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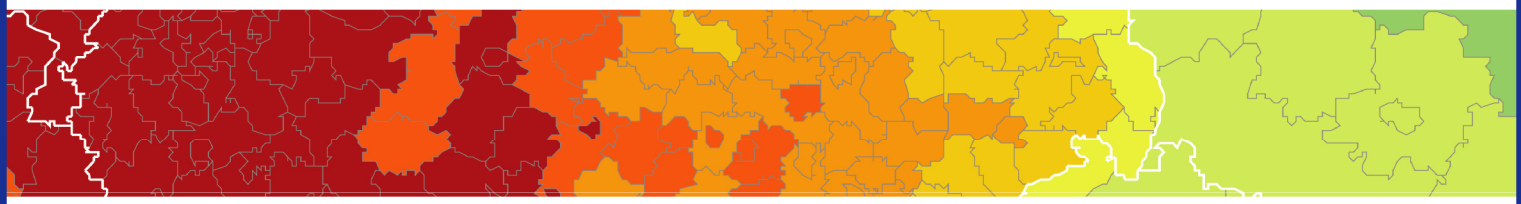

Alps2050

Common spatial perspectives for the Alpine area. Towards a common vision

Targeted Analysis

Scientific Annex

21.11.2018

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Alps2050
Common spatial perspectives for the Alpine area. Towards a common vision

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1 Overview: Methodological operationalisation

The Alps 2050 project basis is threefold (see Fig. 5). Firstly, and typical for an ESPON project, territorial evidence stands in the forefront. Quantitative indicators, regional statistics, and cartographic representations build a solid basis for scientific analysis and for political reflection.

Secondly, political frameworks and spatial development systems throughout the multi-level governance system play an important role. Political documents, institutional publications and scientific reflections are the main resources in this regards.

Thirdly, participatory elements are of particular importance for the development of the territorial vision. There is certainly some common ground for future spatial development as well as competing agendas. Developing a spatial vision for the Alps means to take the multiplicity of development options seriously. It is necessary to address the multitude of exisiting ideas/concepts/processes of Alpine development and policies, as an important background to the current discussion.

These three elements have to be combined in terms of an 'iterative triangulation': Findings from the different methodological steps are positioned towards other methodological results, following the qualitative principles of transparency, traceability, and plausibility.

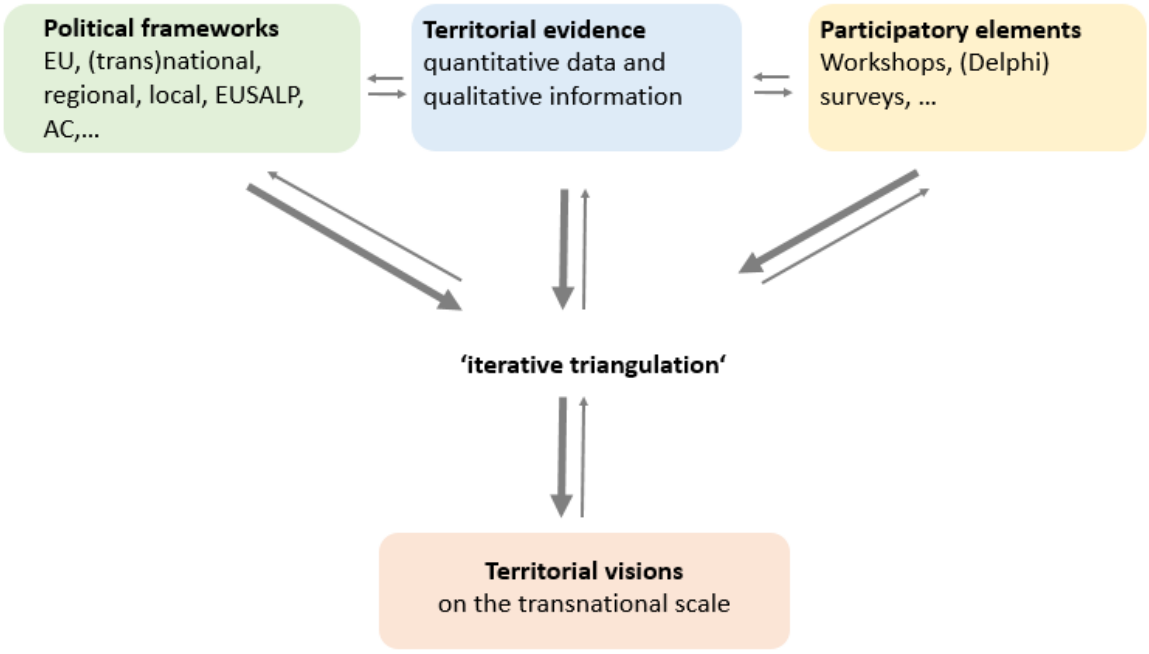


Fig. 1 Elements for the development of spatial perspectives, visions and guidelines.

2 Territorial analyses (Task 1)

2.1 Indicator selection, analysis and challenges

Task 1 is the analytical basis of the Alps 2050 project. Its goal is to analyse and visualise the current state of the Alpine area and to identify the main drivers for the spatial development by means of territorial evidence. The aim of this task is to grasp the most important characteristics and trends, and to detail the challenges with regard to a sustainable and successful future towards 2050. The key results of this step are the basis for the following steps, including the participatory elements.

The data basis consists of a core data set and further data for contextualisation:

- The *core data set* consists of those indicators that are available for the complete Alps 2050 space in a haromonised way on NUTS 3 or LAU 2 level and where no relevant data challenges are to be expected; originally existing challenges have been overcome by involving statistical offices and other institutions (see chapter 2.2). This dataset is explored in a cartographic or graphical way (e.g. scatter plots), it will be scrutinised by means of a hierarchical cluster analyses and it allows cross-sectoral analyses between several indicators. The selection of this data is based on a) the relevance and significance of the indicators and b) data availability.
- The annex 2.2 also gives an overview on further data that is available for the Alps 2050 space. These data are referred to wherever useful, mainly by means of single maps or in terms of background information that play a more qualitative role in developing arguments (*context data*). For the context data, grid data can be used, too; for the core data, grid data is transferred to LAU 2 or NUTS 3 data in order to allow regional statistical analyses. the data are available only on a coarse scale (e.g. NUTS2) or not for the complete Alps 2050 perimeter (e.g. only on Alpine Convention or EUSALP perimeter), but still serve as useful territorial evidence.

This data set allows, firstly, *sectoral* analyses of the relevant indicators reveal important trends and patterns.

Secondly, *cross-sectoral* analyses combine different kinds of indicators and topics in order to ensure a comprehensive understanding of the region and to allow sustainable policy strategies.

Thirdly, the results are the basis for the later participatory steps, (in particular the Delphi study) and for the political recommandations of task 3. This indicator organisation ensures that challenges with regard to data harmonisation and availability would limit or slow down the analytical progress.

2.2 Data availability analysis

2.2.1 Data availability economy

Table 1 Data availability economy

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
Economy	GDP change 2008-14	NUTS 3	Alps 2050	2008-14	Eurostat, national statistical offices	Core data set
Economy	GDP / head pps 2014	NUTS 3	Alps 2050	2014	Eurostat, national statistical offices	Core data set
Labour Market	Change in employment 2008-14	NUTS 3	Alps 2050	2008-14	Eurostat, national statistical offices	Core data set
Labour Market	share & change of labour force in agricultural sector (NACE R2 A)	NUTS 3	Alps 2050	(2008-) 2014	Eurostat, national statistical offices	Core data set
Innovation	patent application per Mio inhabitants	NUTS 3	Alps 2050	2012	Eurostat, national statistical offices	Core data set
Economy	GDP	NUTS-3	EUSALP+ Alpine Space (not all regions)	2000-2015	Eurostat, nama_10r_3gdp	
Economy	Real growth rate of regional gross value added (GVA) at basic prices, percentage change on previous year	NUTS-2	EUSALP+ Alpine Space (not all regions)	2000-2015	Eurostat, nama_10r_2gvagr	
Economy	Gross value added at basic prices	NUTS-3	EUSALP+ Alpine Space (not all regions)	2000-2015	Eurostat, nama_10r_3gva	
Economy	Gross fixed capital formation	NUTS-2	EUSALP+ Alpine Space (not all regions)	2000-2015	Eurostat, nama_10r_2gfcf	

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
Economy	Compensation of employees	NUTS-2	EUSALP+ Alpine Space (not all regions)	2000-2015	Eurostat, nama_10r_2coe	
Economy	Employment (thousand hours worked) by	NUTS-2	EUSALP+ Alpine Space (not all regions)	2000-2015	Eurostat, nama_10r_2emhrw	
Economy	Allocation of primary income account of households	NUTS-2	EUSALP+ Alpine Space (not all regions)	2000-2015	Eurostat, nama_10r_2hhpri	
Economy	Income of households	NUTS-2	EUSALP+ Alpine Space (not all regions)	2000-2015	Eurostat, nama_10r_2hhinc	
Economy	Secondary distribution of income account of households	NUTS-2	EUSALP+ Alpine Space (not all regions)	2000-2015	Eurostat, nama_10r_2hhsec	
Economy	SBS (Structural business statistics) data by NACE (local units, wages and salaries, persons employed, growth rate of employment, share of employment in manufacturing total)	NUTS-2	EUSALP+ Alpine Space (not all regions)	2008-2015	Eurostat, sbs_r_nuts03 (1995-2007) sbs_r_nuts06_r2 (2008-2015)	
Economy	Employment (thousand persons) by NACE	NUTS-3	EUSALP+ Alpine Space (not all regions)	2000-2015	Eurostat, nama_10r_3empers	
Economy	employees per sectors (NACE)	NUTS-2	EUSALP+ Alpine Space (not all regions)	1999-2008 und 2008-2016	Eurostat, lfst_r_lfe2en1 (1999-2008) lfst_r_lfe2en2 (2008-2016)	

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
Economy	Employment in technology and knowledge-intensive sectors	NUTS-2	EUSALP+ Alpine Space (not all regions)	1999-2008 und 2008-2016	Eurostat, htec_emp_reg (1999-2008) und htec_emp_reg 2 (2008-2016)	
Economy	Patent applications to the EPO by priority year (Number, per million inhabitants, nominal GDP)	NUTS-3	EUSALP+ Alpine Space (not all regions)	1977-2012	Eurostat, pat_ep_rtot	
Economy	High-tech patent applications to the EPO by priority year	NUTS-3	EUSALP+ Alpine Space (not all regions)	1977-2012	Eurostat, pat_ep_rtec	
Economy	Biotechnology patent applications to the EPO by priority year	NUTS-3	EUSALP+ Alpine Space (not all regions)	1977-2012	Eurostat, pat_ep_rbio	
Economy	Population of active enterprises	NUTS-3	EUSALP+ Alpine Space (not all regions)	2008-2015	Eurostat, bd_hgnace2_r3	
Economy	Births of enterprises in t	NUTS-3	EUSALP+ Alpine Space (not all regions)	2008-2015	Eurostat, bd_hgnace2_r3	
Economy	High growth enterprises measured in employment (growth by 10% or more) - number	NUTS-3	EUSALP+ Alpine Space (not all regions)	2008-2015	Eurostat, bd_hgnace2_r3	
Economy	Deaths of enterprises in t	NUTS-3	EUSALP+ Alpine Space (not all regions)	2008-2015	Eurostat, bd_hgnace2_r3	
Economy	Birth Rate	NUTS-3	EUSALP+ Alpine Space (not all regions)	2008-2015	Eurostat, bd_hgnace2_r3	

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
Economy	Death Rate	NUTS-3	EUSALP+ Alpine Space (not all regions)	2008-2015	Eurostat, bd_hgnace2_r3	
Economy	Total intramural R&D expenditure (GERD) by sectors of performance	NUTS-2	EUSALP+ Alpine Space (not all regions)	1981-2014	Eurostat, rd_e_gerdreg	
Economy	Total R&D personnel and researchers by sectors of performance, sex	NUTS-2	EUSALP+ Alpine Space (not all regions)	1980-2014	Eurostat, rd_p_persreg	
Economy	HRST (Human resources in science and technology) by category	NUTS-2	EUSALP+ Alpine Space (not all regions)	1999-2016	Eurostat, hrst_st_rcat	

2.2.2 Data availability demography

Table 2 Data availability demography

topic	indicator (description of data)	spatial units	Perimeter	available period of time	source	notes
Demo-graphy	population change 2001-2010 and 2010-2015	LAU2	Alps2050	2010-15	Eurostat, national statistical offices	Core data set
Demo-graphy	net migration 2015	NUTS 3	Alps2050	2015	Eurostat, national statistical offices	Core data set
Demo-graphy	net natural change 2015	NUTS 3	Alps2050	2015	Eurostat, national statistical offices	Core data set
Demo-graphy	elderly population: Total resident population aging index, 2015 (P65+/P0-14) *100	LAU2	Alps2050	2015	Eurostat, national statistical offices	Core data set
Demo-graphy	migration: share of inhabitants by foreign citizenship 2015	NUTS 3	Alps2050	2015	Eurostat, national statistical offices	Core data set
Demo-graphy	Total Population 2001	LAU2	EUSALP	2001	Eurac RegDev, Data source: National statistical offices	
Demo-graphy	Total Population 2010	LAU2	EUSALP	2010	Eurac RegDev, Data source: National statistical offices	
Demo-graphy	Population density 2010	LAU2	EUSALP	2010	Eurac RegDev, Data source: National statistical offices	
Demo-graphy	Population growth rate (per 100 residents)	LAU2	EUSALP	2001-2010	Eurac RegDev, Data source: National	

topic	indicator (description of data)	spatial units	Perimeter	available period of time	source	notes
					statistical offices	
Demo-graphy	Total Resident population by sex	LAU2	ALPINE CONVENTION	2012 et similia	Alpine Convention RSA5	available also at ALPINE SPACE level for the year 2011
Demo-graphy	Women (per 100 residents)	LAU2	ALPINE CONVENTION	2012 et similia	Alpine Convention RSA5	available also at ALPINE SPACE level for the year 2011
Demo-graphy	Elderly population (per 100 residents)	LAU2	ALPINE CONVENTION	2003 et similia, 2012 et similia	Alpine Convention RSA5	available also at ALPINE SPACE level for the year 2011
Demo-graphy	Total resident population aging index (per cent residents)	LAU2	ALPINE CONVENTION	2003 et similia, 2012 et similia	Alpine Convention RSA5	available also at ALPINE SPACE level for the year 2011 (except Lichtenstein)
Demo-graphy	Working-age total resident population (per cent residents)	LAU2	ALPINE CONVENTION	2003 et similia, 2012 et similia	Alpine Convention RSA5	available also at ALPINE SPACE level for the year 2011
Demo-graphy	Crude birth rate (per 1000 residents) and Variation	LAU2	ALPINE CONVENTION	2001 et similia, 2012 et similia	Alpine Convention RSA5	available also at ALPINE SPACE level for the year 2011
Demo-graphy	Crude death rate (per 1000 residents)	LAU2	ALPINE CONVENTION	2012 et similia	Alpine Convention RSA5	available also at ALPINE SPACE level for

topic	indicator (description of data)	spatial units	Perimeter	available period of time	source	notes
						the year 2011
Demo-graphy y	Foreign resident population (per 1000 residents)	LAU2	ALPINE CONVENTION	2003 et similia, 2012/2013	Alpine Convention RSA5	available also at ALPINE SPACE level for the year 2012
Demo-graphy	Population on 1 January by age group, sex and citizenship	NUTS 3	EUSALP	2007-2016	EUROSTAT, migr_pop1ctz	Liechtenstein: 2009-2016 Categories for citizenship: reporting country, EU28 countries except reporting country, Non-EU28 countries nor reporting country, Stateless, unknown
Demo-graphy	Average household Size	LAU2	ALPINE SPACE	2011	EURAC AlpEnv	
Demo-graphy	General fertility rate	LAU2	ALPINE SPACE	2011	EURAC AlpEnv	
Demo-graphy	Married Residents	LAU2	ALPINE SPACE	2011	EURAC AlpEnv	
Demo-graphy	Divorced Residents	LAU2	ALPINE SPACE	2011	EURAC AlpEnv	

topic	indicator (description of data)	spatial units	Perimeter	available period of time	source	notes
Demo-graphy	Single person households	LAU2	ALPINE SPACE	2011	EURAC AlpEnv	

2.2.3 Data availability settlement systems and land use

Table 3 Data availability settlement systems and land use

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
Settle-ment system	perimeters of FUA	LAU2	Alps 2050	2016	ESPON	Core data set
Settle-ment system / land use	degree of urbanisation: DEGURBA classification	LAU2	Alps 2050	2016	ESPON	Core data set
Land use	change in annual soil sealing 09-12	Grid > NUTS 3	Alps 2050	2009-12	EEA	Core data set
Settle-ment system	MEGAs, settlement structure typology	LAU	ESPON space	2016	ESPON EGTC (cf. policy brief polycentricity)	
Settle-ment system	Settlement size		Alpine Conventio n	2015	Bartoletti 2015	
Land use	Corine Land Cover 1990 raster data		Europe		CORINE	
Urban sprawl at the level of NUTS-2 regions	WUP values at the NUTS-2 region level	NUTS-2	EEA	2009	EEA 2016	
Urban sprawl at the level of NUTS-2 regions	Changes in WUP values at the NUTS-2 region level between 2006 and 2009 (absolute and relative)	NUTS-2	EEA	2006-2009	EEA 2016	
Degree of urban sprawl at country level	Weighted urban proliferation (WUP), dispersion (DIS), land uptake per person (LUP) and percentage of built-up area (PBA) on the country level	Countr y	EEA	2009	EEA 2016	

