

# The Alps of the next generation

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# 1. Two approaches to the future of the Alps

## 1.1. Introduction

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The Alps are Europe's tallest and most remarkable mountain ridge extending across the continent in the shape of a 1,200 km-long arch 150 to 250 km wide. From the Bay of Genoa, its beginning or end, it incorporates seven different countries (France, Italy, Switzerland, Liechtenstein, Germany, Austria, and Slovenia). In total the alpine landscape extends across some 220,000 sqkm. The tallest mountains of the western part are Mont Blanc (4810 m) and Monte Rosa (4834 m), while in the eastern part the tallest peaks are Bernina (4049 m), Ortler (3899 m) and Grossglockner (3797 m). Glaciation of the Alps is still topical, with the Aletsch glacier the largest in the Alps. Overall ice-cover has fluctuated enormously in historical times and, of course, considerably more so in geological terms. At present permanent snow begins at 2,500 m at the periphery, and at approx. 3,000 m, or some 500 m higher, in the heart of the Alps. There is no doubt that the Alps are unique, outstanding and among the most attractive landscapes in the World.

The Alps have been populated continuously from prehistory up to the present time. Mountain passes have been points of immense importance at least since the days of Hannibal's crossing until today's dense flow of traffic from North to South, East to West and back. The Alps at once divide and join different parts of Europe, its interests and perspectives. Today tourism is one of the most promising industries, which was not always the case. Cattle farming and industry were a great deal more important in the past.

However, all over the Alps diverging interests are clashing. One of the important research goals is to find out what is in fact going on. An immense and continuous effort to understand processes and developments over time is required. A vision of the future should be created and a great deal of energy should be invested in the preservation of our natural environment for future generations.

However, the main question is where we are and how we should manage our shared alpine environment in future. How can we avoid the Alps being disastrously degraded? How can we preserve them for the benefit of coming generations?

The following speakers will give us an overview, acquainting us with the facts and the wide range of challenges awaiting us in the Alps.

## 1.2. Scenarios of alpine futures: 3D-visualization for decision-support in landscape management

*Eckart Lange, Ulrike Wissen, Olaf Schroth*

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Land management is increasingly decided at a local level, with trends across Europe towards greater public participation in landscape planning processes and empowerment of local administrations to define resource exploitation and development. Yet, understanding of the outcomes and consequences of landscape planning decisions is generally poor among the general public and

their elected representatives. In the context of the VisuLands Project a set of new visualization tools is being developed for enhanced comprehension of these mechanisms.

3D-visualizations of scenarios of future land use are developed to assist planners and the public in assessing the outcomes of landscape planning strategies. The visualizations will be linked with indicators of landscape functions such as biodiversity, cultural heritage, amenity and sustainable production to enable the detailed assessment of the relationship between visual qualities and other landscape functions. Visualization tools can support sound management of the rural and peri-urban landscape, and promote an increased understanding of change.

The tools are tested in co-operation with local stakeholders of the Entlebuch UNESCO Biosphere Reserve (UBE) located in the pre-alpine area in Central Switzerland. Due to its natural scenery and habitat functions for plants and animals, the Entlebuch's cultural landscape is of (inter-)national significance. It is also a valuable tourist and agricultural resource. This is why the various functions of this traditional landscape have to harmonise with each other and with economic development. With public participation the UBE manages landscape stewardship and sustainable development, testing the visualization tools in public development forums and with local experts.

### **1.3. Foresight: the range of methods available**

***Bernard Debarbieux***

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Foresight is a mode of thought and a working method which date back to the early years of the 20th century. It was not applied to the "territorial" level, i.e. to analyze the future of geographical spaces and territories until far more recently. For a long time it was the preserve of forecasters who, by extrapolating trends identified in the present and recent past, outlined the possible future of a place, a region or a particular space. It is of course possible to build a forward view of the Alps as a whole in this way.

But while the aims and methods of territorial forecasting have diversified greatly in the past twenty years or so, alongside "expert" forecasting generally used by political leaders to guide their action and as a rule entrusted to scientists, other forms of forward thinking have emerged. These are based more on the local players (their expectations, representations and objectives) and on the provision made for collective participation (such as discussion forums). By broadening the circle of participants and paying greater attention to the social representations which are present, these alternative methods sought to achieve different goals from those of expert and strategic forecasting: they wanted to place the population of a particular territory in a position to reflect on its future, to design a shared project and organize itself to make the achievement of this project possible.

This conference will present these different ways of approaching territorial forecasting backed by experience, preferably of the Alpine region.

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## 2. What future for the natural environment and use of its resources?

### 2.1. Introduction

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The economy in the alpine area is mostly restricted to adequate and extensive land use such as mountain agriculture, pasturing, protected areas, forestry, ecotourism or small industrial enterprises, which are directly linked to locally available natural resources and environmental conditions. Sustainable development in this area is highly determined by environmental factors such as climate, water, soil, landscape and biodiversity. Therefore the wise management of natural local resources will be a key issue in the interface of human activities and natural processes. The alpine environment is highly vulnerable, which may create problems and conflicts while giving added value to the local population. Therefore the main question is: how can we achieve a contract with future generations in order to keep aside natural resources they need for their future life in the alpine area?

The speakers of Plenary Session Two will present facts and solutions related to issues considered crucial for the future of mountain areas and of great relevance to the socio-economic system of the Alps:

1. key factors influencing landscape changes and socio-economic development: climate change; resource cycles; land-use planning, including nature conservation; land-use intensity; migration;
2. strategies influencing the long-term development of the mountain areas and the sustainable use of resources such as water, landscape, soil, biodiversity;
3. instruments related to the management of landscape processes: spatial planning; regional development strategies; participation methodologies; protection strategies, e.g. of large protected areas; cooperation among stakeholders; incentives for the creation of added value and innovation.

Numerous questions connected to these main issues remain unanswered. Who is the owner and custodian of natural resources such as water, biodiversity, landscape? who is responsible for their sustainable use? Are there self-regulatory processes? Is human intervention required? Do we have to invest in maintaining or developing the alpine area? Who is responsible and who has to pay for inactivity, wrong decisions or implementation? Are future generations aware of their responsibilities and how can we enable them to solve future problems and conflicts?

The speakers Martin Beniston, Simon Meissner, Serena Arduino, Janez Bizjak and Nataša Bratina-Jurkovič will present their results and views related to climate change, water resource management, biodiversity management, nature protection and landscape and land-use planning.

## **2.2. Climatic changes and their impact on the Alps**

***Martin Beniston***

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The Alps occupy a substantial part of the land area of Central, Western and Southern Europe and are a major source of many rivers flowing through the continent. Today, the Alps have been put under pressure by human activities; climate change might add a further constraint to the natural and socio-economic systems.

Paleo-environmental indicators have shown us that, in a more or less distant past, climate change brought about significant alterations in the distribution of vegetation. The present phase of warming, if it were to continue in the 21st century, would have major consequences on ecosystems with the threat of extinction for many species that lack the capacity to adjust to these changes or to migrate to other regions that are more favourable in climatic terms and in their soil characteristics.

In most mountainous regions, a warmer climate will reduce the volume of glaciers, the quantity of permafrost and the snow covering. Changes in the precipitation pattern might have repercussions on mountain farming, tourism, and also on hydropower generation. The consequences for the populations residing in the plains that depend on water from mountain sources would certainly be far-reaching.

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## **2.3. Sustainable Management of Alpine Water Potentials**

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Water represents one of the most important resources sustaining not only biological systems, but also socio-economic and cultural developments. As a matter of fact, the need for high-quality freshwater in Europe has increased by a factor of ten since the beginning of the 20th century. In Europe, due to their geographical situation and topography, the Alps are a major freshwater collector and storage system, providing considerable quantities of water from various origins to supply the fundamental needs of human and natural life in the alpine region and in adjacent areas of Europe. The European community is increasingly concerned with preserving the Alps' reliable supply and high quality of alpine freshwater resources and potentials.

Some aspects to be mentioned are the production of hydroelectricity, an ever-increasing demand for drinking, irrigation and industrial water, as well as the use of water for tourist purposes, in particular to generate artificial snow by snow canons. Of course, all these activities impose an enormous strain on the sensitive ecological systems of the Alps. As if this were not enough, management of and control over access and use of alpine water resources has shifted to areas outside the alpine areas, in particular with respect to hydropower and the future privatisation and liberalisation of the European water sector. This means loss of self-determination in the alpine area in general and among its political entities in particular. Water is often regarded as a commodity for agricultural or industrial production or for trade. Social, ecological and vital implications in the various alpine ecospheres are not considered. New perspectives and strategies for a sustainable management of water resources are therefore required in the Alps, the reservoir of Europe's freshwater.

Responsible use of alpine water resources involves, for example, the direct participation of stakeholders as decision makers, or Public Private Partnerships as economic units. Environmentally sustainable and innovative water management and water marketing solutions offering adequate



economic perspectives have to be developed. The Alps are a sensitive natural and cultural area and the source of many international river basins shared by different states and owners. Appropriate activities are therefore essential. Optimised concepts are not only of crucial interest for the alpine region, but may serve as models for water management systems based on stakeholder decisions in regions where access to freshwater is not guaranteed and therefore vital.

## **2.4. A vision for the biodiversity of the Alps**

### ***Serena Arduino***

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The five WWFs of the Alps (France, Italy, Switzerland, Germany and Austria) joined forces with the three pan-alpine organizations ISCAR, CIPRA and ALPARC to develop a biodiversity vision for the Alps. The scenario created by a total of some one hundred scientists representing ninety organizations is a vision of what alpine biodiversity should look like fifty years from now. It identifies twenty-four areas which are most important for biodiversity at pan-alpine scale where conservation efforts should be concentrated and sustainable development achieved with the highest priority.

These priority areas were defined after identifying overlaying areas most important to the different taxa. The result is a set of areas – the ‘gems’ of the Alps – relevant to the largest number of taxa and ecological processes which give rise to and support biodiversity. They do not represent the only important areas in the Alps but the ones of greatest relevance to biodiversity as a whole. To complete the picture, the corridors connecting them and leading towards the periphery of the alpine range will soon be identified as well. Furthermore, in order to move from vision to action, an initiative is now underway focussed on developing action plans for individual priority areas.

## **2.5. Conservation areas in Slovenia and their role in the protection of the Alps – an example: Triglav National Park**

### ***Janez Bizjak***

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In the Alpine part of Slovenia, the following regions enjoy formal protection: Triglav National Park (by State Law) in the Julian Alps and the regional parks of Logarska dolina and Robanov kot in the Savinian Alps (protected by Municipal Decree), as well as Topla in the Karavanken Mountains. Before World War II, the region of Okrešlja in Logarska dolina (the Savinian Alps), was also protected as a National Park, after it was acquired for that specific purpose by the then Slovenian Mountaineering Society. Unfortunately, after the War the protection lapsed. In the 1960s, experts and nature lovers began to prepare a protection plan for part of the Kamniško-Savinian Alps and Karavankan Mountains; the idea was not implemented at the time, but emerged again in the last decade of the twentieth century with a view to cross-border cooperation and joint protection on the Austrian and Slovenian sides. Initiatives for the creation of a regional park of the Kamniško-Savinian Alps involving several local authorities, a landscape park at Solčavsko and a regional park in Pohorje have reached the phase of coordination of local and economic interests with the aims of nature conservation. The protection of these regions is of regional, national and international importance. This part of the Alps represents a source of drinking water, which is of strategic European importance and has remained relatively unscathed in ecological terms because of its proximity to the state border. The features of the landscape and settlements in this area also have an important bearing on the cultural identity of the Alps.

### ***Triglav National Park (TNP)***

The only national park in Slovenia. Location: Julian Alps, NW part of Slovenia; adjoining the borders of Austria, Italy and Slovenia.

