



Mountain and rural economies under pressure: Identifying global and national challenges for sustainable economic development in mountain and rural areas in Switzerland

Input paper 1 submitted to the strategy group

This Input paper reflects the opinion of the authors.

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Abstract

In recent years, mountain and rural regions were exposed to substantial socio-economic challenges. These challenges are not only rooted in changing economic framework conditions (such as, e.g., declines in the agriculture and the production sectors as main pillars of rural employment, the increasing global competition in tourism) and socio-demographic changes (such as, e.g., an increasingly ageing population, out-migration of highly qualified human capital or heterogeneity of social structures). In addition, changing environmental framework conditions (such as, e.g., the impacts of climate change, the rising economic relevance of natural resources or increasing conflicts regarding land use) and a shift in the paradigm of regional development policies for peripheral regions (from a centralized, top-down donor-recipient model to a decentralized, bottom-up growth-oriented model) considerably challenge sustainable development of mountain and rural regions across Europe and Switzerland. In this paper, we identify the main challenges for mountain and rural regions from a European perspective. We complement these insights with an analysis of particular challenges for mountain and rural regions in Switzerland. The paper eventually proposes the following six overarching challenges: 1) Global competition, innovation pressures and structural changes in the economy of mountain and rural areas; 2) Increasing social and cultural heterogeneity; 3) Sustainability of physical and social infrastructure investments; 4) Changing framework conditions for the exploitation of environmental goods and services and the impacts of climate change; 5) Increasing physical and functional interdependence of rural and urban areas; 6) Increasing institutional complexity for coordinating sectoral policies. We consider these overarching challenges as particularly pertinent for the development of a strategy for mountain and rural regions in Switzerland (“Strategie des Bundes für ländliche Räume und das Berggebiet”). The paper closes with a note about the decision taken by the strategy group at their meeting on March 7, 2013. The group modified the challenges and framework conditions and decided to work with the 12 detailed challenges in the remainder of this strategy process.

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1. Introduction

On June 10, 2012, the Swiss parliament accepted a motion of state councillor T. Maissen. This so called *motion Maissen*¹ commissions the federal council to develop a coherent strategy for mountain and rural in Switzerland. Through the development and adoption of such a strategy, the Swiss federation aims to reshape its current policy framework for economic development in mountain and rural areas². Yet, with this endeavour, Switzerland does not stand alone in Europe and within the OECD countries. Most of these countries recently begun to refocus policies regarding spatial and economic development in peripheral areas: The OECD, for example, drafted a “new rural paradigm” in 2006 to support economic growth and development in rural areas in developed countries (OECD 2006). The Alpine convention started a process for developing an integrated strategy for the Alpine region in 2012 (Gloersen et al. 2012). Also at the European level, new strategies and instruments, such as, e.g., the LEADER program (Ray 2006), have been implemented for supporting sustainable rural development (Ward & Brown 2009).

The common objective of these policy instruments and strategies is to support sustainable development or regional resilience in areas outside the economic growth poles of a country. Yet, in mountain and rural areas the physical and socio-economic conditions may differ significantly (Terliuin 2003; Tödting & Tripl 2005). These differences might be seen as an opportunity to design territorially specific policies for sustainably developing resilient mountain and rural regions. To design such territorially specific policies, the OECD (2006) argues that there is a need for a coherent normative ‘vision’ towards which political actions must be oriented.

In Switzerland, there is neither a coherent vision nor a strategy at the federal level for economic and spatial development in mountain and rural areas. In this paper, the baseline for the development of such a vision and a federal strategy for mountain and rural areas will be elaborated. The goal of the paper is to identify challenges for sustainable development that mountain and rural areas in Switzerland have to face over the next 15 to 25 years. To this end, this paper discusses these challenges from both a European and a Swiss perspective.

This paper uses the triple bottom line approach for sustainable development³ (Elkinton 1997) to structure the forthcoming discussion. Following this approach, sustainable development may be

¹ Original reference to motion 11.3927 (Maissen): „Der Bundesrat wird beauftragt, zusammen mit den wichtigsten Vertretern der Berggebiete und ländlichen Räume eine kohärente Strategie des Bundes für die Berggebiete und ländlichen Räume zu entwickeln. Diese Strategie muss generelle Grundsätze und Leitlinien enthalten sowie konkrete Schritte zu deren Umsetzung aufzeigen. Dabei ist den Aspekten Bevölkerung, Wirtschaft, natürliche Ressourcen und dezentrale Besiedelung sowie der vertikalen Zusammenarbeit der betroffenen Akteure aller Staatsebenen besondere Beachtung zu schenken.“

² Note that Switzerland has a particularly rich tradition in research on mountain areas, see, e.g., Messerli and Lehmann (2006). In recent years, however, the political priorities around spatial development issues have been oriented towards emerging challenges in urban agglomerations (Frey 2011).

³ Note that the triple bottom line approach has been criticised for being too generic and unspecific (see, e.g., Pike et al. 2006). We consider this approach viable as a means to structure the challenges at a strategic level.

achieved along three interdependent and sometimes conflicting dimensions: the economic, social and ecological dimension. In mountain and rural areas, each dimension is under great pressure. As an additional challenge for these areas, national policies designed to develop explicitly or implicitly mountain and rural areas have undergone substantial changes in recent years (OECD 2009). The following overview of challenges for mountain and rural regions not only addresses the main barriers to sustainable development but also covers governance issues that arose as a consequence of policy changes.

2. Basic concepts and data sources

To focus the analysis in the remainder of this paper the basic concepts, limitations and investigated data sources are briefly discussed in the following.

Input paper 1 deals with pressures on sustainable development in mountain and rural areas in OECD countries and Switzerland. Regarding OECD-countries, a region is classified as “predominantly rural”⁴ if the share of population living in rural local units is higher than 50% (OECD 2010)⁵. For determining mountain areas in the European Union, this input paper follows the classification developed in the ESPON GEOSPECS-project (Gloersen et al. 2012) which defines a municipality as mountaineous when it meets certain criteria of altitude, slope and/or ruggedness and when it is part of a continuous mountainous area of 100 km² or more⁶. Regarding Swiss mountain and rural areas, all municipalities that are eligible for the New Regional Policy (NRP), i.e. all municipalities classified as “rural” by the FSO (Schuler et al. 2005) are considered as being either a rural or a mountaineous area. Yet, since “rural areas in advanced economies are coming to be understood as increasingly differentiated” (Ward & Brown 2009: 1240) the analyses in the following aim at addressing three categories of rural or mountaineous areas in Switzerland, namely those proposed by ARE (2005a, 2012a,b):

1. periurban rural areas (defined as rural municipalities in the Mittelland or rural municipalities in the Arc Jurassien and the Alpine arc closely adjacent (max. 20' travelling distance) to agglomeration areas),

⁴ OECD (2010) classifies regions in which the share of population living in rural local units is between 15% and 50% as “intermediate” and regions where the share of population living in rural local units is below 15% as “predominantly urban”.

⁵ The European Union (EU) uses a slightly adapted version of the OECD-classification. The EU's classification uses the moving-window technique and thus distinguishes urban and rural regions on small NUTS scales in a better way than the OECD's scheme (Eurostat 2010).

⁶ The criteria used are practically the same as those used in Gloersen et al., (2004) and EEA (2010). Generally, both delineation exercises have shown that attempts at delineating mountain areas at the regional (NUTS 3 or 2) level do not work, as it is impossible to differentiate highlands and piedmonts. Results from NUTS 3 or 2-based classifications substantially deviate from general perceptions of mountainousness and make cartographic representations of ranges such as the Alps and the Jura impossible. Because they are based on unique pan-European criteria, these delineations lead to an identification of mountain areas that may be perceived as extensive from a Swiss point of view; large parts of the Mittelland plateau are for example identified as mountainous.

2. peripheral rural areas (defined as rural municipalities in the Arc Jurassien and the Alps in at least 15' travelling distance to agglomeration areas) as well as
3. touristic areas (defined as municipalities with more than 100'000 accommodations per year).

