# Strategy-development for the Alpine Space

# Annexes to the Second Draft Report

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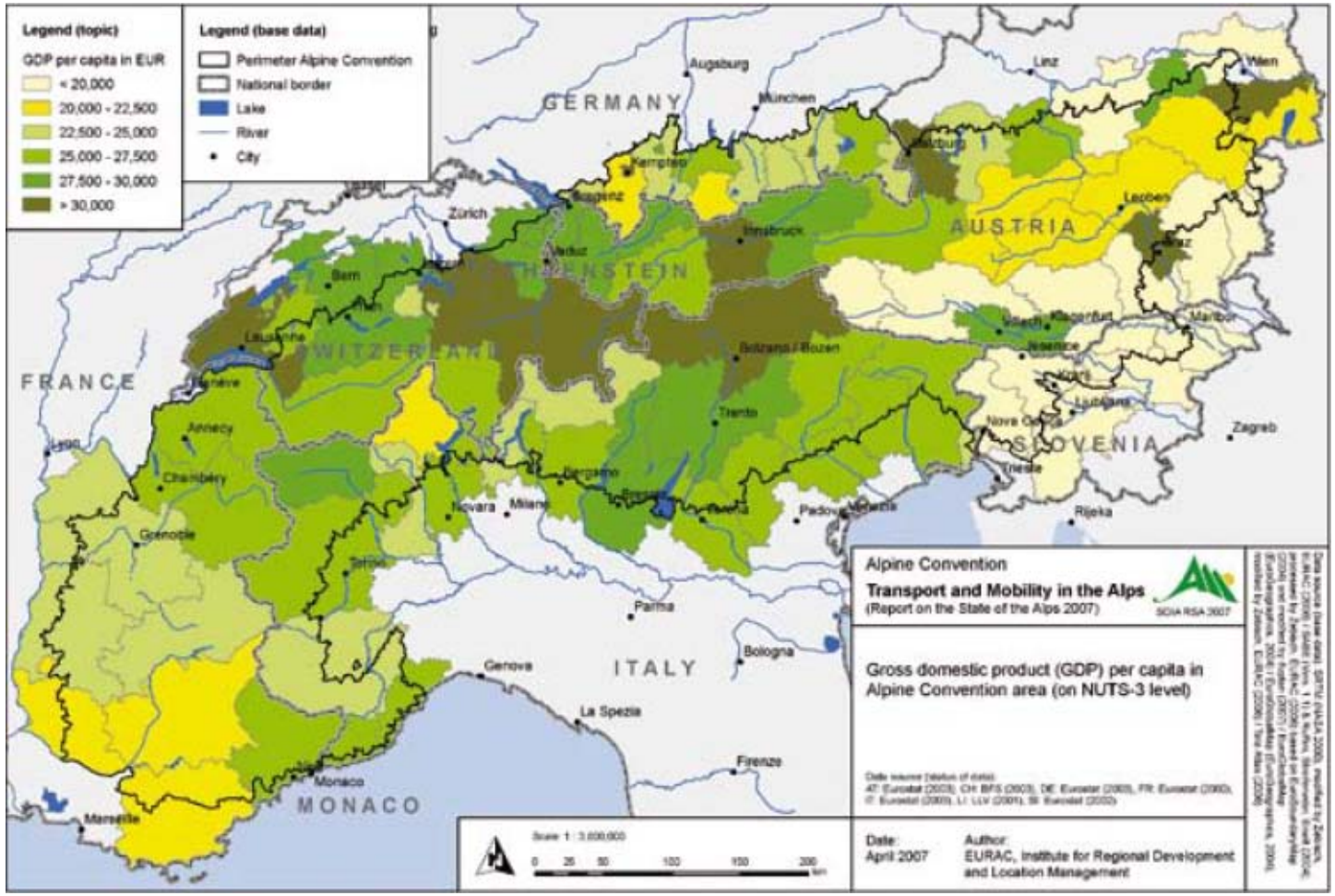
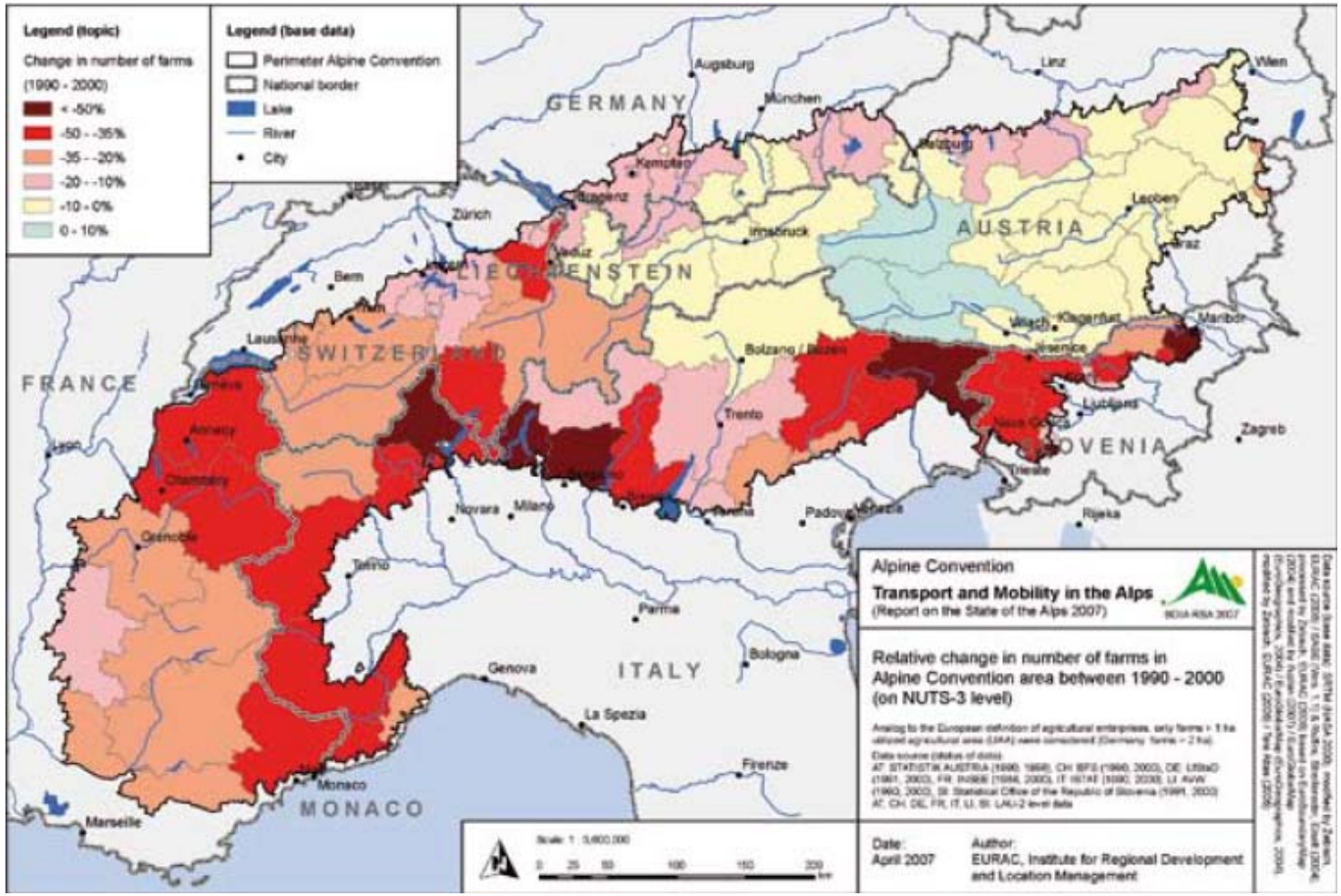
**Annex 1: Maps used as evidence base for the identification of driving forces in the Alps**