Historical development:	1924 – Alpine protection park 1,600 ha 1961 – TNP Decree 2,000 ha 1981 – TNP Law 83,804 ha
International ties:	Europarc Confederation Network of protected Alpine areas (Alparc) Trilateral partnership agreement with NP Ecrins (France) and NP Hohe Tauern (Hohe Tauern, Austria)
Cross-border cooperation:	Regional Park of the Julian Foothills (Italy) Forest conservation area of Trbiž (Italy)

The Network of Protected Alpine Regions (Alparc – Réseau des Espaces Protégés) is the official association of protected regions. The Network was founded by a resolution adopted by the Environmental Ministers of the Alpine States in 1995 and is an instrument for the implementation of the Alpine Convention (a nature conservation protocol). The TNP plays an active role on the Executive Board of the Network. The tasks of the Network cover the following areas: protection of Alpine habitats (Habitat project), wild animals in the Alps, big birds of prey in the Alps, joint promotion of protected regions and the protection of drinking water.

The TNP was granted the status of a UNESCO biosphere region in 2003, and an extensive tract of the park also belongs to the Natura 2000 region, a European network of protected regions whose purpose is to preserve biotic diversity, with particular emphasis on protection of the natural habitats of endangered plant and animal species of European significance.

Alpine protection depends on the quality of the protection accorded to the different areas of the Alps, i.e. the protected regions extending from France to Slovenia.

The role of the TNP within the Alpine Arc is crucial and involves great responsibility. The natural values and cultural heritage, which led to the foundation of the TNP, are not only of national significance, but are also extremely important for the preservation of the natural, regional and cultural identity of the Alps.

## **2.6. Regional planning in the Alps – the Slovenian experience**

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The following paper deals with regional planning in the Alpine area and emphasises the contribution made by such development to the sustainable regional development of the Alps. It outlines the need for effective and holistic regional planning in the Alpine region and presents the case of Slovenia.

The Alpine Convention provides a global vision of the Alps as a unique natural and sensitive area with specific comparative advantages and limitations. The Convention Protocols provide a number of directives for the development of individual activities for geographical and regional management, which are implemented at the level of the individual administrative units of the Seven States, the contractual members of the Alpine Convention.

Awareness of the meaning and value of the Alpine area is very high. The values of a particular area must be effectively integrated into regional development planning and the development itself

must also be integrated in order to ensure the protection of valued regions. Sustainable regional development is the new paradigm which should be closely followed in all areas.

The following elements are important to ensure sustainable regional development:

- regional development issues in the relevant documents/plans should be managed together with the issues of conservation, i.e. both developmental and conservation issues must be included in the development process;
- the documents used for the purpose of regional development planning should cover every aspect of the problem and give precise answers to questions relating to such development, at the specific level on which actions are taken (strategic, regional, local);
- all sectors should be involved in the regional planning process, regardless of whether they have precise developmental or conservation tasks in a particular area;
- tools, such as analyses of developmental capabilities for individual activities/sectors, studies of geographical vulnerability for the purpose of assessing the potential influences of individual activities on the area and analyses of the suitability of an area for development, should be defined and included in the regional planning system as the basis for the definition of the appropriate development of a particular region;
- representatives of different public sectors must be involved in the process with authority to take part in the resolution of regional development and conservation issues.

The Strategy for the Regional Development of Slovenia, embodied in the strategic Regional Development Act of Slovenia, has been developed based from these premises. Up to the stage of adoption by Parliament, all the different State sectors were involved in its preparation, i.e. both developmental and conservation interests. That is why the strategy embodies a consensus over regional development reached at State level. Other developmental policies covering such areas as traffic and energy, as well as lower level land use decisions, must be compatible with this strategy.

The strategy treats the Alps as an area of irreplaceable and unique value and puts forward a concept and directives for the development of human settlements, infrastructure and landscape. Natural qualities, which predominate in Alpine area, are to be preserved as far as possible in the context of regional development, primarily through the way in which important activities are organized and by adapting tourism. The frequency of natural accidents will be diminished by avoiding all interference with potentially endangered areas. Adopting a polycentric concept, the strategy determines the hierarchy of settlements and the necessary facilities to be provided for the individual types of settlements, including accessibility. The development of long distance traffic and railway routes of international importance, as well as international energy links, is planned in the Alpine area in the framework of the X. Traffic corridor, taking due account of natural and regional features.

The strategy also defines the areas typified by important natural and cultural features, of which there are many in the Alpine area, and encourages their holistic treatment. Preliminary development schemes are being prepared for these regions; individual local authorities and state resources play an equal part in the adoption of joint regional planning directives. The preparation of one such regional scheme is in progress for the Triglav National Park.

### **3. Which landscape do we prefer?**

#### **3.1. Introduction**

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The topic ‘landscape’ is quite complex because the concept of ‘landscape’ has changed a great deal. We should therefore not restrict it to a purely visual and aesthetic interpretation of the landscape, but rather see landscape as a complex system consisting of different integrated and interrelated components.

If we interact with a landscape it is obvious that any changes will also be visual, so we must direct our attention towards the actions (choices) which modify these components. These choices are the most important factors in territorial planning and in managing cultural and socio-economic aspects provoking major future impacts.

Stewardship, sustainable management and environmental rehabilitation are interdependent aspects derived from a global strategy of landscape protection and upgrading designed in a process of dialogue and confrontation with those affected by this process. The natural and human heritage can be managed in a sustainable way only if the carrying capacity and the limits of the environment with regard to economic activities are taken into account. The complexity of processes influencing landscapes requires the involvement of all actors because there will never be real and lasting contribution by individuals or social groups to objectives and processes which have not been explained and compared with alternative solutions. It is also true that complex processes can only be defined and designed by drawing on civil society’s knowledge, to which the researchers/experts have no access except through a participatory approach.

A participatory approach should therefore be used as a tool of generating ideas concerning sustainable development. Because it is the young who will inherit the results of our actions, we must address them in particular. We must also remember that what is ideal for us it might not be true for the next generation.

The question introducing this plenary session is: what is an ideal development of the alpine landscape?

Landscape is connected to a person’s or community’s inscape. Thus the observer identifies a given landscape from his/her own cultural background, which means that everybody has his/her own ‘landscape’ in to recognize him/herself. Preferences are subjective and influenced by several factors (aesthetic, perceptual, cultural, economic etc.). The answers take into consideration various aspects such as high biodiversity, protection and upgrading of natural resources, integration of natural and cultural landscape, civil-society participation in developing a landscape, etc.

What is not clear and not satisfactory are the answers provided by planners and policymakers because they have not taken into account the perception of the communities affected by their interventions. It would be useful to provide policymakers with adequate incentives and knowledge in order to facilitate sustainable development of the alpine space. Too often the only reference used by planners and decisionmakers is a socio-economic development model which takes into account only short-term direct and indirect benefits.

The following questions will have to be discussed during this session:

- How can we implement suggestions; how can we achieve an ideal development of the alpine landscape?

- What efficient co-operation between different actors may be established in the long term to safeguard the landscape?
- What are current or likely driving forces of sustainable landscape development?
- What new landscape may we expect? What roles are scientists to assume in negotiating and decision-making processes?
- How can the gap between researchers, decisionmakers and affected populations be bridged so that co-operation has positive effects on as many people as possible?

Issues of this session should be strategies concerning the integration and implementation of the landscape concept. During the Forum it would be useful to hear more about results obtained than expected results.

### **3.2. Cultural landscape as a product of land use**

#### ***Karl Buchgraber***

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In the mountainous regions of Austria, keeping the landscape open depends heavily on cultivation by small-scale farms. For reasons of working methods, investments and productivity, this cycle-oriented type of cultivation cannot compete with dairy and meat production in privileged areas, a fact that has a massive impact on our cultural landscape.

Dairy production in Austria's mountainous regions with three to fifteen dairy cows per farm and an output of 4,500 kg/lactation contrasts unfavourably with the much larger herds and outputs of between 8,000 and 10,000 kg/lactation of market-oriented production. A trend in milk production drifting away from the mountainous regions is already noticeable. Alternatives in livestock husbandry (e.g. mother cows, oxen, heifers, sheep, goats and horses) cannot compensate the decrease in dairy cows; with these forms, there are also fewer calves.

Moreover, in the past decade the average milk output of cows has increased by 784 kg/cow (HOFINGER et al., 1999). To produce the reference milk volume of 2.7 million tons for Austria, with continuing increase in output, in ten years' time only 490,000 dairy cows will be required as against today's 600,000 (see STEINWIDDER, 2003). This can only be achieved with a higher proportion of concentrated feedover green fodder in the ration. In other words, for constant milk production the higher the proportion of concentrated feed, the less green fodder will be required. As a result, up to twenty-five per cent more concentrated feed at the expense of green fodder might be needed in those areas. This amounts to a massive nutrient input in mountainous regions concentrated on those few areas which remain under cultivation. As a whole, within the next ten years about 250,000 hectares of grassland could grow fallow.

This acute risk to our landscape should be demonstrated by a balance of potential grassland yield and the demand of green fodder at municipality level and accordingly pointing out areas which are affected most by a surplus of green fodder. The basis for these calculations are current figures of stocking in mountainous areas and a forecast stock reduced to eighty per cent by the year 2010.

### **3.3. Fish introduction and effects on local fauna – restoration measures**

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Fish are not native to most high-mountain lakes but were introduced by man in the past two centuries or even in the past decade. As local fauna in the lakes was not adapted to co-existence with fish, introduction had a negative effect on the local fauna as well as on the whole lake ecosystem, provoking the extinction of specialized species, some of them also endemic; as well as change in fauna and decline of water quality. Most of the lakes with fish have become eutrophicated. Removal of fish after introduction is difficult, expensive and time-consuming. As some high-mountain lakes represent potential sources of drinking water, a strict ban on fish introduction in high-mountain lakes is required.

### **3.4. The Alps, future zoo of Europe ?**

*Isabelle Mauz*

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Which animals will the Alps shelter in twenty-five or thirty years' time? How will these animals be distributed among wild and domestic species? Three scenarios can be considered and are indeed discussed, although not by the same actors. The first one underlines the enduring fragility of numerous wild species, whose progression could be stopped and which might even decline. According to the second scenario, there would be an inversion of the places of the domestic and the wild: domestic animals and husbandry would become as marginal as wild animals and hunting have long been; the pastoral world would collapse and a mountain wilderness would replace the domestic mountain which alpine societies have produced. In the third scenario, wild and domestic faunas and the people closely linked to them would manage to coexist, albeit sometimes of necessity in a situation of conflict. This last scenario, which would guarantee maximum biodiversity through the diversity of human practices, is obviously the most ambitious. Its realization requires an alpine fauna policy, remembering Arendt's lesson that policy is based on plurality, diversity and reciprocal limitations.

### **3.5. Cultural landscapes between urban areas and wilderness: The Alps in the year 2020**

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Over the past 30 years, the cultural landscapes of the Alps have faced extensive changes. The main phenomena can be summarised as a polarisation between favoured and less favoured areas. The favoured areas (alpine cities and their surroundings, valley floors, tourist centres) are characterised by economic growth but also by increasing environmental problems (traffic, air and noise pollution etc.), whereas less favoured alpine regions are increasingly faced with crisis.

In the REGALP project, funded by the EU under the 5th framework programme, an inter- and transdisciplinary research team is exploring likely futures of alpine cultural landscapes in the year 2020. On the one hand, the team works at the level of the Alps as a whole; in seven selected pilot regions researchers also analyse specific aspects such as depopulation, traffic increase, decline of

agriculture, reforestation and concentration procedures in tourism. The pilot regions are the 'Wipptal' and 'Lower Tauern' in Austria, the 'Isarwinkel' in Germany, 'Carnia' in Italy, the 'Upper Sava Valley' in Slovenia, the region 'Visp-Saas Valley' in Switzerland and the region 'Le Trièves' in France.

The research team developed two more or less optimistic/pessimistic scenarios for the development of alpine landscapes until 2020, providing data, photo-montages of future situations and stories of what the future may hold.

In both scenarios we can expect the gap between favoured and less favoured areas to grow bigger. Moreover, the impact on the Alps of metropolitan areas outside the Alps like Milan, Turin, Lyon, Munich and Vienna will increase, with far reaching consequences for alpine cultural landscapes.

Together with local actors the research team specified the scenarios for the various pilot regions and tried to develop ideas on how to encourage positive and how to reduce negative development aspects. This includes immediate action initiated by the locals in the pilot regions as well as proposals addressed to policy makers on how to adapt specific policies and instruments at national and EU level.