In addition to these definitions of mountain and rural areas, we also have to highlight the importance of medium-sized, small and peripheral urban centres. They are defined according to the spatial typology of Statistics Switzerland.⁷

For studying challenges for sustainable development in mountain and rural areas, this paper builds on scientific and policy literature while neither primary data nor secondary statistical data was processed. The analysed body of literature comprises:

- for the international and European perspectives (section 3): a variety of reports from international organisations such as the Organisation for Economic Cooperation and Development (OECD), the Food and Agriculture Organisation (FAO), the World Tourism Organisation (WTO), European organisations such as the European Environmental Agency (EEA), Eurostat and the European Commission, as well as research reports, e.g. stemming from the ESPON 2006 and 2013 programmes and a number of scientific articles and publications;
- for the Swiss perspective (section 4): mainly the policy documents provided by the "Strategiegruppe" have been analysed. In addition, some further references have been cited that stand in close connection to the policy documents provided by the "Strategiegruppe" (as investigated by the authors).

The conclusions of input paper 1 thus are drawn from a limited body of literature. Furthermore, the analysis is limited to studies at the (supra)national level with a strong strategic focus (i.e. no in-depth analysis of sectoral policies/markets). Studies older than the year 2000 are excluded from the analysis as unpublished studies are too. A further limitation of input paper 1 is that results may only be valid when macroeconomic conditions such as, e.g., currency exchange rates or the political stability in wider parts of Europe, are assumed to remain basically constant in the near future.

⁷For a detailed map of the 22 types of local jurisdictions, see Schuler et al. 2005.

3. Pressures on mountain and rural economies: The European perspective

The following section gives an overview of phenomena that influence sustainable development in mountain and rural areas. The causes why mountain and rural areas are particularly affected by these phenomena are briefly discussed and the main consequences for sustainable development are highlighted. For each phenomenon, we provide a short judgement of its relevance in the context of Swiss mountain and rural regions.

3.1 Economic pressures on sustainable development of EU/OECD mountain and rural areas

3.1.1 Phenomenon 1: Structural changes and decline in employment in the agricultural sector

Description/causes: Following a long trend that accelerated after WW2, the share of employment in the primary sector has declined in all Western countries (Brooks, 2010). In Switzerland, it has fallen from 12% in 1965 (Schuler et al., 2007) to 3,4% in 2008 (BFS website). This trend is comparable to those observed in e.g. Austria, France and Italy.

The decline of agricultural employment is caused by constant productivity gains in agricultural production. Increased productivity is linked to the mechanisation of tasks, pest control, fertilizers and an improved selection of crops and livestock. Pressures set by the markets with fewer tolls along national borders to gain economic efficiency and lower the costs have also tended to limit the size of the agricultural sector in high wage countries. Yet, some factors currently limit the decline of the agricultural sector. Increasing demand for high quality foodstuffs, e.g. regional quality labels, organic food and local products, can create the basis for new types of production. The recognition of ecosystem services and other positive externalities of agricultural activities can, when it leads to financial compensation, also increase the livelihood of farms. Finally, regulatory frameworks facilitating multiactivity are particularly important in the agricultural sector, as many farms do not generate sufficient incomes to justify full-time activity.

Nonetheless, the FAO (2011) expects the decline of Swiss agricultural employment to continue over the next years, with a rate of employment in agriculture falling from 3,14% to 2,7% between 2011 and 2020. This decrease is significantly lower than in the neighbouring countries. In Austria, France, Germany and Italy, the rates of employment in agriculture are expected to fall by around one third⁸. While the decline in agricultural employment may appear as a logical response to the increase in productivity in farming, preserving a diversified agricultural sector is important to enhance its resilience in the face of potential risk factors such as tensions on the energy market and climate change.

⁸ see <http://faostat.fao.org/site/550/DesktopDefault.aspx?PageID=550#ancor> , accessed 17.02.2013.

Consequences: Further decline in agricultural employment are expected in the short run, especially in mountain and rural areas with small farms and limited productivity. This will influence demographic trends in local communities where agriculture still counts for a significant proportion of total employment, unless other employment opportunities arise. Local knowledge of importance for e.g. food and biomass production, landscape management and local resource exploitation may be lost. Some areas may become less accessible and less attractive for leisure activities.

Judgment of authors regarding relevance for CH: Switzerland is one of the countries in the Western world expected to experience the lowest decline in agricultural employment in the coming years⁹, largely as a result of pro-active public policies to preserve the agricultural sector and ensure a continued national supply of foodstuffs¹⁰. The loss of employment opportunities in municipalities with a large proportion of employment in the primary sector will nonetheless be significant. The total number of farms continues to decline and in 2010 for the first time there were less than 60'000 farms (SAB 2012). Structural changes are more severe in lowland rural communities because mountain farmers have fewer opportunities to expand their farms. In addition, challenges arise from political reforms: Future agricultural policies will focus more on ecological and regional development objectives (Schweizer Bundesrat 2012a) making sectoral coordination a challenge.

3.1.2 Phenomenon 2: Structural changes in the manufacturing sector and emergence of a knowledge society

Description/causes: The share of employment in the manufacturing sector has fallen dramatically over multiple decades in the EU as well as across the industrialized world. Responsible for these changes are gains in productivity, outsourcing of services and offshoring of manufacturing activities that are not R&D-intensive. Historically mountain and rural areas played on comparative advantages like traditional location as a result of path dependency (periurban and peripheral rural areas), hydroelectricity or available workforce during winter season (mountain areas). Nowadays, connections with leading research milieus and attractiveness for highly educated employees are central drivers of the competitiveness of firms. The concentration of R&D facilities and higher education institutions in urban and metropolitan areas makes it more difficult for mountain and rural areas to assert themselves in this competition (North and Smallbone 2000). However, the quality of their living environment may attract highly qualified workers with adequate branding. There is also evidence that rural manufacturing activities can be innovative and knowledge intensive thanks to connections/networking in global markets (Skuras et al. 2005, Copus et al. 2004).

Limited access to markets and low connectivity to the largest urban centres, where advanced services and decision-makers are concentrated, can be additional obstacles in the development of

⁹ see <http://faostat.fao.org/site/550/DesktopDefault.aspx?PageID=550#ancor> , accessed 17.02.2013.

¹⁰ Note that 40% of Swiss municipalities have a share of agricultural employment that exceeds 20%. Agriculture therefore remains a significant source of employment in a large proportion of Swiss local communities (Rieder et al. 2004).

advanced manufacturing activities in some mountain and rural areas. However, in this respect, there are important differences between sectors of activity, such as those that rely primarily on reliable, fast and cheap access to major markets (e.g. certain foodstuffs) as opposed to those that require high-capacity infrastructures (e.g. forestry and minerals) or advanced services (e.g. knowledge intensive manufacturing and processing). Furthermore, very diverse situations can be encountered in mountain and rural areas, depending on their access to urban areas.

Manufacturing activities will need to adapt to global competition, knowledge-intensive and fragmented production, increasing environmental constraints, changes in demand linked to ageing and evolving preferences (e.g. demand for environmentally friendly products). Furthermore, manufacturing activities in mountain and rural areas tend to become less vertically integrated and more based on network relations between businesses (Vaz et al. 2006). One can hypothesise that these trends could be exploited to the benefit of rural areas, as they become less dependent on location choices of transnational corporations and the Internet makes it possible to extend their marketing and cooperation opportunities.

Consequences: Mountain and rural areas face new challenges to attract and retain manufacturing activities as well as to ensure the long term viability of these activities. Secondary sectors face particular challenges in terms of recruiting and retaining skilled workers, developing innovations and advancing processes, products and services, and staying competitive in the face of global competition (Doloreux and Dionne 2008). However, certain opportunities emerge from vertical disintegration of manufacturing activities and the need to take better account of environmental constraints (Dinis 2006).

Judgment of authors regarding relevance for CH: Compared to most other countries, Switzerland has achieved a high degree of specialisation in knowledge-intensive manufacturing that is less exposed to competition from emerging countries and to fluctuations on world markets due to its orientation towards high quality niche products (see, e.g., Jannerat & Creviosier 2011). These advanced industries are partly located in mountain and rural areas (e.g. chemical industry specialised in biotechnology and pharmaceutical products in the Valais, high-precision mechanical industries in the Jura), where they constitute essential economic assets. With continued gains in productivity, greater orientation towards innovation and stronger international competition, it will be a challenge to develop these industries in the future.