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
Degree of urban sprawl at country level	Comparison of the values of weighted urban proliferation (WUP), dispersion (DIS), land uptake per person (LUP) and percentage of built-up area (PBA) on the country level for 2006 and 2009 (	Country	EEA	2006-2009	EEA 2016	
Urban sprawl at the level of NUTS-2 regions	WUP values at the NUTS-2 region level	NUTS-2	EEA	2009	EEA 2016	
Urban sprawl at the level of NUTS-2 regions	Changes in WUP values at the NUTS-2 region level between 2006 and 2009 (absolute and relative)	NUTS-2	EEA	2006-2009	EEA 2016	
Urban sprawl at the 1-km2-grid level	Urban sprawl in Europe on the 1-km2 scale in 2009 (based on WUPp values)	1-km2-grid data	EEA	2009	EEA 2016	
Urban sprawl at the 1-km2-grid level	Changes in WUP in Europe between 2006 and 2009 on the 1-km2-grid scale	1-km2-grid data	EEA	2006-2009	EEA 2016	

2.2.4 Data availability mountain areas & services of general interest

Table 4 Data availability mountain areas & services of general interest

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
Services of General Interest	car travel time to next doctor	Grid > LAU2	Alps 2050	2017	ESPON PROFECY	Core data set
Services of General Interest	car travel time to next primary school	Grid > LAU2	Alps 2050	2017	ESPON PROFECY	Core data set
Service of General Interests	Availability, Accessibility (Distance, Traveltime by public transport and private car) of 10 Services of general interest.	SETTLEMENTS	9 Case Studies in the ALPINE CONVENTION	2017	INTESI - Project	
Service of General Interests	Number of hospital beds (per 1000 residents)	LAU2	ALPINE CONVENTION	2012 et similia	Alpine Convention RSA5	
Service of General Interests	Number of long-term residential care facilities (per 1000 residents)	LAU2	ALPINE CONVENTION	2012 et similia	Alpine Convention RSA5	

2.2.5 Data availability tourism

Table 5 Data availability tourism

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
Tourism	intensity: overnight stays per inhabitants	LAU2	Alps 2050	2015	National and regional statistical offices, Eurostat	Core data set
Tourism	Tourism Density (Overnight stays/square km 2001)	LAU2	ALPINE CONVENTION	2001, 2006, 2010	Alpine Convention RSA4	
Tourism	Average length of stay (overnight stays/arrivals)	LAU2	ALPINE CONVENTION	2001, 2006, 2010	Alpine Convention RSA4	
Tourism	Population based tourism function index (overnight stays*100/population)	LAU2	ALPINE CONVENTION	2001, 2006, 2010	Alpine Convention RSA4	
Tourism	Tourism intensity (Number of bedplaces in hotel and similar establishments by population)	LAU2	ALPINE CONVENTION	2010	Alpine Convention RSA4	Data from Austria and France concerning bed places refer to 2011. Missing data for 107 municipalities.
Tourism	Tourism intensity (Number of bedplaces by population)	NUTS 3	EUSALP	2010	EUROSTAT, tour_cap_nuts3 and demo_r_pjangrp3	to be calculated
Eco-system/ Tourism	Outdoor Recreation	LAU2	ALPINE SPACE	2012	EURAC AlpEnv	Outputs of AlpES Project

2.2.6 Data availability climate change

Table 6 Data availability climate change

Topic	indicator (desciption of data)	spatial units	perimeter	available period of time	source	notes
Adaptive capacity	Overall adaptive capacity to climate change	NUTS 3	Alps 2050	2014	ESPON Climate	Core data set
Exposure	Change in annual mean temperature in annual mean number of frost days in annual mean number of summer days in annual mean precipitation in winter months in annual mean precipitation in summer months in annual mean number of days with snow cover	NUTS 3	ESPON CLIMATE	1961-1990, 2061-2100	ESPON CLIMATE (CCLM model and LISFLOOD model)	
Sensitivity	Combined physical sensitivity to climate change Combined environmental sensitivity to climate change Combined social sensitivity to climate change Combined economic sensitivity to climate change Aggregate sensitivity to climate change	NUTS 3	ESPON CLIMATE	2010	ESPON CLIMATE	Sensitivity indicators that are based on CORINE land-use data or Gallego data do not cover Switzerland.

2.2.7 Data availability energy

Table 7 Data availability energy

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
Renewable energy potential	potential for electricity generation [GWh] including wind ohshore, Small / large hydropower, PV, biomass, biogas	NUTS 3	Alps 2050	2016	Eurostat, ESPON Locate	Core data set
Energy	Total energy consumption (GWh/year)	LAU2	ALPINE CONVENTION	2013	EURAC RenEn	Data availability to verify
Energy	Renewable Energy Installations (Type of installation, Capacity of plant [MW])	PUNTUAL DATA	ALPINE CONVENTION	2010	EURAC RenEn	Data availability to verify

2.2.8 Data availability ecosystems

Table 8 Data availability ecosystems

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
Eco-system services	leisure supply demand	LAU 2	Alps 2050	2017	AlpES, EURAC Alpine Environment, Schirpke et al. 2017	Core data set
Eco-system services	Supply / demand drinking water	LAU 2	Alps 2050	2017	AlpES, EURAC Alpine Environment	Core data set
Protection regimes	protected areas (CDDA, Natura 2000)	Georef. > NUTS 3 or LAU2	Alps 2050	2017	EEA, protected planet, national/ regional authorities	Core data set
Ecological conec-tivity	continuum suitability index	Grid data > NUTS 3 or LAU2	Alps 2050	2015	Swiss National Park	Core data set
Eco-System/ Energy	Fuel Wood availabitliy	LAU2	ALPINE SPACE	2006	EURAC AlpEnv	Outputs of AlpES Project
Eco-System/ Energy	Special protected areas	LAU2	ALPINE SPACE	2011	EURAC AlpEnv	
Eco-System/ Energy	Hemeroby index (degree of naturalness)	LAU2	ALPINE SPACE	2012	EURAC AlpEnv	
Eco-System/ Energy	Artificial Areas	LAU2	ALPINE SPACE	2012	EURAC AlpEnv	
Eco-System/ Energy	Light pollution	LAU2	ALPINE SPACE	2011	EURAC AlpEnv	
Eco-System/ Energy	Protective Forests	LAU2	ALPINE SPACE	2012	EURAC AlpEnv	Outputs of AlpES Project
Eco-System/ Energy /Climate	CO^2 Sequestration	LAU2	ALPINE SPACE	2006	EURAC AlpEnv	Outputs of AlpES Project
Eco-System/ Energy	Biomass production from Grasslands	LAU2	ALPINE SPACE	2012	EURAC AlpEnv	Outputs of AlpES Project - some restriciton might be

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
						applied on this dataset

2.2.9 Data availability transport

Table 9 Data availability transport

topic	indicator (description of data)	spatial units	perimeter	available period of time	source	notes
Transport	transit corridors: daily average of all vehicles	Georef.	Alps 2050	2006-16	Imonitraf	Core data set
Transport	car travel time to train stations	Grid > LAU2	Alps 2050	2017	ESPON Profecy	Core data set
Transport	Accessibility to urban centers (travel time by car to the closest municipalities > 5000 inhabitans)	LAU2	ALPINE CONVENTION	2017	Analysis of EURAC RegDev by data of Open Street Map	Enlargement of data for EUSALP / ASP perimeter is foreseen
Transport	Development of traffic flows and tons of freight transported on road and on railways	ALPINE CORRIDORS	ALPINE CONVENTION	2005-2015	iMonitraf, Alpine Convention	
Transport	Flight route density	LAU2	ALPINE SPACE	2011	EURAC AlpEnv	
Transport	Road densitiy of Major Roads	LAU2	ALPINE SPACE	2011	EURAC AlpEnv	
Transport	Road densitiy of All Roads	LAU2	ALPINE SPACE	2011	EURAC AlpEnv	

2.2.10 Data availability cultural and natural heritage

Table 10 Data availability cultural and natural heritage

topic	indicator (description of data)	spatial units	perimeter	available period of time	Source
Natural heritage	Number of indigenous livestock species and breeds	LAU2	ALPINE SPACE	2010-2016	Marsoner et al. (2017)
Cultural heritage	Open Street Map layers on *important historic objects* and *points of interest*)	Punctual data	EUASLP	2017	http://histosm.org/#8/11.16235/45.51045/0/
Cultural heritage	UNESCO Word Heritage Sites	Punctual data	EUSALP	2017	UNESCO, whc.unesco.org/en/list

2.2.11 Core indicator set for Task 1 analyses

Table 11 Core data set

topic	indicator (description of data)	spatial units	perimeter	available period of time	source
Economy	GDP change 2008-14	NUTS 3	Alps 2050	2008-14	Eurostat, national statistical offices
Economy	GDP / head pps 2014	NUTS 3	Alps 2050	2014	Eurostat, national statistical offices
Labour Market	Change in employment 2008-14	NUTS 3	Alps 2050	2008-14	Eurostat, national statistical offices
Labour Market	share & change of labour force in agricultural sector (NACE R2 A)	NUTS 3	Alps 2050	(2008-) 2014	Eurostat, national statistical offices
Inno-vation	patent application per Mio inhabitants	NUTS 3	Alps 2050	2012	Eurostat, national statistical offices
Demo-graphy	population change 2001-2010 and 2010-2015	LAU2	Alps2050	2010-15	Eurostat, national statistical offices
Demo-graphy	net migration 2015	NUTS 3	Alps2050	2015	Eurostat, national statistical offices
Demo-graphy	net natural change 2015	NUTS 3	Alps2050	2015	Eurostat, national statistical offices
Demo-graphy	elderly population: Total resident population aging index, 2015 (P65+/P0-14) *100	LAU2	Alps2050	2015	Eurostat, national statistical offices
Demo-graphy	migration: share of inhabitants by foreign citizenship 2015	NUTS 3	Alps2050	2015	Eurostat, national statistical offices
Settle-ment system	perimeters of FUA	LAU2	Alps 2050	2016	ESPON

topic	indicator (description of data)	spatial units	perimeter	available period of time	source
Settle-ment system / land use	degree of urbanisation: DEGURBA classification	LAU2	Alps 2050	2016	ESPON
Land use	change in annual soil sealing 09-12	Grid > NUTS 3	Alps 2050	2009-12	EEA
Services of General Interest	car travel time to next doctor	Grid > LAU2	Alps 2050	2017	ESPON PROFECY
Services of General Interest	car travel time to next primary school	Grid > LAU2	Alps 2050	2017	ESPON PROFECY
Tourism	intensity: overnight stays per inhabitants	LAU2	Alps 2050	2015	National and regional statistical offices, Eurostat
Adaptive capacity	Overall adaptive capacity to climate change	NUTS 3	Alps 2050	2014	ESPON Climate
Re-newable energy potential	potential for electricity generation [GWh] including wind ohshore, Small / large hydropower, PV, biomass, biogas	NUTS 3	Alps 2050	2016	Eurostat, ESPON Locate
Eco-system services	leisure supply demand	LAU 2	Alps 2050	2017	AlpES, EURAC Alpine Environment, Schirpke et al. 2017
Eco-system services	Supply / demand drinking water	LAU 2	Alps 2050	2017	AlpES, EURAC Alpine Environment
Protection regimes	protected areas (CDDA, Natura 2000)	Georef. > NUTS 3 or LAU2	Alps 2050	2017	EEA, protected planet, national/ regional authorities
Eco-logical conec-tivity	continuum suitability index	Grid data > NUTS 3 or LAU2	Alps 2050	2015	Swiss National Park

topic	indicator (description of data)	spatial units	perimeter	available period of time	source
Transport	transit corridors: daily average of all vehicles	Georef.	Alps 2050	2006-16	Imonitraf
Transport	car travel time to train stations	Grid > LAU2	Alps 2050	2017	ESPON Profecy

3 Stakeholder participation

3.1 Stakeholder workshop

3.1.1 Background and objective

One key element of the participatory process was a stakeholder workshop on May, 23rd, in Munich, hosted by the Bavarian Ministry for the Environment. About 25 experts were present, including members of the Alps 2050 research consortium and the steering committee as well as further experts of the Alpine spatial environment.

The workshop was open to all approx. 150 experts that were invited to participate in the Delphi study. This event took place between the first and the second round of the Delphi study and comprised two main elements: in the morning, the interim analytical results of the Alps 2050 project were presented and discussed. In the afternoon, four thematic stations reflected on the following topics, before a final plenary reflection concluded the workshop (cp. Fig. 2).

The overall objectives of this workshop included:

- Better understanding of ongoing political discussions within the multi-level governance system
- Linking analytical results with political options

The thematic stations were conducted in four interactive sessions of about 20 minutes discussion each. Different groups of experts from different countries participated in each session. The topics of the thematic stations were:

- Thematic orientations and perspectives of the Alpine spatial development towards 2050
- The role of EU funding post 2020, including cross-border tools
- National and regional planning tools in the Alpine context
- The relation ship between the EUSALP and the Alpine Convention

It was agreed to keep the detailed discussions confidential as some controversial political topics were addressed in a very frank way. Furthermore, it should be avoided exposing individual experts or opinions. This is why the following summary of the workshop remains rather abstract.

Fig. 2 Impressions from the Munich workshop in May 2018 – thematic stations and plenary discussion

3.1.2 Documentation

Thematic station 1: "National and regional planning tools"

The discussion of the thematic station "National and regional planning tools" concentrated on relevant topics from a domestic point of view as well as on the transnational dimension of these topics and appropriate governance tools. The starting question was which were the most pressing and current topics on the agendas of spatial development in the respective regions of the present experts.

Generally speaking, there was a high agreement on the relevance of the topics transport, ecological connectivity, water, energy, climate change, and dual education. The overall impression was that the experts focused more on environmental topics and less on social and economic issues like quality of life, migration, growth debates, etc.

With regard to the transnational dimension there have been several important inputs:

- **Transnational level**: there was a certain consensus that a (strong) transnational exchange of important topics would be fruitful. Participation of the relevant actors is seen as the key to success. It is important to bring people together, to involve stakeholders. There is a need for better / more appropriate / elaborated methods for transnational exchange.
- **Spatial development**: The four discussion groups asked for a stronger and coordinating role of spatial planning. However, against the background that it is already difficult on the national and regional level to bring together different sectors, the potentials on the transnational level were seen in rather careful way.
- **Cooperation:** The need of territorial cooperation is obvious, but in practice it is not easy to push/stimulate people to work together, particularly in a transnational setting.
- **Multilevel governance**: The regional level seems to be the most appropriate level for cooperation. The local and national level has to be involved, but cooperation dynamics are most appropriate at the regional level.
- **Instruments:** With regard to the instrumental side, there was a general consensus amongst the participants that *processes* are the key ("HOW rather than WHAT"). A series of more general and also more technical character were discussed, often in a controversial mode:
    - Development of a spatial development tool for the Alpine area, complementing the Alpine Convention planning protocol
    - Establish transnational roundtables to emerge questions that need transnational attention (particularly thematic issues concerning flows and corridors)
    - Establish soft planning instruments on a transnational level
    - Establish legal instruments for consultation (widening/broadening existing laws)

Thematic station 2: "EU funding post 2020"

The Alps 2050 project has been implemented in a time when the budget negotiations on the post 2020 period were in a dynamic phase. The guiding question was "what are the current

challenges and possible improvements for EU funding in the Alpine area?". All participants agreed that EU funding is beneficial for the Alpine Region and shall be kept in order to face transnational challenges. However, the discussion on funding post 2020 has proofed to be a sensitive one. During the interaction, we noticed different opinions concerning the relevance of the different cooperation platforms currently working in the Alpine area (Alpine Convention, Interreg Alpine Space, Eusalp). The discussions were very vivid and addressed thematic, institutional and technical aspects.

The debate can be summarized in the following three strands:

- **Identification and endorsement of transnational priorities**: Funding instruments should follow and support political priorities, which shall be few, feasible and relevant. Priorities should be agreed among all actors (MRS, AC, Interreg ..) – according to some participants, this process is already going on. Transnational priorities should be embraced also at national level and in mainstream programs, i.e. structural funds managed at regional/national level. The strategy currently does not have the power to systematically introduce transnational priorities in national funding.
- **Coordination, communication and capitalization:** At the moment, projects on similar topics are funded in parallel by the different funds. A better communication and a comprehensive collection of all (not just Interreg) projects results facing transnational issues in the Alpine area could be foreseen, so that results can become a permanent achievement. In addition, events to exchange and network might also help, as well as a far-reaching information of which are (all) the funding possibilities ('funding inventory').
- **Alpine Space Programme related suggestions**: The program is currently a precious asset for the region, which is certainly worth keeping. Some improvements to be applied to the program (and projects) are here suggested, including:
    - additional flexibility both in terms of topics and timing of funding, simplification of the bureaucratic tasks, coherence with EUSALP AG needs, opening towards bigger (and smaller investments), re-introduction of innovation (and related risks) in the projects
    - Increase budgetary opportunities for Interreg B, in order to allow bigger investments
    - Increase of "territorial thinking" in transnational funding
    - Funding should support real needs and problems of the area and outstanding ideas
    - Reshape projects, maybe introduce shorter, smaller ones (partnership and budget, so that smaller organization are not intimidated)
    - New funding instruments can be developed
    - Better embedding of MRS in funding instruments (Financing of MRS?)

