

# Project of local ecological network

Case Study: Planning region “Oberland”, Upper Bavaria, Germany

## Mapping report identifying the GBI elements, barriers, connectivity measures in pilot areas

Activity 2.3 Case Studies 2nd step: To design a GBI network for connectivity across administrative boundaries or transnational cross-border areas in pilot sites

Reference in AF: D.2.3.1

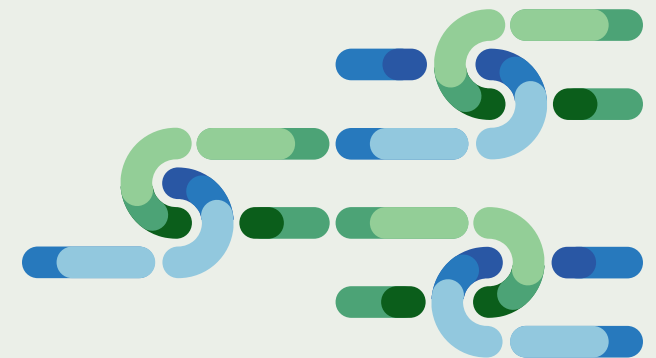
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## GLOSSARY

### **“Connectivity” (structural and functional)**

“Connectivity comprises two components, structural and functional connectivity. It expresses how landscapes are configured, allowing species to move. Structural connectivity, equal to habitat continuity, is measured by analysing landscape structure, independent of any attributes of organisms. [...]. Functional connectivity is the response of the organism to the landscape elements other than its habitats (i.e. the non-habitat matrix). This definition is often used in the context of landscape ecology. A high degree of connectivity is generally linked to low fragmentation.” (EUROPEAN COMMISSION - Technical information on Green Infrastructure (GI), 6.5.2013, Glossary)

(Definition of connectivity see also Deliverable 1.1.1, chapter 8)

### **“GBI – Green and blue infrastructure”**

“Green infrastructure (GI) is a strategically planned network of natural and semi-natural areas with other environmental features designed and managed to deliver a wide range of ecosystem services. It incorporates green spaces (or blue if aquatic ecosystems are concerned) and other physical features in terrestrial (including coastal) and marine areas. On land, GI is present in rural and urban settings.” (EUROPEAN COMMISSION - Green Infrastructure (GI) — Enhancing Europe’s Natural Capital, 6.5.2013)

(Definition of connectivity see also Deliverable 1.1.1, chapter 6)



## EXECUTIVE SUMMARY

The focus in our analysis lays on the connectivity of habitats using the structural approach and planning for a structurally cohesive network for corridors. The priority corridors we are focusing on are modelled by using the PlanToConnect macro-regional model and overlaying it with the corridors from the Federal Concept for Green Infrastructure in Germany, to validate our corridors and to define those corridors as our study and analysis areas.

Our approach focuses on extracting non-secured or really vaguely secured open spaces (by spatial planning instruments). First we define our network and then analyse further how specific instruments can contribute to safeguarding the open spaces with relevance to the overall network coherency.

Our regional focus does not enable the analysis to focus on specific species as this has to be further discussed by local species experts, which is not feasible and also not the responsibility of the regional planning level.

Barriers mainly exist in regards to traffic and settlement, natural hazards and agriculture.

# REPORT

## 1 Introduction

Being highly under pressure by settlement and infrastructure development, especially in peri-alpine areas as well as valley locations, the alpine areas of high ecological value and that enable species permeability to ensure movement and reproduction are at high risk of being intensively fragmented.

For this reason, the Interreg Alpine Space Project “PlanToConnect” aimed for better integrating the topic of ecological permeability and connectivity into spatial planning systems in the Alps. Following a spatial planning focused approach, the project discussed a structural approach on ecological connectivity.

The following local report gives a detailed overview of the contribution that the case study in the German “Planungsregion 17: ‘Oberland’” withholds for safeguarding and maintaining a network of Green and Blue Infrastructure on an alpine wide scale.

This report includes a description of the analysis approach including a general analysis on land use in the study area as well as a methodological analysis.

One ground laying definition is the definition of “Lebensraumkorridore” (habitat-corridors) that represents green connecting areas that go through humanly influenced space. These areas are outside of human settlement areas and can both be present in forest and open land. They require to be kept free from settlement infrastructure and allow permeability.

For the pilot region, connectivity needs to be understood as a structural concept where we argue on a more regional and thus abstract level for permeability of land through open spaces, that are safeguarded by using planning instruments. The most prevalent function that needs to be preserved is the decrease in soil contamination by nitrates, so more intensive agriculture, also a decrease in land take by settlement infrastructure and a potential harmonization of open space and renewable energies. The connection to the Alpine Wide Structural Connectivity is ensured by using the PlanToConnect macro-regional corridors as our specific study and focus areas and applying a more meta-structured analysis on the topic.

The main barriers evident are traffic, settlement and natural hazards that we analyse further identifying the role of regional instruments for agricultural use, and landscape preservation.

## 2 Pilot region and GBI network

### 2.1 Short introduction to pilot area

The planning area No. 17: “Oberland” is a structural and strategic area in the south of Upper Bavaria that is of high interest for the specific analysis due to the topographic situation, being in the south in alpine topography and agricultural pasture economy and in the north highly frequented by pressures often present in fringe areas: settlement pressure from the agglomeration Munich, traffic and industrial use of land.

Within our pilot region, we conducted a thorough analysis of the land cover to get a specific over-view of the conflicts and potentials that arise in questions of how to deal with land uses.

### 2.2 Process to achieve GBI network

#### 2.2.1 Identification of analysis areas

For identifying our analysis areas, we overlaid our macro-regional corridors that were analysed in a prior step within the PlanToConnect project with the German Federal Concept for Green Infrastructure. Hereby we achieved a validation of our corridors in a broader sense that we can somehow adapt a macro-regional analysis to a more regionally based study area for our analysis. The macro-regional corridors also enable us to further narrow down our analysis areas to look for conflicts in land use and for the network in a more specific way.

