# #1 Population density

The Austrian-Lichtenstein EUSALP Presidency ⛰️ proudly presents the new format of #EUSALPinMaps. The aim is to present important developments in the Alps region in the perimeter with which EUSALP is dealing with.

Today we present two maps to understand the distribution of people in the Alps. The map *population density* shows the population density of the NUTS-3 regions in the EUSALP territory, while the map *proportional population density* emphasises the most populated regions in a proportional way. This combination highlights some important phenomena that affect the Alpine region:

* In principle, there is an imbalance between rather less densely populated regions in central alpine regions and densely populated areas to the north and south of the Alps.
* This can lead to pressure on the inner Alpine region, e.g. distribution of resources for the leisure industry 🏂, tourism 🚠 or energy production. 💡
* Furthermore, this uneven distribution may increase transalpine transport. 🚚

The centre of the Alps leaves less land available for cultivation, settlement and transport in the centre of the Alps thus exacerbating the situation.

Here are just a few topically relevant projects for the EUSALP space: [LUIGI](https://alpine-region.eu/action-groups-projects/innsieme-a-cross-border-cooperation-for-the-river-inn/luigi-linking-urban-and-inner-alpine-green-infrastructure) and [Going Local](https://alpine-region.eu/action-groups-publications/results-from-the-workshop-going-local-green-infrastructure-meets-climate-change-adaptation).   
  
Further scientific Sources: Alps [2050](https://archive.espon.eu/Alps2050)

Which other projects dealing with such population development challenges do you know of?

#EUSALPinMaps #EUSALP #alpine #cooperation #population #demographic #youthcouncil

# #2 Population change

Today in #EUSALPinMaps, we have a closer look at the population changes in the municipalities of the EUSALP territory. Over the last years, the overall population of the Alps increased from 5% with some distinct trends between the municipalities.

The map shows the *population change* (in %) over the years 2017 to 2023. It depicts that…

* Municipalities in the north of the EUSALP area tend to grow, while those in the south are more likely to lose population.
* A closer look shows more differentiated trends: many urban and suburban regions 🏢 are growing throughout the Alps, whereas more rural / remote regions 🏡 are challenged by a decreasing population.
* An even further detailed look reveals that growing and shrinking municipalities are located next to each other. Even if there is an overall trend, the concrete population development of one municipality is often depending on very local circumstances.

What do you think the population of the Alps will look like in the next 10 years?

Here are some current projects relevant to the EUSALP space: [AlpJobs](https://alpine-region.eu/action-groups-projects/alpjobs) and [PlurAlps](https://www.alpine-space.eu/project/openspacealps-2/)

#EUSALPinMaps #EUSALP #alpine #cooperation #population #macroregion

# #3 Average internet speed

Today in #EUSALPinMaps, we focus on the role of high-speed internet access as a driver for digital transformation in the Alps.

Digitalisation is reshaping the way we live, work and connect. But to fully harness its benefits, fast and reliable internet access is key – especially in the diverse territorial contexts of the Alpine region.

The map below shows the average fixed network download speed (in Mbps) across the EUSALP area at municipal level, with speeds ranging from below 50 to over 250 Mbps and clear patterns emerge:

* **Urban areas** typically benefit from faster and more reliable connections.
* **Rural and remote areas**, on the other hand, often face slower speeds and less reliable service.
* **National policies and infrastructure investments** play a larger role than geography like mountains.

This digital divide has a significant impact. Why?

💡 Over 80%\* of people in the EU use the internet daily, especially young people & city dwellers.  
💼 They rely on it for education, remote work, e-services, online shopping, entertainment, staying connected – basically, everyday life. Not everyone benefits equally. Some people face **challenges due to poor access or lack of digital skills**, leading to a growing **digital divide** – especially in rural or peripheral regions.

**But here’s the opportunity:**The **digital divide** isn’t just a challenge; it’s an opportunity to support remote, rural regions. Through **Smart Villages** and digital public services like **e-Health, e-Governance**, and **e-Learning**, these regions can be vibrant, connected and competitive. However, even as e-services help to improve the quality of life, the functions of the urban centres cannot be replaced.

👉 How do you see digitalisation shaping remote regions in the next decade?

Relevant EUSALP initiatives addressing this topic include:

* [Smart Villages](https://www.alpine-space.eu/project/smartvillages/) – Smart digital transformation of villages in the Alpine Space
* [DiMark](https://www.alpine-space.eu/project/dimark/) – Transnational Network for Linking Digital Earth Observation

\* this and many other insightful information from the [Eurostat regional yearbook 2024](https://ec.europa.eu/eurostat/web/products-flagship-publications/w/ks-ha-24-001)

Further scientific Sources: Chilla, T., Bertram, D. & M. Lambracht (2023): Mapping the Scene: Cartographic sketches linked to the EUSALP cross-cutting priorities – EUSALP Annual Forum organised by the Swiss Presidency. Working Papers FAU Regional Development No. 5.

#EUSALP #DigitalTransition #SmartVillages #Broadband #RegionalDevelopment #AlpineRegion #DigitalAlpsConference

# #4 Population Change and Migration

#EUSALPinMAPS #4 📊 **Population Change &Migration – The Alpine Brain Drain Challenge**

In today’s #EUSALPinMAPS, we take a closer look at the demographic changesacross the Alpine region – based on recent data (2022–2023). The story these maps tell is both complex and crucial for shaping sustainable development strategies.

➡️ **Map 1: Total Population Change (2022–2023)**

This map gives us a first impression of where populations are growing – and where they are shrinking. While some regions show significant gains, others face marked population losses.

➡️ **Map 2: Natural Population Change**

Here, we see the impact of birth and death rates. A worrying trend emerges: most peripheral and rural Alpine regions experience natural population decline.

➡️ **Map 3: Net Migration**

This is where it gets interesting. Migration patterns vary greatly and compensate for the negative natural development in many areas. Urban centres and economically dynamic regions show strong net in-migration. In contrast, isolated or economically weaker areas often see out-migration.

🧠 **Why does this matter?**

The Alpine region is undergoing a silent transformation. It’s not just about shrinking numbers – it’s about **who leaves, who stays, and who arrives**.

Many rural regions are experiencing **brain drain**: mostly young, well-educated people move to urban centres, leaving behind ageing populations and a shrinking local workforce. This trend threatens not only the economic resilience of mountain areas but also their social fabric, public services, and long-term sustainability.

🌄 **A diverse region with diverse needs**

It’s tempting to view the Alps as a single geographic entity – but these maps clearly show how territorial diversity defines demographic dynamics. There’s no one-size-fits-all solution.

* Some regions thrive due to good connectivity, jobs, or quality of life.
* Others fall behind due to isolation, limited services, or lack of future prospects – making them more vulnerable to brain drain and demographic decline.

That’s why **tailored, place-based policies** are essential – especially at the intersection of regional development, labour markets, education, and infrastructure.