3.1.3 Phenomenon 3: Tourism challenges: Global competition, climate change and innovations for sustainability

Description/causes: While tourism had little economic significance until the second half of the 20th century, it has since emerged as a major component of the 'leisure society'. According to the World Tourism Organisation (WTO 2011) international tourist arrivals in the world have grown from 25 million in 1950, to 980 million in 2011 and are expected to double by 2030. This growth, however,

is not uniform across the world. Since the mid-1990s, the most rapid growth is observed in some emerging destinations, particularly in Asia. Among global trends that are currently affecting tourism, one may mention: globalization and economic fluctuations, fuel prices, aging populations in industrialized countries, increasing travel safety and health concerns, increased environmental and cultural awareness as well as advances in information and transportation technology (Scott, 2006). The European Commission has become increasingly involved in tourism since the early 1980s and released a Green Paper on the role of the European Union in the field of tourism in 1995. Although the Community has no formal competence in this field, a number of European policies have an impact on tourism, e.g. education, vocational training, youth, culture, consumers and regional policy. The European Commission considers tourism as an economic activity capable of generating growth and employment, particularly in rural and mountain areas, coastal regions and islands. Tourism is furthermore a source of diversification of the rural economy. Tourism is therefore a natural component of measures to improve the quality of agricultural products and the rural environment, which are implemented as part of the European Agricultural Fund for Rural Development (EAFRD) (European Commission, 2010).

Consequences: For a number of rural and peripheral areas, tourism has slowly become an indispensable source of revenue. Therefore, rural and particularly mountain areas face a number of challenges. Sustainable solutions will need to be found to address external pressures resulting from e.g. ageing, climate change and fluctuating currency exchange rates. In addition, in a competitive market, it is increasingly important to offer innovative products and services; the industry needs a strategy to live up to these expectations of constant renewal.

Judgment of authors regarding relevance for CH: When competing on the global tourist market, the positive image and highly profiled brands of Switzerland and of the Swiss Alps are unique competitive assets. While tourism is present virtually all over Switzerland, it plays a particularly important role in alpine areas where it has developed as early as the beginning of the 19th century. For instance, almost 45% of hotels and 87% of tourist condominiums in Switzerland are concentrated in the regions of Graubünden, Lucerne, Valais and in the Bernese Oberland (FST 2011). Therefore, these Alpine economies are principally exposed to the global trends affecting the tourism industry with particular consequences, such as:

- Ageing will be a particular challenge for alpine resorts specialised in sport activities.
- Climate change is affecting winter sport resorts in particular and forces them to either develop new activities and/or invest in snow technologies with adaptation costs in either case. It is important to note that there will probably be 'winners' of the change, as high altitude resorts will experience less competition.
- Sustainable development paradigms lead to inevitable conflicts between environmental and economic development goals in tourist areas. Particularly when it comes to implementing

projects such as the building of additional second homes, expansion of tourism infrastructures and so on, a balance between the different objectives has to be found.

- Low productivity, partly linked with seasonality, lead to a situation where banks are reluctant to lend money. At the same time, increasing frequency with which new trends in tourism appear forces stakeholders to adapt and invest constantly. Furthermore, in a context where older destinations have to cope with ageing infrastructures and have to maintain their comparative advantages in a global market, tourism entrepreneurs face the challenge to finance their projects. Increasingly public-private partnerships may be used to implement projects.
- Rising energy prices will affect not only international tourism flows, but especially Alpine tourism which is characterised by high reliance on energy in e.g. lifts, heating, snow-making and spas. An opportunity may be in the development of 'close-to-home getaways' for nearby urban agglomerations.

Yet, the Swiss tourism industry as a whole is facing a severe crisis with a decline in demand for tourist accommodations resulting eventually in a decline in tourist employment (FSO 2012). This decline also seems to affect farm tourism and other forms of 'alternative tourism'. Despite the fact that these forms are often mentioned as development opportunities for Swiss mountain and rural areas (see, e.g., Regiosuisse 2009), their market share remains very low, with only 0,2% of all accommodations in Switzerland in 2010 (FST, 2011).

3.1.4 Phenomenon 4: Increased mobility of goods and persons, combined with 'tunnel effects' in Alpine and rural areas

Description/causes: Competitive regional production systems, such as, e.g., the high-tech industry or knowledge-intensive business services are increasingly interlinked with specialised labour pools, supplier firms, education institutes and other institutions that might provide 'gatekeeping' functions to global markets and value chains (see, e.g., Karlsen et al. 2011). Yet, mountain and rural areas generally do not have the critical mass to provide such 'gatekeeping' and 'hub' functions. However, the impact of this situation in terms of economic development potentials should not be overestimated, as it only implies that mountain and rural areas cannot base their development strategy on 'hub'-type functions. All other types of development are possible, insofar as necessary connections with existing European hubs are developed. The main threat is to be by-passed by infrastructure connecting hubs and neglecting secondary growth poles.

Contrary to claims that the Trans-European Networks (TEN) would reinforce the cohesion of the European territory by reducing distances between core areas and peripheries (European Commission, 2012)¹¹, these kinds of networks primarily connect European metropolitan and urban centres. They therefore reinforce accessibility contrasts (Spiekermann and Wegener, 1996) and lead to

¹¹ http://ec.europa.eu/transport/themes/infrastructure/index_en.htm, accessed 13.02.2013.

tunnel effects in areas through which transport infrastructures run. As a result they do not provide improved accessibility particularly for peripheral areas. Tunnel effects are particularly obvious for high speed rail connections. The Alps are in a special position in Europe due to their central position on North-South and East-West transportation axes, combined with a predominantly rural character and topographic constraints. For this reason, transit traffic reaches particularly high levels and generates extensive nuisances and risks. Major infrastructure investments are needed to avoid these risks.

The acceleration in the mobility of persons and goods is driven by continued access to relatively cheap fossil energy (Ganser & Reinhard 2008), offshoring, outsourcing and centralisation of manufacturing activities (Jammerneegg, Rosič & Bauer 2009) and increasing incomes (Dieleman & Wegener 2004). However, a recent OECD report suggests that car transport ceases to increase in some economies with very high income level, possibly due to congestion and as an effect of increasing income disparities (International Transport Forum & OECD 2011). Generally, the trend is towards increasing commuting and continued urban sprawl across most parts of Europe (EEA, 2006).

Consequences Mountain and rural areas with relatively low population densities and long distances to urban centres primarily rely on motorized individual transportation, even if innovative types of public transportation are promoted. Spatially undifferentiated national or European measures to discourage individual transport may therefore have negative effects in these areas. Commuting, however, generates significant nuisances, risks and congestion. Yet, limits to regional mobility can encourage further demographic polarisation as they would reduce the size and sectoral scope of local labour markets in mountain and rural areas. Transport flows also result from non-work related activities – inhabitants of rural areas wish to benefit from the cultural and commercial services offered by urban areas, while urbanites seek to benefit from the leisure and sports opportunities in the rural hinterland. Finally, the tourism industry is dependent on a continued high general degree of mobility. Tourist areas therefore face challenges in balancing various sustainability objectives. At a technical level, however, the political commitment to polycentric development (cf. phenomenon 10) forces public investments in a diverse array of infrastructures at the same time. Due to public spending restrictions, the legitimisation and amount of these investments in basic services (such as, beside transportation, e.g., health-, basic education- or postal infrastructures and services) in mountain and rural areas have come under pressure. As a result, mountain and rural areas will be challenged to maintain the quality of basic services on a level as to not endanger their attractiveness (cf., e.g., Einig and Spangenberg 2008).

Judgment of authors regarding relevance for CH: Due to its exposure to transit traffic, Switzerland has a particular stake in debates on long-distance flows and modal shift (see, e.g., UVEK 2010). Moreover, commuting has been identified to influence substantially spatial and economic development of Switzerland at the national level (Scherer et al. 2010). Yet, as in the case of long-distance

travelling, mountain and rural areas often are located outside the main commuting axes (Scherer et al. 2010). Debates on long-distance flows and positive and negative externalities of commuting are of increasing relevance to mountain and rural areas in Switzerland.

3.1.5 Phenomenon 5: Increasing importance of research and development, innovation, entrepreneurship for economic success

Description/cause: Research and development (R&D) activities, creativity, innovation and entrepreneurship are key factors of long-term economic success of regional economies (Lee et al. 2004). R&D activities provide the baseline for innovative products and services. These products and services might be recognized, evaluated and eventually valued on markets by entrepreneurs (Shane 2003). Entrepreneurial activities affect regional economies directly (through, e.g. employment creation, additional tax revenues) and indirectly: inefficient incumbent firms and competitors might be replaced by more efficient ones. In the long run, such ‘creative destruction’ (Schumpeter 1943) assures the efficient use of production factors and eventually increases the competitiveness of regional economies.