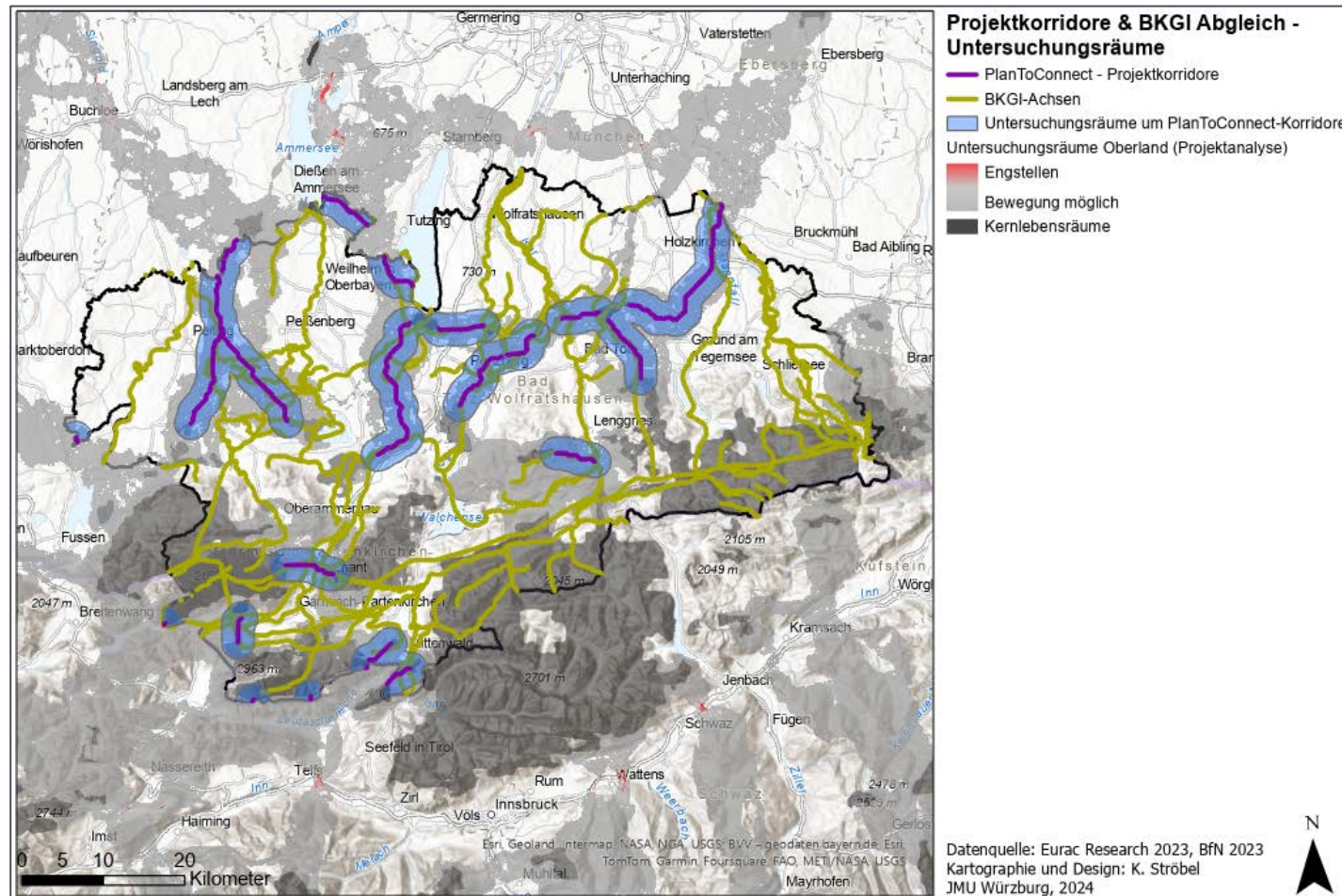


Figure 1: Overlay of macro-regional corridors with Federal Concept of Green Infrastructure and buffering to include the variability of movement-areas.

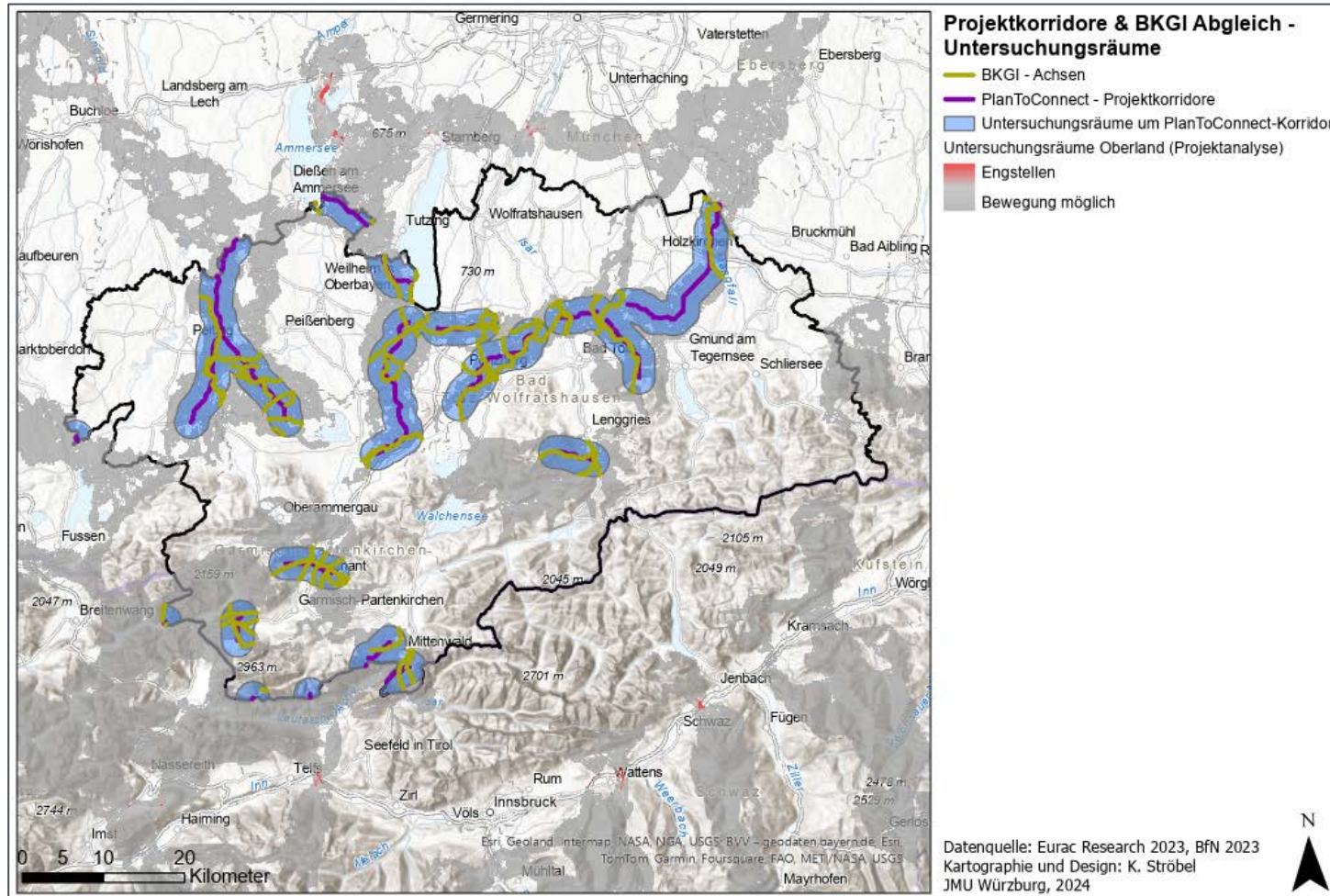


Figure 2: Finalization of analysis areas.