Increase implementation skills, capacity building to get funding (introduce targeted funds for rural areas that have lower capacity (skills) to access funding

Thematic station 3: "Future of EUSALP and Alpine Convention"

The first part of each session started out with the same guiding question: "How to strengthen the coherence of EUSALP and Alpine Convention?". Three major amendments have been suggested during the interactive sessions:

- The Interreg Alpine Space Programme has to be seen as a third big player connecting stakeholders at the transnational level as well as providing funds to realise at lots of

projects taking place on the ground in Alpine regions. Further transnational activities are possible within the framework of the ARGE ALP.

- Some transnational activities are rather restricted to single sectors only. However, initiatives such as the Zurich process for transportation policies or the concept of transeuropean corridors are very important pillars of transnational policy-making in the Alpine Space.
- Transnational activities are complemented by a lot of cross-border activities at smaller scales. Cross-border cooperation (e.g. in the Lake Constance Region) is considered as an important groundwork for transnational policy making.

It remains an open question how EUSALP, the Alpine Convention, the Alpine Space Programme, ARGE ALP, sectoral policies, cross-border projects, and other activities relate to each other. Obviously, these different elements of Alpine governance play different roles in terms of networking, funding, policy making, or policy implementation. It also remains an issue of debate which role spatial planning is playing and should play within the Alpine governance arrangement.

In the second part of each session participants discussed both the necessity and options to strengthen the coherence of EUSALP, Alpine Convention, and other policies. On the one hand, some participants preferred the co-existence of different policies, and endorsed the benefits of competition and overlaps. Especially the role of EUSALP putting pressure on other policies was appreciated. Also, stakeholders wearing different hats were considered as an advantage to enable, balance, and speed up policy-making processes. On the other hand, other participants favoured better coordination, more coherence, and less redundancy between policies. In that respect it was suggested to reduce the number of EUSALP Action Groups or Alpine Convention Platforms. In general, stakeholders called to reduce overlaps, to concentrate on core issues, to cooperate, to make better use of synergies.

Thematic station 4: Thematic priorities

The station on “thematic priorities” differed from the other three groups as it focused not on institutional and governance aspects but on the content side of the Alps 2050 project. The initiate question was: “Imagine that the EUSALP has a Department for Spatial Planning with an unlimited budget and an unlimited political mandate for spatial development. What would be the first three measures/projects you would plan?”

Three of the four groups at this thematic station developed graphic outputs on blind maps of the Alps 2050 perimeter. These ‘mental maps of the future’ were of exploratory, sometimes experimentalist character (see Fig. 3).

They cannot directly be translated political agendas or even into planning documents. However, the synopsis of these drawings and the discussions deliver important elements for developing spatial perspectives in the Alpine region:

- **Transport**: (high speed) rail axes with noise reduction measures, ban of road expansion, European transit axes, sustainable mobility

- **Tourism**: touristic hotspots, green tourism,
- **Economy**: „brain-circulation“,regional value chains
- Spatial **planning**: one comprehensive transnational spatial planning perimeter and development axes,relations between metropolitan and rural areas, relations between mountainous and non-mountainous areas, poly-centricity sprawl reduction social services
- **Ecology**: green infrastructure and ecological connectivity

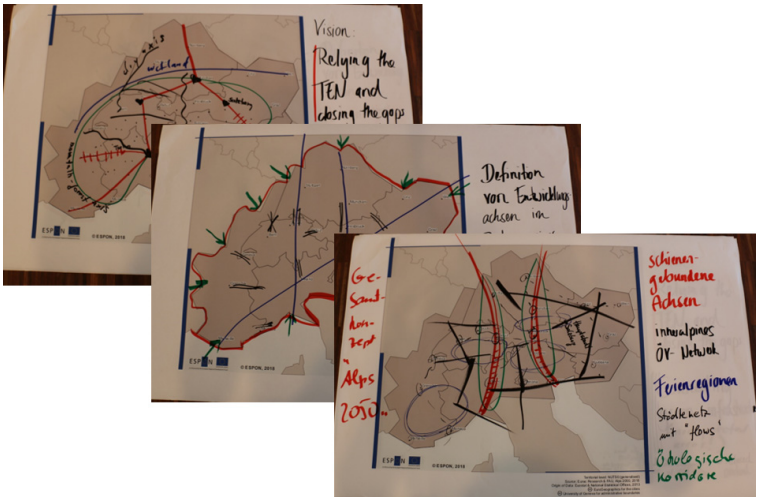


Fig. 3 Experimentalist ‘mental maps’ from the workshop on the Alpine future

Considering the workshop input in the project

The workshop input has been systematically been taken into account throughout the project’s lifetime. This was the case in different forms:

- Inspiration for the drafting of the Delphi 2nd round
- Take-up of concrete ideas and proposals in the scenarios and visions
- Guidance for the development of possible roadmap elements

3.2 Involvement in political process

It is important to link the results of the Alps 2050 project with the broader political context. During the recent implementation process, the interaction was fruitful, and there are further discussions foreseen:

- Permanent Committee of the Alpine Conference, Liechtenstein, June 2018 (Liechtenstein)
- Alpine Space Programming Process 1./2. October 2018
- Permanent Committee of the Alpine Conference, Innsbruck November 2018 (Innsbruck)
- Workshop on EUSALP 2nd Annual Forum in Innsbruck, 20/21.11.2018, http://www.eusalpforum2018.com/index.php/en/programme/workshops-en#workshop5

All these elements will help to concretise political options in interaction with the political stakeholders, and they contribute to the dissemination of the project results.

3.3 Delphi study

3.3.1 The Delphi approach

For the Alps 2050 project, an online based two round Delphi is currently conducted (to record initial assessment and adjusted perspectives of respondents), including both textual and cartographic elements. The Alps 2050 project implements a so called policy Delphi study, i.e. a Delphi study that aims to identify and concretise political options for the future (Balram et al. 2003, Landetta et al. 2011, Evrard et al. 2013).

The selection of the Delphi followed the following criteria, a) *expertise* and b) an *institutional* balance and c) *geographical* balance. The expertise has both an institutional dimension (political mandate to contribute to the process) and a personal dimension (working experience on a relevant field for the Alpine development). The balanced selection considers the different levels of the governance system in place, the representation of the different national and regional contexts, and the representation of remote and central places as well as inner Alpine and lowland areas of the whole EUSALP area.The concrete list of persons has been drafted by the consortium members and was then checked and partially complemented by the the steering committee. Table 12 illustrates the logic of the experts identification.

Table 12 Systematic for the identification of experts for the Delphi Study

		AT	CH	DE	FR	IT	MC	SI
Alpine level	EUSALP Executive Board member	nn	nn	nn	nn	nn	nn	nn
	Alpine Convention Delegation member	nn	nn	nn	nn	nn	nn	nn
	Alpine Space national coordinator	nn	nn	nn	nn	nn	nn	nn
National level	Experts for territorial development / planning	nn	nn	nn	nn	nn	nn	nn
	Experts from sectoral policies	nn	nn	nn	nn	nn	nn	nn
	NGOs, associations, chambers, cross-border cooperation	nn	nn	nn	nn	nn	nn	nn
Regional level	Experts for territorial Development / Planning	nn	nn	nn	nn	nn	nn	nn
	Experts from sectoral policies	nn	nn	nn	nn	nn	nn	nn
	NGOs, associations	nn	nn	nn	nn	nn	nn	nn
EU Com		nn	nn	nn	nn	nn	nn	nn
EUSALP Action groups		nn	nn	nn	nn	nn	nn	nn
Alpine Convention thematic groups		nn	nn	nn	nn	nn	nn	nn
Other		nn	nn	nn	nn	nn	nn	nn

The survey takes up important insights from the sectoral analyses and developes postulates. The participants were asked to contribute with avaluating the postulates in a standardised way and to formulate their visions in an open manner.

3.3.2 Conduction and analysis of the Delphi study – 1st round

The first survey was sent out end of march 2018 to more then 100 experts that represent the above introduced governance setting. 56 responded this survey.

The interpretation of the first round results followed the postultes of the qualitative social science methodology, i.e. that those perspectives and assessments werde combined and grouped that share common characteristics. In practical terms, also the quantitiative picture of the respondends was taken into account. This is not to be misunderstood as a (descriptive) statistical analysis: The expert selection and the respondant rate of the expert groups does not allow *representative* results. A Delphi study as a qualitative method does not (primarily) aim at quantification and statistical representative data, but at revealing the *relevant* options for future developments, the respective argumentations and institutional implications. But still, in the phase of identifying relevant patterns, quantitative ratios were one argument (in parallel to others).

Fig. 4 shows an example from the interim analysis of the first survey, visualised in terms of a so-called Likert scale. The respondends were asked to express their degree of consent and they were given the opportunity to comment this in detail. These comments will be analysed after the closure of the first survey round. This overall picture allowed to formulate postultes which political priorities were typically combined by certrain fractions of experts.

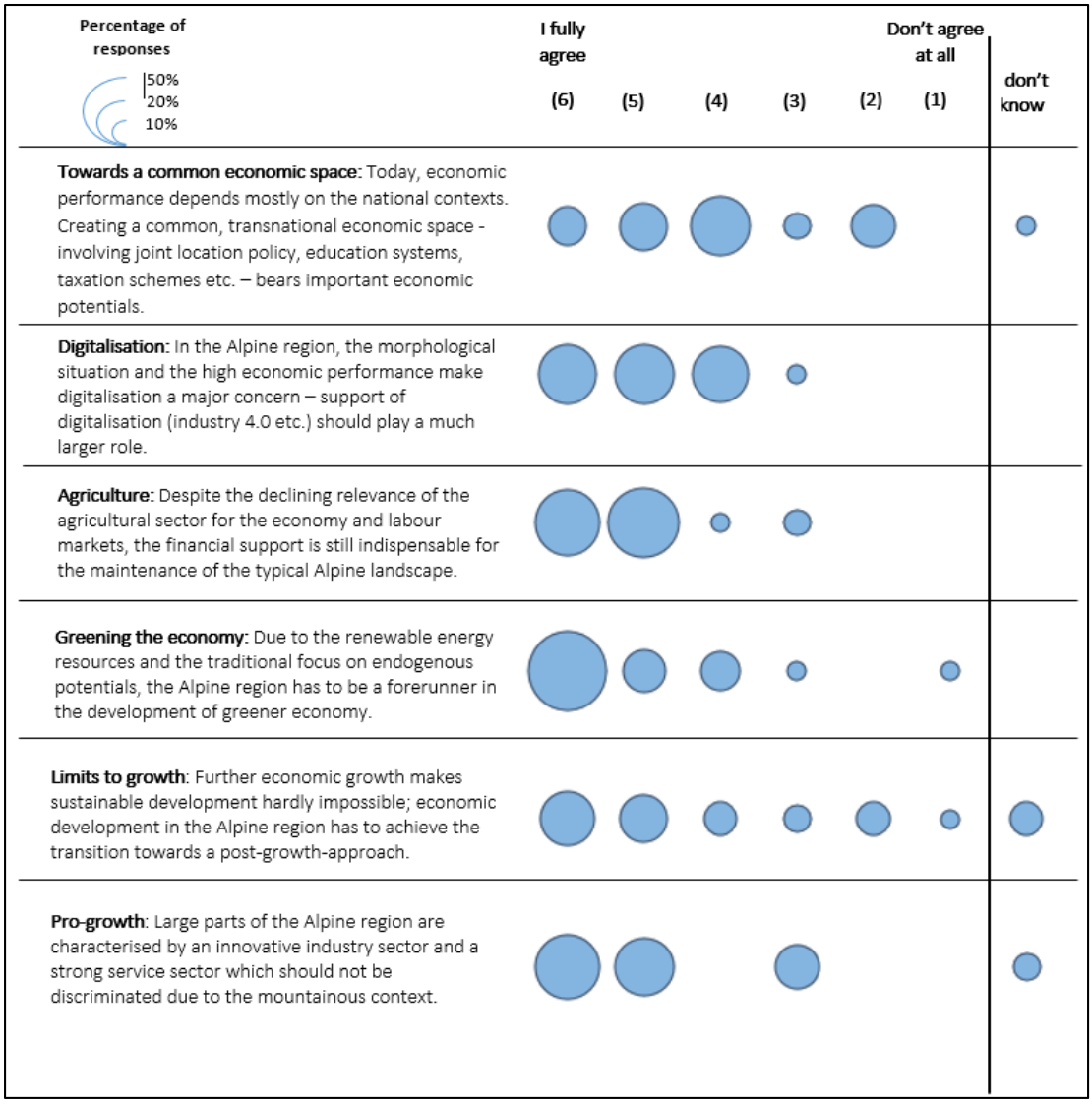
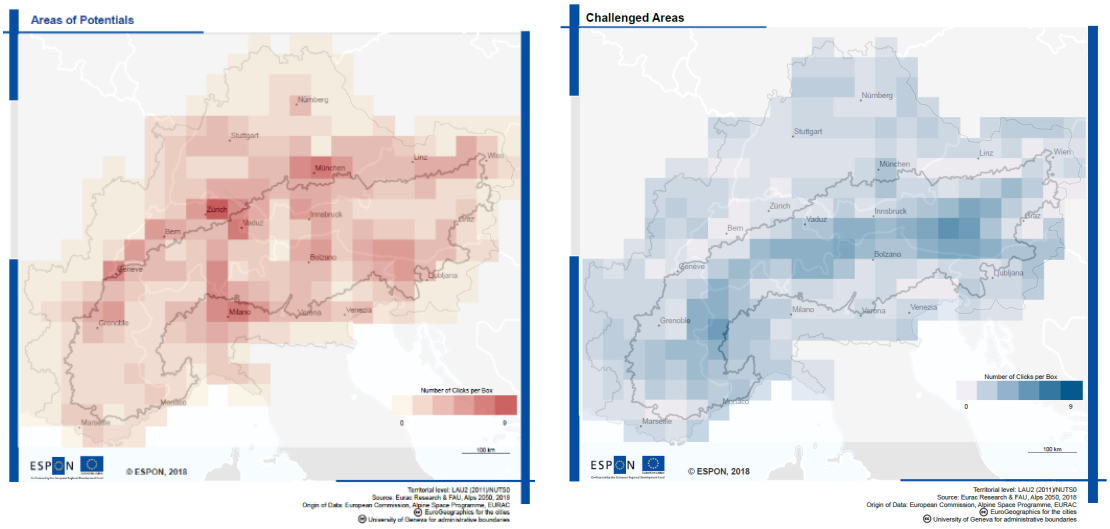


Fig. 4 Interim results Delphi study: postulates and responses on questions regarding the economic development

The same is true for Map 1: The interim analysis revealed spatial patterns in the cartographic representation that contributed to the development of postulates for spatially bound options.



Map 1 'heat map' of most mentioned areas of action (n=52 responses, 21 cartographic answers)

One of the main objectives was to formulate scenarios that covered the different expert opinions in very condensed but still meaninfull way. The Delphi 1 input was combined with territorial evidence from task one of the Alps 2050 project, workshop input, and information from literature and political documents (chapter 4 illustrates this more in detail).

3.3.3 2nd Delphi survey

Based on the above mentioned sources, the second Delphi round propsed three contrast scenarios that comprised all (groups of) arguments that were articulated in the first round. These scenarios are described in more detail in chapter 4 and they are entitled "Alpine protection", "functional linkages", and "European core".

27 experts responded to the second round, which is about more than half of the 1st round. This result is not optimal and can be explained to the rather short project life time that forced to conduct the 2nd survey in the summer months. But still, relevant results can be extracted – and again, quantification can only be an approximate tool for structuration.

Table 13 shows that the formulation of the scenarios worked well as the experts' assessments covered them in a rather balanced way. The scenario of European accessibility was more polarizing than the other two scenarios, but all of them are relevant.

More important than the quantitative result were the qualitative responses. They helped to sharpen the scenario priorities and to concretize the policy options. The overall reactions were very constructive, sometimes including some comments about the somehow simplistic and very short format of the scenario descriptions, but this is a typical part of the Delphi approach, and often this led to helfpull differentiations of the responding experts.

	Rank	Number of responses
Scenario 1: Alpine Protection	**1**	**9**
	2	15
	3	1
	No response	0
Scenario 2: Functional linkages	**1**	**10**
	2	8
	3	6
	No response	1
Scenario 3: European accessibility	**1**	**7**
	2	1
	3	16
	No response	1

Table 13 The respondents' choice for the different scenarios

The qualitative interpretation of the Delphi 2 respondents focused on detecting (further) connections between arguments and political priorities. These argumentations were the basis for the finalisation of the scenario formulation as presented in the main report and the summary report.

