on their land, this was sometimes seen as a control measure and as an intrusion into private property and therefore was accordingly often refused or only allowed after a period of persuasion.

Related future endeavours should ensure sufficient preparation time for monitoring and measures derived from it. As a basic action local contacts need to be built up in the region, allies need to be identified and personal levels of discussion must be established in order to reduce the feeling of being patronised and the chance of restrictions being issued.

The SaveGREEN team quickly learned that it is not common knowledge that ecological connectivity goes beyond the construction of over- and under passes and that landowners are reluctant to agree to certain measures that would be necessary to preserve or improve the functionality of ecological connectivity. From this bottom-up perspective, we noticed that landowners do not want to be restricted in their activities on their property; from top-down we experienced that competences for implementing respective legislation with regard to spatial planning is spread across different level of hierarchy (federal administration only has few competences, while federal states and municipalities are endowed with most of them) and thus very complicated.

Without specific legislation in place to protect ecological corridors, priority must be given to voluntary implementation within the existing legal framework. Therefore, it is necessary to meet with relevant stakeholders from all sectors, such as spatial planning, rural development, agriculture, forestry and hunting, and together discuss how to safeguard or improve ecological connectivity.

CHAPTER 5
Logframe
CROSS-SECTORAL OPERATIONAL PLAN FOR THE KOBERNAUSSER FOREST



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This logframe represents a wide array of threats and pressures on ecological connectivity at the landscape level, which was compiled for all the pilot areas in the project to consider and select accordingly.

THREAT/PRESSURE What do we want to address?	SPECIFIC OBJECTIVE What do we want to achieve?	Problems	Measures	Actions
1	2			
1. New Transport and other Linear Infrastructure (TLI*) projects may increase the barrier effect at landscape level. * roads, railways, navigable channels, waterways, canals, power lines, and pipelines *The upgrade of an existing infrastructure to a new category/class normally implies new constructive works – i.e. enlargements, fencing etc. – and new environmental permits, and therefore will be considered as a new infrastructure project).*	**01. Ensure support data for new infrastructure projects**	Not relevant in PA		
	02. Support the SEA/EIA/AA processes and procedures with relevant data and examples of good-practice	Not relevant in PA		
	03. Support the design & technical details and constructive solutions with examples of good-practice	Not relevant in PA		
	1. Maximize the functionality of underpasses (all objects)	Not relevant in PA		
	2. Maximize functionality of overpasses (all objects)	Not relevant in PA		
	3. Assign legal status and develop coherent regulations for all objects which are potential wildlife passages	Not relevant in PA		
	4. Increase permeability of embankments *(when & where fencing is not mandatory)*	Not relevant in PA		

THREAT/PRESSURE What do we want to address?	SPECIFIC OBJECTIVE What do we want to achieve?	Problems	Measures	Actions
2. Structural interventions on existing Transport and other Linear Infrastructure (TLI) (maintenance, upgrading without changing the category/class of the infrastructure etc.) **and on other linear features may increase the barrier effect at landscape level.**	**1. Safeguard or improve the permeability of existing transport infrastructure** (including enhancement of permeability of existing features when possible)	Structural changes increase the barrier effect, e.g. parking and depositing in underpasses. Limitations though narrow underpasses without suitable structure.	Suggestions for improvements related to surrounding landscape. Implementation of expert recommendations on the width of crossing aids.	Transfer of information for implementation. Ensure the continuous monitoring of overpasses and underpasses that are actively used for migration.
	2. Safeguard the transversal permeability of river banks (including enhancement of permeability of existing features when possible)	Small streams are often situated along the migration corridors, but often lack structure and vegetation.	River banks need to be improved and riparian strips should be established.	Restoration of riverbed and creation of riparian strips.
	3. Safeguard the longitudinal permeability of rivers (including enhancement of permeability of existing features when possible)	Not relevant in PA		

THREAT/PRESSURE What do we want to address?	SPECIFIC OBJECTIVE What do we want to achieve?	Problems	Measures	Actions
3. Linear transport infrastructure elements (including electric power lines) cause wildlife mortalities	**1. Implement an adequate fencing system on motorways & high-speed railways, including escape gates**	Not relevant in PA, the higher road network is fenced in Austria		
	2. Direct animals towards functional underpasses and overpasses	The crossing aids are lacking elements of Green Infrastructure as guiding vegetation, although recommended. No systematic approach to tackle this multi-sectoral problem. Therefore, related to threat/ pressure no. 4 and 5	Ensure the establishment of guiding vegetation and elements of Green Infrastructure.	Engage with relevant stakeholders. Facilitate discussion on systematic solution for guiding vegetation related to linear infrastructure. Ensure guiding vegetation is realised for recommended areas.
	3. Warning drivers on road-kill / accident-prone areas	Relevant, but well covered in AT. Warnings are already in place on the low-ranking road network.		
	4. Warning train conductors on rail-kill / accident-prone areas	Not relevant, no train lines in PA.		
	5. Prevent accidents caused by mammals being blocked in railway tunnels or on long bridges	There are no tunnels in the area, not relevant		
	6. Increase drivers / conductors' visibility on roads / railways	Relevance in project area unclear.	Identify spots of insufficient visibility	Road maintenance could perform a mapping of traffic accidents caused by decreased visibility in the pilot area. Use special reflectors during the night

THREAT/PRESSURE What do we want to address?	SPECIFIC OBJECTIVE What do we want to achieve?	Problems	Measures	Actions
	7. Implement special measures to avoid bird mortalities (power lines, noise barriers impact)	Relevance unclear for the project area.	Evaluate mortality of birds	Get in contact with BirdLife Austria. Propose further actions based on existing data.
	8. Implement special measures to avoid bats mortalities (light impact)	Relevance unclear for the project area, bats were not monitored.	Evaluate mortality of bats	Get in contact with KFFÖ. Propose further actions based on existing data.
	9. Implement special measures to avoid amphibian & reptile mortalities	Relevance unclear for the PA, amphibians and reptiles were not monitored.	Evaluate mortality of amphibians and reptiles	Get in contact with ÖGH to get existing data.
	10. Collect and process data to identify incident-/ accident-prone sectors on roads, motorways and railways	Existing data sources need to be identified and merged	Roadkill application is under development.	Use ROad.kill App when finished, supplemented with any other existing datasets
	11. Create and/or train specialized teams to deal with wildlife-related incidents on motorways, railways, roads, including emergency interventions I.e. Bears on the motorway/railway tunnels	Data collection capabilities have been developed	Roadkill and injured animals can be reported to the veterinary university in Vienna, injured animals are also treated there. Roadkill data is recorded with the app roadkill.at.	In the higher-ranking road network, the road service unit removes roadkill. In the lower-ranking road network, this is carried out by the executive in cooperation with the local hunters.
	12. Develop and use an integrated database as a decision-support tool to address traffic incidents (for implementing / adjusting measures to prevent wildlife traffic-kills / damages / human casualties)	Existing data sources need to be identified and merged	The ROad.kill App, has been developed as a notification system. It allows users to record the exact location of roadkill.	Use ROad.kill App, supplemented with existing datasets.

THREAT/PRESSURE What do we want to address?	SPECIFIC OBJECTIVE What do we want to achieve?	Problems	Measures	Actions
4. Changes in land-use may reduce landscape permeability	**1. Enforce legislation preventing changes of land-use towards a less permeable category** (including compensatory measures targeting connectivity)	Changes in land use and agriculture led to large rural areas without sufficient cover for migrating animals.	Analyse degree of connectivity of greening measures and ensure their functional and temporal existence. Safeguard well-established structures and prevent deterioration of currently permeable corridors.	Maintain corridor permeability by avoiding construction and fencing, e.g. around photovoltaic areas, no road construction and no commercial development.
	2. Facilitate / support changes of land-use toward more permeable categories i.e. through agricultural payments	Agricultural intensification, building of industrial areas and expansion of settlements cause the loss of landscape elements.	Enhancing extensification of agriculture, support the maintenance and establishment of ecological corridors and guiding vegetation.	Appropriate zoning of the area, municipalities (mayors) as responsible entities; create better acceptance through lobbying and knowledge transfer.
5a. Changes in land management - fencing - may reduce landscape permeability This does not refer to fencing of transport infrastructure elements.	**1. Fencing regulations and promoting unfenced areas**	In individual cases, fencing can lower the permeability in certain migration corridors. Reforestation and Christmas tree production might be relevant.	Analysis of relevance	LRV Guidelines, see www.lebensraumvernetzung.at
	2. Develop guidelines and impose fencing-related conditions linked to agriculture / forestry subsidies or specific programmes	Areas, like forests or crops, are fenced to gain a high wildlife density for hunting or to prevent feeding damage to arable crops.	Create structures along the fences for migration.	Consider existing regulations, lead discussions with landowners. Also relevant here: LRV Guidelines: www.lebensraumvernetzung.at

THREAT/PRESSURE What do we want to address?	SPECIFIC OBJECTIVE What do we want to achieve?	Problems	Measures	Actions
5b. Changes in land management - crop cultivation / natural vegetation management - may reduce landscape permeability	**1. Prevent large-scale monocultures and/or facilitate & support mosaic cultivation**	Intensification and concentration of agricultural production leads to large monocultures in agriculture.	Political awareness raising	Green Deal, CAP – foresees 10% of agricultural land should be dedicated to biodiversity, raise awareness among stakeholders
	2. Support adequate management of natural features & marginal habitats	Poor knowledge of the need for landscape structures and features contributing to biodiversity.	Awareness raising among farmers, advisors and public society	Awareness raising among farmers, advisors and public society
	3. Support and promote development of good-practice examples of connectivity-conscious agriculture, water management and forestry practices	Connectivity measures on agricultural land are often seen as a loss of land or management hardship. Too little awareness of habitat connectivity. Farmers fear restrictions on use of their land if areas are classified as ecologically valuable.	Collect and actively promote good examples by opinion leaders	Awareness raising & promotion of good practices. Consult SaveGREEN Handbook including good practice examples: Information on agricultural procedures, planting of hedges in the course of land consolidation.
5c. Land management causing degradation of natural habitats may reduce landscape permeability	**1. Prevent/control the spread of invasive plant & animal species and promote renaturation of invaded /degraded lands**	Unmanaged construction land causes spreading of invasive species.	Restore the construction area as soon as possible ideally by sowing seeds typical for the area from the region.	Provision of regional seeds as well as initiation of maintenance measures. Information campaigns for landowners to create awareness on the issue.
	2. Prevent/enforce legislation on fire	Not relevant in PA		
	3. Prevent alteration of water bodies, restore hydric system and support renaturation of wetlands	Watercourses are used by wildlife for migration, but they often lack structure and vegetation or are channelled for drainage reasons.	Watercourses should be designed close to nature so that they do not represent barriers but enhance the habitat and its connectivity.	Renaturation of the watercourses with accompanying vegetation and natural structures, especially Trattnach river as main axis, Zinselbach that flows under the underpass and Stillbach near the commercial centre.

THREAT/PRESSURE What do we want to address?	SPECIFIC OBJECTIVE What do we want to achieve?	Problems	Measures	Actions
5d. Land management through mineral extraction may reduce landscape permeability	**1. Develop coherent management plans and apply EIA/AA procedures** in order to avoid-mitigate-compensate for impacts, and to restore the sites	Not relevant in PA		
6a. Other anthropogenic activities - game management - may reduce landscape permeability	**1. Develop coherent game management plans and apply EIA/AA procedures** in order to avoid-mitigate-compensate for impacts	Very high game populations and therefore high bark stripping damage on silvic cultures and orchards. High densities of roe deer and wild boar in fenced areas, as these are used for hunting.	Fenced areas are often in private ownership, an intervention is difficult. Migration routes along these areas should be provided or maintained.	Awareness raising among private and public landowners to maintain or create migration routes.
	2. Facilitate data-collection on key-species	Hunters well-informed about species occurrence.	For future monitoring programmes in the area, cooperation with stakeholders should be pursued.	Contribution by monitoring data collected within SaveGREEN.
	3. Harmonize game management with Natura 2000 and connectivity-related objectives	No Natura 2000 sites in PA		
	4. Implement poaching prevention and control	Not relevant in PA		