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### **3.6. Preferences and conflicts regarding future landscape development in the Alps: theoretical models, representative surveys and consensus-building experiments**

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Due to the high value of the landscape as an important resource of mountainous regions, in particular regarding tourism, society is called upon to deliberately steer the future development of such landscapes. Clearly, what is expected from landscape needs to be established. The first goal of our study is therefore to investigate the objectives of different parts of the population regarding the alpine landscape and its development. As the 'landscape-objectives' of different groups may be diverging, the second goal is to develop and evaluate participatory methods to foster consensus building regarding these objectives.

The project consisted of three parts: (1) In the inductive part problem-centred interviews with representatives of different groupings provided deep insights into landscape objectives. (2) The deductive part provided representative quantitative data regarding landscape objectives: standardised questionnaires were used to survey representative samples of different strata of the Swiss population as well as of the tourists and residents of two study areas. (3) In the quasi-experimental part participatory consensus-building procedures were applied. Their effects were measured by surveys prior to and after the intervention.

Beyond providing scientifically reliable information about what landscape-objectives exist among the different groups of the Swiss population, the project explains landscape scenario judgements by applying different theoretical approaches. The project further contributes to the efforts of the scientific community to integrate these theories. Our attempt to measure the outcome effect of consensus-building processes by applying an intervention approach is innovative and provides new insights in whether or not it is worth pursuing participatory approaches in landscape planning.

As for *implementation* of the findings, the quasi-experimental consensus-finding phase already provides a substantial contribution. It is complemented by special implementation activities which ensure the realisation of established consensus-based objectives in the investigation areas over a longer period. Furthermore, the research findings are specifically processed for use by selected federal and cantonal authorities. In addition, numerous NGOs aim at including our findings into their strategies of fostering sustainable development.

### **3.7. The Alps, a wilderness? Alpine cities in the ‘wild’ Alps**

***Mario F. Broggi***

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Seventy per cent of the Swiss population are ‘agglomerites’ living and working in settlement areas concentrated chiefly in the Swiss Mittelland but also in agglomerations located in the very heart of the Alps. This, combined with continually increasing mobility and a boundless demand for leisure activities makes Switzerland lose 11 ha (over 27 acres) of crop area every day. This ‘consumption-type Switzerland’ contrasts with a ‘wilderness or forest-type Switzerland’ brought about by massive structural changes in agriculture: every day the forest area increases by 13 ha. In his talk M. F. Broggi outlines relevant driving forces and structural conditions, as well as their impact on the wilderness debate in Switzerland.

## **4. Economic perspectives: subsistence or prosperity?**

### **4.1. Introduction**

***Helmer Vogel***

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Increasing dependence on global economic networks and development has caused enormous worldwide changes. These changes are leading to increasing advantages for favoured places and disadvantages for less favoured locations and require different attitudes towards development.

The alpine countries form a heterogeneous pattern: some areas will be favoured in the future but many will be at an obvious disadvantage. The main economic sector in the alpine region has become tourism: every year thirteen million inhabitants host about sixty (!) million tourists in about five million beds, and they make a turnover of twenty-three billion Euros a year. This huge economic impact has, however, caused enormous environmental and social problems due to traffic, reduced diversity, urbanisation or infrastructure. Most of these problems directly or indirectly originate from tourism.

Tourism development during the last two decades occurred between two poles, i.e. efforts to minimize ecological and cultural impact, contrasting with efforts to maximize tourist-related turnover by expanding tourist facilities and infrastructure. Sustainable development has therefore become the key word for the future of the region.

So what is the overall objective of economic and touristic development in the alpine region? It is to provide those people who must and want to live in the region with jobs and to offer them an economic basis. This aim must be reached under the aspect of sustainability and greatest possible protection of resources. Every future project should be evaluated from this point of view, and prior criteria should be the correlation of turnover and jobs. As a logical consequence, priority should be given to projects which at equal turnover create more jobs.

Among the biggest problems are the transit of people and goods through the Alps, and an overcapacity of touristic infrastructure. Although booking rates fluctuate extremely between high and low seasons and actually have only two extreme peaks (Christmas and August), all capacities have to



be planned and provided to satisfy peak demand, leading to excess capacities in most cases. Intelligent solutions will be required to develop the region in a sustainable way in the future!

The following questions will have to be discussed during this session:

- can the alpine economies play an individual role in the global competition, or do they have to follow the general pattern of globalisation? Will the policymakers and stakeholders be able to find solutions to meet the demands of globalisation?
- are heterogeneous, varied, differentiated and individual structures a solution for future development?
- will it be possible to create enough jobs in the future? Or will there be migration and economic decrease for disadvantaged locations and increased agglomeration in suitable places?
- will sustainable approaches provide a balance between economic output and ecological impact?
- what solutions exist for a reduction of transit and holiday traffic?

This session should address strategies to develop the economy of the alpine region, with the main focus on job creation and the greatest possible protection of natural and human resources.

## **4.2. Alpine economy – from subsistence to global division of labour**

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1. Economic and social evolution may be perceived as a universal process wherein the basic pattern of increasing division of labour (supported by ever more powerful production technologies) is overlaid by context-specific and pathway-dependent particularities. Resulting intercultural differences are usually interpreted as mere time-lags. However, it remains to be examined more closely whether it is correct to assume an ultimately convergent development (in Fukuyama's sense).
2. Any development from subsistence economy to global division of labour and competition, combined with changing economic structures (agriculture/industry/service sector) also leads to changes in locational demands as well as conditions of production, and hence to disadvantages for less suitable locations (i.e. accessibility, urban areas). This also affects the Alps, where a similar segregation process can be observed. Increasing inter-dependence affects all locations, however, including the 'driving poles'; autonomous economic areas are a thing of the past (if they ever existed at all).
3. This situation begs the questions of whether Alpine economy wants to be something special; how this should be legitimised; and how such a process might be steered. Essentially, various strategies offer themselves, positioned differently between conflicting priorities of the market and politics. It is to be assumed that owing to its heterogeneity the Alpine arc is not a priori uniform, but represents a complementary structure. The question remains whether this process should be left to market forces and 'chance', or whether it should be steered from a higher perspective and, if so, according to what principles.

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### **4.3. What tourists and tourism will look in the future**

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The aim of this contribution is to examine the main facts and variables which have to be taken into account to outline the future of alpine tourism. This overview will also include cultural and environmental issues, as well as economic and demographic ones. It will point out sustainable management options of the "playground of Europe" (Leslie Stephen), climate change, urban growth, transport saturation... Finally, it will discuss the interest of alpine tourism and leisure activities as a thematic research topic in its own right.

### **4.4. Is the game worth the candle? Questions asked by NGOs about the economic sense of tourism**

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Tourism is the biggest industry in the Alps. It generates jobs and income, but on the other hand requires huge capital investments and often causes damage to the natural environment and landscape. How much tourism and what kind of tourism are needed in the Alps? Before being able to answer that question, we must first ask another: what is the purpose of tourism in the Alps? To create jobs and develop the economy might be the natural reply. High quality jobs attractive to the resident population and stimulating the local economy, I might add. But things are not always so. We are left with the impression that the great tourism machine which requires major economic investments, uses up vast tracts of the land and resources (water, energy) is anything but a model of efficiency. Perhaps the same result (in terms of employment and economic benefits) could be achieved with the use of less resources (both economic and environmental), so making the system more efficient.

It is worrying to think that so much investment is being made in tourism without knowing what the real economic benefits are. One thing is particularly astonishing: why have the politicians and heads of public administrations not yet tried to find answers to these questions? We already realized the importance of this issue when the Trento Congress was held in 2000.

Normally, the indicators which are regarded as important to assess the success of a particular tourist offering are the number of arrivals, the presence of tourists and the money spent by them. Many analyses have also been made of the average spending for each particular type of offering. On the other hand, few or very few try to establish effectively where the money brought in by tourism ends up.

We take the view that the key indicators must be different. Foremost among them is the value to the local economic cycle created by tourist spending, i.e. the ratio between job creation and the amount of money spent by tourists.

For each investment, a careful assessment should be made to determine what share of tourist spending is retained locally and how much money is used to sustain intermediate import costs and therefore flows out of the region concerned. And what kind of investments (often incidentally of public money!) are capable of bringing better results instead of continuing the headlong flight forward (bigger installations, greater capacities, more parking spaces and wider highways, more accommodation beds, all intended to increase the presence of tourism which may bring higher revenue but almost never creates higher added value). In the case of tourist resorts with a high ratio of tourists to the resident population, we have a distinct impression that tourism is designed first and foremost to

produce a high volume of business, but only a small part of this is effectively beneficial to the local population.

#### **4.5. ‘Future in the Alps’ – awakening the power of the Alps**

##### ***Andreas Götz***

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CIPRA, the International Commission for the Protection of the Alps, aims to promote sustainable development in the Alps. In close cooperation with the Swiss Federal Institute for Forest, Snow and Landscape Research WSL, CIPRA has created a broad-based, three-and-a-half year project funded by the MAVA Foundation for Nature Conservation at Montricher (Switzerland).

‘Future in the Alps’ is a project which contributes to the implementation of the Alpine Convention. Its objective is to accelerate the implementation of sustainable development in the alpine region. Useful information is to be collected and shared with relevant actors in suitable form and in the major alpine languages. The project will run for three and a half years; the estimated budget is some 2.4 million Euros. Its objective is to encourage individuals, businesses and institutions to network in order to stimulate sustainable development with a balanced consideration of ecological, social and economic aspects.

##### ***‘Sleeping’ information***

Large numbers of local initiatives with plenty of experience in the field of sustainable development have sprung up in the alpine region. If their snowball effect is to be amplified, tools must be created which will enable local actors to access appropriate and useful information quickly and easily. Any links between research and practitioners have been tenuous so far. They must be transformed into solid connections. The challenge lies in strengthening cooperation between actors across national and linguistic boundaries in the Alps, and to encourage interactive exchange between practitioners, scientists, government administrations, NGOs and politicians.

The project consists of three parts: alpKnowHow – identification of existing knowledge; alpService – structure of information dissemination, and identification of needs; alpPerformance – application of knowledge, and definition of future problems. Added value will be created in the regions if the natural environment, culture and alpine identity are integrated. The large alpine sanctuaries and reserves; mountain agriculture and its perspectives; new approaches to alpine tourism; and tourist, leisure and commuter traffic are among the key issues with regard to sustainable development.

##### ***Direct exchange between actors***

The project aims to create platforms where actors can exchange their knowledge and experience, and benefit from information collected and processed by ‘Future in the Alps’. Results have been made accessible on the Internet (as a database) as well as through publications. To encourage access by ‘grassroots’ users and to promote direct exchange among them, new solutions to selected issues will be presented at meetings, seminars, workshops and educational events.

The project ‘Future in the Alps’ shall be a catalyst for good ideas. Contacts and exchanges established in its context will lead to an ‘Enterprise Alps’ to be initiated after completion of ‘Future in the Alps’ at the end of 2007.

#### **4.6. Sustainable Alpine Space – more than protected area**

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Changes which occurred in Europe in the past decade and the process of globalization require a different attitude towards development.

The purpose of this paper is to present the new principles and activities at the European level for balanced and sustainable development, focusing on the alpine space. It deals with activities, procedures, actors, measures and instruments for cooperation, and coordination between various levels and sectors for the definition and implementation of future development prospects for the alpine space.

Special attention is given to the presentation of the Alpine Convention and the EU programme INTERREG III B Alpine Space.

#### **4.7. Alpine communities buffeted by the winds of economic change – Problems and possible solutions**

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This paper presents problems a large number of communities are faced with, and gives examples of a few solutions. The following main issues are dealt with:

- many communities' room for manoeuvre is being more and more restricted, especially by increasingly tight budgets;
- their inhabitants are demanding more and better amenities and services; country dwellers expect the same opportunities as people in the cities;
- the average age of the population is increasing while the number of working-age people is decreasing; increasing numbers of old people combined with a decline of intact family structures will mean higher expenses for health care and care-related services;
- rural structures are disintegrating; many farmers have problems finding successors and so numerous farms are being abandoned; whole regions will probably be depopulated, with the young leaving first; later these areas will be completely deserted .

