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Inspire Policy Making with Territorial Evidence

// InTerAlp

Interface Territories across the Alpine region

Research results
November, 2024

ESPON // InTerAlp



Friedrich-Alexander-Universität
Erlangen-Nürnberg



Politecnico
di Torino

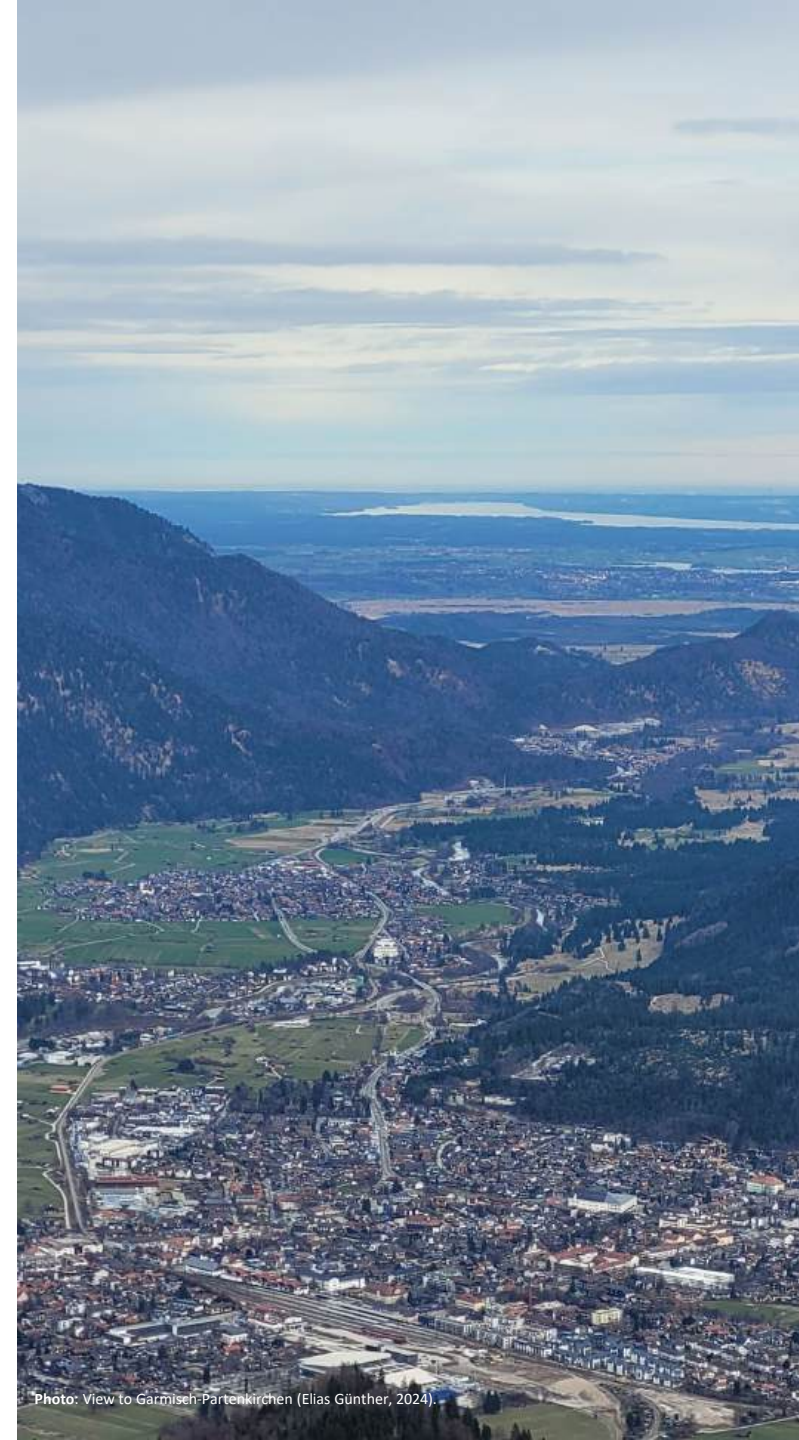


Photo: View to Garmisch-Partenkirchen (Elias Günther, 2024).

1

Mapping interface territories across the Alpine region



Photo: View from Planken in Liechtenstein over the Alpine Rhine Valley (Elias Günther, 2024).

Turin area



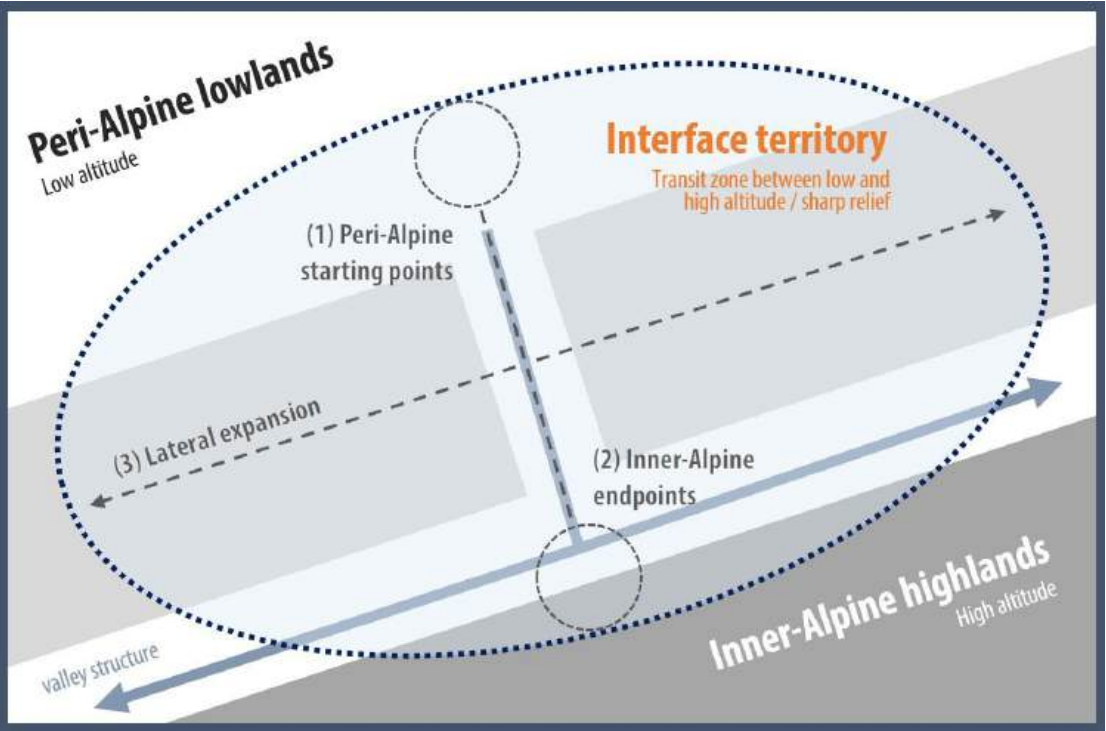
Photo: Andrea Mucelli, CC BY-NC-SA 2.0, <https://www.flickr.com/photos/bluestardrop/8296928890>

Grenoble area



Photo: Agence d'urbanisme de la région grenobloise

Scheme of defining interface territories



FAU, 2024

Garmisch-Partenkirchen towards Munich



Photo: Elias Günther, 2024

General criteria for the spatial definition include the following aspects:

- Interface territories **link the peri-Alpine lowlands** with **inner-Alpine highlands**.
- Interface territories represent the **transition zone** between low and high altitude, encompassing areas with sharp relief.
- The definition of interface territories is based on characteristics of the **Alpine settlement system**, the **transport infrastructure** and **morphological aspects** such as topographical elevation and the river system.
- Spatial patterns in demographic organisation, environmental regionalisation and transport infrastructure provide the **data framework** (e.g. accessibility to central places, functional urban areas, water catchment areas, transport infrastructure, geomorphological arguments like altitude and slope).

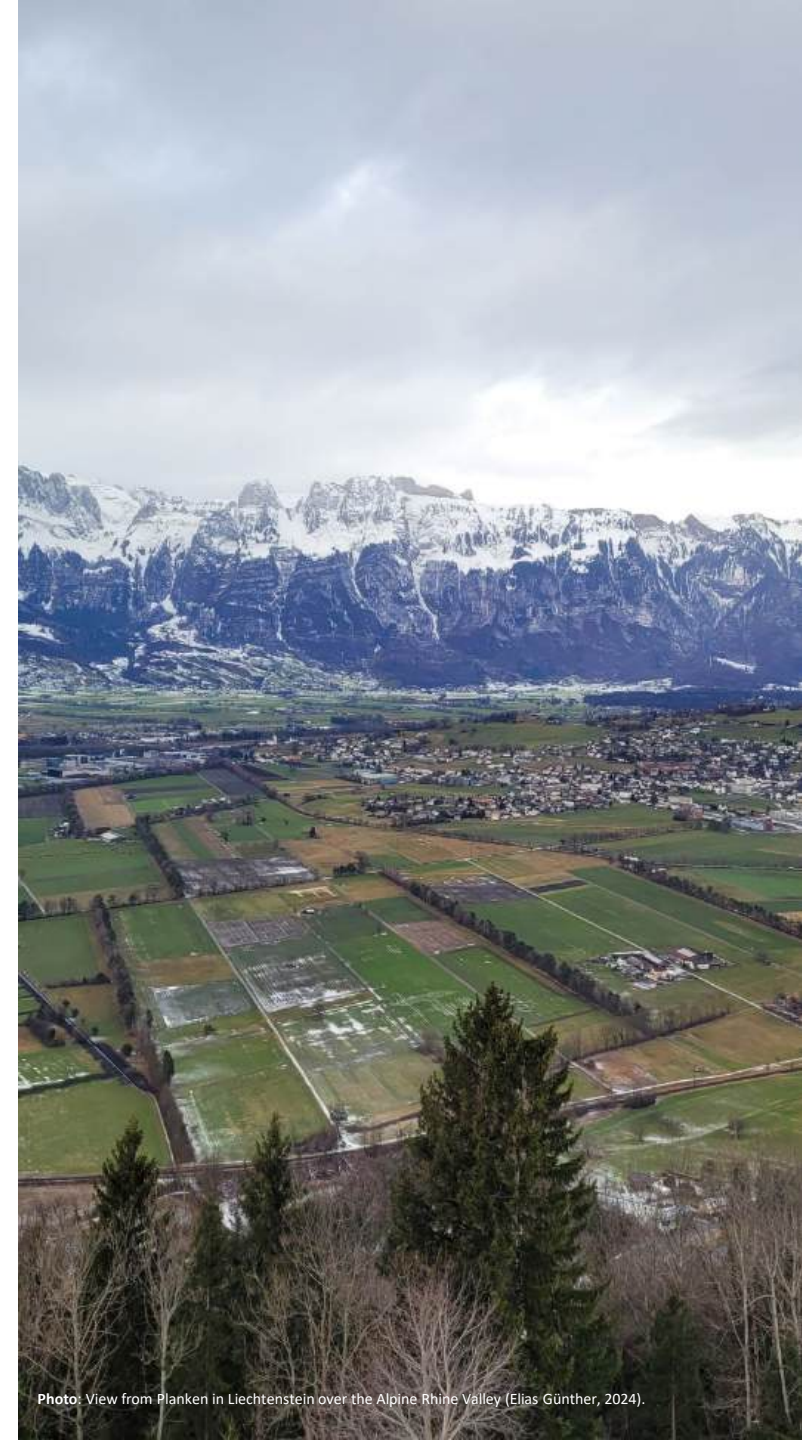
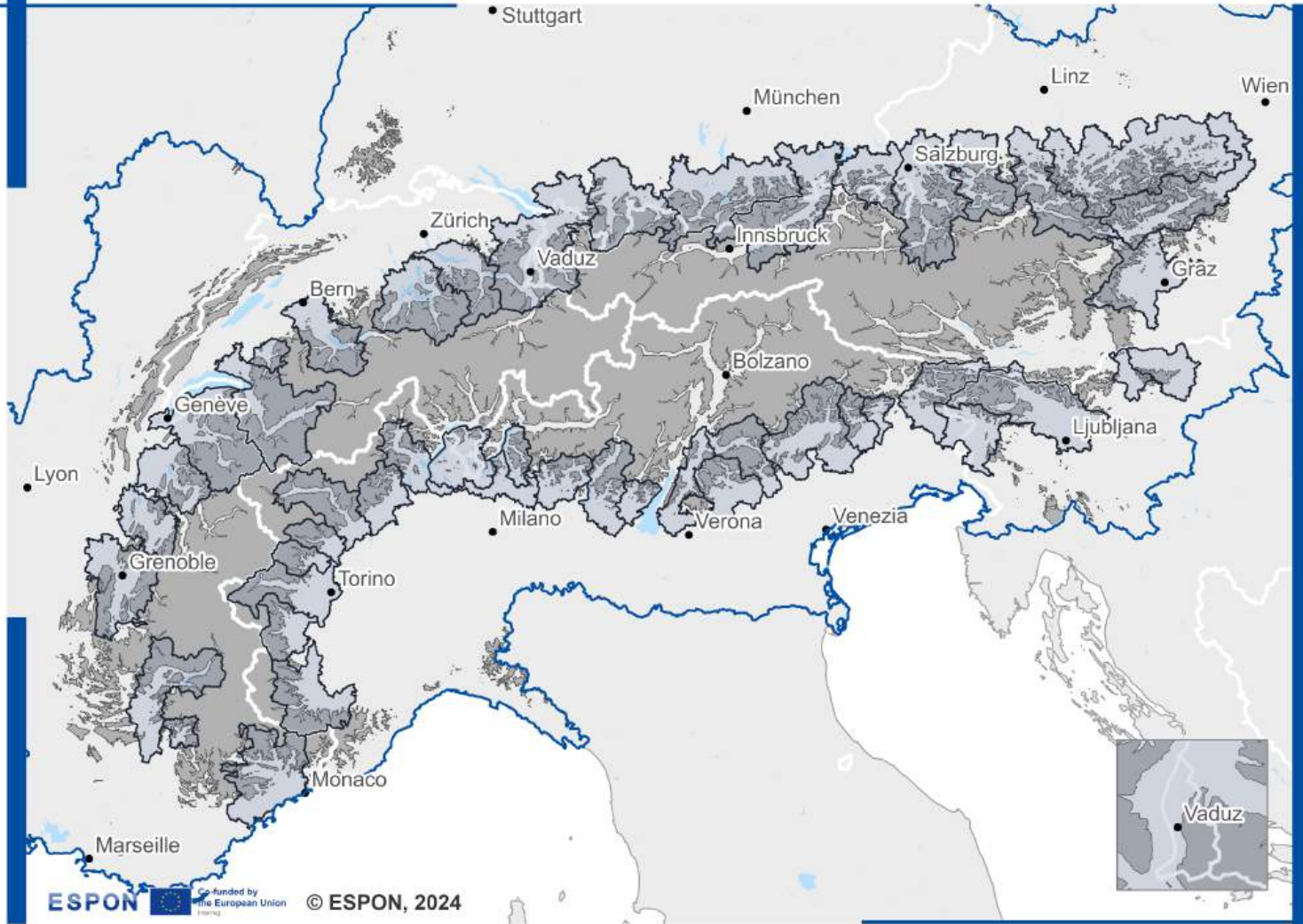





Photo: View from Planken in Liechtenstein over the Alpine Rhine Valley (Elias Günther, 2024).

Interface territories across the Alpine region

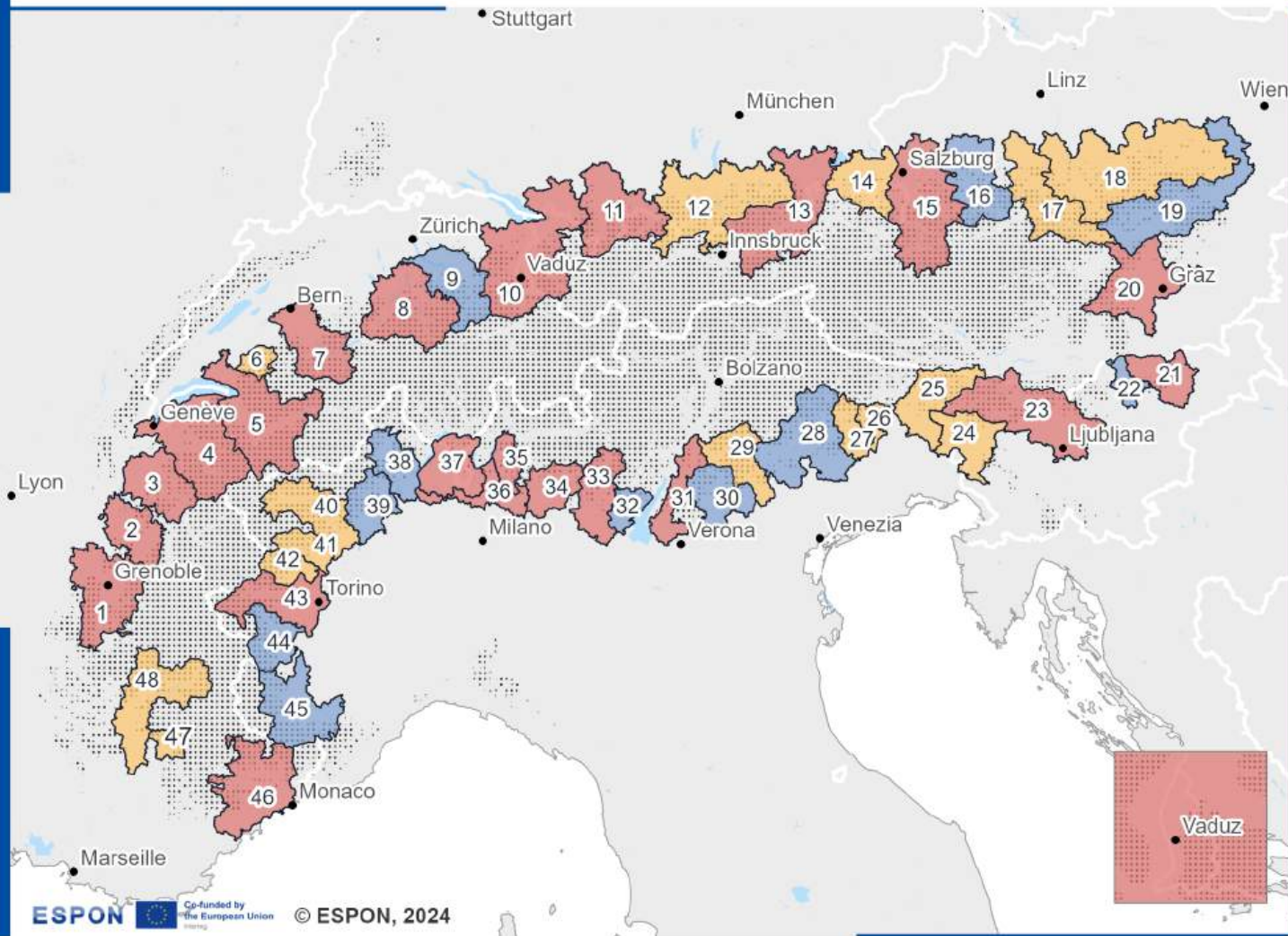


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-  Interface territories
-  High altitude (≥ 1.000m a.s.l.)
-  EUSALP

Regional level: LAU 2021
Source: FAU, ESPON InTerAlp, 2024
Origin of data: own calculations, 2024
© EuroGeographics for administrative boundaries

Spatial typologies of Alpine interface territories



Spatial typology

Interface areas

Core city interface areas

- (01) Grenoble/Rhône-Alpes region (FR),
- (02) Chambéry (FR),
- (03) Annecy (FR),
- (04) Geneva/Annemasse/Thonon-les-Bains (CH/FR),
- (05) Rhone Valley (CH/FR),
- (07) Bern/Thun (CH),
- (08) Zug/Luzern (CH),
- (10) Alpine Rhine Valley (DE/CH/AT/LI),
- (11) Allgovia (DE/AT),
- (13) Rosenheim (DE/AT),
- (15) Salzburg (AT/DE),
- (20) Graz (AT),
- (21) Maribor (SI),
- (23) Ljubljana/Julian Alps (SI/AT),
- (31) Trento (IT),
- (33) Brescia (IT),
- (34) Bergamo (IT),
- (35) Lecco (IT),
- (36) Milano fringe (IT),
- (37) Lugano (CH/IT),
- (43) Turin (IT),
- (46) Nice (FR)

Semi-urbanised interface areas

- (09) Zürich/Schwyz/Glarus (CH),
- (16) Gmunden (AT),
- (19) Vienna/Mürz Valley (AT),
- (22) Velenje (SI),
- (28) Belluno/Piave Valley (IT),
- (30) Vicenza/Schio (IT),
- (32) Gavarado/Salò (IT),
- (38) Domodossola (IT),
- (39) Biella/Borgomanero (IT),
- (44) Pinerolo (IT),
- (45) Cuneo/Cottian Alps (IT)

Rural interface areas

- (06) Bulle (CH),
- (12) Munich fringe (DE/AT),
- (14) Bad Reichenhall/Berchtesgaden Alps (DE/AT),
- (17) Liezen (AT),
- (18) Vienna/Lower Austria fringe (AT),
- (24) Gorizia/Nova Gorica (IT/SI),
- (25) Udine (IT),
- (26) Maniago (IT),
- (27) Pordenone (IT),
- (29) Bassano del Grappa (IT),
- (40) Aosta Valley (IT),
- (41) Cuornè (IT),
- (42) Ciriè (IT),
- (47) Digne-les-Bains (FR),
- (48) Sisteron/Gap (FR)

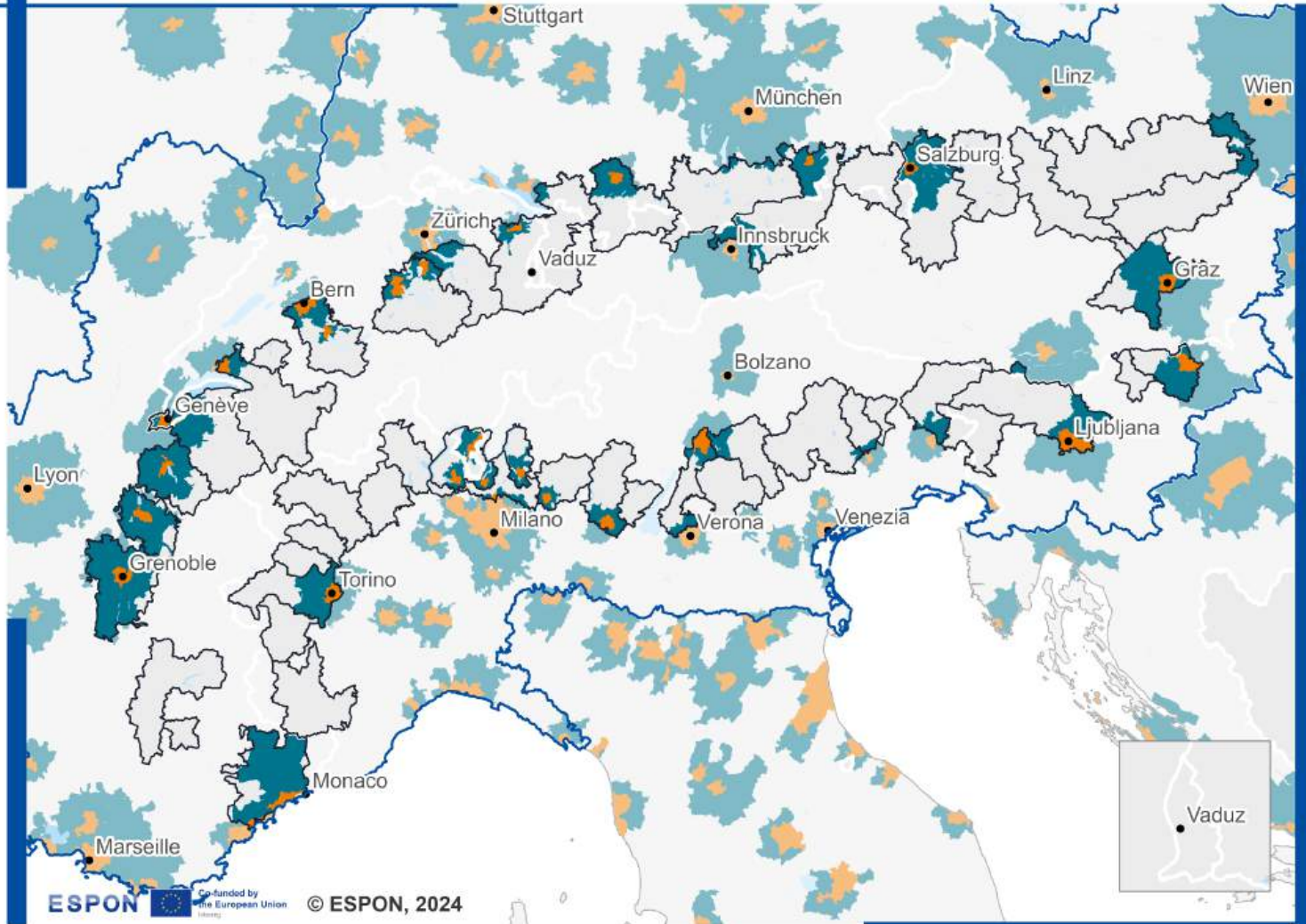
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Alpine interface territories as a specific geographic category





Photo: View from Planken in Liechtenstein over the Alpine Rhine Valley (Elias Günther, 2024).