Yet, R&D activities, entrepreneurship and “innovation appear to be large city phenomena” (Feldmann & Audretsch 1999). In fact, R&D-activities and entrepreneurship rates constantly are lower in rural than in metropolitan areas (see, e.g., Lee et al. 2004). Indeed, R&D-intensive industries such as, e.g., information and communication technology, biotechnology or medicine, tend to cluster in urbanized regions (Mayer 2011). Rural and peripheral regions, in turn, increasingly struggle with hosting R&D-intensive production sites or even territorial systems of innovation that are competitive on global markets (Doloreux & Dionne 2008).

Consequences: Mountain and rural areas are increasingly forced to invest in R&D, innovation and entrepreneurship to close the gap in these activities to urban areas. Main challenges encompass the qualification of human capital (Skuras et al. 2005), institutional assistance for establishing a ‘critical mass’ of innovative activities and entrepreneurship within regional production systems (Doloreux & Dionne 2008) and strengthening the linkages along the ‘triple helix’, i.e. between research institutions, public sector organizations and private firms (Antonopolous et al. 2009).

Judgement of authors regarding CH: Swiss mountain and rural regions generally report high R&D and innovation activities compared to national and international competitors (regiosuisse 2011). However, there is still potential for better co-ordination of public policies for fostering innovation, (further) education programs and R&D activities in private companies (OECD 2011). In addition, policies in support of technology transfer and innovation (e.g. KTI policies) could be better adapted to the context of mountain and rural areas.

3.2 Societal pressures on sustainable development of EU/OECD mountain and rural areas

3.2.1 Phenomenon 6: Demographic changes, ageing and brain drain

Description/causes: Demographic changes such as those associated with ageing of the population are particularly relevant for mountain and rural regions. About 60% of the elderly live in rural areas (Expert Group on Rural Ageing 1999). The differences between urban and rural areas are particularly strong when we consider the age structure of the population: In 2006 the share of people aged 65 and over is higher in the EU-15 rural regions (19,3%) than in the EU-15 urban regions (17,1%) (Goll 2010). In addition, the proportion of 0-14 years is declining faster in rural areas (-1%) than in urban areas (-0,4%). Due to out-migration of young adults, brain-drain, low birth rates and the in-migration of retired populations, many mountain and rural areas have experienced a substantial increase in the share of elderly people in recent years. From all demographic challenges, brain drain¹² is acknowledged as one major current process in the Alps (Alpine convention 2011).

Consequences: Demographic changes often result in a downward spiral of development: outmigration is followed by a contraction of the local labour market, a decrease in local demand for goods and services, reduced trade for local business, etc. An ageing population also requires a different infrastructure provision. Low population levels, which characterise most mountain and rural areas, lead generally to higher costs associated with infrastructure and service provision. High costs are to be expected in mountain and rural areas for supplying or re-configuring infrastructure suitable for elderly people. It is also to be considered that infrastructure and services set-up up in the context of an ageing population may attract elderly urban people wishing to retire in rural or mountain areas (as part of the trend towards amenity-led migration).

Judgment of authors regarding relevance for CH: While all Swiss regions show a positive demographic evolution at NUTS 3 level (cantons), numerous mountain and rural municipalities (particularly in peripheral locations) face depopulation and ageing. Areas most affected are especially in the Jura region, in alpine valleys and remote rural regions such as the Napf area in the Emmental (Schuler et al. 2007: 81). This trend tends to be ignored or underestimated in studies relying on data at the regional level (NUTS3 or NUTS 2), as population growth and in-migration in and around

¹² The phenomenon brain-drain has been quantified in the canton of Valais (Kraft U. et al. 2004): 71% of young adults born in the canton and having graduated from a university find their first job outside the canton. The corresponding rate for graduates from a University of Applied Sciences is 55%. 43% of University students wish to return to the Valais after graduation, suggesting that 28% are forced to migrate out because of a lack of employment opportunities. Besides losing its most educated population, brain drain has an economic implication estimated at 27-37 Mio CHF per year in educational costs that do not benefit Valaisan labour markets and 37-50 Mio. CHF per year in lost tax incomes. Yet, the phenomenon is however not evenly distributed across Swiss mountain and rural areas, with significant exceptions for example in tourist destinations and around regional centres (Schuler et al. 2007).

main regional centres and tourism resorts cancel out demographic decline and ageing in small and isolated communities¹³.

3.2.2 Phenomenon 7: (Trans)national migratory movements

Description/causes: Out of 6.9 billion people on Earth in 2010, 214 million (3.1%) were international migrants (Henning 2012). These international migrants generally have positive effects on European demography and economy as they are likely to be young, have higher birth rates and bring with them new ideas and knowledge, filling gaps in the labour market. The European Union recognizes the positive benefits of migration in filling labour shortages and meeting demographic challenges (IOM 2011). Yet, migrants are likely to be twice as much subject to unemployment as the local population in most Western European countries. As a result, the challenge is to mediate distrust, social tensions and negative attitudes in local communities. Migration to rural and mountain areas depend predominantly on national context and cannot be generalised.

Consequences: Foreign populations not only contribute to regional economic development and demographic change, they also play an important role in diversifying mountain and rural societies. In mountain and rural areas, 'imported' cultures interact with strong traditions and dense social networks of mutual social control, leading to blending or clashing of different norms and expectations. New forms of co-existence between local 'traditions' and the lifestyle of new residents must be found.

Judgment of authors regarding relevance for CH: With the noteworthy exception of alpine tourist resorts, international migration in Switzerland is mainly an urban phenomenon (SAB 2012). This migration pattern is therefore reinforcing metropolisation trends (cf. phenomenon 10), leading to demographic stagnation or decline of most remote municipalities. Migration, however, plays an important role in many mountain and rural areas particularly when it comes to recruiting workers for tourism, construction and agriculture (SAB 2010a). Furthermore, in Swiss border regions, cross-border commuters are a special case of migrants. Despite the fact that they do not fit the definition of immigrants, the intensity of this phenomenon (particularly in the Jura region, around Geneva, Basel and Ticino) has relevant effects on local employment markets and social integration (cf. Schuler et al. 2007).

¹³ One prominent example for the underestimation of depopulation and ageing might be found in OECD (2011). In its territorial exam regarding Switzerland, OECD-experts conclude that there are neither demographic declining nor ageing regions in Switzerland.

3.3 Environmental pressures on sustainable development of EU/OECD mountain and rural areas

3.3.1 Phenomenon 8: Future increase in the economic relevance of renewable natural resources

Description/causes: The economic importance of natural resources in mountain and rural areas will increase over the next decades because of rising prices for fossil or nuclear energy and political efforts towards a 'green economy' (Wyman 2012). The focus on low-carbon energy production will lead to an increase in the market value of wood, biomass, wind, geothermal, water or reuse of industrial heat. More or less extensive land areas need to be dedicated to the exploitation of these resources, leading to increasing conflicts over land use, while offering new economic opportunities to mountain and rural areas. Using case study data, a recent OECD study argues that the economic effects of renewable energy production for rural economies go beyond job generation and also include innovations in products, practices and policies as well as capacity building and community empowerment (OECD 2012). The authors, however, identify the greatest challenge in designing a complex and flexible framework for regional development policy based on renewable energy.

Consequences: The shift towards renewable energy uses is likely to change the paradigm from 'centralised' energy production to different models such as, e.g., the 'centralised/decentralised' pattern. At the same time, the opening of electricity markets gave municipalities the opportunity to produce energy (e.g. turbine water), while individual households are selling surplus solar electricity. Most renewable energy developments will be small-scale, decentralised and based on local resources. Therefore, developing policies, contracts and, above all, governing the use of their resources will be a particular challenge for mountain and rural areas.

One exception is the next generation of hydropower projects. Considering pumped hydro-energy storage technology as the most efficient way to store energy (Deane et al, 2010), the Alps are likely to function as the 'powerhouse of Europe', as illustrated by the agreement signed by the Energy Ministers of Switzerland, Germany and Austria on the development of pumped storage stations in May 2012. This, however, may require investments in large-scale capital projects.