💬 **How can we empower remote regions to thrive in the face of demographic change?**

Further scientific sources:

ESPON Alps 2050 (FAU & Eurac) – <https://archive.espon.eu/Alps2050>

Migration patterns in the Alps – <https://bttgcm.github.io/prtfl/enveng/mountain.pdf>

#EUSALP #AlpineRegion #DemographicChange #BrainDrain #RegionalDevelopment #SmartTerritories #RuralFuture #Migration #YouthRetention #AlpinePolicy #EUSALPinAction

# #5 Hydropower and Grid Infrastructure

**💧⚡ #EUSALPinMAPS #5 📊 Hydropower & Grid Infrastructure – Key Enablers of a Cross-Border Renewable Energy System in the Alps**

In this edition of #EUSALPinMAPS, we shift the focus to hydropower and the energy transmissionnetwork – essential building blocks for a secure, renewable energy system in the Alps.

➡️ **Map: Hydropower and Transmission Network**

Hydropower has a long history in the Alpine region – from mills to high-capacity energy hubs. Today, it plays a central role in storing surplus energy from wind and solar, ensuring grid stability.

🔢 The Alps host:

* 1,278 run-of-river plants (37 GWh)
* 91 pumped storage plants (28 GWh)
* 756 reservoir plants (73 GWh)

📍 Most run-of-river plants are aligned along major rivers like the Danube, Rhine and Rhône.  
⛰️ Many pumped and reservoir plants are in the central Alpine region, highlighting the European-level importance of these installations for buffering peak energy demand.

🔌 But energy must also travel:

The transmission network varies greatly between countries — some dense (e.g. Switzerland), others sparse (e.g. Austria–Slovenia border). Especially in inner Alpine zones, the mesh size is low, challenging energy flow and distribution.

📌 Why does this matter?

As wind and solar capacity grows, so too does the need for storage and robust transmission. Alpine hydropower plants offer both – but future expansion raises sensitive questions about ecological impact and landscape integrity.

Planning the future of Alpine energy must go hand in hand with protecting its ecological treasures and social cohesion.

Further scientific sources:

ESPON InTerAlp (FAU, POLITO, ÖIR) - <https://www.espon.eu/sites/default/files/2025-01/interalp_final-report.pdf>

#EUSALP #AlpineRegion #Hydropower #EnergyInfrastructure #Transmission #GridPlanning #Renewables #SustainableDevelopment #SmartTerritories #EnergyTransition #EUSALPinMAPS #EUSALPinAction #EUSALPConference #Bregenz

# #6 Wind Power

**🌬️ #EUSALPinMAPS #6 📊 Wind Energy in the Alps – Balancing Potential and Land Use Conflicts for a Resilient Energy Future**

In this edition of #EUSALPinMAPS, we explore the current state and spatial potential of wind power in the Alpine region — and the territorial conflicts it brings.

➡️  **Map: Wind Power – Current Wind Energy Production in the EUSALP Territory**

Wind energy is gaining ground across Europe: only in 2024 16.4 GW of new capacity were installed. Still, the EU must more than double installations to meet the 2030 renewable energy target of 425 GW.

In the EUSALP area, around 3,500 wind turbines are operating. Thereof,

* 45% are located in Germany
* 40% are located in Austria

🔍 The wind capacity factor—a measure of energy yield potential—highlights favourable zones:

* Strong potential along the Rhône Valley (France), across Germany and Eastern Austria
* Alpine plateaus and higher elevation areas also show promise

⚠️ Yet in inner-Alpine areas, severe conflicts with nature protection, tourism interests, and access constraints restrict wind development. As a result, very few turbines are currently installed in mountainous terrain.

📌 Why does this matter?

Addressing the energy transition in sensitive Alpine landscapes demands regional planning, due diligence, and transparent participation to ensure acceptance.

EUSALP #AlpineRegion #WindEnergy #EnergyTransition #SustainableDevelopment #Renewables #SmartTerritories #ClimateNeutrality #EnergyPlanning #EUSALPinAction #EUSALPinMAPS #WindPower #EUSALPConference #Bregenz

# #7 Education and Brain Drain

#EUSALPinMAPS #7 📊

**Education & Brain Drain – Unlocking Talent to Strengthen Alpine Communities**

In this edition of #EUSALPinMAPS, we explore how educational attainment levels influence migration trends and contribute to brain drain and depopulation across the Alpine region – based on 2023 data.

➡️ **Figure 1: Primary & Lower Secondary Education (2023)**

Regions in Italy show the highest shares of people with only basic education, indicating structural challenges in access to and quality of early education.

➡️ **Figure 2: Upper and Post-Secondary Education (2023)**

This level serves as a bridge to both employment and higher education. Its prevalence varies across the Alpine space, influencing youth transition into qualified work.

➡️ **Figure 3: Tertiary Education (2023)**

Striking disparities emerge, with Zurich leading at 56.8%. High shares of tertiary education are a key asset for innovation, resilience, and economic vitality.

📌 **Why does this matter?**

A well-educated population is crucial for regional development. Yet remote Alpine areas often lack the professional skills needed to manage complex development processes. This vulnerability can limit local capacities and make regions more prone to outmigration.

Brain drain is not only driven by a lack of job opportunities – it is also shaped by factors like quality of life, social infrastructure, and a sense of belonging. Where young people see no future, they leave – often for good.

Empowering mountain regions through education is key to reversing depopulation and building thriving, future-ready communities.

What do you think it takes to make Alpine regions more attractive for young, educated people to stay or return?

#EUSALP #AlpineRegion #Depopulation #BrainDrain #BrainGain #Education #YouthInTheAlps #STEM #RemoteLearning #TerritorialCohesion #EUSALPinAction #SmartTerritories #RegionalDevelopment

# #8 Youth Unemployment

#EUSALPinMAPS #8 📊 Youth unemployment – a core factor behind Brain Drain in the Alps

Today’s #EUSALPinMAPS zooms in on a crucial demographic and socio-economic issue: **youth unemployment**. The maps (2018–2023) reveal not only regional differences, but also the deep impact on migration trends and territorial cohesion in the Alpine Region.

➡️ **Figure 1: Youth Unemployment Rate, 2018**

Youth unemployment was particularly high in the south-western Alps, including parts of France and Italy, while northern and eastern regions generally fared better.

➡️ **Figure 2: Youth Unemployment Rate, 2023**

We see clear progress in many areas. Regions in France, Switzerland, Italy, and Slovenia have successfully reduced youth unemployment rates.

➡️ **Figure 3: Change in Youth Unemployment Rate (2018–2023)**

The trend is encouraging – with noticeable decreases in several regions. But some areas still face high rates, limiting opportunities for young people and fuelling outward migration.

🧠 **Why does this matter?**

Youth unemployment is one of the main drivers of brain drain in the Alpine Region. Young, well-educated people leave their home regions in search of better prospects – rarely returning. This affects not just local labour markets, but the social capital and long-term resilience of entire communities.

🌄 **Urban pull – rural push**

Younger generations concentrate where they can get educated, work, and thrive – typically in urban centres. In contrast, rural and mountain areas often lack of high-quality jobs, vocational and digital training, accessible public infrastructure.

💬 How can we better connect local potential with young people’s aspirations in mountain areas?