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## 2.2.2 Overlay with sectoral and planning instruments

To gain an understanding of the situation for how the space in the study area is actually managed by spatial planning, we overlaid the existing spatial plans:

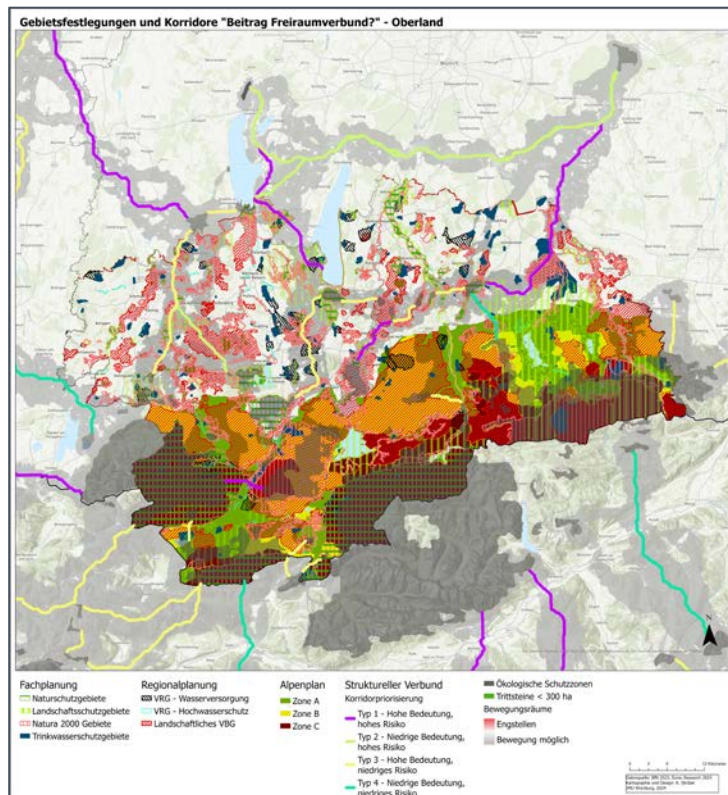
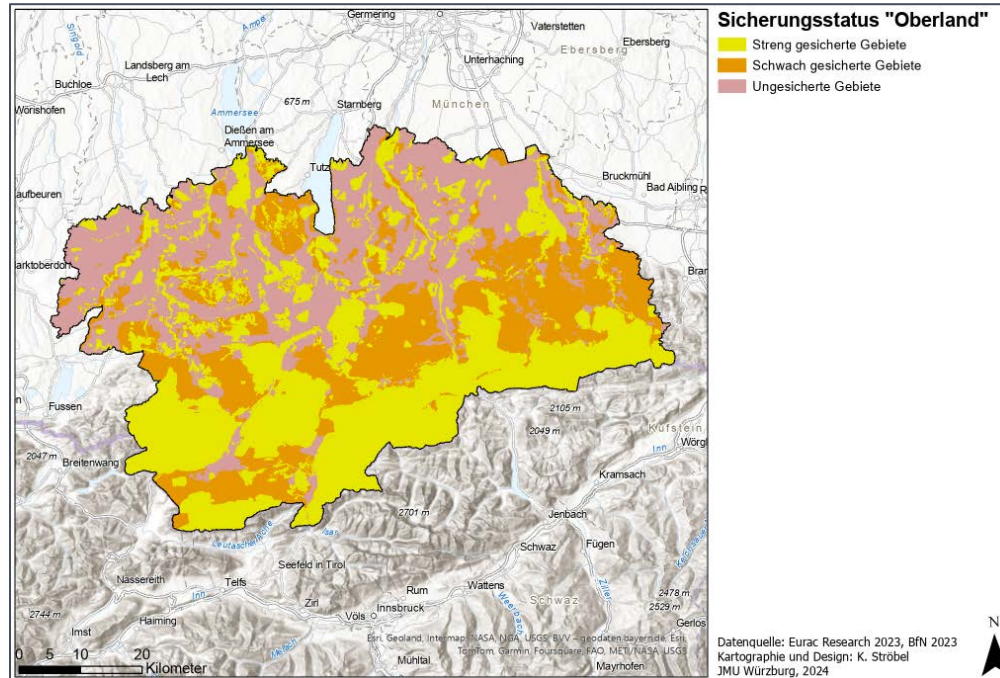


Figure 3: All existing spatial and sectoral plans in our network.

We then further categorized the instruments into the three categories of being strongly secured (sectoral plans), loosely secured or not secured at all.



| Sicherungskategorie | Inkludierte Sicherungen   | Schwerpunkt-räume |
|---------------------|---|-------------------|
| Streng gesichert    | Alpenplan Zone C, Naturschutzgebiete, Natura2000-Gebiete, VRG-Wasserversorgung, VRG-Hochwasserschutz, VRG-Trinkwasser |                   |
| Schwach gesichert   | Landschaftsschutzgebiete, Alpenplan Zone B, Landschaftliche Vorbehaltsgebiete   |                   |
| Ungesichert         | Rest (inkl. Alpenplan Zone A und Naturpark Ammergauer Alpen)  |                   |

Figure 4: Categorization of spatial instruments

The Areas within our analysis areas were then intersected and clipped.