**Map 1. GDP in the Alps**

*The map displays the territorial patterns of disparities in GDP in the Alpine Space, with extreme values to be found in the central and eastern Alps.*

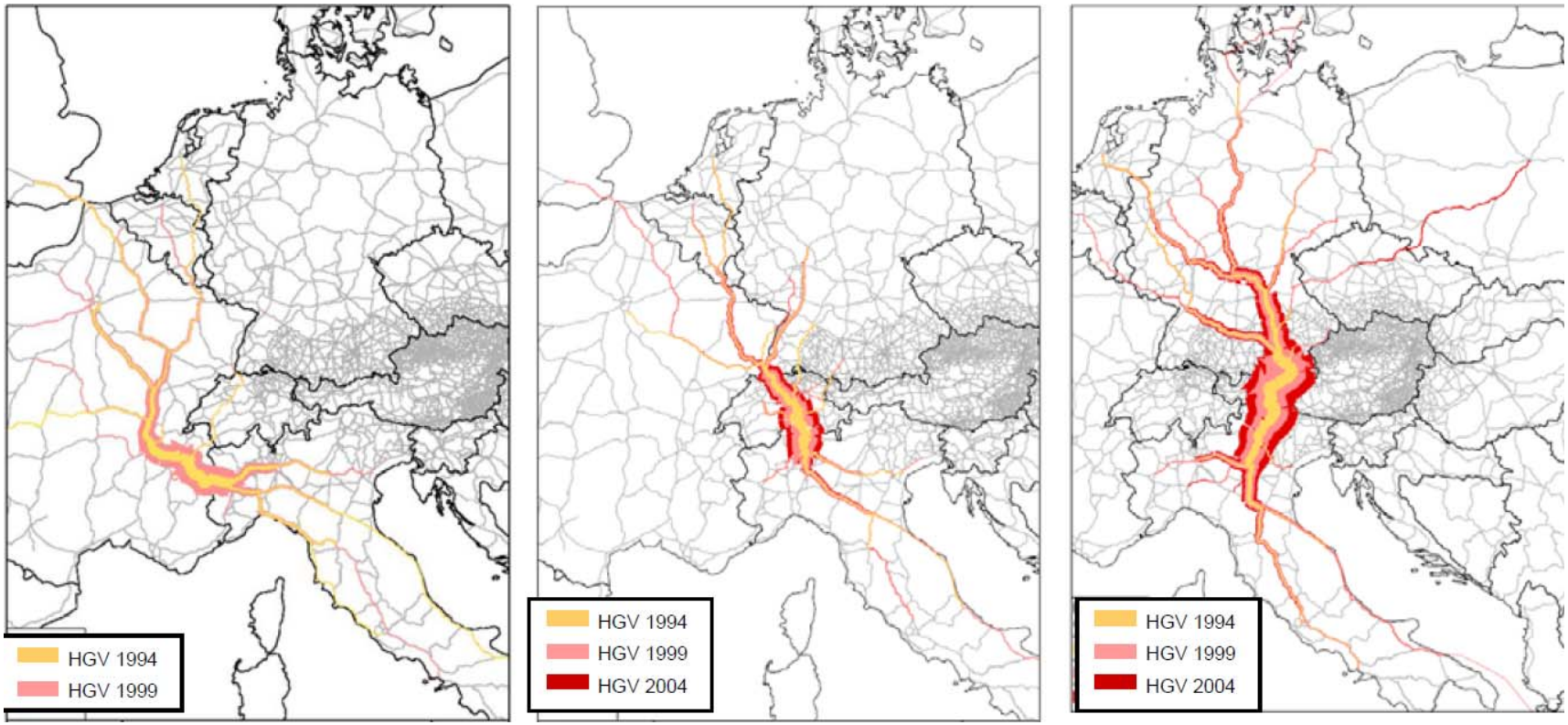
*Source : Permanent Secretariat of the Alpine Convention (2007)*




**Map 2. Change in the number of farms between 1990 and 2000**

*The number of farms is shrinking, especially in the southern and western alpine areas. By comparison, the Eastern Alps display a less important loss, and in some cases even an increase in the number of farms. The issue is both to allow for a transition to other economic activities, and to create appropriate framework conditions for a viable alpine agriculture.*

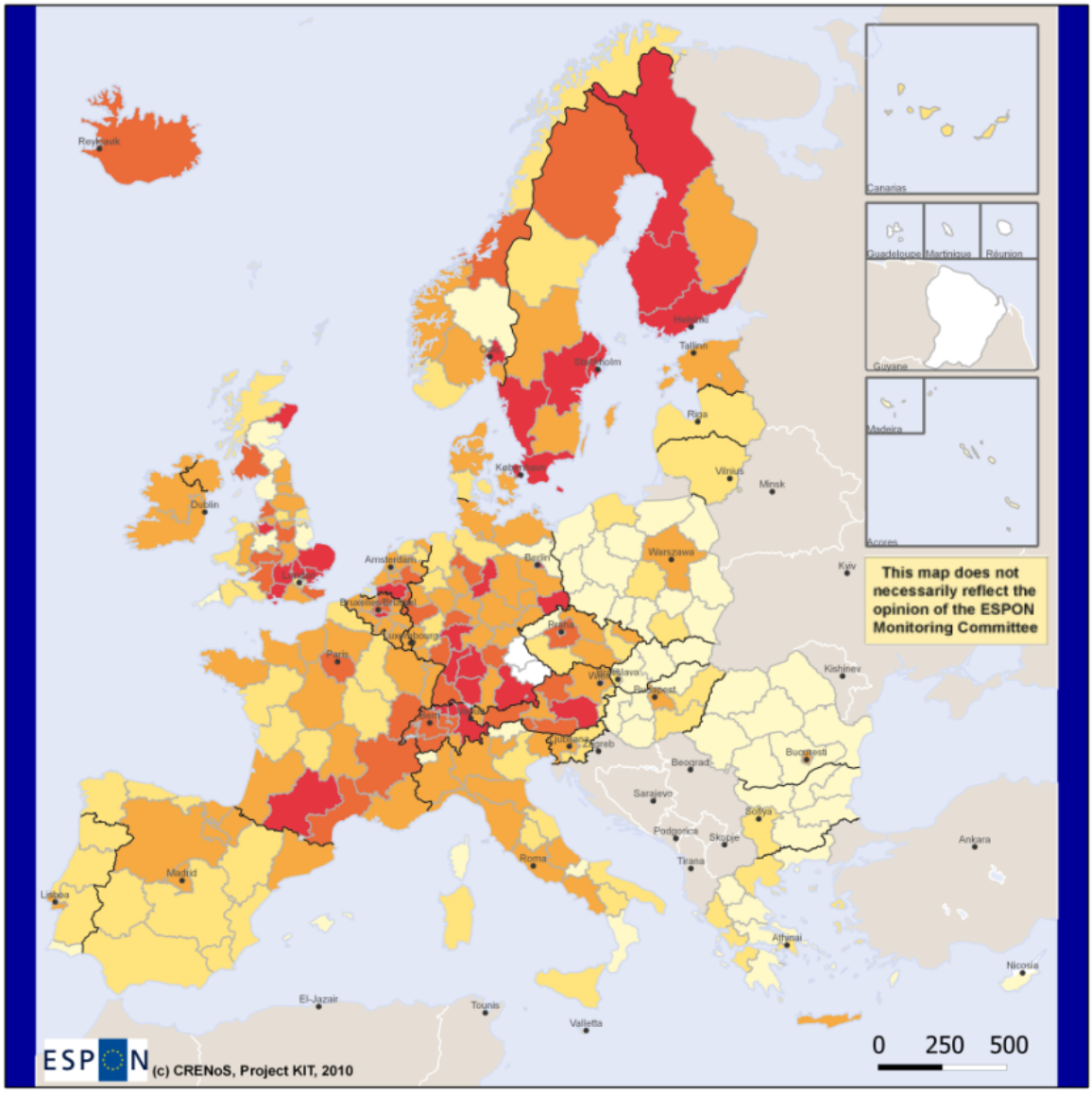
*Source: Permanent Secretariat of the Alpine Convention (2007)*