Further scientific sources:

Equal Time: <https://www.equaltimes.org/the-emptying-out-of-rural-areas?lang=en>

#EUSALP #AlpineRegion #YouthUnemployment #BrainDrain #RegionalDevelopment #SmartTerritories #YouthRetention #RuralFuture #FutureOfWork #EUSALPinAction #MountainPolicy #Migration #VocationalTraining

# #9 Gendered Unemployment

#EUSALPinMAPS #9 📊 Gendered Unemployment & its impact on depopulation

In this edition of #EUSALPinMAPS, we take a closer look at the gender dimension of unemployment across the Alpine region and its link to regional depopulation trends.

➡️ **Figure 1: Unemployment Rate Difference by Sex (2023)**

This map reveals how unemployment rates differ between men and women across the EUSALP space. A clear country-specific pattern emerges:

* Higher unemployment for women in regions of Italy and Switzerland
* Minimal differences in regions of France and Germany
* Higher unemployment for men in parts of Austria and Slovenia

➡️ **Figures 2 & 3: Male and Female Unemployment Rates (2023)**

These maps present unemployment rates separately by sex across NUTS2 regions, transcending national borders. The data show:

* Higher unemployment at the eastern and western peripheries of the Alpine region
* Lower unemployment in more central areas of Germany, Switzerland, Italy and Slovenia

📌 **Why does this matter?**

Gender-based labour market inequalities are more than a fairness issue – they can amplify rural depopulation. Improving access to employment for both women and men is key to preventing labour force loss and tackling the brain drain in peripheral regions.

🔍 With only 67% of women employed compared to 80% of men across EU rural areas, many young women leave mountain communities in search of better job opportunities. This results in shrinking populations, reduced economic vitality and challenges for public service provision.

Creating inclusive and attractive job opportunities is essential for brain gain & the future of mountain areas – and closing the gender gap is a vital step toward that goal.

💬 Show your perspective! – what does it take to ensure that everyone – regardless of gender – has good job opportunities in the Alpine region?

Further scientific sources:

EESC: <https://www.eesc.europa.eu/en/news-media/news/rural-areas-have-potential-deliver-more>

#EUSALP #AlpineRegion #Depopulation #GenderEquality #Unemployment #RegionalDevelopment #SmartTerritories #RuralFuture #EUSALPinAction #BrainDrain #EUSALPinMAPS #LabourMarkets #NUTS2

# #10 Tourism Intensity

**#EUSALPinMAPS #10 🏔️ Tourism Intensity in the Alps – Where Demand Meets Pressure**

In this edition of #EUSALPinMAPS, we examine tourism intensity across the Alpine region – a key metric that reflects both the economic relevance of tourism and its potential strain on local communities.

➡️ **Map 1: Tourism Intensity (2023)**

This map shows the number of overnight stays per 100 inhabitants at NUTS3 level. The data reveals a clear spatial pattern:

* Particularly high intensities in inner Alpine regions
* A combination of strong tourist demand and low population density in many areas
* Regions with very high intensity may face infrastructure and environmental pressures

➡️ **Maps 2 & 3: Domestic vs. Foreign Tourism**

While the average tourism intensity is similar for domestic and foreign visitors (~400 nights per 100 residents), regional differences are striking:

* Domestic tourism hotspots: Hautes-Alpes, Savoie (FR), Graubünden (CH), Trento (IT), Berchtesgadener Land, Oberallgäu (DE), Liezen & Pinzgau-Pongau (AT)
* Foreign tourism hubs: Tiroler Oberland, Außerfern (AT), Bolzano-Bozen (IT) with up to 10,500 nights per 100 inhabitants – over 25× the average
* In some Austrian regions **foreign guests make up over 94%** of overnight stays

📌 **Why does this matter?**

Tourism is a cornerstone of Alpine economies, particularly in structurally weaker regions. But high intensity can result in **seasonal crowding, pressure on housing market,** and **landscape degradation**.

🌍 Promoting **year-round, nature-based and diversified tourism** can help distribute demand more evenly and safeguard the Alpine environment – making tourism a force for sustainable regional development rather than a burden.

#TourismIntensity #AlpineRegion #EUSALPinMAPS #Overtourism #SustainableTourism #RegionalBalance #NatureTourism #TourismPressure #SmartTerritories #EUSALP #ResilientRegions

# #11 Tourism Capacity

**#EUSALPinMAPS #11 📊 Tourism Capacity in the Alps – Infrastructure Between Opportunity and Responsibility**

The Alpine region is among Europe’s most iconic tourist destinations. But how much infrastructure exists to accommodate all these visitors? In this edition of #EUSALPinMAPS we take a closer look at tourism capacity in the EUSALP area — expressed as the number of tourist bed places per region.

➡️ **Map 1: Total Tourism Capacity (Beds Available)**

* Highlights regions with a high number of beds in tourist accommodation establishments.
* Coastal hotspots along the Mediterranean, especially the French Riviera and Adriatic Coast, dominate due to beach tourism.
* Inner-Alpine highlands with significant capacity include Savoie and Haute-Savoie (France), Graubünden and Valais (Switzerland), Bolzano-Bozen, Trento, Udine (Italy), and Pinzgau-Pongau and Tiroler Unterland (Austria).

➡️ **Map 2: Tourism Capacity Cartogram**

* Rescales regions based on bed capacity, enlarging areas with high tourism infrastructure and shrinking those with less.
* Visually underscores the structural importance of certain Alpine and peri-Alpine regions in the overall tourism system.

📌 **Why does this matter?**

* Tourism infrastructure supports economic development, especially in remote, less accessible regions.
* Even sustainable development of tourism capacity can increase land use.
* Even moderate infrastructure growth may cause land use conflicts, particularly in ecologically sensitive areas or where agriculture and forestry overlap.
* Protected areas like NATURA 2000 hold great potential for soft, nature-based tourism but require careful management to preserve conservation goals.
* Cooperation with local communities and private landowners is essential to balance tourism benefits with ecological integrity.

🌍 How can Alpine regions best manage their tourism capacity to foster sustainable growth while protecting their unique landscapes?

#EUSALP #Tourism #SustainableTourism #AlpineRegion #RegionalDevelopment #Natura2000 #TourismPlanning #EUSALPinMAPS

# #12 Protected Natural Resources

[#EUSALPinMAPS](https://www.linkedin.com/search/results/all/?keywords=%23eusalpinmaps&origin=HASH_TAG_FROM_FEED) #12 🏞 𝗣𝗿𝗼𝘁𝗲𝗰𝘁𝗲𝗱 𝗡𝗮𝘁𝘂𝗿𝗮𝗹 𝗥𝗲𝘀𝗼𝘂𝗿𝗰𝗲𝘀 𝗶𝗻 𝘁𝗵𝗲 𝗔𝗹𝗽𝘀

🌿 **Today EUSALPinMAPS explores the wealth of protected natural areas across the Alpine region** – a vital resource for biodiversity, climate resilience and regional identity.  
National parks, biosphere reserves, nature parks and protected landscapes form the ecological backbone of the Alps. These areas are safeguarded under national protection schemes (CDDA) and through pan-European networks like Natura 2000 and the Emerald Network.

The map shows the protected areas in the Alps by IUCN Categories

🏞️ National parks and species/habitat management areas dominate many mountainous Alpine regions.

🧭 Strict nature reserves and wilderness areas are rare and often embedded in larger national parks.