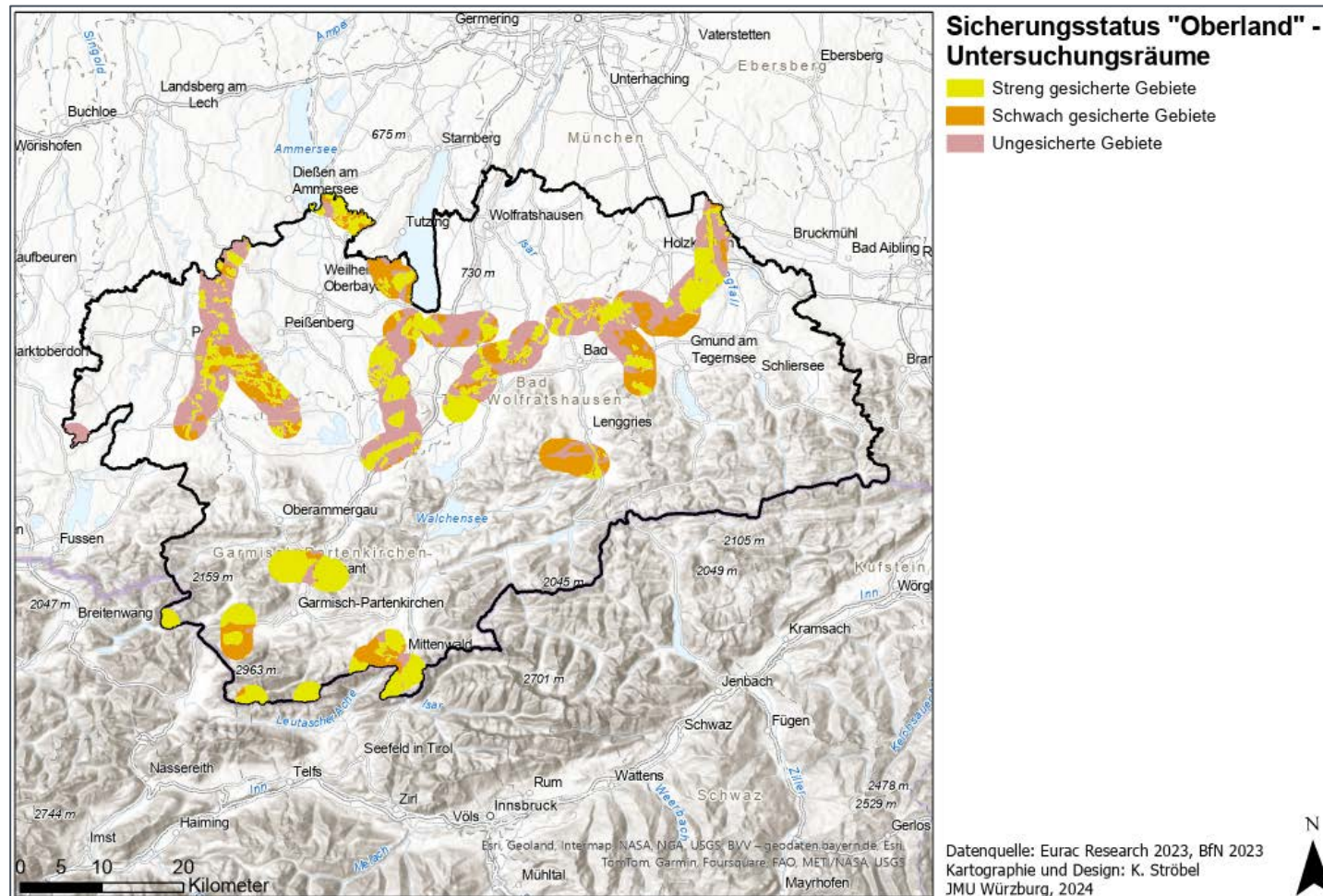


Figure 5: Categorization in analysis areas.

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In a next step, we extracted only those areas that are loosely secured or not secured at all by regional instruments:

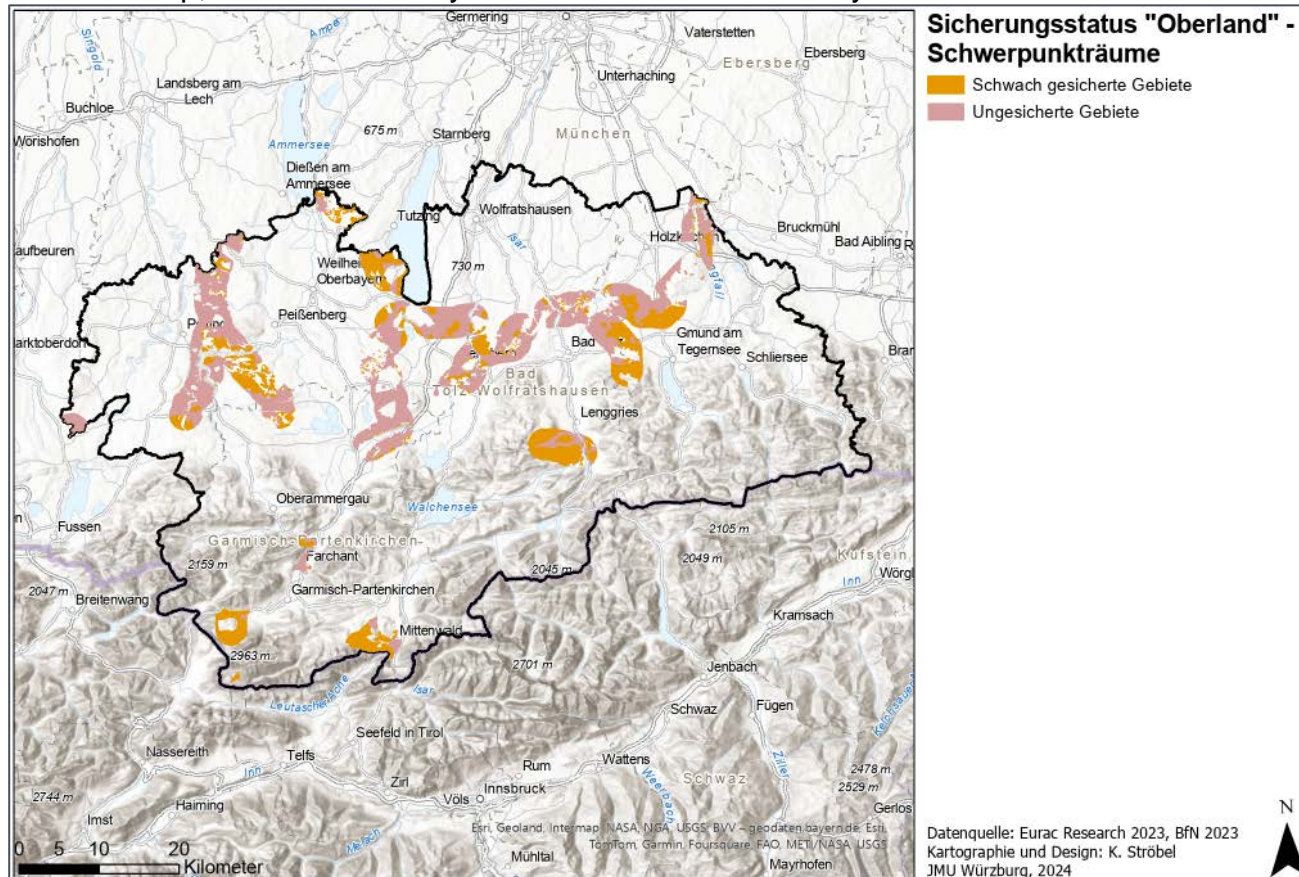


Figure 6: Status of non- or loose securing by regional instruments in analysis areas. Formation of focus areas