4 Scenario building

4.1 Introduction

When reflecting on the development of the Alpine region up to the year 2050, one tends to leave solid scientific ground. The further in the future the references of prognostics and scenarios are, the larger becomes the uncertainty (Hopkins & Zapata 2007). This is true for all kinds of future related research, but in particular for territorial development as the multiplicity of influences and causalities increases uncertainty and complexity (Fürst 2012). This is why it is of crucial importance to involve a very broad range of information sources. Given the vast focus of the project at hand, the ambition cannot be to be complete and comprehensive, but aim to include all kinds of relevant information (and not all information).

Against this background, the Alps 2050 scenarios were developed based on the following elements (cp. Fig. 5):

- The **territorial analyses,** including contemporary territorial evidence and ex-post analyses of long-term past developments.
- The **participatory elements** entail**,** in particular the Delphi study and the workshop conducted in May 2018.
- The **political documents**, which describe the political context.
- **Mega-trends** of socio-economic development that potentially influence the trends and dynamics within the Alpine context.

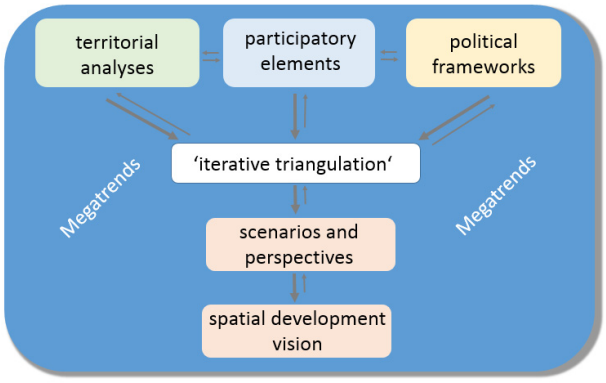


Fig. 5 Elements for the development of the scenarios, perspectives and the vision

Starting from the rich basis of information, opinions, ideas, and documents, scenarios have to condense the main characteristics and priorities in the process of iterative triangulation, i.e. by combining the arguments in a hermeneutic way (Fig. 5).

Bringing together all the different kinds evidence and the different arguments can not be presented in a complete way . However, in the following tables and sections, we present exemplary arguments from what has fed our analyses. This is certainly a simplistic sketch of the analytical paths, but it allows a presentation in a chronological way that replaces the different software based analytical steps.

4.2 Status quo scenarios

Scenario 1 – Status quo

The status quo scenario assumes that the hitherto dominant trends will be carried forward. Development paths are mainly based on national, domestic politics that lead to complex spatial patterns. The overall positive trend in economic development continues. However, this comes along with only limited success in achieving sustainable development and strategic spatial development. Dispersed spatial trends in demography and settlement development lead to dispersed developments, blurring the spatial structure of mountainous and non-mountainous regions and the urban-rural relations.

Fig. 6 Sketch of the Status quo scenario

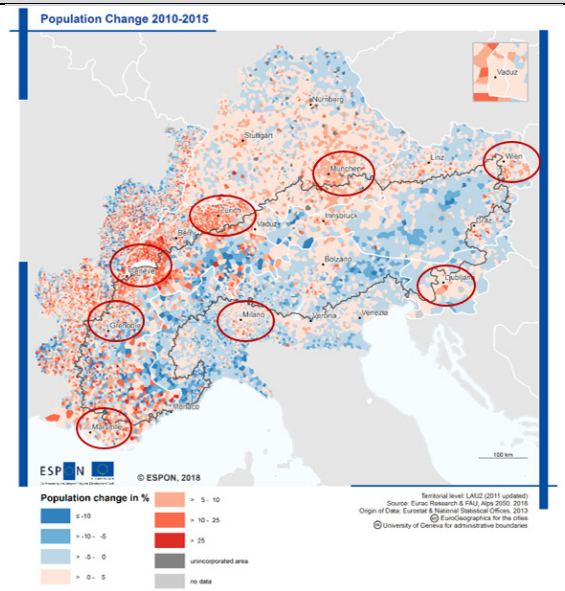
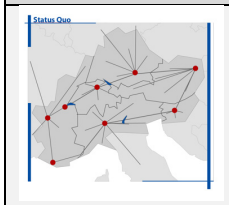
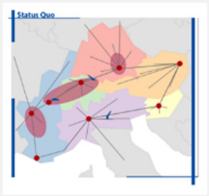
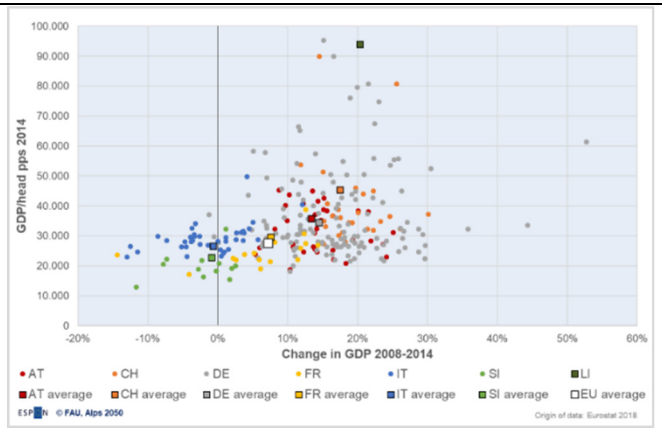
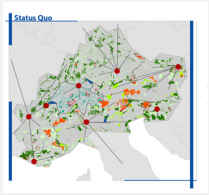
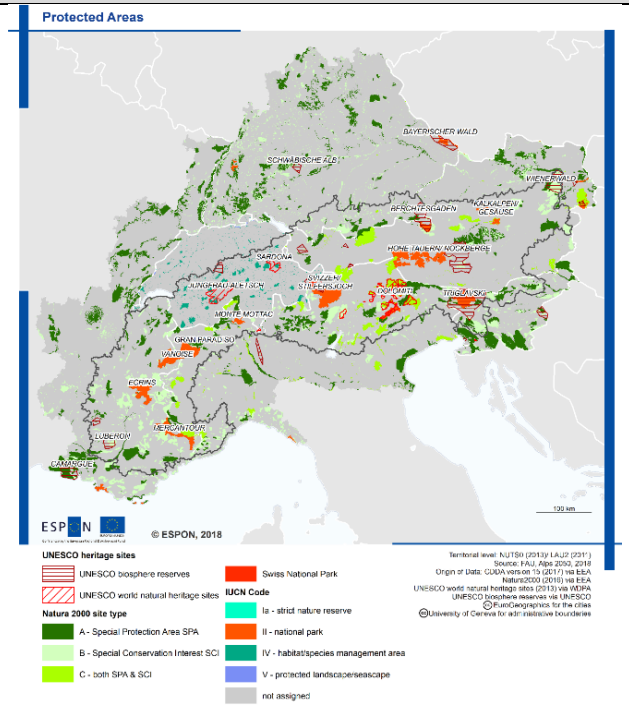
<table>
<tr><th>Status Quo scenarios</th><th>Basic elements – main messages</th><th>Exemplary territorial evidence</th><th>Examplary arguments from Delphi / workshop / literature</th></tr>
<tr><td>Sketch
  </td><td>• Predominantly domestic organisation (marked with borders), overall economic growth, limited sustainability
• Metropolitan ring around the Alps (large cities with population growth and capitals) as growth poles but overall dispersed spatial trend in demography and settlement development</td><td> 

Fig. 7 Population change 2010-15 on municipal level (for details see Alps 2050 Atlas, chapter “Demography”)</td><td>• Alpine Convention (2015): Demographic changes in the Alps.
• Workshop-Input: doubts of participants to make progress under current circumstances (“hard to involve relevant actors”, “trend of sectoralisation also in domestic policies”)
• …</td></tr>
<tr><td>perspective “People & Territories”</td><td>• Predominantly domestic organisation
• Metropolitan ring around the Alps (large cities with population growth and capitals) as growth poles but overall dispersed spatial trend in</td><td><table><tr><th>Spatial unit</th><th>Population Change 2001-2015</th></tr><tr><td>Alps2050 space</td><td>7,8%</td></tr><tr><td>AT</td><td>6,1%</td></tr><tr><td>CH</td><td>15,5%</td></tr><tr><td>DE*</td><td>3,5%</td></tr><tr><td>FR*</td><td>12,1%</td></tr></table></td><td>• Alpine Convention (2007): Transport and mobility in the Alps.</td></tr>
</table>

Status Quo scenarios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
	demography and settlement development • Domestic linkages to metropolitan areas as settlement, transport system and services of general interest are organised in a predominantly national way	IT* 8,1% LI 12,2% SI 4,8% *parts that belong to the Alps2050 perimeter *Fig. 8 Population change 2001-15 depending on national affiliation* *Source: Alps 2050 Atlas, chapter "Demography".*	
perspective "Economy" 	• Economic strength of regions depending very much on national affiliation • Innovative and growing regions (around Grenoble, between Geneve and Zurich/Rhine-Valley, around Munich) situated in the North or West of the Alps	 *Fig. 9 Change in GDP – comparing districts of different national affiliation* *Source: Alps 2050 Atlas, chapter "Economy"*	• COM (2017a): Regional Innovation Scoreboard • COM (2017b): 7th Report on Economic, Social and Territorial Cohesion

Status Quo scenarios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
perspective “Environment” 	• Series of area protection instruments with frictions along borders	 *Fig. 10 Protected areas* *Source: Alps 2050 Atlas, chapter “Ecological concerns”*	• Alpine Convention (2004): cross-border ecological network • Sutter et mult al. (2017): External costs in mountain areas

4.3 Protected Alps

Scenario 2 – Protected Alps

The second perspective underlines the necessity to protect the inner-Alpine mountainous areas. The Alpine mountains are a precious and vulnerable natural and cultural heritage. Touristic demand, transport needs, settlement growth and other human activities have put this region under high pressure. Protection regimes as initiated by the Alpine Convention are more than necessary and are further strengthened. The dynamic of the 'metropolitan ring' surrounding the Alps will be organised in a way that does not question sustainable development within the Alps (e.g. with regard to settlement sprawl, transport emissions).

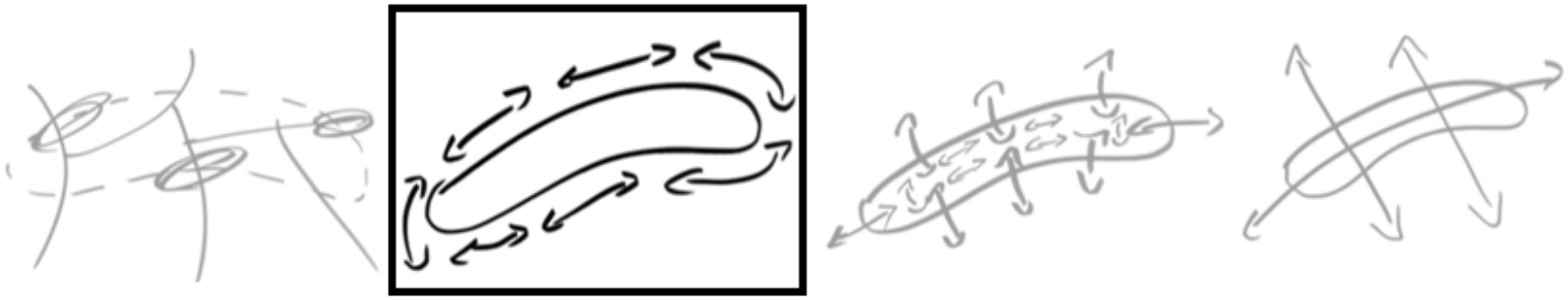
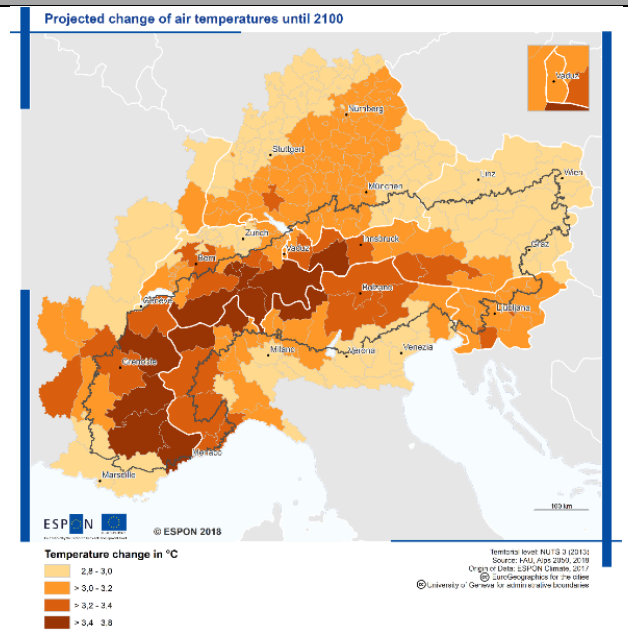
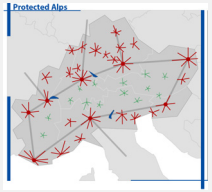
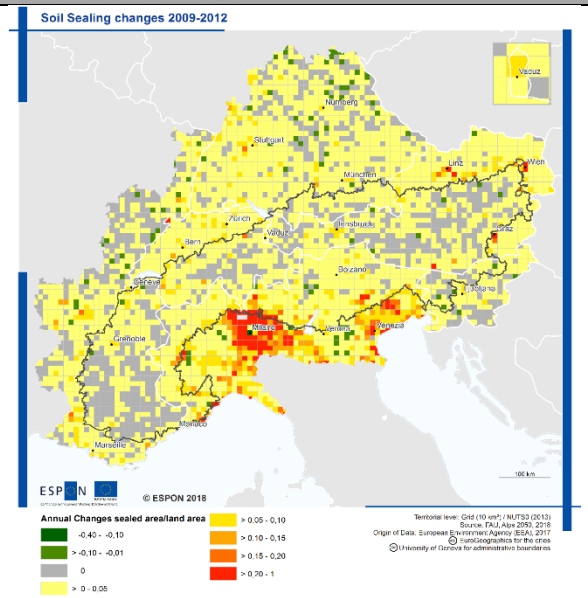
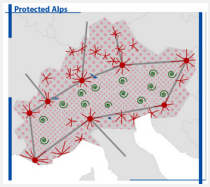
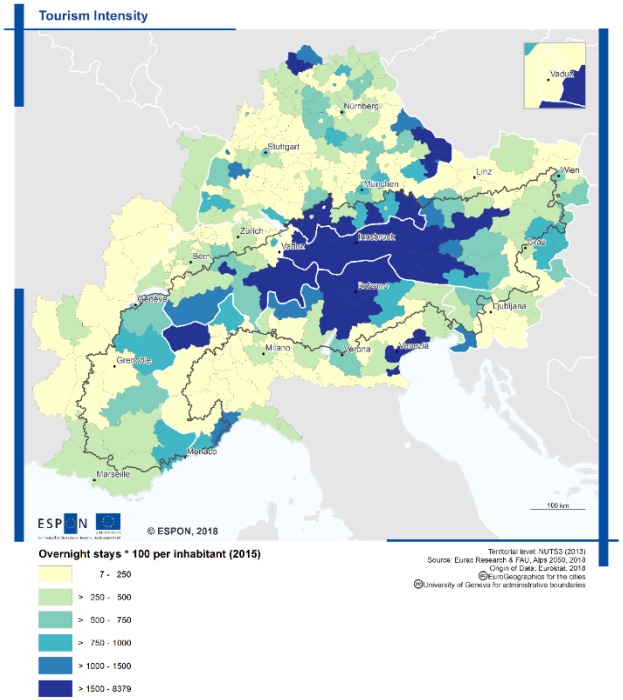
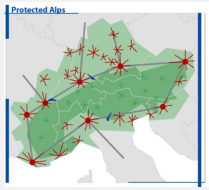
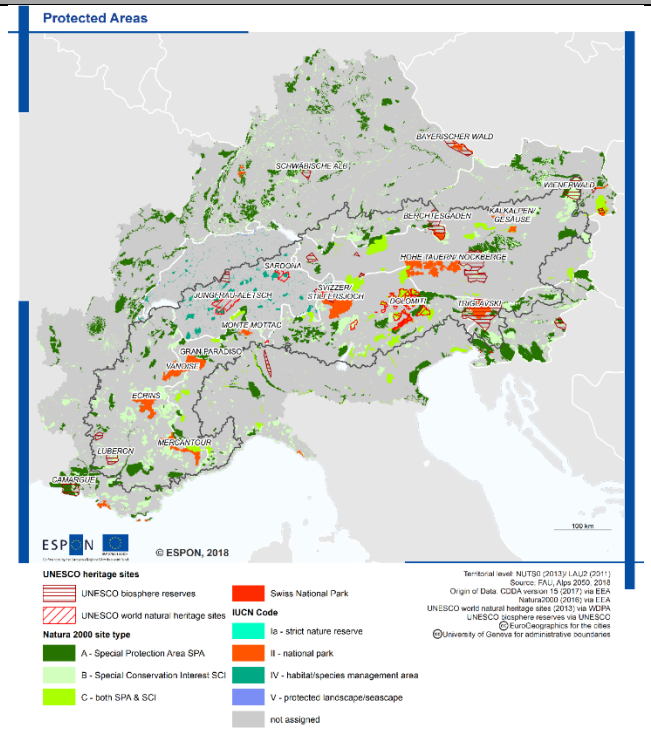