**Map 3. Attraction zones of Frejus, Saint-Gothard and Brenner passes between 1994 and 2004**

*Theses maps show the traffic increase over a period of 10 years as well as the ramifications of traffic all over Europe.*

*Source : Alpine Space Programme Monitraf project, Region Rhône-Alpes et al. (2008) Monitraf – Synthesis report*




**Map 4. R&D expenditure as share of GDP**

The share of R&D in the GDP is globally high in the Alpine Space.

*Source : BEST et al., 2012*

## Annex 2: Main strengths and weaknesses of territorial types

| SW metropolis | | strengths | weaknesses |
|---|---|---|---|
| **economy** | E1 accessibility to markets | excellent : heart of Europe / good connections to global gateways through infrastructure networks | freight transport of goods coming from / to the metropolises often relies on road infrastructures |
| | E2 productive structure | large and diverse productive basis + large range of high services, location of decision centres (headquarters, design, finance, etc.) | high prices and space availability limit the framework for production activities<br>congestion is a limit to the economic efficiency |
| | E3 labour market | large human resources and job opportunities, high attractively in the field of high services | development of a low qualified service sector substituting to better paid jobs in the production sector<br>the size of the metropolis implies wide travel to work migrations |
| | E4 R & D / innovation | often high level of R&D and innovation, high level ranked universities, good level of private R&D activities | |
| | E5 entrepreneurship | very good business culture and business support (incubators, services, networking), existence of world market leading companies | sensitivity to global economic conditions (crisis) |
| | E6 revenue structure | revenues are more and more plugged to the global economy, well balanced – net payers | |
| | *additional remarks* | *competitive edge on innovative sectors (micromechanics, biotech's, etc.)* | |
| **society** | S1 public services | very good (all kinds of services on high quality level) | |
| | S2 health care and cure | very good (all kinds of services on high quality level) | |
| | S3 higher education | very good (all kinds of services on high quality level) | |
| | S4 cultural heritage | | |
| | *additional remarks* | | |
| **ecology** | B1 local climate conditions | | Heat peaks in summer worsen living conditions |
| | B2 topography | lowlands location offer wide growth opportunities, attractive surrounding (close distance to mountains) | land consumption and urban sprawl offer no optimal conditions for urban management and generate costs |
| | B3 natural heritage / biodiversity | | |
| | B4 natural resources | | high consumption of natural resources from a wide area around the metropolis (e.g. water)<br>wide range of pollutions because of anthropic activities : air, soil, water, noise, etc. |
| | *additional remarks* | | |
| **territory** | T specific aspects of spatial/ territorial development | | unbalance between population development and housing capacities generating high prices, sprawling and high level of mobility |

| SW alpine cities | | strengths | weaknesses |
|---|---|---|---|
| **economy** | E1 accessibility to markets | very good (heart of Europe / good infrastructure)<br>good connections with the metropolises | |
| | E2 productive structure | very good (mixture SMEs / larger companies, wide range of sectors production + services) | constraints of spatial capacities are often caused by the topography of their sites (valley location) |
| | E3 labour market | in accordance with productive structure | the influence area of the cities implies wide travel to work migrations |
| | E4 R & D / innovation | very good (often in combination with regional research institutions) | |
| | E5 entrepreneurship | very good (business culture / good business support) | constraints of spatial capacities |
| | E6 revenue structure | well balanced - net payers | |
| | *additional remarks* | *existence of world market leading companies*<br>*competitive edge on innovative sectors (micromechanics, biotech's, etc.)* | |
| **society** | S1 public services | very good (all kinds of services on high quality level) | |
| | S2 health care and cure | very good (all kinds of services on high quality level) | |
| | S3 higher education | very good (all kinds of services on high quality level) | |
| | S4 cultural heritage | high potential of material and immaterial cultural heritage | |
| | *add remarks* | *broad variety of cultural life*<br>*distinctive and attractive urban culture* | |
| **ecology** | B1 local climate conditions | | Heat peaks in summer worsen living conditions |
| | B2 topography | attractive surrounding (close distance to mountains) | constraints of spatial capacities, risks of flooding's |
| | B3 natural heritage / biodiversity | | |
| | B4 natural resources | | air pollution, noise of traffic |
| | *add remarks* | *cities close to attractive surroundings (mountains, lakes)* | |
| **territory** | T specific aspects of spatial/ territorial development | | unbalance between population development and housing capacities generating high prices, sprawling and high level of mobility |

| SW stable or growing rural areas | | strengths | weaknesses |
|---|---|---|---|
| **economy** | E1 accessibility to markets | in general, good accessibility thanks to infrastructure network and proximity of metropolises and cities | |
| | | infrastructures are a backbone for development | |
| | E2 productive structure | a dense pattern of SMEs competitive at a local and regional level | few SMEs can compete over the regional level |
| | | capacities of endogenous development with a diverse productive structure beside a productive agriculture | |
| | | a good diffusion of activities thanks to a dense network of infrastructures | |
| | E3 labour market | a rather wide local / regional market | high share of commuters |
| | | proximity of cities widen the scope of local labour markets | |
| | E4 R & D / innovation | | |
| | E5 entrepreneurship | local/regional productive culture and existence of entrepreneur | |
| | | good conditions for businesses development : reasonable prices+good services and infrastructures | |
| | E6 revenue structure | | |
| | *additional remarks* | *rural areas revitalised both through inner potentials and the proximity of cities* | |
| **society** | S1 public services | a good level of public services through a dense network of small cities | |
| | S2 health care and cure | good level of services | |
| | | proximity to cities and metropolises offer high level services at a limited travel time | |
| | S3 higher education | proximity to cities and metropolises offer high level services at a limited travel time | |
| | S4 cultural heritage | variety of cultural heritage | |
| | *add remarks* | | |
| **ecology** | B1 local climate conditions | healthy climate make the location attractive | |
| | | capacities to tackle natural constraints | |
| | B2 topography | | |
| | B3 natural heritage / biodiversity | agriculture contributes to conserve attractive landscapes | loss of biodiversity with infrastructure and settlement development as well as with intensive agriculture |
| | B4 natural resources | capacities to value natural resource economically | |
| | *add remarks* | | |
| **territory** | T specific aspects of spatial/ territorial development | a dense pattern of small attractive cities offering a wide range of local / regional services; good connections with cities and metropolises through a good network of infrastructures; infrastructures as backbones for a deep reaching development | |