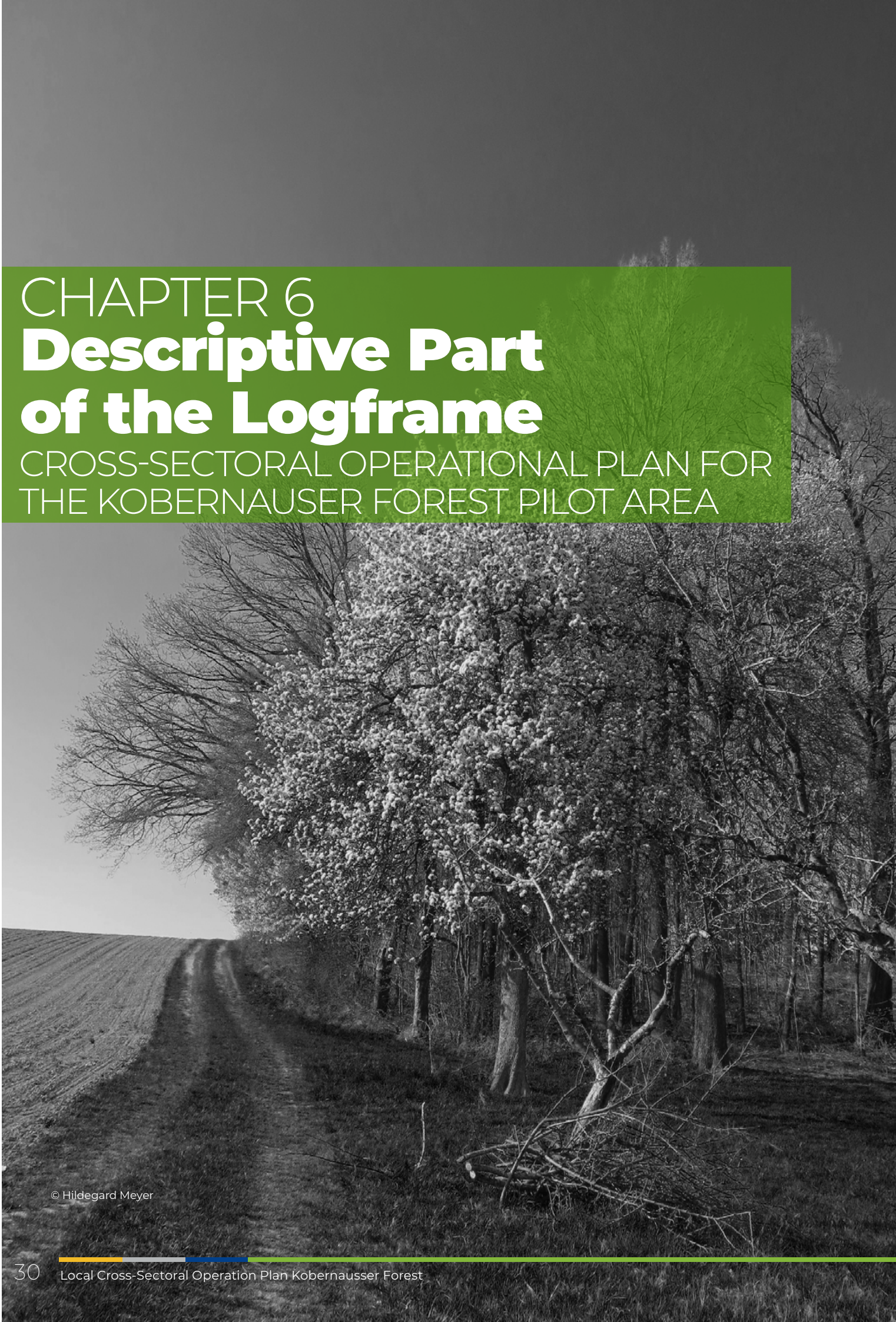
THREAT/PRESSURE What do we want to address?	SPECIFIC OBJECTIVE What do we want to achieve?	Problems	Measures	Actions
6b. Other anthropogenic activities - human-wildlife conflicts - may reduce landscape permeability	**1. Facilitate the implementation of legislation on damage compensations**	Damage due to feeding on young trees by wild boar and red deer, as well as feeding damage to arable crops (cereals, corn, soybeans). Information on damage compensation must be readily available, including information on the required evidence.	Informing farmers about damage compensation procedures.	The insurance companies pay for the damage caused by game browsing. In game damage proceedings, the person authorized to hunt is responsible for decimating the game population and thus reducing the damage. Informing of farmers through specialized events.
	2. Facilitate the implementation of traditional shepherding	Traditional shepherding declined during the 20th century. The potential return of large carnivores can cause significant damage due to abandonment of traditional methods of protection.	Informing farmers about methods of traditional shepherding.	Inform farmers in specialized events. The Austrian Centre Bear Wolf Lynx provides info about protection measures, rip and compensation. https://baer-wolf-luchs.at/
	3. Facilitate the implementation of modern methods for prevention	Financing preventive measures is often complicated and difficult to implement for farmers.	Informing and support for farmers on modern methods of prevention and the possibilities for funding.	Inform farmers in specialized events. Support farmers in applying for subsidies for preventive measures. The Austrian Centre Bear Wolf Lynx provides info about protection measures. https://baer-wolf-luchs.at/
	4. Facilitate increased subventions based on large carnivore conservation	No large carnivores in project area		
	5. Regulate other anthropogenic activities, which could increase the level of conflicts (waste management, unsustainable development & tourism activities etc.)	Fast development of industrial zones, urban sprawl, soil sealing	Develop a map of ecological connectivity as a tool for lobbying and awareness raising. Information about localities used as core habitats by protected species	Lobbying, awareness raising, soil sealing with regional development authorities, mayors, landowners etc. Spreading of information on core habitats.
	6. Facilitate rapid intervention in special situation related with wild animals	Relevance unclear for PA.		

THREAT/PRESSURE What do we want to address?	SPECIFIC OBJECTIVE What do we want to achieve?	Problems	Measures	Actions
7. Lack of coherent monitoring at landscape level and adaptation of solutions	**1. Facilitate the implementation of an integrated monitoring programme – procedures, database, indicators, and assessment**	The monitoring required to avoid negative effects to habitat connectivity does not always take place and data is not collected systematically. Central databases are missing. New threats to connectivity are constantly occurring. A monitoring of conceptions and projects considered for SEA and EIA must be performed constantly to prevent risks for connectivity.	Monitoring the effectivity of existing migration axes and permeability in general. Monitoring as important part of SEA and EIA.	Lobbying at federal ministries BMK and BML, spread methodology on monitoring of functional connectivity in AT, cooperation with the platform of Lebensraumvernetzung Österreich Constant monitoring for SEA and EIA relevant projects. Creation and implementation of a durable monitoring plan.
8. The support of stakeholders for a cross-sectoral & integrated approach at landscape level is reduced	**1. Facilitate networking and develop a common platform and database**	Representatives of different sectors do not have formalised exchanges; they mainly stick to their professional networks. Competences are split hierarchically making super-regional planning difficult Missing formal binding legal designation of ecological corridors; depending on good will	Establish formal/informal exchange platform among relevant stakeholders	Connect to LRV platform Support implementation of LE project; SaveGREEN capacity building events, transnational workshops, and local stakeholder meetings
	2. Facilitate information, awareness, education, communication	Awareness on the need of ecological corridors is low among relevant stakeholders and the general public	Targeted information campaigns and broader awareness raising campaigns	Event at local school and kindergarten, info day, press field trip, and personal meetings with relevant stakeholders

THREAT/PRESSURE What do we want to address?	SPECIFIC OBJECTIVE What do we want to achieve?	Problems	Measures	Actions
	3. Support research and studies focused on connectivity; **facilitate inter-sectoral capacity building and development of new professional opportunities** **(mainstream biodiversity into other sectors)**	Scientific data often unavailable or status unclear. Biodiversity is a cross-cutting issue that is still not sufficiently recognized in different sectors	Targeted information campaigns Further research Capacity building events	Research ongoing, EAA aims to publish scientific papers that are relevant for connectivity in this region.
	4. Facilitate the development of a regional identity and promote the area – nature, culture, services **(connectivity as one of the topics)**	The region Mostlandl-Hausruck has a certain identity with regards to agricultural products, especially fruit, juice and cider. These products could be directly related to semi-natural orchards, which can support the structure of ecological corridors.	Establish ecological connectivity and protect local biodiversity as elements (e.g. semi-natural orchards) of local heritage	Establish dialogue with the LEADER group LAG
	5. Facilitate the development & alignment of local strategies into regional sectoral strategy **(connectivity as one of the themes)**	Regional strategies do not consider ecological corridors, but there is the commitment to preserve and secure (semi-) natural landscapes.	Raise awareness on the multi-scale nature of ecological corridors.	LEADER Research into suitable regional development plans, Integration of corridors into the forest development plan.
	6. Facilitate and support complementary initiatives (connectivity as one of the topics)	Projects and involved experts often show unwillingness to share generated information or knowledge	Offer networking between relevant projects	LEADER LRV, LE, Dare2Connect, MaGICLandscapes, ConnectGREEN, campaigns on soil protection, WWF-AT

Kobernausser Forest © Christophe Janz

CHAPTER 6
Descriptive Part of the Logframe
CROSS-SECTORAL OPERATIONAL PLAN FOR THE KOBERNAUSER FOREST PILOT AREA



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6.1 General considerations

The village of Aistersheim - and municipality of the same name - lies in the middle of a wildlife migration corridor of international importance, connecting the Kobernausser forest with Bavaria and the Czech Republic. The A8 highway runs along several communities between Meggenhofen and Haag am Hausruck and represents a major barrier for wildlife. A feasibility study for finding the optimal location for the establishment of a green bridge carried out by ASFINAG revealed that Aisterheim would be the best location. Connectivity strips shall guide wildlife from the surrounding woodland to the bridge.

Three of the main corridor branches are described in the below (Figure 4), the landscape conditions are discussed and suggestions for improvement are made. These corridors were monitored to provide evidence of current wildlife movement.

The studied bottleneck area and the three underpasses therein are therefore of particular importance for wildlife migration. The section is highly sensitive due to intensive agricultural use, the proximity to the growing metropolitan areas of Wels and Ried im Innkreis and, in addition, the presence of the highway A8 as well as the federal roads B135 and B141 that represent important and heavily frequented feeder roads.

6.2 Actions proposed to address threats and pressures indicated in Chapter 2. 1 Logframe

In the pilot area Kobernausser forest the following threats and pressures were identified based on the general project logframe:

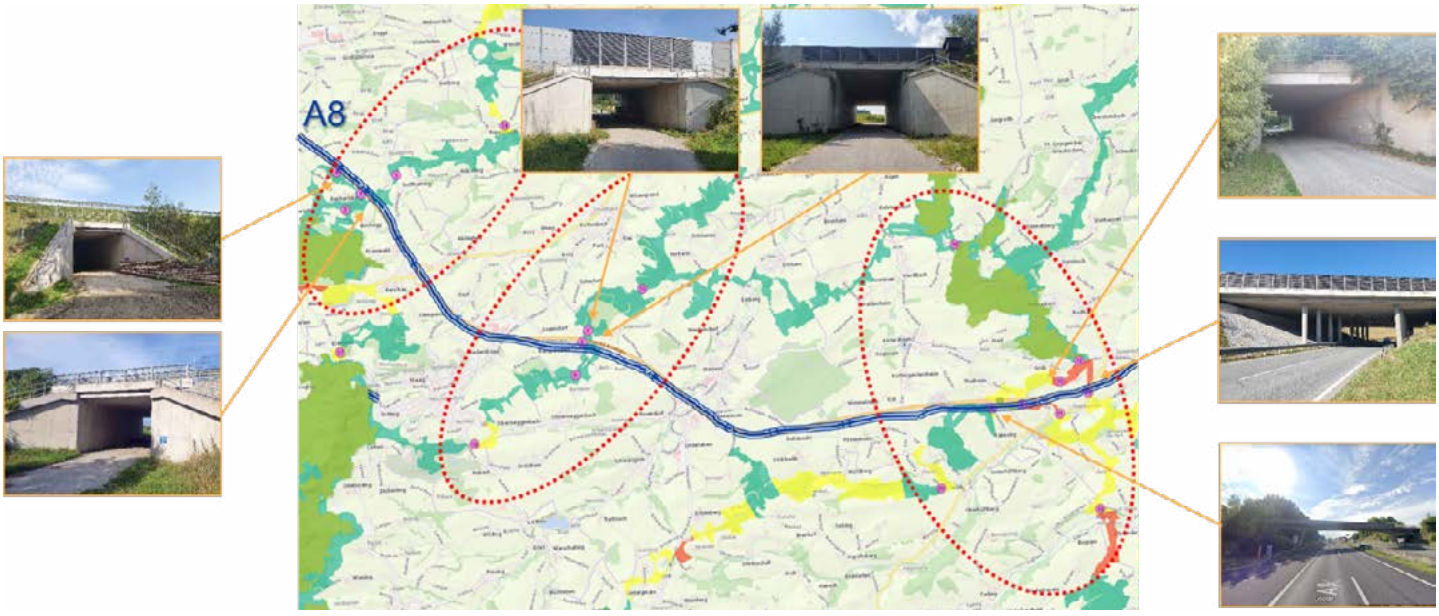

Figure 4 Overview of existing crossing aids in the focus area near Aistersheim © Environment Agency Austria / OpenStreetMap

Threat/Pressure 2: Structural interventions on existing transport and other linear infrastructure

Specifics of the threat/pressure in the PA Kobernausser forest:

This area of the corridor is already heavily used, it is to be expected that an expansion of the existing infrastructure will have negative consequences on the functionality of the corridor. Especially the situation near the underpasses and possible changes due to the planned green bridge near Aistersheim on existing infrastructure are of particular interest.