Fig. 11 Sketch of the Protected Alps scenario

Protected Alps scenarios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
Sketch 	• Protection of the inner-Alpine mountainous areas • dynamic of the metropolitan ring is organised in a way that does not question sustainable development in the inner-Alpine area	 The map on projected change of air temperature shows the high vulnerability of inner Alpine areas that call for particular policies (cp. Atlas chapter on climate change)	• Bätzing W (2015): Die Alpen: Geschichte und Zukunft einer europäischen Kulturlandschaft. • Erlacher R (2014): Makroregionale Strategie Alpen und Alpenkonvention • Delphi Input: „A strong level of protection has to be provided by legislation. Nature protection will be neglected without political effort.“ • …

Protected Alps scenarios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
perspective “People & Territories” 	• Metropolitan ring around the Alps (large cities with population growth and capitals) is organised in a way that does not question sustainable development in the inner-Alpine area • Transport system is transformed into a sustainable regime, traffic in the inner-Alpine area is reduced • growth dynamics regarding the settlement system are limited in the inner-Alpine area	 *Soilsealing as overall trend (Atlas chapter on soil sealing)*	• Delphi input “I do not support any further settlement spead in the (core) alpine area.” • Workshop input: policy priority on noise reduction measures, ban of road expansion

Protected Alps scenarios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
perspective “Economy” 	• inner-Alpine areas do not exceed their limits of growth • focus on regional value-chains, small-scale afarming, soft tourism etc.	 *The map shows the high touristic demand in inner Alpine regions – coming along with considerable challenges for sustainable development*	• Alpine Convention (2013): Sustainable Tourism in the Alps • Alpine Convention (2017): Greening the economy • Delphi Input: “The transition towards a green economy is one major opportunity for the Alpine region and should be highlighted here. A Green Alpine Economy is climate-neutral and resilient; resource efficient; preserving its natural capital and preventing the loss of biodiversity and ecosystem services; as well as improves quality of life and well-being of its citizens.” • Workshop input: focus on regional value chains

Protected Alps scenarios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
perspective “Environment” 	• Establishment of a differentiated protection regime on transnationale scale	 *The predominantly domestic organization of protected areas underpins the potentials of transnational approaches*	• Delphi input: “It is necessary to make clear […] the special functions of the alps - not only as natural and cultural heritage, but also a special space for to sustain biological variability and evolution (while overusing and overheating the earth)”

4.4 Functional Space

Scenario 3 – Functional space

The scenario that describes the Alpine region as one ‘functional space’ underlines the necessity to improve linkages between the different subregions. Towards the year 2050, the relationship between mountainous inner-Alpine and the more urbanised pre-Alpine parts will be strengthened, and in parallel the cross-border relations will be addressed more intensively. This has to be seen against the background that the territorial structure of the Alpine region is complex: The numerous borders between the Alpine countries have been frictions for a long time. Smart spatial development strategies overcome existing frictions with innovative political agreements and with adequate infrastructure investments. Removing barriers and enhancing functional links is of key importance (e.g. for labour markets, budget organisation, public services).

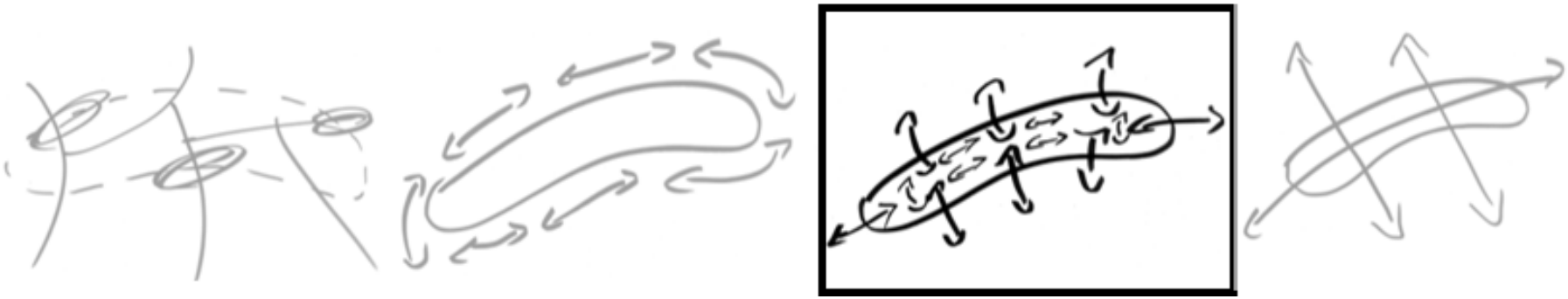
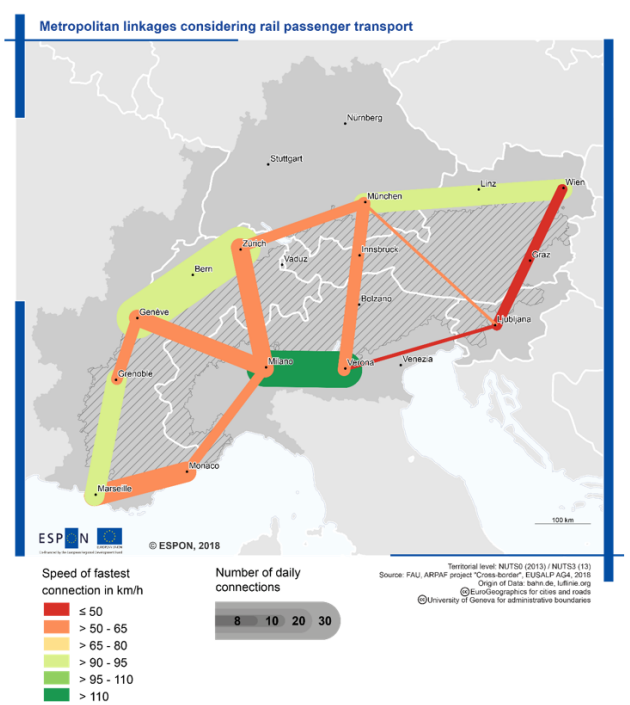
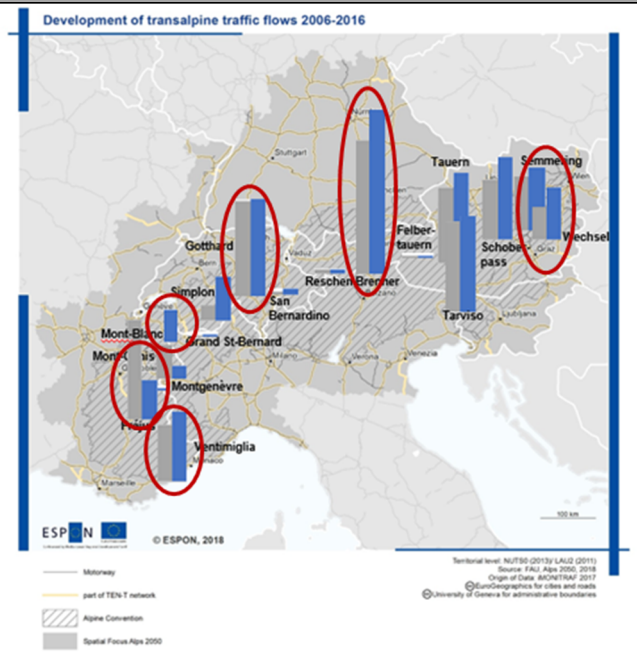
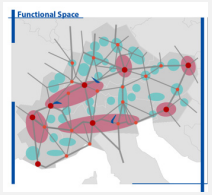
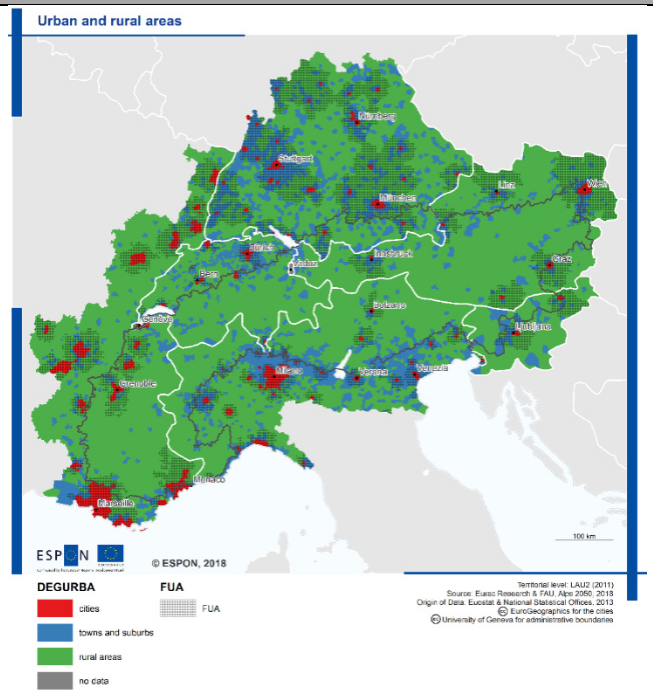
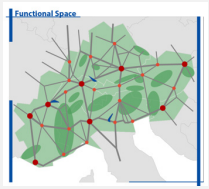
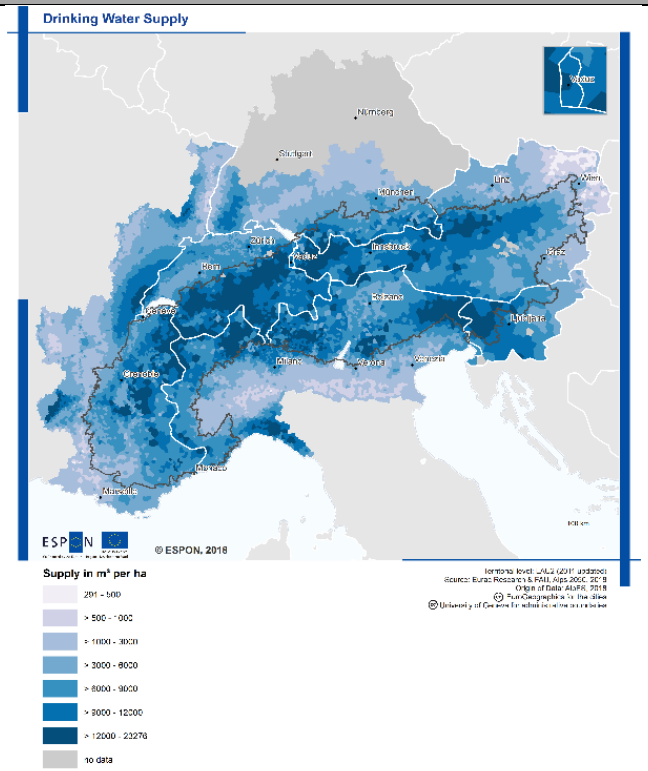


Fig. 12 Sketch of the Functional space szenario

Functional space scenarios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
Sketch 	• Linkages between subregions are improved • Relationship between mountainous inner-Alpine part and more urbanised pre-Alpine parts are strengthened	 *The map shows rail connectivity on the transnational scale and the differences in quality – one example for potentials of better connections in the broader sense (cp. Atlas chapter on transport)*	• Bausch, T. et al. (2005): ALPINE SPACE Prospective Study. Sustainable territorial development in the Alpine Space. Towards long term Trensnational cooperation. • Delphi Input: “Territorial development is all about funcional linkages.” • …

Functional space scenarios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
perspective “People & Territories” 	• Overcoming of frictions and borders • Stronger functional linkages within the settlement system, strengthening of the relationships between mountainous and non-mountainous parts • cities (with a population over 100.000) are connected, links within the mountainous parts are organised in a way that safeguards fairness and compensation between different territories • Biggest functional linkages along existing routes are used to optimise transit flows, other linkages help to overcome intra-regional bottlenecks	 *Fig. 13 Development of transalpine freight traffic flows 2000-2014* *Source: Alps 2050 Atlas, chapter “Transport”*	• Delphi Input: “Borders still cause frictions, there are still tensions between metropolitan areas and their surroundings. What I would also like to be stressed a bit is that we clearly see different sub-zones or different territorial types in the alpine area, they have similar challenges and problems and I see great potential that we support them in share expertise and knowledge and find common approaches” • Workshop input: potentials of soft instruments for spatial development on the transnational level

Functional space scenarios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
perspective “Economy” 	• Development of a transnational economic space • Innovation as main driver: Building on existing regional innovation systems and innovation cultures and link them in a productive way (turquiose spaces), profiting from metropolitan functions that are already in place (red spaces)	 *Fig. 14 Urban and rural areas folowing the DEGURBA approach* *Source: Alps 2050 Atlas, chapter “Settlement system”*	• Delphi input: “There are, and will more frequently be in the future, linkages and exchanges with the surrounding areas, not only of economic nature, […] but also of demographic and cultural nature” • Delphi input: “This scenario might to a certain degree overcome the problem of (iner)periferies by supporting their functional integration, […] - in particular crossborder functions […] might improve the provision of services. Scenario seems to build on regional potentials […] that is a right way to procide but a bearing capacity needs to be determined as functional linkages encourage flows.” • Workshop input: importance of Alpine wide “brain circulation”

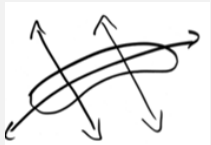
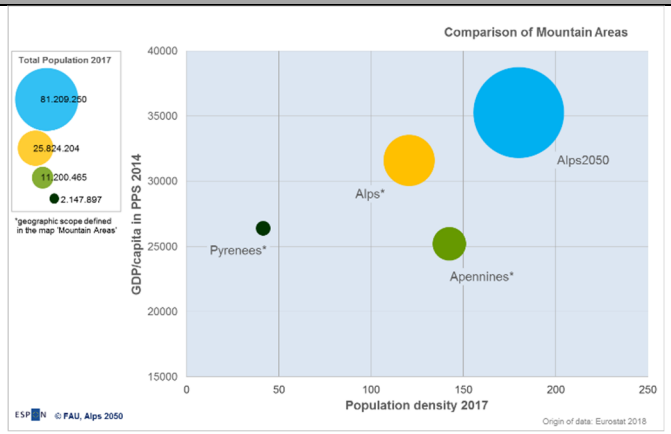
Functional space scenarios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
perspective “Environment” 	• Consolidating existing protection instruments • Natural uniqueness offers unique ecosystem services with the Alps	 *Fig. 15 Supply of water as eco-system service* *Source: Alps 2050 Atlas, chapter “Ecological concerns”*	• Delphi input “the Alpine wide protection regiomes should be aligned for the area which are important at Alpine level (ecological connctivity, river regimes, flood management along crossborder rivers,..) but not for example for landscape or regional parks, which include also regionally specific cultural heritage or landscape heritage which base on specific agricultural practices.”