| SW declining rural areas | | strengths | weaknesses |
|---|---|---|---|
| **economy** | E1 accessibility to markets | | longer distance to higher transport network<br>weak coverage with high speed internet |
| | E2 productive structure | robust against global crises | mainly locally/regionally focused tiny SMEs not competitive in national / global markets; a higher share of agriculture |
| | E3 labour market | | few job opportunities for highly qualified<br>distance to cities / metropolises limit the access to their job market |
| | E4 R & D / innovation | | |
| | E5 entrepreneurship | low prices for ground | services for business are limited |
| | E6 revenue structure | | higher share of public transfers |
| | *additional remarks* | | |
| **society** | S1 public services | basic level of services | only low to medium level services because of shrinking demand and financing |
| | S2 health care and cure | | distance to emergency services / specialists (e.g. child doctor) |
| | S3 higher education | | long distance forcing younger to leave regions |
| | S4 cultural heritage | still existing with broad variety, immaterial c. h. on high level | |
| | *add remarks* | | |
| **ecology** | B1 local climate conditions | | limited capacities to tackle natural constraints |
| | B2 topography | | longer distance to high speed transport network |
| | B3 natural heritage / biodiversity | agriculture contributes to conserve attractive landscapes | loss of biodiversity with intensive agriculture |
| | B4 natural resources | capacities to value natural resource economically | |
| | *add remarks* | | |
| **territory** | T specific aspects of spatial/ territorial development | | increasing costs for infrastructure maintenance regarding inhabitants concerned |

| SW tourism areas | | strengths | weaknesses |
|---|---|---|---|
| **economy** | E1 accessibility to markets | mostly very good (information, booking, transports)<br>good connections with lowlands and their population basin though infrastructure (rail, road, airports) and services | some punctual access difficulties in winter times because of weather conditions and valley structures |
| | E2 productive structure | international high competitiveness (quasi monopole in winter sports tourism)<br>wide benefits spread from tourism implying diverse activities in services for tourists and maintenance for equipment's<br>a capacity of the local economy to retract and expense | an economy relying heavily on revenue transfer from outside<br>often a seasonal economy meaning the alternating of high and low season |
| | E3 labour market | a diverse labour market offering numerous job opportunities<br>capacities to mix different activities to make an income all around the year<br>good sectorial education systems | a labour market relying partly on seasonal workers from outside of the area<br>a labour market relying on few highly qualified jobs |
| | E4 R & D / innovation | important induction of the tourism sector on R & D and technology but mostly located outside these areas | innovation is mostly technology driven rather than service driven |
| | E5 entrepreneurship | good entrepreneurship in the field of tourism<br>very good sectorial mix of SMEs and few large scale companies<br>low investment is needed to start up | |
| | E6 revenue structure | a high level of transfers | revenues coming from outside on a seasonal basis<br>strong level of direct or indirect subsidies |
| | *additional remarks* | *high cross sector potential (e.g. agriculture, forestry, handicraft, etc.)* | *risk level at financial market highest category (Basel II criteria)* |
| **society** | S1 public services | very good level of public services with benefits to the local in the high season as basis of public services for the population living all the year in these areas | risks of deficits outside season |
| | S2 health care and cure | emergency services are very good in season | |
| | S3 higher education | many graduate offers in tourism and hospitality on university level<br>they are located in cities | |
| | S4 cultural heritage | part of product authenticity, by this locals keep traditions alive | |
| | *add remarks* | | |
| **ecology** | B1 local climate conditions | | |
| | B2 topography | mountains make the unique characteristic of the product / experience<br>good management of seasonal hazards | negative impacts of transports with access difficulties in winter times<br>damages by natural hazards |
| | B3 natural heritage / biodiversity | remarkable landscapes of high mountains<br>a high-ranking level of biodiversity in Europe with a important concentration of parks | sometimes visitor pressure above carrying capacity of nature<br>skiing equipment not always compatible with landscape preservation |
| | B4 natural resources | high potential to be valued for tourism products often linked to services (e.g. health, wellness). | high exogenous pressure to use natural resources for other uses than tourism<br>a rising consumption of water for artificial snowing |
| | *add remarks* | | |
| **territory** | T specific aspects of spatial/ territorial development | | high prices for ground and housing do not correspond with average income of locals |

## Annex 3: Raw list of opportunities and trends emerging by impacts of driving forces to strengths and weaknesses

| Territorial type metropolises | |
|---|---|
| **raw list of opportunities** | |
| **climate change** | |
| E4 R & D / innovation | capacities to innovate to face climate change challenges (e.g. on water and energy supply) |
| S1 public services | investment in low carbon services |
| S3 higher education | developing R&D capacities on climate change challenges |
| **energy** | |
| E4 R & D / innovation | capacities to innovate in low consumption models and new energy production / distribution patterns |
| T territorial development | more compact metropolises and shorter transport lines |
| **global economy** | |
| E2 productive structure | adaptive and innovative structure able to maintain existing positions and create new ones in a global economy |
| E3 labour market | high attractiveness to highly qualified immigrants |
| E4 R & D / innovation | strong capacities of universities and research centres to compete and build alliances |
| E5 entrepreneurship | global competitors coming in, capacities to build global alliances |
| add remarks | opportunity to gain global positions |
| S1 public services | high level of public security and public services |
| T territorial development | spatial organisation is efficient compared to other world metropolises |
| **knowledge and innovation** | |
| E2 productive structure | capacity to fuel the productive structure with knowledge and innovation capacities |
| E3 labour market | attracting the Alps and their metropolises to high profile professionals |
| E4 R & D / innovation | strong capacities of universities and research centres to compete and build alliances |
| E5 entrepreneurship | reinforcement of productive cultures in entrepreneurship |
| Ea add remarks | capacities to maintain and increase the competitive edge |
| B1 local climate conditions | capacity to value innovation benefits to manage climate change |
| B4 natural resources | capacity to value innovation benefits to manage shorter resources |
| **demographic change** | |
| E3 labour market | winning the fight for talents with global players |
| E4 R & D / innovation | making use of the market potential of an ageing society |
| S1 public services | economic capacities to maintain a high level of public services |
| S2 health and care | economic capacities to maintain a high level of healthcare services, capacities to innovate in this field |
| **transport** | |
| E2 productive structure | growth of the transport sector |
| E4 R & D / innovation | capacities to innovate in the field of transports |
| S1 public services | high level of public transports and infrastructures reinforcing the global attractively |
| B1 local climate conditions | support for low carbon transport systems |
| **raw list of threats** | |
| **climate change** | |
| E2 productive structure | higher constraints of spatial capacities |
| Ea add remarks | energy availability in high summer because of low level in rivers to cool power plants |
| S1 public services | higher hazard occurrences and more means/costs for hazard prevention and mitigation |
| S2 health and care | emergency management of climate extreme events |
| B4 natural resources | water availability |
| **energy** | |
| E1 accessibility to markets | increasing costs (they apply to all areas and are rather neutral to that extent) |
| S1 public services | rising energy costs of public equipment's, investment in higher energy efficiency, higher costs public transport |
| B4 natural resources | hydro production faces a reduction of resource and a necessity to share it |
| **global economy** | |
| E1 accessibility to markets | increasing costs (they apply to all areas and are rather neutral to that extent) |
| E2 productive structure | risks of delocalisation still exist |
| E4 R & D / innovation | risk of loosing some competitive edge in front of new global competitors |
| E5 entrepreneurship | limited capacities for capital risk compared to competitors, risk of loss of control of capital |
| E6 revenue structure | risk of shrinking public money support in key competition sectors (shrinking public demand) |
| Ea add remarks | risk of emerging competitors |
| S4 cultural heritage | integration of immigrants from other cultures |
| B4 natural resources | risks of higher economic costs to integrate ecological costs |
| **knowledge and innovation** | |
| E1 accessibility to markets | loss of advantage against imitators / copyright ignorers |
| E4 R & D / innovation | risk of loosing some competitive edge in front of new global competitors |
| add remarks | growth of competitors |
| **demographic change** | |
| S1 public services | rising demand of public services and associated costs |
| S2 health and care | rising demand of healthcare services and associated costs |
| **transport** | |
| E1 accessibility to markets | increasing costs (they apply to all areas and are rather neutral to that extent) |
| B4 natural resources | increase of air pollution in metropolises |