Examples of some solutions will be presented:

- local Agenda 21, a joint planning process for the future of communities;
- finding, encouraging and supporting volunteers who do community service;
- regional cooperation;
- networking with like-minded people.

#### **4.8. Alpine regional development as seen by a local authority – the Municipality of Kranjska Gora**

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Tourism is an important feature of the Municipality of Kranjska Gora. With the transformation and urbanization of human settlements, the growth of tourism has created great demand for building land. The local authority aims to develop “soft” tourism in the widest sense of the term. In this endeavour, the local community will deploy its means of action and instruments in the field of regional protection and management. In that spirit, they will endeavour to harmoniously coordinate the needs of the economy, nature conservation and the local population. Existing residential estates must not be allowed to expand into agricultural areas; traffic loads throughout the region will be regulated and limited.

The Alpine area provides us with the conditions necessary for the sustained and balanced development of tourism. In this respect, the Municipality of Kranjska Gora follows the Conventions on Alpine Conservation and the Protocol on Regional Management and Sustained Development.

### **5. How will alpine societies change?**

#### **5.1. Introduction**

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Current analyses of change in the Alps seem to show differing outcomes: between the regions in the West and East, inner and peripheral regions, high altitude and valley regions, regions with urban development and those remote from such development, it seems hard to make any generalised assessment of a trend which might be described as “alpine”. Looking at the factors of change, many studies have also revealed an opposition between externalised growth dynamics and regions which are more remote and can count only on their internal capacity to derive value from their cultural and natural resources.

We will therefore try to move beyond an inventory of situations or a reductive assimilation of growth to a loss of identity and take an interest instead in the process of change and the role played by alpine features in this process. This approach would lead to an examination of renewal of specific alpine features in agriculture, modes of life, attachment to the territory or collective sentiment. In the development of societies in the Alps, can we detect the development of original forms of territorialization in which trends towards globalization and modernity might be associated with specific alpine features to produce a renewed but distinctive inserted space? In that case, are these specific features active, mobilized by the population to become constituted as resources, or do they simply form part of a system of constraints in which the alpine character might show first and foremost the weight of a geography which generates marginality? Or, in the opposing configuration, do trends promote a growing similarity of dynamics and life forms in which the alpine character exists only in the form of remaining traces connected with protection, tradition or an instrumentalised image.

These questions seek to determine how change occurs, going beyond the major trend analyses structured by Manichean contrasts of the tradition/modernity, globalisation /localisation type to take

an interest instead in the transformations which reflect the complexity of the dynamics and reveal potential “hybridisations” of characters and meanings. We will also be able to see how an alpine specificity or alpine values are factors of change and can be the driving force behind innovation.

“*How will alpine societies change?*” which is the title of our session therefore requires an identification of the new data of the alpine space, but also an understanding of the process of change itself, the dynamics and mechanism of production and reproduction of forms of specificity. The correlated questions would then be formulated as follows: how are alpine societies reproduced while changing? How are they based on alpine characters to produce and conduct their process of change?

The thematic views proposed by the different speakers all involve this threefold approach. They lead simultaneously to a consideration of the phenomena that are decisive today and require vigorous management to the extent that they have a strong bearing on future developments: the city, education, leisure. In every case, the issue is what the alpine region may look like in 2020 in terms of its organisation, facilities and economy, but also more particularly the relationship to the territory resulting from this and emerging through the quality of education, the quality of an urbanity spread through the rural regions or the ability of the towns to conduct their own autonomous development.

## **5.2. Where will alpine populations live? Changing traditional lifestyles and urbanization patterns**

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Although the exogenous transformation of an industrial society to a leisure and service society affected the Alps quite early on, quite traditional economic structures and lifestyles have continued to exist as endogenous forces. They are under pressure, however, and the question is how and where the alpine population will live some decades from now. This presentation will demonstrate new tendencies of spatial structuration (‘post-suburbia’ and ‘town-country-compound’), the resulting new structures, and the forces driving the process. It concludes with a general evaluation of development trends.

## **5.3. School system and educational achievement in alpine areas – current and future problems**

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In the 18th and 19th centuries, parts of the middle Alps (Switzerland, Vorarlberg, Tyrol etc.) belonged to the areas with the highest rates of literacy and the highest density of elementary schools in Europe. Even the poorest mountain villages had their own schools and, apart from the local priest, the teacher was the most highly regarded person in the village, responsible for the adoption and adaptation of many economic and social innovations. A first wave of school closures occurred shortly before the First World War; a second, greater one during the last three decades of the 20th century, brought the closure of a large number of these small elementary schools.

The centralisation of schools in urban centres brought many disadvantages to some of the mountain areas, including longer travel distances of children to schools and a negative impact on the cultural and regional identities of villages who lost their only school. The main negative result of the closing of small elementary schools was that these villages lost their key persons, i.e. teachers, who

had fulfilled a number of extracurricular cultural and social functions which were crucial to social coherence and cultural level in remote villages.

The paper will discuss some of the reasons and planning ideologies which caused this concentration process of elementary schools. It will discuss some prerequisites and alternative models on how to achieve a high educational level in remote mountain areas.

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#### **5.4. Leisure and tourist traffic in the Alps – perspectives until the year 2020**

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The paper presents general statements and specific aspects of the development of the leisure and tourist traffic in the Alps until the year 2020. They are based on the results of a study done for the Swiss Federal Office of Spatial Development and other relevant studies on traffic in the alpine area. The focus is on the analysis of passenger traffic in the alpine region, especially on traffic of the local population and the tourists within the alpine area, as well as on transiting tourist traffic. The report analyses the past and present situations; it also provides predictions and forecasts on the development of leisure and tourist traffic until the year 2020; it also identifies relevant influencing factors.

#### **5.5. Alpine cities between despondency and new self-esteem**

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Since the romantic era the Alps have been a popular projection screen for urban desires. Everything the cities seem to lack – naturalness and a natural environment, for example – is being projected onto the mountains and the people living there. It is a rural-pastoral image which is at particular odds with the fact that two thirds of the population in the alpine region live in urbanised areas. The rapid urbanisation of areas along the alpine rim and in the main valleys is usually ignored, even in the Alpine Convention and its protocols.

Most of the socio-economic discourse concerning the Alps is focused on structural change in rural areas. However, the technical term ‘structural change’ conceals what actually amounts to mass migration away from mountain villages and inaccessible valleys to the cities, for which there are numerous reasons, i.e. lack of jobs, especially attractive ones; or rigid social control in rural communities. To many, the ‘city’ has become synonymous with ‘freedom’ and ‘success’. Mountain populations, too, have their yearnings: since the industrial age cities have been a popular projection screen for rural desires.

Most towns and cities in the Alps are quite small, and often traditional market towns, or administrative and educational centres. They are threatened by the same fate as all other towns and small cities in Europe, in that they risk becoming mere appendices to the big conurbations. That is, unless they manage to conserve – or reclaim – their unique profile and are willing to bank everything on the sustainability card.

Alpine cities are not isolated entities but have always been very closely connected with the surrounding territories. They have an economic interest in marketing the resources of their rural regions, such as quality products, and cultural and natural leisure attractions. If rural areas are

perceived as lively, the entire region, including the city, benefits from increased potential added value. Which is why strong cooperational relationships between such cities and the areas around them are a key factor for sustainable development in the alpine region. Much, however, still remains to be done in this field.

Finally, alpine cities could also become the Alps' envoys and stakeholders throughout Europe and the rest of the world. If this is to happen, they need to be part of a solid network. Some beginnings have been made, e.g. in the 'Arbeitsgemeinschaft der Alpenstädte, a network of small and medium-sized alpine towns, and in the 'Alpine Town of the Year' network.

## **5.6. Alpine Convention – a framework for future competitiveness and sustainable development of Slovenia in the EU?**

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The Barcelona Strategy of the European Union wants to make the EU the most competitive economy in the world through sustainable development. Slovenia joined the EU in 2004 and will have to find its place in Europe in political, economic, social and environmental terms. Slovenian accession to the EU will generally have a beneficial effect on the country's prosperity, but some problems similar to those faced by other alpine countries may also emerge. Major development choices are being made at this point in time, and although the current situation in terms of sustainability is relatively favourable, the Alpine Convention could (and should) be used as a framework for securing a sustainable future and competitive position in the globalised market.

The alpine culture, in terms of responsibility towards the community and environment has helped Slovenia weather the instabilities and regimes of the 20th century and to emerge as a leading candidate to the EU. With seventy per cent mountains, Slovenia is one of the most mountainous countries in Europe with a wealth of cultural landscapes, water resources, forests, biological and cultural diversity. Increasing traffic and sprawling settlements are threatening these resources and their relevance to quality of life. On the other hand, local and regional initiatives such as regional parks and sustainable mobility concepts aim at improving sustainability. The vision for the Alps of future generations can help in making these initiatives a success.



## 6. ISCAR Workshops

### 6.1. Demographic developments in mountain areas of Europe. Challenges, research demand, perspectives

#### 6.1.1. Key questions

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#### 1. Facts

- Development of population indices in mountain areas of Europe
- Differentiation between remote (altitude) locations and main valleys
- The Alpine City – an oxymoron?

#### 2. Causes

- Availability of infrastructure (schools, hospitals, airports, train stations)
- Employment (tourism, industry, agriculture, tertiary sector)
- EU, transboundary transport ...

#### 3. Consequences

- Ageing
- Emigration
- Infrastructure breakdown
- Cultural change (the roles of tradition, culture and language)

#### 4. Open questions, research demand, perspectives

- Internal differentiation and small-scale differences
- Availability of infrastructures
- Political and planning activities (jurisdiction, support policies)
- How to act?

### 6.1.2. Infrastructure, economic situation and demographic patterns in European mountain areas

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The global importance of mountains is increasingly recognised, as shown by the inclusion of a dedicated chapter on mountains in the Agenda 21 and the declaration of the year 2002 as the International Year of the Mountains. Europe has many mountain ranges in all parts of the continent. However, these mountains are very diverse at every scale, in terms of climate, ecology, economy, demography and other characteristics.

In the context of European cohesion and enlargement, mountain regions are considered as having permanent natural handicaps, due to topographic and climatic restrictions on economic activity and/or peripherality. On the other hand, they also provide potentials and assets as they are centres for biological and cultural diversity, providing opportunities for recreation and tourism, or because they act as water and energy suppliers for lowland areas.

As Europe expands and becomes increasingly complex, future policies for mountain areas must be based on a thorough understanding of their current social, economic and environmental situation. Such an in-depth analysis of the mountain areas for the old and new EU member states plus Romania, Bulgaria, Norway and Switzerland was conducted in a study commissioned by DG Regional Policy of the European Commission, undertaken by a consortium of twenty-two partners from across Europe, led by Nordregio.

This presentation shows subset results of this study, focussing on infrastructure supply and accessibility, the economic situation, and demographic patterns and trends in European mountain areas. The situation of and within the Alps is compared against the situation in other mountain ranges in Europe, so as to identify the specific handicaps, potentials and assets of the different mountain ranges. As there is not only diversity between mountain ranges in Europe, but there are also great disparities within individual mountain ranges, the basic analyses of the situation are carried out at municipality level. Thus, the presentation will provide results both at municipality and at massif level. Eventually, three typologies of mountain areas will be introduced, where different massifs are classified according to certain sets of criteria in order to define massifs with similar problems and potentials.

The three typologies assess the massifs in Europe from three different perspectives as they relate to (1) social and economic capital; (2) infrastructure, accessibility and services; and (3) land use and land cover; representing the key issues of mountain areas.

The specific situation and the performance of the Alps will be highlighted against the situation in other massifs in Europe. The internal variety within the massifs will also be addressed in the presentation.