🌐 Protected landscapes are common in most EUSALP countries but often stop at national borders despite overlapping with cultural heritage areas.

🔍 Why does this matter?

Protected areas secure vital ecosystem services, safeguard biodiversity, and offer recreation and education opportunities. They contribute to climate adaptation and carbon sequestration especially in vulnerable mountain areas. At the same time increasing tourism and infrastructure pressures make integrated, cross-border conservation strategies more important than ever. Their preservation is not only an ecological necessity - it is key to a resilient Alpine future.

💬 **How can Alpine regions better link protected areas with local livelihoods while maintaining their ecological integrity?**

#EUSALPinMAPS #Biodiversity #ProtectedAreas #Natura2000 #NaturalResources #Alps #SustainableDevelopment #CircularEconomy #Resilience

# #13 Cultural asset density

[#𝗘𝗨𝗦𝗔𝗟𝗣𝗶𝗻𝗠𝗮𝗽𝘀](https://www.linkedin.com/search/results/all/?keywords=%23eusalpinmaps&origin=HASH_TAG_FROM_FEED) #𝟭𝟯 - 𝗖𝘂𝗹𝘁𝘂𝗿𝗮𝗹 𝗮𝘀𝘀𝗲𝘁 𝗱𝗲𝗻𝘀𝗶𝘁𝘆

🏛️ After looking at natural heritage last time we now turn to the Alps second great treasure: their rich cultural heritage.

From Roman ruins to rural traditions, the EUSALP space hosts a wealth of tangible and intangible assets that have shaped its identity for centuries. The cultural asset density indicator highlights how concentrated these heritage features are across Alpine tourist destinations.

Map 13 illustrates the Cultural Asset Density per 100 square kilometres:

🎭 The indicator includes museums, sacred architecture, festivals, traditional buildings and even living customs.

🇮🇹 Italy shows a strikingly high density of cultural assets—thanks to its historical depth and well-preserved heritage sites.

🏘️ Dense cultural zones are found in long-settled areas like South Tyrol, the Inn Valley and along the Po Valley margins.

🧭 Many cultural attractions align with historical routes and alpine crossings, reflecting centuries of human activity.

🔍 Why does this matter?

Cultural heritage is not just a legacy—it’s a foundation for future-oriented development. It fosters local pride, supports sustainable tourism and enriches regional economies. But these assets are at risk due to depopulation, land abandonment and underinvestment. Preserving and revitalising them requires cross-sector cooperation, smart planning and local engagement. Their protection strengthens social cohesion, ecological identity and Alpine resilience.

💬 How can cultural assets become stronger pillars of sustainable regional development?

#EUSALPinMAPS #CulturalHeritage #AlpineCulture #SustainableTourism #RegionalIdentity #CulturalAssets #Alps #CircularEconomy #RuralDevelopment #Resilience

# #14 Rewilding Potential

🌿 **EUSALPinMAPS takes a closer look at rewilding potential across the EUSALP space**🌿 Rewilding is no longer a distant vision—it is a valid option for climate-smart land use in the Alpine Region. But where is it most feasible and impactful?

🔍 **EUSALPinMAPS reveals key dimensions of rewilding potential, based on the recently published research article “Where could climate-smart rewilding be done in Europe”:**

🐾 **Ecological potential**: Areas with high geodiversity, intact water systems and rich   
habitat networks are ideal for restoring self-sustaining ecosystems.

🌱 **Carbon potential**: Areas where soil and vegetation could store significantly more carbon under natural cover.

🌄 **Land potential**: Low-conflict zones with low agricultural productivity or abandoned land offering the opportunity for transformation.

These three dimensions are visualised in a set of maps highlighting the multifaceted nature of rewilding feasibility:

* **Map A– Ecological Potential** 🐾 Strong values along the Alpine spine with rugged terrain and intact habitats.
* **Map B – Carbon Potential** 🌱 Scattered patterns across foothills and valleys with high sequestration capacity.
* **Map C – Land Potential** 🌄High potential in peri-Alpine regions especially in Northern Italy, Eastern Austria, and Southern Germany.
* **🧩 Map D – Combined Value**: The map merges all three layers, identifying composite hotspots for rewilding especially along river corridors like the Po and Danube and in remote Alpine areas.

🔎 **Why does this matter?**  
Rewilding integrates biodiversity recovery, carbon storage, and land-use transition into one forward-looking strategy. Identifying areas where all three aspects align helps maximise ecological impact while minimising social conflict. These spatial insights are essential for implementing the upcoming EU Nature Restoration Law and for steering sustainable land use in the Alpine Region.

Yet rewilding also raises important questions:  
How does it relate to traditional Alpine landscapes shaped by active stewardship and grazing? What conflicts may arise with livestock farming—especially where large carnivores like wolves and bears return? And can “wild” ecosystems truly coexist with tourism, which often relies on accessibility and infrastructure?

Rather than a one-size-fits-all solution, rewilding is best understood as a selective and complementary approach—one that can enhance ecological connectivity and resilience, particularly where land-use pressure is low or abandonment occurs. Its success depends on balancing ecological ambition with cultural and economic realities.

📣 Where do you see the greatest opportunities—or challenges—for rewilding in your region?

Further scientific sources:

**Where could climate-smart rewilding be done in Europe:** <https://doi.org/10.1016/j.jenvman.2025.125084>

#EUSALPinMAPS #Rewilding #NatureRestoration #AlpineRegion #SpatialPlanning #ClimateAdaptation #GreenInfrastructure

# #15 Potential Ecological Network

[EUSALP](https://www.linkedin.com/company/eusalp/)𝗶𝗻𝗠𝗔𝗣𝗦 #𝟭𝟱 - 𝗣𝗼𝘁𝗲𝗻𝘁𝗶𝗮𝗹 𝗲𝗰𝗼𝗹𝗼𝗴𝗶𝗰𝗮𝗹 𝗻𝗲𝘁𝘄𝗼𝗿𝗸

🌍 **Ecological connectivity matters – and EUSALPinMAPS shows where it’s needed most**. As land use intensifies and climate change accelerates ensuring the **connectivity of ecosystems** is more urgent than ever. Isolated natural areas can’t function in the long term, because species need space to move, migrate, and adapt 🌱🐾

🔗 That’s where the Interreg Alpine Space project - **PlanToConnect** - comes in:  
It provides a **structural model of ecological connectivity** including components such as:

* **Ecological Conservation Areas (SACA1)**
* **Natura 2000 and Emerald Network sites**
* **Unprotected natural landscapes**

Together these layers create a **macro-regional picture of connectivity** in the EUSALP space revealing where gaps and bottlenecks remain.

🗺️ **EUSALPinMAPS visualises this in the map "Potential Ecological Network"** which highlights:

* **953 potential regional ecological corridors** modelled using least-cost path and current flow methods
* **Bottlenecks** in areas like the Po Valley and peri-urban France where roads, settlements and solar parks disrupt connectivity
* **Unprotected high-value areas** especially in Switzerland, Italy and Slovenia where formal conservation is still missing

🔎 **Why does this matter?**  
The Alpine Region hosts a mosaic of protected and semi-natural landscapes—but many are disconnected. Ensuring **ecological corridors** between them is essential for:

* Species migration and gene flow
* Climate adaptation
* Compliance with the EU Biodiversity Strategy and the Nature Restoration Law
* 🧩 Just like rewilding, connectivity must be addressed at a transnational scale. With over **300 critical linkages at risk from urbanisation**, we need **coordinated action** that bridges sectors and borders.