### 2.2.3 Land uses

To grasp what is actually being secured, we covered the area with the current Land uses, using the ATKIS-Basis-DLM Data base for Oberland. The majority of land is covered by open land that is again used in majority by agriculture

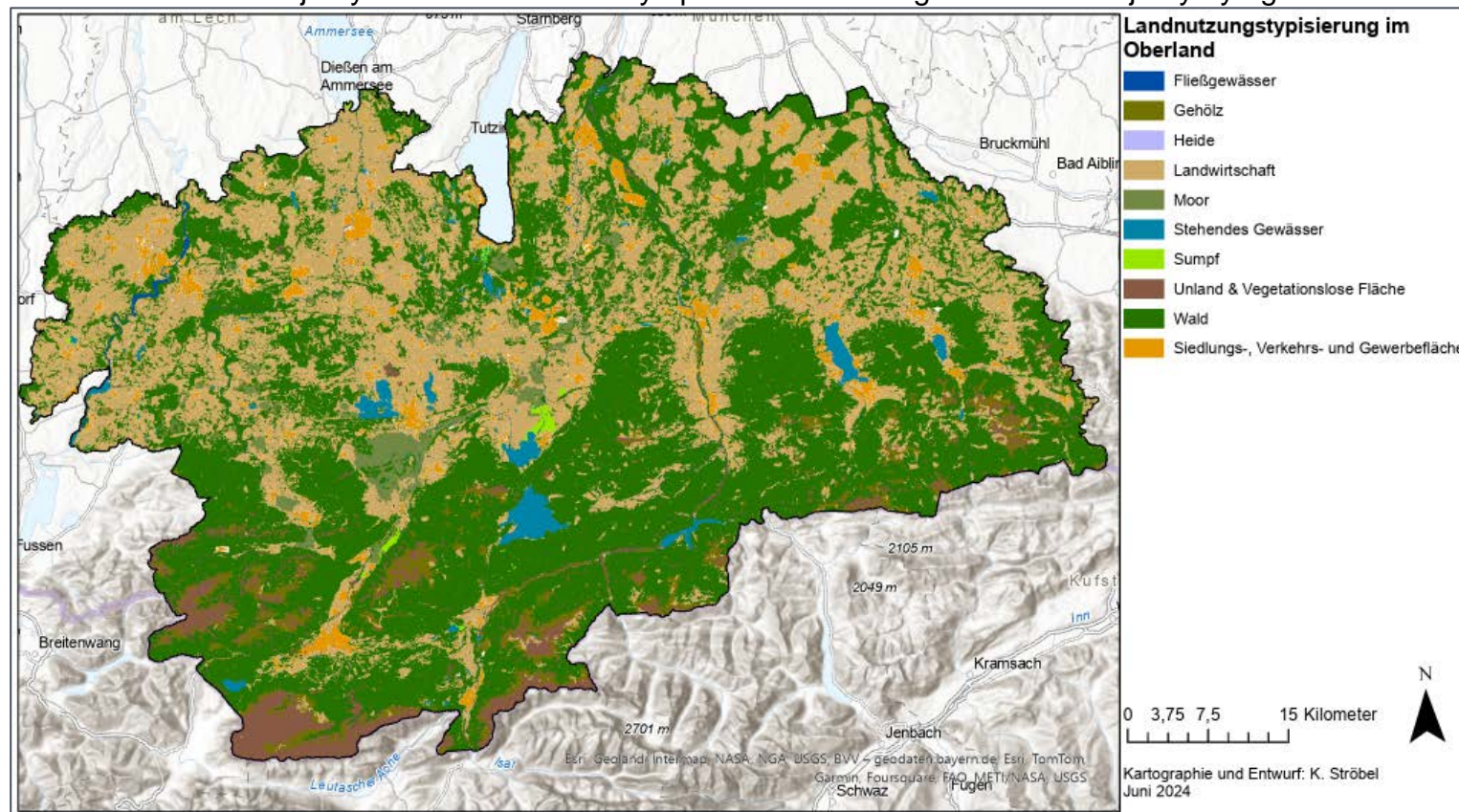


Figure 7: Land use in pilot region.

Land uses were classified for open land, forest and water areas based on expert opinion...  
...were clipped first to our analysis regions:

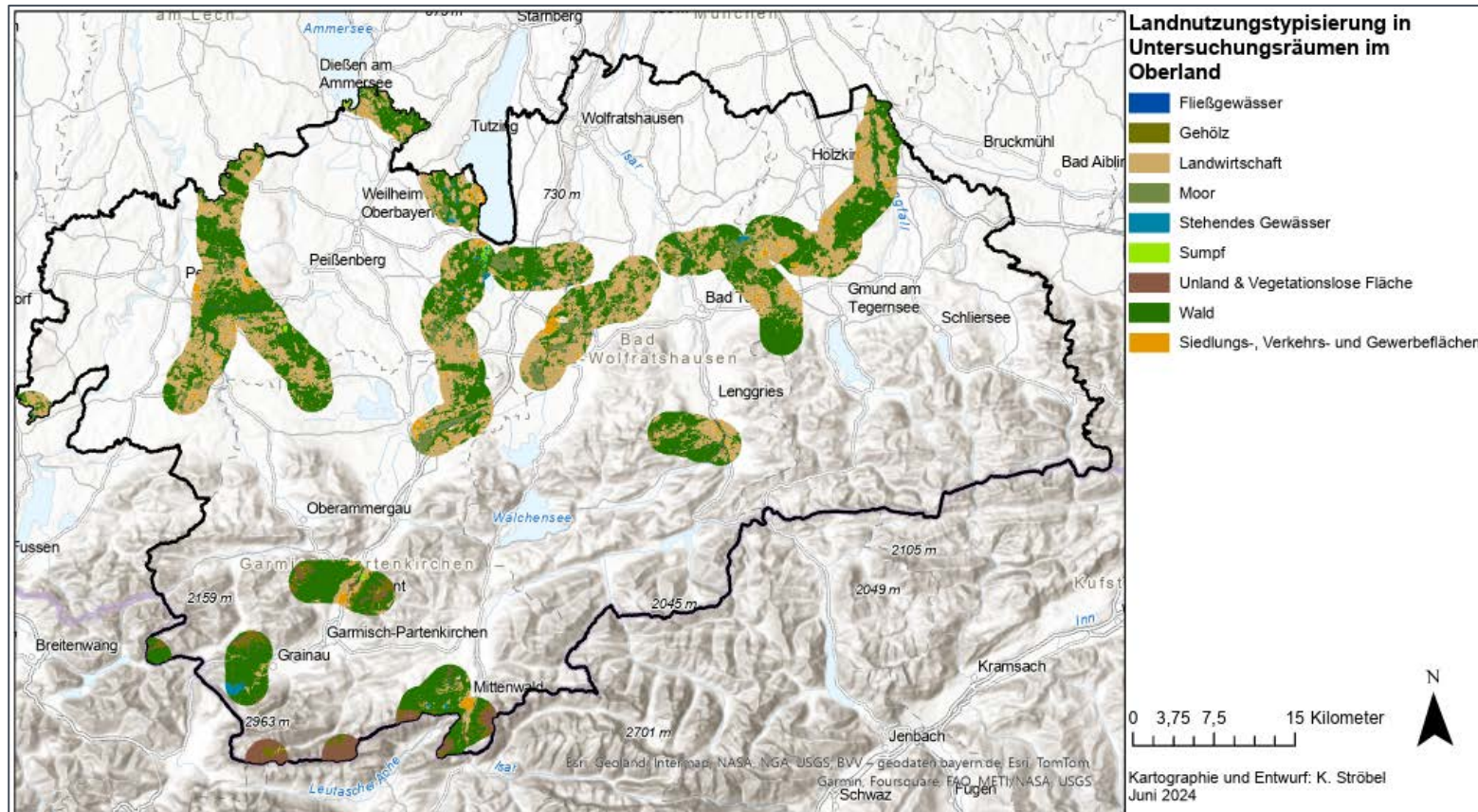


Figure 8: Land uses in analysis region.

...and then categorized first for the whole pilot region...

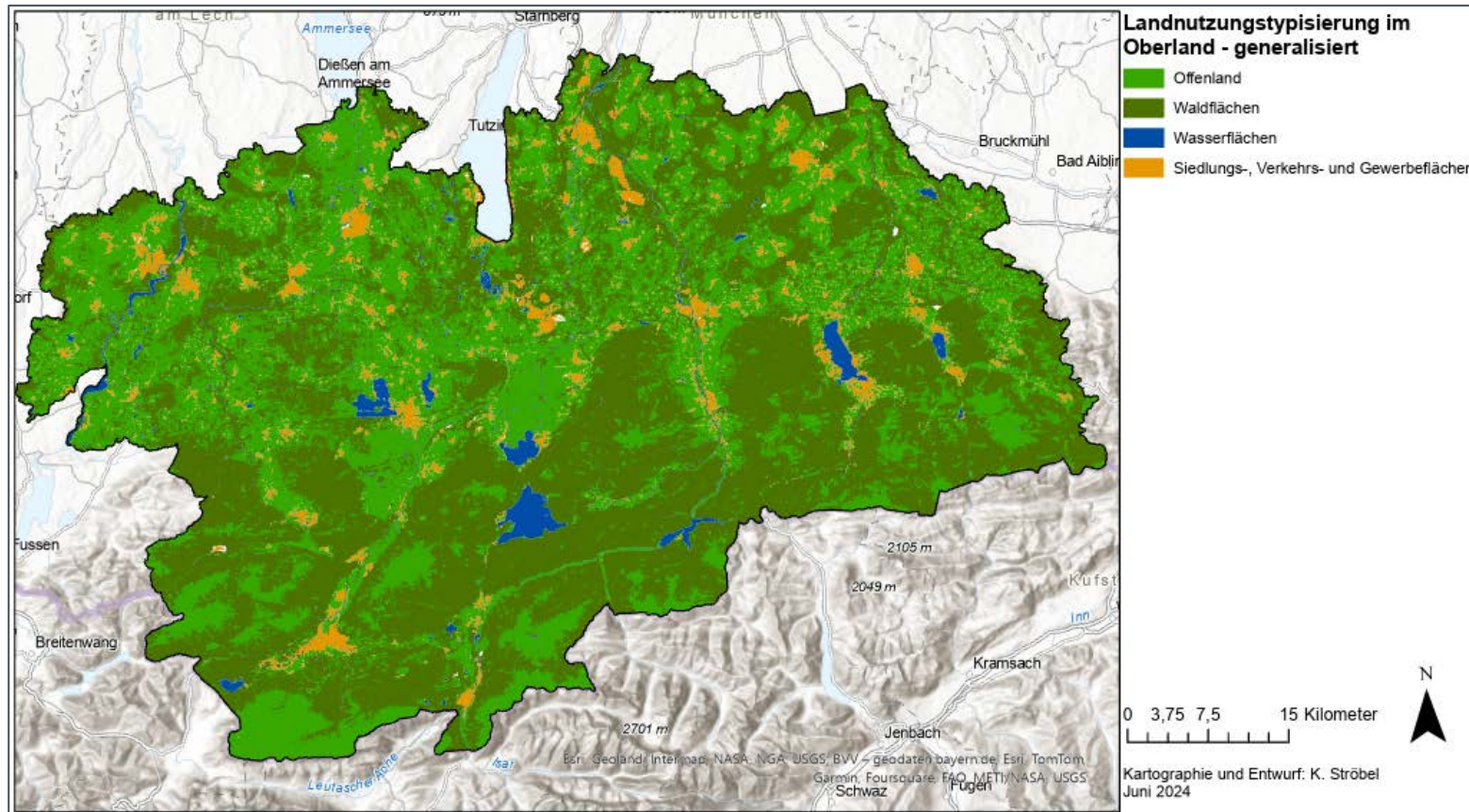


Figure 9: Categorization of land uses in open land, forest and water bodies.

... and then again clipped to our analysis areas.