Judgment of authors regarding relevance for CH: The foreseeable shift towards the use of renewable energy sources and towards models of decentralised energy production might imply the following for Switzerland:

- Forest revaluation due to an increase in the demand for wood as an energy source. This would not only make forestry more valuable, but also help with landscape preservation as forests are constantly growing over agricultural land and reduce Switzerland's reliability on fossil energy sources. Indeed, the use of 1 million m³ wood-energy could generate 1'100 work places in remote rural/mountain areas of Switzerland, while Swiss forests produce 7 million m³ wood per year, of which 30% is not used yet (Revaz 2001).

- Using more energy based on local renewable resources will lower the dependency on energy imports and, therefore, have positive effects on the economic balance of mountain and rural areas, while creating decentralised job opportunities.
- Efforts around research in energy production, like the NRP project BlueArk in Valais, is not only linking actors in mountain and rural regions with metropolitan institutions like EPFL, but it also creates opportunities for innovation transfer and implementation, start-up creation and, as a result, it may offer opportunities for young graduates so settle in peripheral regions.

Finally, there is a great opportunity related to energy saving measures in the built environment. This may imply positive effects for the construction sector, an important activity in many mountain and rural areas.

3.3.2 Phenomenon 9: Direct and indirect effects of climate change

Description/causes: A significant proportion of economic activities in mountain and rural economies are particularly exposed to direct and indirect effects resulting from climate change:

- Direct effects: Rising temperatures directly influence the length of the winter season in tourism destinations. In addition, changes in precipitation intensity and frequencies may lead to losses in agricultural and forestry production. Furthermore, higher temperatures and a higher frequencies of extreme meteorological and hydrological events lead to higher natural hazard rates (EEA, 2012), which result in significant economic costs. Hydroelectric production will have to adapt to new precipitation patterns. On the other side, agriculture production possibilities at high altitudes and a stronger attractiveness of 'cool' summer holiday hotspots may create new possibilities
- Indirect effects: climate change mitigation strategies may change economic framework conditions in mountain and rural areas, e.g. with an increased focus on renewable sources of energy, less CO₂-intensive economic activities and a reinforced focus on risk management.

The need for reconversion strategies in middle mountain ski resorts is noted by a series of studies (Rixen et al., 2011, OcCC / ProClim, 2007). Possible reduced supplies of water, especially during warm summer months, may result in a competition for use between metropolitan areas and rural areas (agriculture, tourism) (OcCC / ProClim, 2007).

Consequences: There will be costs for maintaining/adapting infrastructure but also the search for alternative business models in tourism (mainly) and even agriculture. However, the main challenge for climate change related strategies is to improve the resilience of local communities in the face of uncertain future trends. While it seems certain that average temperatures will continue to increase, it is for example still uncertain whether climate change will lead to precipitation increases or decreases at the level of mountain ranges and rural areas (ClimChAlps, 2008).

Judgment of authors regarding relevance for CH: Risk management and enhanced resilience are all the more important parameters of development in Swiss mountain and rural areas in the face of climate change. Different types of risk patterns need to be taken into account: landslides are likely to occur in upland areas with the melting of the permafrost; more frequent floods are expected in valleys; avalanches may be more expected¹⁴. These aspects may be incorporated in sectoral development strategies such as, e.g., in agriculture, forestry, tourism and spatial planning.

3.3.3 Phenomenon 10: Metropolisation and its multiple effects in mountain and rural areas

Description/causes: Across Europe, metropolitan areas are gaining importance as locations for economic activity, particularly activities associated with high value creation such as those in the tertiary sector. As a result of this metropolisation, a sort of core-periphery structure within Europe emerged after WW2 and it now referred to as the 'pentagon' (bounded by London, Hamburg, Munich, Milan, and Paris). The EU's 'pentagon' core remains powerfully dominant – with just 14% of the European territory, it accounts for 43% of the economic output and 75% of investments in research and innovation (ESPON 2004). Within this core area, major metropolitan hubs are flourishing while many peripheral areas languish. Territorial effects of metropolisation mean that socio-economic development is concentrating around urban areas, while the gap is widening between central and marginal regions. As a result interconnectivity is becoming an increasingly relevant success factor. At the European level, the concept of polycentricity has emerged that a guiding policy objective. In this context, polycentricity is not so much a goal as such, but rather a means to achieve political objectives like economic competitiveness, social and territorial equity and sustainable development (ESPON 2006). While the capacity of polycentric development to achieve cohesion is disputed (ESPON 2006), the concept is of particular relevance to a federal nation like Switzerland (ARE 2012c).

Consequences: Metropolisation has multiple, and contradictory effects on mountain and rural areas. The Alps for example, in which two thirds of the population live in urban or periurban areas, are characterised by a network of small and medium sized towns: only five of these towns have more than 100'000 inhabitants (Perlik & Debarbieux 2001). Indeed, socio-economic functions and relationships tend to be orientated towards the major metropolitan areas that are outside the mountain massif such as Zürich and Milano. Within the alpine region, regional and tourist centres are experiencing periurbanisation effects. As a result of the fact that an increasing proportion of the population concentrate in towns and cities, the mountain and rural areas are increasingly considered as

¹⁴ Note that there is a series of studies regarding climate change adaptation in Switzerland compiled in *forum raumentwicklung* 3/2009. Focussing the consequences of climate change for mountain regions in Switzerland, SAB (2010b) furthermore published a position paper. Yet, on the way to a national strategy for the adaptation to climate change, only the first, conceptual part has recently been published (Schweizer Bundesrat 2012c).

leisure areas, which may lead to a process of commodification. Maintaining anthropic landscapes, and preserving associated biodiversity, becomes increasingly costly and difficult. Landscape protection measures and other regulations limit the use of natural resources like land, wood, biomass, wind, water (cf. phenomenon 8). The population of mountain and rural areas may feel that their interests are disregarded.

Judgment of authors regarding relevance for CH: In Switzerland, the share of the population living in rural areas declined from 55% in 1950 to 26% in 2011 (Mayer, Forthcoming). This was primarily due to the incorporation of rural areas into growing urban agglomerations. At the same time, the share of the population living in urban agglomerations increased from 45% in 1950 to 74% in 2011. These metropolisation processes influence the relationship between urban and rural areas in many ways. First, many rural areas (particularly periurban rural areas) have complex relationships (commuting patterns, business linkages, etc.) with nearby urban agglomerations and they are part of larger functional spatial areas. Second, those peripheral rural areas beyond commuting distance to cities and accessibility issues may conflate problems they face in terms of demographic changes and brain drain. Increased functional interactions between regional centres and their hinterlands call for new governance structures across existing administrative boundaries. The geography of territorial governance must be better aligned with the geography of social and economic interactions.

Moreover, metropolisation and spatial polarisation challenge the equilibrium between the different jurisdictions/geographic units of the Swiss federation. It also jeopardizes the constitutionally enacted objective of maintaining decentralised settlements. This leads to a situation where the balance between rural and mountain areas, on the one hand, and urban regions on the other, which has traditionally been one of the pillars of the Swiss federation, is severely challenged.

3.4 Challenges for governing sustainable development in EU/OECD mountain and rural areas

3.4.1 Phenomenon 11: The ‘shift in paradigm’ in regional policy making

Description/cause: Regional development policy has undergone a ‘shift in paradigm’ from a donor-recipient to be a more growth-oriented model of policy (Pike et al. 2006). Growing core regions of a country do not longer automatically pay fixed transfer payments to mountain and rural regions. Rather, decentralised government in mountain and rural regions are expected to initiate regional development projects in a ‘bottom-up’ fashion by applying for limited financial resources. Moreover, these resources operate within temporally limited and evaluated programs (OECD 2009).

This understanding of regional policy has led to a series of applications, a few of which have proved to be of particular relevance for rural areas:

- The “LEADER method” initially implemented as part of the Rural Development program of the EU Common Agricultural Policy has increasingly become a guiding principle for rural regional development approaches. The notion of “Community-Led Local Development” (CLLD) currently promoted by the European Commission as part of its proposals for Cohesion Policy in the forthcoming programming period (2014-2020) is based on the same type of thinking: development of soft factors such as a wide participation, efficient decentralised management, and promotion of synergies with a wide range of sectoral policies (Schuk-smith et al. 2005, European Commission 2012).
- Contract-based partnerships in regional policy: While the notion of partnership among different levels of government (from European to local) and with actors from different sectors is a long-established component of European regional policy, the idea of giving these partnership a contractual dimension was recently defended in the White paper on European Governance (European Commission 2001). One proposal was to implement regional policy on the basis of tripartite contracts between Member States, regions and localities that would for example include provisions on objectives and monitoring. European cohesion policy for the next programming period will, among other things, be based on partnership agreements between the Commission and the Member States.