### **6.1.3. Concentration and abandonment in alpine areas and their impact on landscape structures**

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Recent statistical data concerning the demographic situation of the Alps (CIPRA area) in the past twenty-five years emphasize the general growth of the alpine population and the end of emigration movements of the 20th century. We must consider this subject carefully: apart from quantitative evaluation, we have to look at the quality of the process in action and to observe its impact on the structure of alpine landscapes. While the great process of demographic redistribution actually increases the number 'people in the alpine arc', it reduces the number of 'mountain people' and generally produces a loss of homes, of a natural and cultural relationship with the environment.

In past decades, mainly in the Italian and French Alps, a change towards urban diffusion and settlement increase along the periphery of the Alps and on the main valley floors has been observed. Elsewhere the depopulation trend perseveres, affecting mountain slopes, remote inner valleys and peripheral regions away from the tourist areas. These areas are characterized by population age increase, abandonment of dwellings, decay of agricultural and utility structures (terraced fields, meadows, small utility buildings), and loss of usefulness due to increasing natural afforestation in uncultivated areas.

Reading these processes in the light of the main subject of this Forum ('from preview to action'), we have to ask ourselves what kind of Alps we desire in the future. If we think that the Alps will chiefly be the 'playground of Europe', i.e. a great wilderness/leisure area for urban people and a few tourist operators, perhaps this is the right trend. But if, on the contrary, our vision is the continued presence of alpine people and their cultural landscape, we must provide better measures and more resources for adaptable, flexible and integrated processes, finding a balance between traditional activities and new economic forms of production or tourist activity. This action is a strategic goal in the fight against the hydro-geological, environmental and cultural deterioration of these territories.

#### **6.1.4. The alpine city – an oxymoron?**

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The term 'alpine city' seems to hold a contradiction between the two words it consists of. The city – of human construction, where we expect modernity and the absence of natural habitats, except for some 'greens' intended for recreation (parks) or for aesthetic value (trees) – contrasts with the Alps – symbol of naturalness, a region where humans are guests rather than hosts, a sanctuary of biodiversity and an infinite array of landscapes. In reality, however, and at closer range, the alpine city may represent a kind of synthesis between the anthropogenic and the natural spheres, a paradigmatic new city which embraces the positive values of both humans and nature. Is that how it is, or is this still fictitious?

#### **6.1.5. Population and culture in the Alps today – in the light of the Alpine Convention**

##### ***Ester Cason Angelini***

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This presentation wants to emphasize the presence of historical cultural communities in the Alps which have to be protected and sustained. At the same time there is an urgent need to formulate the Population and Culture Protocol of the Alpine Convention in order to avoid the disappearance of those specific communities and their replacement with a 'culture' alien to the mountains. Such groups should be named *cultural communities* rather than *ethnic* or *linguistic minorities*, as reported in the proceedings of an international conference in Belluno in 1996 (*Mes Alpes à moi. Civiltà storiche e comunità culturali delle Alpi*, Regione Veneto-Fondazione G. Angelini ed., 1998).

It is necessary to give culture a central and objective role, as it is an essential factor of a more remote yet sustainable connection between people, and between people and their environment. Already in the resolution signed by the president of the Alpine Convention, the Slovenian minister for the environment, Pavel Gantar, it was established that to develop mountain communities we do not need more museums or sentimental or folkloristic recalls of the past. What is required are efficient political and legal instruments to allow for the dynamic evolution of cultural communities, which must be protected in their identity yet open towards the world around them; moreover, the needs of the young generations need to be considered especially. A new booklet 'The privilege of the Alps: multitude of peoples, environments and cultures', published by the European Academy of Bolzano/Bozen and the Fondazione Angelini under the auspices of the Italian ministry for the environment and in cooperation with the Club Arc Alpin, will be launched at the ForumAlpinum2004. It will present those communities as well as a 'new charter of mountain values' based on a harmonious

relationship between people and the environment. The booklet also contains a specific proposal from the Italian part for the Population and Culture Protocol.

## **6.1.6. Transport through and in the Alps: necessity and burden**

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No other topic has stirred as much controversy in the alpine region as that of transport. The discussions on the transportation protocol in the context of the Alpine Convention illustrate the at times diametrically conflicting positions between individual states, as well as between the alpine region and national interests. The commercial transport which crosses the fifteen most critical passes in the alpine region (domestic, export and transit traffic in the alpine region) has more than doubled since 1980, and in 2004 amounted to a total of 195.1 million tons, approximately 154 million tons of which were transported via the passes between Ventimiglia and Tarvis. The percentage of commercial transport actually transiting the Alps amounts to fifty per cent of total commercial traffic in the region. At the same time, however, commercial transport has shifted towards the road. The percentage of road-use in alpine transit amounts to seventy-five per cent, although this figure varies in individual countries (roads in 2004: CH 35.3%, A 76.8%, F 77.9%). In comparison to the road network, the railway network is still beset by serious structural, organisational and logistical disadvantages. According to a survey conducted by the Economic Research Institute of Bolzano (2002), the railway system's lack of reliability is one of the major criticisms raised by transport agents. Moreover, Alpine transit traffic is increasingly affected by trends in international freight transport. Changing employment legislation, the expansion of Italian Mediterranean ports and their strategically more favourable location in proximity to intercontinental routes passing the Suez Canal have resulted in large growth. The new EU infrastructure programme (TEN-t) addresses several projects which directly affect the alpine region (Brenner, Mont Cenis, Genoa-Swiss border etc.) and were approved by the European parliament and the council (ruling no. 884, of April 29, 2004). This is an attempt to offset existing deficits of the railway system. However, it is still doubtful that this will suffice to establish sustainable development in a sensitive region unless decisive transport policies, organisational and logistical measures are implemented.

## **6.2. Key issues of landscape development in the Alps**

### **6.2.1. Key questions**

#### ***Erwin Stucki***

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1. What are the driving forces related to landscape development in the Alps?
2. Who is affected by landscape development in the Alps now and in the near future?
3. At what institutional level (local community, region, nationwide, Alpine Convention) should landscape development be dealt with? In other words, is landscape development (now and in the near future) an item the international, transnational agenda, e.g. the Alpine Convention?
4. What lessons can we learn from the past?

### ***Content:***

Contributions to the key questions will be gathered from the following sources:

1. the Swiss National Research Programmes (NRP 48 – Landscapes and Habitats of the Alps) (6.2.2. – 6.2.4.)
2. ongoing research programmes at national and international level (6.2.5. – 6.2.9.)
3. contributions, statements and assessments by the workshop participants

Special attention will be paid to international agendas on research, strategic planning and policy.

## **6.2.2. Swiss NRP 48: Landscapes and Habitats of the Alps**

### ***Paul Messerli***

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### ***Sustainable development in alpine areas***

The Swiss National Research Programme Landscapes and Habitats of the Alps (NRP 48) aims to determine what developments in the alpine area are discernible, socially desirable, ecologically sound, and economically sustainable. To this end, NRP 48 prepares foundations and develops specific strategies to help set sustainable development in motion. Long-term possibilities and opportunities are sought to overcome conflicts between the demands of consumers and conservationists.

NRP 48 intends to heighten awareness of the collective assets of ‘landscape’ and ‘habitat’ and their far-reaching social significance. The aim is to produce results which can be applied not only to Switzerland, but to the entire alpine region. In this respect, collaboration and exchange with parallel research endeavours at European and international level are of great importance.

### ***Research foci and key questions***

The research activities of NRP 48 are gathered up in five research foci. The key question in each case formulates the expectations of NRP 48 as regards future synthesis and implementation of the results. Thirty-five individual projects dealing with inter- and transdisciplinary concepts contribute results in one or several research foci.

#### ***I Processes of perception***

Key question: how are landscapes and habitats perceived?

#### ***II Processes of change***

Key question: how and why do landscapes and habitats in the alpine area change?

#### ***III Designing goals in landscape evolution***

Key question: how can objectives be defined and achieved?

#### ***IV Land use and adding values***

Key question: how can one ensure that landscapes and habitats maximise their potential value?

#### ***V Virtual representation***

Key question: how can landscape development be anticipated?

### ***Research effectiveness and collaboration with actors involved***

The results of NRP 48 are intended to help the various authorities, decision-makers (Swiss government, cantons and municipalities), as well as private-sector protagonists both within and beyond the alpine area to better identify their landscape-related tasks, to match their activities to agreed goals, and to make use of available means. In order to ensure this, the majority of the 35

projects involve local communities and individuals in the research process. A supervisory group of representatives from seven federal offices are actively involved in the programme in order to ensure optimal transfer of research results to legislation and public administration. Key Swiss NGOs are involved in the dissemination of the programme results.

### ***Programme stages and funding***

The first stage (2002-2005) of NRP 48 consists mainly of actual research in the 35 projects. The second stage (2005-2007) will be devoted to synthesis and implementation. The Swiss National Science Foundation (SNSF) is in charge of executing the NRP. A framework budget of 15 million Swiss francs over five years has been granted.

### **6.2.3. FUNalpin, virtual future – new types of alpine landscapes. Evaluating the resource bases of new economies for reshaping local policy.**

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What economic opportunities do alpine landscapes offer today? Perhaps cross-country skiing in front of Cologne cathedral rather than in the Engadine? It would seem that landscapes can easily be changed. Due to the economic transformation and mechanisation of leisure activities, regions with a high landscape potential are experiencing economic decline. The project examines how, on the basis of a performance agreement, public money could in future increasingly be directed towards public causes such as landscape maintenance.

### ***Background***

Partly due to globalisation and liberalisation, the economic situation in the alpine area has changed dramatically. New relationships are forming between peripheral and central alpine regions. The traditional resource of ‘alpine landscape’ is losing importance, being increasingly supplanted by mechanical structures, landscape simulation, organised leisure, and/or new technologies. Owners and ‘suppliers’ of real landscapes are thus losing the foundation of their livelihood. Economic activity is concentrated in intensely used alpine areas of much less value in terms of nature and culture, as well as in regions on the periphery of the Alps. Alpine regions must decide what sustainable long-term economic use they can make of their landscape resources.

### ***Objectives and approach***

The project is based on the idea that regions have a chance of survival if state payments (grants, sponsorships, etc.) are directed to areas showing high ecological performance. This ecological performance would be awarded official certification as a preservation area, something which would also be useful to these regions for their own marketing. Working from case studies, quality criteria will be drawn up for ecological performance regulations, and a certification procedure established. A further stage would involve the assessment of economic potential, and the drawing up of elements for a performance agreement.

## ***Significance***

The project involves a new approach in regional policy: public money should increasingly be directed towards public causes such as preserving the quality of resources and landscape, on the basis of which the private sector can produce certified quality goods and services. The elaboration of award criteria and performance regulations is to be carried out in close cooperation with the affected parties in the regions, as well as with members of the national and cantonal governments.

### **6.2.4. Maintenance of the traditional cultivated alpine landscape by means of institutional resource regimes**

***Raimund Rodewald<sup>1</sup>, Peter Knoepfel<sup>2</sup>, Willi Zimmermann<sup>3</sup>, Peter Bolliger<sup>4</sup>, Martin Arnold<sup>5</sup>***

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#### ***This study is based on the following initial hypothesis:***

Sustainable landscape development requires the integration of collective property rights into the former institutional regime for the resource of landscape, which previously was predominantly conceived on an individualistic basis, i.e. individual ownership of individual plots.

#### ***Theoretical base***

Our use of natural resources is strongly determined by the institutional framework which exists for the use of a resource. Property rights play a particularly important role here as they constitute the link between users and a resource. Ostrom (1990) and Hanna et al. (1996) assumed that unless the property issue could be resolved, sustainable use of resources would be impossible to achieve. However, property rights are just one part of the institutional regime determining the way in which natural resources are treated. The institutional regime includes not only the distribution of rights but also the nature and content of regulations, participating actors and institutional structures, and the processes and measures involved in public protection and use policies.

So far, the framework conditions for co-operation and collective action in the landscape have only been examined in a few research programmes.

#### ***Research questions***

Today, historical traditional landscapes, like the terraced landscapes in the Lower Engadine, Ticino and Valais, or traditional alpine landscapes with their old irrigation and access systems, are no longer economically viable. The introduction of a system of direct agricultural payments in 1992 meant that at least some of these landscape-conserving activities have been funded. These subsidies are, however, closely associated with farming activities and are therefore only paid to the farmers who own or lease the land. The example of terrace sponsorships in the Cinque Terre region (in Italy), which give non-farmers the opportunity to become land sponsors is another potentially interesting solution.