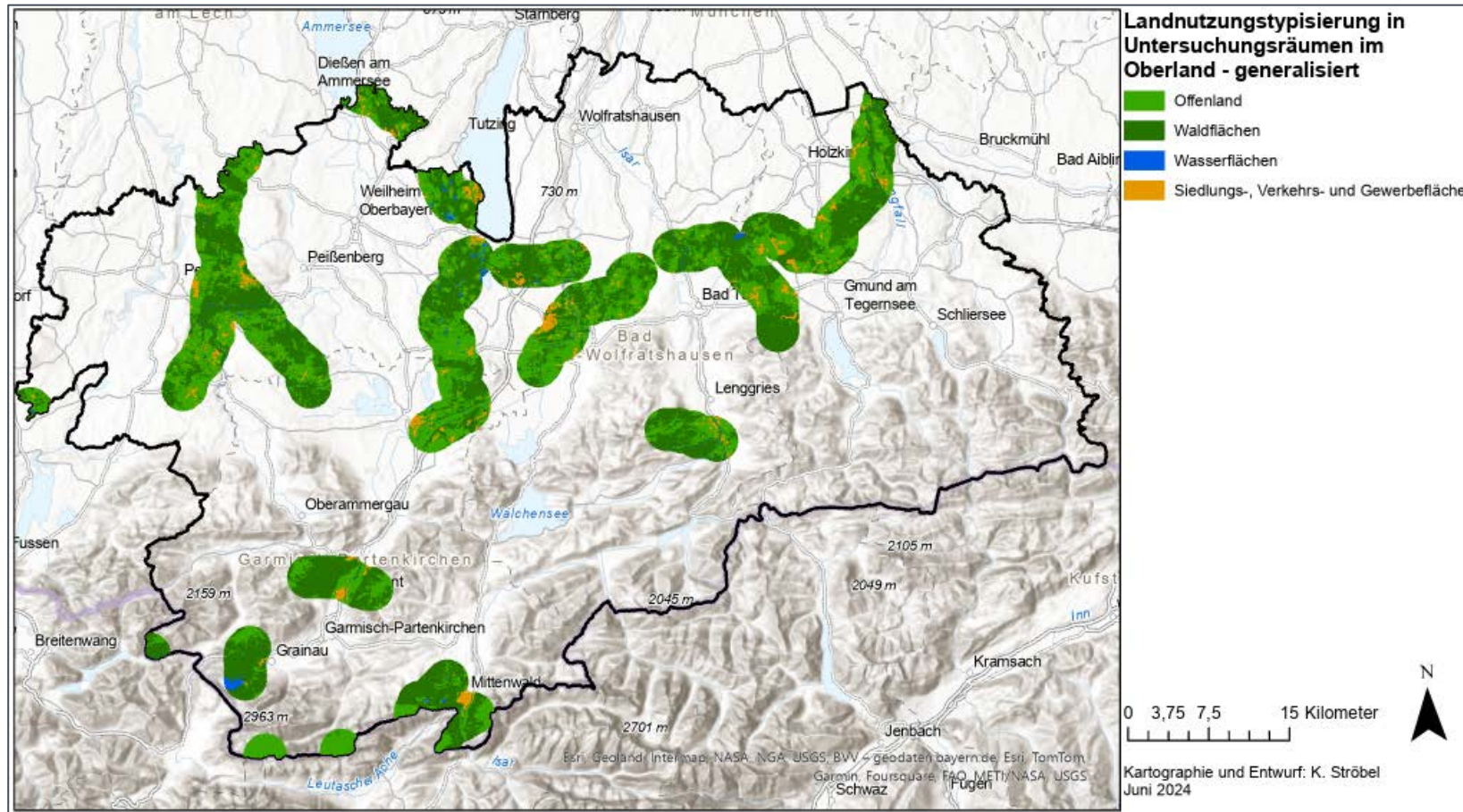


Figure 10: Types of land use in our analysis areas: open land, forest, water and settlement areas.

| Landnutzung im Freiraumverbund: in Schwerpunkträumen im Oberland (Gesamtfläche: 418 km <sup>2</sup> ) |                              |                                     |
|---|------------------------------|-------------------------------------|
| Landnutzungskategorie   | Fläche (in km <sup>2</sup> ) | Prozentualer Anteil an Gesamtfläche |
| Offenland   | 212                          | 51,20 %                             |
| Waldfläche  | 207                          | 49,52 %                             |
| Wasserfläche  | 3                            | 0,72 %                              |

Figure 11: Categorization of land use (in German): with a total area of 418 km<sup>2</sup> of total study area. 51 % are covered by open land, 49,52 % are covered by forest and 0,72 % are covered by water bodies.

The majority of land cover is constructed by open land and agricultural use (green areas) which also presents one of the main challenges in safeguarding a biotope network, as land ownership is hard to be regulated by regional planning.

## 2.2.4 Focus areas

For further analysis, we extracted all non-secured or loosely secured areas (as shown in Figure 6):