The idea of basing development programmes on endogenous initiatives and participation is not a European invention. Such a perspective is rooted in a broader set of theories and concepts about regional development that focus on the importance of networking economic actors and creating linkages between institutions (for example theories of clusters, industrial districts, regional innovation systems, learning regions, etc.). In addition to emphasizing the importance of agglomeration economies, the theories highlight that a large part of the explanatory factors of regional disparities, are found in the institutional structure while traditional location factors such as land availability and costs might be of secondary importance.

Other changes in framework conditions for rural and mountain areas affect the way in which regional policies may operate in these context. Policy-wise, the OECD (2006) observes three parallel shifts from (1) redistribution to the promotion of rural competitiveness, (2) from a narrow focus on agriculture to a broader sectoral range of measures and (3) from subsidies to investments. However, in the context of the European Union, these observations need to be tempered by the influence of the Common Agricultural Policy on rural development policies. This leads to a continued focus on agricultural activities. In terms of socio-economic trends, the countryside is increasingly diversified, as some are exposed to pressures from modern development, while others experience decline and abandonment. The critical factor is access to urban services and employment opportunities, influenced both by infrastructure endowment and by the daily mobility practices of countryside inhabitants (Ward & Brown 2009).

Consequences: A new 'entrepreneurialism' not only in the private sector but also in the public sector is needed in order to successfully apply for financial support from regional policy. Mountain and rural regions may face the challenge of developing the capacity to develop projects from the bottom-up. However, rural areas and mountain areas cannot be approached as if their development occurred in isolation for cities and towns. A difficult balance needs to be found between acknowledging the fact that the development of most dynamic rural areas is based on extensive daily interactions with neighbouring urban areas, while encouraging endogenous potentials and entrepreneurial capacities within the countryside. The reliance on regular interaction with urban nodes places rural and mountain areas beyond daily mobility distance of towns and cities in a particularly challenging situation. There may therefore be a need to re-centre regional policies on these areas.

Judgment of authors regarding relevance for CH: European and Swiss regional policies have followed parallel evolutions over the past decades, since the 1997 reform of the Swiss regional policy (IHG/LIM). Yet, there also have been significant changes that occurred through this shift. For example, the NRP implementation has given greater power to the cantons while it has taken away some capacity from the region (Schweizer Bundesrat 2005). One of the questions is how NRP can bring a competitive advantage to Swiss regions, insofar as no differences to mainstream strategies in other countries can be identified. Further dialogues are needed to identify innovative and unique measures that could potentially offer Swiss mountain and rural areas a competitive edge from an international perspective.

3.4.2 Phenomenon 12: Increasing institutional complexity regarding spatial development

Description/causes: As a consequence of the 'shift in paradigm' in regional policy making (cf. phenomenon 11), the policy-making discourse focuses on the need for 'bottom-up' initiatives in mountain and rural areas. However, at the same time, regulatory constraints, short-term strategic perspectives in economic policies and brain drain in rural areas limit the possibility of living up to these expectations.

While ‘bottom-up’ initiatives make an increasing number of public, private and non-governmental organisations eligible for regional policy support (OECD 2009), the capacity of rural areas to adapt to this new paradigm of complex, multi-level governance tends to decrease. In particular, the issue of how to deal with the weaker rural areas, that neither possess the human resources nor the network connections to function as drivers of “bottom-up development processes” remains unanswered. The downward spiral of decline of some rural areas therefore remains unanswered. This is a concern not only in Europe, but also in Australia (Herbert-Cheshire 2000) and in North America (Proulx 2000). However, the policy response is generally restricted to declarations of the necessity to promote development in all areas. The situation in declining areas is therefore allowed to worsen, without any attempts at “controlled decline” and only few examples of strategies seeking to stabilise population at a lower level than in previous decades.

In addition the need to create synergies between different sectoral policies is particularly pertinent to regional development in mountain and rural areas. Different sectoral policies and instruments need to be aligned and coordinated (e.g. agricultural policy with regional policy, etc.). Often the challenge is to find a common language to solve conflicts. In addition, different departments following different sectoral policies work within their own areas leading to a so-called silo-mentality.

Consequences: An often underestimated parameter in the discourse about bottom-up and endogenous rural development is the frequent asymmetry between local authorities in rural areas and the private actors with which they are expected to interact. A partnership between a public authority with few full-time politicians and a small staff with limited expertise, considering legal aspects and financial control as well as technical aspects, on the one hand, and a large corporation on the other, often leads to unbalanced results in which it can be difficult to defend the public good. The challenge lies therefore in offering a support infrastructure for these local authorities and interest groups, without creating a new bureaucracy pursuing own agendas or generating an additional administrative burden.

Judgment of authors regarding relevance for CH: Governing the process of spatial development in mountain and rural areas requires more pro-active policy to encourage ‘professional’ management and cooperation at different spatial scales. Attempts at heightening the competence of local stakeholders in mountain and rural areas often face the challenge that stakeholder do not have the capacity or means to devote sufficient time and resources. Groupings of interest between rural areas facing similar opportunities and challenges could help address this issue, as they have already been initiated in some areas, e.g. the Val d’Hérens and the Gothard (“PREGO”). The new legal framework for “European Groupings of Territorial Cooperation” (EGTC) could make it possible to expand such groupings of interest across national boundaries. In sum, involving all kinds of actors at the grassroots level, in particular, involving the private sector still is a great challenge (Crevoisier et al. 2011).

4. Pressures on mountain and rural economies: the Swiss perspective

Global phenomena challenging the development of mountain and rural economies are also observable in Switzerland. Yet, the political and economic framework conditions in Switzerland lead to particular challenges for the Swiss mountain and rural economies. In the following the three main political and macro-economic framework conditions are discussed.

4.1 Particular framework conditions for the development of mountain and rural economies in Switzerland

4.1.1 Condition 1: Governance: Strong federalism, horizontal coordination and direct democracy

Regarding spatial and economic development, two features of the Swiss political system must be considered, namely strong federalism and direct democracy at all political levels (Odermatt & Wachter 2004). Swiss federalism affects spatial and economic development issues because relevant policy fields such as, e.g. economic promotion, spatial planning or even fiscal policy are mandated to the cantons or even municipalities. As a consequence, customized modes of cooperation between different public institutions (vertically and horizontally) are needed to address spatial and economic development issues that go beyond municipal or cantonal boundaries. Yet, the process of negotiating such tailored models of cooperation generally is time-consuming and might not always lead to the most efficient way of organising public action (Blöchlinger 2005).

Direct democracy allows citizens at all federal levels to participate actively in public decision making, including spatial and economic development issues at the federal level. As a consequence, several legal conditions for the development of rural and alpine economies have been enforced by popular votes (protection of marshlands (1987), alpine landscapes (1994) or regulations regarding second housing (2012)). These popular votes demonstrate that spatial development strategies in rural and alpine areas can be overdriven by political decisions taken by the majority of the country's (urban) population.

Direct democracy and the need for horizontal and vertical co-ordination might set generic boundaries for a federal strategy for mountain and rural areas in addressing the eleven phenomena outlined in section 3. A federal strategy might only define a strategic framework and a vision for the development of mountain and rural development while the implementation, financing and evaluation/adaption of such a strategy has to be developed in close co-ordination with a broad variety of stakeholders (cantons, regions, enterprises, NGOs). Additional implications at the federal level may include issues such as, e.g., acknowledge the active participation and role of regions, tolerate experiments in regional development projects, provide a platform of dialogue between the different

actors, and facilitate coordination of those sectoral policies that have implications for regional development, or the need for co-financing of projects.

4.1.2 Condition 2: Spatial heterogeneity: Small scales and a distinctive topography

Switzerland's spatial and economic development is characterized by its physical and infrastructural preconditions: the particular position of the country in the middle of Europe's main development axes and short travelling distances between most of the localities within the country¹⁵ due to a dense and highly developed system for public and private transportation both shaped economic development in the last decades (Schneider-Sliwa 2012).

Switzerland's position in the cross of Europe's main development axes in particular affects spatial development in the alpine arc: there is a need for increasing transportation capacity (railways, roads) across the Alps and increasingly also on the East-West axis (UVEK 2010). In addition, due to their topography, in particular the considerable share of mountain areas, Switzerland is expected to be more heavily exposed to the impacts of climate change than other areas in Europe (Rebetez 2009).