🌿 Where **are the key corridors in your region—and what stands in their way?**

Further scientific sources:

PlanToConnect: <https://storymaps.arcgis.com/stories/fbb042fc53bc43a6b3bb24dad8cc882f>

#EUSALPinMAPS #EcologicalConnectivity #GreenInfrastructure #PlanToConnect #NatureRestoration #Biodiversity #AlpineRegion #SpatialPlanning #AlpineSpace

# #16 TEN-T Freight Corridor

**EUSALPSinMaps #16 – TEN‑T Freight Corridors**

**EUSALPinMAPS#16** takes a closer look at trans-Alpine freight corridors.  
The Trans-European Transport Network (TEN‑T) is the backbone of Europe’s mobility – connecting regions and markets through multimodal corridors. In the Alpine Region corridors such as Brenner, Gotthard and Fréjus/Mont Cenis form the arteries of long-distance freight flows.

🔹**The Map** shows how these strategic axes structure freight transport and where multimodal hubs – e.g., Innsbruck, Chambéry, Verona – enable modal shift from road to rail. Yet, their benefits are unevenly distributed: many inner-Alpine and rural areas remain weakly connected, highlighting a territorial imbalance.

📍**Regional Development Perspective:**

These disparities are not only about infrastructure – they shape the economic geography of the Alps. Without better integration of hinterlands into the TEN‑T system, entire valleys risk being bypassed. Regional and spatial planning must link local transport systems to European corridors, ensuring sustainable economic development.

💡 Why does this matter?

* 🚄 Sustainable modal shift remains challenging – road transport still dominates in most corridors.
* 🌍 Territorial cohesion is at risk if peripheral regions cannot connect to high-speed infrastructure.
* 🌱 Environmental pressure in sensitive Alpine areas grows as freight volumes increase.

🚀 EUSALP Action Plan supports solutions:  
It promotes better regional integration of TEN‑T corridors, multimodal terminals and ICT-supported logistics chains. For planners, it highlights aligning corridor access with local and regional development strategies.

❓ How can Alpine regions ensure that the benefits of TEN‑T corridors are shared more evenly across territories?

#Corridors #Freight #Transport #Transnational #Logistics

# #17 Road Freight Transport

**EUSALPSinMaps #17 – Road Freight Transport**

**EUSALPinMAPS#17** this time shifts focus from corridors to the regional picture of road freight transport.  
While TEN‑T corridors structure the “backbone” of Alpine freight, regional road freight flows reveal a more fragmented and unequal geography.

🔹**Figures Y & Z** highlight strong concentration in urban and peri-urban industrial areas (loading) and large metropolitan/rural markets (unloading).  
🔹 **Figure ß** (net cargo movement) shows the imbalance between loading and unloading regions: seaports and industry-heavy areas generate flows while many Alpine valleys and remote areas remain destinations with weak connections to multimodal infrastructure.

📍 **Regional Development Perspective:**  
These patterns underscore the dependence of many Alpine regions on road freight and the territorial disparities in access to multimodal hubs. Planning responses must address last-mile connectivity, sustainable logistics in urban areas, and equitable access for peripheral regions.

💡 **Why does this matter?**

* 🚛 Road freight dominates, increasing congestion and ecological pressure.
* 🇨🇭 Switzerland demonstrates with its modal shift policies that alternatives are possible.
* 🌍 Without targeted regional and spatial strategies, Alpine regions risk deepening their dependency on road transport.

🚀 **EUSALP Action Plan supports solutions:**  
It backs modal shift to rail, low-carbon logistics chains and last-mile sustainable transport. For planners, it provides a framework to integrate freight flows into broader regional development and to design resilient, less car-dependent infrastructures.

❓ How can regional development and logistics strategies together reduce Alpine dependence on road freight transport?

[#Freight](https://www.linkedin.com/search/results/all/?keywords=%23freight&origin=HASH_TAG_FROM_FEED) [#Logistic](https://www.linkedin.com/search/results/all/?keywords=%23logistic&origin=HASH_TAG_FROM_FEED) [#Alpine](https://www.linkedin.com/search/results/all/?keywords=%23alpine&origin=HASH_TAG_FROM_FEED) [#Transport](https://www.linkedin.com/search/results/all/?keywords=%23transport&origin=HASH_TAG_FROM_FEED) [#LowCarbon](https://www.linkedin.com/search/results/all/?keywords=%23lowcarbon&origin=HASH_TAG_FROM_FEED) [#Sustainable](https://www.linkedin.com/search/results/all/?keywords=%23sustainable&origin=HASH_TAG_FROM_FEED) [#Corridors](https://www.linkedin.com/search/results/all/?keywords=%23corridors&origin=HASH_TAG_FROM_FEED) [#Territorial](https://www.linkedin.com/search/results/all/?keywords=%23territorial&origin=HASH_TAG_FROM_FEED) [#AlpineRoad](https://www.linkedin.com/search/results/all/?keywords=%23alpineroad&origin=HASH_TAG_FROM_FEED)

# #18 Access to Train Stations by car

**🚗🚆 EUSALPinMAPS#18 Balancing Accessibility and Sustainability: Alpine Rail Access by Car**

EUSALPinMAPS takes a closer look at accessibility in Alpine passenger transport today. The EUSALP space faces complex mobility challenges: fragmented settlements, mountainous terrain and ecological sensitivity make sustainable travel difficult. Car-based access to rail stations dominates, particularly in inner-Alpine and peripheral areas, reinforcing dependence on private vehicles. This also connects to the TEN-T corridors we explored last time showing how multimodal infrastructure can reduce car reliance.

📊 **The Map: Average Travel Time by Car to Nearest Rail Station**

🚗 Travel times exceed 30 minutes in many remote areas highlighting limited accessibility.

🏔️ Inner peripheries often suffer from diminished access to core services.

📍 Spatial planning perspective: Integrating local transport systems with TEN-T corridors is crucial to improve accessibility, reduce car dependency and connect remote valleys to regional and European networks.

💡 **Why does this matter?**

* Low-density and ageing populations make traditional public transport economically challenging.
* Seasonal tourism peaks create demand surges that systems struggle to absorb.
* Persistent car dependence increases emissions and land-use pressure.
* Governance fragmentation across municipalities and national borders complicates coordinated planning, timetable integration and effective mobility solutions.

❓ How can Alpine regions improve car-to-rail access while balancing sustainability, service coverage and governance complexity?

#EUSALPinMAPS #PassengerTransport #AlpineMobility #SustainableTransport #TEN\_T #RegionalConnectivity #Alps #SmartMobility #ClimateAction #RailAccessibility #SustainableMobility

# #19 Urban Access to Public Transport

**EUSALPinMAPS#19 Walking to Mobility: Urban Public Transport in the Alpine Region**

**🚏** One week later, EUSALPinMAPS highlights public transport accessibility in Alpine cities. While urban areas often provide close access to bus, tram, metro and train stations, smaller towns and peri-urban zones face uneven service frequency and coverage. Car dominance persists where public transport is limited, increasing emissions and reducing sustainable mobility options.