Functional Urban Areas



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Functional Urban Areas (2021)

-  City
-  Commuting zone (LAUs with more than 15% of their employed population commuting to the city)

-  Interface territories
-  EUSALP

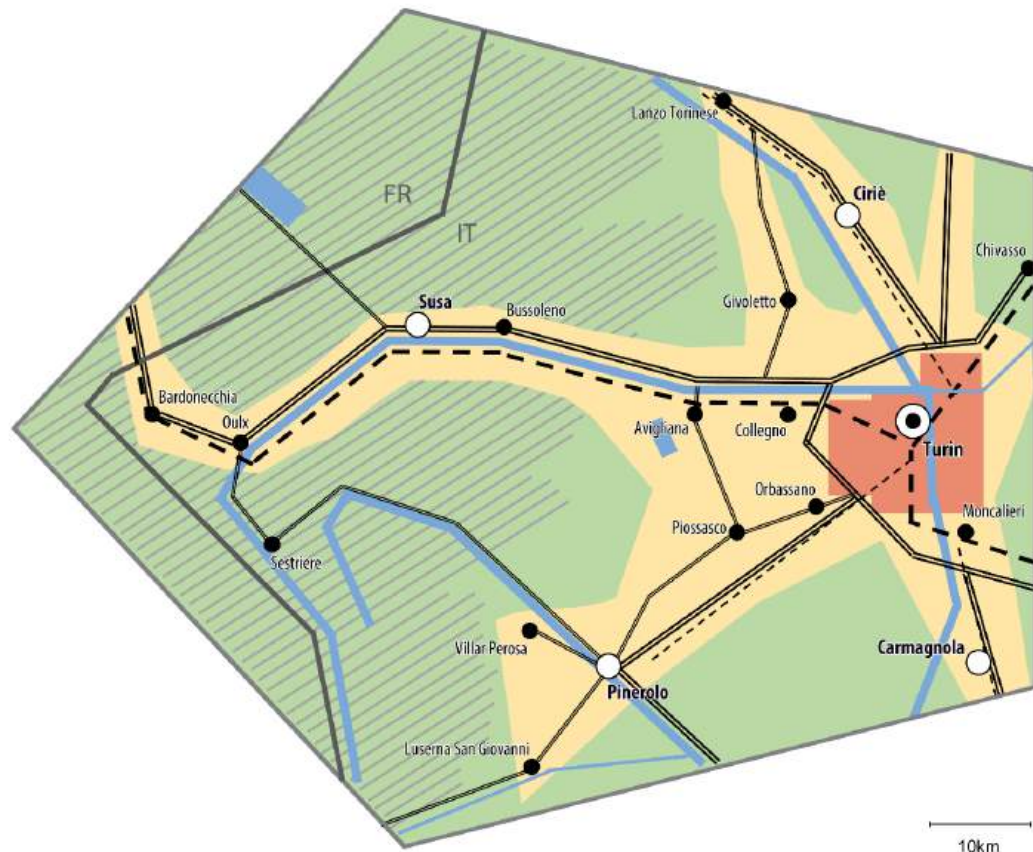
Regional level: LAU 2021
Source: FAU, ESPON InTerAlp, 2024
Origin of data: Eurostat
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A new geography

The European Alps beyond Functional Urban Areas

A new geography

The geographic specificity of mountain-lowland areas



Settlement system

- Metropolis
- Regional centre
- Local node

Territorial character

- Cities
- Towns and suburbs
- Rural areas

Mobility infrastructure

- Road (first tier)
- Road (second tier)
- - - Rail (first tier)
- - - Rail (second tier)

Natural features

- River
- Tributary river
- Waterbody
- ▨ Mountainous terrain (≥ 1000m)

Political boundaries

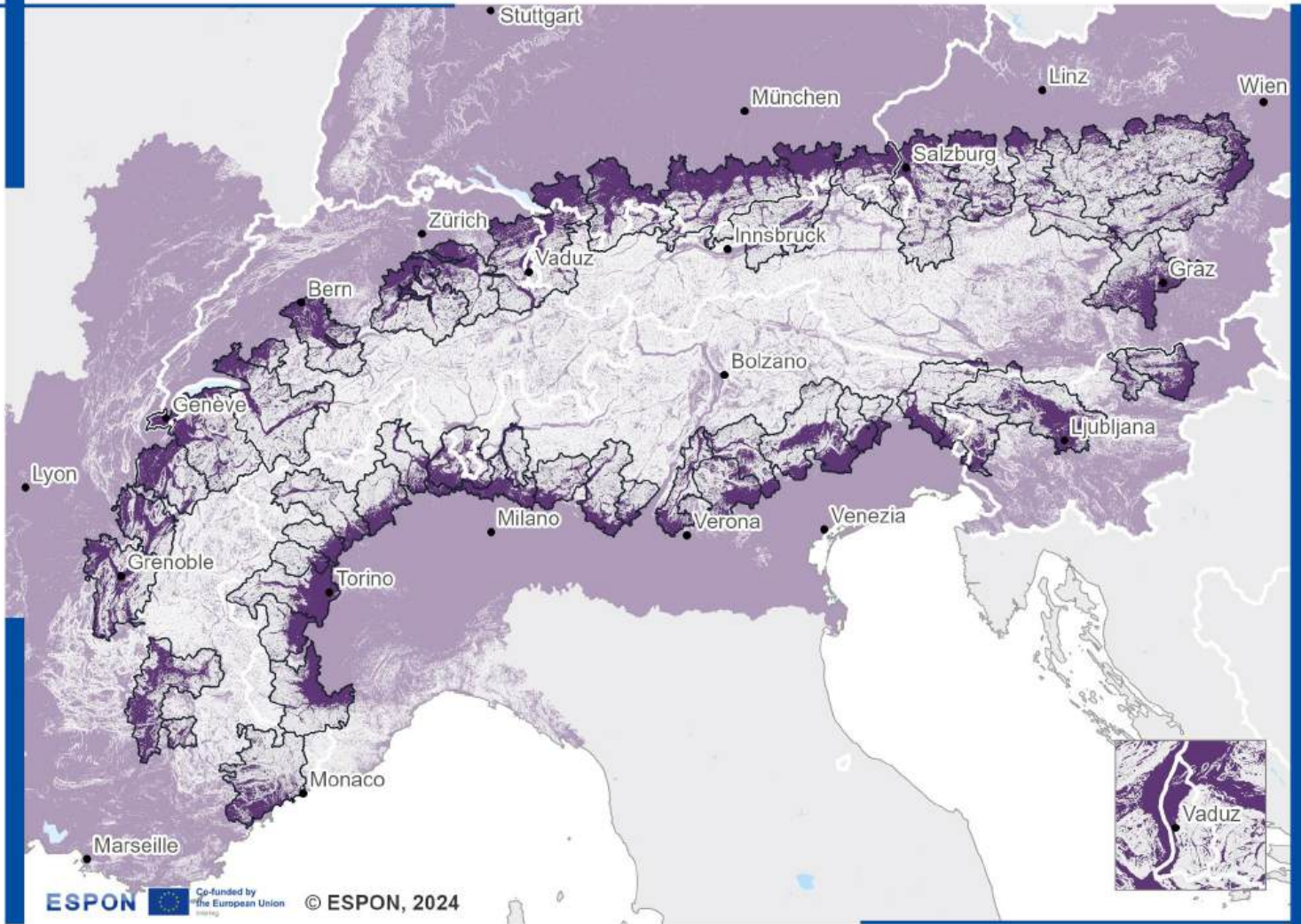
- National border

Turin area




Photo: Andrea Mucelli, CC BY-NC-SA 2.0, <https://www.flickr.com/photos/bluestardrop/8296928890>

Degree of inclination



ESPON  Co-funded by the European Union © ESPON, 2024

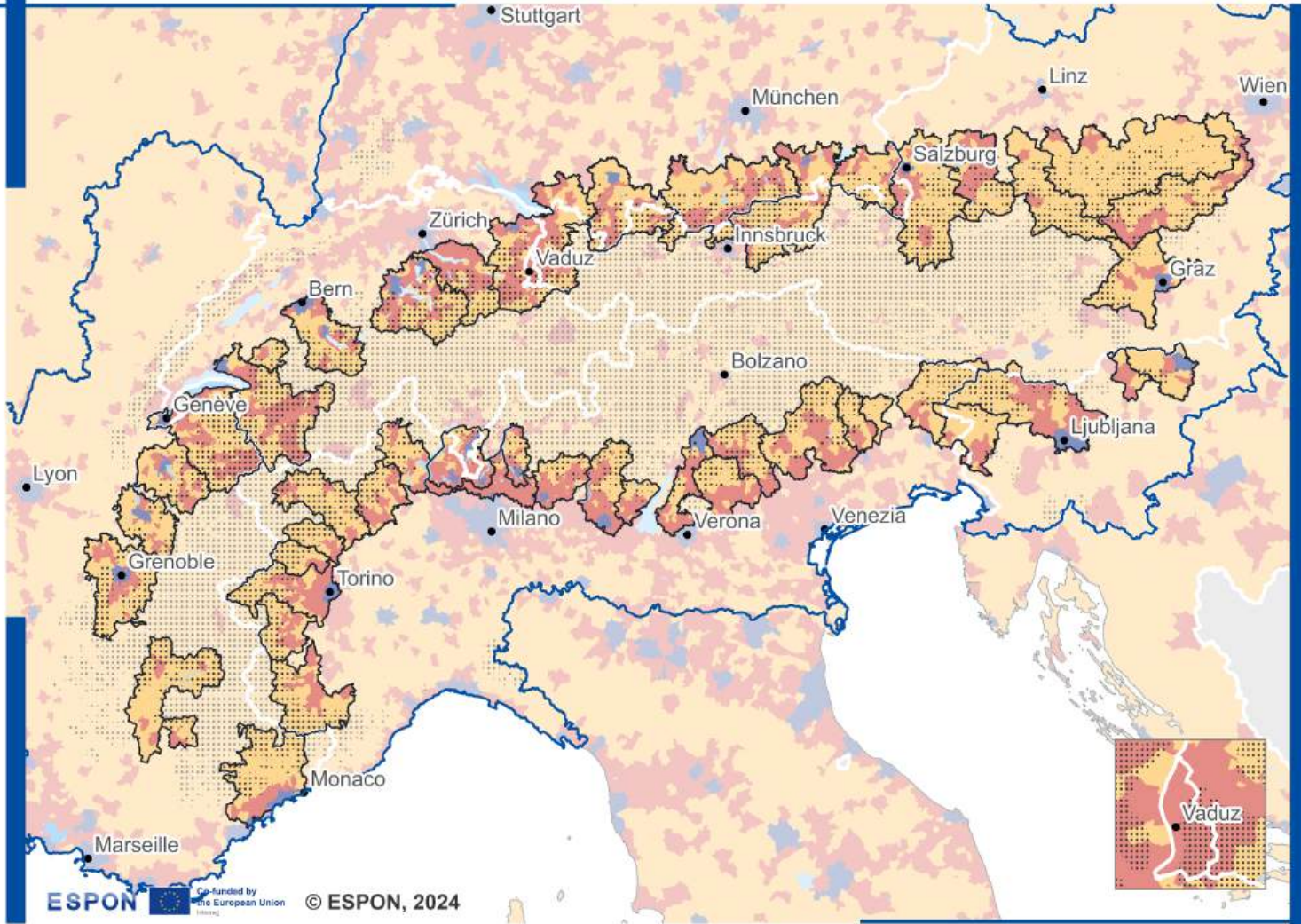
-  Interface territories
-  Areas with less than 30% slope (Topographic Potential Area)

Regional level: Raster data
Source: FAU, ESPON InTerAlp, 2024
Origin of data: EU-DEM, own calculations
© EuroGeographics for administrative boundaries




A new geography




The challenge of double-demand
with half of space

Degree of urbanisation



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-  Densely populated (cities or large urban areas)
-  Intermediate populated (towns and suburbs or small urban areas)
-  Thinly populated (rural)

-  Interface territories
-  High altitude (≥ 1.000 m a.s.l.)
-  EUSALP

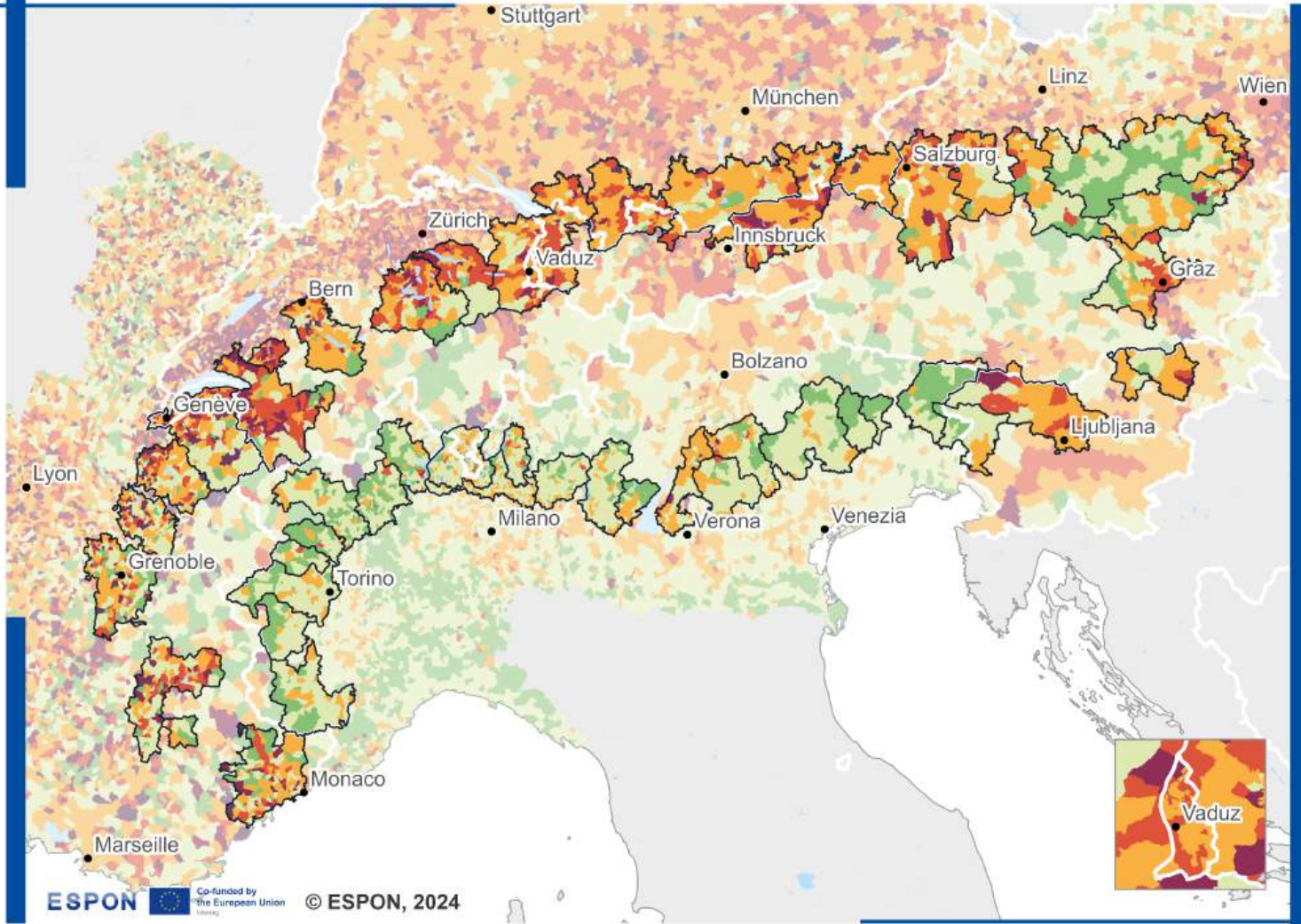
Regional level: LAU 2021
Source: FAU, ESPON InTerAlp, 2024
Origin of data: Eurostat
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A new geography

The challenge of double-demand with half of space

A new geography

The challenge of double-demand with half of space



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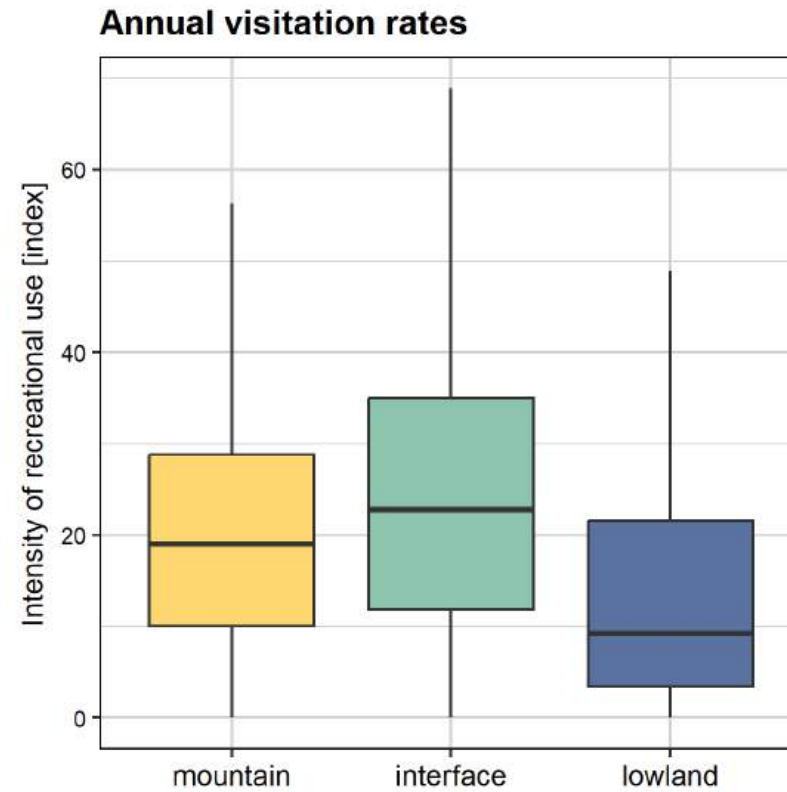
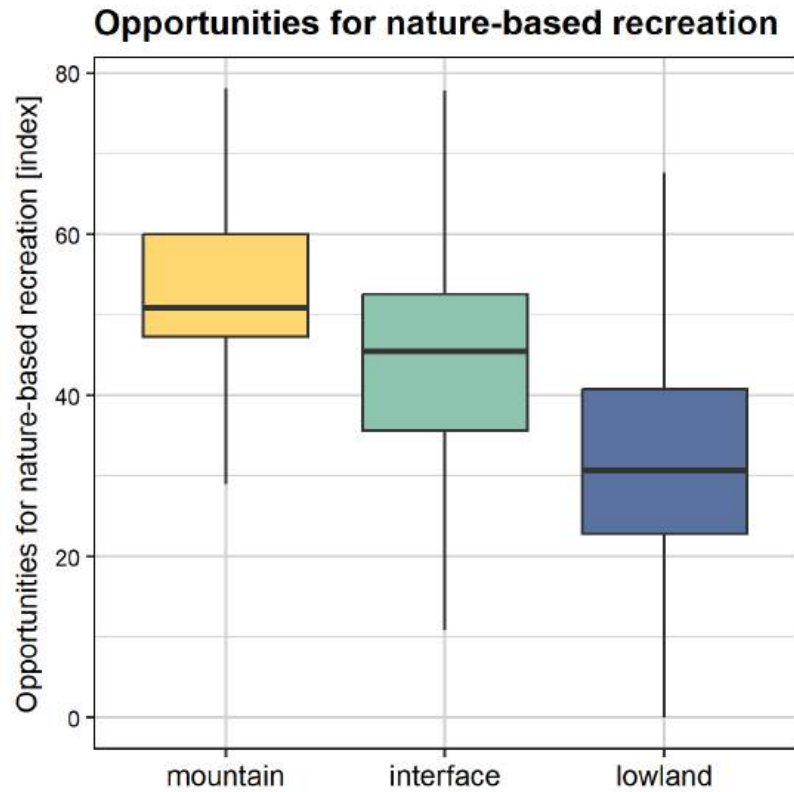
Population change (2017-2023) in %

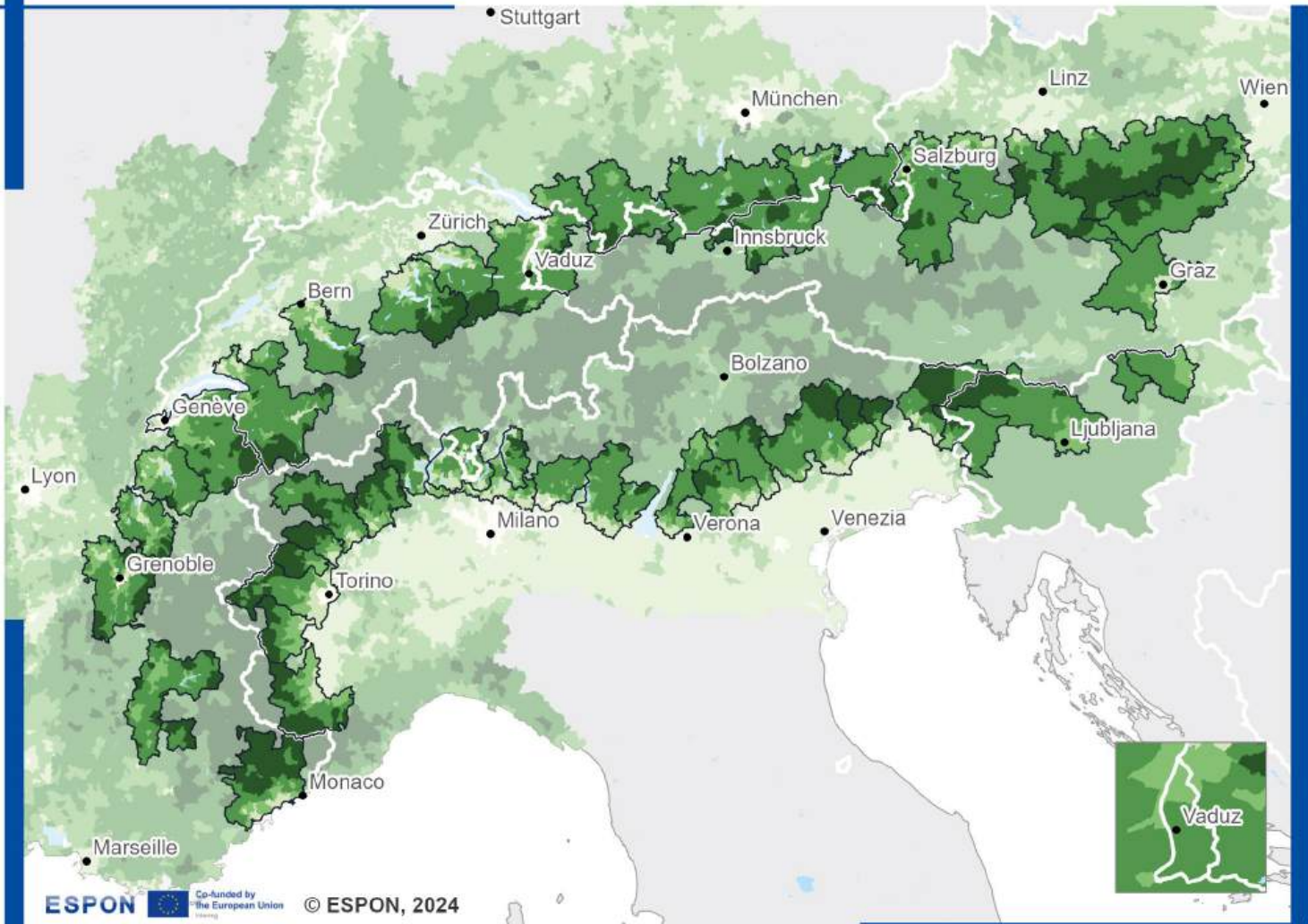


Regional level: LAU 2021
Source: FAU, ESPON InTerAlp, 2024
Origin of data: Eurostat
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A new geography

The challenge of double-demand with half of space





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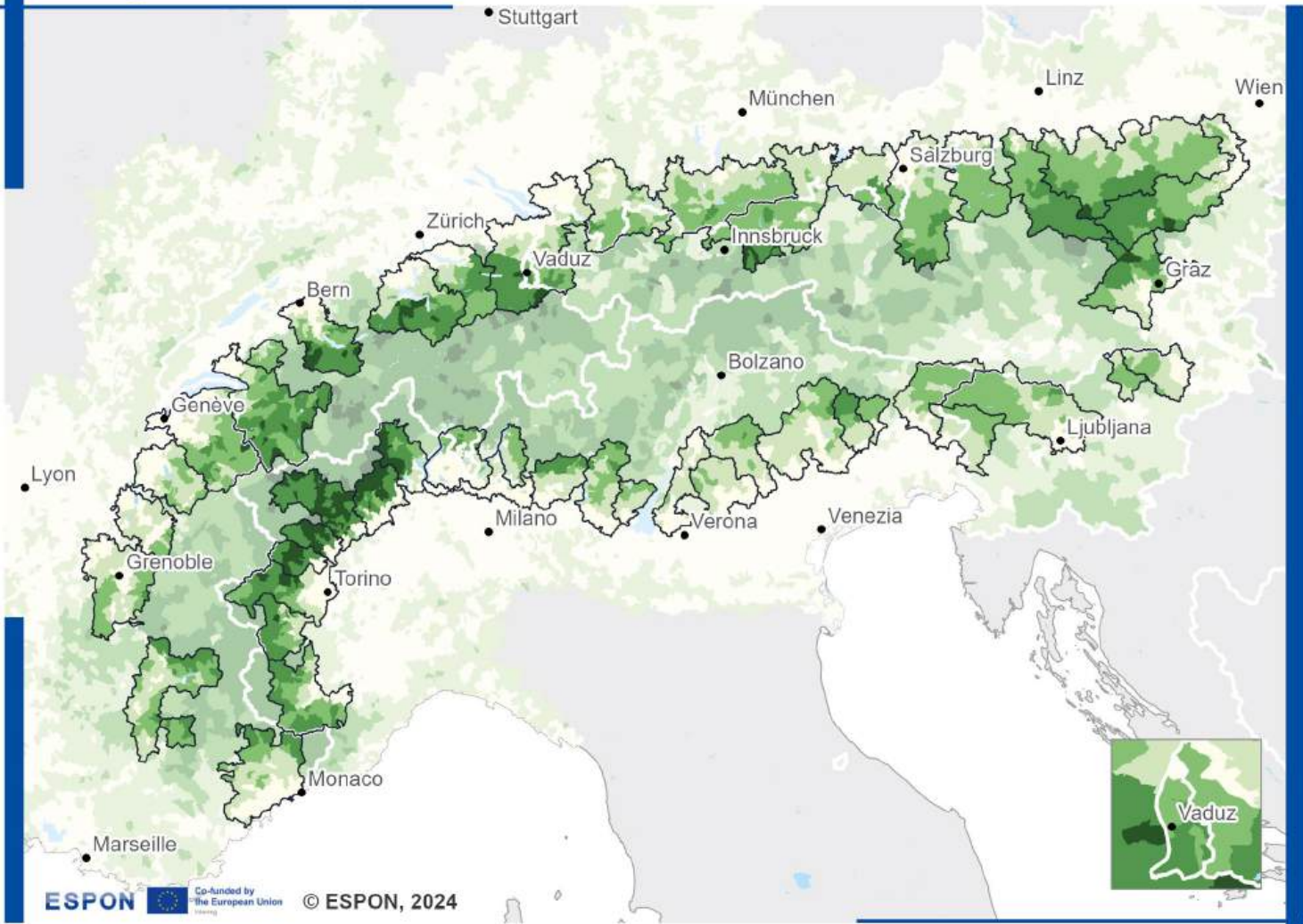
Degree of naturalness of land cover (index)



Regional level: LAU
 Source: Uta Schirpke, ESPON InTerAlp, 2024
 Origin of data: Corine Land Cover, 2018
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Territories with sharp contrasts

Areas of environmental contrasts



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Area of non-fragmented (semi-)natural land cover types (km²)

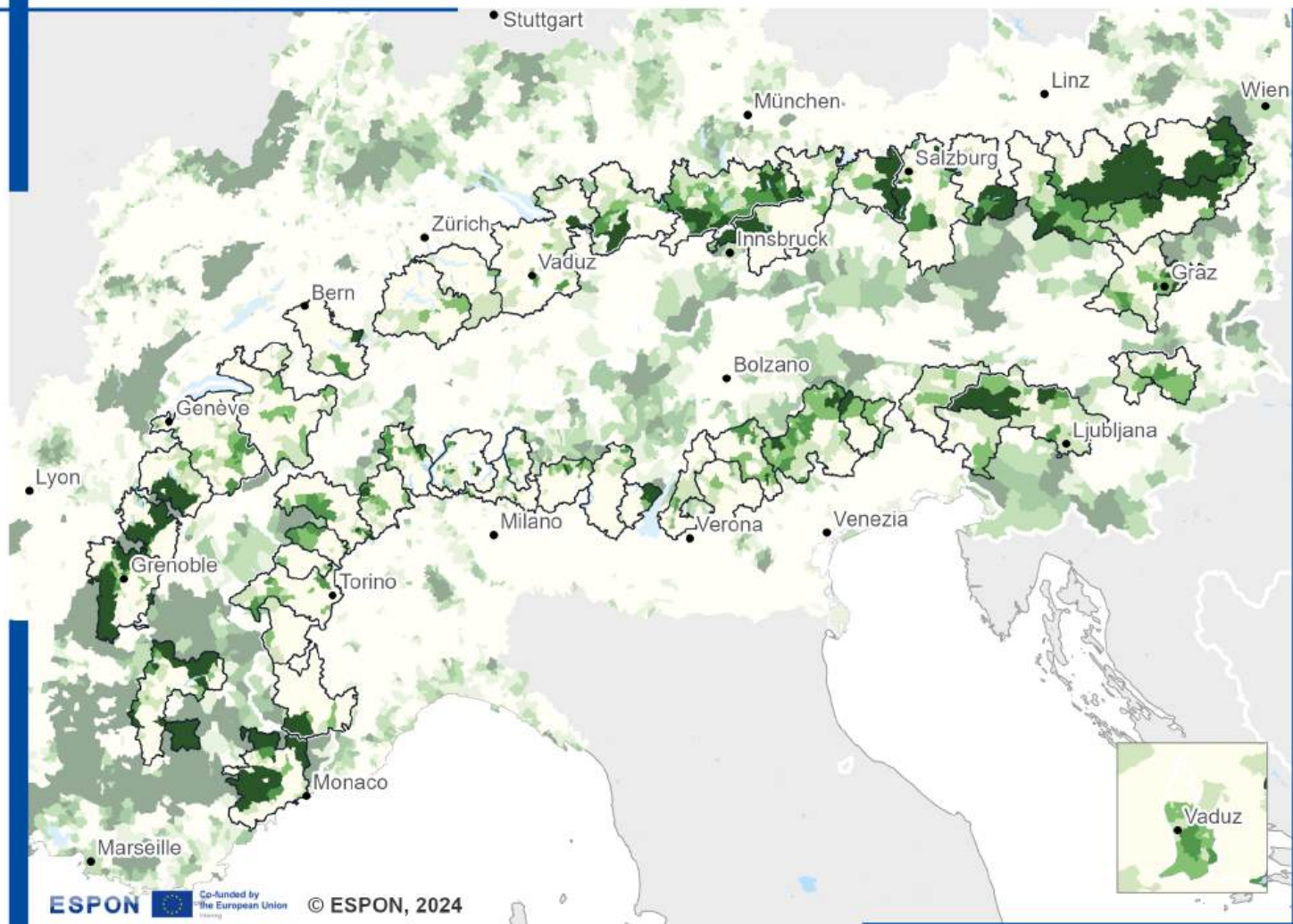


Regional level: LAU
Source: Uta Schirpke, ESPON InTerAlp, 2024
Origin of data: Corine Land Cover; OpenStreetMap
© EuroGeographics for administrative boundaries