Furthermore, demands to impose management obligations on persons wishing to convert old agricultural buildings in rural areas into holiday homes were also voiced in the context of the debate surrounding the new Swiss Federal Law on Regional Planning. A similar aspect was recently introduced in a government decision concerning the problem of the rustici in the canton of Ticino.

The proposed project seeks to answer the following questions:

- How does the institutional regime for the resource ‘landscape’ (property rules, public conservation and use policies) influence the quality of this resource, taking the historical and geographical particularities into account?
- How can new or revived traditional collective forms of institutional property (e.g. common property and combination of diverse property regimes) contribute to sustainable landscape development?

### ***Methods***

Three case-study areas will be subject to a screening process. This will make it possible to record the extent of sustainable landscape use (the criteria/indicator system has been borrowed from the BAFU Project Landschaft 2020 (Landscape 2020). The resource regime (property situation and public policies) will also be recorded. We assume that it will be possible to adequately record and describe the situation in the case-study areas using a maximum of about twelve screening criteria/indicators (Knoepfel et al. 2001). This screening process will focus on three time reference points (prior to 1980/90, the current situation and, prospectively, the year 2020):

With the help of these case studies, it will be possible to test the hypothesis that there is a causal relationship between altered regime components and assumed changes in landscape quality. To avoid any distorting mono-causality, in addition to the variables with a direct effect on regime change, other exogenous and endogenous influence variables will also be tested.

On completion of this screening and hypothesis verification, possible desirable target status variants for sustainable landscape development will be outlined for each case study area and, on this basis, the institutional landscape regime will be derived as an ideal model which would positively support this target status.

### ***Expected results***

The proposed project will examine the relationship between institutional regimes for the resource of landscape and the actual state of the landscape, taking historical and geographical particularities into account. The study shall also demonstrate whether the terraced landscapes currently threatened by abandonment, intensification or destruction might not be better preserved if new common-property-like regimes were established.

## **6.2.5. REGALP: Regional development and cultural landscape change:**

### **The example of the Alps.**

#### **Evaluating and adjusting EU and national policies to manage a balanced change**

***Wolfgang Pfefferkorn<sup>1</sup>, Hans-Rudolf Egli<sup>2</sup>, Josette Barruet<sup>3</sup>, Barbara Cernic-Mali<sup>4</sup>, Peter Eggenberger<sup>5</sup>, Antonio Massarutto<sup>6</sup>***

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REGALP is a research project funded by the European Commission under the 5th Framework Programme, Quality of Life, Key Action 5, sustainable development of rural and other relevant areas. The overall aim of REGALP is to investigate the interrelation between regional development and cultural (= man-made) landscape change. In a future-oriented approach the research team will propose



improvements and adjustments to policies at EU and national level. The proposals are based on a new understanding of the interrelation between regional development and cultural landscape change, in order to meet future requirements and to manage balanced change in the Alps and other European landscapes and regions.

### ***Project structure***

- Working package 1: identifying the relevance of the landscape issue in regional development policies at EU and national level;
- Working package 2: analysing the interrelation between regional development and cultural landscape change in the Alps;
- Working package 3: evaluation of public policy contributing to the interrelation between regional development and cultural landscape change;
- Working package 4: developing integrated cultural landscape scenarios in the Alps for the year 2020;
- Working package 5: making public the view of locals;
- Working package 6: proposing adjustments to EU and national policies.

## **6.2.6. VISTA – Vulnerability of ecosystem services to land-use change in traditional agricultural landscapes**

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### ***Problems to be solved***

Rapid technological, economic and social changes have induced major land-use changes in traditional landscapes in Europe's 'marginal agricultural areas', resulting in a steep decline in the total area of extensive agro-ecosystems typical of these regions. Agricultural abandonment and reduction, or abandonment of grazing and hay-making in semi-natural pastures have transformed landscapes from diverse mosaics of land use intensities to coarse mosaics, where large abandoned areas contrast with foci of intensive use. Remaining open habitats characteristic of traditionally managed lands are potentially under further threat from continuing land-use change and/or an intrinsic fragility of sparse and disconnected plant and animal populations. Hence many areas have evolved towards less ecologically and culturally valuable vegetation. An assessment of the vulnerability of traditional agro-ecosystems to future land-use change, including an evaluation of threats and a quantification of their impact on the delivery of ecological services they provide is therefore urgently required.

### ***Scientific objectives and approach***

VISTA aims to compile an *integrated assessment of the vulnerability of European traditional agro-pastoral landscapes to land-use change* which will assist land managers and regional policy makers towards sustainable development.

1. *Build a framework for predicting the dynamics of and services provided by agro-pastoral landscapes.* Based on previous studies of the response of plant traits to land-use change and experiments at eleven sites in Europe and Israel, we will identify morphological and easily-measurable physiological Plant Functional Traits (PFT) which predict the response of vegetation diversity and ecosystem functioning to land use, and unravel experimentally the relevant ecophysiological and demographic mechanisms.

2. *Develop, in collaboration with land managers, easy and cost-effective trait-based indicators of ecosystem services* such as herbage production, litter decomposition and agro-economic value. The robustness and the community utility of a short list of easily measurable traits as indicators of these services will be tested by involving land managers and an anthropologist throughout the research, and by running field demonstrations and training courses.
3. *Apply a scenario-based approach to simulate ecological changes and assess with stakeholders the vulnerability of services provided by traditionally managed landscapes.* Scenarios for future land use at six of the study sites will combine sensitivity thresholds identified from the compilation of historical data, constraints by regional socio-economic scenarios, and local natural and socio-economic context. Their impacts will be projected by combining landscape simulations of vegetation diversity and ecosystem functions, and the relationships between these properties and ecosystem services. Then alternative projections within each site will be ranked according to stakeholders' criteria. A synthesis highlighting regions with differing vulnerability will be presented during a multi-sectorial conference.

### **6.2.7. IMALP – Implementation of sustainable agriculture and rural development in alpine mountains**

#### ***Philippe Fleury***

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IMALP is a three-year project initiated in January 2003 and funded under the European Community 5th Framework programme for Quality of Life and Management of Living Resources (QLK5-CT -2002-01099).

IMALP has developed a research-demonstration approach to sustainable agriculture in four pilot areas across the Alps: Moyenne Tarentaise (France), Val di Sole (Italy), Oberes Drautal (Austria), Val d'Hérens (Switzerland).

#### ***Project objectives:***

- to design and implement local action plans for sustainable agriculture to contribute to rural development in the alpine region;
- to assess implemented action plans and disseminate methods and tools to promote sustainable agriculture;
- to make political recommendations about rural development.

#### ***Expected results and challenges***

IMALP will lead to new knowledge on the sustainability of alpine agriculture at an inter-territorial European scale. This knowledge will inform:

- the operational definition of sustainable agriculture at local level;
- the relationships and negotiation processes between actors;
- the multi-functionality of farming systems and current changes;
- representations of farmers' identities and definition of farmers' tasks.

#### ***IMALP will propose:***

- methods and tools to implement sustainable agriculture and indicators of sustainability from monitoring and backing to decision-making.

## 6.2.8. Euromontana project: strategic information for development of quality mountain food products in Europe

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In 2000, on the occasion of the Trento Mountain Convention, Euromontana<sup>1</sup> emphasised the comparative advantage of food products from mountain areas, justifiably described as a ‘reservoir of diversity’. However, both the world and the European economic context tend to progressively marginalise these regions and their products. In a purely economic logic they struggle to find their place, which is why it is essential to study the development of mountain products through innovation and quality responding to consumer expectations. Euromontana decided to act, with fourteen partners, by establishing a European study programme on mountain food products.

### *The project in context; its objectives*

From October 2002 to September 2004, Euromontana coordinated a European research programme on mountain food products, funded by the Framework of the 5th RTD Programme of the DG Research (European Commission). The aim is to develop and put at the disposal of actors and professionals some useful tools for the development of mountain products.

The fourteen partners are from different mountain areas in eight European countries, i.e. Spain, France, United Kingdom, Greece, Italy, Poland, Romania and Norway. They are development agencies, local authorities, research or training centres and associations active in the field of food products from their mountain territories.

The two objectives of the project are:

- to create an Internet site making available strategic information on mountain products with the long-term potential to become a resource centre for the professionals in these areas;
- to develop political proposals and strategic recommendations at the European level, based on a European Charter of Quality Mountain Products.

### *Methodology and results*

The study comprises two series of surveys conducted in ten study areas in eight European countries. The first was a questionnaire survey to collect data on more than 120 products. The second study took the form of case studies on eighteen of the previously surveyed products. Legislation concerning these products was also scrutinised in the eight countries.

Consultation with a larger public was made possible through two seminars. The ‘technical’ seminar in Turin (February 2004) involved the participation of selected experts to deepen and refine the final project findings. The final conference in Cordoba (July 2004) enabled a large audience to validate future development of the Internet site and a European Charter of Quality Mountain Products.

*Some results: of the 122 products examined, 87 are processed (55 of animal and 32 of vegetal origin) and 35 non-processed (23 and 12, respectively). Communicating their merits relies more on the image of the region (mountainous) than on the term ‘mountain’ as such. They are more easily identifiable through private brands than through quality denominations (European or national);*

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<sup>1</sup> European multisectoral network for the development of mountain areas

however, there are considerable differences between individual products (plenty of cheeses bear the PDO label<sup>2</sup>).

Most of the raw material is produced in the mountains, where processing also mainly takes place. For the most part, the natural mountain conditions positively affect raw-material production; however, effects can occasionally be negative (poor soil...).

There are two major product categories, i.e. products originating from natural conditions and a particular environment (mountains), and unique products requiring specific know-how. The following success factors have been identified, i) in terms of production: natural conditions, historical presence, extensive use of resources and a social link; ii) in terms of organisation: availability of a collective structure and quality management; and iii) in terms of funding: local or national public support of the launch of the project and of collective structures.

Currently only the French government has legislation on the term 'mountain' with regard to food-products.

### **European information website**

The website makes available the results of the project in eight languages, i.e.:

- i) information on national and European regulations on quality and mountain products;
- ii) examples of innovative local initiatives; relevant contacts to promote exchanges;
- iii) an analysis of factors contributing to success.

This European resource centre will be developed by referring other processes to it, ongoing projects, and news on this theme in order to make it a 'European centre for the exchange of information on mountain food products'. This site will be available online from October 2004 and should be associated to projects and exchanges in the field with the support of Euromontana.

### **A European Charter on Quality Mountain Food Products**

The point of such a Charter is to define common perceptions and concepts on what constitutes a mountain product in order to promote cooperation, initiate the involvement of various actors to develop these products, and finally raise awareness and involve European and national institutions. Euromontana foresees a period of consultation from now on, and will be progressing towards a wide recognition and ownership of this Charter by the mountain organisations in Europe. Initially, the Charter is expected to play a political role. It is hoped that it will be signed by all the professionals, national and international institutions, research and development centres. Euromontana will also submit its own recommendations to the European Commission, and when appropriate, to national governments.

## **6.2.9. proVision – providing for nature and society**

### **Christian Smoliner**

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End of September 2004 the Austrian Ministry for Education, Science and Culture (BMBWK) started its new national research programme proVision, which focuses on providing for nature and society.