📊 **The Map: Accessibility of Public Transport in Urban Areas**

🏙️ Most larger cities have coverage for near to 90% of residents.

🚶 Smaller towns often lack reliable service limiting mobility for low-income and non-driving populations.

📍 Regional development perspective: Improving walking access, service frequency and integration across municipalities ensures urban transport supports social equity and sustainable mobility.

💡 **Why does this matter?**

* Fragmented coverage limits mobility for many residents.
* Car dominance persists raising emissions and land-use pressure.
* Low-income and non-driving populations face inequities in access.
* Governance fragmentation in coordination of timetables, ticketing and network planning complicates consistent and reliable public transport across urban and peri-urban areas.

❓ How can urban and regional planning ensure equitable, sustainable public transport coverage for all residents in the Alpine space?

#EUSALPinMAPS #UrbanMobility #PublicTransport #AlpineCities #SustainableTransport #SmartMobility #RegionalDevelopment #ClimateAction #SocialEquity #UrbanAccessibility

# #20 Warte Abstraction

# EUSALPinMAPS#20 **Water as a Resource - Understanding Water Demand Across the Alps** The Alps are Europe’s water tower—storing and feeding freshwater to millions downstream. Today EUSALPinMAPS explores water abstraction across the Alpine Region. Balancing water demand and supply is becoming increasingly critical. While the Alps generate vast amounts of freshwater the pressures from households, agriculture, tourism and energy are unevenly distributed across the EUSALP space.

📊 *The Map: Water Abstraction by households*

🌆 Demand hotspots concentrate in lowland and metropolitan areas such as Lombardy, Veneto, the Swiss Plateau and major agglomerations like Vienna, Munich, Lyon and Ljubljana.

🚜 Agricultural irrigation adds further pressure in peri-Alpine and foothill regions.

🏔️ Within the Alpine arc abstraction levels remain comparatively lower but they are increasingly linked to seasonal peaks from tourism and snow-making.

📍Regional development perspective

Water abstraction is not just a technical issue of meeting demand with the available supply, it directly shapes land use and local economies. Competing demands from agriculture, tourism, households and energy production make water governance a territorial balancing act.

Why does this matter?

💧 Water scarcity risks: High demand coincides with increasing droughts and heatwaves.

⚡ Conflicts of use: Irrigation, snow-making, water supply and hydropower compete for the same resource.

🏙️ Urban pressure: Growing metropolitan regions amplify extraction needs.

🧩 Governance challenge: Water flows across regions and borders but management often remains fragmented.

⚠️ Effects: Communities in downstream lowlands are especially affected by water abstraction, as they face increased competition both with upstream water use and also locally for limited resources during periods of drought and peak demand.

💬 How can Alpine regions balance water demand between households, agriculture, tourism and energy without undermining ecosystem resilience or compromising the protection of sensitive natural areas?

Scientific Sources:

AlpES, 2018 - <https://www.alpine-space.eu/project/alpes/>

ESPON InTerAlp, 2024 - <https://www.espon.eu/projects/interalp-interface-territories-across-alpine-region>

#EUSALPinMAPS #WaterDemand #AlpineWaterManagement #SustainableWater #WaterResources #ClimateAdaptation #TerritorialPlanning #EUSALPCoPresidency

# #21 Water Availability

EUSALPinMAPS#21 **The Alps as Europe’s Water Tower - Mapping Europe’s Alpine Water Supply**

Today, EUSALPinMAPS focuses on water availability showing how Alpine mountains act as supply zones for Europe’s rivers, ecosystems and communities. The Alps are the source of Europe’s major rivers. Their snowpack, glaciers and rainfall generate the runoff that sustains ecosystems, agriculture, energy and cities far beyond the mountain arc.

📊 *The Map: Water Availability (average annual surface water runoff)*

⛰️ High-elevation ranges such as the Swiss Alps, the French Alps and the Italian-Slovenian border supply large volumes of freshwater runoff.

🌊 These Alpine sources feed Europe’s major river basins: Rhine, Po, Rhône, and Danube.

🌍 Water availability is highest in the Alpine mountains while lowlands depend heavily on these upstream supplies.

📍 Regional development perspective

Water availability shapes downstream economies and land uses far beyond the Alps. Decisions on hydropower, hazard zones and tourism in mountain regions directly affect agriculture, industry and households in lowland areas.

Why does this matter?

🌿 Ecosystem resilience: Alpine runoff sustains biodiversity and ecosystem services.

⚡ Energy production: Hydropower relies on predictable flows threatened by climate extremes.

🚰 Interregional dependence: Lowland metropolitan regions depend on Alpine water sources.

🧩 Governance challenge: Cross-border coordination is essential to manage shared rivers and reservoirs.

💬 How can Alpine countries strengthen cross-border governance to secure sustainable water supply from Europe’s “water tower”?

Scientific Sources:

AlpES, 2018 - <https://www.alpine-space.eu/project/alpes/>

ESPON InTerAlp, 2024 - <https://www.espon.eu/projects/interalp-interface-territories-across-alpine-region>

#EUSALPinMAPS #WaterSecurityAlps #FreshwaterSupply #AlpineRegion #EcosystemServices #ClimateResilience #EUSALPCoPresidency

# #22 Climate Change

EUSALPinMAPS#22 **Dealing with climate change impacts – Adapting Alpine territories to rising heat extremes**

The Alps are a climate change hotspot—warming at twice the global average. Among the many risks, heat stress is emerging as a major challenge especially in lowland and peri-Alpine areas. Strong heat stress occurs when temperatures rise above 32°C

📊  **Figure 1: Heat Stress in 2024**

🏞️ The Po Valley faced more than 80 strong heat days in 2024, with temperatures above 32°C.  
🇸🇮🇫🇷 Slovenia and France show up to 60–80 heat days, making them hotspots of thermal stress.

🏔️ Inner-Alpine valleys and foothills were less challenged, with only 10–30 heat days.

📊 **Figure 2: Change in Heat Stress (1995–2004 vs. 2024)**

⏳ Over the past 20 years strong increases in heat stress were observed in Slovenia, Southeastern Austria and Southern France—up to +30 additional days.

🏔️ In contrast most mountainous regions recorded little to no increase showing a clear territorial divide.

📍 Regional development perspective  
Heat stress is not only a health challenge. It affects productivity, tourism and liveability. Vulnerable groups (elderly, outdoor workers) face higher risks while regional disparities grow between urbanised lowlands and cooler Alpine valleys.

Why does this matter?

🌡️ Human health: Sustained exposure above 32°C raises risks for vulnerable groups.

🏙️ Urbanisation: Cities amplify heat stress through heat islands.

🌍 Territorial imbalances: While mountain regions remain less affected, peri-Alpine areas face disproportionate risks.

🧩 Governance challenge: Adaptation remains fragmented across borders, making coordinated Alpine-wide responses difficult.

💬 How can Alpine regions strengthen coordinated adaptation to heat stress across national and regional borders?