Generally short travelling distances in Switzerland challenge mountain and rural areas in so far as they de facto¹⁶ compete directly with urban areas for, e.g., qualified labour or residential population. As a consequence, except for 278 remote rural municipalities (ARE 2005a), most mountain and rural areas in Switzerland are functionally and physically much closer connected with the main metropolitan areas of the country than similar areas in other European countries (Aberegg & Tschopp 2010).

Spatial heterogeneity and the distinctive geography of Switzerland, again, force the federal level of policy making to develop "territorially sensitive" (OECD 2009) policies for mountain and rural areas. For addressing the challenges for these regions as outlined in section 3, regionally differentiated policies might be formulated. These policies might also address the complex relationship between national cohesion vs. competitiveness which strongly influences the interaction of rural and urban areas in Switzerland (Odermatt & Wachter 2004). Further implications for a federal strategy may include: fundamental considerations regarding goals towards cohesion versus growth or about the relationship between urban and rural areas.

¹⁵ Even peripheral regions like Goms or Engadin have travelling distances to one of the five Swiss metropolitan regions (Zurich, Basel, Bern, Geneva, Lausanne) between 1.5 and 2 hours (Aberegg & Tschopp 2005).

¹⁶ Note that nearly 80% of all mountain and rural municipalities in Switzerland are classified as "periurban rural" municipalities, i.e. they are only max. 20 minutes travelling distance away from the next urban or agglomeration area (ARE 2005a).

4.1.3 Condition 3: International interdependence: political unilateralism vs. an open and globally interlinked economy

Switzerland's foreign policy is characterised by a 'mix' of political unilateralism and economic openness. While the Swiss official foreign policy is oriented towards national independence and neutrality, Switzerland's economy – in particular in the second and the third sector – is highly dependent on open markets for goods, services and the main factors of production, i.e. labour, capital and knowledge (Odermatt & Wachter 2004). This 'mix' of political unilateralism, open markets and close linkages with foreign markets carries risks for both the entire economy such as, e.g., unfavourable currency exchange rates or foreign pressure on particular industries as seen in the recent financial and economic crisis. These risks have multifaceted consequences for mountain and rural areas: on one hand, continuous export orientation and successful niche strategies of various highly specialized industrial companies lead to the fact that some Swiss (periurban) rural regions (such as, e.g., the Arc Jurassien or the Rhine valley) host global market leaders in particular industries (see, e.g., Jeannerat & Crevoisier 2011). In these industries, open markets for factors of production, particularly labour and knowledge, allow to seek for the best talents and technologies on a global scale. Global interlinkages assure that innovation capacity and eventually the competitiveness of the industry remains constantly high.

On the other hand, increasing global competition or unfavourable currency exchange rates raise pressures in the production of commodity goods. Due to high factor cost (in particular for qualified labour) in Switzerland, particularly parts of the first sector and the tourism industry are not competitive any more without public subsidies (Schweizer Bundesrat 2012a, SECO 2010). Moreover, in mountain and rural areas, as agriculture and tourism might profit from the single European labour market for low qualified labour, the social consequences of this in-migration such as, e.g., ethnic segregation, loss of local culture or seasonal unemployment must be considered (SAB 2010a).

The international interlinkage of Switzerland influences political answers to the challenges for mountain and rural areas as outlined in section 3 at the federal level. Strategic visions and political actions might be consistent with regulations in (potential) target markets. As a consequence, political actions might be focused on pre-competitive measures. These measures may aim at improving economic framework conditions for growing businesses and industries in a flexible way (i.e. temporarily limited, evaluated and adaptive for macroeconomic challenges of the future). Further implications for federal policy making may include the following shortlist: focus on innovation and entrepreneurship capacity or education and skill development (i.e. pre-competition issues) or the strict absence of an industrial policy orientation.

4.2 Specific pressures on sustainable development of mountain and rural areas in Switzerland

Table 1 presents an overview of specific challenges for mountain and rural areas in Switzerland. In this compilation, the implications of the aforementioned Swiss framework conditions for the global phenomena are briefly discussed¹⁷.

The table further gives the authors' judgement of which type of rural area (ARE 2005a, 2012a) is most affected by which challenges (in colours: red=touristic centers, blue=periurban rural areas, green=peripheral rural areas, no colour=no specific type of rural/mountain area). The judgement is – whenever possible – consistent with the judgement provided by the documents developed by the ARE (ARE 2012a,b).

¹⁷ The challenges outlined in Table 1 are consistent with the list of challenges for rural areas given in ARE 2012b. Yet, several challenges in Table 1 could be re-formulated and re-arranged compared to ARE 2012b.

Table 1: Specific challenges for Swiss mountain and rural regions (own compilation, red=touristic areas, blue=periurban rural areas, green=peripheral rural areas, light grey=no particular spatial focus)

		Framework condition 1: <i>governance</i>	Framework condition 2: <i>spatial heterogeneity</i>	Framework condition 3: <i>international interdependence</i>
Economic challenges	Phenomenon 1 <i>Structural changes in the agricultural sector and decline in employment</i>	- Coordination of agricultural policy measures regarding para-agricultural activities such as, e.g., agritourism, direct marketing or rural community development with other sectoral policies (Schweizer Bundesrat 2012a)	- Improving the multifunctionality of agriculture, particularly for maintaining and improving the high quality and availability of environmental and cultural amenities, i.e. cultural landscapes (BLW 2012) and decentralised settlements (BV Art. 104c)	- Maintaining sufficient high-quality domestic food production by simultaneously cutting subsidies due to free-trade negotiations (Schweizer Bundesrat 2012a)
	Phenomenon 2 <i>Structural change in the manufacturing sector and the emergence of a knowledge economy</i>	- Amendment of effectiveness of public initiatives for economic promotion and innovation support for the manufacturing and service sector in rural areas at federal and regional levels (OECD 2011)	- Maintaining qualifications of the domestic labour force on a globally competitive level through, e.g., continuous formation, incentives for attracting and retaining highly qualified talent (Egger 2009)	- Fostering exporting activities in the manufacturing and service sector (Schweizer Bundesrat 2005) - Strengthening alternative success models to purely export-oriented businesses ("residential economy") (Crevosier et al. 2011).
	Phenomenon 3 <i>Tourism in an increasingly global competition</i>	- Strengthening coordination of public and private stakeholders and advancing innovation in the tourism industry (e.g. regarding marketing activities, qualification of human capital, sustainable development a.s.o.) (SECO 2010)	- Enhancing the quality and quantity (e.g. through diversification) of tourist products and services (supply side) tailor-made to the conditions of the specific tourism destination (SECO 2010)	- Improve the resilience of the tourism industry against exogenous shocks such as, e.g., political instability in source markets or fluctuation of currency exchange rates (SECO 2010)
	Phenomenon 4 <i>Increasing mobility and effects on infrastructure</i>	- Developing governance models to avoid or balance "tunnel effects" and negative impacts of long-run traffic and commuting externalities	- Maintaining and strengthening high quality physical and social infrastructure ("service public")	
	Phenomenon 5 <i>Importance of R&D, innovation and entrepreneurship</i>	- Strengthening coordination between knowledge and tech transfer institutions, private actors and public sector (triple helix) and coordination with existing economic development policies	- Adaption of knowledge and technology transfer policies to the mountain and rural context	- Fostering R&D, innovation and entrepreneurship in sectors beyond high-technology in accordance to international competition laws
Social Challenges	Phenomenon 6 <i>Demographic changes, ageing and brain drain</i>	- Balancing costs and potential benefits (e.g. through new employment opportunities) for supplying or reconstructing infrastructure suitable for elderly people	- Maintaining and amending infrastructure suitable for elderly people - Reducing out-migration and stimulating re- or in-migration	