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<sup>2</sup> PDO : Protected Designation of Origin: quality designation defined in EC regulation EC 2081/92

proVision is part of the Austrian initiative for research on sustainable development (FORNE) of the Austrian Council for Research and Technology. It also includes the research programme on Technologies for Sustainable Development of the Austrian Ministry of Transport, Innovation and Technology (BMVIT), and the Pfeil05 research activities of the Austrian Ministry of Agriculture, Forestry, Environment and Water Management (BMLFUW). The objective of the FORNE initiative is the definition and further development of a common set of future goals for Austrian sustainability research, and the strategic coordination of the various research programmes. More detailed information on FORNE can be found at [www.forne.at](http://www.forne.at)

proVision is designed for a ten-year period (2004-2013), with the first call for proposals starting end September 2004. Programme management is shared between the BMBWK and the Environment Agency, each with a different focus on strategic and operative management activities.

proVision was developed in a nine-month participatory process and will cover seven key questions:

- *Integrated risk-management research*: vulnerability of humans and nature – how can we deal with this in a prospective way? Despite risks and insecurity – how can we deal responsibly with global environmental and climate change and spatial development?
- *Prospective/sustainable lifestyles*: how can we agree on standards of life-quality which correspond to the goals of sustainable development?
- *Prosperity and fairness of costs*: what are the future costs of environmentally responsible actions and who has to pay? How can we formulate, implement and evaluate an extended and broader understanding of prosperity in a participatory manner?
- *Environment in Balance*: what services can ecosystems provide? How much wilderness does Austria need?
- *Spatial development and land-use*: what use, stress and interference in land-use and development is justifiable in regard to sustainable development? What are future forms of land-use and development?
- *Global responsibility*: how can Austria meet its international obligations in regard to sustainable development? How can Austria contribute to the advancement and implementation of sustainable development?
- *Dialogue for sustainable development*: what kind of science culture is necessary for a provident society? What type of language can encourage dialogue?

Apart from these key-questions, on which calls for proposals will be made, proVision has defined certain operative goals:

- enhance international co-operation;
- enhance the quality and quantity of science-practice co-operation;
- enhance the quality and quantity of research-education co-operation;
- strengthen involved disciplines through interdisciplinary work;
- foster gender equality in science;
- foster gender-related research questions;
- increase the percentage of women in science;
- increase the number of young scientists;
- foster the qualification and career-potential of young scientists in inter- and transdisciplinary research.

## **6.3. Participation – a key element for sustainable development**

### **6.3.1. Participation – a key element for sustainable development – from the Entlebuch Biosphere Reserve to INNOREF**

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#### **1. Introduction**

How can regional development improve prosperity in alpine regions? Methodology, principles of participatory processes and best practice examples are presented. Initiation of bottom-up processes, involvement of stakeholders, building up networks, co-operation and communication are crucial factors for the success of sustainable development.

Representatives of communities and regions are invited to share their experiences and best practice examples during the workshop.

The project idea of the Regional Framework Operation (RFO) INNOREF (2004 – 2005) derives from the Programme Man and the Biosphere MAB promoted by UNESCO. The sustainable development model has been successfully tested in the Entlebuch Biosphere Reserve in Central Switzerland. Entlebuch has developed a strategy for the conservation of culture, nature and landscape as well as economic development based on local resources, creating added values and benefits for the local population.

#### **2. Entlebuch: model region for sustainable development**

The long-term targets of the Entlebuch Biosphere Reserve are conservation, development and cooperation. These goals imply the conservation of the unique, protected natural and cultural landscapes, especially of the raised bogs, moorlands and karst areas, and, simultaneously, the realization of sustainable regional development. A cooperation process allows sustainable growth and prosperity in the region. In connection with the experiences from the process, the 'I method' (for details see below) may enable the adaptation and application of the model in other regions as well.

Due to its topography, soil, climate and development, the Entlebuch valley does not have optimum site qualities concerning agriculture, industry and trade. The topography, fauna and flora of the Entlebuch cultural landscape, comprise many unique features of national and even international importance. Large areas of Entlebuch are dominated by a patchwork of valuable and diverse habitats, such as cultivated green-land ecosystems, raised bogs and peat bogs, alluvial woodlands along the Kleine Emme and Grosse Entlen rivers, hedge landscapes and large, near natural forests.

About 50 per cent of its 395 sq km surface area is agriculturally utilizable and alp meadows, 43 per cent is forested land, while the 2 per cent settlement areas are mainly villages, some industrial companies and tourist infrastructure. Of the 17,000 Entlebuch inhabitants, around 8,000 are in work, a third of whom are employed in agriculture and tourism, respectively. Among the 1,200 farms, 83 per cent are full-time enterprises; 39 per cent of employed work in the first sector. The main employers are the two mountain railways, Sörenberg and Marbach, as well as the five largest industrial firms and local trade.

The project (from 1998 to 2001) aimed at the establishment of a UNESCO Biosphere Reserve in Entlebuch. Based on the local characteristics and resources, lasting economic development with sustainable growth was to be achieved. A referendum in September 2000 on providing financial support and on establishing the Biosphere Reserve was unexpectedly successful: 94 per cent of the voters in the eight municipalities concerned supported the bill. Prospects for the future, local participation, extraordinary communication efforts as well as convincing arguments were important factors for the project's success.

In 2001 the Advisory Committee of the International Coordination Council for the Man and the Biosphere Program (ICC) congratulated the people in charge on the democratic process, their project management strategy, the procedure by which the municipalities reached agreement on the biosphere reserve and on its financial support.

### ***Cooperation as a key issue for sustainable growth***

Sustainable development may be achieved by establishing regional structures and cooperation within and between sectors, as well as with other regions. This improves the regional material loop and raises added value. Consequently, long-term growth may be guaranteed by resource efficiency and innovation potential within the various networks. Regional management as a professional hub is responsible for cooperation and moderation, communication, innovation and implementation of the Biosphere Reserve concept and, as a centre of competence, have to initiate, integrate, facilitate and evaluate the project and its data.

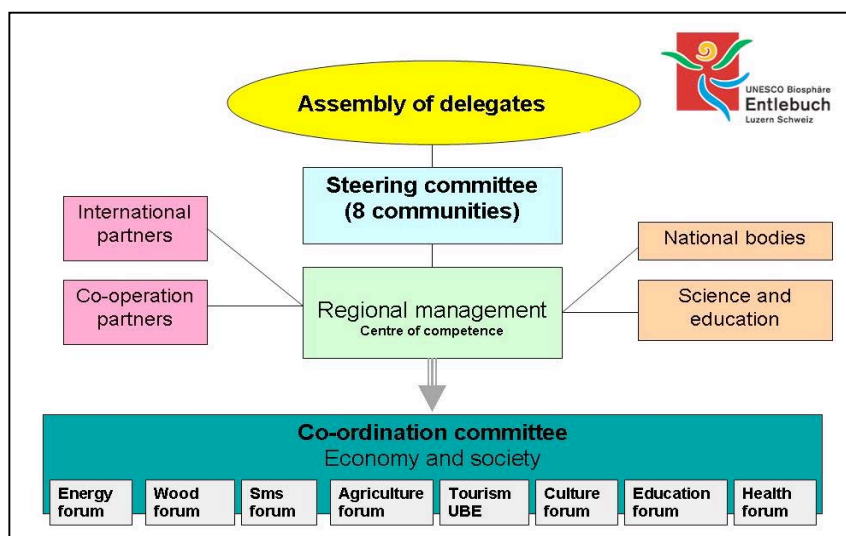


Fig. 1: Participatory structures: The bottom-up organisation of the Entlebuch Biosphere Reserve allows the involvement of society and economy.

The legal institution in the Biosphere Reserve is the Entlebuch Association of Municipalities, formed by the Steering Committee and the Assembly of Delegates (fig. 1). Their members represent public institutions and are delegated by the municipalities. The implementation process will not be accelerated without direct involvement of the stakeholders from economy and society. Therefore the stakeholder networks, the so-called Forum, were reorganized on a regional scale; the Coordination Committee consists of their chairpeople. Together with the Regional Management, these bodies implement the Biosphere Reserve's development strategy.

### ***3. Methodology applied in the Interreg IIIC project INNOREF***

The partner regions of INNOREF, Friuli Venezia Giulia, Umbria (Italy), Western Greece and Hranicko (Czech Republic), found this idea suitable to be adapted to different economic and social environments. Moreover, it is coherent with the territorial approach sustained by Interreg IIIC and with the strategies implemented by the participating regions.

The implementation of a sustainable regional development will be reached through participatory processes and bottom-up network structures. This approach is considered a normative participation process based on people participating in the decision process from the very beginning. It therefore contrasts with the usual top-down approach based on a hierarchical structure. The main advantage of adopting a bottom-up approach is participant identification with decisions concerning their environment.

Participatory processes require all participants to show a high degree of competence and imply a permanent learning process required great flexibility. Therefore, INNOREF is focusing on creating stakeholder and public involvement, corporate citizenship, regional management structures and capacity building within the framework of sustainable development within regional networks. All stakeholders interested in regional development activities should be able to participate. The motivation to achieve sustainable development will be a key factor.

In fact the bottom-up process will not be successful without top-down governmental support and side-in effects due to support from NGOs, research and education institutions, and national and international organisations, increasing know-how and competences within the region.

Methodologies integrated in the 'I method' concept:

- Participatory methods
- Target-oriented process management
- Decision process
- Workshop moderation
- Communication and Public Relations
- Cooperate identity and Marketing
- Leadership in public organisations
- Conflict prevention and resolution

### ***Implementation of the 'I method'***

Through a methodological procedure the process will be accelerated. Capacity building in the region can be improved through management team and stakeholder training. Even if, at the beginning, time must be invested in establishing and honing procedures (methodology and training), the processes will be faster later on due to the participation of networks which build up sub-projects and will be assisted and moderated by staff from the Professional Service Centre (PSC).

In INNOREF the target process is initiated by networks which propose goals relating to the regional strategy and topics of sub-projects, according to needs having emerged in the area and defined through a SWOT analysis. Networking is essential already in the decision process in order to create acceptance, synergies and to improve co-operation and resource efficiency. Networks in different sectors will cooperate; the exchange of information and ideas will bring creativity; innovation and focus on a long-term culture to manage changes will be enhanced.

The consistent implementation of the strategy will bring the desired impact and added values. It is necessary to balance short-term goals leading to concrete results, against profit and long-term goals creating an impact, in order to motivate participants to proceed consistently.

### **Methodological procedure with I-Method:**

- |  |
|--|
| <ol style="list-style-type: none"> <li>1. Creation of Pioneer Team: Selection field of activities</li> <li>2. Target finding process: Ideal development, overall objectives (vision)</li> <li>3. Selection of Stakeholders and interested persons</li> <li>4. SWOT: Strengths, weaknesses, opportunities, threats/bottle necks</li> <li>5. Establishment of stakeholders networks and professional moderation</li> <li>6. Quality check of targets (CARMAT: are they <b>C</b>lear, <b>A</b>tractive, <b>R</b>ealistic, <b>M</b>easurable, <b>A</b>ccepted, <b>T</b>ime defined?)</li> <li>7. Goal concretisation (short term, long term)</li> <li>8. Implementation plan: activities, tasks, tools, resources (human, financial, natural) and timetable</li> <li>9. Assessment strategy and selection of indicators</li> <li>10. Actions: results and impact</li> <li>11. Assessment (Activities, Indicators and Process)</li> </ol> |
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#### ***4. First Success in the Entlebuch Biosphere Reserve***

##### ***Impact-oriented public relations strategy***

The communication strategy has to be tailored to the process of sustainable development. Permanent and long-term information as well as positive communication are crucial for successful public relations and the creation of a chain reaction. An important task is to switch from activity to impact-oriented communication. A feedback culture helps focus consistently on the needs of the local population. A further important task is to translate complex information on regional sustainable process into simple language which a majority of the population can understand.

The Entlebuch process has been the topic of some 700 (2004) newspaper and magazine articles and TV and radio reports every year. Also, 8,000 individuals have participated in Entlebuch excursions and events, providing ideal information multipliers in a word-of-mouth chain.

##### ***The Echt Entlebuch (Genuine Entlebuch) trademark***

Products and services as well as partner companies can obtain certification of the Biosphere Reserve and use the Echt Entlebuch trademark. This is an instrument to create credibility for consumers and to increase productivity based on local resources.

The main tasks of such a trademark are:

- Production of high-quality products
- Creation of a corporate design and image
- Support the philosophy of the Biosphere Reserve
- Enhance regional identity and local particularities
- Increase innovation of products and services
- Assessment of origin and quality
- Added-value creation within the region

The criteria for individual product and service categories and companies were developed by a committee consisting of representatives of the sectors involved, and with producer participation.