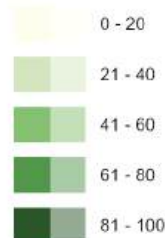
Territories with sharp contrasts

Areas of environmental contrasts

Protected areas



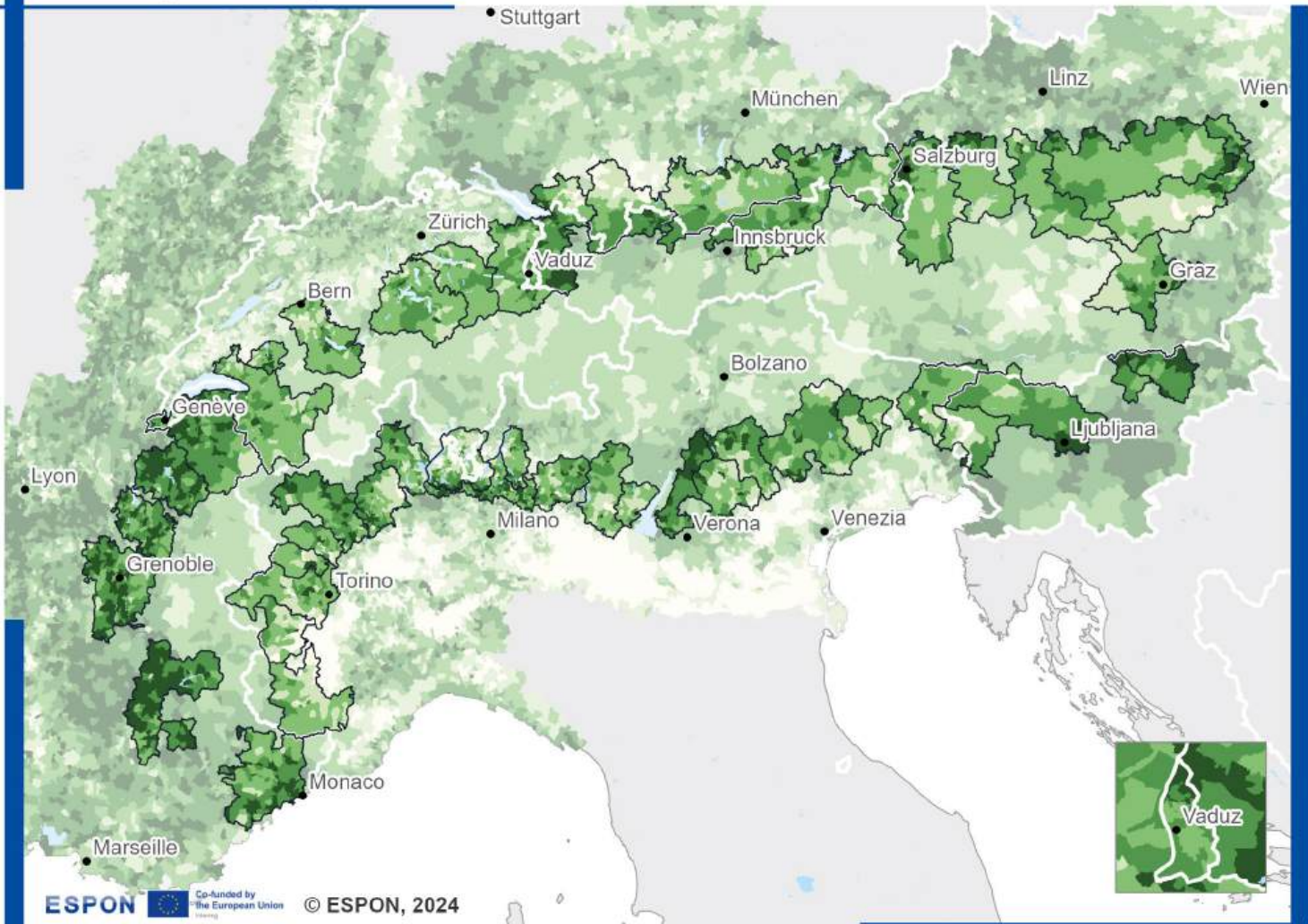
Share of protected area (%)



Regional level: LAU
Source: Uta Schirpke, ESPON InTerAlp, 2024
Origin of data: Natura 2000; Common Database on Designated Areas (CDDA)
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Areas of environmental contrasts



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Number of different land cover types (n km⁻²)

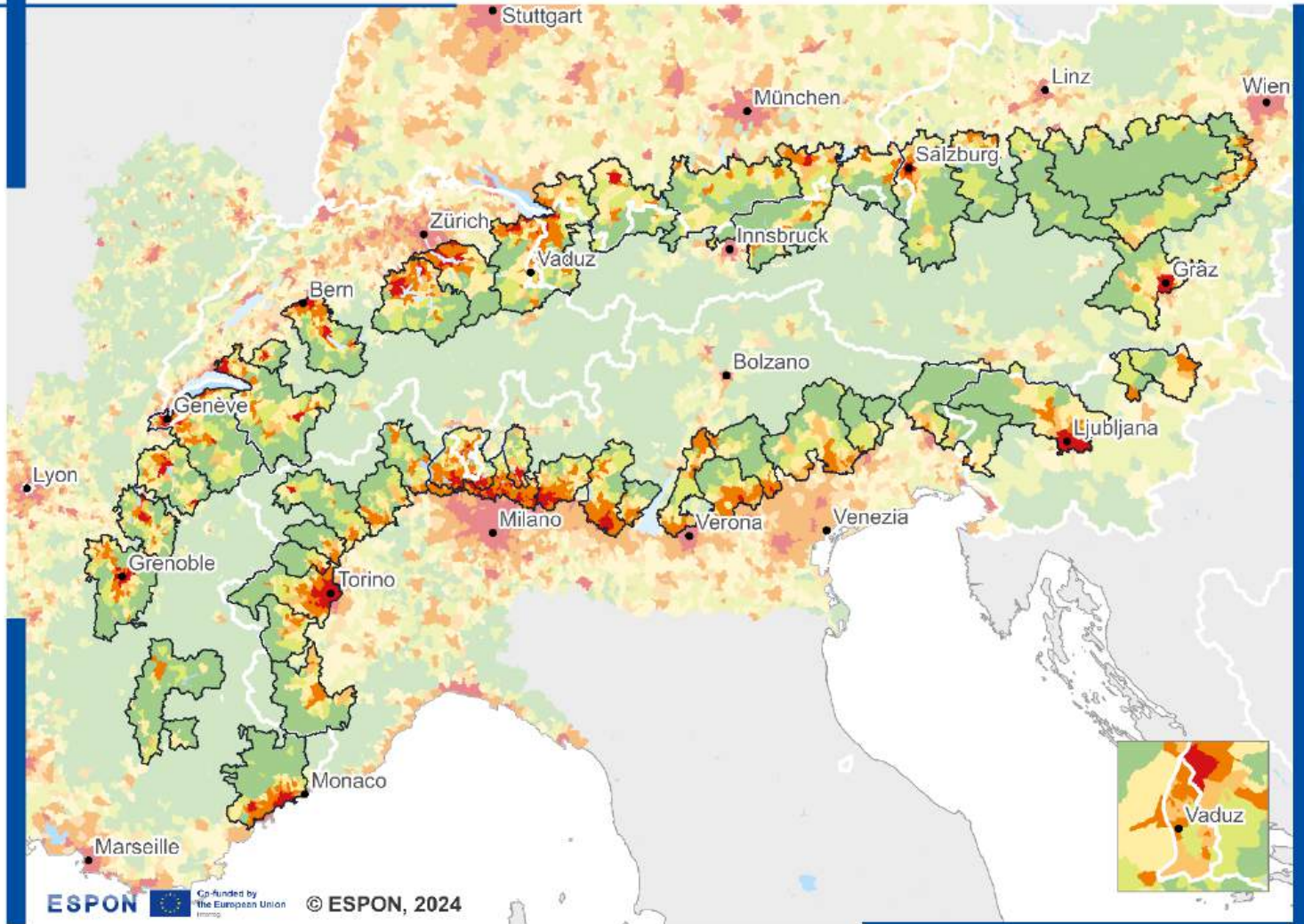


Regional level: LAU
 Source: Uta Schirpke, ESPON InTerAlp, 2024
 Origin of data: Corine Land Cover, 2018
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Territories with sharp contrasts

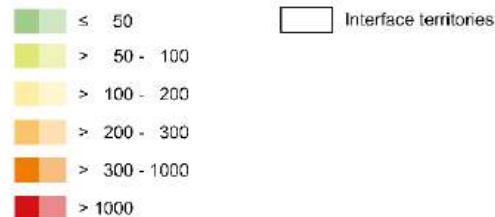
Areas of environmental contrasts

Population density



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Population density (inhabitants/km², 2023)

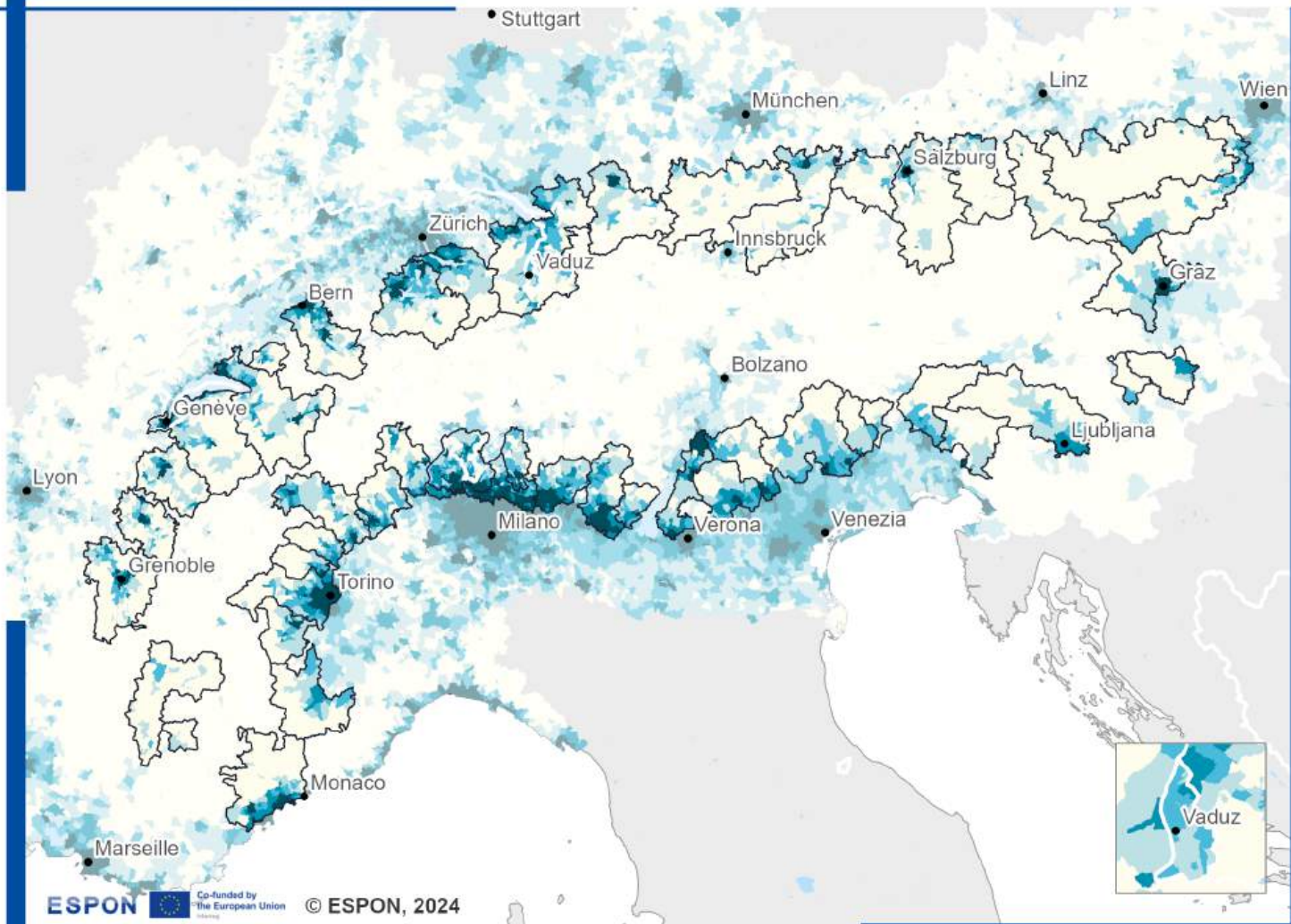


Regional level: LAU 2021
Source: FAU, ESPON InTerAlp, 2024
Origin of data: Eurostat
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Territories with sharp contrasts

Areas of socio-economic contrasts

Water abstraction



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Water abstraction by households ($\text{m}^3 \text{ha}^{-1} \text{y}^{-1}$)



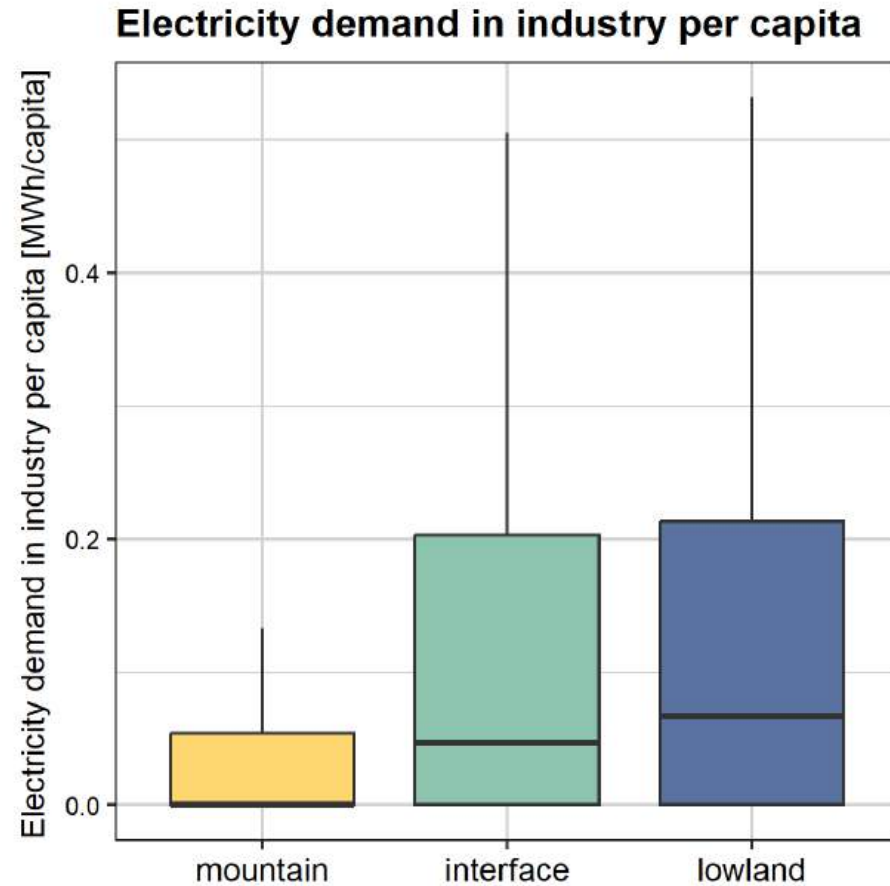
Regional level: LAU
Source: Uta Schirpke, ESPON InTerAlp, 2024
Origin of data: Project AlpES 2018
© EuroGeographics for administrative boundaries

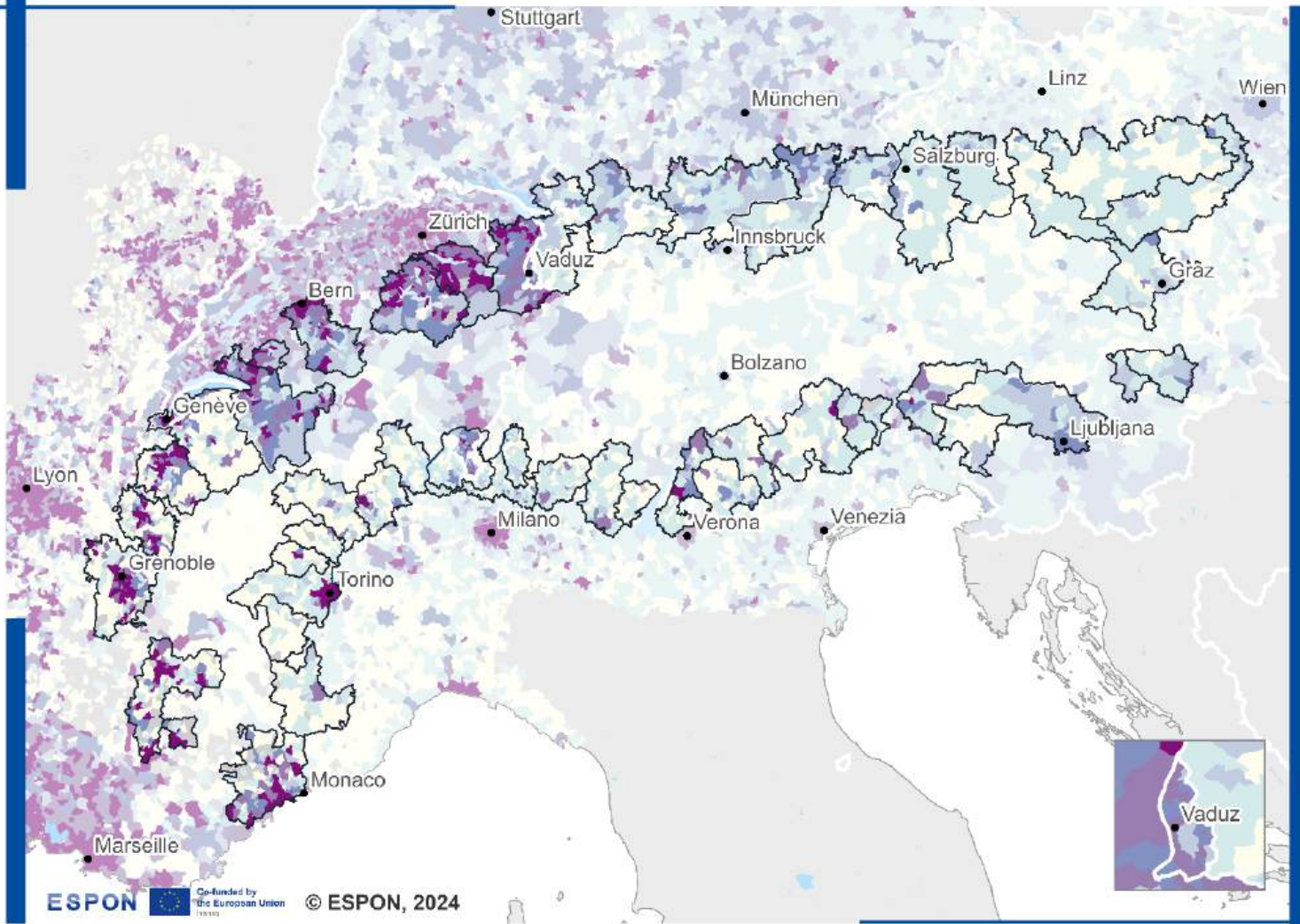
Territories with sharp contrasts

Areas of socio-economic contrasts

Territories with sharp contrasts

Areas of socio-economic contrasts





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Download speed in Mbps (2022)

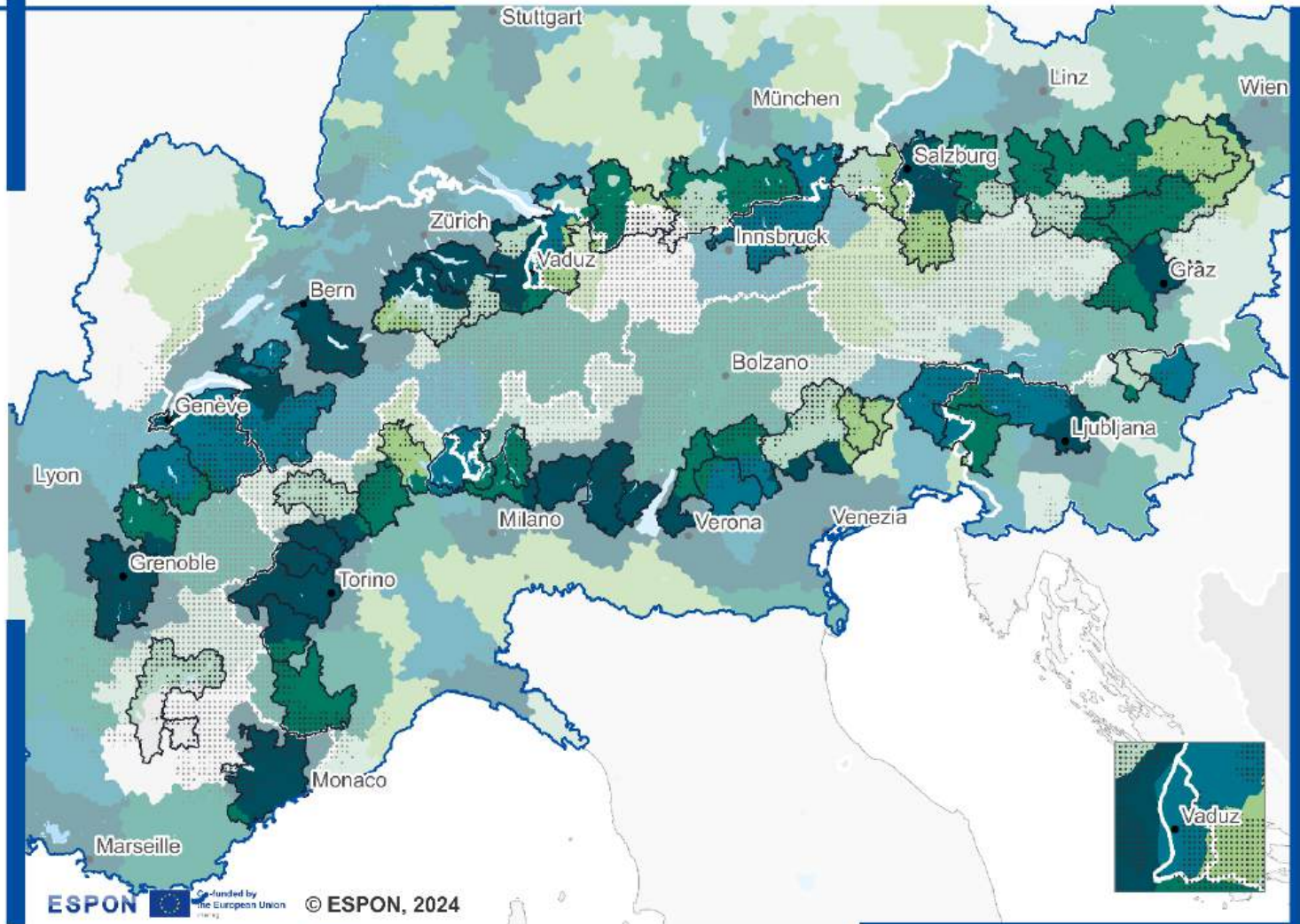


Regional level: LAU 2021
 Source: FAU, ESPON InTerAlp, 2024
 Origin of data: O. Gjergji on www.europeandatajournalism.eu, 2022,
 Speedtest by Ookla Global Fixed and Mobile Network Performance Maps.
 © EuroGeographics for administrative boundaries

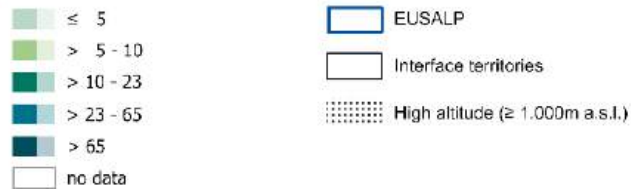
Territories with sharp contrasts

Areas of socio-economic contrasts

Total number of foreign direct investment projects (2003-2015)



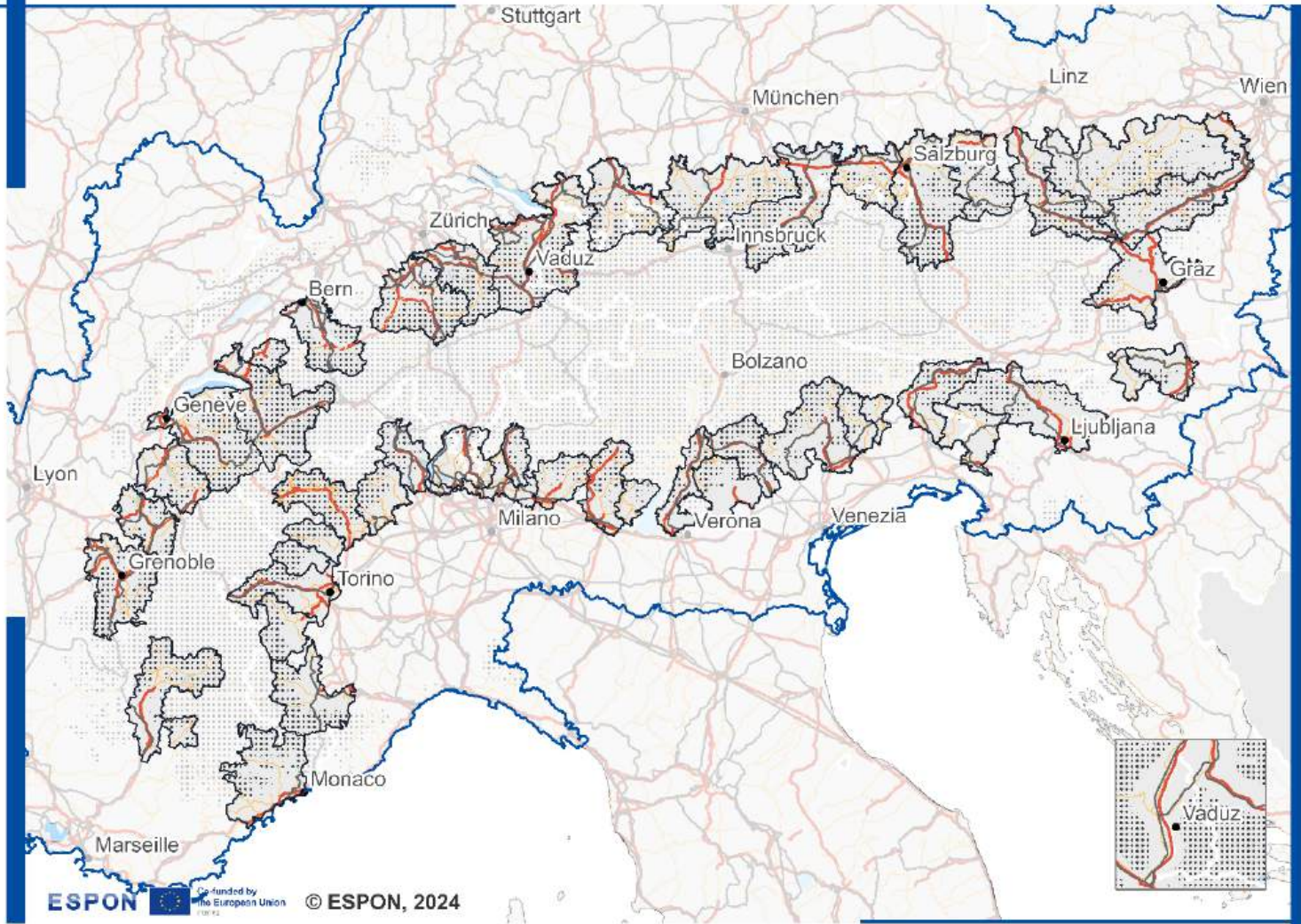
ESPN  Co-funded by the European Union © ESPON, 2024