| Territorial type Alpine cities | |
|---|---|
| **raw list of opportunities** | |
| **climate change** | |
| E4 R & D / innovation | need for climate protection / energy efficiency offers opportunities in technology and consulting/engeneering |
| S1 public services | investments in low carbon services |
| S3 higher education | gaining leading position in R & D (see above) |
| **energy** | |
| E4 R & D / innovation | need for climate protection / energy efficiency offers opportunities in technology and consulting/engeneering |
| S3 higher education | gaining leading position in R & D (see above) |
| **global economy** | |
| E2 productive structure | growing importance of regionalism in some sectors |
| E3 labour market | high attractiveness to highly qualified immigrants |
| E5 entrepreneurship | global acting companies as investors to enter European market |
| Ea add remarks | opportunities of exports in global markets |
| S4 cultural heritage | basis for unique products and services in global uniform markets |
| **knowledge and innovation** | |
| E4 R & D / innovation | in combination with regional resources and traditions |
| E5 entrepreneurship | start-ups by high educated |
| Ea add remarks | capacities to maintain and increase the competitive edge |
| S2 health and care | regional competence centres taking part of rural institutions |
| S3 higher education | strengthening leading position in applied sciences linked to regional traditions |
| B4 natural resources | leading position in field of use regional resources |
| **demographic change** | |
| E4 R & D / innovation | making use of the market potential of an ageing society |
| S1 public services | economic capacities to maintain a high level of public services |
| S2 health and care | economic capacities to maintain a high level of healthcare services, capacities to inovate in this field |
| **transport** | |
| E3 labour market | new jobs by new transport offers |
| B1 local climate conditions | support to install carbon neutral transport by region / country |
| **raw list of threats** | |
| **climate change** | |
| E2 productive structure | higher constraints of spatial capacities |
| Ea add remarks | energy availability in high summer because of low level in rivers to cool power plants |
| S1 public services | rising costs of risk prevention and mitigation |
| S2 health and care | emergency management of climate extreme events |
| S4 cultural heritage | threat on some traditional alpine activities |
| B2 topography | increasing risk of mass movements |
| B4 natural resources | drinking water availability |
| **energy** | |
| E1 accessibility to markets | increasing costs (but problem to all) |
| E3 labour market | raising costs to commuters |
| S1 public services | investment in higher energy efficiency, higher costs public transport /buildings |
| S3 higher education | share of commuting students decline, pressure to housing market |
| B4 natural resources | part-time availability of water resource for hydro production |
| **global economy** | |
| E1 accessibility to markets | increasing costs (but problem to all) |
| E2 productive structure | risks of delocalisation's |
| E4 R & D / innovation | research fields with high need of financial resources could get lost |
| S1 public services | integration of immigrants from other cultures |
| Ba add remarks | risks of higher economic costs to integrate ecological costs |
| **knowledge and innovation** | |
| E2 productive structure | loss of advantage against imitators / copyright ignorers |
| add remarks | growth of competitors |
| **demographic change** | |
| E3 labour market | fight for talents with global players / metropolitans |
| E5 entrepreneurship | transmission of SME to next generation |
| S1 public services | rising demand of public services and associated costs |
| S2 health and care | rising demand of healthcare services and associated costs |
| **transport** | |
| E1 accessibility to markets | increasing freight transport in cities with node function |
| E2 productive structure | higher costs (but relevant to all) |
| E6 revenue structure | increasing costs to maintain transport infrastructure |
| S1 public services | increasing costs connecting rural declining areas in periphery |
| B4 natural resources | increase of air pollution in cities and connected valleys |

| Territorial type stable and growing rural areas | | |
|---|---|---|
| **raw list of opportunities** | | |
| **climate change** | | |
| E4 | R & D / innovation | capacities to innovate for better water consumption |
| S1 | public services | investment in low carbon services |
| **energy** | | |
| E4 | R & D / innovation | capacities to innovate in low consumption models and new energy production / distribution patterns |
| Ea | add remarks | investing in energy autonomous regions (energy to region by region) |
| S4 | cultural heritage | basis for unique products and services in global uniform markets |
| B4 | natural resources | capacities to value different resources in the field of renewable energies |
| **global economy** | | |
| E2 | productive structure | a productive structure associated to the cities and metropolises and benefiting from their place in globalisation |
| E3 | labour market | growing attractively as "backyard" of cities and metropolises |
| S4 | cultural heritage | basis for unique products and services in global uniform markets |
| **knowledge and innovation** | | |
| E4 | R & D / innovation | capacities to benefit from R&D results from cities and metropolises |
| S3 | higher education | strengthening links between education structures in the areas and those in cities and metropolises on advanced topics |
| B1 | local climate conditions | capacity to value innovation benefits to manage climate change |
| B4 | natural resources | capacity to value innovation benefits to manage resources |
| **demographic change** | | |
| E4 | R & D / innovation | making use of the market potential of an ageing society |
| S1 | public services | availability economic capacities to maintain a level of public services |
| S2 | health and care | economic capacities to maintain a level of care services |
| **transport** | | |
| E4 | R & D / innovation | development of low consumption transports |
| S1 | public services | support for low carbon transport systems |
| **raw list of threats** | | |
| **climate change** | | |
| E2 | productive structure | impact on agriculture, higher costs for intensive agriculture (e.g. water), limits for the intensive agricultural model |
| B2 | topography | higher hazard occurrences and more means for hazard prevention and mitigation |
| B4 | natural resources | higher mobilisation of scarcer water supplies for activities and human settlements |
| **energy** | | |
| E1 | accessibility to markets | increasing costs (they apply to all areas and are rather neutral to that extent) |
| S1 | public services | rising energy costs of public equipment's, investment in higher energy efficiency, higher costs public transport |
| B4 | natural resources | hydro production faces a reduction of resource and a necessity to share it |
| **global economy** | | |
| Ba | add remarks | risks of higher economic costs to integrate ecological costs |
| **knowledge and innovation** | | |
| **demographic change** | | |
| E5 | entrepreneurship | transmission of SME to next generation |
| S1 | public services | covering rising demand of public services to elderly / keeping services for children (decline of age groups) |
| S2 | health and care | rising demand of care services: associated costs / support of relatives |
| B3 | natural heritage / biodiv. | transmission of farms to next generation, capacity to keep landscape conservation |
| **transport** | | |
| E3 | labour market | rising costs of transports for commuters, less attractive living location because of increasing transport costs |
| S1 | public services | higher costs of public transports and possible impact on the quality of service |
| B3 | natural heritage / biodiv. | high level of mobility means pollution impacts |