Further Information on Heat Stress: <https://climate.copernicus.eu/heat-stress-what-it-and-how-it-measured>

#EUSALPinMAPS #ClimateChange #HeatStress #AlpineRegion #UrbanResilience #ClimateChangeImpacts #ClimateAdaptation #ExtremeHeat #ThermalStress

# #23 Drought

EUSALPinMAPS#23 **Drought impact – Safeguarding ecosystems and communities under growing drought pressure**

Another major climate risk for the Alpine Region is drought. Beyond immediate water shortages, droughts reduce soil moisture, weaken forests, threaten agriculture and increase wildfire risk.

📊 The Map: Average drought impact area (2000–2023)

🌾 In Slovenia, Southeastern Austria, parts of France and Germany, 4–10% of land area faced yearly drought impacts.

🏔️ Alpine mountains show comparatively lower drought stress, but impacts are expanding into mid-altitude slopes and valleys.

🚜 Agriculture and forestry are particularly exposed, with knock-on effects on biodiversity and water security.

📍 Regional development perspective

Drought is no longer limited to traditionally arid zones, it increasingly affects landscapes once thought resilient. This shift challenges local economies, water management and ecological stability across the EUSALP space.

🔍 Why does this matter?

🌿 Ecosystem services: Reduced water availability disrupts carbon storage, soil fertility and biomass production.

🔥 Risk multiplier: Drought amplifies the likelihood of forest dieback and wildfires.

🥛 Water security: Competing demands from agriculture, households and industry increase tensions.

🧩 Governance challenge: Droughts cross borders but adaptation strategies remain fragmented and unevenly developed.

💬 How can Alpine regions build more resilient, cross-border drought management strategies?

#EUSALPinMAPS #ClimateChange #DroughtImpact #WaterSecurity #AlpineResilience #ClimateRisk #ClimateAdaptation #WaterSecurity

# #24 Built-Up Ratio

🏔️ Between mountain slopes and valley floors space is running out. The Alps’ limited settlement areas are increasingly covered by buildings and infrastructure—leaving less room for soil, nature and agriculture to breathe.

Today EUSALPinMAPS#24 explores the built-up ratio, showing how much land is already urbanised and where artificial surfaces are most present.

**The Map: Built-up Ratio**

📖 The “Built-up Ratio” describes the percentage of “artificial surfaces” as defined by category 1 of Corine Land Cover, on the total land surface.

🌆 Municipalities within major agglomerations show the highest built-up ratios—often over 50% of the total land surface is bult-up.

🏘️ The most densely developed zones include Vienna, Milan, Zürich and Stuttgart, while smaller values are found around Munich, Nuremberg or Graz.

🏔️ Remote and high mountain areas remain largely unaffected with only minimal artificial surfaces due to steep topography and hazard exposure.

📍 **Regional development perspective**

Land is a finite resource in the Alps. Where settlement, agriculture and infrastructure compete for the same space, land-use conflicts intensify. Urbanisation in accessible valleys coincides with soil sealing while remote regions face depopulation and land abandonment—creating a dual pressure on Alpine territories.

**Why does this matter?**

🏗️ Soil sealing**:** New settlements reduce fertile land and impairs water regulation.

🌄 Spatial imbalance: Dense lowlands face land scarcity, while high-altitude areas are underused.

🌱 Ecosystem pressure: Fragmented landscapes weaken biodiversity and ecosystem services.

🧩 Governance challenge: Spatial planning remains fragmented; no Alpine-wide system monitors or coordinates land use sustainably.

💬 How can we ensure that land consumption doesn't undermine soil protection goals?

EUSALPinMAPS #SoilProtection #LandUse #UrbanDevelopment #SustainablePlanning #AlpineRegion #TerritorialGovernance #LandTake #EUSALP

# #25 Change in Built-Up ratio

🏔️Across Alpine valleys and foothills landscapes are changing. Expanding towns and infrastructure slowly transform fertile land into artificial surfaces—challenging the balance between development and soil protection.

EUSALPinMAPS#25 focuses on changes in land take, revealing how fast agricultural and natural areas have been converted into built-up zones.

**The Map: Change in Built-up Ratio (2000–2018)**

🏙️ Strong increases appear in suburban belts around major cities such as Milan, Lyon and Vienna.

🚧 Dynamic development hotspots include the Po Valley, Lake Como, Upper Austria and the Rhône corridor.

🇨🇭 In contrast, many Swiss municipalities show only minor growth in built-up land reflecting stricter spatial regulation.

📍**Regional development perspective**

New construction areas increasingly extend into peri-urban and rural zones. The resulting loss of agricultural land and natural surfaces reduces the resilience of Alpine ecosystems and threatens long-term food security. At the same time remote regions struggle with land abandonment and loss of management leading to ecological imbalance.

**Why does this matter?**

🌍 Territorial fragmentation: Incremental land take erodes landscape coherence.

🚜 Loss of fertile soil: Conversion of agricultural land reduces local food production capacity.

🏘️ Planning dilemma: Expanding infrastructure often conflicts with flood safety, biodiversity and soil functions.

🧩 Governance challenge: Land use policies differ across countries—limiting coordinated transnational action on soil protection.

💬 Urban sprawl continues to reshape the Alpine landscape—but are local planning systems adapting fast enough to prevent irreversible land take?

#EUSALPinMAPS #LandTake #SoilProtection #UrbanSprawl #SustainableLandUse #EUSALP #RegionalDevelopment #LandTake #SpatialPlanning #Alps

# #26 University Enrolment

*EUSALPinMAPS#26* **University Enrolment: Mapping the Geography of Knowledge**Today, EUSALPinMAPS explores university enrolment across the Alpine space.  
Universities do more than educate — they *anchor regional innovation*.  
Across the Alpine Region, university enrolment reflects where research and talent creation are concentrated — and where territorial gaps persist.  
***The Map: University enrolment***🏙️ *Major urban centres in the pre-Alpine lowlands host the largest student populations: Milan, Lyon, Vienna and Munich. These* form powerful knowledge clusters driving innovation and economic activity. *🏔️* Few inner-Alpine cities reach comparable levels. Innsbruck, Trento, Bolzano/Bozen, Lugano, and Chur are vital academic hubs, yet their limited scale highlights how many valleys remain distant from higher education opportunities.

📍 Regional development perspective *Research institutions anchor innovation ecosystems. In smaller towns and Alpine valleys they can drive local entrepreneurship, knowledge-based economic diversification and smart specialisation strategies.*

*Why does this matter?  
🎓 Education access:* With only a handful of universities and limited enrolment capacity, many Alpine valleys offer few opportunities for local students to access higher education.   
*🚀 Innovation potential: Without research infrastructures, peripheral areas struggle to develop new technologies or attract talent.  
🏔️ Territorial cohesion: Unequal access risks further marginalisation of remote Alpine communities.*

*💬* How can Alpine regions expand access to higher education to strengthen innovation beyond the major cities?

*#EUSALPinMAPS #AlpineInnovation #Universities #RegionalDevelopment #KnowledgeEconomy* #Innovation

# #27 Employment in science and technology

EUSALPinMAPS #27 **Science & Technology Employment: The Innovation Divide**

Today EUSALPinMAPS focuses on employment in science and technology. Innovation in the Alps isn’t evenly spread — it’s shaped by geography.Science and technology jobs reveal where R&D thrives — and where the gaps remain.