Regional level: NUTS 3 (2021)
 Source: FAU, ESPON InTerAlp, 2024
 Origin of data: ESPON 'The World in Europe: Global FDI Flows towards Europe', inspired by ESPON TIGER and ESPON IRIE
 © EuroGeographics for administrative boundaries

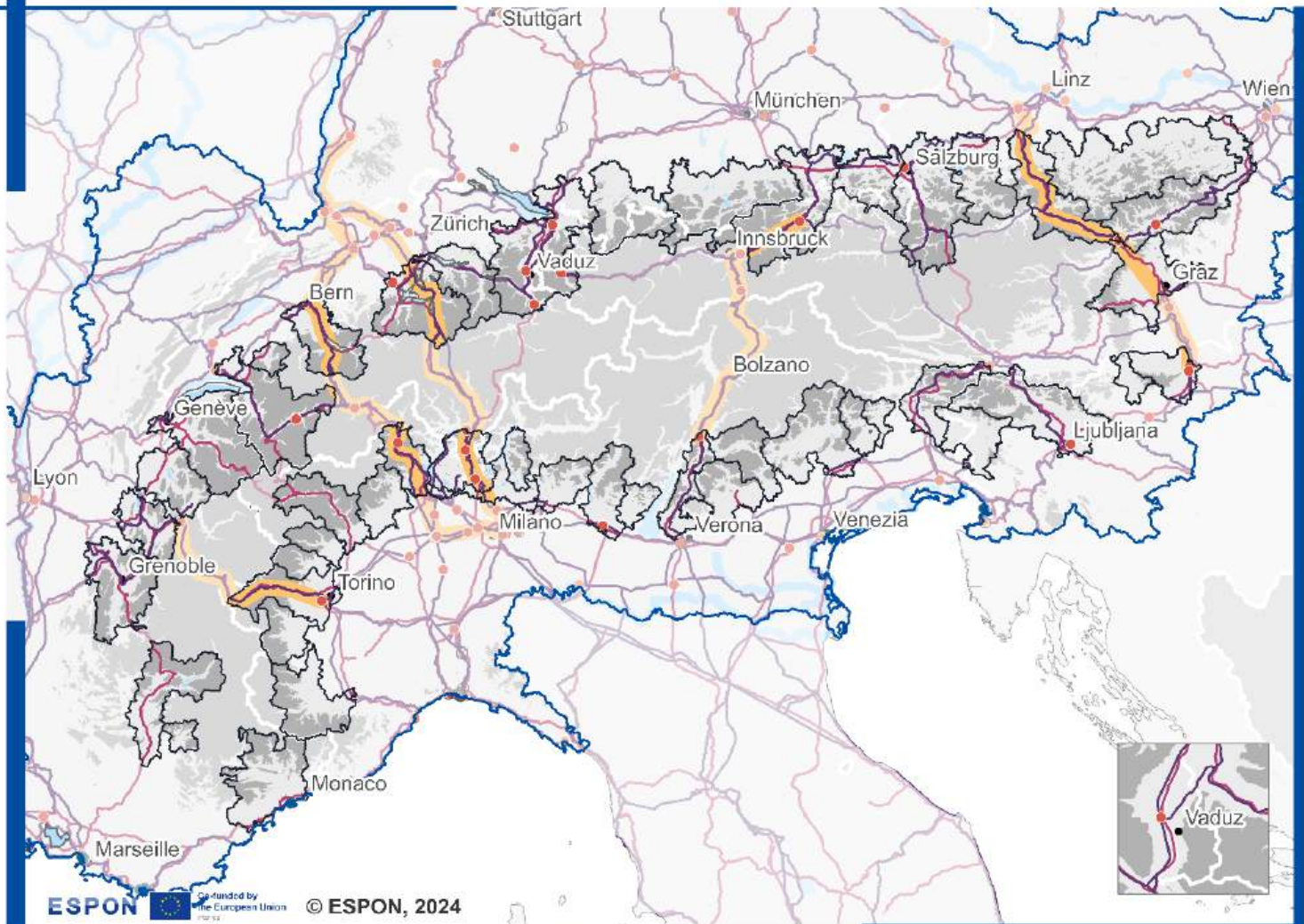
Territories with sharp contrasts

Areas of socio-economic contrasts



Territories with a geographic funnel effect

Transalpine gateways and mobility funnels







Territories with a geographic funnel effect



Transalpine gateways and mobility funnels

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Infrastructure

-  TEN-T road
-  TEN-T rail
-  Navigable river
-  ROLA ("Rollende Landstraße")

CT terminals

-  Trmodal
-  Road/Rail
-  Water/Road
-  Container depot

 Interface territories

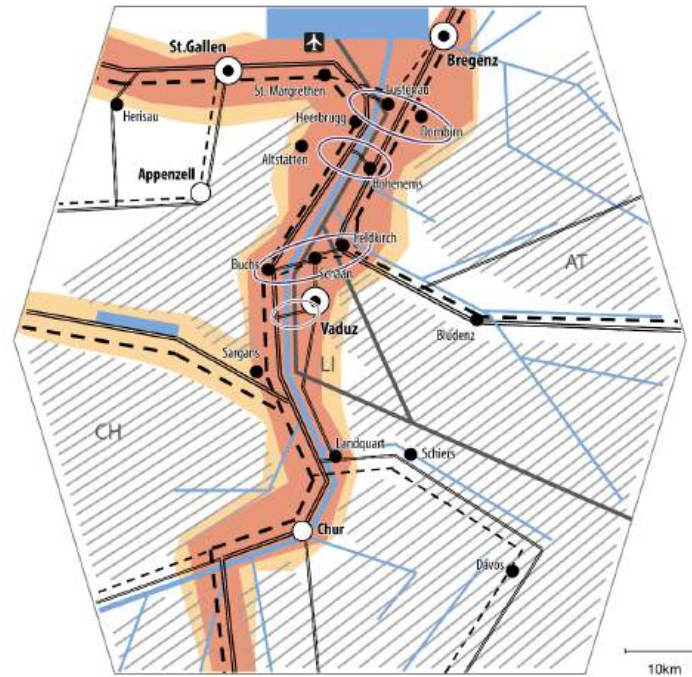
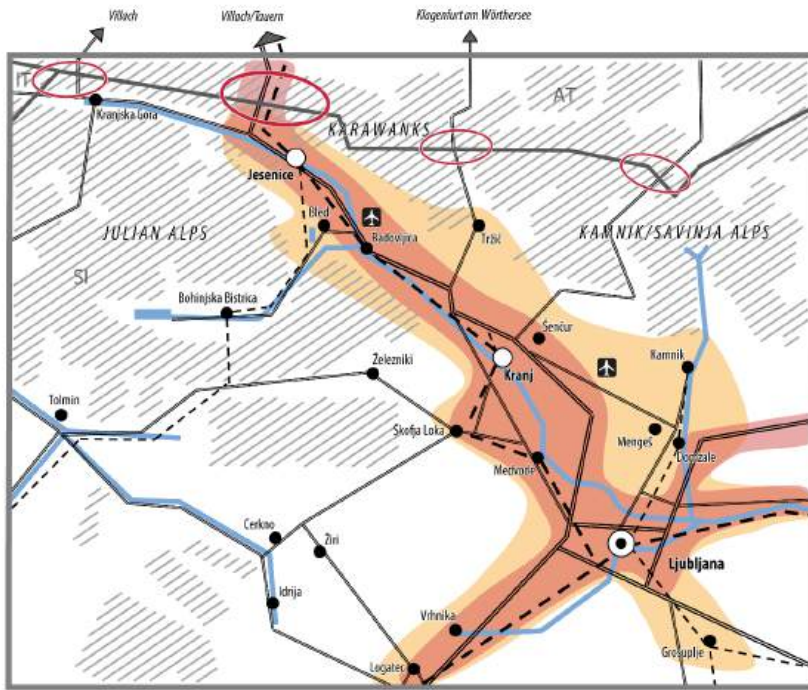
 High altitude (≥ 1000m a.s.l.)

 EUSALP

Regional level: Geolocalised data (2024)
 Source: FAU, ESPON InTerAlp, 2024
 Origin of data: EuroGlobalMap, TransNET database (Rail Cargo Group), DB Cargo network data base, SBB Cargo data base, FRET SNCF homepage
 © EuroGeographics for administrative boundaries

Territories with a geographic funnel effect

Transalpine gateways and mobility funnels



Settlement system

- Metropolis
- Regional centre
- Local node

Natural features

- River
- Waterbody
- Mountainous terrain

Mobility infrastructure

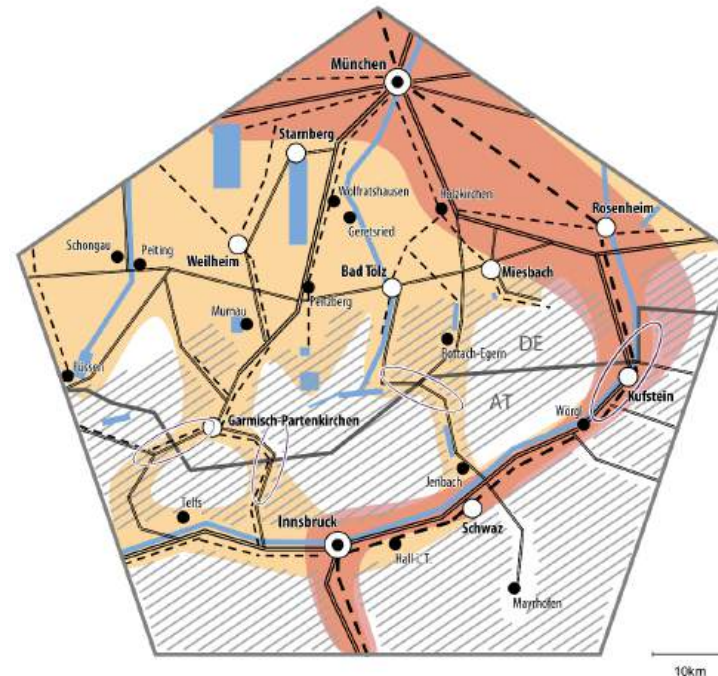
- Road (first tier)
- Road (second tier)
- Rail (first tier)
- Rail (second tier)

Transport and mobility

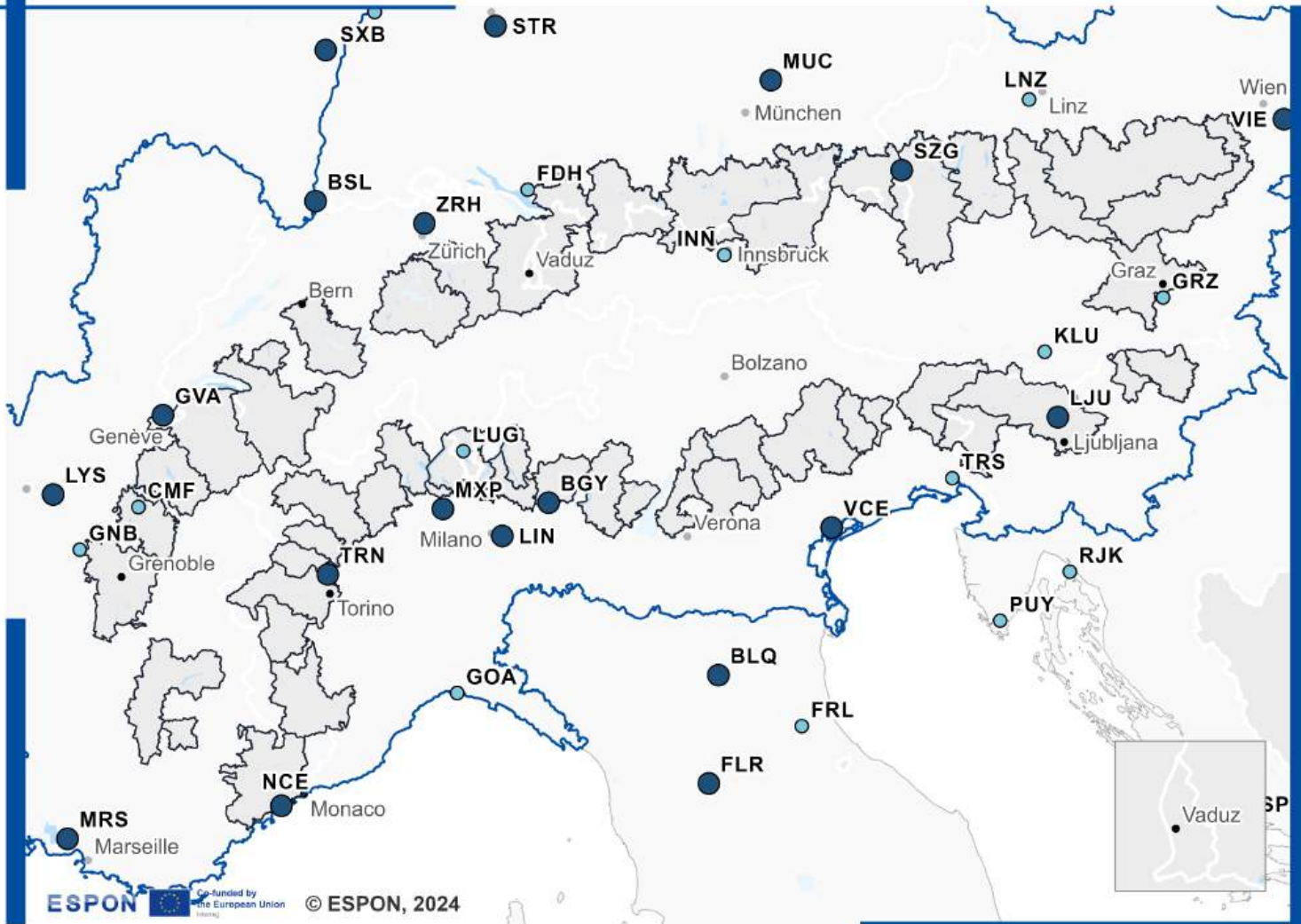
- High intensity of freight transportation
- High intensity of individual mobility
- Highly frequented border crossing
- Relevant airports as mobility node

Political boundaries

- National border



Airport infrastructure



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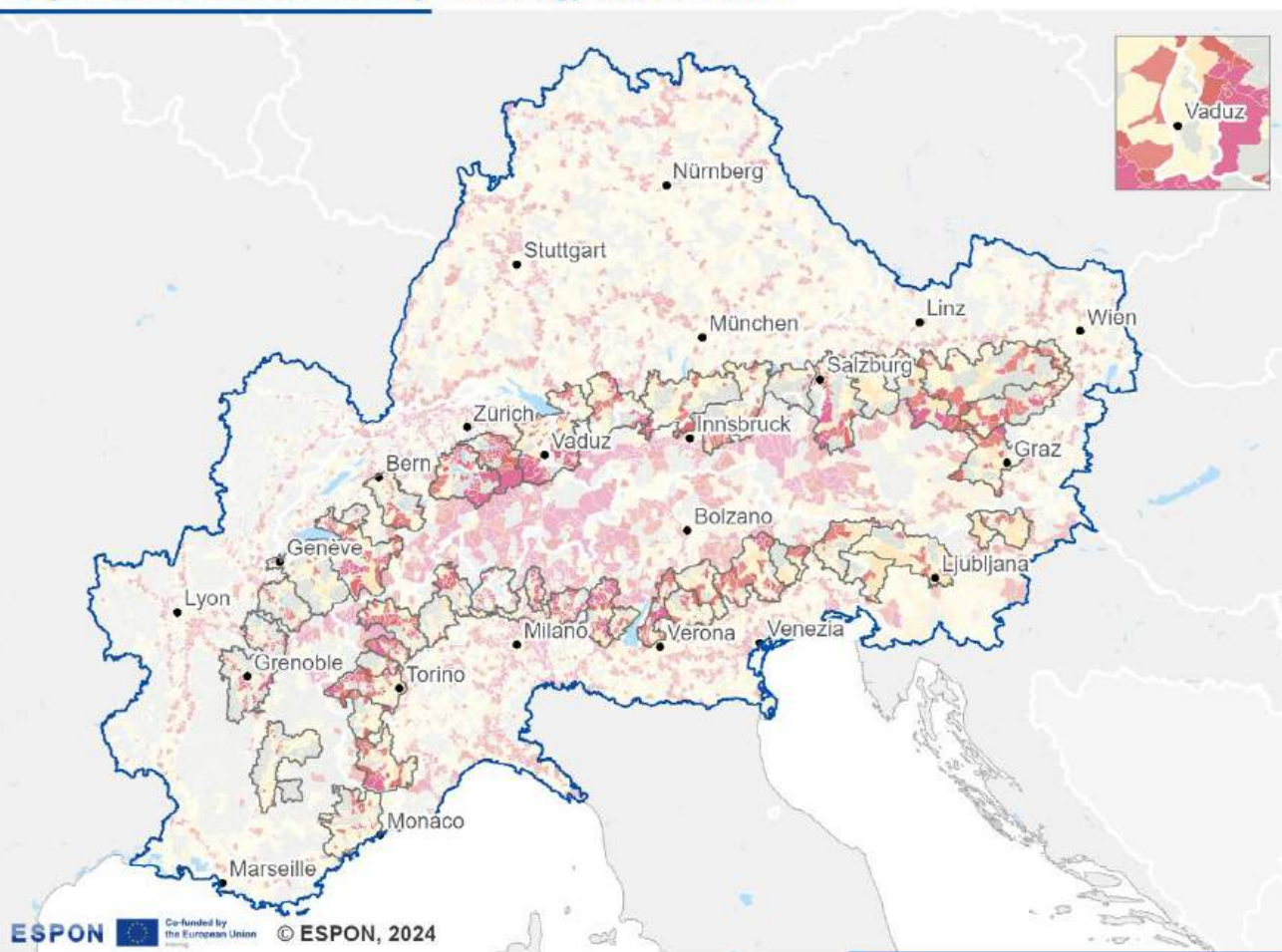


Regional level: Geolocalised data (2024)
 Source: FAU, ESPON InTerAlp, 2024
 Origin of data: European Commission (GISCO Airports 2013 dataset)
 © EuroGeographics for administrative boundaries

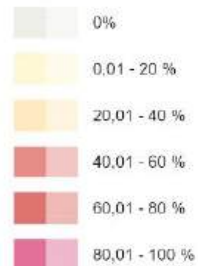
Territories with a geographic funnel effect

Transalpine gateways and mobility funnels

Population within visual range of energy infrastructure



Share of population in proximity to high voltage transmission networks (500m to 1500m depending on average pole heights, 110kV to 380 kV)



Regional level: LAU
Source: OIR, ESPON InTerAp, 2024
Origin of data: OpenStreetMap contributors, 2024;
Eurostat, 2023
© EuroGeographics for administrative boundaries

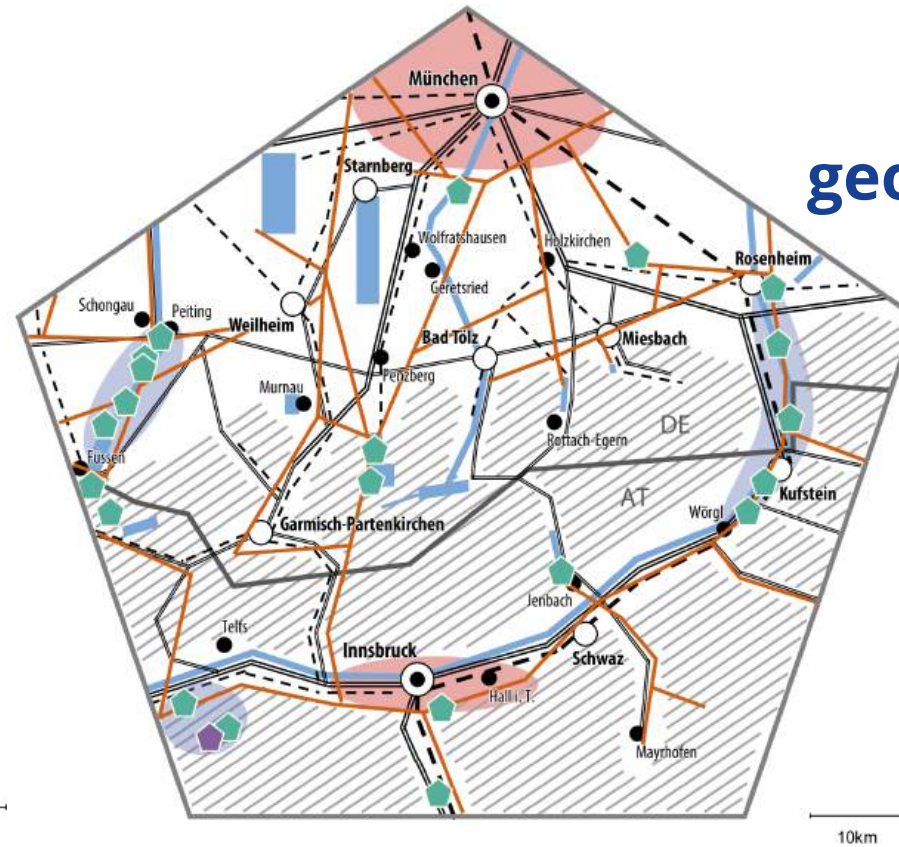
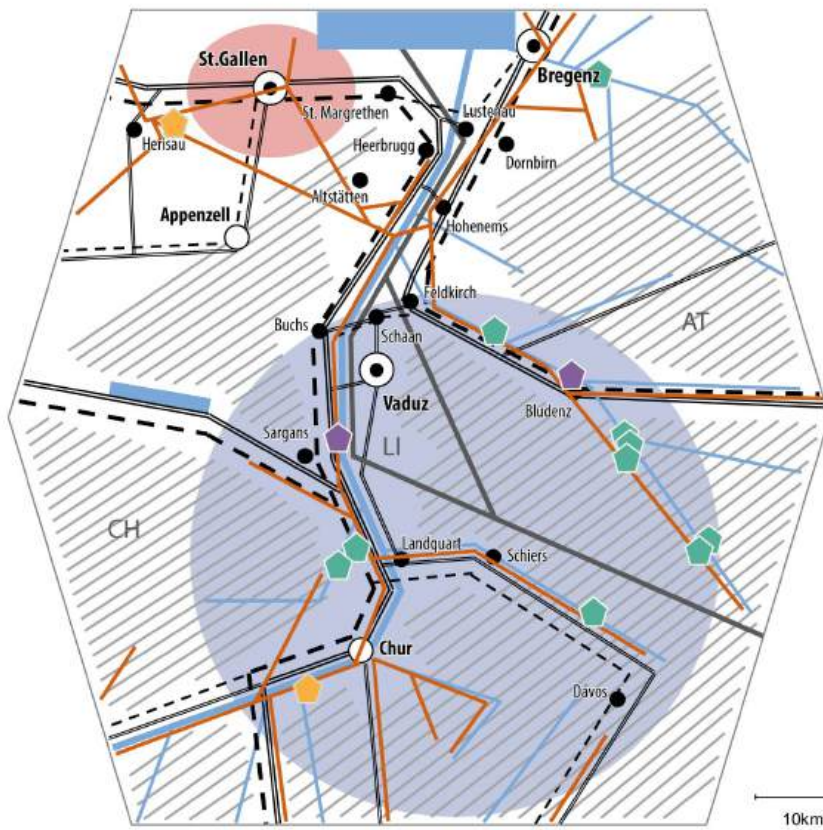
(Disclaimer: The Census 2021 grid dataset used for the calculations is provisional and under validation.)