| Territorial type declining rural areas | | |
|---|---|---|
| **raw list of opportunities** | | |
| **climate change** | | |
| E3 | labour market | renewable energy resources as growing sector |
| B1 | local climate conditions | summer with fresh air attractive to people from cities / metropolitans |
| **energy** | | |
| E3 | labour market | additional jobs in field of renewable energies |
| E6 | revenue structure | additional revenues out of energy production / storage |
| S3 | higher education | green energy creates jobs to highly qualified |
| B1 | local climate conditions | green / zero emission transport and energy supply |
| B2 | topography | wind / water power production / energy storage |
| B4 | natural resources | green energy production / storage |
| **global economy** | | |
| S4 | cultural heritage | basis for unique products and services in global uniform markets |
| **knowledge and innovation** | | |
| E2 | productive structure | in case of existing high speed internet services start-up find cheap starting conditions |
| E4 | R & D / innovation | cooperation with R&D in alpine cities / metropolises |
| S4 | cultural heritage | use of local traditional knowledge for innovation |
| B4 | natural resources | leading position in field of use regional resources |
| T | territorial development | use of conversion areas (transport / military) for start-up centres |
| **demographic change** | | |
| **transport** | | |
| S1 | public services | green economy / carbon neutral offers to increase local/regional demand |
| **raw list of threats** | | |
| **climate change** | | |
| E2 | productive structure | higher constraints of spatial capacities |
| **energy** | | |
| E1 | accessibility to markets | increasing costs (but problem to all) |
| S1 | public services | investment in higher energy efficiency, higher costs public transport /buildings |
| S4 | cultural heritage | high investments in energy inefficient historic buildings |
| B3 | natural heritage / biodiv. | monoculture biomass production |
| **global economy** | | |
| **knowledge and innovation** | | |
| E1 | accessibility to markets | closing white areas on maps of high speed internet connections |
| E5 | entrepreneurship | lack of innovation in SMEs |
| **demographic change** | | |
| E5 | entrepreneurship | transmission of SME to next generation |
| S1 | public services | covering rising demand of public services to elderly / keeping services for children (decline of age groups) |
| S2 | health and care | rising demand of care services: associated costs / support of relatives |
| S4 | cultural heritage | transmission of immaterial cultural heritage to next generation |
| B3 | natural heritage / biodiv. | transmission of farms to next generation, capacity to keep landscape conservation |
| **transport** | | |
| E3 | labour market | reduction of public transport offers |
| E6 | revenue structure | high investments and running costs to provide competitive services |

| Territorial type tourism areas | | |
|---|---|---|
| **raw list of opportunities** | | |
| **climate change** | | |
| E2 | productive structure | better conditions in spring and autumn |
| Ea | add remarks | debate about climate change as driver to a green tourism economy |
| **energy availability** | | |
| E4 | R & D / innovation | need for climate protection / energy efficiency offers opportunities in technology and consulting/engineering |
| Ea | add remarks | cross sectorial potential for local / regional energy supply |
| B1 | local climate conditions | green / zero emission transport and energy supply (image factor) |
| B2 | topography | water power production / energy storage |
| B4 | natural resources | green energy production / storage |
| **global economy** | | |
| E1 | accessibility to markets | entrance and further growth in international / intercontinental source markets |
| E3 | labour market | coverage of additional seasonal work force |
| E4 | R & D / innovation | knowledge and technology transfer to other mountain areas |
| E5 | entrepreneurship | exogenous investors for large scale tourism projects |
| S1 | public services | very high security level |
| S2 | health and care | global competitive health treatments |
| S3 | higher education | study offers and networking |
| S4 | cultural heritage | trend of "glocalisation" = local authentic products / services against global uniform tourism offers |
| **knowledge and innovation** | | |
| E2 | productive structure | development of new integrated winter experience products |
| E4 | R & D / innovation | knowledge and technology transfer to other mountain areas |
| S3 | higher education | study offers, research and networking of tourism universities/faculties |
| S4 | cultural heritage | tourism innovation by combination of traditional knowledge and new research results |
| B4 | natural resources | leading position in field of use regional resources |
| **demographic change** | | |
| E2 | productive structure | combined services of health and nature experience |
| S2 | health and care | reducing seasonality by offering new services in heath / cure |
| **transport** | | |
| E1 | accessibility to markets | new high speed railway connections / regional airports nearby |
| E3 | labour market | creation of jobs for higher qualified (engineers, informatics) |
| S1 | public services | green economy / carbon neutral offers to increase local/regional demand |
| **raw list of threats** | | |
| **climate change** | | |
| E2 | productive structure | higher constraints of spatial capacities, mid height winter sport regions will get strong problems |
| E3 | labour market | shortening labour market in the snow economy. Seasonal workers from outside would be the first concerned |
| E4 | R & D / innovation | additional focus on technical solutions |
| E6 | revenue structure | in medium height winter destinations growing tendency for public engagement |
| Ea | add remarks | on-going increase of risks-ranking in affected regions (productivity, natural hazards) |
| S4 | cultural heritage | damage of material cultural heritage by natural hazards |
| B2 | topography | higher hazard occurrences and more means for hazard prevention and mitigation |
| B3 | natural heritage / biodiv. | higher anthropic pressure in the areas where snow prospects are maintained |
| B4 | natural resources | higher mobilisation of scarcer water supplies for artificial snowing especially in southern Alps |
| **energy availability** | | |
| E1 | accessibility to markets | increasing costs (but problem to all) |
| E2 | productive structure | increasing costs to high energy consuming infrastructure (e.g. snow making, ropeways) |
| E6 | revenue structure | additional efforts in case of public tourism infrastructure with high energy demand |
| S1 | public services | investment in higher energy efficiency, risk of shrinking in reconversion tourism areas |
| S4 | cultural heritage | high investments in energy inefficient historic buildings |
| B3 | natural heritage / biodiv. | monoculture biomass production |
| **global economy** | | |
| E6 | revenue structure | increasing costs (subsidies) for global marketing |
| S2 | health and care | high competition by mountain regions with low labour cost |
| **knowledge and innovation** | | |
| E5 | entrepreneurship | lack of innovation in SMEs |
| **demographic change** | | |
| E1 | accessibility to markets | accessibility not adapted to handicapped /low mobility people |
| E2 | productive structure | decrease of market potential for winter sports/ families in traditional source markets |
| E3 | labour market | strong decrease of endogenous labour potential |
| E5 | entrepreneurship | transmission of SME to next generation |
| S2 | health and care | additional demand by older retirement immigrants without families in region |
| S3 | higher education | younger high educated leave and come not back (brain drain effect) |
| S4 | cultural heritage | transmission of immaterial cultural heritage to next generation |
| B3 | natural heritage / biodiv. | transmission of farms to next generation, capacity to keep landscape conservation |
| T | territorial development | high pressure by second home / retirement residents in real estate market / extrusion of younger locals |
| **transport** | | |
| E6 | revenue structure | high investments and running costs to provide competitive services |
| B1 | local climate conditions | growing impacts by transport especially air transport |
| B3 | natural heritage / biodiv. | need of additional space for transport infrastructure |