	Phenomenon 7 <i>(Trans)national migration movements</i>			- Elaboration of models for integrating foreign migrants (high- and low-qualified) by simultaneously strengthening local tradition and culture
Environmental Challenges	Phenomenon 8 <i>Increase in the economic relevance of (renewable) natural resources</i>	- Adapting of federal policies in order to better exploit the potential of wood (Schweizer Bundesrat 2007), water, wind and bio mass (Schweizer Bundesrat 2012a,b) for renewable energy supply - Avoiding or resolving spatial conflicts regarding decentralised wood, solar, wind and water energy supply (Schweizer Bundesrat 2012b)	- Fostering co-operation and knowledge transfer between (energy) research institutes and renewable energy production actors in peripheral regions; - Balancing costs and benefits for the exploitation of environmental goods and services such as, e.g., wind, wood or water for decentralised energy production versus use of landscape for leisure, sports a.s.o.	- Developing subsidies for green energy production consistent with legislation in potential target markets (Schweizer Bundesrat 2012b)
	Phenomenon 9 <i>Direct and indirect impacts of climate change</i>	- Balancing costs (e.g. for hazard protection, artificial snow-making etc.) and potential benefits (e.g. through precipitation regimes) of effects of climate change esp. in tourism and agriculture	- Ensuring regionally and sectorally differentiated adaptation to effects of climate change (ARE 2011).	-
	Phenomenon 10 <i>Metropolisation and its multiple effects</i>	- Strengthening collaboration between rural and urban territories within functional areas, e.g., regarding spatial planning (ARE 2005b) - Developing a 'common identity' of mountain and rural areas vis-à-vis metropolitan and agglomeration areas	- Developing regionally differentiated visions for spatial development, particularly regarding housing, transportation and nature protection (ARE 2011) - Fostering the diffusion of economic impulses of small and medium-sized towns to their hinterland (Schweizer Bundesrat 2005, Perlik & Debarbieux 2001)	-
Governance Challenges	Phenomenon 11 <i>'Paradigm shift' in regional policy making</i>	- Establishing a culture of 'entrepreneurialism' in both public & private sector in order to successfully apply for financial support from regional policy (Egli 2011)	- Strengthening inter-regional and particularly inter-cantonal co-operation in regional policy issues (Egli 2011) -	- Ensuring the knowledge transfer from international good practice in regional and rural policy making (Egli 2011)
	Phenomenon 12 <i>Institutional complexity in spatial develop.</i>	- Involving "new" stakeholders such as, e.g., civic organisations (Schulz and Baumgartner in press), enterprises and entrepreneurs (Crevoisier et al. 2011) etc.	- Optimising support infrastructure for institutions engaged with economic development issues, without creating additional bureaucracy (Egli 2011)	

5. Summary and experts` recommendation

As Table 1 demonstrates, most of the global challenges for mountain and rural areas also affect Switzerland. Yet, due to specific political and economic framework conditions, the challenges for these types of areas in Switzerland mostly concern governance issues.

We recommend grouping the identified phenomena and framework conditions into the following six overarching challenges:

1. ***Global competition, pressures to innovate and structural changes in the economy of mountain and rural areas:*** While structural change is a long-term issue in agriculture policy, globalisation has also led to an increased stress of competition in a variety of other industry sectors that are important to mountain and rural areas such as the manufacturing-, tourism- or forest industry. Mountain and rural areas are challenged to strengthen the competitiveness of these industries by developing and implementing appropriate strategies such as, e.g., fostering qualification of human capital, supporting innovation and entrepreneurship or strengthening residential economic activities. In addition, mountain and rural areas are challenged to develop new sustainable economic activities in existing (tourism) but also new types of sectors (green economy).
2. ***Increasing social and cultural heterogeneity of mountain and rural areas:*** Globalisation, demographic change, (inter)national migration and commuting lead to increasing social and cultural interaction between mountain and rural areas and international and national urban areas. These interactions can threaten social cohesion and cultural identity in mountain and rural areas. Yet, cultural identity and dense social networks may also provide (economic) advantages (such as, e.g., traditional craftsmanship for high-quality products or lower transaction costs due to mutual trust) for mountain and rural areas. As a result, these areas will be challenged to maintain and strengthen their social and cultural identity and valorise such aspects as location factors in an increasingly globalised social and economic environment.
3. ***Sustainability of physical and social infrastructure investments:*** Increasing mobility of goods and persons as well as continuous immigration and ageing of the population will create a need for further expansion or amendments of physical (road, rail, ICT) and social (institutions for geriatric care, additional supply of education and child care services) infrastructures. Investments and operational financing of these infrastructures must be evaluated regarding their economic, social and ecological sustainability. Developing political tools for balancing costs and benefits of infrastructure investments such as, e.g. external cost of an amended accessibility of a tourism destination or operational cost of an additional school building might be important challenges for mountain and rural areas in the near future.

4. ***Changing framework conditions for the exploitation of environmental goods and services and the impacts of climate change:*** In the near to medium term future, the demand for natural resources such as, e.g., wind, water, biomass and wood for energy production might change fundamentally. Additionally, the importance of natural and cultural landscapes as a source of recreation (leisure, sport, tourism) is expected to rise. In combination with the expected impacts of climate change (snow reliability, changing temperature, precipitation and drought regimes a.s.o.) mountain and rural areas will hence be exposed to considerable changes regarding the consumption and exploitation of environmental goods and services.
5. ***Increasing physical and functional interdependence of rural and urban areas:*** Due to generally short travelling distances and high accessibility of most rural and many mountain areas in Switzerland, many issues in spatial planning (e.g. expansion/reduction of building zones for industrial or residential use, planning of transportation systems etc.) and cost-benefit balancing (e.g. balancing cost of basic health or education services) need a close co-operation between urban and rural territories. To this end new modes of co-operation in functional areas will be needed.
6. ***Increasing institutional complexity for coordinating sectoral policies for mountain and rural areas:*** The experiences of the new regional policy (Egli 2011) demonstrate that the implementation of the 'new paradigm' of rural and regional policy making needs a fundamental change of mind-sets among both public actors and potential other stakeholders such as, e.g., entrepreneurs, civic organisations, NGOs etc. The challenge of mountain and rural regions is to adapt their (institutional and mental) structures to the 'new paradigm' of regional policy making. To tackle this challenge, however, further efforts are needed at the federal level of policy making, particularly regarding the coordination of sectoral policies and the bureaucracy of detecting, exploiting and valuating bottom-up initiatives for regional development issues.

We recommend using these six overarching challenges as a baseline for further work in the remainder of this project.

6. Conclusions and outlook

On March 7, 2013 the strategy group discussed the papers the experts prepared. The discussion revolved around the challenges and framework conditions presented in this paper. Strategy group members were invited to respond with additions or changes and the group decided to not combine the twelve detailed challenges into the six overarching challenges as recommended above. Instead, the twelve challenges were slightly modified as outlined below. The group decided to continue its work with these challenges.

1. Structural changes and decline in employment in the agricultural sector
2. Structural changes in the manufacturing sector and emergence of a knowledge society
3. Tourism challenges: Global competition, climate change and innovations for sustainability
4. Increasing importance of research and development, innovation, entrepreneurship for economic success
5. Increased mobility of goods and persons
6. Maintaining and strengthening high quality physical and social infrastructures ('service public')
7. Demographic changes, ageing and brain drain
8. (Trans)national migratory movements
9. Increasing economic relevance of natural resources
10. Direct and indirect effects of climate change
11. Internal and external appreciation of mountain and rural areas under increasing metropolitanisation
12. Focus on territorial competitiveness and increasing institutional complexity of regional development policies

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8. List of Abbreviations

ARE	Bundesamt für Raumentwicklung / Office fédéral du développement territorial
BV	Bundesverfassung
EEA	European Environmental Agency
EPFL	École Polytechnique Fédérale de Lausanne
ESPON	European Spatial Observation Network
FSO/BFS	Federal Statistical Office (of Switzerland) / Bundesamt für Statistik Schweiz
FST	Fédération Suisse du tourisme
IHG/LIM:	Investitionshilfegesetz für Berggebiete / Loi sur l'aide en matière d'investissements dans les régions de montagne
IOM	International Organisation for Migration
LEADER	Liaison entre actions de développement de l'économie rurale (European rural development initiative)
KTI	Kommission für Technologie und Innovation
NGO	Non-Governmental Organisation
NRP	New Regional Policy (of Switzerland)
NUTS	Nomenclature des Unités Territoriales Statistiques
OECD	Organization for Economic Co-Operation and Development
R&D	Research and Development
RPG/LAT	Raumplanungsgesetz / Loi sur l'aménagement du territoire
SAB	Schweizerische Arbeitsgemeinschaft für die Berggebiete
SECO	Staatssekretariat für Wirtschaft / Secrétariat d'Etat à l'économie
UNWTO	United Nation's World Tourism Organisation
UVEK	Eidgenössisches Departement für Umwelt, Verkehr, Energie und Kommunikation
WW2	Second World War (1939-1945)