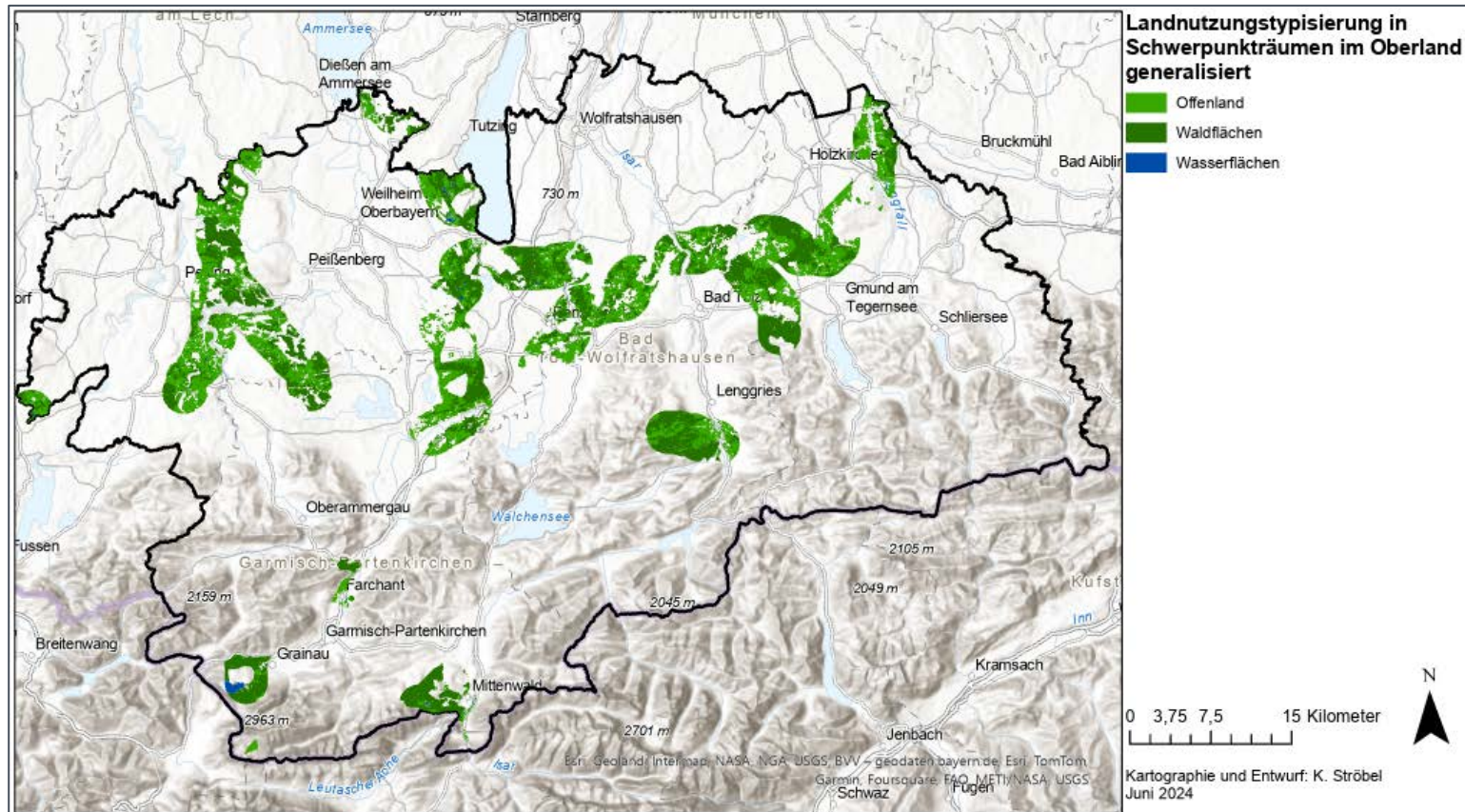


Figure 12: Focus areas

Also a thorough descriptive analysis was conducted for the land cover in non-secured or loosely secured areas:

| Sicherungsstatus  | Fläche (in km <sup>2</sup> ) | Prozentualer Anteil an Gesamtfläche | Landnutzungskategorie | Fläche (in km <sup>2</sup> ) | Prozentualer Anteil an jeweiliger Gesamtfläche | Prozentualer Anteil an Gesamtfläche |
|-------------------|------------------------------|-------------------------------------|-----------------------|------------------------------|--|-------------------------------------|
| Ungesichert       | 260                          | 62,2 %                              | Offenland             | 152                          | 58,46 %  | 36,36 %                             |
|                   |                              |                                     | Waldfläche            | 109                          | 41,92 %  | 26,08 %                             |
|                   |                              |                                     | Wasserfläche          | 0                            | 0,3 %  | 0,07 %                              |
| Schwach gesichert | 158                          | 37,8 %                              | Offenland             | 60                           | 37,97 %  | 14,35 %                             |
|                   |                              |                                     | Waldfläche            | 98                           | 62,03 %  | 23,44 %                             |
|                   |                              |                                     | Wasserfläche          | 3                            | 1,90 %   | 0,72 %                              |

Figure 13: Descriptive analysis of land cover

Majority of land cover in focus area is open land in non-secured spaces, with 96,7 % of this area being agriculturally used land.

## 2.3 Overall working process

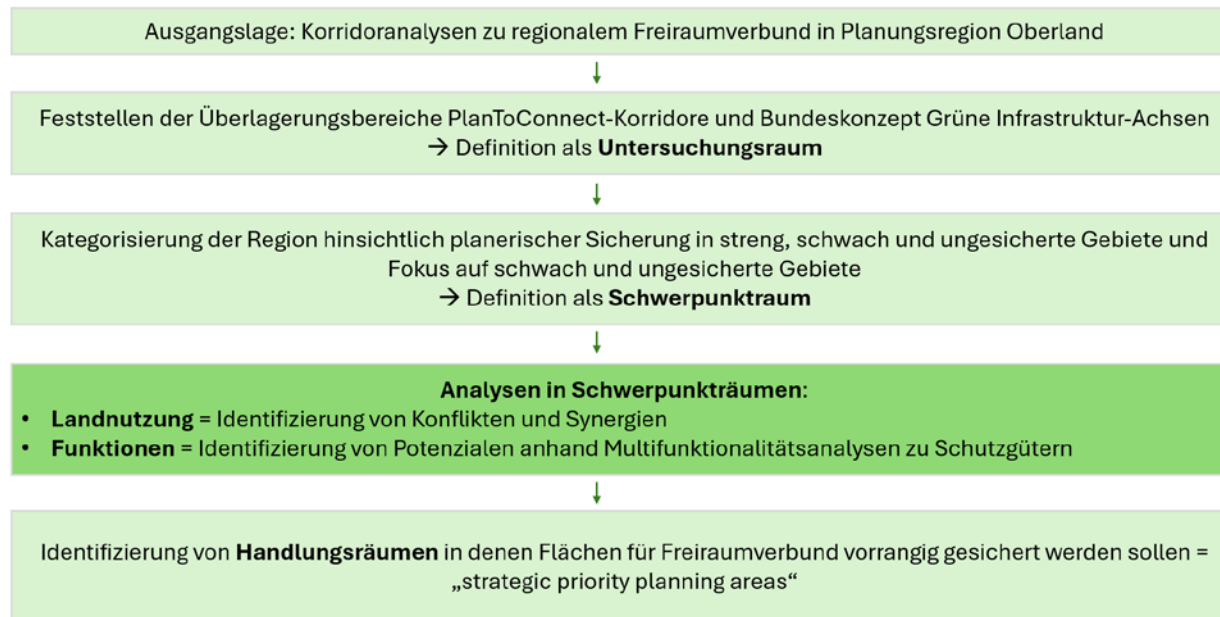


Figure 14: Working process (analysis process to get access to foci areas)

### 3 Next steps and concluding remarks

Due to our regional approach using a macro-regional model that is not easily adaptable to the whole region and faces its limitations rather quickly, our approach focuses on qualitatively identifying how spatial planning in our study region can comprehend conflicting land uses and how competencies can be put in place to ensure a great network connection.

In the next steps, a further and details impact assessment analysis will be carried out and rather qualitatively described in terms of connectivity, agriculture and natural hazards.

**Document / report title: Mapping report identifying the GBI elements, barriers, connectivity measures in pilot areas**

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