Territories with a geographic funnel effect

Energy transit zones

Territories with a geographic funnel effect

Transalpine gateways and mobility funnels



Settlement system

- Metropolis
- Regional centre
- Local node

Mobility infrastructure

- Road (first tier)
- Road (second tier)
- Rail (first tier)
- Rail (second tier)

Political boundaries

- National border

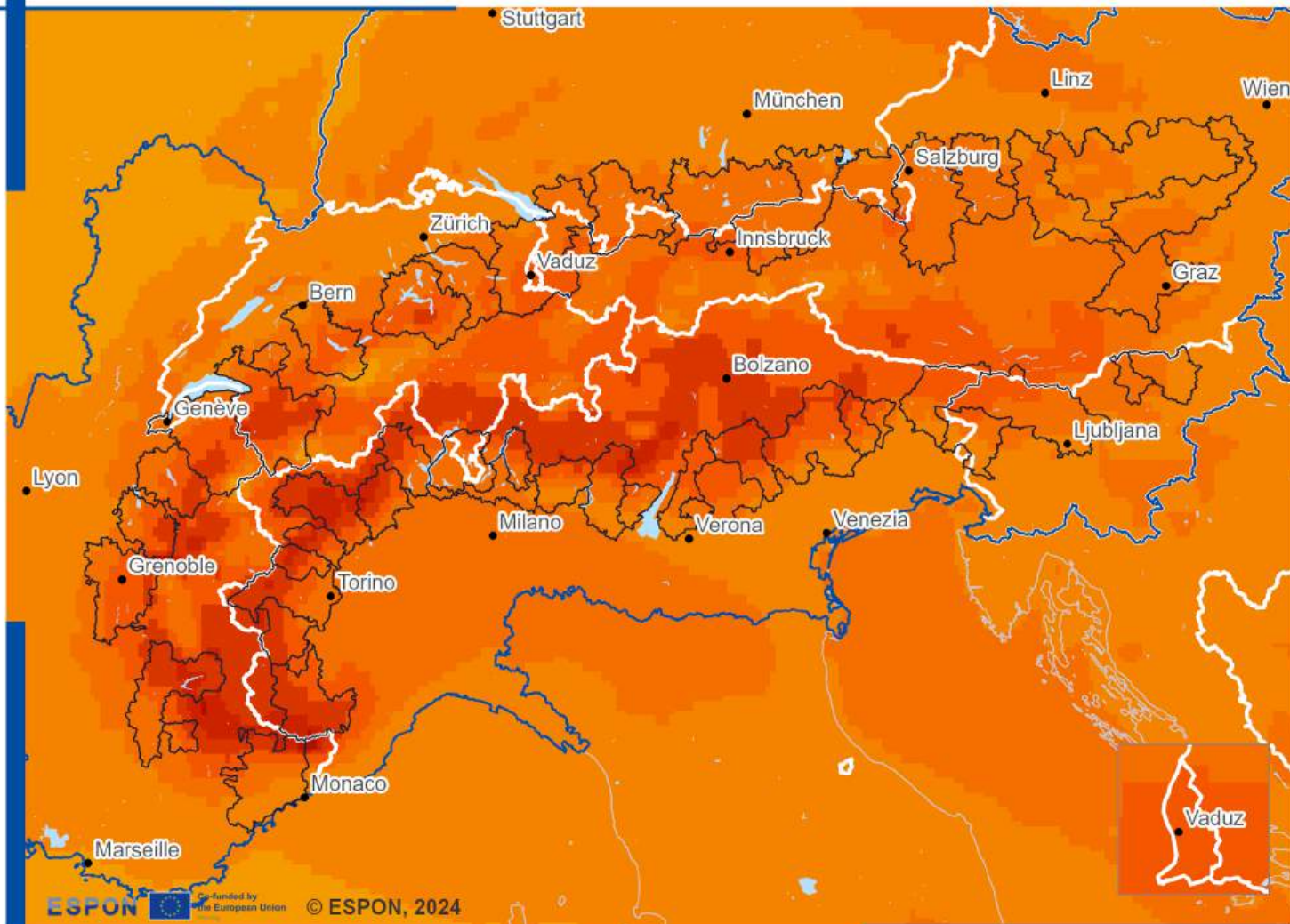
Natural features

- River
- Tributary river
- Waterbody
- Mountainous terrain

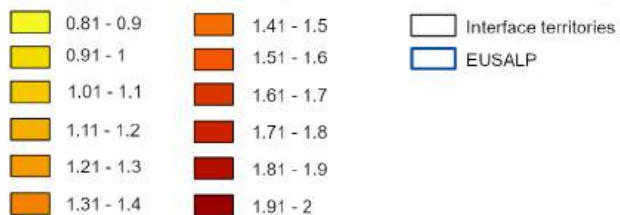
Energy infrastructure

- Hydroelectric plant (≥ 100 mio. kWh/a)
- Hydroelectric plant with hydrogen production facility (≥ 200 t/a)
- Planned hydroelectric plant (≥ 50 mio. kWh/a)
- Power line (≥ 50 kV)
- Main region of energy demand
- Main region of energy production

Temperature change



Changes in surface temperature between 2021-2050 (in Celsius)



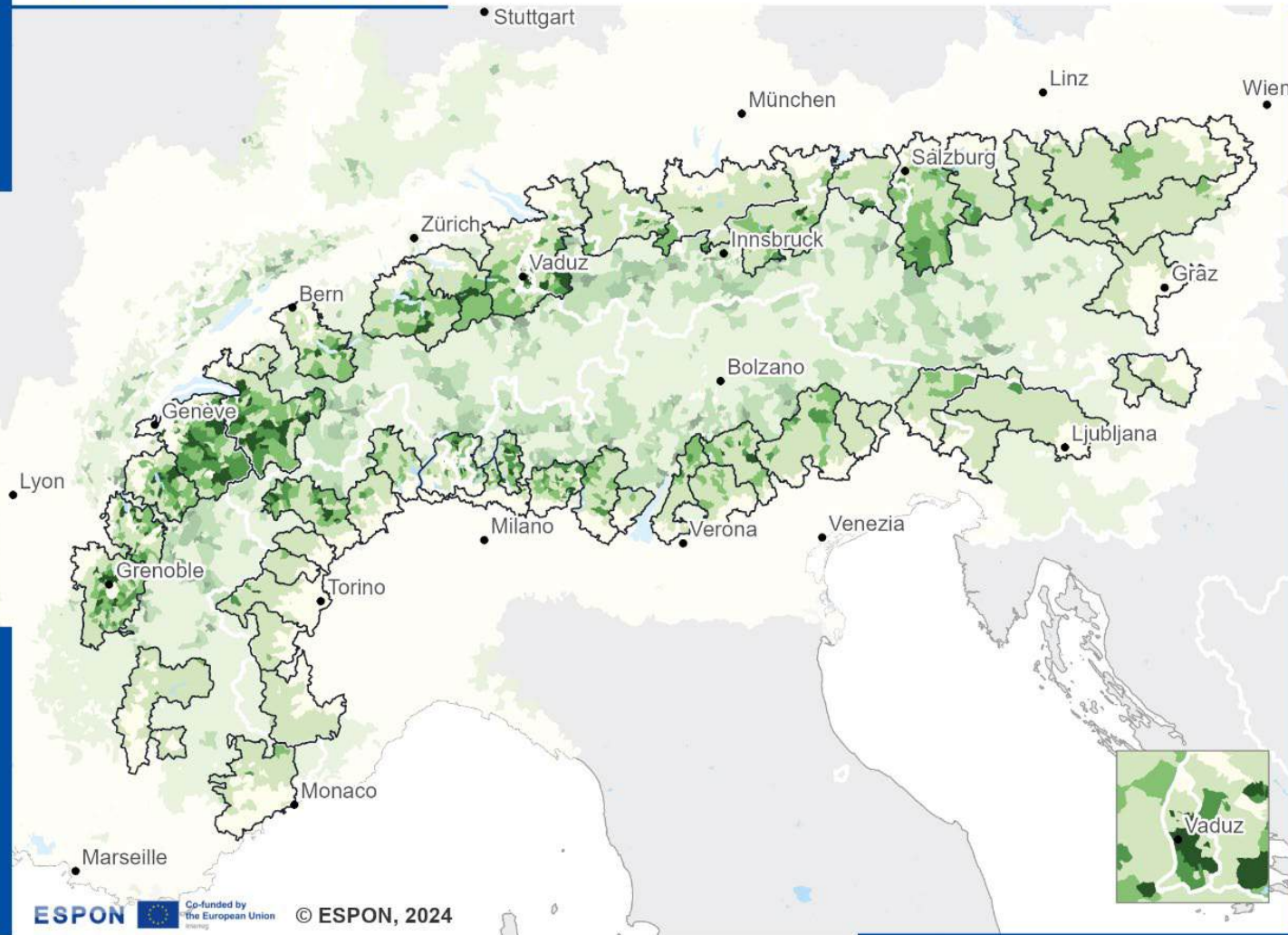
Regional level: Raster data
 Source: FAU, ESPON InTerAlp, 2024
 Origin of data: Alpine Convention for projected changes in annual near surface temperature in Southern Europe 2021-2050 in Celsius (WMS), 2024
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Territories with common challenges and specific roles

Addressing cross-cutting issues of climate change

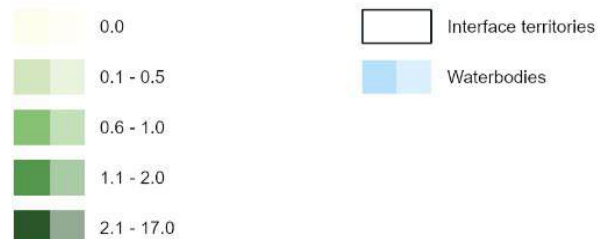
Territories with common challenges and specific roles

Hazard prevention areas



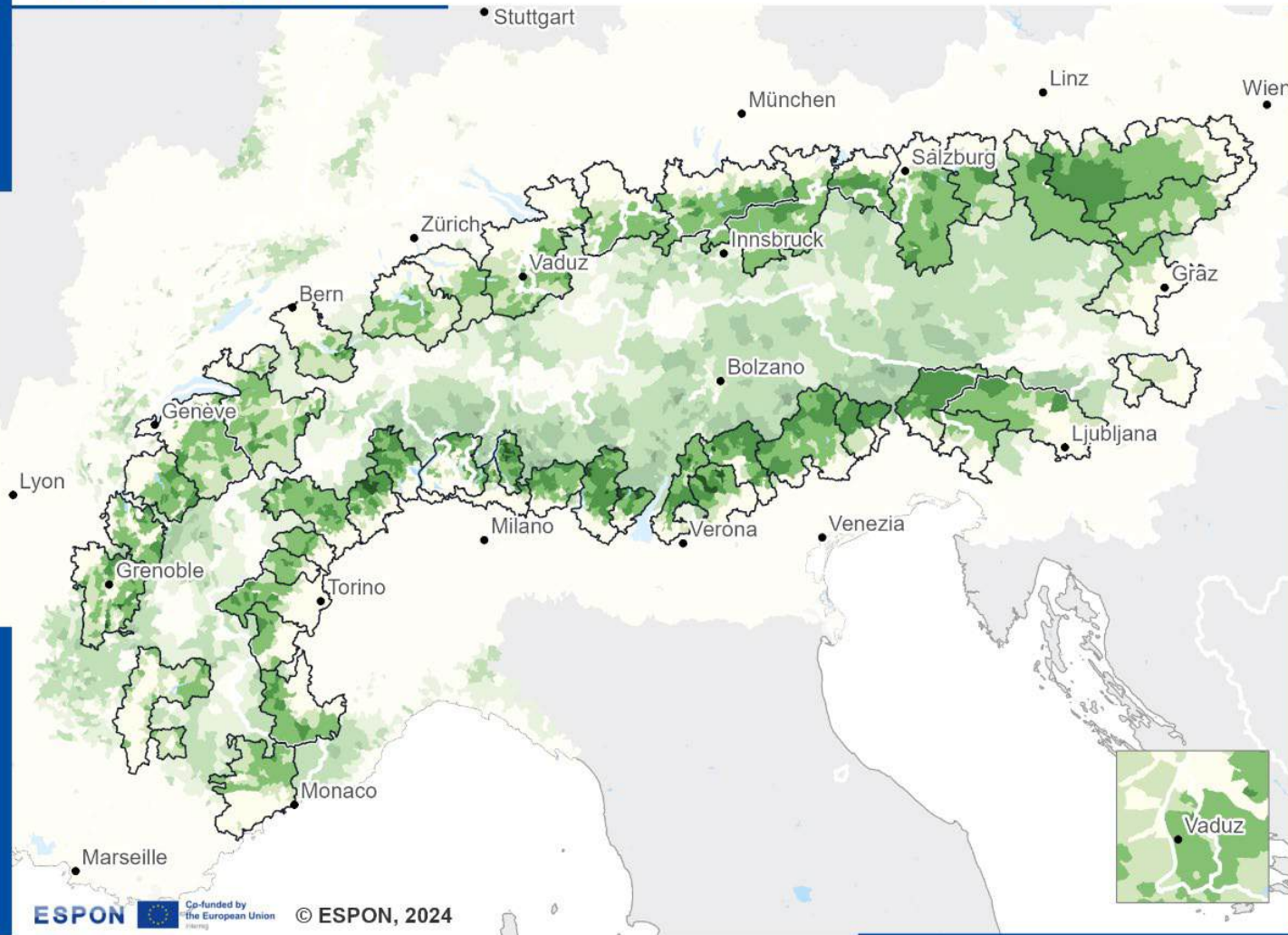
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Share of infrastructure in hazard zones (%)

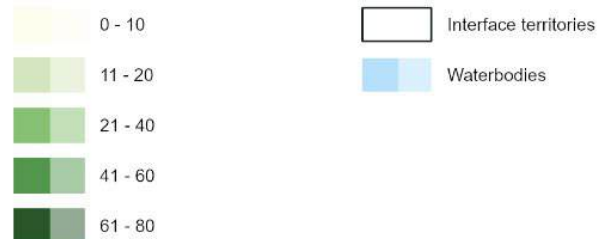


Regional level: LAU
 Source: Uta Schirpke, ESPON InTerAlp, 2024
 Origin of data: Project AlpES, 2018
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Site-protecting forest



Share of protection forest (%)

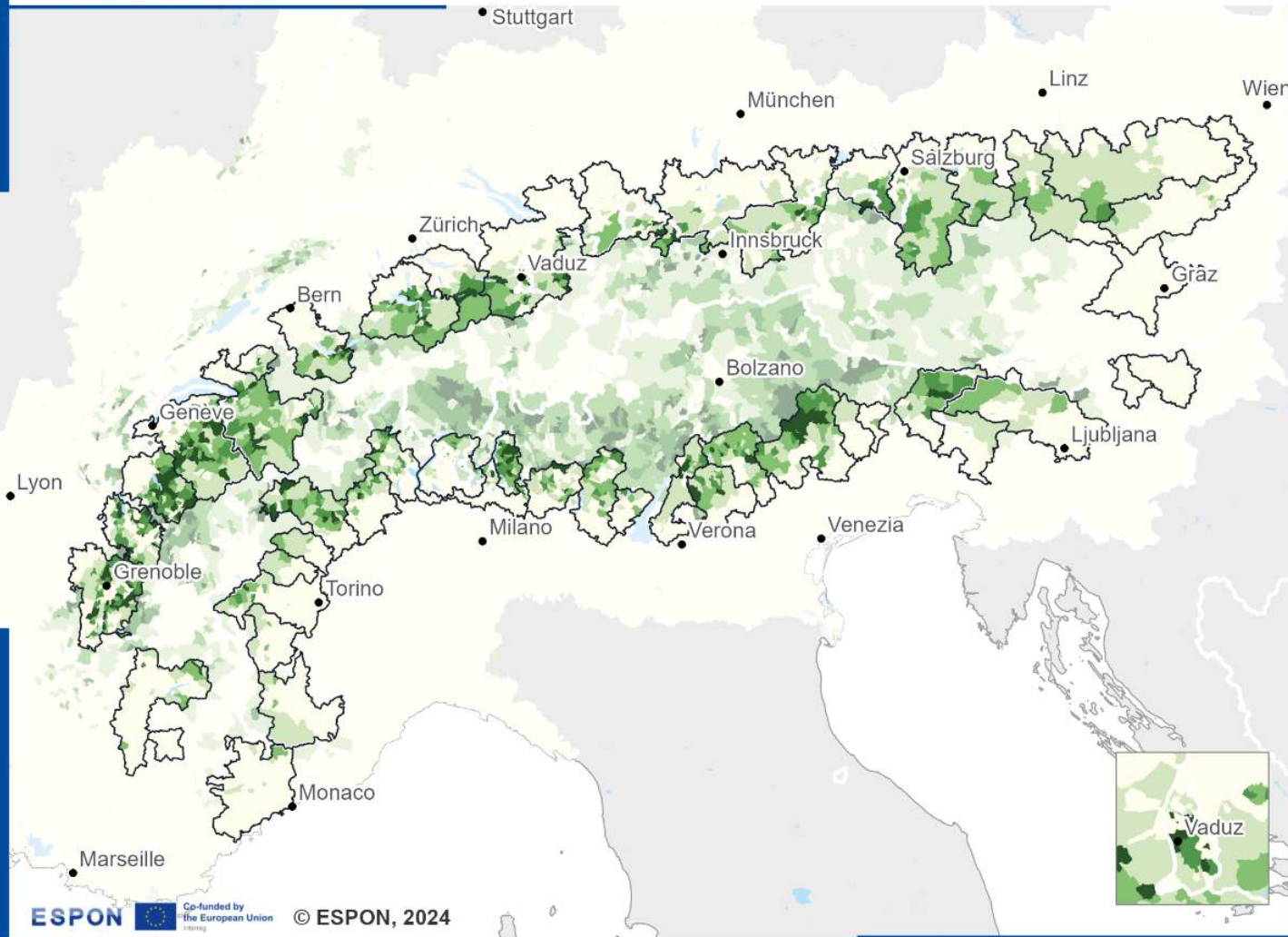


Regional level: LAU
Source: Uta Schirpke, ESPON InTerAlp, 2024
Origin of data: Project AlpES, 2018
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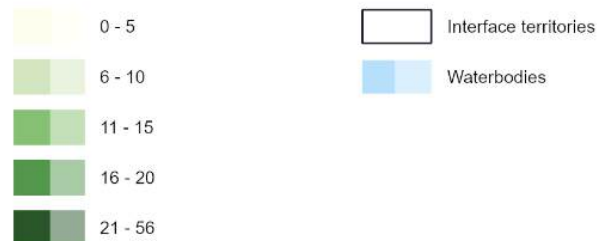
Territories with common challenges and specific roles

Hazard prevention areas

Object-protecting forest



Share of forest protecting human infrastructures (%)

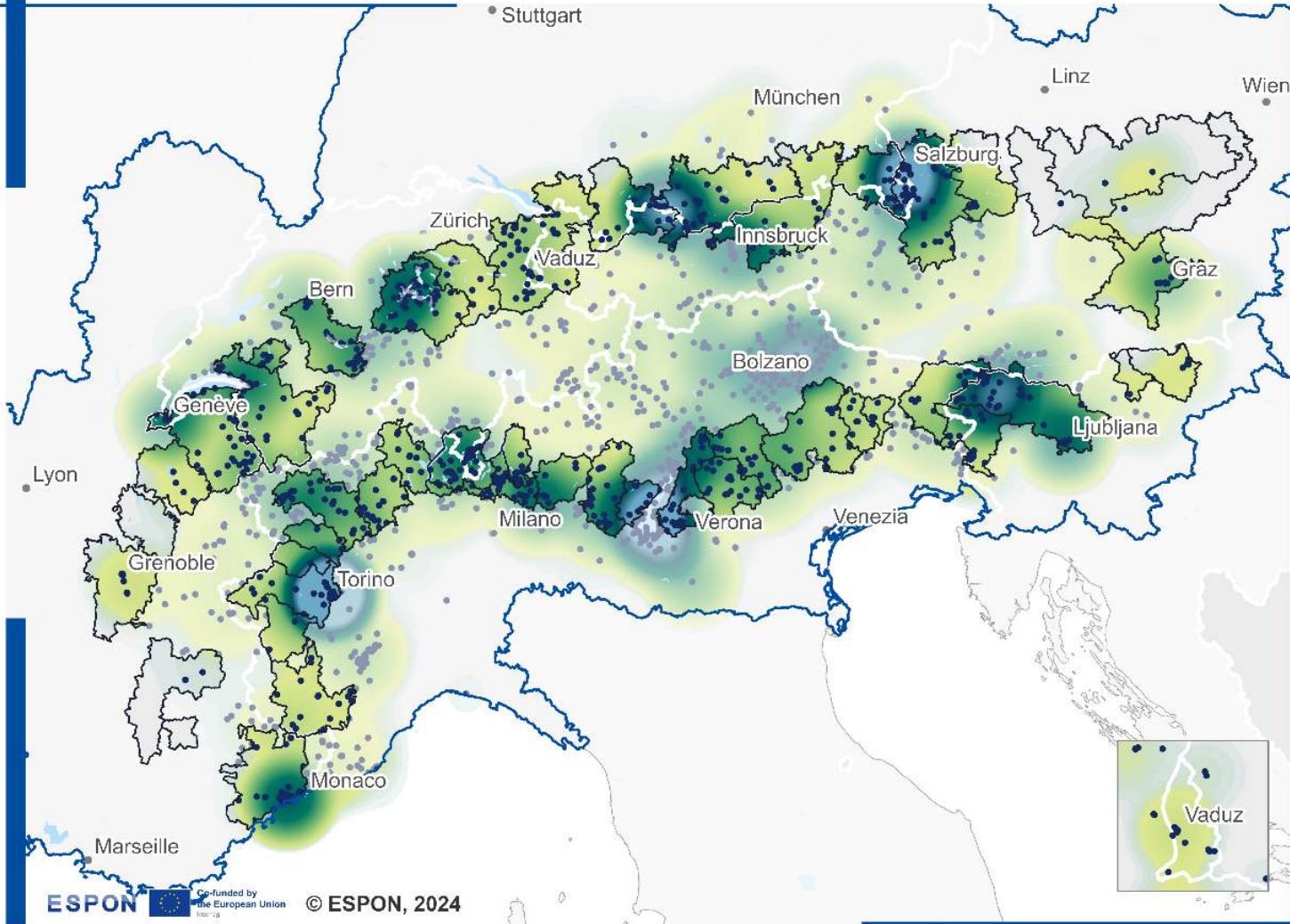


Regional level: LAU
Source: Uta Schirpke, ESPON InTerAlp, 2024
Origin of data: Project AlpES, 2018
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Territories with common challenges and specific roles

Hazard prevention areas

Tourism hotspots

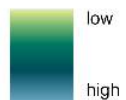


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Google Maps photos assigned to tourist attractions by Tripadvisor

- Tourist attraction (by Tripadvisor)
- ▭ Interface territories

Amount of photos in Google Maps



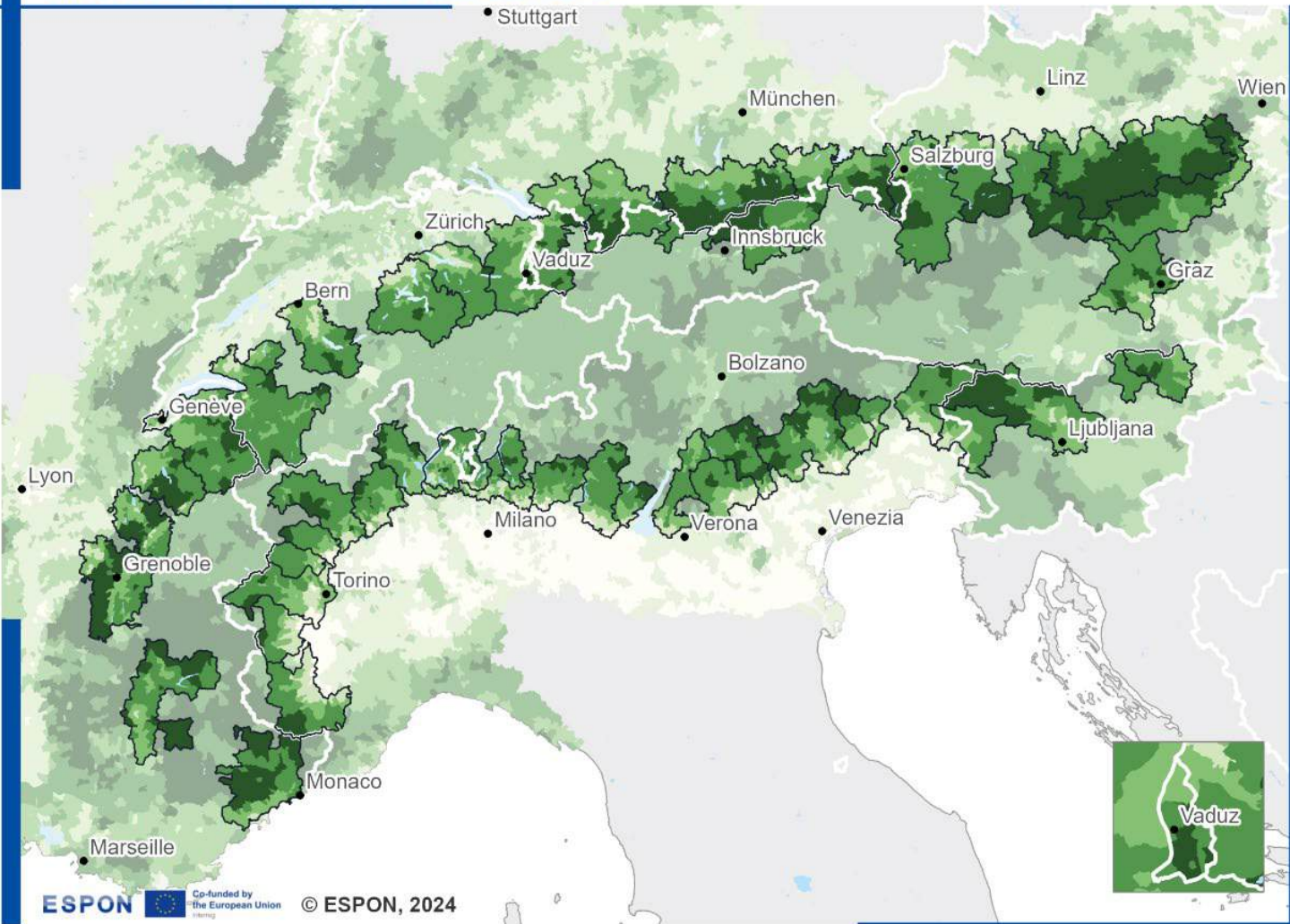
- ▭ EUSALP

Regional level: Geolocalised data (2024)
Source: FAU, ESPON InTerAlp, 2024
Origin of data: Tripadvisor, Google Maps
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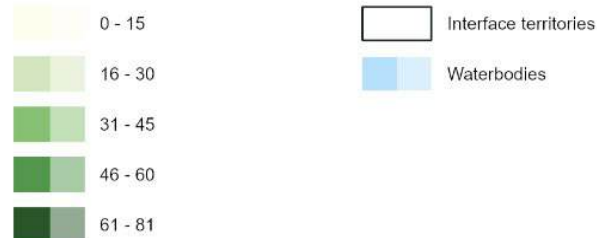
Territories with common challenges and specific roles

Tourist and recreation areas

Opportunities for nature-based recreation



Opportunities for nature-based recreation (index)

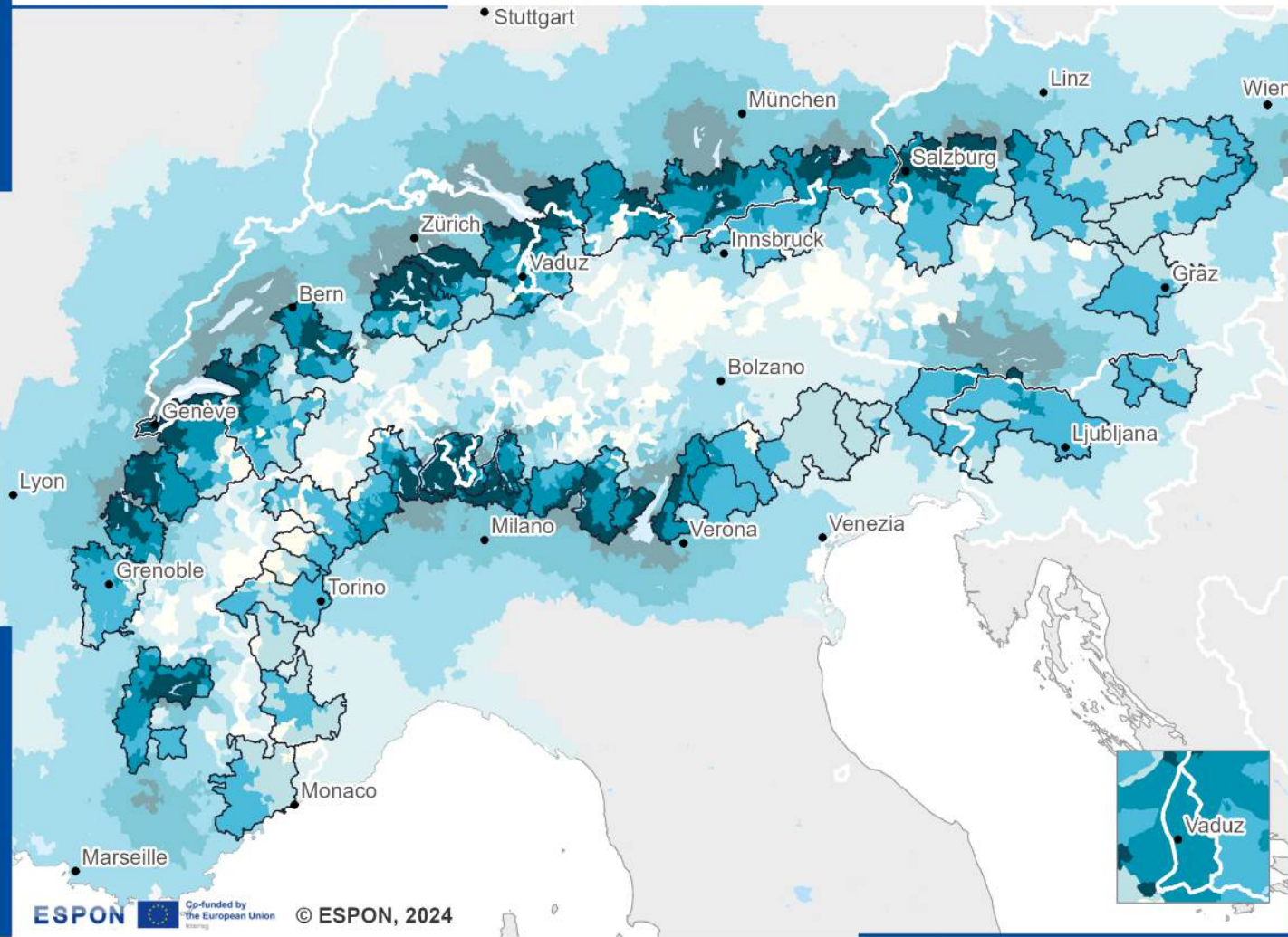


Regional level: LAU
 Source: Uta Schirpke, ESPON InTerAlp, 2024
 Origin of data: Schirpke et al. 2018;
 Corine Land Cover; Natura 2000;
 Common Database on Designated Areas (CDDA);
 Digital Elevation Model (DEM)
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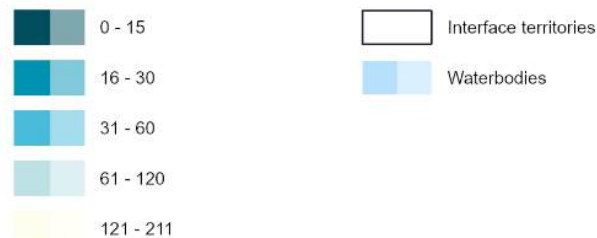
Territories with common challenges and specific roles