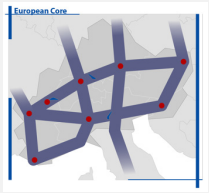
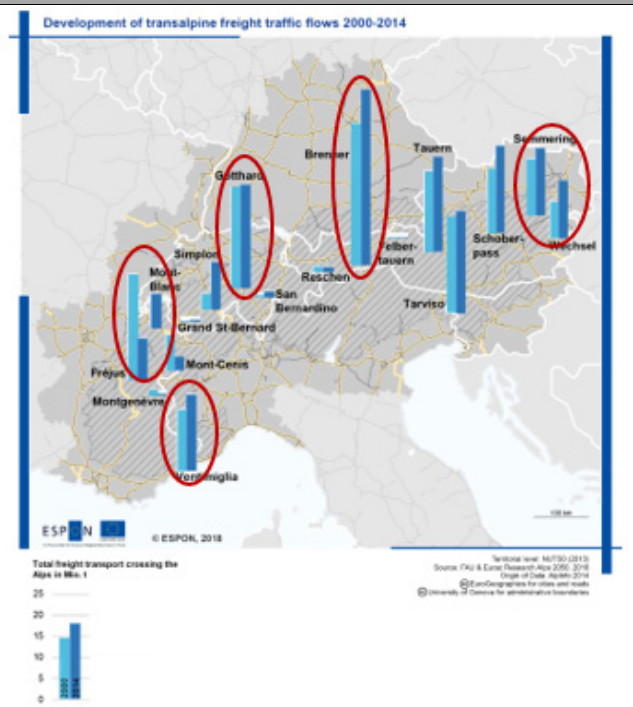
4.5 European Core

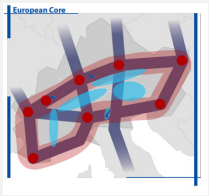
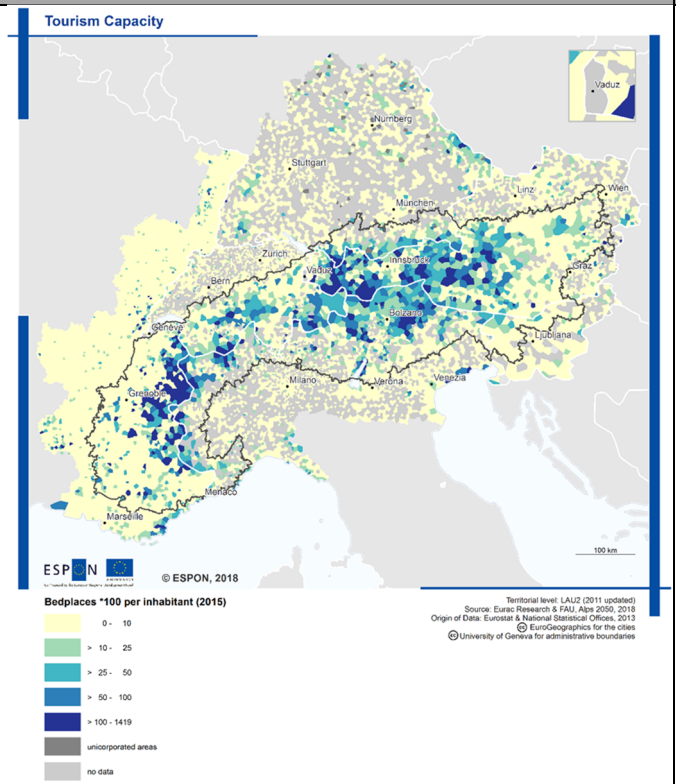
Scenario 4 – European core

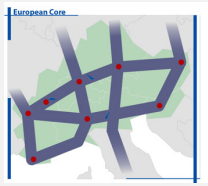
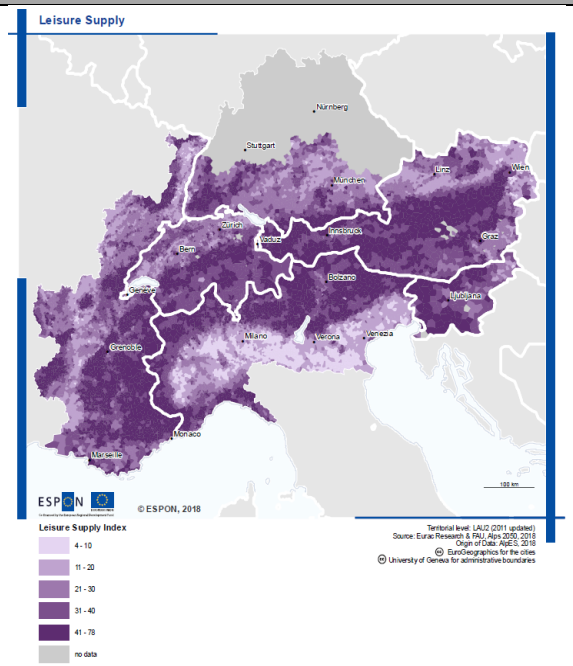
The Alpine region is one of the most successful economic spaces in Europe and one of the most attractive touristic destinations worldwide. Moreover, the position in the centre of Europe causes the need for transit flows to ensure European economic prospering. It is of major importance to build on this strong basis. The metropolitan 'hubs' and the major corridors are the basis of successful spatial development. Attracting skilled labour force and entrepreneurial investments is as important as to ensuring good transport and economic flows on the Alpine and European level (e.g. with regard to transport and ICT infrastructure).

Fig. 16 European core

European Core scenrios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
Sketch 	• Alpine region as one of the most successful spaces in Europe • position in the centre of Europe causes need for transit flows to ensure European economic prospering	 *Comparing the overall socio-economic performance of the Alpine region with other mountain areas and also with the EU average shows a rather strong picture*	• Delphi input “personal opinion: on the (very) long run, east-west corridors will become much more important than north-south (see, e.g., the new silk road or the enormous economic growth potential of eastern european contries)...” • Workshop input: graphic proposals for improving large scale accessibility

European Core scenrios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
perspective “People & Territories” 	• The Settlement system is part of European urban network: Connections between metropolitan ring (cities with population growth, important functions e.g. capital as cities with hub quality) and to other European metropolises • Large corridors are developed as important axes with reduced transaction costs	 Development of transalpine freight traffic flows 2000-2014 (2050 Atlas, chapter “Transport”)	• Delphi input: “corridors are important for the alpine development. The different flows should however be limited: quality more than quantity!” • Delphi input: “The key points are: sustainable mobility through intermodality, innovative (e.g. electric) solutions, good connectivity with the maritime transport routes; completing the main corridors and linking them to second tier transport infrastructures.”

European Core scenrios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
perspective “Economy” 	• Metropolitan ring positioned as a hub of global economy, rural spaces profit from spill over effects (red spaces) • Agricultural sector steered where there is an important role for tourism , touristic sector includes new clients due to climate change and geopolitica conflicts in other destinations (blue spaces)	 *Tourism capacity – bedplaces per 100 inhabitants (Alps 2050 Atlas, chapter “Economy”)*	• Delphi input: “a integrated, multilevel transport system is a priority for the alpine region. its objectives are: facilitating communication and integration in the alpine area and with the external european and non european territories and markets; ensure good accessibility and connectivity for peripheral areas, as instrument for economic and social inclusion; ensure good accessibility and services for tourists.”

European Core scenrios	Basic elements – main messages	Exemplary territorial evidence	Examplary arguments from Delphi / workshop / literature
perspective “Environment” 	• The Alpine Region has an important environmental function for Europe • The unique and attractive landscape and natural capital has to be safeguarded and developed for touristic and leisure use drinking water resources, energy supply and energy storage are major functions that the Alps have to fulfil	 *Fig. 17 Leisure supply as eco-system services* *Source: Alps 2050 Atlas, chapter “Ecological concerns”*	• Delphi input: “it is certainly fair to give adequate value to ecosystem services […] But we also need to improve the services that the metropolitan areas can give to the rural and mountain areas, in [terms of] visibility, innovation transfer, economic potential, accessibility.” • Delphi input: “To see the alps as a fishbowl of protection activities is attractive but not realistic.”

5 Proposal for further research

The Alpine region is not only characterized by a high density of territorial cooperation and development platforms but also by a high number of research activities. This comprises

- A high number of university institutes, public research institutions and consultancies with a strong focus on Alpine development; some of them are part of the Alps 2050 research consortium.
- Some scientific journals are more or less exclusively dedicated to Alpine topics (e.g. eco-Mont / Journal on Protected Mountain Areas Research and Management, Revue de géographie alpine etc.). This has led to a dynamic and multi-faceted publication activity (cp. Körner 2009).
- The research network ISCAR with strong links to NGOs, in particular the CIPRA, that develops and implements a strong research agenda (for details see Scheurer & Sgard 2008)
- The Alpine Convention Permanent Secretariat host a series of information sources, including a WebGIS and the SOJA and DIAMONT databases. Many of these data are part of the respective publications (in particular the reports on the state of the Alps)

	local	regional	national	Alpine space/EU
Policies at local/regional level				
LEADER programmes	x	**x**		
Interreg	x	**x**		
Biosphere Reserves	x	**x**		
Local Agenda 21	**x**	(x)		
Climate Alliance	**x**	(x)		
Learning Regions		**x**		
Thematic regional initiatives		**x**		
National "mountain" policies (e.g. NRP - New Swiss Regional Policy)		x	**x**	
Alpine area				
Alpine Convention	x	(x)	(x)	**x**
Alpine Space Programme (ASP)		x	(x)	**x**
CIPRA and NGO networks	x	x	x	**x**
Regional cooperation (ARGEALP etc.)		**x**		(x)
Macro-regional Strategy (EUSALP)		x	x	**x**

Fig. 18 Policy initiatives in the Alpine regions. Source: Dax 2014

Beyond these institutional activities, there is a high number of programme and project based activities throughout the multi-level system that provides important input with specific reports

and databases. Fig. 18 provides an overview of policy related activities that deliver continuously important knowledge support. One should add the European programmes, for example:

- The project “Re-Search Alps” form the Connecting Europe Facilities context
- The Horizon 2020 project on “social innovation in marginalized rural areas”
- The Alpine Space project ASP AlpInnoCT on Alpine innovation on combined transport

All the mentioned activities have provided a rich basis of knowledge and information that allow, in general, evidence based policies and relevant political debates. However, and somehow surprisingly, the *data* base is for from being adequate:

- There is in particular a lack of flow data on the transnational scale. If the potentials of *common challenges* are at the heart of macro-regional implementation procedures, the knowledge base has to be improved. There are good examples on the field of the traffic policy with regard to the transit theme (Zürich process, iMonitraf etc.), but few information beyond. This is true for economic and trade interlinkages, for labour market mobility, for eco-system services etc.
- There are few standardized data on the municipal level. The problem lies, firstly, in a high complexity of municipal geodata, due to numerous and ongoing territorial reforms on this level that lead to misfits (data management, coding etc.). The problem continues with regard to data definitions (e.g. employees) and data protection (e.g. bedplaces for touristic purpose) and does not end with availability questions (e.g. cross-border commuters). – If tailor made territorial strategies are the aim, these questions should soon be addressed.

A transnational spatial monitoring tool certainly misses, even if there are promising initiatives that might pave the way: *Alpine Convention WebGIS tool* (limited to AC perimeter) and *ESPON European and Macro-regional Territorial Monitoring Tool* (under construction for all MRS). In the long run, it will be important to have a meaningful platform on the transnational level that provides continuously relevant spatial data on the transnational level with an adequate accuracy.

The topics addressed concern in particular the political will to improve the data quality. In the meantime, thematically and regionally bound studies should bridge the gaps – in particular with regard to the interrelatedness. One must join the assessment in the mountain research initiative (Drexler et al. 2016: 9 f.):

> *“The reality is that mountain regions heavily influence, and are heavily influenced by, lowland areas – both nearby and distant – and are part of global economic systems. However, the cause-effect relationships of these interdependencies are not well known”*

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7 Additional material

7.1 Delphi survey form – first round

DELPHI Study Alps 2050

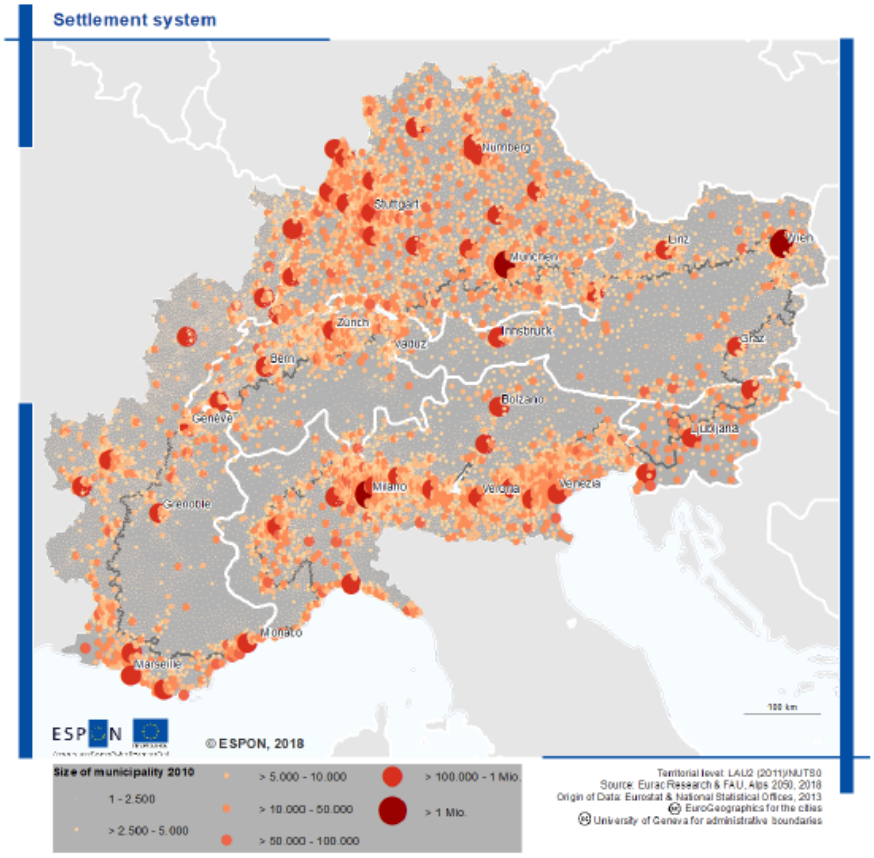
ESPON EUROPEAN UNION

Co-financed by the European Regional Development Fund

Thank you for participating in this Delphi study. Your expertise will help the Alps 2050 project to develop spatial perspectives and a vision for the larger Alpine area towards the year 2050.

When filling in this form, you can answer the open questions either in English (preferred option) or in your native language (German, French, Italian, Slovenian).

STEP 1/11

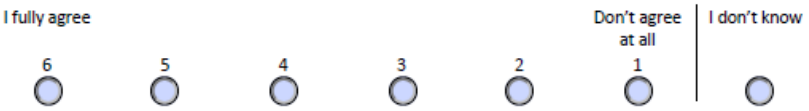


The polycentric **settlement system** of the Alps 2050 region shows complex patterns (of which the map shows just some aspects):

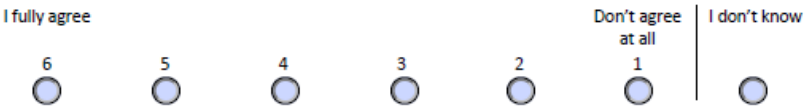
- The overall structure is characterised by a rather **rural** settlement structure in the Inner Alpine perimeter and by a much more **urbanised** structure in the surrounding area.
- Compared with other mountain regions, the Alpine region is **densely populated**, even in the inner Alpine areas, many valleys and lower parts are intensively used for settlement purposes.
- **Metropolitisation**: In socio-economic terms, urban and metropolitan regions tend to develop more positively than many rural or peripheral regions.
- **Urban sprawl** is an important trend of the recent years, in particular around the larger cities and along the valleys.

Please give your opinion on the following postulates.

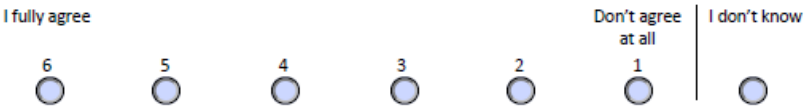
The inner alpine area should be **protected** from further urbanisation; instead, settlement growth should be limited to the pre-Alpine settlements.



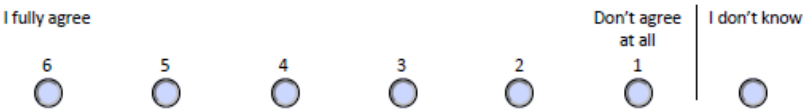
The settlement system of the Alps 2050 area lacks a large scale perspective: **Functional linkages** along transport corridors, the organisation of large scale labour markets, synergies in border regions etc. are key tasks for the future development.



Polycentric development: Small and medium sized settlements must be fostered in order to balance current metropolisation trends.

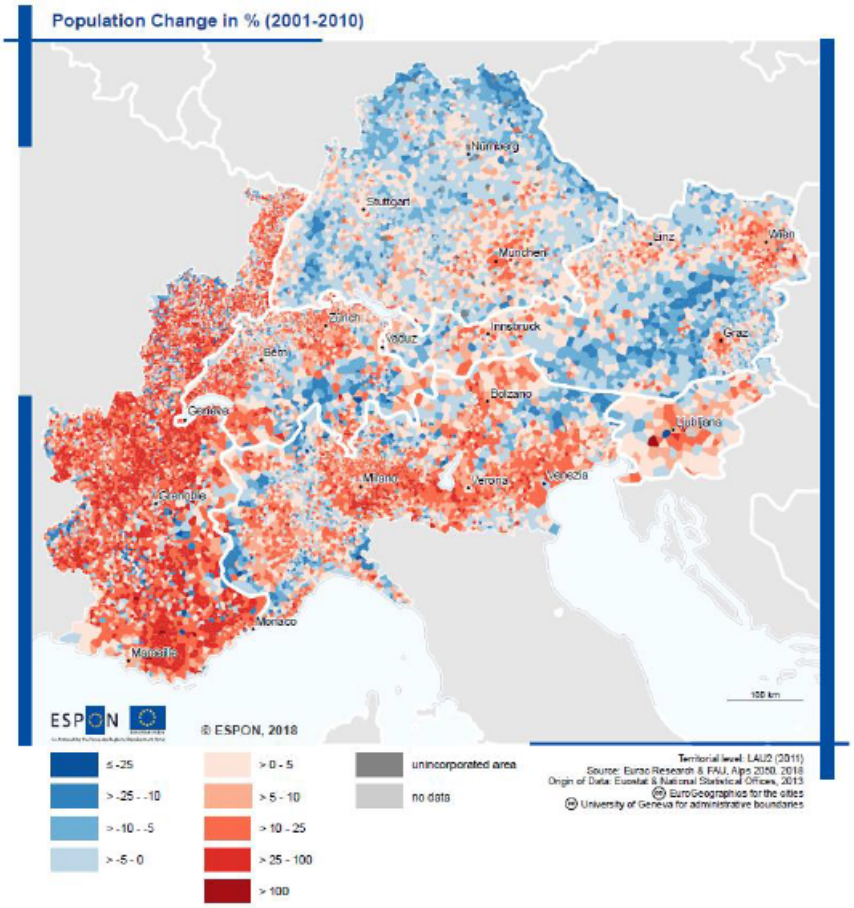


Metropolisation: In order to achieve a competitive settlement system in a globalised world, the large cities and metropolitan places have to be privileged.