Aims:

- At present, there is insufficient information on whether the corridor sections connected by the underpasses are restricted in their functionality or not. Therefore, both the underpasses themselves and landscape areas that serve as funnels are to be subjected to wildlife monitoring. This is to identify potential bottleneck sections that have only limited functionality as wildlife corridors
- In Aistersheim, possible changes on existing infrastructure due to the implementation of the planned green bridge are of particular interest
- In order to be able to guarantee the functionality of the Kobernausser forest corridor in the long-term, the support of the local decision makers and population is needed

Objectives set to address the threats are:
2.1. Maintain or improve permeability of existing transport infrastructure

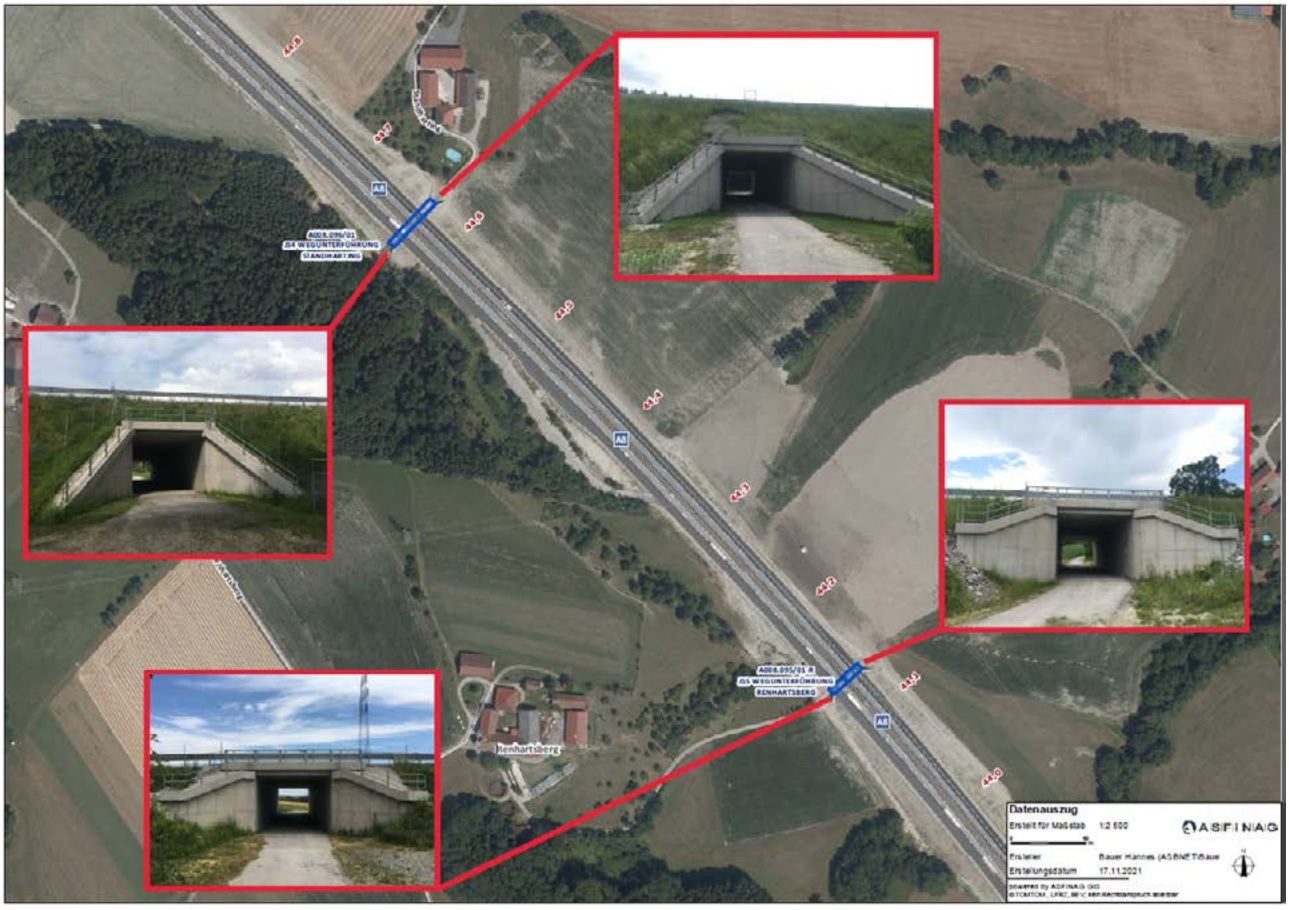

Figure 5 Underpasses near Renhartsberg ©ASFINAG

2.2. Safeguard the transversal permeability of river banks

Problem:
Lack of information of wildlife activities in order to estimate impacts of structural interventions on existing transport and other linear infrastructure that may increase the barrier effect at landscape level.

Measures:
Measure 2.1.1. Develop suggestions for improvements of the situation

As described in D.T2.2.3 (Local Monitoring Plan of the Kobernausser forest pilot area) a set of locations were identified to monitor the functionality of the corridor in this pilot area. The gathered information will help to assess impacts on wildlife activities due to new/ updated infrastructure.

Besides the two underpasses near Renhartsberg (Figure 5) and the underpass near Rampersdorf (Figure 6) there is also a special situation in the south-east of Aistersheim. Here are two underpasses (Figure 7, Figure 8), with unclear functionality. Especially the one in the east seems to be hampered due to high traffic volume. ASFINAG is planning a new green bridge at this location (Figure 9), which is expected to have positive consequences on wildlife movement. However, it is unclear whether this project might have also negative effects on existing crossings. The results of the monitoring will serve as basis to assess positive and negative consequences of the new green bridge.

Measure 2.2.1 Improvement of the riverbeds

Figure 6 Underpass near Rampersdorf ©ASFINAG

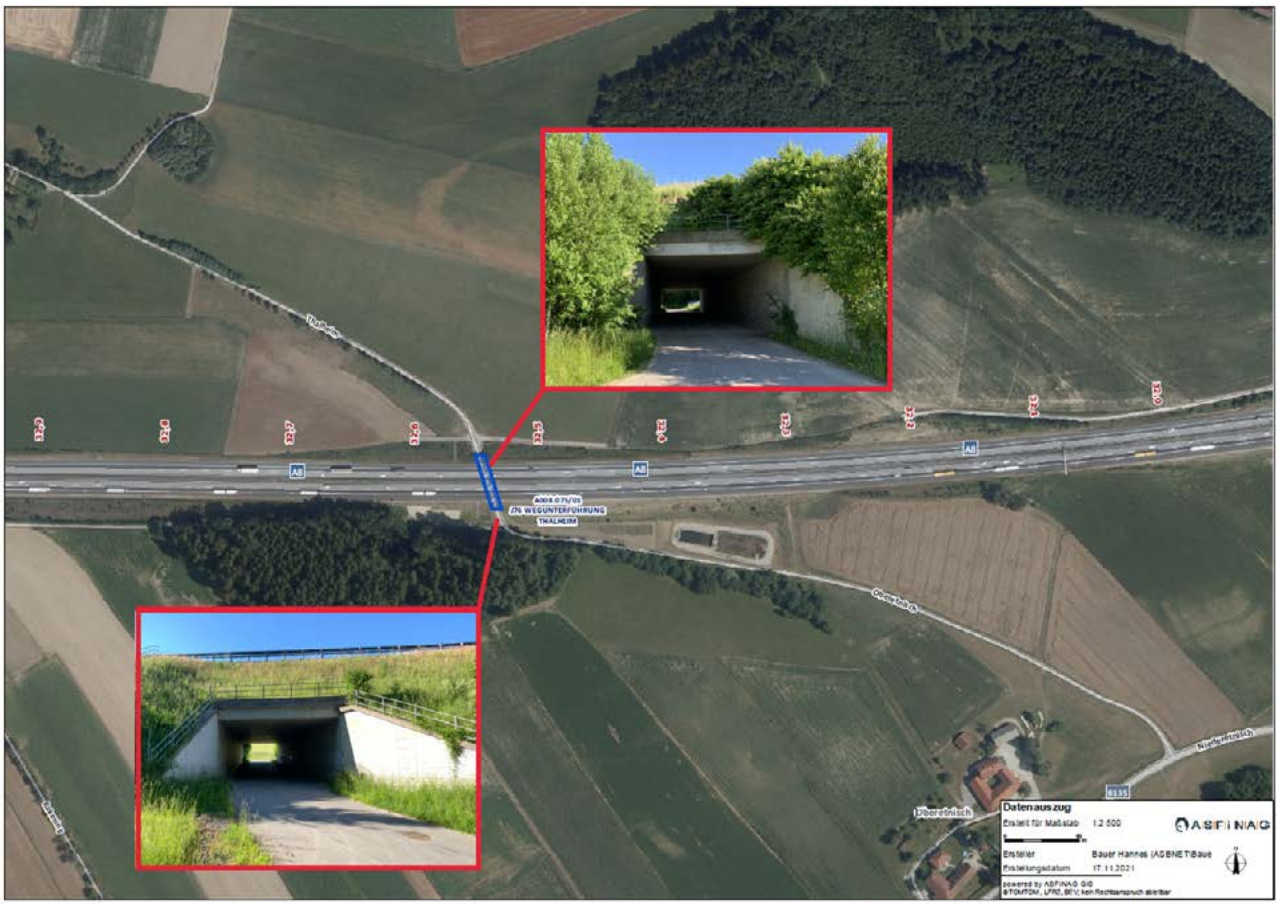

Figure 7 Western underpass near Aistersheim ©ASFINAG

Improvement of riverbanks located in the corridor to create a better guiding structure for wildlife, renaturation of rivers Trattnach, Zinselbach and Stillbach.

Actions required:

- Monitoring of bottleneck areas along linear transport infrastructure and the riverbed, ensure permanent monitoring of existing underpasses that are actively used for migration – see below, Threat/ pressure 7
- Develop recommendations for the improvement of the bottleneck areas:
  - For spatial planning (community leader, provincial government): visualisation of ecological corridors along the linear transport infrastructure, raise awareness about how the constructions influence the function of ecological corridors (see Threat/Pressure no. 8 below)
  - ASFINAG: make sure that the underpasses are not blocked with cars or other vehicles; support the planning of the green bridge with a focus on the vegetation (islands and strips of bushes) and adjacent vegetation stripes
  - For landowners and managers: establish measures to restore the riverbed and to create riparian strips along the riverbeds of Trattnach, Zinselbach and Stillbach wherever possible (identify the landowner and water management entity of concern, support the identification of financing options of the action)
- Transfer of monitoring results and recommendations to relevant experts and

Figure 8 Western underpass near Aistersheim ©ASFINAG

decision-makers

» Develop and establish tools and processes to address relevant and interested persons (see Threat/pressure 8)

Threat/Pressure 3: Linear transport infrastructure elements (including electric power lines) cause wildlife mortality

Specifics of the threat/pressure in the Kobernausser forest PA:

The higher roads, motorways and expressways, are principally fenced in Austria, hence this threat is not particularly pronounced in this area, at least related to the higher road network. Moreover, warning signs are already in place on the low-ranking road network.

Nevertheless, there is wildlife mortality in the region that could be diminished.

Aim:

» To reduce wildlife mortality in the entire pilot area by addressing the problems facing the various animal species from mammals to insects

Actions required:

» Evaluation of mortality of different animal groups with different methods in collaboration with organisations that work with the animals of concern (BirdLife Austria, Coordination Platform for the Protection of Bats, Austrian Society for Herpetologists, hunters, University of Veterinary Medicine Vienna)

» Introduce the SaveGREEN ROad.kill app, which is a citizen science tool as well as the Austrian https:/roadkill.at tool

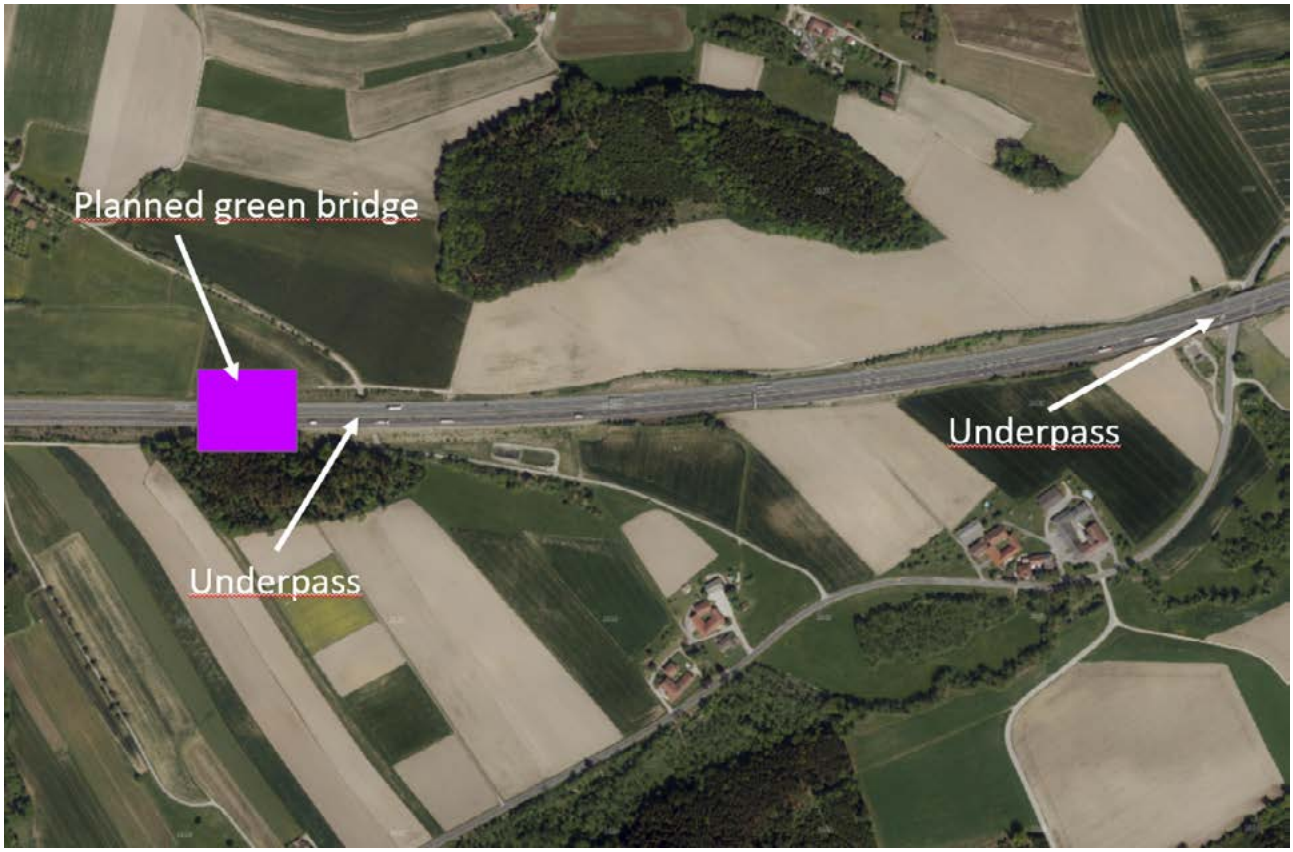

Figure 9 Location of the planned green bridge near Aistersheim © ASFINAG

Threat/Pressure 4: Changes in land-use may reduce landscape permeability

Specifics of the threat/pressure in the Kobernausser forest pilot area:

Agricultural intensification, building of industrial areas and commercial centres, and the expansion of settlements cause a loss of landscape elements, fragmentation and decreasing space for wildlife habitats. By this, ecological corridors get narrower and narrower, and loose guiding vegetation necessary for stepping-stones and shelter.