Tourist and recreation areas

Accessibility to water-based recreation



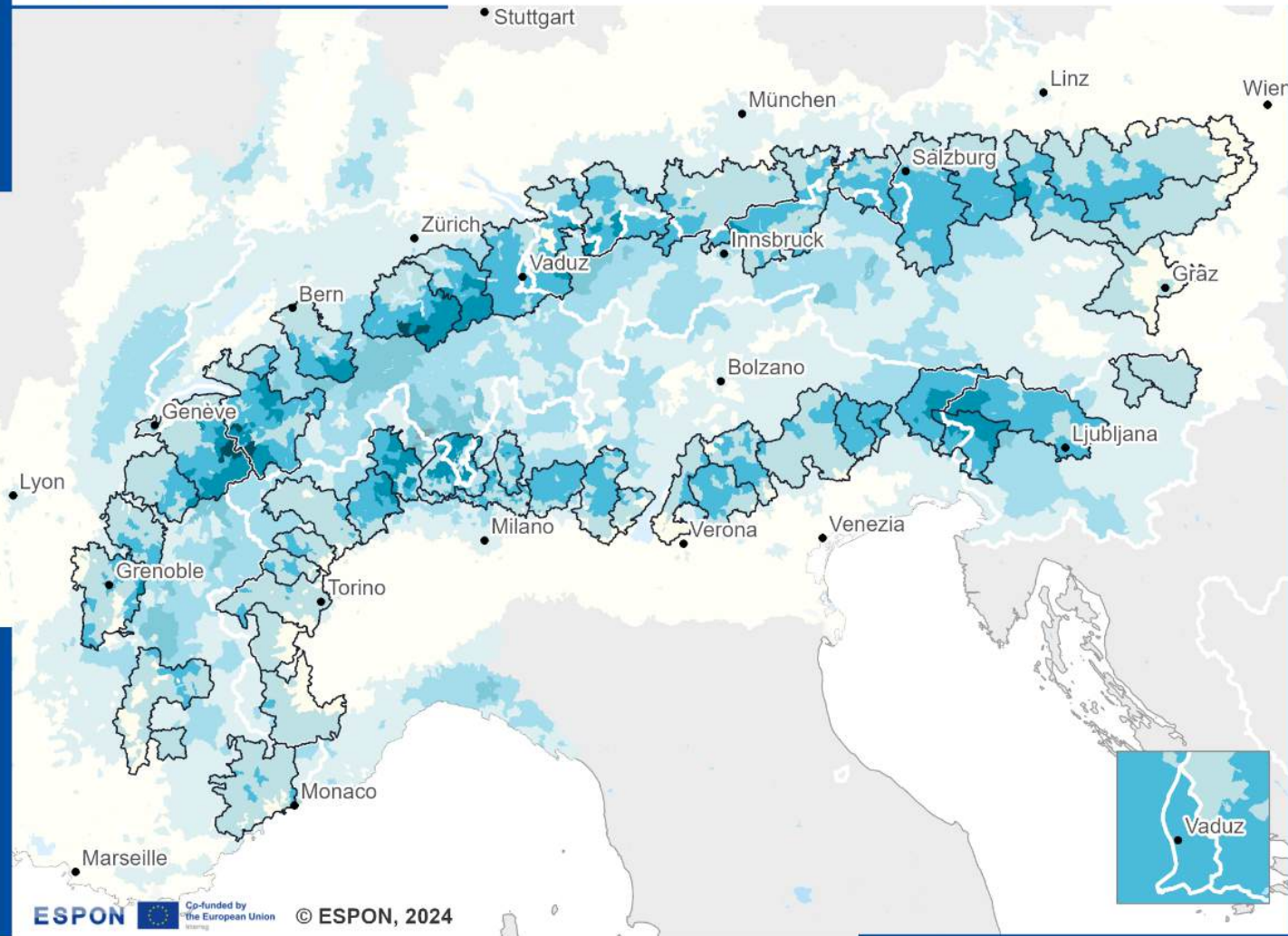
Travel time to lakes (minutes)



Regional level: LAU
Source: Uta Schirpke, ESPON InTerAlp, 2024
Origin of data: OpenStreetMap, 2024
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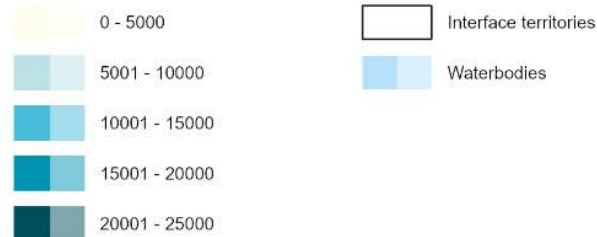
Territories with common challenges and specific roles

Tourist and recreation areas



ESPON Co-funded by the European Union © ESPON, 2024

Potentially available water quantity ($m^3 ha^{-1} y^{-1}$)



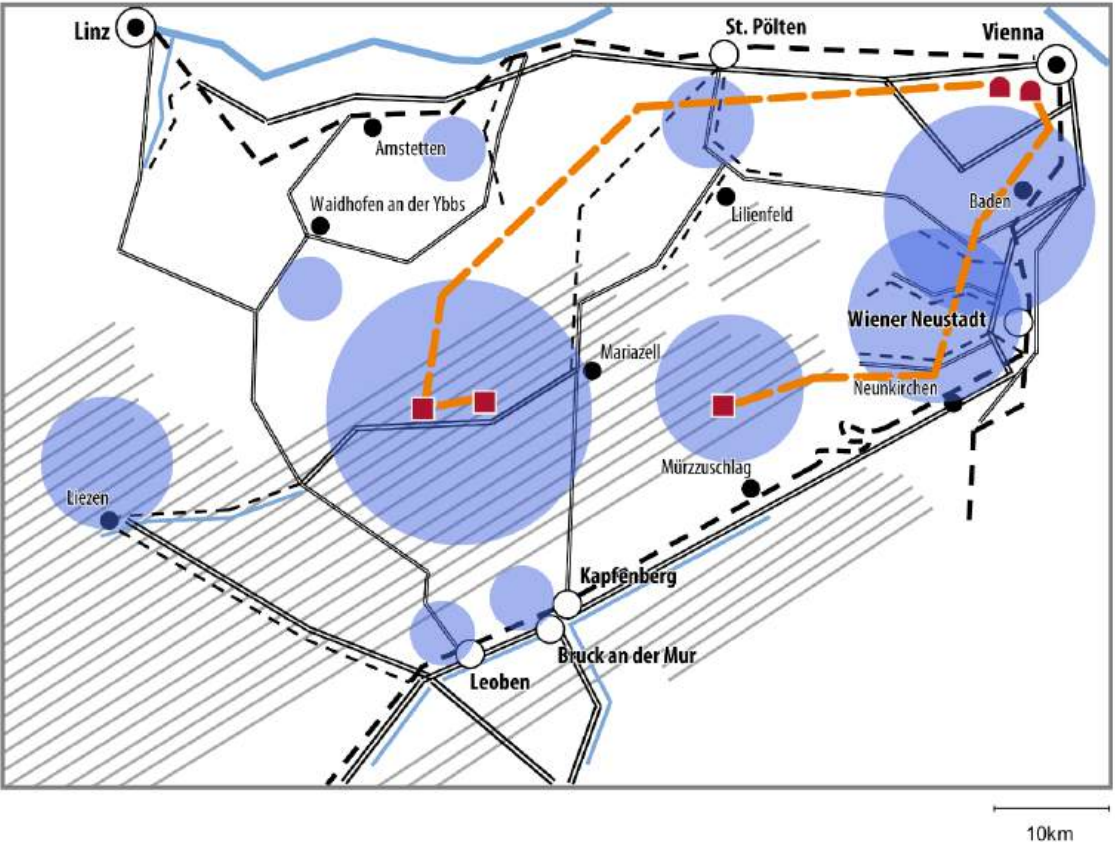
Regional level: LAU
 Source: Uta Schirpke, ESPON InTerAlp, 2024
 Origin of data: Project AlpES, 2018
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Territories with common challenges and specific roles

Areas of water infrastructure

Territories with common challenges and specific roles

Areas of water infrastructure



Settlement system

- Metropolis
- Regional centre
- Local node

Mobility infrastructure

- Road (first tier)
- Road (second tier)
- - - Rail (first tier)
- - - Rail (second tier)

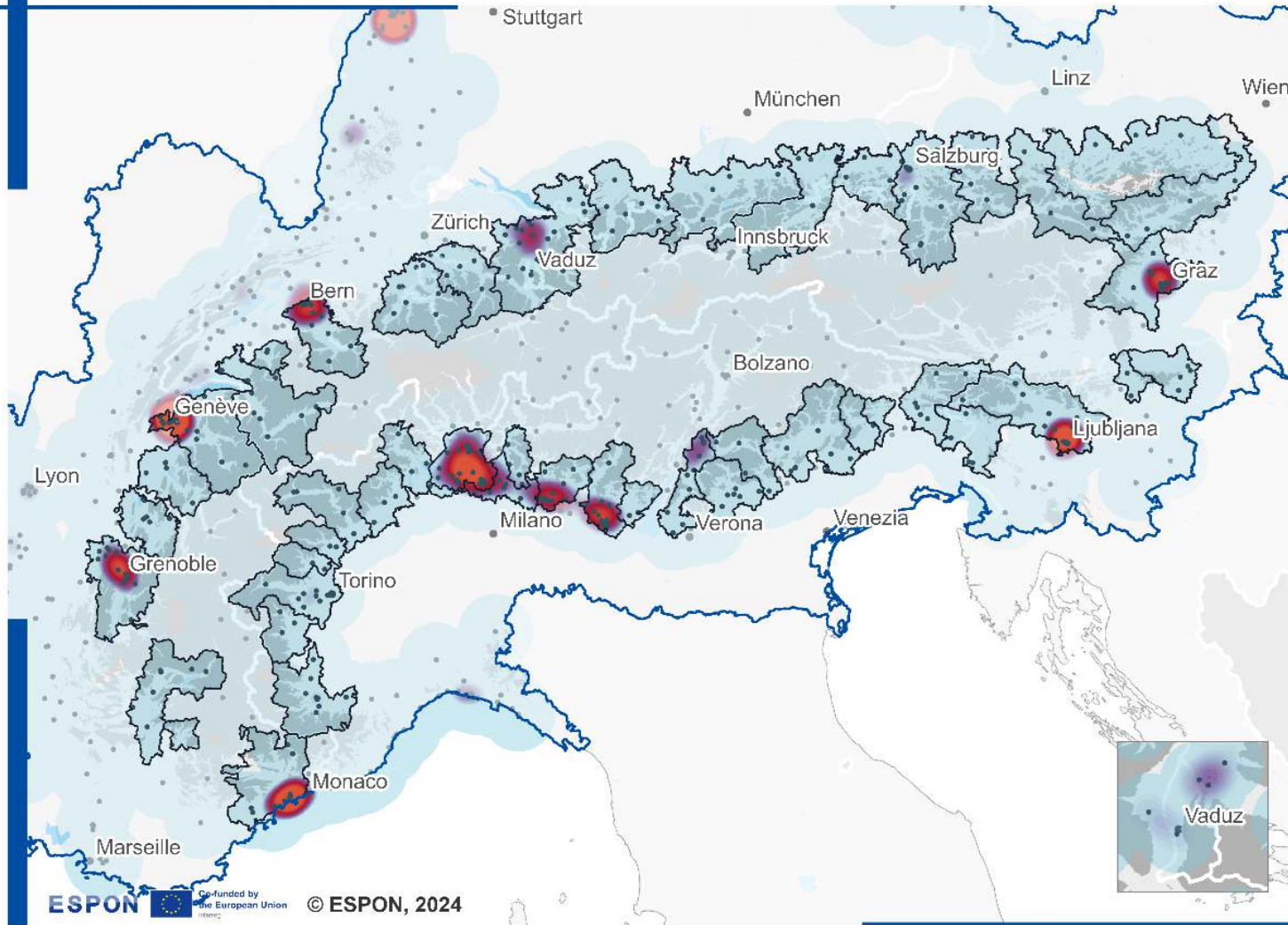
Natural features

- River
- Tributary river
- ▨ Mountainous terrain

Water infrastructure

- Water spring
- Water reservoir
- Water pipe
- Protected water area

Location of hospitals



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Hospitals within 15km buffer to high altitude in EUSALP perimeter

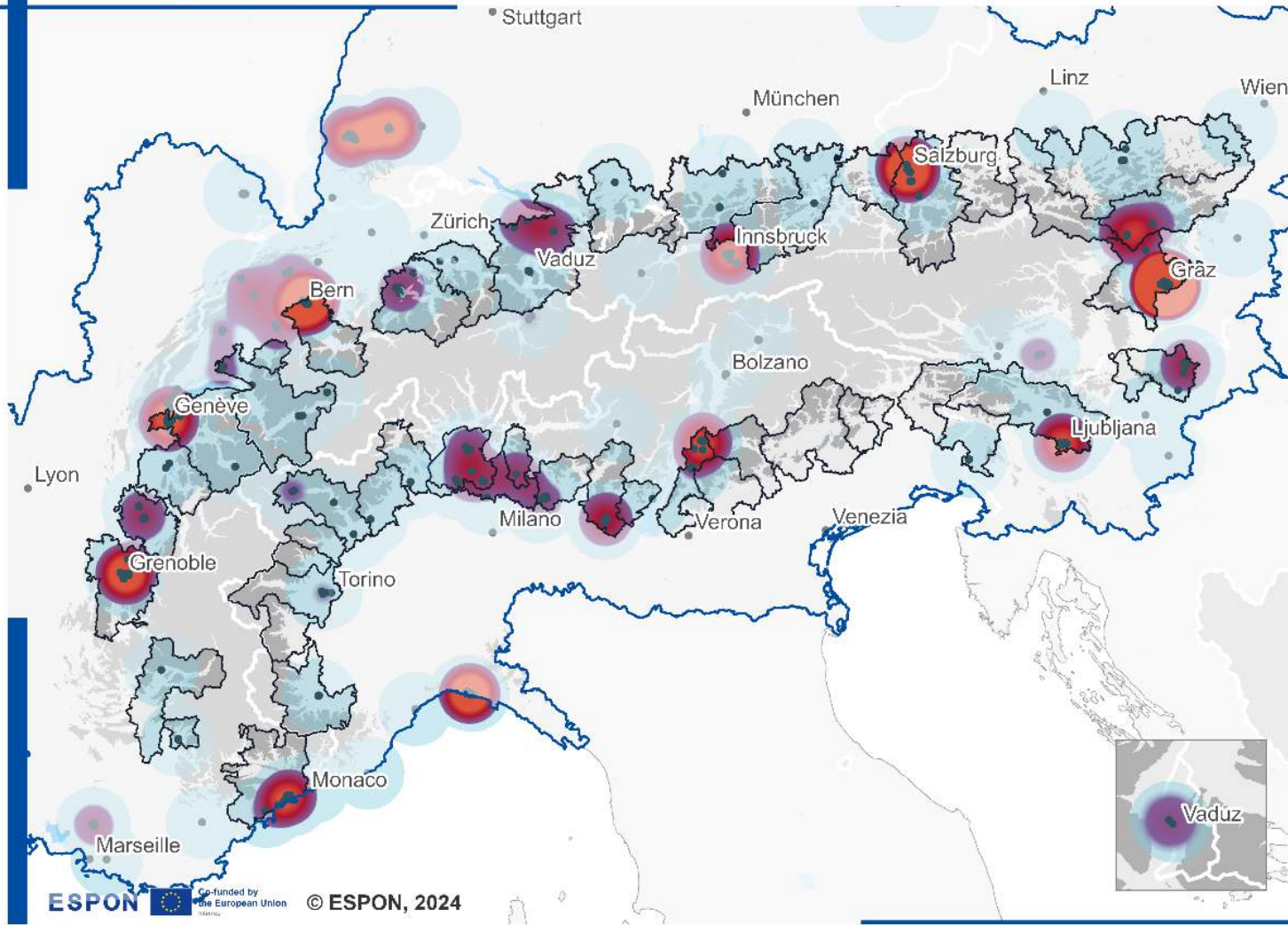


Regional level: Geolocalised data (2024)
Source: FAU, ESPON InTerAlp, 2024
Origin of data: EuroGlobalMap, OpenStreetMap
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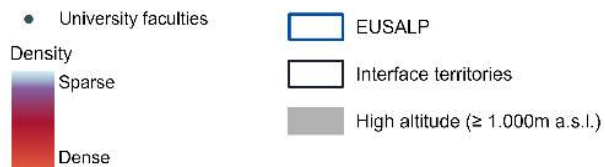
Territories with common challenges and specific roles

Agglomeration areas of hospitals and universities

University locations



University faculties within 15km buffer to high altitude in EUSALP perimeter

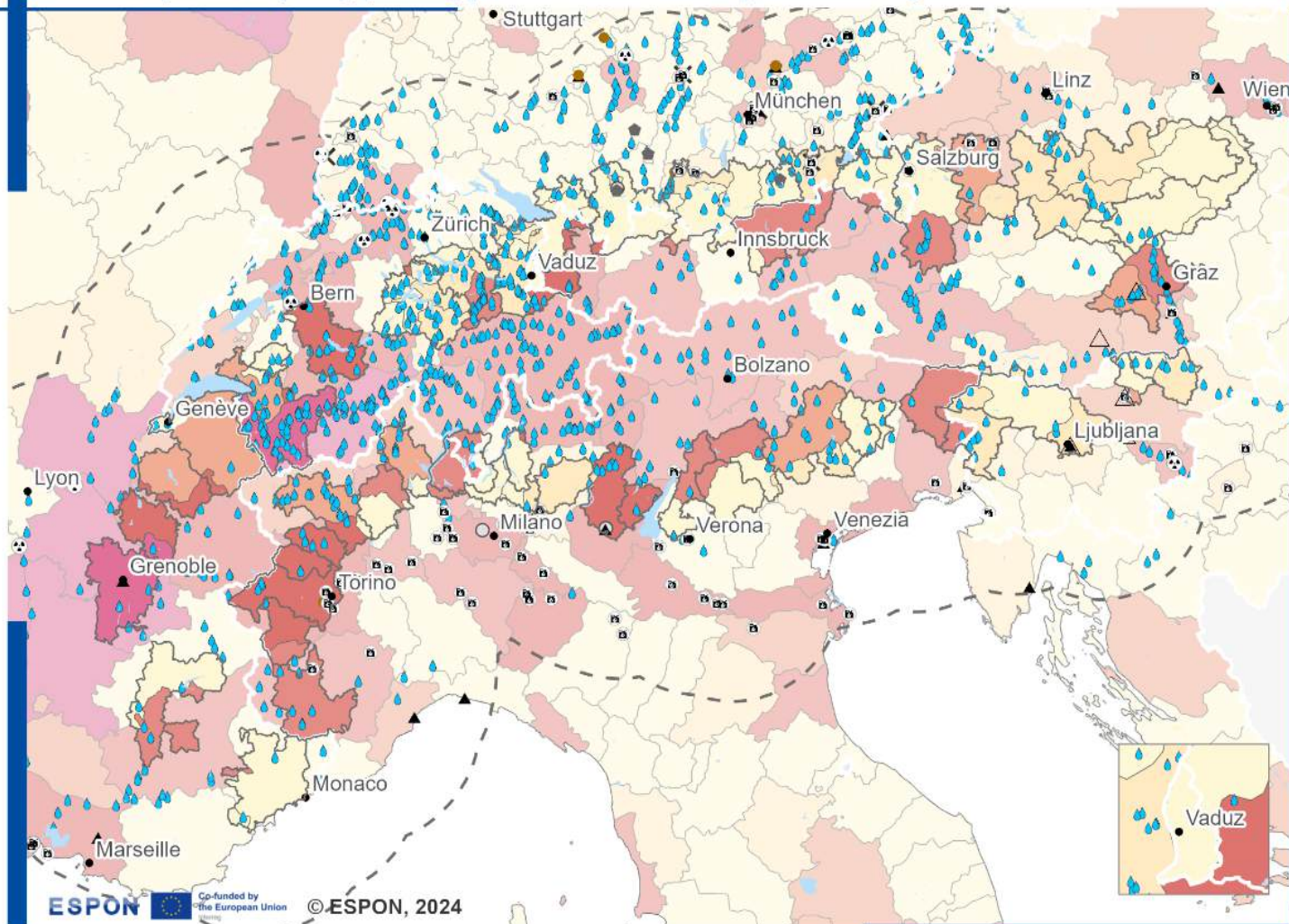


Regional level: Geolocalised data (2024)
Source: FAU, ESPON InTerAlp, 2024
Origin of data: EuroGlobalMap, OpenStreetMap
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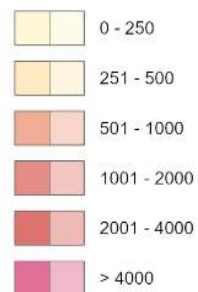
Territories with common challenges and specific roles

Agglomeration areas of hospitals and universities

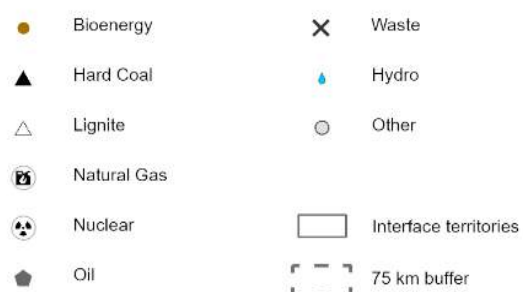
Plant capacities (MW), plant types and locations by NUTS 3 region



Sum capacity



Fueltype

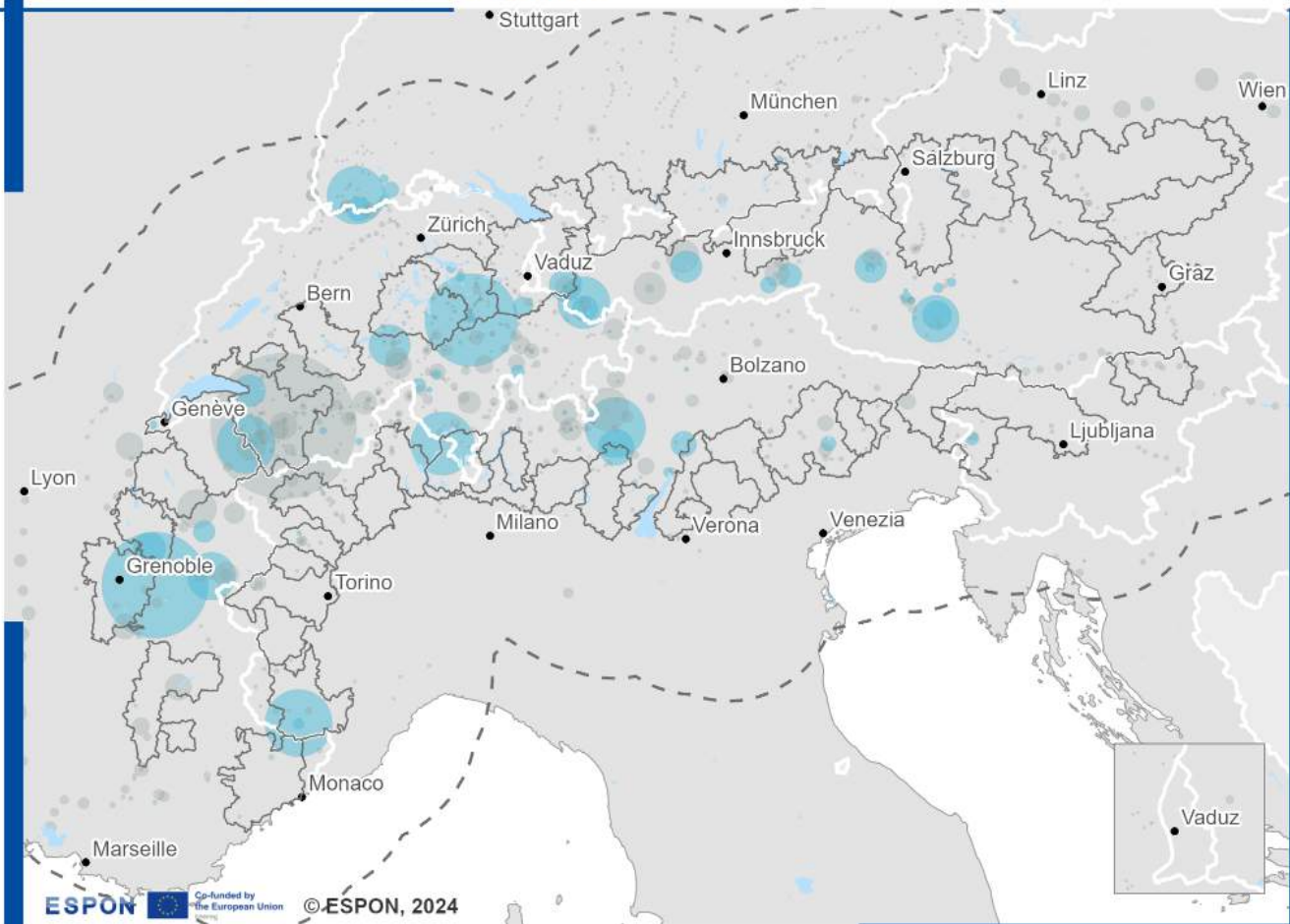


Regional level: NUTS 3 (2021), geolocated data
 Source: OIR, ESPON InTerAlp, 2024
 Origin of data: F. Gotzens, H. Heinrichs, J. Hörsch, and F. Hofmann, Performing energy modelling exercises in a transparent way - The issue of data quality in power plant databases, Energy Strategy Reviews, vol. 23, pp. 1–12, Jan. 2019. [https://zenodo.org/record/3358985#.XURat99fjRY]
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Territories with common challenges and specific roles

Energy production patterns

Hydropower - plant types and capacities

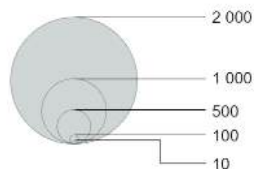


Plant types

-  Pumped storage
-  Other technology
(Reservoir, Run-Of-River, Unknown)

-  Interface territories
-  75 km buffer

Power plant capacity (MWh)