**Annex 4: Fields of actions emerging from the SWOT, related strategic objectives and thematic objectives with corresponding thematic objectives (proposed by the EC)**

| Fields of actions based on the SWOT | R | Related strategic objectives proposed by the expert team | Thematic objectives proposed by the expert team | Thematic objectives for Cohesion Policy proposed by the Commission |
|---|---|---|---|---|
| Spatial organization, transport and mobility management | M | Foster resilience<br>Turn to a green economy | Develop a new quality of management of mobility and transport needs | Promoting sustainable transport and removing bottlenecks in key network infrastructures |
| | | | Conversion to a low carbon energy system | Supporting the shift to a low carbon economy in all sectors |
| | | | Efficient and sustainable use of endogenous natural resources | |
| Development models for stable or declining territories | M | Foster resilience | Capitalize on diverse human and cultural potentials | |
| | | | Balance the risks and use the opportunities of demographic change | |
| Accessibility: digital gap and physical access | L | Foster resilience | Develop a new quality of management of mobility and transport needs | Enhancing access to and use and quality of information and communication technologies |
| Low consumption models and innovation in the energy and water sector | H | Turn to a green economy<br>Foster resilience | Efficient and sustainable use of endogenous natural resources | Protecting the environment and promoting resource efficiency |
| | | | Conversion to a low carbon energy system | Supporting the shift to a low carbon economy in all sectors |
| Renewable energy production considering land use interests | H | Turn to green economy | Efficient and sustainable use of endogenous natural resources | Protecting the environment and promoting resource efficiency |
| | | | Conversion to a low carbon energy system | Supporting the shift to a low carbon economy in all sectors |

R = Relevance for trans-alpine cooperation H = high relevance; M= medium relevance; L = low relevance

| Fields of actions based on the SWOT | R | Related strategic objectives proposed by the expert team | Thematic objectives proposed by the expert team | Thematic objectives for Cohesion Policy proposed by the Commission |
|---|---|---|---|---|
| Competition for water: defining and safeguarding general interest | H | Foster resilience<br>Turn to a green economy | Efficient and sustainable use of endogenous natural resources | Protecting the environment and promoting resource efficiency |
| | | | Implementing measures to cope with environmental and climate change risks and opportunities | Promoting climate change adaptation, risk prevention and management |
| Areal economic sectors: forestry and agriculture | M | Foster resilience<br>Turn to a green economy | Efficient and sustainable use of endogenous natural resources | Promoting climate change adaptation, risk prevention and management |
| | | | Implementing measures to cope with environmental and climate change risks and opportunities | Protecting the environment and promoting resource efficiency |
| | | | | Enhancing the competitiveness of small and medium-sized enterprises, the agricultural sector (for the EAFRD) |
| Framework conditions and support of start-ups and entrepreneurship | M | Foster resilience | Improve the stimulation of entrepreneurship and innovation in manufacturing industries, handicrafts, services and tourism | Enhancing the competitiveness of small and medium-sized enterprises |
| R & D cooperations and clusters of universities and / or private research institutions | H | Foster resilience<br>Turn to a green economy | Build on knowledge based society in all parts of the Alpine Space | Strengthening research, technological development and innovations |
| | | | Strengthen the trans-alpine network and governance capacities | |

R = Relevance for trans-alpine cooperation H = high relevance; M= medium relevance; L = low relevance

| Fields of actions based on the SWOT | R | Related strategic objectives proposed by the expert team | Thematic objectives proposed by the expert team | Thematic objectives for Cohesion Policy proposed by the Commission |
|---|---|---|---|---|
| Innovation towards sustainable tourism | M | Foster resilience<br>Turn to a green economy | Implementing measures to cope with environmental and climate change risks and opportunities | Protecting the environment and promoting resource efficiency |
| | | | Efficient and sustainable use of endogenous natural resources | Promoting climate change adaptation, risk prevention and management |
| | | | Conversion to a low carbon energy system | Enhancing the competitiveness of small and medium-sized enterprises |
| | | | Improve the stimulation of entrepreneurship and innovation in manufacturing industries, handicrafts, services and tourism | Supporting the shift to a low carbon economy in all sectors |
| Making use of immaterial and material heritage as a potential resource | H | Foster resilience<br>Build on cultural diversity and social solidarity | Capitalize an diverse human and cultural potentials | |
| Regional economic cycles and networks | L | Foster resilience | Strengthen the trans-alpine network and governance capacities | Enhancing the competitiveness of small and medium-sized enterprises |
| | | | Improve the stimulation of entrepreneurship and innovation in manufacturing industries, handicrafts, services and tourism | |
| Keeping and developing social services securing quality of life | M | Foster resilience<br>Build on cultural diversity and social solidarity | Balance the risks and use the opportunities of demographic change | Promoting social inclusion and combating poverty |
| | | | Capitalize an diverse human and cultural potentials | |

R = Relevance for trans-alpine cooperation H = high relevance; M= medium relevance; L = low relevance

| Fields of actions based on the SWOT | R | Related strategic objectives proposed by the expert team | Thematic objectives proposed by the expert team | Thematic objectives for Cohesion Policy proposed by the Commission |
|---|---|---|---|---|
| Innovation and adaptation of infrastructure and services in an ageing society | H | Foster resilience<br>Build on cultural diversity and social solidarity | Balance the risks and use the opportunities of demographic change | |
| | | | Capitalize on diverse human and cultural potentials | |
| Regional intergenerational human resource management | M | Foster resilience<br>Build on cultural diversity and social solidarity | Capitalize on diverse human and cultural potentials | Promoting employment and supporting labor mobility |
| | | | Build on a knowledge based society in all parts of the Alpine Space | Investing in education, skills and lifelong learning |
| Alternative lifestyles and modes of economic functioning | M | Foster resilience<br>Build on cultural diversity and social solidarity | Balance the risks and use the opportunities of demographic change | Promoting social inclusion and combating poverty |
| Sustaining landscape conservation regarding the future EU agriculture policy | M | Foster resilience | Efficient and sustainable use of endogenous natural resources | Protecting the environment and promoting resource efficiency |
| Management of ecological pressures | M | Foster resilience<br>Turn to a green economy | Efficient and sustainable use of endogenous natural resources | Protecting the environment and promoting resource efficiency |
| | | | Implementing measures to cope with environmental and climate change risks and opportunities | |
| Keeping Alpine biodiversity by stopping habitat loss and fragmentation | H | Foster resilience<br>Turn to a green economy | Efficient and sustainable use of endogenous natural resources | Protecting the environment and promoting resource efficiency |
| Governance deficiencies | M | Foster resilience<br>Build on cultural diversity and social solidarity | Strengthen the trans-alpine network and governance capacities | Enhancing institutional capacity and on efficient public administration |

R = Relevance for trans-alpine cooperation H = high relevance; M= medium relevance; L = low relevance

**Annex 5: Examples for trans-national Alpine Cooperation**

For the selection of trans-national Alpine cooperation activities we refer to the types of cooperation presented in the Prospective Study on Sustainable Territorial Development in the Alpine Space: Towards a long term Trans-national Cooperation (Bausch et al 2005, p. 81), but we simplified the six cooperation objectives and propose three levels of cooperation with increasing cooperation intensity:

**Basic assumptions**

Trans-national Alpine cooperation as it is used in this study means the working together of more than 2 partners from different regions in the Alpine Space in order to better reach their aims.

**Level 1: Information exchange**

Exchange of data, information, knowledge, experiences, good practice examples etc. Each partner uses the exchanged information by his own, there is no joint elaboration of issues, products or services and no joint implementation of action.

**Level 2: Joint development of tools**

The partners jointly elaborate guidelines, handbooks, instruments and other tools. Each partner uses the jointly elaborated issues on his own. There is no joint implementation of action.