Aims:

- Increase or safeguard landscape permeability
- In order to be able to guarantee the functionality of the Kobernausser forest corridor in the long-term, the support of the local population and local decision-makers is needed

Objectives set to address the threats are:
4.1 Enforce legislation preventing changes of land-use towards less permeable categories including compensatory measures targeting connectivity

Problem:
In Austria, ecological connectivity is not reflected in any law. The maps or ecological corridors harmonised across Austria by the Environment Agency are recommended to be used for spatial planning and other development plans (forest development plans). They are considered as a professional basis. However, many of the local decision-makers are not aware of these maps and do not consider them. In addition, there is a lack of political will. Unfortunately, all actions toward the improvement of ecological connectivity are voluntary.

Measures:
Measure 4.1.1 Analyse the connectivity of greening measures and ensure their

functional and temporal existence

A solid analysis of not only structural but also functional connectivity represents a good basis for the negotiation with stakeholders at all levels.

Measure 4.1.2 Safeguarding of well-established structures and preventing deterioration of currently permeable corridors

Actions required:

- Monitoring of structural and functional connectivity, and landscape features, like strips of trees, hedgerows, islands of trees etc., which are important for migrating animals
- Maintaining corridor permeability by avoiding reclassification of rural land into construction zones, no commercial development
- Analyse funding instruments for maintaining ecological connectivity (Common Agricultural Policy, Biodiversity Strategy, Rural Development Funds, etc.)
- Develop recommendations for funding measures and lobby for them
- Awareness raising for local decision-makers, landowners and managers and support applying for funding (see Threat/Pressure 8), ideally also at the national level for the integration of ecological corridors into spatial planning

Threat/Pressure 5: Changes in land management

Specifics of the threat/pressure in the Kobernausser forest pilot area:

Managing agricultural and other rural and forested land bears risks for the functionality of ecological corridors. On the one hand, they represent a good prerequisite for the functioning of ecological corridors, but on the other hand, they can hamper them substantially. In the pilot area, we face the problem of an "empty" landscape dominated by monocultures without guiding vegetation and/or stepping-stones. According to experts, the newly planned photovoltaic areas could function as new stepping-stones in case no fencing is erected. Invasive species spread across the area, displacing local plant species and altering the natural plant species composition and structure.

Furthermore, economic development needs to be restricted. In the past 20 years, many industrial and commercial centres have been established benefiting from the easily accessible transport network. The A8 motorway is one of the busiest motorways in Austria.

Aims:

- Increase the number of landscape elements serving as guiding structures for wildlife
- Raise awareness regarding the needs for functioning ecological corridors
- Analyse funding mechanisms for measures that support the improvement of ecological corridors

5a Objectives on fencing set to address the threats are:

5a.1 Fencing regulations and promoting non-fenced areas

5a.2 Develop guidelines and impose fencing-related conditions linked with agriculture/forestry subsidies or specific programmes

Problem:

In individual cases, fencing can lower the permeability in certain migration corridors, especially when put up to gain a high wildlife density or to prevent feeding damage to arable crops. Fencing of reforestation areas or Christmas tree production might be a problem.

Measures:

Measure 5a.1.1 Analysis of relevance in the area

The project team is not aware yet of any problems related to fencing in the pilot area, thus an analysis thereof would be helpful.

Measure 5a.2.1 Create structures along the fences for migration

Actions required:

- Analyse the area with regard to fencing and based on that, develop recommendations
- In case new photovoltaic plants are planned for the region, establish contact with the constructors and owners to explain that they can contribute to the improvement of permeability for wildlife by refraining from fencing the system
- Promote the "Guidelines for the Assessment of the Ecological Permeability of Wildlife Corridors for Wild Mammals of Rabbit-size and Larger" that were developed by the Environment Agency Austria, which contain recommendations for fencing. Source: https://www.interreg-danube.eu/approved-projects/savegreen/outputs
- Raise awareness among farmers, foresters, landowners and managers (see Threat/ pressure 8 below)

5b Objectives on crop cultivation / natural vegetation management set to address the threats are:

5b.1 Prevent large-scale monocultures and/or facilitate & support mosaic cultivation

5b.2 Support adequate management of natural features & marginal habitats

5b.3 Support and promote development for good-practice examples of connectivity-conscious agriculture, water management and forestry practices

Problem:

In this pilot area, intensification and concentration of agricultural production leads to large monocultures. There is little knowledge on the need for green landscape structures and features contributing to biodiversity and ecological connectivity. Many stakeholders have little awareness regarding the value of habitat connectivity and do not look beyond their own properties or communal lands This is unfortunately also reflected in the Common Agricultural Policy that focuses more on individual farmers/ landowners than an entire region. Connectivity measures on agricultural land are often seen as a loss of land or management hardship. Farmers fear restrictions on use if areas are classified as ecologically valuable.

Measures:

Measure 5b.1.1 Lobby for the integration of ecological corridors into other sectors at the political level

Measure 5b.2.1 Raise awareness on the topic of adequate management of natural features and marginal habitats among farmers, advisors, and public society

Measure 5b.3.1 Collect and promote good examples for the adequate management of land that takes ecological connectivity in account

Actions required:

- Become engaged in relevant policy processes at the regional and national levels promoting land management that takes ecological corridors into account (Common Agricultural Policy, Green Deal that foresees that 10% of agricultural land should be dedicated to biodiversity) – e.g.: vegetation strips along fields support the 10% goal
- Promote the SaveGREEN "Handbook of Best Practices for Planning and Implementation of Mitigation Measures" that contains information on agricultural procedures like planting hedges in the course of land consolidation. Source: https://www.interreg-danube.eu/approved-projects/savegreen/outputs
- Organise events at the local level to firstly raise awareness on the topic, and secondly, to provide knowledge to the respective stakeholders

5c Objectives on degradation of natural habitats set to address the threats are

5c.1. Prevent/control spreading invasive plant & animal species and restore invaded/degraded lands

5c.3 Prevent alteration of water bodies, restore hydric conditions and support restoration of wetlands

Problem:
Invasive species occur in the region and may alter natural plant composition.

Actions required:
- Management of invasive species by land managers, e.g. ASFINAG to take care of the green bridges and underpasses
- Renaturation of the watercourses with accompanying vegetation and natural structures
- Awareness raising (see Threat/pressure 8)

Threat/Pressure 6: Other anthropogenic activities

Specifics of the threat/pressure in the Kobernausser forest pilot area:

The area is used for hunting, which is why there is a high abundance of game that causes bark damage in silviculture and orchards. Data on game is available and collected by the hunters. If human-wildlife conflicts occur, there are compensation measures in place. People might not be aware of them and additionally, they are often difficult to access or implement.

Objectives set to address the threats are
6a.1 Find a balance between the number of game and their impact on plant cultivation (forestry and agriculture)

6a.2 Enrich data collected by the hunters with further monitoring data generated in the project

6b.1 Increase knowledge on compensation measures for animal damages

6b.3 Facilitate implementation of modern methods for prevention of wildlife damages

6b.5 Regulate other anthropogenic activities which could increase the level of conflicts – unsustainable development

Actions required:
- Raise awareness among private and public landowners to maintain or create migration routes in dedicated events
- Foster cooperation with local hunters for future monitoring programmes in the area and contribute to their database with SaveGREEN monitoring data
- Organise special events to inform farmers and foresters about damage compensation procedures and applying for subsidies for preventive measures to avoid human-wildlife conflicts. Source: The Austrian Centre Bear Wolf Lynx https://baer-wolf-luchs.at
- Lobbying and awareness raising on the topic of soil sealing and reclassification of land among regional development authorities, mayors (decision-makers at the local level), landowners, etc. based on the newly created maps of ecological connectivity that also indicate core habitats (see Threat/pressure 8 below)

Threat/Pressure 7: Lack of coherent monitoring at the landscape level and adaptation of solutions

Specifics of the threat/pressure in the Kobernausser forest pilot area:

The hunter association informed us that the underpasses are frequently used by wildlife. There were some indications that wild boars behave differently and do not use underpasses at all. All landowners and hunting leaders in the communities of Meggenhofen, Gaspoltshofen, Aistersheim, Weibern, Rottenbach, Haag am Hausruck, and Pram were contacted to reach an agreement

on the setting up of wildlife cameras on their respective territories.

Aim:
In order to have a comparable data covering the three branches of the corridor in the area, a comprehensive monitoring needs to be set up in cooperation with interested landowners and hunters.

Problem:
The monitoring required as a basis for decisions to avoid negative effects on habitat connectivity has not been conducted by following a systematic approach.

Measures
Measure 7.1 Facilitate implementation of an integrated monitoring programme – procedures, database, indicators and assessment

SaveGREEN provided resources to develop a monitoring tool to assess structural and functional connectivity.

The monitoring methods to assess corridor permeability focused on the occurrence of red deer, roe deer and wild boar.

The monitoring of animal activity was conducted by the following stationary monitoring devices:

- Camera traps
- Light sensors
- Sound sensors

Field mapping was done by mapping direct species observations, track observations and other activity signs. Additionally, the data of roadkill was collected.

In addition, the quantity and quality of over- and underpasses were monitored as well as the number, location and expansion of landscape elements (linear/punctiform), as well as existing barriers in the field.

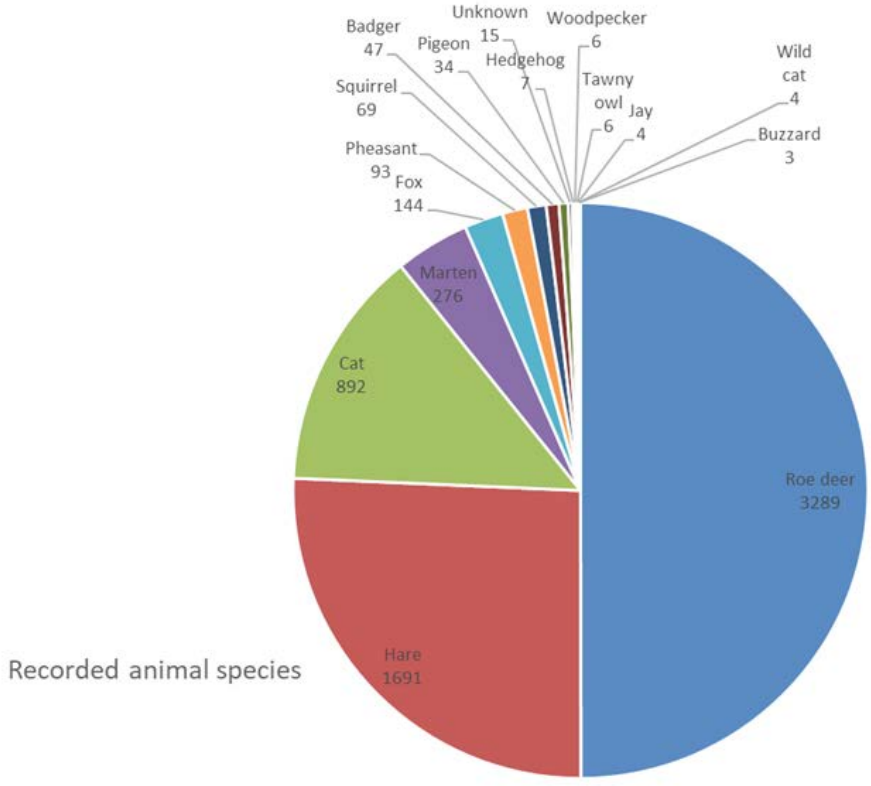

Figure 10 Recorded animal species in pilot area Kobernausser forest © Environment Agency Austria