From a **future perspective** towards 2050 for the Alps 2050 region: How should the development patterns of the settlement system look like? Please describe your personal 'vision'.

STEP 2/11



The **demographic development** in the Alps 2050 region shows diverse developments (of which the map shows just some aspects):

- **South-West vs. North-East**: We see growing municipalities in most parts of France, Italy, and Switzerland, and much more diverse patterns in the German and Austrian parts.
- **Rural areas**: many rural areas are hit by demographic decline; others are strongly growing – diversity is characterising the rural space.
- **Migration**: Migration means very different things, comprising labour force migration from neighbouring countries, asylum seeking, second homes in touristic places etc. – each coming with particular chances and challenges.

Please give your opinion on the following postulates.

More than safeguarding traditional identities, it is of crucial importance for rural spaces to be **attractive** living places for skilled labour and young people from other regions and countries.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

Amenity migration, i.e. the in-migration of rather wealthy inhabitants looking for nice landscape and attractive leisure infrastructure - is an important demographic potential for rural Alpine regions.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

Spatial development policies must play an important role for the **integration** of international immigrants, e.g. by influencing real estate and labour markets.

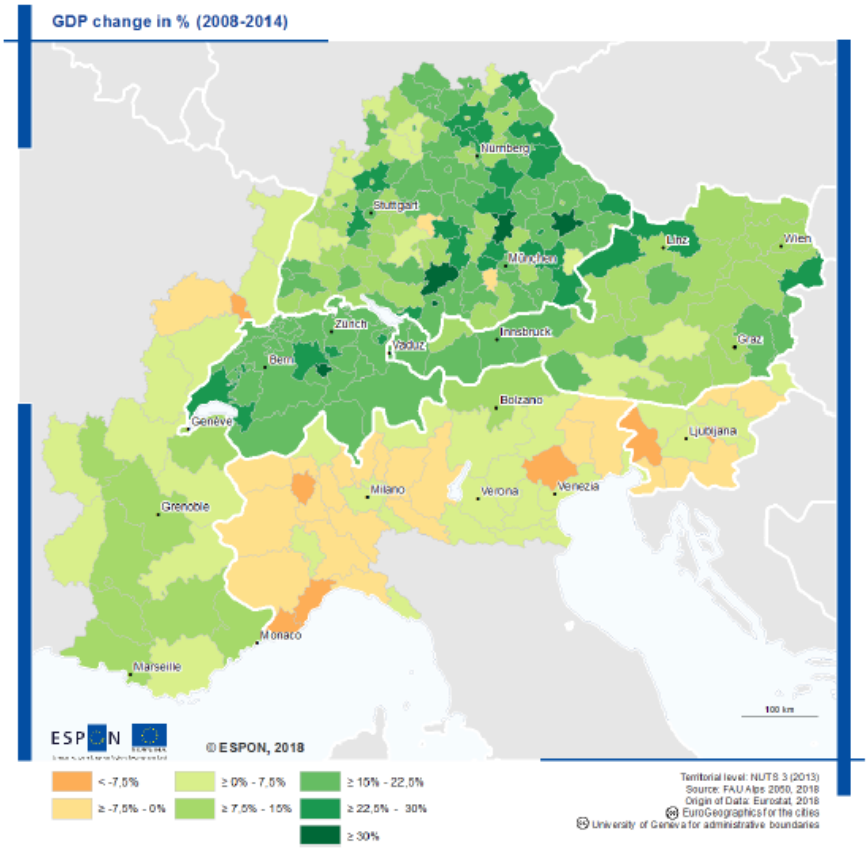
I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

Outmigration from rural spaces has to be accepted as a consequence of structural change in the agricultural sector.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

From a **future perspective** towards 2050 for the Alps 2050 region: How should demographic development patterns look like? Please describe your personal 'vision'.

STEP 3/11



The economic development in the Alps 2050 region is characterised by the following patterns (of which the map shows just some aspects):

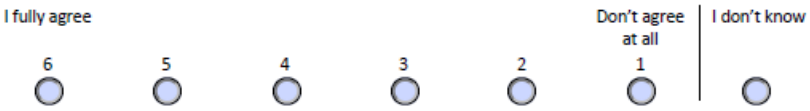
- Economic strength: Compared to the European average, the Alpine area is a strong one. The Swiss, Austrian and German parts have recently performed rather strongly, whereas parts of Slovenia, France and Italy have recently performed less positively.
- Structural change: we see a declining economic relevance of the agricultural sector in most parts of the Alps 2050 perimeter, a rather stable industrial sector and a growing service sector.

Please give your opinion on the following postulates.

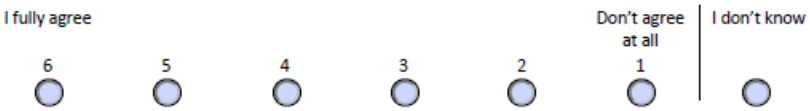
Towards a common economic space: Today, economic performance depends mostly on the national contexts. Creating a common, transnational economic space - involving joint location policy, education systems, taxation schemes etc. – bears important economic potentials.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

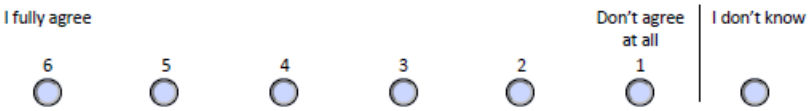
Digitalisation: In the Alpine region, the morphological situation and the high economic performance make digitalisation a major concern – support of digitalisation (industry 4.0 etc) should play a much larger role.



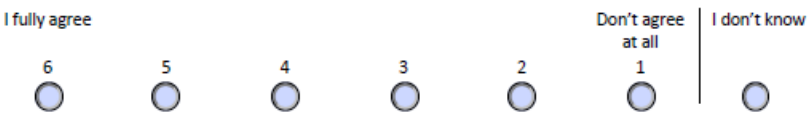
Agriculture: Despite the declining relevance of the agricultural sector for the economy and labour markets, the financial support is still indispensable for the maintenance of the typical Alpine landscape.



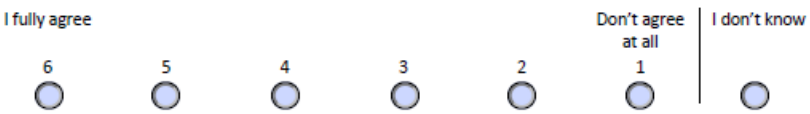
Greening the economy: Due to the renewable energy resources and the traditional focus on endogenous potentials, the Alpine region has to be a forerunner in the development of greener economy.



Limits to growth: Further economic growth makes sustainable development hardly impossible; economic development in the Alpine region has to achieve the transition towards a post-growth-approach.

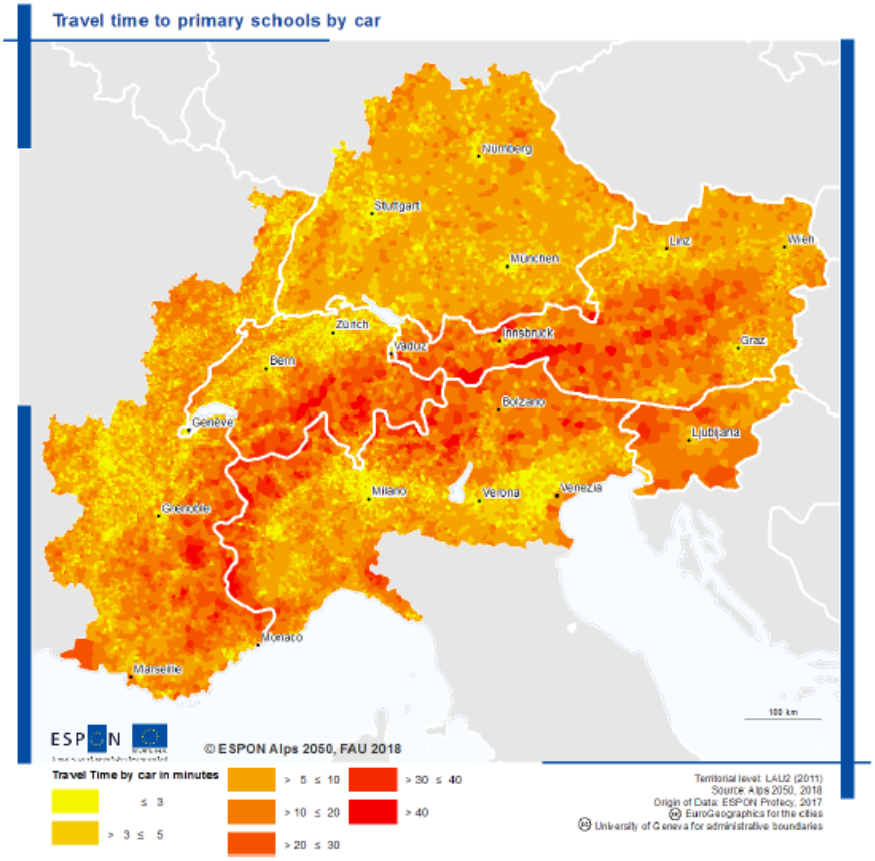


Pro-growth: Large parts of the Alpine region are characterised by an innovative industry sector and a strong service sector which should not be discriminated due to the mountainous context.



From a **future perspective** towards 2050 for the Alps 2050 region: How should economic development patterns look like? Please describe your personal 'vision'.

STEP 4/11



The accessibility of public services in the Alps 2050 region is illustrated in the map by the example of access to primary schools. Obviously, it is a challenge to provide a good level of access to public services (like schools, medical facilities or retail structures) in all regions. Population density and the morphological context are the main explanatory factors.

Please give your opinion on the following postulates.

Cohesion policy has to accept that providing public services is much more expensive in rural and mountainous regions and, thus, provide higher budgets then in other regions.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

Technological alternatives like tele-medicine, tele-learning, and online shopping put into question if public services in rural areas must be maintained on the same level as today.

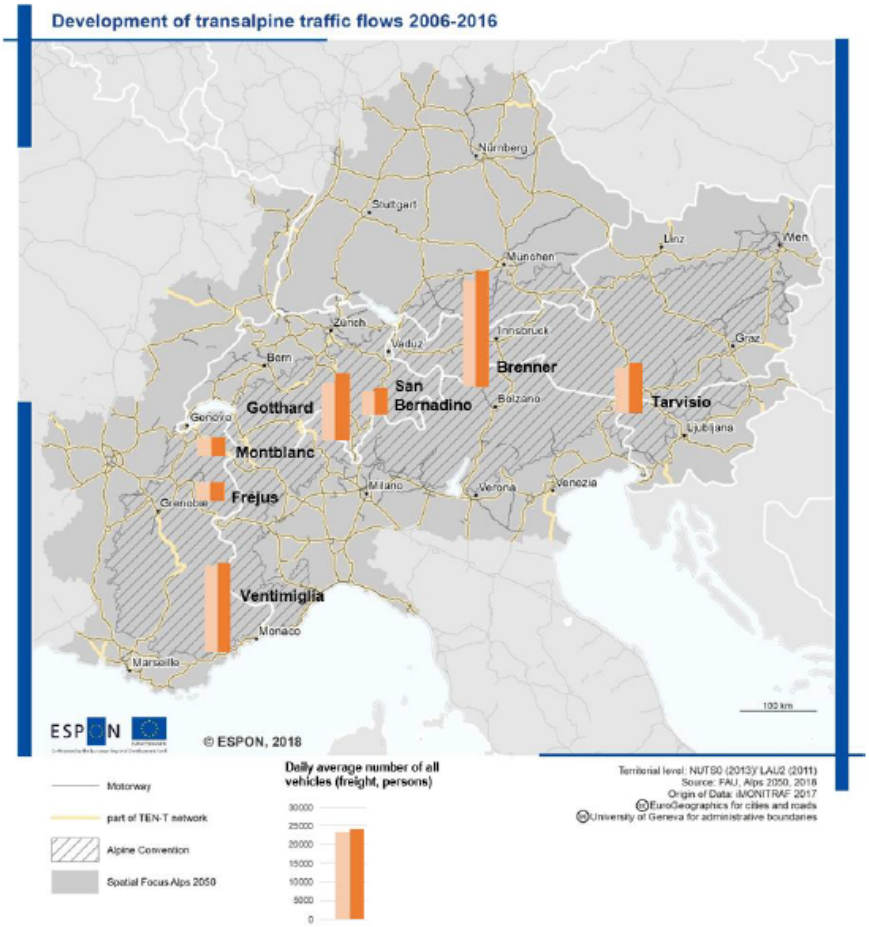
I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

Improving the accessibility of public services (health, education, etc.) can be achieved by investing in mobility infrastructure or by investing public services infrastructure: It is more efficient to invest in mobility infrastructure.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

From a **future perspective** towards 2050 for the Alps 2050 region: What should public services provision look like? Please describe your personal 'vision'.

STEP 5/11

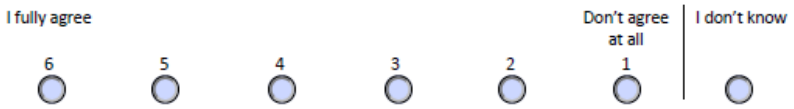


The transport development in the Alps 2050 region shows the following patterns (of which the map shows just some aspects):

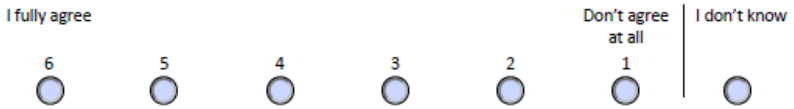
- Growing numbers: Freight and passenger transportation, public and individual mobility are growing in almost all parts of the Alps, raising multiple questions of environmental concerns and infrastructure organisation.
- Uneven spatial organisation: The spatial patterns of transport, and in particular of trans-Alpine traffic, is unevenly distributed, raising questions of transnational transport management.

Please give your opinion on the following postulates.

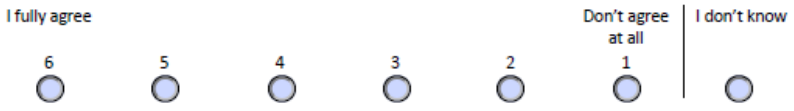
Economic relevance: From the European perspective, the Alps are a barrier for transport flows. Improving transalpine infrastructure is of high economic importance.



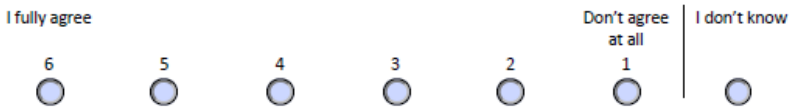
Alpine wide transport policy: There should be stronger efforts for a coherent transport policy through an Alpine wide organisation of toll policy and heavy goods transport.



Modal split: sustainable modes of mobility (public passenger transport, freight transport via rail) have to be developed in a far more effective way, applying increasing restrictions on less sustainable transport modes.

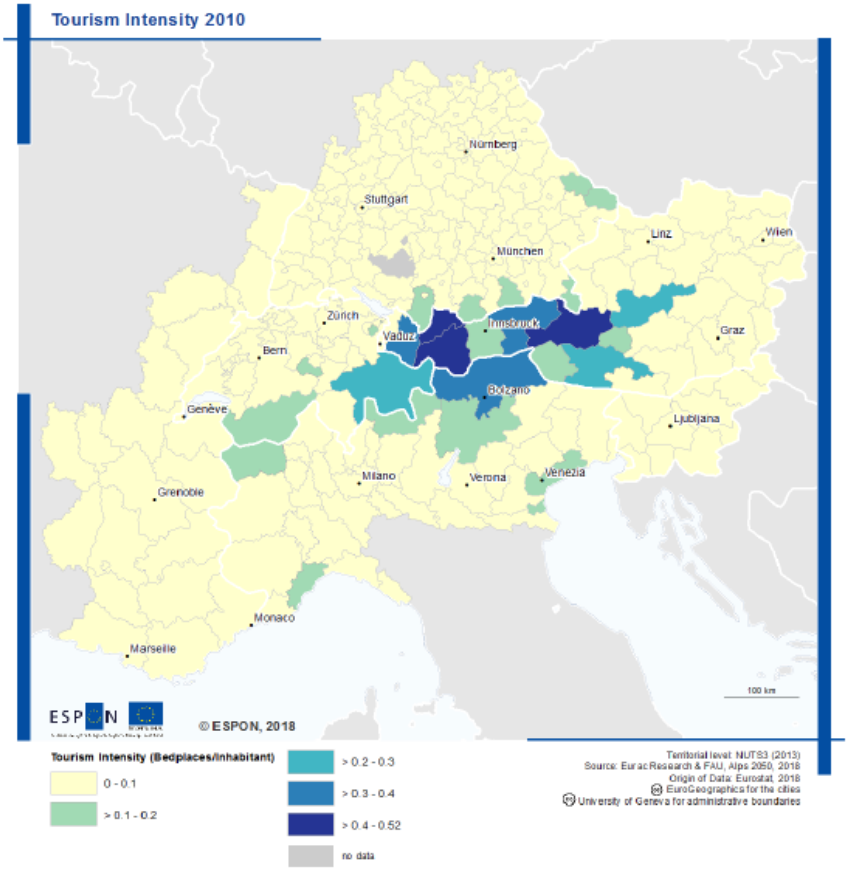


Rural mobility: Due to financial restrictions and ecological concerns, investments in high-ranking transport infrastructure should be reduced in rural spaces.