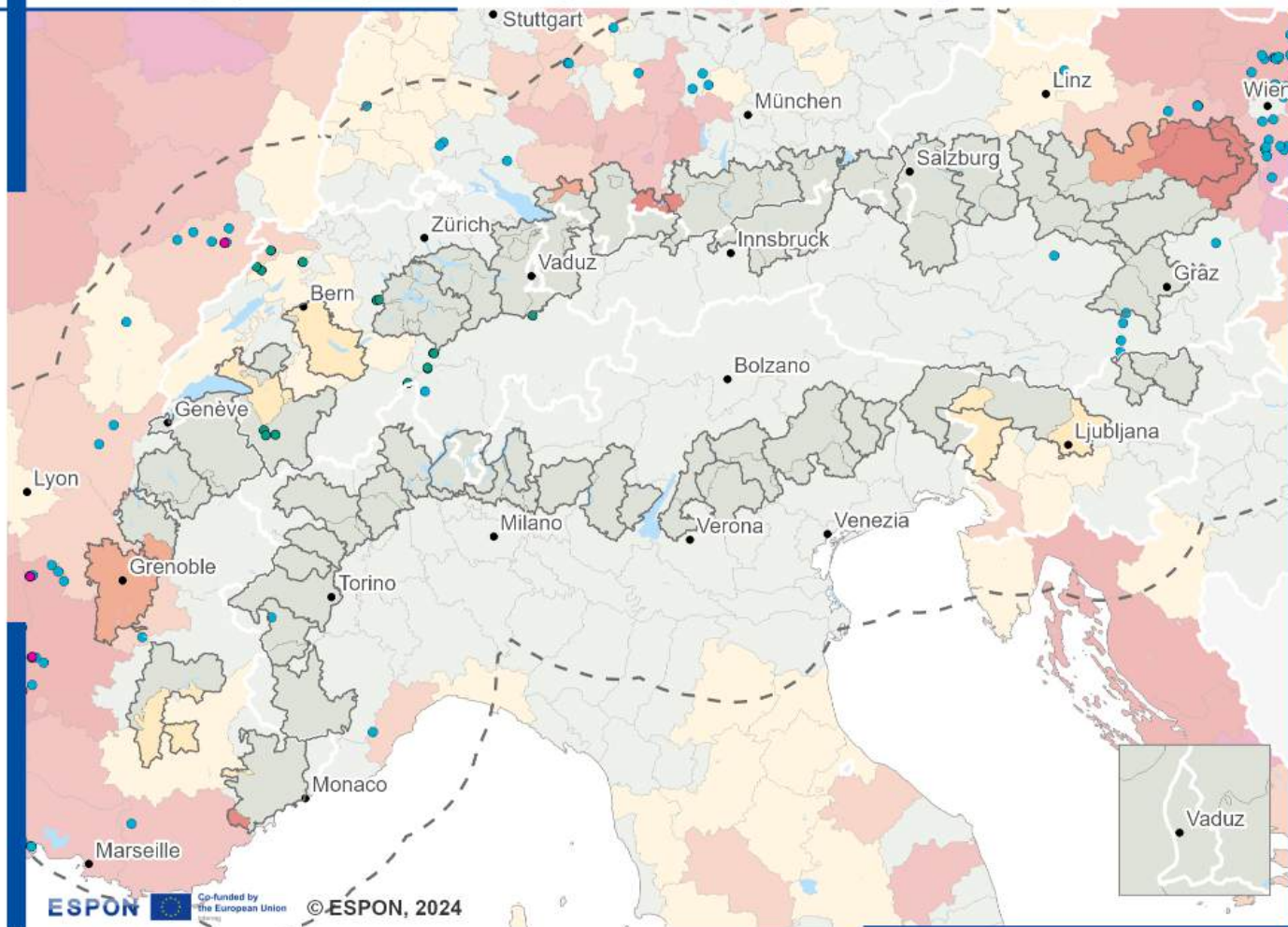
Regional level: geolocated data
Source: ÖIR, ESPON InTerAlp, 2024
Origin of data: F. Gotzens, H. Heinrichs, J. Hörsch, and F. Hofmann, Performing energy modelling exercises in a transparent way - The issue of data quality in power plant databases, Energy Strategy Reviews, vol. 23, pp. 1-12, Jan. 2019. [<https://zenodo.org/record/3358985#.XURat99fjRY>]
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Territories with common challenges and specific roles

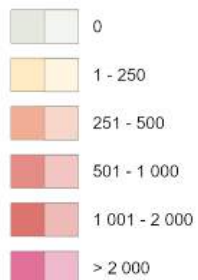
Energy production patterns

Territories with common challenges and specific roles

Energy production patterns



Wind energy potential, in MWh/km²



Wind park locations (within a 75 km buffer)



Regional level: NUTS 3 (2021), geolocated data
Source: OIR, ESPON InterAlp, 2024

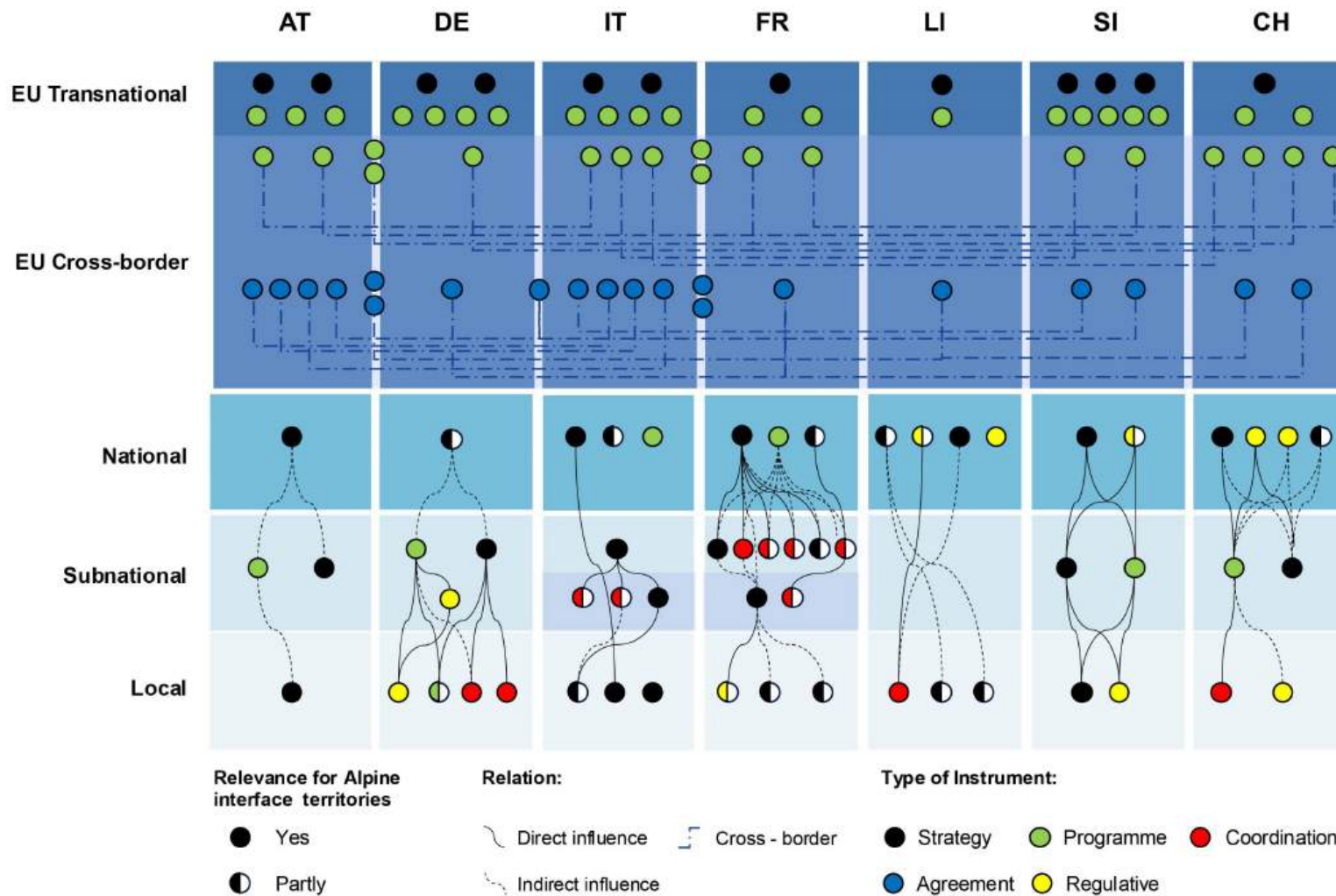
Origin of data:

- Powerplantmatching-Tool: F. Gotzens, H. Heinrichs, J. Hörsch, and F. Hofmann, Performing energy modelling exercises in a transparent way - The issue of data quality in power plant databases, Energy Strategy Reviews, vol. 23, pp. 1–12, Jan. 2019. [<https://zenodo.org/record/3358985#.XURat99fRY>]
- Open Street Map: Open Street Map Contributors: Power Plant Data retrieved via Overpass Turbo (Map data copyright OpenStreetMap contributors and available from [<https://www.openstreetmap.org/>])
- JRC: Hidalgo Gonzalez, Ignacio; Kanellopoulos, Konstantinos; Matteo De Felice; Bocin, Andrei (2019): JRC Open Power Plants Database (JRC-PPDB-OPEN), European Commission, Joint Research Centre (JRC) [<http://data.europa.eu/89h/9810feeb-f062-49cd-8e76-6d9cfd488a05>]
- SFOE: Swiss Federal Office of Energy (2024): Wind energy plants [<https://data.geo.admin.ch/browser/index.html#/collections/ch.bfe.windenergieanlagen>]
- Wind energy potential: LOCATE - Territories and Low-Carbon Economy, ESPON [<https://www.espon.eu/low-carbon-economy/>]

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Territories with no specific governance

Interface territories and Alpine multi-level governance

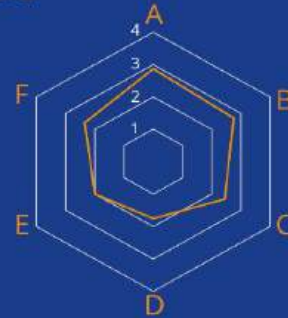


Spatial and sectoral governance and planning

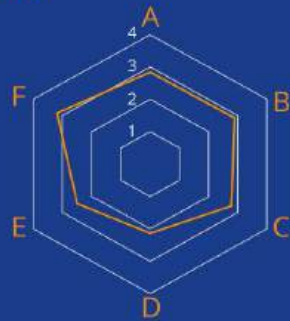
LEGEND

- A - Attention to multilevel coordination
- B - Attention to cross-sectoral coordination
- C - Stakeholder engagement and participation
- D - Cross-border relevance
- E - Congruence with functional patterns
- F - Alpine specificity

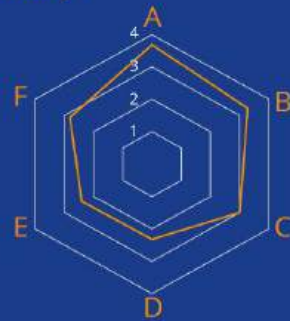
Austria



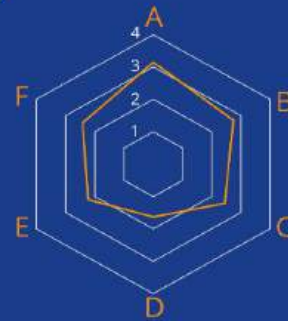
France



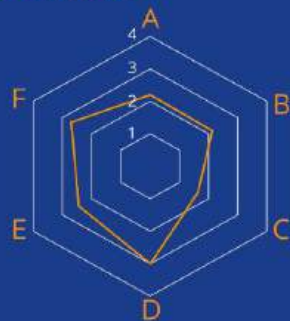
Germany



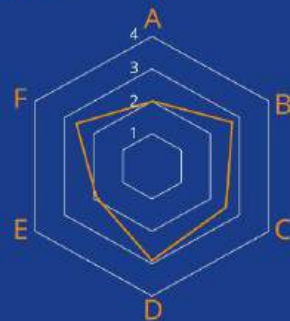
Italy



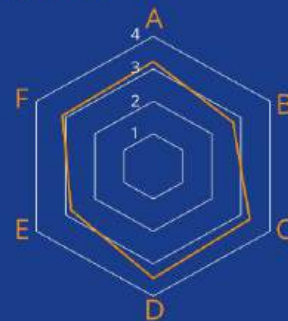
Liechtenstein



Slovenia

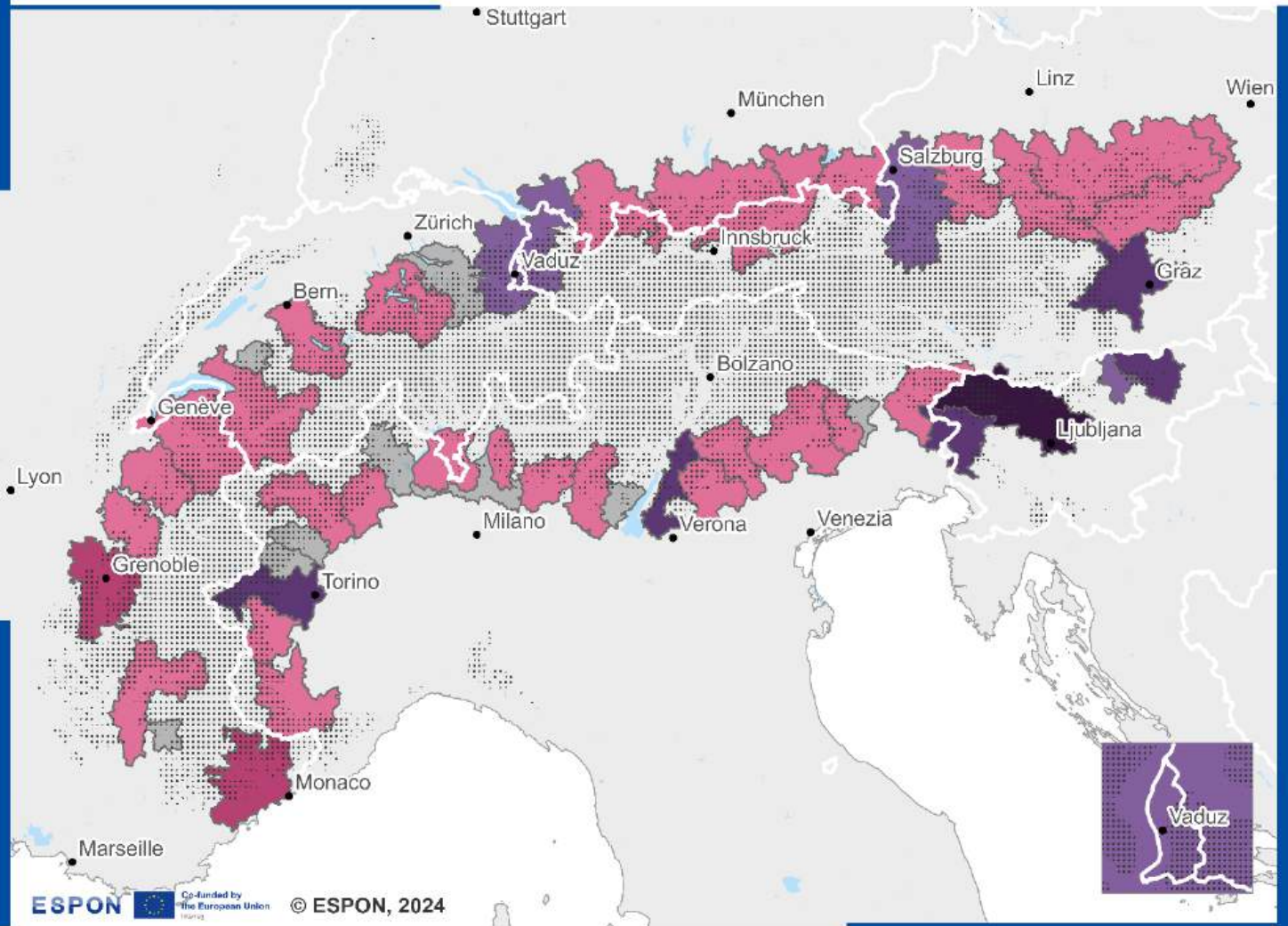


Switzerland

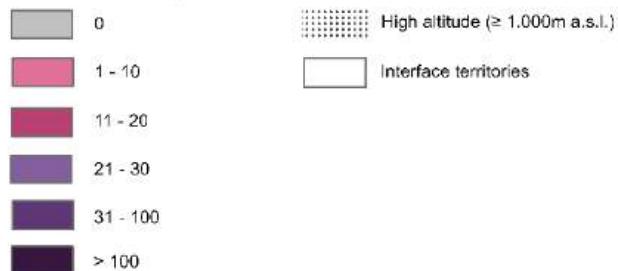


Territories with no specific governance

Spatial and sectoral governance and planning



Number of projects implemented in the Alpine interface territories

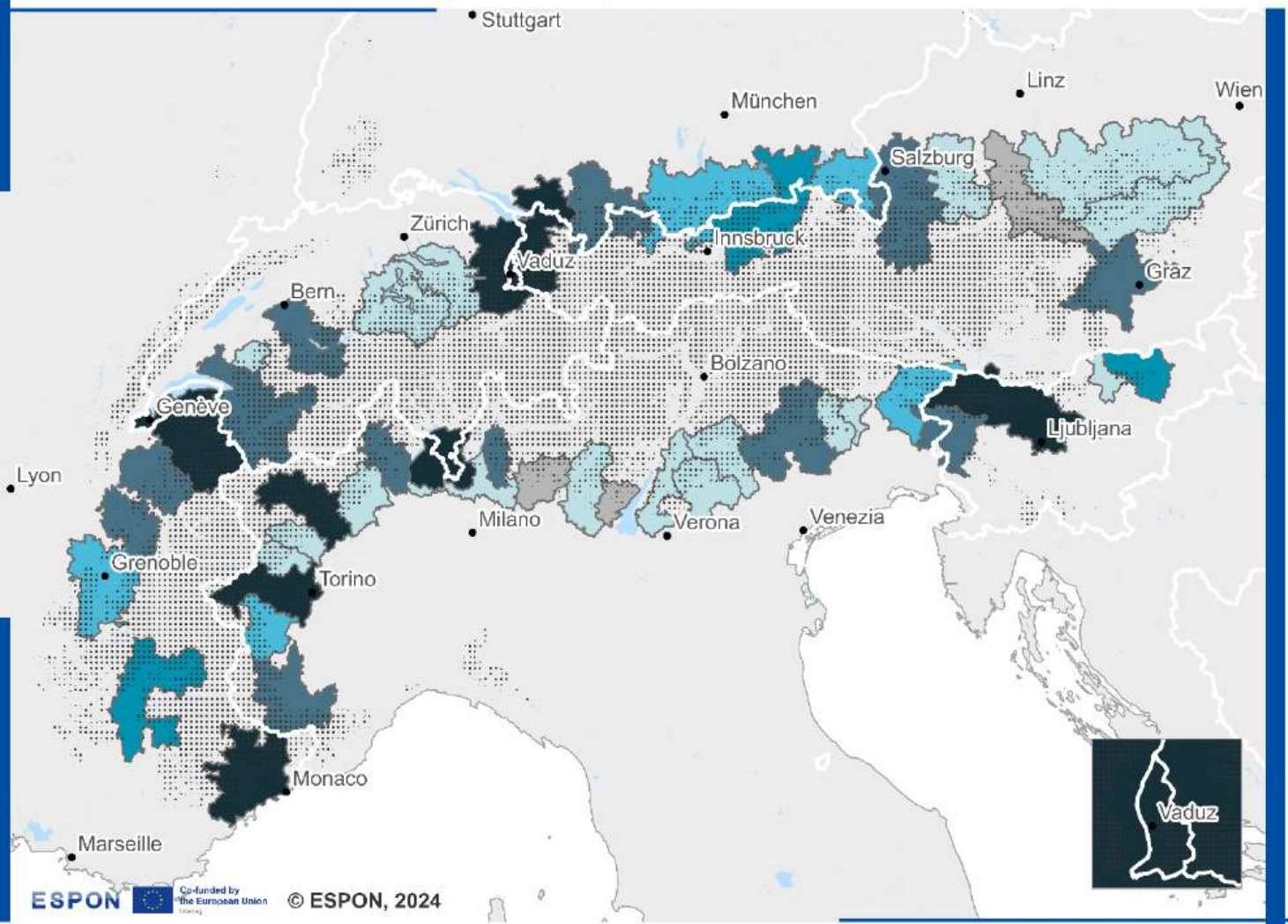


Regional level: NUTS 3 (2021)
 Source: POLITO & FAU, ESPON InTerAlp, 2024
 Origin of data: keep.eu, 2024
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Territories with no specific governance

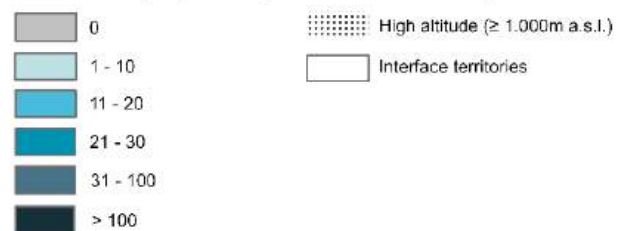
Opportunities for Alpine interface territories from a governance perspective

Transnational and cross-border level



ESPON Co-funded by the European Union © ESPON, 2024

Number of projects implemented in the Alpine interface territories



Regional level: NUTS 3 (2021)
 Source: POLITO & FAU, ESPON InTerAlp, 2024
 Origin of data: keep.eu, 2024
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Territories with no specific governance

Opportunities for Alpine interface territories from a governance perspective

Transnational and cross-border level

Alpine Convention

The Alpine Convention has the potential to significantly contribute to the **agenda setting** and **recognition** of interface territories.

Across the different sectoral and working groups and activities, the Convention could emphasise the importance of these interface territories as part of a new spatial and governance geography. Amongst others, Alpine interface territories can also be considered in **Reports on the State of the Alps**. This geography could be central in fostering a more place-based and territorially sensitive approach:

- Identifying territorial dynamics that stem from existing planning and cooperation practices (whether formal or informal) within interface territories.
- Investigating and testing the existence of any political convergence (explicit or implicit) towards this new geographical framework.
- Involving local actors in the Alpine Convention's governance process through specific tools, such as establishing a "Forum of Alpine interface territories."
- Encouraging local actors to adopt a proactive approach, raising awareness of the strategic and operational importance of Alpine interface territories.

Territories with no specific governance

Opportunities for Alpine interface territories from a governance perspective

Transnational and cross-border level



EUSALP

The EUSALP offers an important **platform for discussing** Alpine interface territories, in particular as its perimeter comprises all interface territories.

By promoting transnational cooperation, this strategy can develop a **common approach to support the Alpine interface territories** through a cooperative perspective. Across the EUSALP's sectoral Action Groups, it might contribute to:

- Providing technical and political support to solidify the role of Alpine interface territories, in line with EU strategies and policies.
- Building a common (transnational) approach to this new “geographic category” by acknowledging their unique status.
- Understanding and promoting their needs and potential in terms of fair and balanced territorial development.
- Targeting these territories with specific, ad hoc initiatives. This could become easier if they are included in post-2027 discussions.

Territories with no specific governance

Opportunities for Alpine interface territories from a governance perspective

Transnational and cross-border level



INTERREG Alpine Space and cross-border programmes

The **Alpine Space programme** as well as the **cross-border cooperation programmes** offer relevant platforms of territorial cooperation: this can actively promote **tailored-made projects** within interface territories.

The programmes' scale and objectives align well with the geographic distribution of many Alpine interface territories. In this respect, territorial cooperation programmes can support the Alpine interface territories when it comes to:

- Promote new forms of formal (or informal) cooperation values through which emerge or consolidate existing cooperation initiative formats.
- Promote ad hoc projects or a set of projects that specifically target these territories.
- Funding new emerging governance experiences which implement various models (see the case of PITER promoted by the ALCOTRA programme).

Territories with no specific governance

Opportunities for Alpine interface territories from a governance perspective

Transnational and cross-border level



Federal Agglomeration Policy, Switzerland

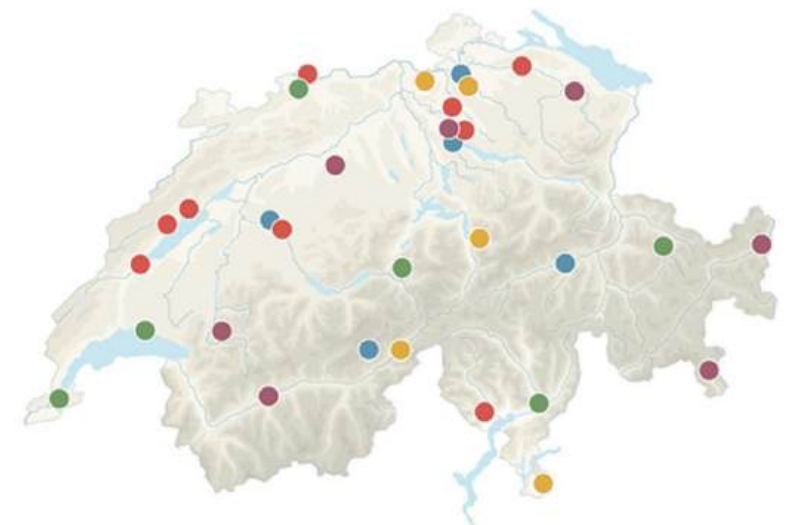
What are the benefits of Agglomeration Policy for Alpine interface territories?

- **Improved coordination of settlement development and transport:** The Alpine interface territories can benefit from better integrating transport infrastructure with settlement planning, ensuring more efficient and sustainable mobility options supporting regional development.
- **Comprehensive development support:** Through specific measures and instruments that complement sectoral policies (such as transport and social policy), AggloPol provides holistic support for the development of Alpine territories, fostering sustainable growth.
- **Enhanced collaboration and governance:** The policy promotes efficient collaboration across multiple levels of governance (Confederation, cantons, cities, municipalities) and private stakeholders, enabling more coordinated and effective territorial development for the Alpine regions.

Territories with no specific governance

Opportunities for Alpine interface territories from a governance perspective

National level



2020-2024 Sustainable Land Development Model Projects. Source: Ufficio federale dello sviluppo territoriale (ARE)

Future Mountains Programme, France

What are the benefits of Programme Avenir Montagne for Alpine interface territories?

- **Support for sustainable and diversified tourism:** It provides funding and operational support for Alpine territories as they transition toward a more sustainable and diversified tourism model, conserving natural resources and respecting biodiversity.
- **Tailored and collaborative regional support:** It offers solutions adapted to the strategies and needs of different mountain regions, promoting collaboration between national and local entities in shaping development strategies.
- **Strengthened territorial cohesion:** Managed by the National Agency for Territorial Cohesion, the programme enhances economic and social resilience in Alpine areas, equipping them to face economic and environmental challenges.

Territories with no specific governance

Opportunities for Alpine interface territories from a governance perspective

National level



Projects supported by the state in 2021 under the investment section of the Programme Avenir Montagnes. Source: <https://www.montagnes-magazine.com/actus-avenir-montagnes-quel-futur-les-territoires>

Piano Strategico Metropolitan di Torino (Turin's Strategic Metropolitan Plan), Italy

What are the benefits of Piano Strategico Metropolitan di Torino for Alpine interface territories?

- **Fostering metro-mountain collaboration:** The SMP promotes a new vision of interdependence and collaboration between metropolitan, rural, and mountain areas. This "metro-mountain" approach encourages Alpine interface territories to build stronger ties with urban areas
- **Cross-border and inter-regional cooperation:** The SMP underscores the importance of strengthening cross-border cooperation with neighbouring French territories and collaboration with other European metropolitan areas facing similar challenges.
- **Innovative metro-mountain thinking:** The SMP introduces an innovative method for reimagining the "metro-mountain" relationship, which the Alpine interface territories could apply. This approach encourages new thinking about development incorporating urban and rural mountain dynamics.