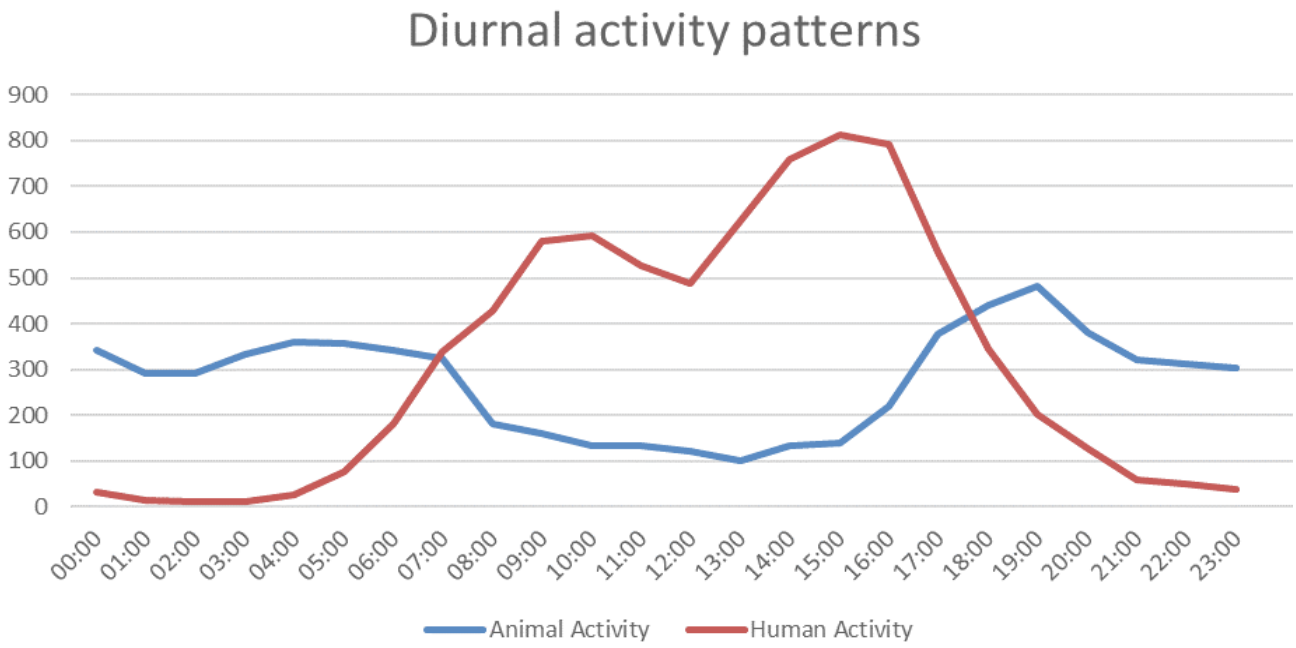

Figure 11 Diurnal activity patterns of humans and animals, Kobernausser forest, aggregated © Environment Agency Austria

In total, 21 monitoring sites were equipped with camera traps and data was collected from 16.12.2021 - 13.06.2022 in a first phase and was continued until the end of 2022. The day and night activated cameras were triggered by wildlife and other movements in the immediate surroundings. This resulted in 14.294 specific sightings for this first phase of monitoring.

Aggregated for the entire pilot region, sightings featured mainly roe deer (3289 sightings), followed by hare (1691), cat (892), marten (276), fox (144), pheasant (93), squirrel (69), badger (47) and pigeon (34) (Figure 10).

The different activity periods of animals and humans are clearly evident: while the activity levels of animals decrease from 7:00 in the morning and increases again from 15:00, human activity peaks at 10:00 and 15:00 (Figure 11).

In addition to the presentation of aggregated results for the entire pilot region, the spatially explicit visualisation of the activity along the corridors and across the entire bottleneck is of great interest.

Here, the varying potential for disturbance by human activity in each of the sensitive areas also becomes obvious (Figure 12).

In contrast, when looking at groups of species or individual target species, the very different use and thus functionality of the corridors becomes evident. While animals of the open land could be detected consistently over the entire bottleneck area and seen traversing each of the three crossing aids, forest-bound species were limited to the two more structured corridors in the west (Figure 13).

During the period in question, from winter 2021 to summer 2022, no evidence of the target species red deer and wild boar was recorded. However, an analysis from this point of view cannot be carried out at the present time - possibly the data of the remaining half year will provide insights. However, with respect to the migratory behaviour of roe deer

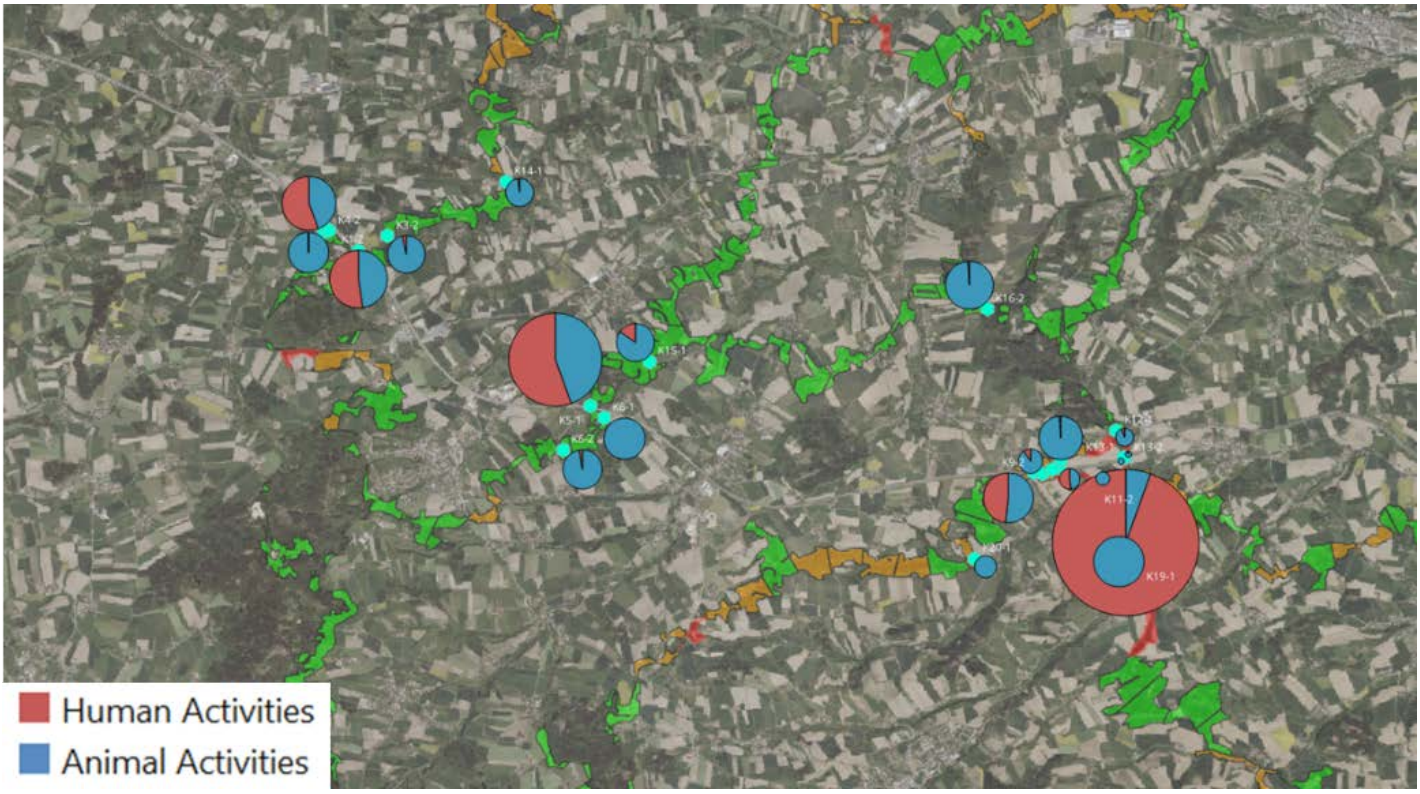

Figure 12 Monitoring of human and animal activities © Environment Agency Austria / Geoland Basemap

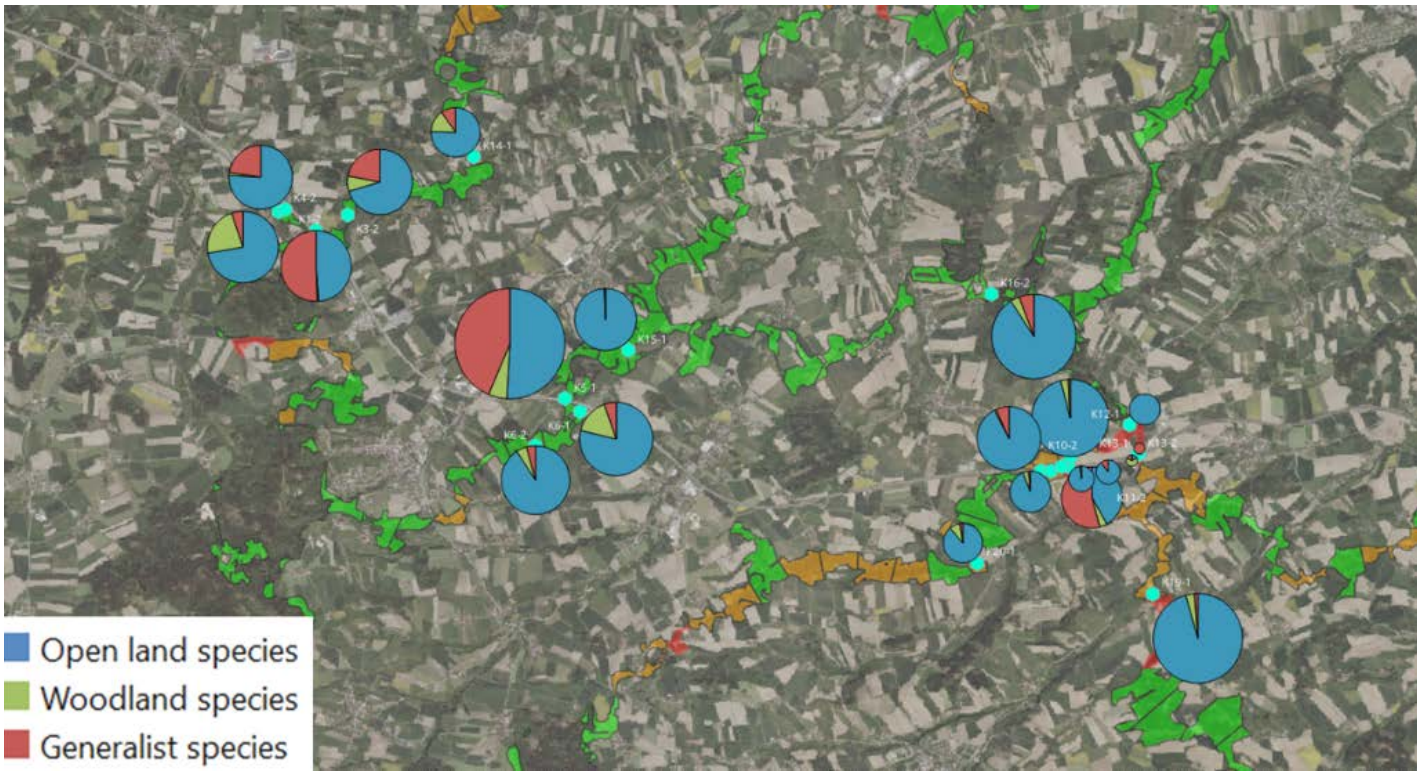

Figure 13 Monitoring of animal activities clustered according to species groups © Environment Agency Austria / Geoland Basemap

as a lower-ranked target species and the use of local corridors and crossing aids, it can be stated that there are no significant differences in the utilization of the three underpasses and the associated landscape structures (Figure 14).

The results of the wildlife cameras also coincide with the results of the field survey methods, i.e. the mapping of direct species observations, track observations and other activity signs. The interpretation of the heat maps of these field-collected activity records, also indicate a severely restricted permeability of the bottleneck section for forest-bound species with almost no evidence of these species (Figure 15). However, the section remains easily passable for a wide range of wildlife - with the two underpasses in the West being particularly suitable.

These considerations can of course also be illustrated at other spatial levels - for example, when considering sensitive points such as the underpasses and crossing aids in the region.

A detailed analysis of the Renhartsberg/ Gotthaming underpasses for the various groups of species shows, for example, that the two crossing aids are mostly used by open land species and that woodland species hardly cross the highway (Figure 16).

The underpasses in the Schachenreith/ Rampersdorf area show a similar trend, with the crossing aid at Schachenreith being particularly well received, as evidenced by the number of recordings of animal activity (Figure 17).

In the vicinity of Aistersheim, it is striking that despite numerous sightings along the feeder corridors, the number of sightings in the proximity of the highway and the crossing aids is quite low (Figure 18).