From a **future perspective** towards 2050 for the Alps 2050 region: What should transport patterns and management systems look like? Please describe your personal 'vision'.

STEP 6/11



The Alpine region comprises some of the most popular touristic '**hot spots**' world-wide. The highest importance can be found in the Inner Alpine area, both for summer and winter tourism.

Please give your opinion on the following postulates.

Capacity overload is an important challenge, therefore a much more **restrictive management** of touristic flows is necessary, favouring soft forms of tourism.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
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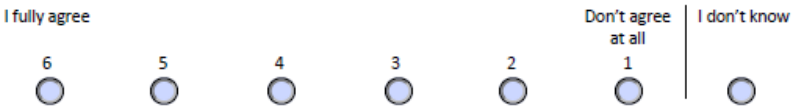
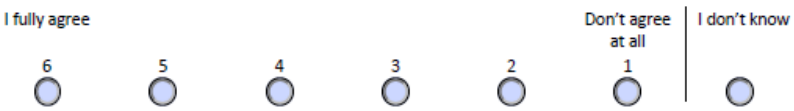
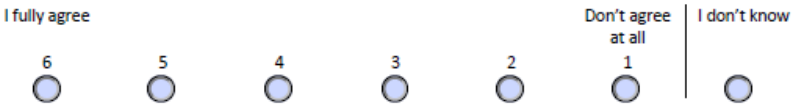
Climate change and ecological concerns forbid further any support of downhill **skiing** infrastructure.



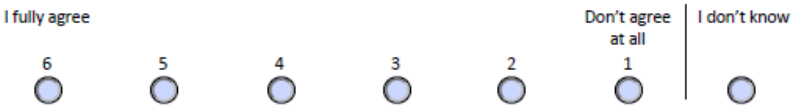
The relevance of the touristic sector is of high potential for rural, mountainous areas and needs particular **support**, including further infrastructure expansion.



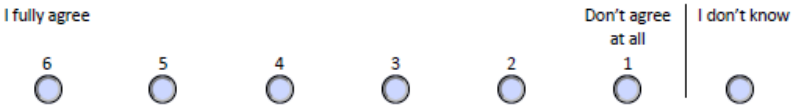
In recent years, some parts of the Alps have become important destinations of **global tourism** (in particular from Asia, Arabian countries): exploiting these potentials is a key future potential.



Climate change is an opportunity for the Alpine tourism due to the moderate summer temperatures.

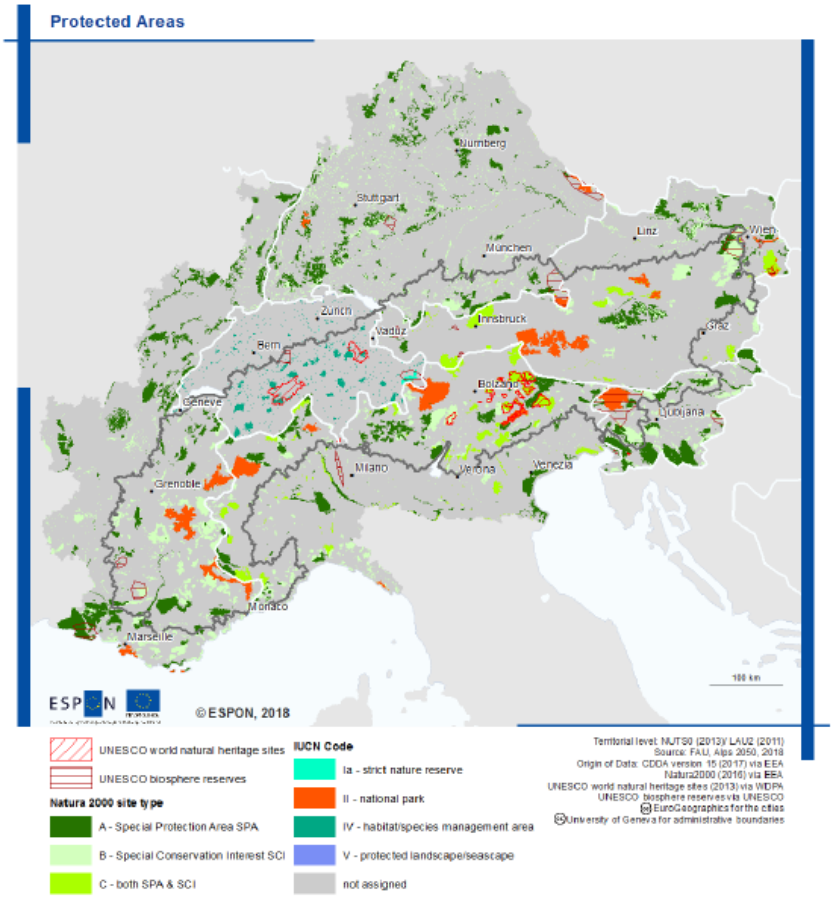


It is important to strictly limit the share of **second homes** in order to avoid negative effects on real estate markets and the vitality of settlements.



From a **future perspective** towards 2050 for the Alps 2050 region: What should tourism development look like? Please describe your personal 'vision'.

STEP 7/11



The Alpine region is of high **ecological** value and vulnerability which is challenged by the high level of socio-economic development. As an example, the map shows the tool of protected areas that aim to safeguard ecological functions.

Please give your opinion on the following postulates.

The '**ecological connectivity**', i.e. the linkages between important natural areas, are challenged by fragmentation. Linking corridors should be treated with much higher priority.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

Protected areas: Protection regimes remain a predominantly national or regional issue, which should be complemented by a much stronger cross-border and transnational perspective.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

The important ecological function of the Alpine region should be much better **compensated financially**, reducing the need for economic development.

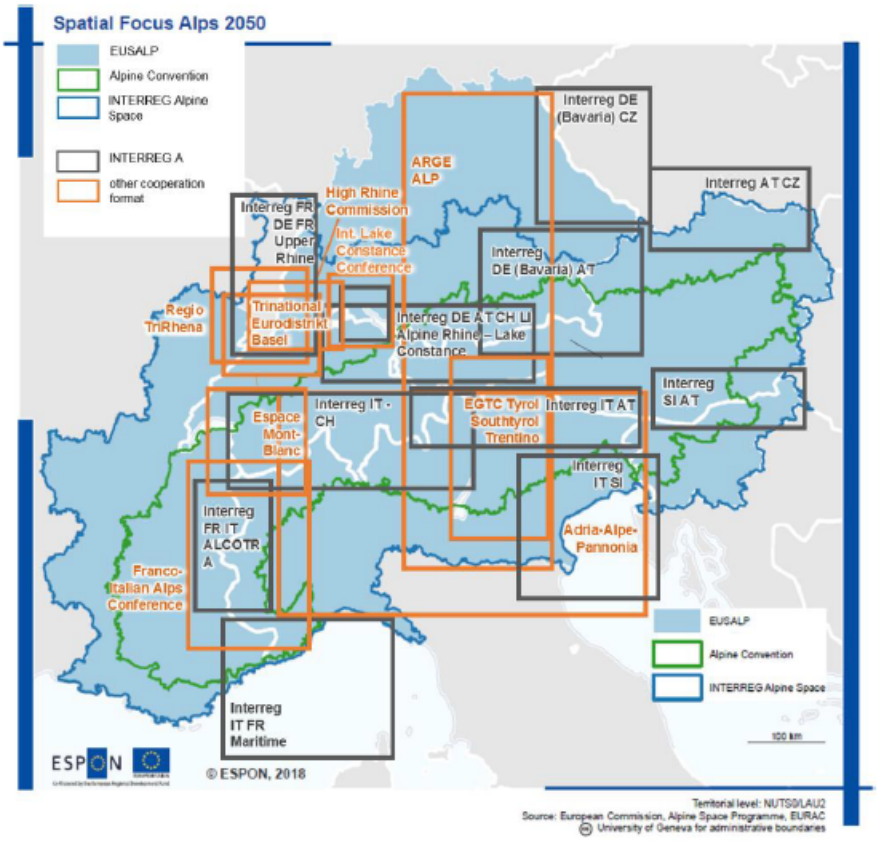
I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

Protection regimes should be **less static** as e.g. climate change bears strong implications for habitats and natural developments anyway.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

From a **future perspective** towards 2050 for the Alps 2050 region: What should the ecological situation look like? Please describe your personal 'vision'.

STEP 8/11



Governance: The Alpine Areas is characterised by small territorial units and a high density of national borders on the one side – and on the other side by a high intensity of cooperation formats on all levels, which is shown in the map.

Please give your opinion on the following postulates.

The small size of territorial units in the Alpine areas – in particular on the municipal level – is hindering efficient spatial development.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

In some parts of the Alps 2050 perimeter, the regional level is politically not strong enough.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

The high number of **national borders** is hindering efficient spatial development.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

Spatial development is too heavily dominated by **sectoral policies** and integrated spatial development and planning are not given enough relevance

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

The relevance of **European funding** for spatial development is overestimated.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

It would be useful to merge the **EUSALP** and the **Alpine Space** programme.

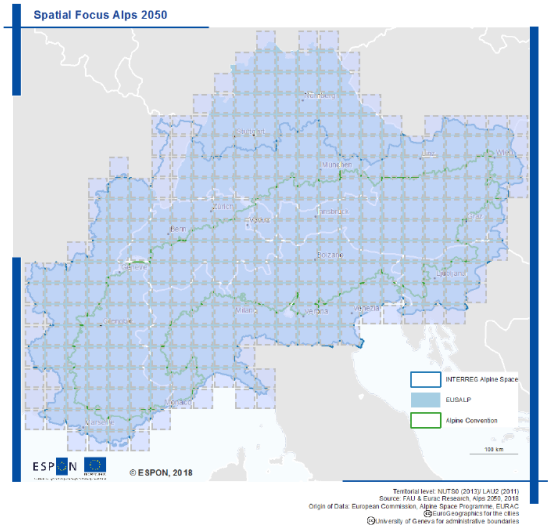
I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

A stronger cooperation of the **Alpine Convention** with the EUSALP and the Alpine Space programme bears high potentials.

I fully agree					Don't agree at all	I don't know
6	5	4	3	2	1	
○	○	○	○	○	○	○

From a **future perspective** towards 2050 for the Alps 2050: What should the governance system look like? Please describe your personal 'vision'.

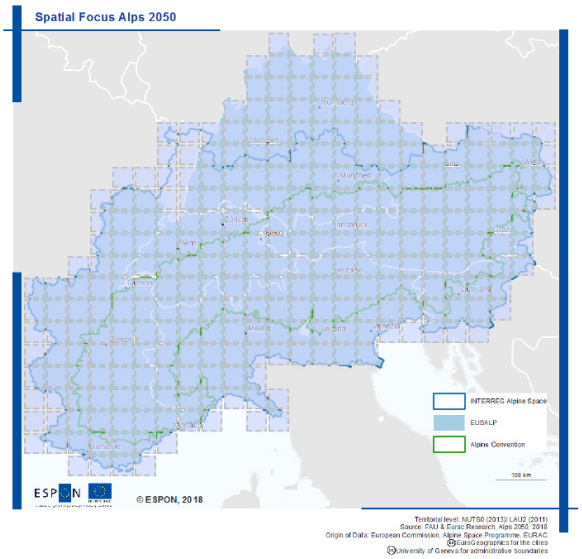
STEP 9/11



Based on your expertise: Which are the three most important **'areas of potentials'** in this map?
Please activate these areas by clicking on the boxes (each area can consist of one or more boxes).
Please comment on the potentials of these areas.

DELPHI Study Alps 2050

STEP 10/11



Based on your expertise: Which are the three most important 'challenged areas' in this map?
Please activate these areas by clicking on the boxes (each area can consist of one or more boxes).
Please comment on the challenges of these areas.

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STEP 11/11

There might be challenges and opportunities that are of more abstract character and that can hardly be located in the map.

Please feel free to formulate such aspects here.

Thank you for your support.

We will come back to you soon.

7.2 Delphi survey form – second round

DELPHI Study Alps 2050 (second survey)

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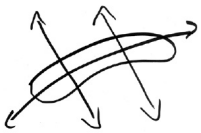
A) Scenarios

If we synthesize and simplify the experts' feedback to a certain extent, we can identify three general scenarios of the Alpine region towards the year 2050, reflecting the general priorities. In the following section, we summarise these perspectives in a very condensed and slightly provoking way.
On the next page, we will ask you to comment on these perspectives.

Scenario 1: Alpine protection	**Scenario 2: Functional linkages**	**Scenario 3: European accessibility**
The Alpine mountains are an area of a highly precious and vulnerable natural and cultural heritage. Touristic demand, transport needs, settlement growth and other human activities have put this region under high pressure. Protection regimes, supported by the Alpine Convention, are more than necessary and have to be further strengthened. The dynamic of the 'metropolitan ring' surrounding the Alps has to be organised in a way that does not question sustainable development within the Alps and the eco-system services (e.g. with regard to settlement sprawl, transport emissions).	The territorial structure of the Alpine region is complex: The numerous borders between the Alpine countries function as frictions with regard to functional linkages, public services, economic development, eco-system services etc. Moreover, the relationship between mountainous inner-Alpine and the more urbanised pre-Alpine parts has to be strengthened. Removing barriers and enhancing functional links is of key importance (e.g. for labour markets, budget organisation, public services).	The Alpine region is one of the most successful economic spaces in Europe and one of the most attractive touristic destinations worldwide. Moreover, the position in the middle of Europe causes the need for transit flows to ensure European economic prosperity. Against this background, ensuring good transport and economic flows at the Alpine and European level is of major importance (e.g. with regard to transport and ICT infrastructure).
		

Please provide a ranking of these scenarios. We would be thankful if you could comment the scenarios.

1. Rank: scenario no.
Comments

2. Rank: scenario no.
Comments

3. Rank: scenario no.
Comments

B) Towards implementation

Regardless which scenario you support most, we would like to reflect on the instruments that pave the way towards future Alpine development. The following proposals describe concrete actions that could be part of a political roadmap. Again, we would like to ask your degree of consent and your comments.

1. Large scale **corridors** (Brenner, Mont Blanc etc.) should be developed not only as transport infrastructure but as functional corridors of supraregional importance, that do not only share transport infrastructure but also important settlement functions, tourism flows etc. Transnational corridor development schemes should be developed.

I fully agree — Don't agree at all — I don't know

6 5 4 3 2 1

Comments

2. Defining budget schemes should be based on the provision of large scale **ecosystem services** – i.e. metropolitan areas 'paying' rural areas for delivering drinking water, landscape qualities etc.

I fully agree — Don't agree at all — I don't know

6 5 4 3 2 1

Comments

3. So far, the **protection regimes** in the Alpine countries are organised in very different ways. An Alpine wide protection regime should align the different approaches, including the instruments and cross-border linkages.

Comments

4. Spatial **fragmentation** is considered to be one of the most important issues for the environmental quality. Defining an Alpine wide area **connectivity** regime beyond protected areas would be an important step.

Comments

5. The definition of **local cross-border settlement partnerships** allows a better access to public services (in particular for schools, doctors, ...). The regions and countries of the Alpine regions should agree on the systematic establishment of such partnerships.

Comments

6. Overcoming **border-effects** has to be addressed by developing a binding to-do-list for the removal of border-barriers, in particular with regard to transport infrastructure, juridical barriers.

Comments

7. A political declaration should define the Alpine **settlement system**, listing metropolitan cities, large cities, regional cities etc. This would facilitate the organisation of public services, transport regimes, and spatial planning procedures.

Comments

8. There is an overall consensus that the current transport policy is too much based on national and regional particularities. Developing a binding Alpine wide **transport** policy is promising and should comprise a joint transnational toll system for transit, limitations to heavy goods transport via road and prescriptions for the construction of transport infrastructure.

Comments

9. Developing a stronger Alpine **economic policy** is regarded to be promising. This should include economic cluster policies, transnational labour mobility, digitalisation support, green economy transition support and a cross-border location policy.

Comments

10. **Governance**: There are controversial positions about the future governance in the Alpine region with different opinions about the relationship between EUSALP, Alpine Convention, the Alpine Space Program and other relevant institutions. Moreover, discussions extend particularly to the future of EU funding in general. Regardless of these debates: Would you agree that it is necessary to develop a stronger **institutionalisation** of Alpine wide politics, providing more budget and stronger political mandates?

Comments

11. **Tourism:** The first Delphi round has revealed different opinions about the future role of tourism. The balance of socio-economic potential and ecological burden is seen differently. Beyond this controversy: Should there be an Alpine wide, large scale zoning of touristic activities, comprising different categories like 'touristic hot spots', 'small scale endogenous tourism', and 'touristic prohibition zones'?

Comments

12. **AOB:** Which other concrete measures would you like to suggest or underline for the future development of the Alps?