**The Map: Employment in science and technology**

🔬 Regions such as Rhône-Alpes, Lombardia and Oberbayern host the highest absolute numbers, some with over 30% of their labour market in science and technology.

🏔️ Mountainous and rural regions often lack universities and R&D facilities — limiting access to qualified labour, entrepreneurship, and innovation funding. This concentration risks reinforcing *knowledge peripheries* and territorial imbalances.

📍Regional development perspective:

High-tech sectors and research employment stimulate local innovation ecosystems, attract skilled labour and support entrepreneurship. Their absence in remote areas creates structural imbalances across the Alpine Region.

Why does this matter?

💼 Job opportunities: Limited high-tech employment reduces local career prospects.

🌱 Innovation gaps: Peripheral areas miss out on knowledge spillovers and collaboration.

🏔️ Territorial imbalance: Concentration in urban hubs reinforces disparities between lowlands and Alpine valleys.

🌐 Resilience: Access to research-driven jobs and clusters strengthens regional economic resilience.

💬 How can we connect the innovation power of Alpine cities with the potential of rural and mountainous regions?

#EUSALPinMAPS #ScienceAndTech #AlpineInnovation #RegionalDevelopment #KnowledgeEconomy #ScienceAndTechnology #SmartSpecialisation

# #28 CO2 emissions per capita

EUSALPinMAPS #28 **CO₂ emissions per capita — decarbonisation starts locally**

Today, EUSALPinMAPS explores municipal CO₂ emissions across the Alpine Region. Decarbonisation is not only a global or national challenge — it is inherently territorial. Municipalities influence emissions through buildings, mobility and spatial planning, yet the Alpine Region presents unique complexities due to climate, topography and settlement patterns. To assess these differences, a harmonised methodology captures heating, electricity and transport emissions, creating spatialised CO₂ per capita inventories that highlight where mitigation efforts are most urgently needed.

**The Map: Municipal CO₂ Emissions**

Most municipalities emit under 10 tonnes of CO₂ per capita per year, either due to low population or higher density helps offset emissions.

**Hotspots:**

🏭 Industrial municipalities such as Schwechat (AT) or Fos-sur-Mer (FR) show extremely high CO₂ emissions.

🚙 Small remote municipalities often have high per capita emissions due to heating needs and car dependency.

📍 **Regional development perspective**

Decarbonisation is a spatial challenge. Where people live, work, and move affects energy use and emissions. Compact settlements and efficient mobility systems are key, especially in mountainous regions where natural constraints limit space.

**Why does this matter?**

🌍 Climate neutrality: Municipal action is essential to meet EU climate targets.

📈 Evidence-based planning: Territorial CO₂ data guides targeted mitigation efforts.

🏔️ Regional justice: Small municipalities need support to overcome resource gaps and structural barriers.

🌐 Policy coherence: Cross-border collaboration and multilevel coordination are vital for a coherent decarbonisation strategy.

Further Information on estimating CO₂ emissions: [*https://essd.copernicus.org/articles/14/845/2022/*](https://essd.copernicus.org/articles/14/845/2022/) and to the interactive map: [*https://openghgmap.net/*](https://openghgmap.net/)

💬 How can Alpine municipalities accelerate decarbonisation while accounting for spatial constraints?

#EUSALPinMAPS #Decarbonisation #AlpineRegions #CO₂Emissions #ClimateAction #RegionalDevelopment *#EnergyTransition #ClimateNeutrality*

# #29 Employment in Agriculture & the Changing Alpine Landscape

EUSALPinMAPS #29 **Employment in Agriculture & the Changing Alpine Landscape**

Today EUSALPinMAPS explores employment in agriculture, forestry and fishing across the Alpine Region. These sectors continue to shape Alpine landscapes and cultural identity, yet their economic weight is shifting across the region. Let us take a closer look at the maps!

Map 1: **Employment in agriculture, forestry and fishing in 2012**

👩‍🌾 High employment shares in rural and peripheral regions especially in Slovenia and southern/northern Austria.

🏔️ These areas rely strongly on small-scale often family-run farms.

Map 2: **Employment in agriculture, forestry and fishing in 2022**

🏙️ Urbanised and industrialised Alpine corridors show consistently low shares reflecting ongoing economic diversification.

📉 In many regions the primary sector’s relative importance continues to decline.

Map 3: **Change in employment 2012–2022**

📉 Strongest decreases appear along Austria’s northern and south-eastern borders, across Slovenia and in eastern Bavaria, regions that already had comparatively high shares in 2012.  
📈 Slight increases emerge in parts of Italy and France where agricultural and forestry activities regained modest importance.

**📍Regional development perspective**

The spatial patterns highlight the distinct territorial dynamics of Alpine primary sectors. Fertile valley floors face rising competition from urbanisation, tourism and infrastructure. Mountain and upland areas rely more on extensive grazing, forestry and multifunctional land use which is vital for biodiversity, cultural landscapes and protective ecosystem services.

**Why does this matter?**

🌾 Rural resilience: Declining employment risks weakening the economic base of remote Alpine regions.

🌄 Landscape stewardship: Agriculture and forestry maintain ecological and cultural functions essential for mountain territories.

🔄 Circular bioeconomy: Strengthening sustainable value chains depends on viable primary sectors across the Alps.

💬 How can Alpine regions support agricultural and forestry employment while managing land-use competition and demographic change?

#EUSALPinMAPS #Agriculture #Forestry #Fisheries #AlpineRegions #RuralDevelopment #LandUse #Bioeconomy

# #30 Organic Farming

EUSALPinMAPS #30 **Organic Farming: A Territorial Trend Across the Alps**

Today EUSALPinMAPS shows the spatial distribution of organic farming in the Alpine Region. Organic agriculture plays an increasingly important role in sustainable resource management, aligning with the “cradle to cradle” principle and supporting biodiversity, soil health and resilient regional food systems.

The Map: **Share of organic farms**

🌿 High shares (often exceeding 50%) stretch across much of Austria, Switzerland, southern Germany and western France, signalling a strong shift toward environmentally conscious farming.

🌱 Significant organic farming clusters also appear in southern Slovenia, parts of Italy north of Genoa and along the French Mediterranean coast.

🚜 Low shares are found in the pre-alpine lowlands of Germany, France and Italy as well as some mountainous parts of Italy and western France.

**📍Regional development perspective**

Organic farming expands most where land-use intensity is lower and multifunctional landscapes dominate. In contrast lowland areas with strong competition for fertile soils or intensive production models show slower uptake.

**Why does this matter?**

🌍 Environmental resilience: Organic farms support biodiversity, soil fertility and climate adaptation.

🔁 Circular value creation: They contribute to localised sustainable value chains aligned with Alpine ecological limits.

🏔️ Regional identity: Organic farming reinforces the cultural and environmental uniqueness of Alpine landscapes.

💬 How can Alpine regions support a more balanced transition toward organic and sustainable farming practices?

#EUSALPinMAPS #OrganicFarming #SustainableAgriculture #AlpineRegions #Biodiversity #CircularEconomy