**Level 3: Joint establishing of structures and implementation of actions**

The partners jointly develop concepts for actions and also implement these actions. The partners develop joint products and jointly use these products. The partners jointly establish structures like networks or other organisations which then keep functioning.

## Thematic objective “Balance the risks and use the opportunities of demographic change“

*Examples for possible trans-alpine cooperation activities*

**Level 1: Information exchange**

- Exchange of experiences and good practice examples (policies, actions) how to find appropriate solutions for declining areas
- Exchange of experiences and good practice examples on integration of immigrants from non-alpine regions and to deal with increasing social diversity in rural areas

**Level 2: Joint development of tools**

- Development of action programmes to make rural areas attractive for young families with highly qualified parents as well as for high qualified digital nomads and tele-commuters
- Increasing the knowledge base on trans-national migration flows within the Alpine Space and between the Alpine Space and other regions
- Deepening the understanding about the motivation of people to out-migrate, immigrate or stay in peripheral rural Alpine areas

**Level 3: Joint establishing of structures and implementation of actions**

- Creation of new and strengthening of existing networks of local and regional authorities working in the field of adapting their social services and infrastructures to future needs and a changing population structure
- Developing, testing and introducing a label for barrier free infrastructure in different sectors (public buildings, tourism etc.). Slogan: the Alps don´t have barriers!

## Thematic objective “Capitalise on diverse human and cultural potentials“

***Examples for possible trans-alpine cooperation activities***

**Level 1: Information exchange**

- Exchange of good practice and experiences concerning models of voluntary work of “young elderly” people for example in the social sector, in neighbourhood activities etc.

**Level 2: Joint development of tools**

- Creation of a trans-alpine UNESCO heritage inventory and exchange of experiences with regard to the capitalisation for regional economy
- Collecting and exchanging good practice examples on the valorisation of social capital with a focus on young people, elderly, women and immigrants – development of handbooks or guidelines for municipalities and regions

**Level 3: Joint establishing of structures and implementation of actions**

- Joint development and implementation of a trans-alpine strategy to better valorise cultural heritage
- Establishing a network of institutions (like chambers of commerce, tourism organisations, learning regions etc.) focusing on qualification, training and knowledge transfer linked to alpine specific issues

## Action field “Build on a knowledge based society in all parts of the Alpine Space”

*Examples for possible trans-alpine cooperation activities*

**Level 1: Information exchange**

- Development of frameworks and carrying out trans-alpine “market places” for knowledge transfer and establishing partnerships in different sectors

**Level 2: Joint development of tools**

- Development of disseminations methods and tools for an efficient transfer of recent research results to Alpine stakeholders
- Development of specific tools and instruments to better implement different elements of digital economy: e-services in peripheral areas, e-commerce for agricultural products, e-learning etc.

**Level 3: Joint establishing of structures and implementation of actions**

- Creating a trans-alpine R&D framework programme focussing on Alpine specific applied research activities
- Setting up thematic and interdisciplinary trans-alpine R&D-networks with a focus on Alpine specific issues: water management, tourism, natural hazards, wood, renewable energy etc.

## Thematic objective "Improve the stimulation of entrepreneurship and innovation in handicrafts, manufacturing, services and tourism"

*Examples for possible trans-alpine cooperation activities*

**Level 1: Information exchange**

- Exchange of know-how and experiences on successful regional value added chains in different sectors, documentation of best practises
- Collection, analysis and dissemination Alpine success stories of untypical and innovative entrepreneurial initiatives

**Level 2: Joint development of tools**

- Elaboration of handbooks and guidelines for the implementation and management of start-up centres based on the exchange of experiences and good practice examples

**Level 3: Joint establishing of structures and implementation of actions**

- Development of trans-alpine networks and clusters for value added chains of Alpine specific products and services in fields like renewable energy, water management, wood, tourism and others
- Develop a joint strategy for transforming the Alpine Space to the world leading destination of sustainable tourism considering natural, cultural and historical assets

## Thematic objective "Implement measures to cope with environmental and climate change risks and opportunities"

*Examples for possible trans-alpine cooperation activities*

**Level 1: Information exchange**

- Exchange of experiences and good practice on the preparation and implementation of regional climate change adaptation strategies

**Level 2: Joint development of tools**

- Development of an assessment tool linked to trans-alpine efficient adaptation measures for all sectors
- Development of an analysis tool applicable by farmers and forest owners showing options and scenarios to handle climate change adaptation efficient

**Level 3: Joint establishing of structures and implementation of actions**

- Development further and implement of concepts for trans-national wildlife corridors and linkages between areas of high ecological value

## Thematic objectives “Efficient and sustainable use of endogenous natural resources”

*Examples for possible trans-alpine cooperation activities*

**Level 1: Information exchange**

- Exchange of knowledge and good practice on low consumption models and efficient resource use in different sectors (energy, water, soil …)
- Exchange of knowledge and good practice how to manage drought in different Alpine regions
- Exchange of knowledge and good practice on local and regional strategies to negotiate interests in the competition for water

**Level 2: Joint development of tools**

- Development of regional footprint systems based on the exchange of successful models
- Development of models for a better branding of Alpine agricultural products on a global market
- Development of a tool box for setting up local / regional production and distribution of renewable energy considering conflicts with other land use interests (nature protection, leisure etc.)

**Level 3: Joint establishing of structures and implementation of actions**

- Development of a trans-alpine strategy “Securing and capitalizing the Alps as European water tower”

## Thematic objective “Conversion to a low carbon energy system”

*Examples for possible trans-alpine cooperation activities*

**Level 1: Information exchange**

- Exchange of experiences and good practices on policies and instruments on energy saving and energy efficiency
- Exchange of knowhow and good practice on the regional implementation of wind and solar power production

**Level 2: Joint development of tools**

- Development of a toolbox for setting up local / regional energy production and distribution considering other land use interests
- Elaboration of guidelines and handbooks to develop energy self sufficient regions based on exchange of knowhow and good practice

**Level 3: Joint establishing of structures and implementation of actions**

- Development of an energy strategy for the Alpine Space
- Development of a “Masterplan for Energy Power Lines” in the Alpine Space

## Thematic objective “Develop a new quality of management of mobility and transport needs”

*Examples for possible trans-alpine cooperation activities*

**Level 1: Information exchange**

- Exchange of experiences and good practice on existing integrated regional public transport systems
- Analysis of deficiencies in multilateral cross border public transport supply (e.g. in the regions Bavaria, Vorarlberg, Liechtenstein, Graubünden or Austria, Italy, Slovenia)
- Exchange of experiences and good practice on traffic information systems

**Level 2: Joint development of tools**

- Development of trans-national traffic models
- Development of trans-alpine traffic forecasts
- Harmonisation and standardisation of digital traffic infrastructure databases
- Development of solutions to reduce the digital gap in remote areas

**Level 3: Joint establishing of structures and implementation of actions**

- Development and implementation of a trans-alpine multimodal Advanced Traffic Information System

## Thematic objective “Strengthening of transalpine network and governance capacities”

*Examples for possible trans-alpine cooperation activities*

**Level 1: Information exchange**

- Exchange of experiences and good practice on successful governance models and structures in the different sectors

**Level 2: Joint development of tools**

- Development of training offers for soft skills required with regard to the practice of multilevel governance with a focus on public administration. Exchange programmes to improve mutual understanding could be part of it.

**Level 3: Joint establishing of structures and implementation of actions**

- Strengthening of the existing and establishing new trans-alpine networks in the different sectors