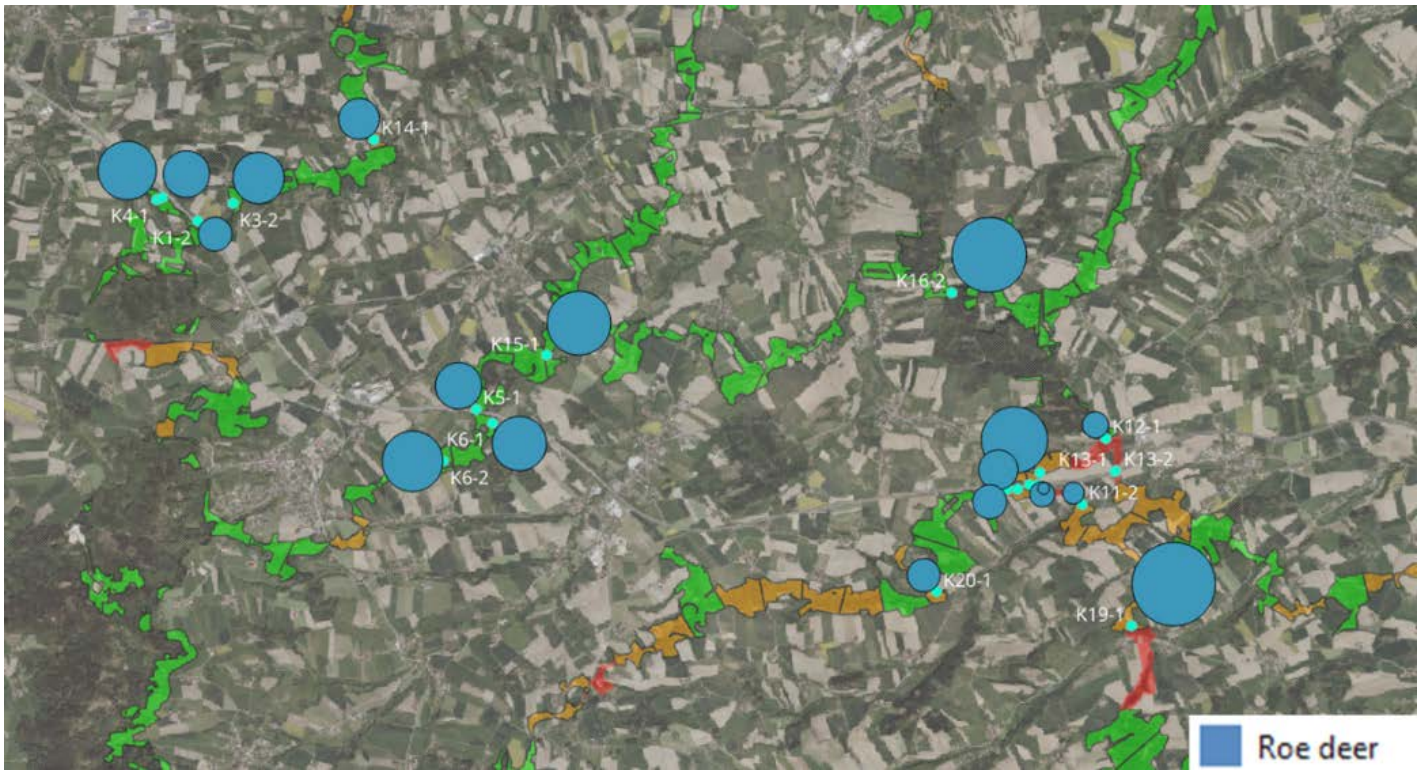

Figure 14 Monitoring of animal activities for the lower-ranked target species roe deer © Environment Agency Austria / Geoland Basemap

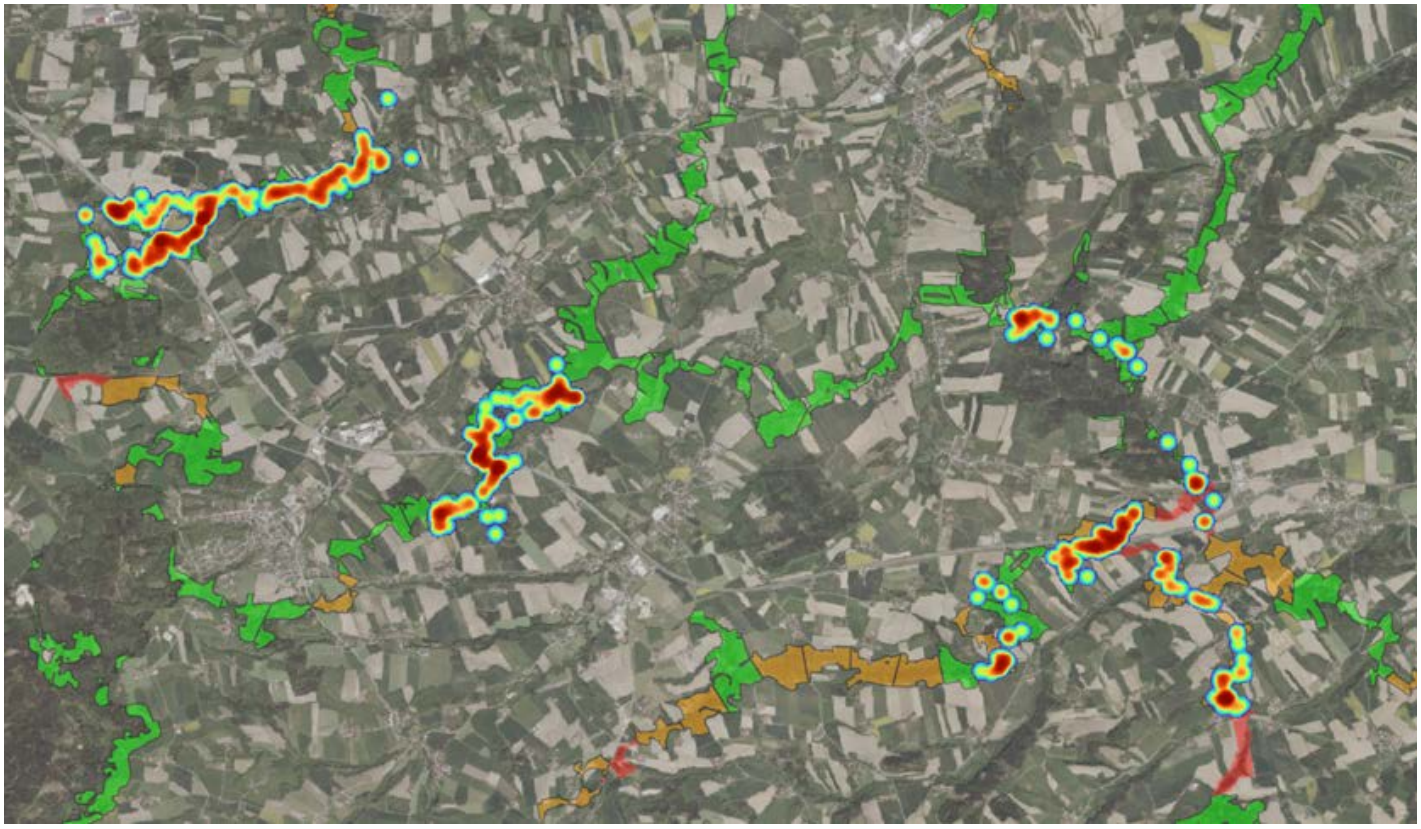

Figure 15 Heat map of activity signs of all recorded species © Environment Agency Austria / Geoland Basemap

Figure 16 Monitoring of animal activities clustered according to species groups at the Renhartsberg/ Gotthaming underpasses © Environment Agency Austria / Geoland Basemap

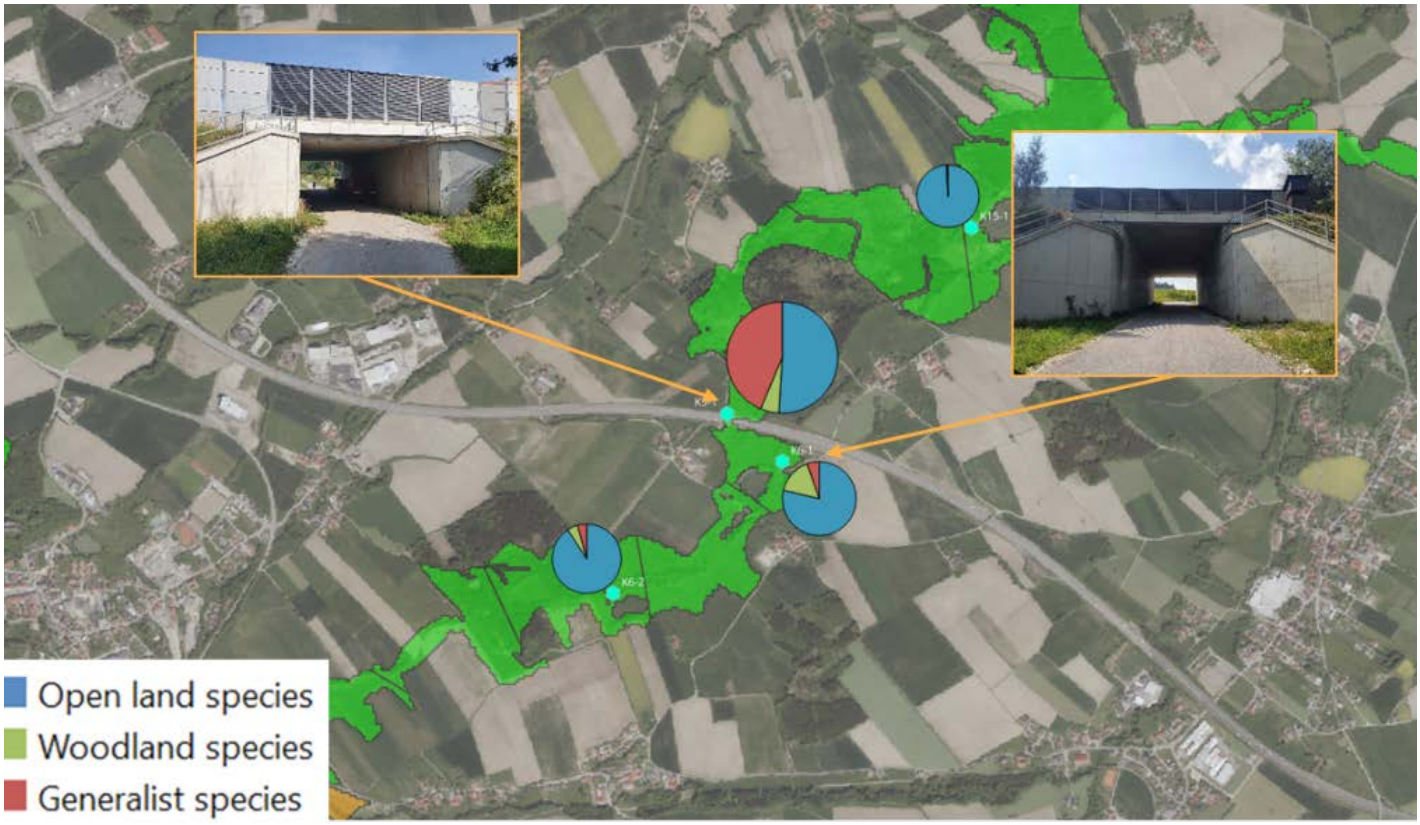

Figure 17 Monitoring of animal activities clustered according to species groups at the Schachenreith/ Rampersdorf underpasses © Environment Agency Austria / Geoland Basemap