Territories with no specific governance

Opportunities for Alpine interface territories from a governance perspective

Sub-national level



Metropolitan and mountain relations. Source: PSM 2024-2026, Torino Metro(poli)montana

Verein Agglomeration Werdenberg-Liechtenstein

What are the benefits of Verein Agglomeration Werdenberg-Liechtenstein for Alpine interface territories?

- **Enhanced cross-border cooperation:** The Werdenberg-Liechtenstein Agglomeration Association is an exemplary model of cross-border collaboration, involving multiple municipalities from Switzerland and Liechtenstein. Alpine interface territories can benefit from similar cooperative frameworks to address shared challenges that extend beyond national borders, improving governance and coordination.
- **Strengthened public service delivery:** The association's focus on the efficient fulfilment of public tasks demonstrates how collaboration can improve the delivery of public services across regions. Alpine interface territories can adopt similar methods to enhance service provision and address regional challenges collectively.

Territories with no specific governance

Opportunities for Alpine interface territories from a governance perspective

Local level



Buchs-Vaduz cycle and pedestrian bridge. Source: Agglomeration Werdenberg-Liechtenstein

Local Mobility Concepts, Austria

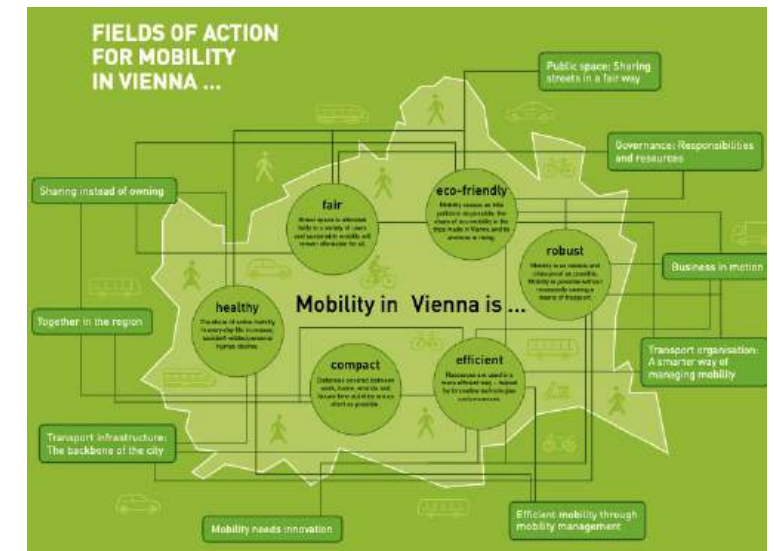
What are the benefits of Austrian Local Mobility Concepts for Alpine interface territories?

- **Regional coordination and integrated planning:** Similar to how the Vienna Urban Mobility Plan pro-motes coordination between Vienna, Lower Austria, and Burgenland, Alpine territories can benefit from regional cooperation. By aligning mobility plans with broader spatial development goals, Alpine municipalities can ensure that mobility solutions are integrated with land-use planning, environmental conservation, and economic development strategies. This regional and integrated approach helps address both local and cross-border mobility challenges.
- **Sustainable mobility solutions for sensitive areas:** The Vienna plan's focus on sustainable mobility—promoting walking, cycling, and public transportation—can directly benefit the Alpine interface territories. Given the environmental sensitivity of the Alps, Local Mobility Concepts in these regions can prioritize low-impact, eco-friendly transport solutions.

Territories with no specific governance

Opportunities for Alpine interface territories from a governance perspective

Sectoral planning: Transport



Thematic Concept STEP 2025. Source: Urban Mobility Plan Vienna

Lokalni Energetski Koncept (Local Energy Concept), Slovenia

What are the benefits of Slovenian Local Energy Concepts for Alpine interface territories?

- **Alignment with national and EU policies:** By ensuring that local energy policies align with national frameworks like the Energy Concept of Slovenia (EKS) and broader EU goals, the LEK provides a structured approach that can harmonize energy initiatives across borders in the Alpine region. This coordination is key for cross-border projects and integrated energy systems in the Alpine interface territories.
- **Long-term strategic planning:** The LEK's role in planning the spatial and economic development of local communities fits well with the Alpine region's need for long-term, sustainable growth. Its methodical approach can help Alpine municipalities develop infrastructure that balances energy needs with environmental preservation, crucial for maintaining the region's ecological integrity.

Territories with no specific governance

Opportunities for Alpine interface territories from a governance perspective

Sectoral planning: Energy



LEK Celje. Source: Energy Renovation and Management in the Municipality of Celje

River/Lake/Wetlands Contracts, Italy

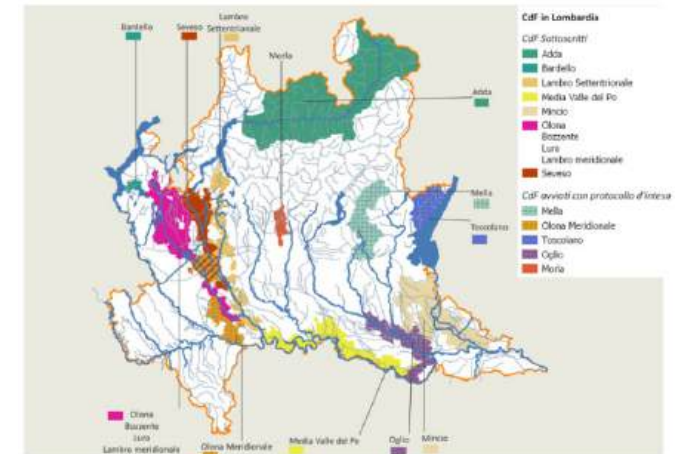
What are the benefits of Italian River/Lake/Wetlands Contracts for Alpine interface territories?

- **Cross-border and regional cooperation:** In the Alpine region, where rivers, lakes, and wetlands often span multiple countries, cross-border agreements (such as the Roia/Roya French-Italian Transboundary River Contract) can promote coordinated water management, benefiting all involved territories by addressing shared environmental and water resource challenges.
- **Integrated water management:** The contracts foster a holistic approach to water management that incorporates ecological preservation, spatial planning, and hydraulic risk prevention. This is particularly important for the Alpine region, where fragile ecosystems and mountainous terrain require careful management to prevent issues like flooding, erosion, and biodiversity loss.
- **Flexibility across administrative boundaries:** The flexibility of these contracts allows them to operate independently of strict administrative borders, which is ideal for the Alpine territories, where ecological zones and water bodies often overlap various municipalities and regions.

Territories with no specific governance

Opportunities for Alpine interface territories from a governance perspective

Sectoral planning: Water



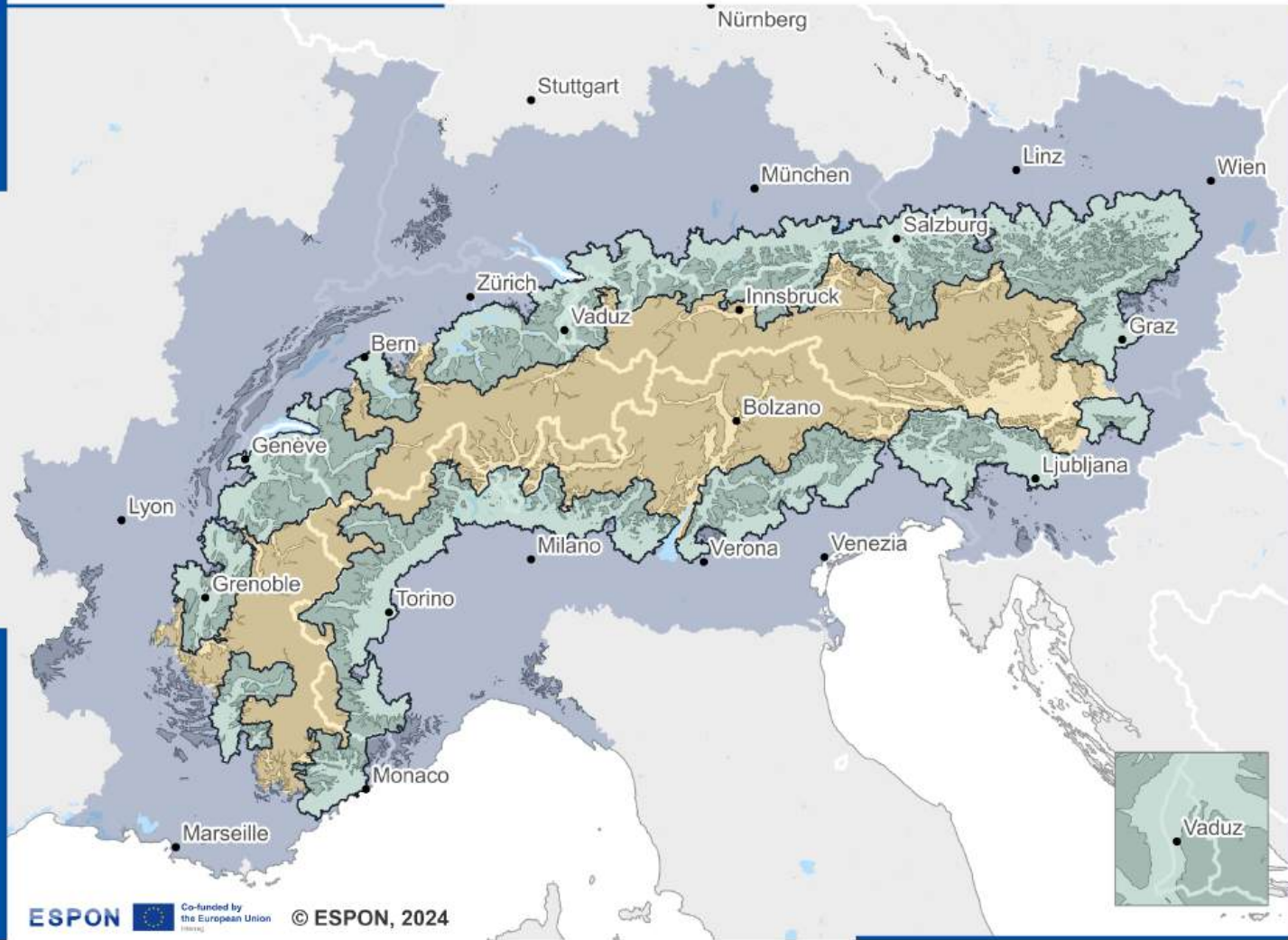
Olona - Bozzente - Lura - Southern Lambro meridionale River Contract. Source: <https://www.contrattidifiume.it/it/contratti-di-fiume/olona-bozzente-lura-lambro-meridionale/>

3

Positioning the spatial category of interface territories





Interface territories, mountain and lowland areas



ESPON  Co-funded by the European Union  © ESPON, 2024

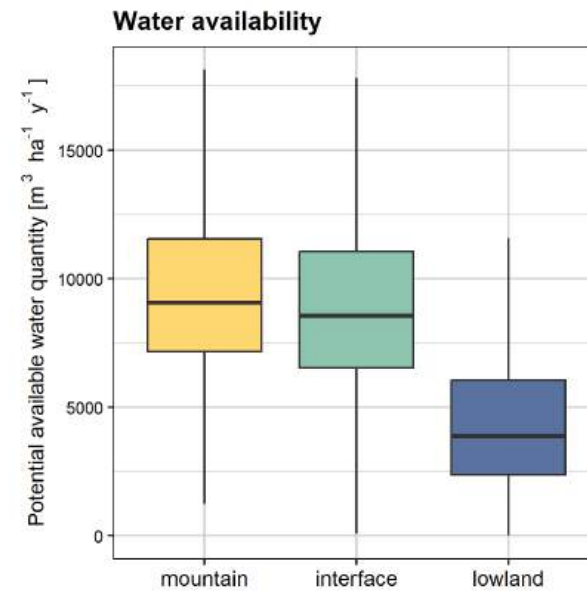
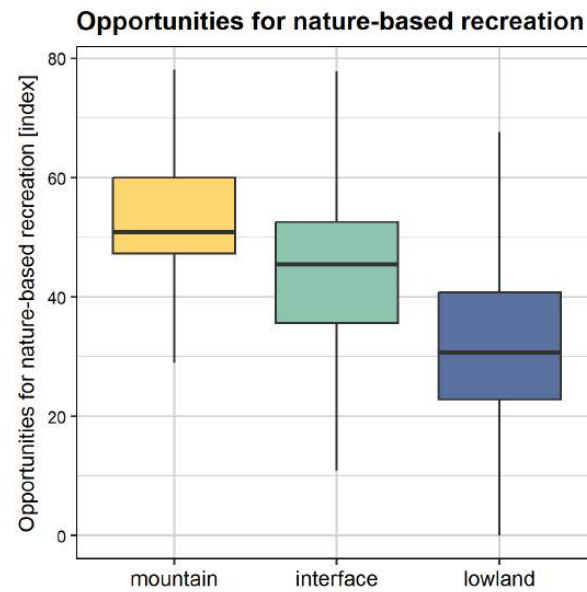
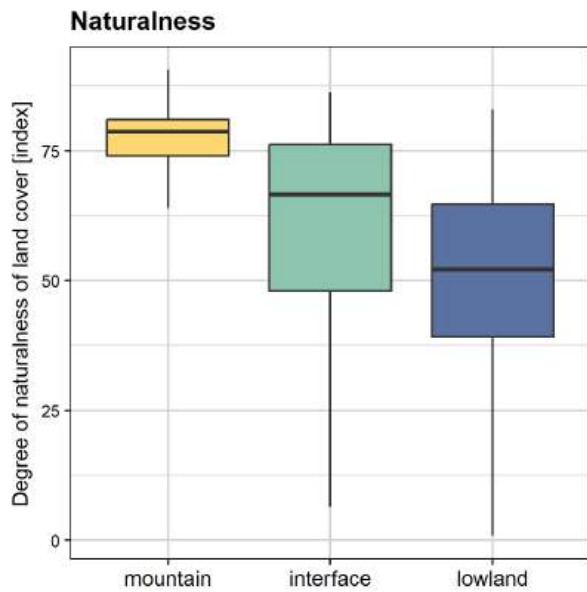
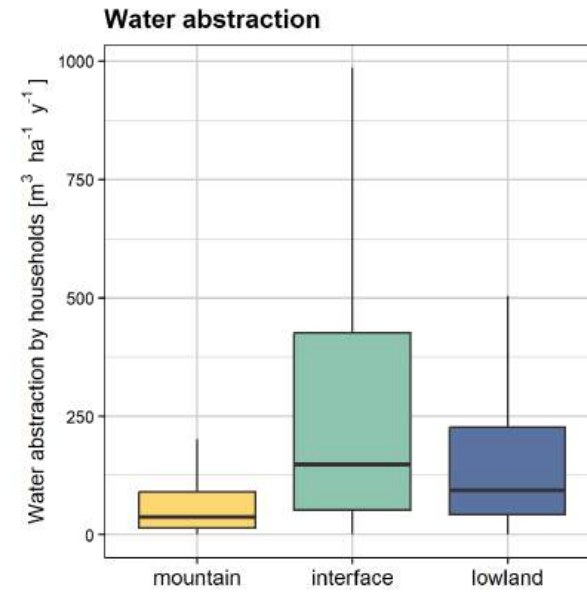
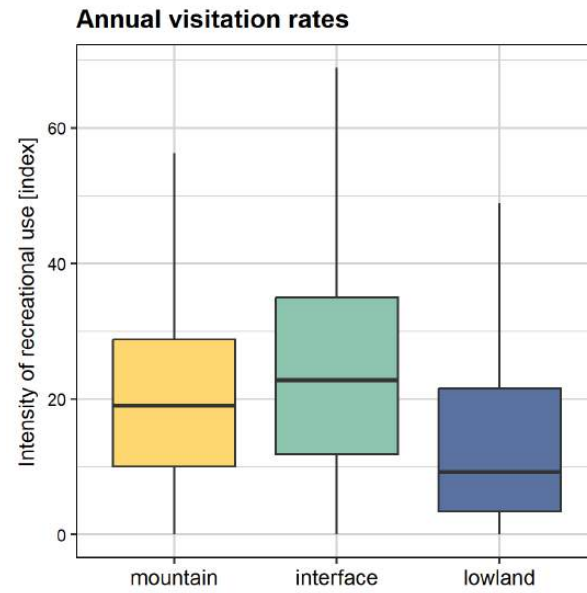
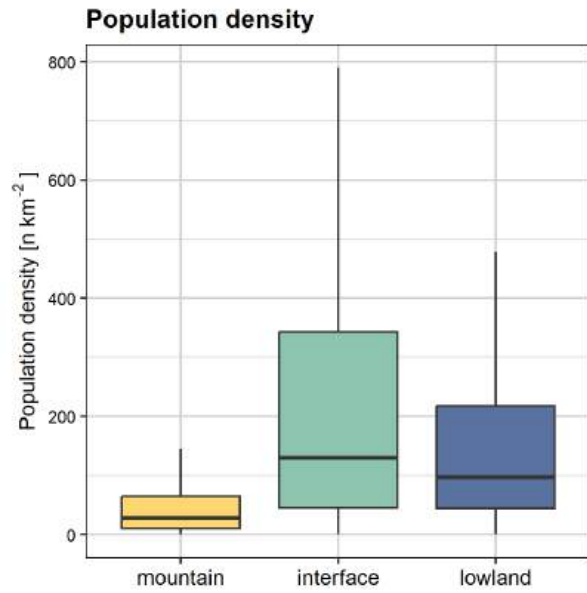
 Interface territories

 High altitude (≥ 1.000 m a.s.l.)

 Mountain areas

 Lowland areas

Regional level: LAU 2021
Source: FAU & Uta Schirpke, ESPON InTerAlp, 2024
Origin of data: own calculations, 2024
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4

The geographical specificities of interface territories



Photo: View from Planken in Liechtenstein over the Alpine Rhine Valley (Elias Günther, 2024).

Summary

- 1) Interface territories are areas with sharp **mountain-lowland contrasts**
- 2) Interface territories are **geographic funnels** and **transalpine gateways**
- 3) Interface territories are area with **common challenges** and **specific roles**



Photo: Andrea Mucelli, CC BY-NC-SA 2.0,
<https://www.flickr.com/photos/bluestardrop/8296928890>



Photo: Agence d'urbanisme de la région grenobloise



Photo: Elias Günther, 2024

5

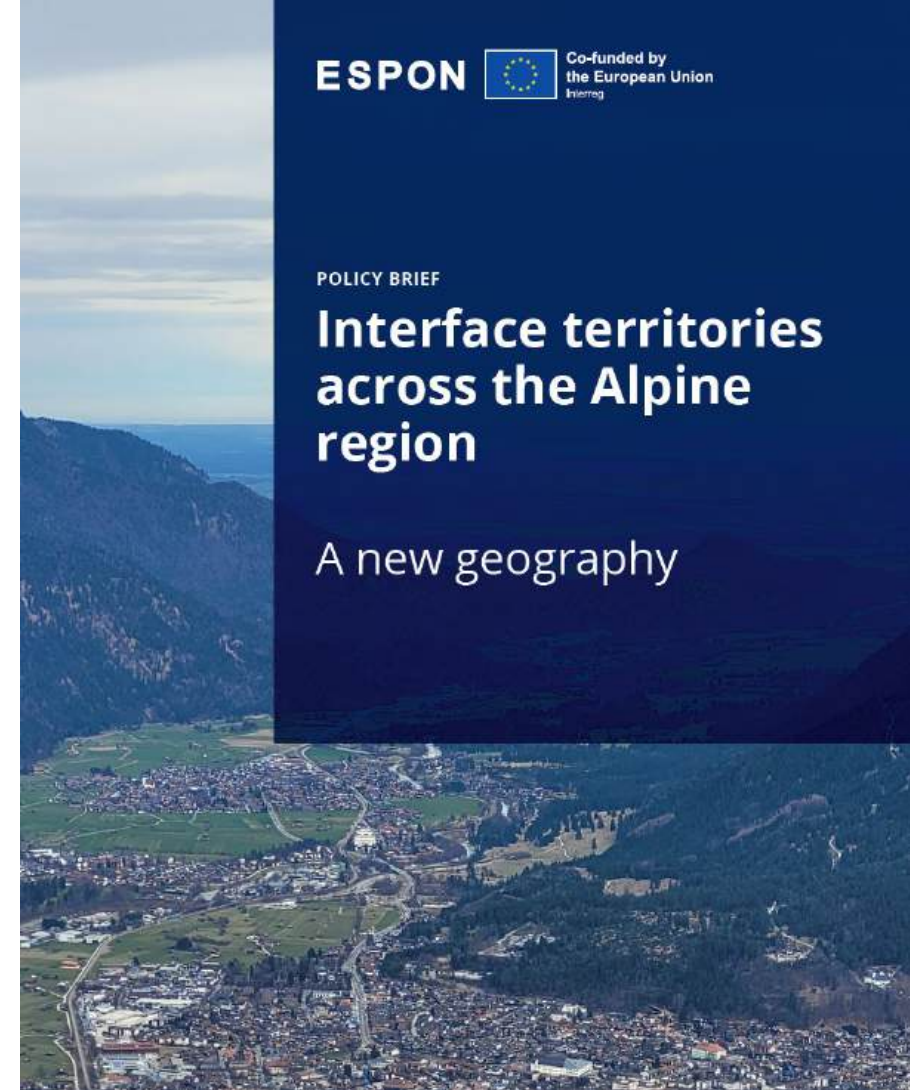
Policy implications



KEY POLICY MESSAGES

1.

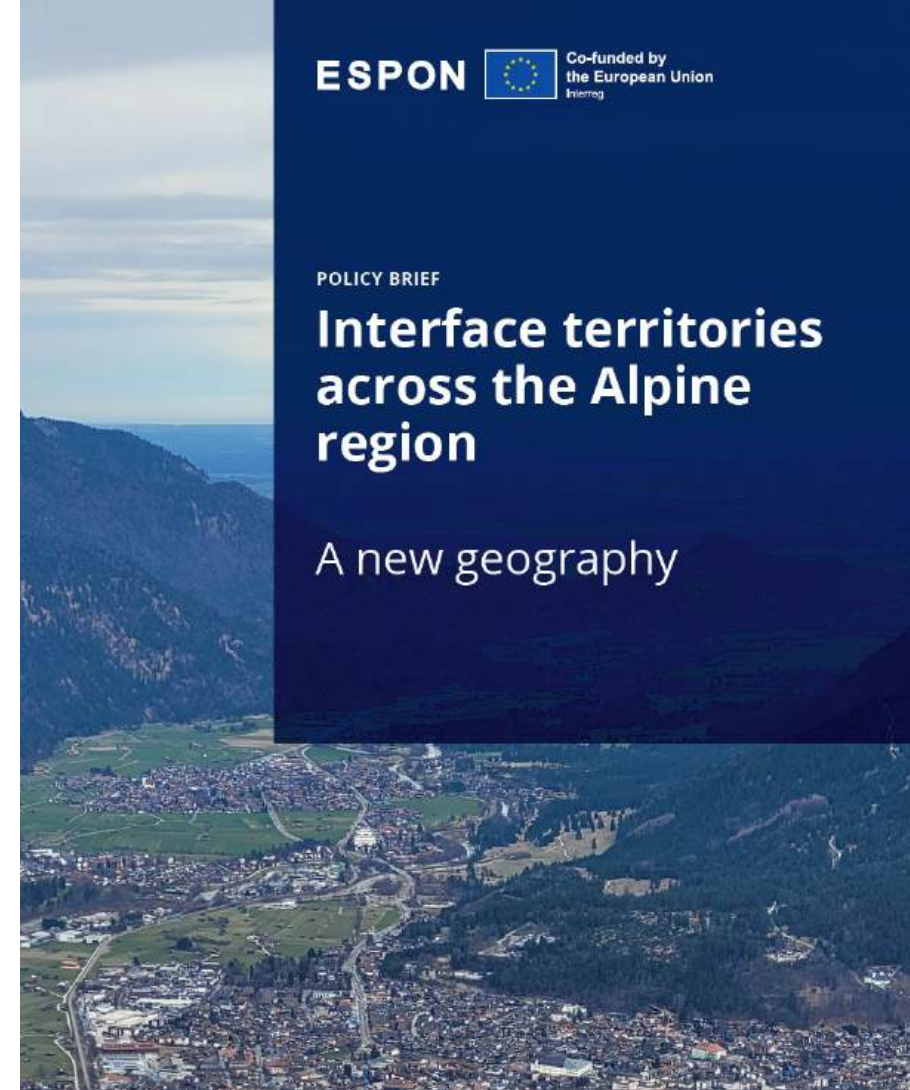
It is essential to **recognise interface areas as a specific geographic category**



KEY POLICY MESSAGES

2.

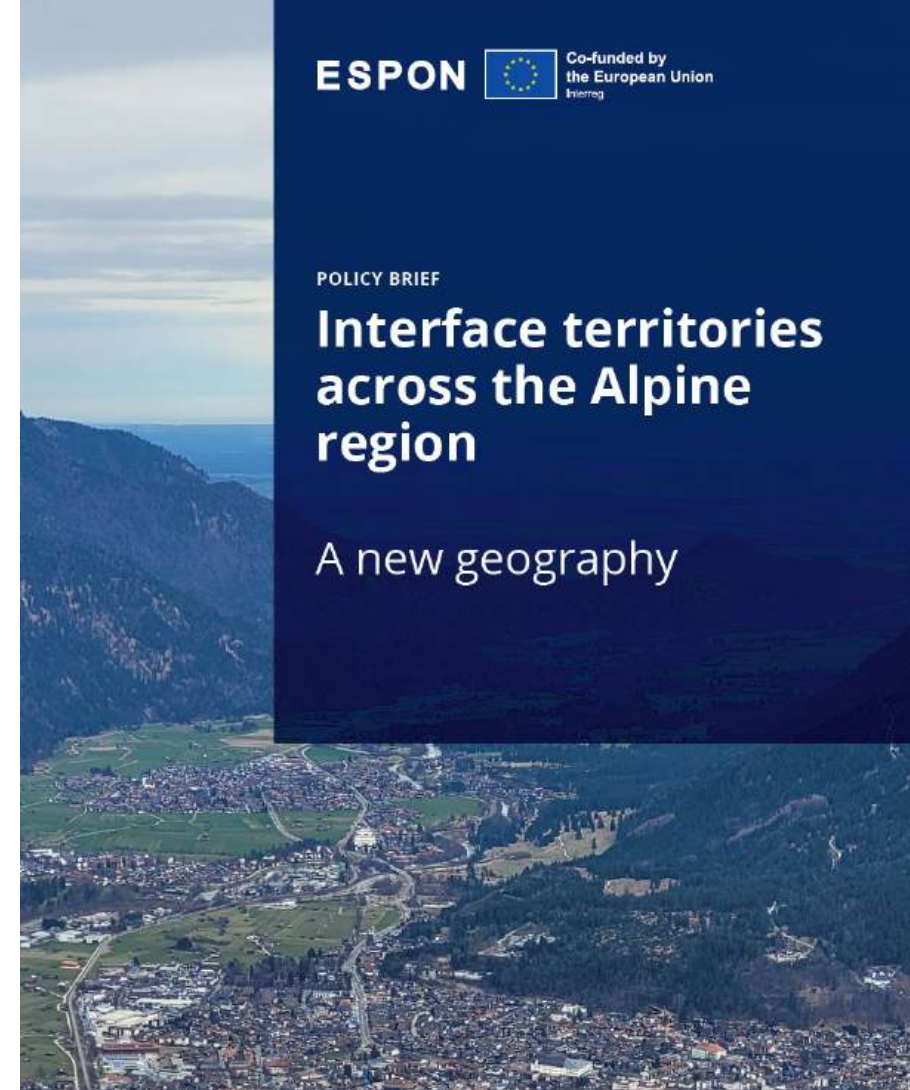
It is crucial to **address the common challenges faced by interface areas.**



KEY POLICY MESSAGES

3.

The **governance of Alpine interface areas** requires a **tailor-made approach**.





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Inspire Policy Making with Territorial Evidence



// Thank you