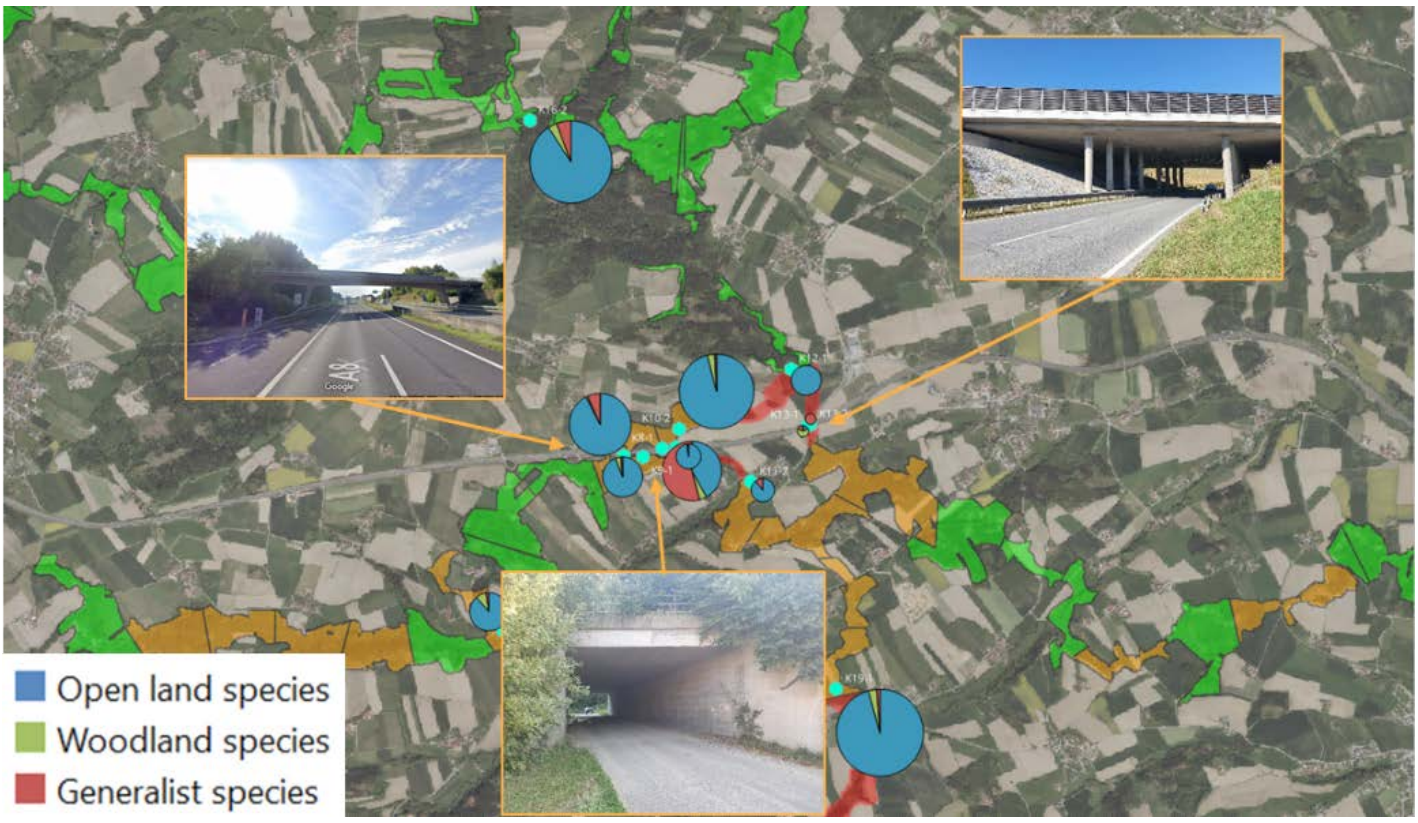

Figure 18 Monitoring of animal activities clustered according to species groups at the Aistersheim crossing aids © Environment Agency Austria / Geoland Basemap

In conclusion, the biggest risks to wildlife migration can be summarised as the following:

- The A8 highway
- Intensive land use practices
- Sprawl of human settlements
- Sprawl of industrial sites
- Noise and light pollution

Actions required:

- In the pilot region, the A8 motorway can currently only be crossed via several, rather narrow underpasses; individual smaller bridges for road traffic are of little significance. The studied underpasses are located at suitable sites in the bottleneck area and they clearly have structural and functional connectivity to support animal migration. However, not a single red deer nor wild boar (target species) was recorded crossing the existing underpasses. The value of constructing an appropriately designed green bridge in the immediate vicinity would therefore be supported by the gathered data, in accordance with the results of previous studies
- To allow for the migration of target species, the existing very narrow underpasses, which were designed for human use and are frequented accordingly, are not sufficient. The construction of a green bridge integrated into the landscape is therefore urgently required. The embedding in existing and ideally enhanced landscape structures must go hand in hand with the construction in order to make the structure accessible and usable for wildlife. In addition, the designated corridors should be included in the wildlife corridor map of Upper Austria
- The high level of human activity shown by the monitoring measures also demonstrates the need for corridors and crossing aids to be appropriately equipped to prevent disturbance
- However, to be successful, local stakeholders need to be informed and involved, as was done during the project implementation, to ensure their buy-in and support for realising ecological connectivity. Much more time would be needed to get a broader consensus regarding the importance of ecological connectivity and its conservation

Further actions addressing Threat/ pressure 7 include:

- Lobbying the federal ministries for climate action and agriculture and forestry for better use of the online platform on ecological connectivity (Plattform Lebensraumvernetzung) at www.lebensraumvernetzung.at
- Conduct constant monitoring for SEA and EIA relevant projects in the area
- Create and implement a durable monitoring plan
- Inform stakeholders about monitoring results on a running basis (see Threat/pressure 8 below)

Threat/Pressure 8: The support of stakeholders for a cross-sectoral & integrated approach at landscape level is reduced

Specifics of the threat/pressure in the Kobernausser forest pilot area

Through the preparatory work of ASFINAG, finding the best location for a green bridge according to the Ministry of Climate Action's order, local stakeholders in the pilot area have a basic understanding that such a construction will come and why. ASFINAG conducted different meetings with local stakeholders, worked together with experts on the feasibility study and the first planning steps. However, when it comes down to concrete actions, things get complicated.

Aims:

- Without specific legislation in place aimed

at protecting ecological corridors, priority must be given to voluntary implementation within the existing legal framework. Therefore, it is necessary to meet with relevant stakeholders from all sectors, such as spatial planning, rural development, agriculture, forestry and hunting, and discuss how to safeguard or improve ecological connectivity. The issue must of course also be discussed in political fora

» Within the project, we focus on awareness raising on the importance of ecological connectivity among local communities, representatives of different sectors concerned and decision makers, and seek for the implementation of measures outlined in this document. We will provide scientifically sound maps of ecological corridors to be taken into account for future strategic planning. This will be done through activities addressing different stakeholders presented below

Objectives set to address the threats are:
Objective 8.1. Facilitate networking and develop a common platform and database

Objective 8.2 Facilitate information, awareness, education, communication

Objective 8.3 Support research and studies focused on connectivity, facilitate inter-sectoral capacity-building and development of new professional opportunities

Objective 8.4 Facilitate the development of a regional identity and promote the area – nature, cultural services

Objective 8.5 Facilitate the development & alignment of local strategies into regional sectoral strategy

Objective 8.6 Facilitate and support complementary initiatives

Problems:
It is not well known that the preservation of ecological connectivity must also be considered beyond the construction phase of a project and landowners are often reluctant to agree to certain measures that would be necessary to keep or improve the functionality of ecological connectivity on their land. Viewed from the bottom-up, we notice that landowners do not want to be restricted in their activities on their property; from top-down we see that the competences for implementing respective legislation with regard to spatial planning is spread across different levels of hierarchy (state with little competences, provinces, and communities with most competences); and thus very complicated.

Local communities make decisions about what kind of development they would allow on their territory. This creates a competitive environment in which local authorities seek to convince companies to settle in their communities, as this promises a good potential source of income. There are attempts to work together beyond the territory of a community, as indicated in certain regional development plans. The term ecological connectivity is not anchored as a category in spatial planning in Austria. Consequently, all measures to improve ecological connectivity are on a voluntary. Stakeholders need to be informed, involved and their knowledge considered in the decision-making process. The following measures were selected to overcome the issue:

Measure 8.1.1. Establish formal/informal exchange platform(s) among relevant stakeholders

Description/examples of identified problem:

Instead of a dedicated set of laws at the national level, spatial planning in Austria, with its federal system of government, is based on coordination and cooperation between sectors and regional political subdivisions. In this system of multi-level-governance, the nine federal states, the *Länder*, are the main legislating entities, while the authority to carry out spatial planning decisions lies primarily with the 2 098 municipalities. When implementing their decisions, the

municipalities are bound by the laws set out at the state, federal and EU levels.

The development of spatial plans in Austria occurs at three levels: regional spatial plans are developed by the *Länder*, while municipalities can develop spatial plans for their territories, within the framework provided by the *Länder*. The federal government has no planning authority, with the exception of four specific sectors: forestry, water management, transportation (federal roads, railways, waterways, air travel) and energy.

In the absence of a national planning authority, there is a significant need for coordination of spatial planning activities. The coordination at the national level, as well as between the national and regional governments, occurs in an informal manner under the oversight of the Ministry of Climate Action and the Austrian Conference on Spatial Planning (ÖROK). Decisions by ÖROK are non-binding in nature.

In light of this strong division of planning and decision-making authority, effectively addressing supra-regional and cross-sectoral issues such as ecological connectivity in a coherent manner throughout the country is very challenging. Coordination of a nationwide network of wildlife corridors depends heavily on the legislative support of the nine Länder and the goodwill of the municipal authorities.

Existing resources:

- ÖROK (2016) "Flächen sparen, Flächenmanagement, und aktive Bodenpolitik", *ÖROK Empfehlung Nr. 56*, available here
- ÖROK (2021) "ÖREK 2030-Umsetzungspaket 'Bodenstrategie für Österreich' - Strategie zur Reduktion der weiteren Flächeninanspruchnahme und Bodenversiegelung bis 2030", available here
- ÖROK (2018) *Raumordnung in Österreich und Bezüge zur Raumentwicklung und Regionalpolitik*, available here
- WWF Austria (2021) *WWF-Bodenreport 2021 - Die Verbauung Österreichs*, available here

Actions required:

- **Short-term:** Feed data gathered in the course of SaveGREEN into the *Lebensraumvernetzung* platform, which represents the primary database for centralised data on ecological connectivity in Austria
- **Short-term:** Promote use of the *Lebensraumvernetzung (LRV)* platform among relevant stakeholders by means of capacity-building workshops and targeted stakeholder meetings

In their Recommendations Nr. 56 on 'Reducing land consumption, land management and active spatial policy' (2016), ÖROK recommends the following:

- **Long-term:** Develop common understanding of ways to achieve reduced levels of land consumption by building awareness among the public and relevant stakeholders through dedicated advisory and awareness programmes
- **Long-term:** Creation of a "Sustainable land-use" platform that convenes stakeholders from relevant sectors and institutions nationwide, as well as international experts. The platform should serve as a catalyst for regular knowledge-transfer and develop strategies, measures and campaigns promoting sustainable land-use practices
- **Long-term:** Set overarching aims in supra-regional and national spatial plans to secure sustainable allocation and management of land in the long-term
- **Long-term:** Spatially define maximum limits for the sprawl of settlements for municipalities across Austria that experience strong pressure for the allocation of land
- **Long-term:** Based on set quantitative targets for future allocation of land for construction, municipalities are to report on the amount of

land currently in use. To allow for effective comparison and analysis, the data must be gathered and catalogued according to common standards. On-going analysis across all levels of government and subsequent inter-stakeholder discussions are to be held under the auspices of ÖROK

Measure 8.2.1. Targeted information campaigns and broader awareness raising

Description/examples of identified problem:

Awareness about the importance of ecological connectivity among the general public as well as many relevant stakeholder groups is low in Austria. The fact that spatial planning in the country is organised according to a multi-level-governance system means that there is no one decision-making entity that can initiate the steps required to secure wildlife corridors. Awareness raising activities cannot therefore be limited to one stakeholder group in particular, but must address a multitude of actors at all levels of government, especially at the local level.

Existing resources:

- Pro natura (2017) Unterichtshilfe: Wildtierkorridore, available here.
- WWF Austria (2021) WWF-Bodenreport 2021 - Die Verbauung Österreichs, available here
- Leitner H., Grillmayer R., Oberleitner I., Leissing D., Leissing J., Stejskal-Tiefenbach M. (2018) Lebensraumvernetzung in Österreich: Biodiversität ist Leben - Leben ist Bewegung, brochure, available here
- Leitner H., Grillmayer R., Oberleitner I., Leissing D., Leissing J., Stejskal-Tiefenbach M. (2018) Lebensraumvernetzung in Österreich: Biodiversität ist Leben - Leben ist Bewegung, flyer, available here

Actions required:

- **Short-term:** Conduct awareness raising activities in the municipalities of the Austrian pilot areas, making use of different channels (on-site events, media, written communication, etc.) and tailored to specific target audiences (hunters, farmers, inhabitants of concerned municipalities, school children, etc.)
- **Long-term:** Develop common understanding of ways to achieve reduced levels of land consumption by building awareness among the public and relevant stakeholders through dedicated advisory and awareness programmes (ÖROK, Recommendations Nr. 56, 2016)
- **Long-term:** Creation of a "Sustainable land-use" platform that convenes stakeholders from relevant sectors and institutions nationwide, as well as international experts. The platform should serve as a catalyst for regular knowledge-transfer and develop strategies, measures and campaigns promoting sustainable land-use practices (ÖROK, Recommendations Nr. 56, 2016)

Measure 8.3.1. Promote further research on the preservation of ecological connectivity and ensure knowledge-transfer and -uptake

Description/examples of the identified problem:

To support outreach and awareness-raising measures (measure 8.2.), robust, comparable and up-to-date data on ecological connectivity and spatial plans is required.

Existing resources:

- Platform for Ecological Connectivity: www.lebensraumvernetzung.at

Actions required:

- **Short-term:** EEA and external experts to use data gathered during monitoring in the AT pilot areas and along linear transport infrastructure in Austria to inform scientific publications on ecological connectivity
- **Short-term:** Provide capacity-building workshops for relevant stakeholders on the importance of ecological connectivity and the role of spatial planning in securing its preservation

- **Long-term:** Creation of a nationwide spatial planning database with harmonised methods of data collection

- **Long-term:** Creation of a "Sustainable land-use" platform that convenes stakeholders from relevant sectors and institutions nationwide, as well as international experts. The platform should serve as a catalyst for regular knowledge-transfer and develop strategies, measures and campaigns promoting sustainable land-use practices (ÖROK, Recommendations Nr. 56, 2016)

- **Long-term:** Based on set quantitative targets for future allocation of land for construction, municipalities are to report on the amount of land currently in use. To allow for effective comparison and analysis, the data must be gathered and catalogued according to common standards. On-going analysis across all levels of government and subsequent inter-stakeholder discussions are to be held under the auspices of ÖROK (ÖROK, Recommendations Nr. 56, 2016)

Measure 8.4.1 Support integration of ecological connectivity into regional development plans as part of a regional identity

Description/examples of identified problem:

The pilot area Kobernausser forest is characterised by agriculturally shaped and used areas with centres of business in the outskirts of bigger settlements that are continually growing. Efforts to define a regional identity are developed by the county administration of Grieskirchen in a participatory approach (2013), and is driven by the following motives:

- Self-determined and self-responsible living in community

- Preserve efficiency, proximity and diversity for people

- Strengthen communities as places of action

- Set anchors and build bridges

- Value and create culture

The topics reflect the need for an adaptation to current trends, such as how to keep the region attractive for investors and at the same time an attractive living environment as a response to demographic changes. It touches on social welfare, economic development, and networking among communities. Innovation is solely linked to new technologies; sustainability with infrastructure, jobs, education, recreational areas and culture. Integrative regional and spatial planning include collaboration of communities with a focus on economic development and tourism. Nature conservation or ecological connectivity is not directly considered. It seems that people take nature for a guaranteed good that does not need to be mentioned.

The LEADER Local Strategy (2017) says that people increasingly take care of the environment. The hilly area with many orchards, small-scale fields, hedgerows and other landscape elements is to be preserved and enlarged. Projects were approved that aimed to preserve the orchards and fruit juice production typical for the region; support for preparing flowering strips for pollinators and organic farming, including marketing, has been funded. Local communities seem to be conscious about the value of natural resources. This is a good trend. However, ecological connectivity is not explicitly considered. Projects are primarily implemented at the small-scale.

Existing resources:

- "wir & Grieskirchen. verbinden - verstehen - verankern. Zukunftspapier", Bezirkshauptmannschaft Grieskirchen, October 2013

- LEADER Hausruck-Mostlandl: Lokale Entwicklungsstrategie (LES), 2017

Actions required:

- Short-term: Awareness raising: establish contact with the LEADER Local Action Group Hausruck-Mostlandl in order to discuss ecological connectivity as part of their valuable natural heritage. Discuss the importance of this last remaining supra-

regional green corridor that connects the Kobernausser forest and Bohemia. Discuss the possibilities of how local actors can substantially contribute to its conservation. Local actors should be aware of the last chance to save the corridors

- Support agricultural projects, e.g. organic farming that takes care of wildlife corridors by planting trees and hedgerows, and extending orchards to support the functionality of wildlife corridors.

Measure 8.5.1 Support the integration of ecological connectivity into various local development plans

Description/examples of the identified problem:

Based on desktop research, the following strategies have been found and analysed with regard to ecological connectivity. Below, you will find a short analysis thereof and their relations to strategies at the provincial and federal levels.

Local strategies/ guidance principles:

- Province of Upper Austria, Department for Nature Conservation: **Natur und Landschaft: Leitbilder, Band 25 Hausruck- und Kobernaußerwald** (Nature and landscape: Guiding principles, volume 25 Hausruck and Kobernausser forests): The increasingly rapid pace of overall spatial development is creating framework conditions which also require new strategies and concepts in nature conservation. Ways are offered for sustainable development of our country in order to make a contribution to the future shaping of the landscape and thus to fulfil the socio-political mandate to protect, conserve and develop nature and the landscape. The following project with regards to wildlife corridors is outlined in the paper:
  - The aim of this pilot project of the province of Upper Austria, in cooperation with the University of Natural Resources and Applied Life Sciences in Vienna, is to connect the Kobernausser forest with the Bohemian forest and to create a migration corridor for animals at the international level between Austria, Germany and the Czech Republic
  - This corridor currently extends south of Braunau across the Siedelberg and the Kobernausser forest and further east across the Hausruck forest in an east-northeast direction. It crosses the A8 motorway at Meggenhofen/Aistersheim (construction of a wildlife crossing aid in the form of a green bridge is planned) and continues in a north-easterly direction past the west of Grieskirchen in a northerly direction to the Schlögener Schlinge
- **LEADER Hausruck-Mostlandl Regional Development Strategy** (2017) with the aim of creating a regional identity and improving the quality of life. LEADER is an important economic factor in the region and is built on various areas of action. Among others, these are 1) added values, 2) natural resources and cultural heritage, 3) public welfare structures and functions including networking and public relations work
- Regionalmanagement OÖ GmbH (RMOÖ) is the regional development agency of the province of Upper Austria. As **Upper Austria's competence centre for regional development**, it is the primary contact point for municipalities, associations, institutions and regional actors who want to implement initiatives for the development of their region

  The goals of the Regionalmanagement GmbH are to secure and strengthen the attractiveness, quality of life, competitive strength and cross-border cooperation of the Upper Austrian regions. This includes dynamic economic development, social cohesion, attractive jobs, sustainability and long-term oriented spatial planning as well as the positive development of soft location factors such as housing, leisure, nature and cultural offerings in the Upper Austrian regions. Our pilot area falls into the

area governed by Regionalmanagement Innviertel-Hausruckviertel

- **Forest development plans** for the different counties in the region: Grieskirchen, Vöcklabruck, etc.

- A local strategy developed in cooperation between the Hunting Association and the forestry sector is the "**Hunting and Forestry Dialogue. Strategies in the local forests for a good cooperation after bark beetle calamities, snow pressure and thunderstorms**". The document recommends planting smaller groups of trees or hedgerows to guide wildlife outside the forest in order to prevent damage inside the forest

- **Local development concepts** prepared by communities in the framework of the local zoning plan:

  Every municipality is required to implement, maintain and regularly review the zoning plan in order to carry out the tasks of local spatial planning. The zoning plan consists of the local development concept and the zoning part. The local development concept seeks to outline basic development options for a longer-term planning period. The zoning section - based on the development concept - specifies the intended uses of land that can be implemented in the short-term in a concrete and parcel-specific manner. The zoning section must not contradict the planning and textual specifications of the local development concept.

  The competent planning authority for the tasks of local development planning is the municipal council. A supervisory approval by the provincial government is required

National strategies / policies:

The Austrian Spatial Planning Conference (ÖROK), described in detail above, developed the **Austrian Spatial Planning Concept (ÖREK)** together with relevant stakeholders, in which it calls for the following measures to be taken for 'open spaces' a term that, among others, can denote ecological connectivity:

- Establishment of an ÖREK Partnership for "Development of open spaces, resource protection and climate change"

- Analyse models for financial and fiscal consideration of ecosystem-based services and present their spatial impacts

- Develop guidelines for resolving conflicts between increasing urban density and urban greening, and prepare good practice examples

The ÖROK can only issue recommendations.

The **Common Agricultural Policy for Austria** (GAP, submitted to the European Commission in December 2019) includes chapters for conservation of biodiversity, improvement of ecosystem services and safeguarding habitats and landscapes. Rural development interventions are recommended to include environmentally sound management that promotes biodiversity. However, economic pressure and a heavy workload cause farmers to let fields lie fallow, or to cut down hedgerows and trees that are not "productive".

One part of the GAP is the so-called **agro-environmental programm**e (ÖPUL) that regulates payments for organic farmers and farmers that manage or support biodiversity-rich landscapes/areas. Ecological connectivity is mentioned; farmers get paid for planting trees, hedgerows or groups of trees that increase the functionality of ecological connectivity. However, the measures are considered at the level of a single farmer only, and are not based on a supra-regional plan. Some farmers take up this offer to contribute to contractual nature protection.

Actions required:

- **Short-term:** Provide the map showing the supra-regional, regional and local wildlife corridors, its local branches and critical

areas to decision-makers and discuss how they can contribute to the conservation of this important ecological connection

- **Short-term:** Organise meetings to disseminate the results of the project and highlight beneficial actions that could be taken by local players

- **Long-term:** Strive for ecological connectivity to be anchored in the legislation / spatial plans at the national level. Attempts to place this topic high on the political agenda have already started a long time ago. As the system is a complicated one, it will be a lengthy process

Target groups: LEADER Local Action Group, local communities, Regionalmanagement OÖ, Province of Upper Austria - Department of Nature Conservation, Environmental Ombudsman (Umweltanwaltschaft) Upper Austria.

Measure 8.1.6 Establish an exchange of information platform for initiatives that work on ecological connectivity

Description/examples of identified problem:

At the national level, there are different organisations, institutions and universities that deal with the identification of ecological corridors and related topics like soil sealing, often in the frame of EU funded projects (Interreg Alpine Space, Interreg Central Europe, Interreg Danube Transnational Programme, Interreg Cross-border Cooperation Programmes, Horizon, etc.). However, there is no synopsis of the initiatives and projects to learn from each other, discuss the findings and develop position papers to jointly address decision-makers.

The Environment Agency Austria is developing a common platform to display data, interactive maps and related publications, the so-called information platform “Lebensraumvernetzung”.

Resources:
- Platform “Lebensraumvernetzung” (LRV)
- Rural Development Programme
- LEADER strategy
- Interreg DTP Dare2Connect Project
- Interreg Cross-border Cooperation AT-CZ NatReg Project
- WWF Soil campaign
- etc.

Actions required:
- **Short-term:** provide an interactive exchange platform (LRV Platform?)

- **Short-term:** identify initiatives and inform them about the topic and the attempts to strengthen the LRV Platform

- **Long-term:** organise meetings of representatives of relevant initiatives on a regular basis

General actions to engage stakeholders:
- Identify opinion leaders in the region

- Organise face-to-face meetings to learn the local hierarchical order and extend the group of stakeholders step by step

- Hold bilateral meetings in the municipalities with all relevant stakeholder groups and keep them informed about the process and results

- Organise an info day to introduce ecological connectivity and the role of their region to the general public

- Organise capacity-building workshops for decision-makers and management authorities working in sectors of relevance for ecological connectivity

- Collaborate with as many stakeholders as possible

- Hold end-of-project meetings with all engaged parties to inform them about final results and possible local next steps

7. Conclusions

Ensuring functional ecological corridors and their long-term maintenance requires the support of the local population and regional authorities. However, there is often a lack of understanding of the fact that functioning wildlife corridors are an essential component of sustainable landscape development and that information, e.g. wildlife monitoring, is crucial for this. Therefore, it is important to provide relevant and interested persons with information about information the value of ecological corridors and the tasks associated with their preservation. An investment of time for engaging stakeholders at the local level is key to fostering the voluntary implementation of measures in order to maintain, improve or restore ecological connectivity. In the end, landowners need to agree with the implementation of measures on their private land; funding for concrete measures and compensation of possible economic loss need to be secured.

In Aistersheim, we encountered a very open-minded community that understands the importance of safeguarding biodiversity and ecological connectivity. This is a first step and many more must follow to implement the required measures. We should support landowners and managers who want to contribute to the implementation of supportive measures by identifying and providing technical support and compensation payments.

PILOT AREAS:

Austria

1 Kobernausser forest

2 Pöttsching (Alpine-Carpathian Corridor)

Czech Republic/Slovakia

3 Beskydy-Kysuce CZ-SK cross-border area

Hungary/Slovakia

4 Novohrad-Nógrád SK-HU cross-border area

Ukraine

5 Zakarpattia region

Romania

6 Mureş valley (Arad-Deva)

7 Mureş Valley (Târgu Mureş – Târgu Neamţ)

Bulgaria

8 Rila-Verila-Kraishte corridor

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Project partners:

Austria: WWF Central and Eastern Europe (Lead Partner), Environment Agency Austria

Bulgaria: Black Sea NGO Network, Bulgarian Biodiversity Foundation

Czech Republic: Friends of the Earth Czech Republic – Carnivore Conservation Programme, Transport Research Centre Czech Republic

Hungary: CEEweb for Biodiversity, Hungarian University for Agriculture and Life Sciencis

Romania: Zarand Association, EPC Environmental Consultancy Ltd., WWF Romania

Slovakia: Slovak University of Technology in Bratislava – SPECTRA Centre of Excellence of EU

Associated Strategic Partners:

Austria: Ministry for Climate Action, Environment, Energy, Mobility, Innovation, and Technology

Bulgaria: Ministry of Agriculture, Food and Forestry – Executive Forest Agency, Southwestern State Enterprise SE – Blagoevgrad

Czech Republic: Ministry of the Environment, Nature Conservation Agency

France: Infrastructure and Ecology Network Europe (IENE)

Germany: Bavarian State Ministry of the Environment and Consumer Protection

Greece: Egnatia ODOS S.A.

Hungary: Natinoal Infrastructure Developing Private Company Ltd. (NIF Ltd.), Ministry of Agriculture, Danube-Ipoly National Park Directorate

Romania: Ministry of Environment, Waters and Forests, Ministry of Public Works, Development and Administration, Ministry of Transport, Infrastructure and Communications

Slovakia: State Nature Conservancy, Ministry of Environment, Ministry of Transport and Construction, National Motorway Company

Ukraine: M.P. Shulgin State Road Research Institute State Enterprise – DerzhdorNDI SE, Department of Ecology and Nature Resources of Zakarpattia Oblast Administration

SaveGREEN "Safeguarding the functionality of transnationally important ecological corridors in the Danube basin"

DTP3-314-2.3, July 2020 – December 2022

Project overall budget: EUR 2,681,728.70, ERDF funded: EUR 2,279,649.36