##### ***Certification of partner companies***

The partnership programme has been established for restaurants, bakeries and butchers. This partnership is of high interest regarding the great need for local resources and exponentially increased added-value creation through production activities. Moreover, small companies know their customers, which makes them ideal communicators of the philosophy of the Biosphere Reserve.

Criteria relate to products and to service provided for guests. Criteria concerning products are:

- 75 per cent of all products from the area must be certified or from organic production;
- the menu must state the origin of the produce and producer's name; meals have to contain seasonal food;
- 50 per cent of the products used in a certified restaurant must originate from Biosphere Reserves, including foreign sites;
- typical meals must be on the menu daily;
- staff must be able to inform their guests about the Biosphere Reserve;
- promotion material must be available and well presented;
- information material must be supplied with the menu, and placed in all hotel rooms.

The consistent implementation has increased the use of local products and the creation of added value resulting from local resources. Moreover, cooperation with partners can accelerate implementation.

### ***Quality economy increases prosperity***

The objective of the Biosphere Reserve was to create and promote a new destination in line with the aims of nature protection and education, requiring the promotion of new venues and facilities away from the main winter ski resort. A regional network of agencies, public bodies and private operators had to support destination marketing. The main task was to improve cooperation between the stakeholders in the tourist sector.

The results of these efforts have been:

- definition of a new destination strategy and creation of greater authenticity;
- diversification of tourist products, mainly during the summer season;
- creation of new products linked to agritourism;
- creation of new packages for seminars and congresses, mainly related to research and education, nature and recreation;
- promotion of the Biosphere Reserve school targeted at schools and groups, combined with excursions and overnight stays in farms in mountain areas;
- increased overnight stays during the summer season, 3.5 and 5 per cent respectively;
- double the number of excursion participants every year;
- increased involvement of Biosphere Reserve partners from the tourist sector;
- increased income for producers of local products as a result of the new tourist marketing strategy.

<b>First Success</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>	<b>2002</b>	<b>2003</b>	<b>2004</b>
<b>Communication</b>						
Visitors on the homepage www.biosphaere.ch		6'218	12'219	25'054	50'832	71,132
Number of articles on UBE	40	72	424	471	532	576
Edition of news papers with articles from UBE	1,292,952	2,292,952	13,599,964	17,100,000	21,500,000	24,700,000
<b>Excursions</b>						
Excursions organized by tourist office	20	18	21	39	34	32
Excursions organized by BE management	2	6	22	66	112	122
Participants tourist office excursions	289	315	249	474	443	402
Participants BR excursions	36	121	661	1445	2070	2568
<b>Services by BR Management</b>						
Cash flow realized by services (meals) for groups CHF			6,125	28,100	49,624	48,776
Cash flow realized by services for overnight for groups CHF			0	10,430	22,409	20,776
<b>Trademark "echt entlebuch"</b>						
Number of producers "echt Entlebuch"			6	28	34	36
Product groups "echt entlebuch"			31	117	133	135
Gastronomy partners				0	6	10

Tab. 1: Results from the BR Management activities:

The project's website and the media are most effective means of communication to make a process visible and to obtain feedback: visits to the website and number of articles concerning the Biosphere Reserve.

Increased numbers of excursions and participants, as a result of the activities of the Biosphere Management, compared to tourist office.

The services linked to the Biosphere Reserve Management show that there is an enormous potential to increase added values and same time to co-finance the management

The consequent implementation of a brand improves the cooperate image, can be successful within short time and increases the cooperation among producers and partners

The partly self-sustaining management system has been made possible through a private-public partnership created from the beginning, providing flexibility and freedom to management. This

bottom-up system benefits from bottom-up initiatives, support from local and regional bodies, and from know-how transfer from universities and research institutions.

The Entlebuch model is reproducible because it has followed a methodical procedure ('I – method'). The needs of the local/regional population are taken into particular consideration: everybody should have the opportunity to participate in the development. The 'I method' as a concept can therefore be used in regions all over the world with different historical, political, cultural backgrounds because it is based on local human and natural resources and knowledge and aims to benefit the local population.

The methodical course of action allows for an acceleration of all processes, which additionally enhances the development of added values in the region. Therefore, a secure economic perspective is prerequisite for the conservation of a natural and cultural landscape and of intact social structures.

## **6.4. Mountain sports without Alps**

### **6.4.1. Key questions**

#### ***Philippe Bourdeau***

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The purpose of the workshop on "Mountain sports without Alps" was to examine the increasingly widespread creation of artificial or semi-artificial sports and recreational centres both in the mountain valleys and in urban areas remote from the Alps: adventure trails, canyoning parks, white water stadiums, urban hikes, artificial potholing trails, cross-country skiing on roads, ski pistes on former mining sites, aeroparks (simulation of free flight by parachute), snow domes etc.

This issue was examined on the basis of two addresses which complemented each other effectively.

- First of all, Professor Juergen Schmude (Regensburg University) presented the results of a highly original research project into the phenomenon of snow domes which are becoming increasingly frequent all over the world and in Europe. Based on in-depth studies of attendance at these artificial ski centres, he showed how these infrastructures are complementary to, rather than competitors with, alpine ski resorts.
- Dr Pascal Mao (Institute of Alpine Geography at Grenoble University) went on to explain that these new recreational spaces encourage an increasingly strong segmentation of the relationship between nature-based sports and their spheres of action: alongside traditional uses of the mountains in a largely unspoiled natural environment (outdoor), more dilettante practices of tourist consumption are developing in completely artificial (indoor) spaces or in transitional spaces (aroundoor). The people who use these different alpine or urban sports areas and their reasons for doing so differ increasingly widely.

The discussion between the speakers and the audience then turned to the environmental implications of these phenomena, which are paradoxical and very interesting. While the development of sports sites which are largely artificial responds first and foremost to constraints of accessibility and economic utilization, it also indirectly contributes to a limitation of the impact of sports which involve nature on the natural environment. Despite the ethical and ideological criticisms to which these recreational spaces are exposed, they also lend themselves very clearly to the principle of "local concentration" of some forms of use and can therefore help to circumscribe within limited and

managed sectors, some of the problems of environmental impact, conflicts of use and even of security generated by sports pursued in the mountains and in a natural setting.

These leisure infrastructures can therefore be regarded as “part of the solution” and not just “part of the problem” of the impact of mountain sports on nature. To achieve these objectives, better use should therefore be made of these spaces to support information, education and preparation for access to the alpine environment.

#### **6.4.2. Skiing without mountains? The tourism of skiing between the Alps and ski domes**

##### ***Jürgen Schmude***

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Two years ago the first two ski domes has been opened in Germany (in Neuss and Bottrop) and there is a great demand. Does that mean that the tourism of skiing will run a development to „artificial worlds“ similar to other segments of tourism?

This paper does not discuss the question of sense of such „new winter worlds“ (e.g. ecological problems), but it analyzes the perception of these snow domes by ski tourists and how they judge them as locality for skiing activities. The problem of new spatial patterns will be discussed (away form the alps to the new location) as well as the possibility of a temporal expansion (activity not only in winter, but for the whole year).

The results presented in this paper are based on a questionnaire about the perception of ski domes given to skiers in Regensburg, Heidelberg and Düsseldorf. It will be discussed whether the perception varies with the spatial distance to traditional alpine skiing regions. The results of another questionnaire given to skiing tourists in a traditional alpine skiing resort in Germany (Sudelfeld in Bayerischzell) and in a sow dome (in Neuss) in spring 2002 show differences in socio-demographic structure of the ski tourist and their behaviour. The paper presents the first results of the field work.

## **7. Project Fairs and posters presentations**

### **7.1. Co-operation projects with alpine focus (INTERREG IIIb Alpine Space)**

*Moderation: Christian Salletmaier*

#### **Interreg IIIB – Alpine Space**

##### *Christian Salletmaier*

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The European Commission has decided to contribute actively to the development of transnational co-operation by co-financing the INTERREG III B programme for the Alpine Space. Participating countries include Austria, France, Germany and Italy in the European Union, as well as Slovenia, Switzerland and Liechtenstein. Structural Fund assistance amounts to EUR 59.7 million out of a total budget of EUR 123.7 million.

##### *Action Priorities*

- Priority 1: promotion of the Alpine Space as a competitive and attractive living and economic space in the scope of polycentric spatial development in the EU. Key actions concern the preparation of spatial development strategies, and networking and co-operation between metropolitan areas, cities, towns and rural regions.
- Priority 2: development of sustainable transport systems with particular consideration of efficiency, inter-modality and improved accessibility. Key actions focus on spatial and environmental impact assessments of new infrastructure, and the promotion of sustainable mobility by improving intermodality and safety standards.
- Priority 3: smart management of nature, landscapes and cultural heritage, promotion of the environment and the prevention of natural disasters. Key actions focus on good management and promotion of landscapes and cultural heritage, including water resources, and the prevention of natural disasters.
- Priority 4: technical Assistance. Another EUR 3.54 million of Community funding is being provided under the heading of Technical Assistance.

##### *Description of eligible areas*

The programme covers an area of 450,000 sq km around the Alps. This area has a population of seventy million people and includes mountainous alpine rural areas with low population densities, as well as the river valleys, foothills and lowlands around the major European urban centres such as Milan, Vienna, Munich, Zurich, Lyon, Marseille, Geneva, Strasbourg, Turin and Venice, where most of the population is concentrated. It is a central area, crossed by important axes and corridors for transit and trade. The Alpine Space is among the wealthiest of Europe, with some of the most innovative and competitive European regions and cities. It hosts a rich cultural diversity. It requires specific integrated and land-use management measures, especially with regard to managing the impact of tourist activities and major transport corridors, and intensive urbanisation processes in certain areas. The core alpine area faces a strong population decrease with concomitant loss of economic attractiveness.

##### *Management*

The Managing Authority for the programme is the Land of Salzburg in Austria.

## **Local endogenous development and urban regeneration of small alpine towns**

***Maria Cavallo Perin, Daniela Sena, Anna Maria Caputano***

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### ***The AlpCity project in a nutshell***

The AlpCity project is financed in the context of the INTERREG III B – Alpine Space Programme. It focuses on local development and urban regeneration of small alpine towns. Its total budget (2003-2006) is 2.204.928 Euro (50 per cent FESR ; 50 per cent co-national funding)

### ***Objectives and activities***

The project aims at promoting common understanding and cultural/political change through a large transnational partnership and different groups of activities, i.e.:

- networking and exchange to create common knowledge and strategies;
- collection of local best practices and innovative projects by individual local authorities;
- dissemination/communication;
- guidelines/future scenarios.

### ***Partners***

Lead Partner: Regione Piemonte, Regional Budget Planning and Statistics (I)

Partners: Lower-Austria, Provincial Government, Department of Spatial Planning and Regional Policy. Agency for the Regeneration of Towns (A); Franche-Comté regional council (FR) ; Conseil Général du Territoire de Belfort, International Co-operation Department (FR) ; Région Rhône-Alpes (FR); Regione Lombardia, Trade, Fairs and Markets Department (I); Regione Veneto, Planning and Territorial Development Unit (I); Regione Friuli Venezia Giulia, Service for Mountains (I); the municipality of Grainau (D); Haute Ecole Valaisanne, Groupe de Compétences Economie & Tourisme (CH); the municipality of Saint-Maurice (CH); the municipality of Tschlin (CH).

### ***Expected achievements***

1. raise awareness at all levels, sharing and improving knowledge and building a common understanding on the project's issues (local endogenous development and urban development in struggling small alpine communities)
2. promote and support local innovative actions and approaches through the design and implementation of fifteen to twenty pilot activities (project-cases) at the local level in the following fields identified within the project:
  - a. economic development;
  - b. services/quality of life;
  - c. urban environment;
  - d. cooperation among towns.
3. promote and develop general practice and policy guidance
4. promote long and short networks and new forms of co-operations. Across all project activities vertical (especially between regions and towns) and horizontal cooperation (between regions themselves, towns, universities) will be sought for.

Expected results: the establishment of new local and European networks on project issues whereby small alpine towns will be the main beneficiaries of new programmes, actions and technical assistance.

## **The Alps and tourism**

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In the Alps, tourism has a huge importance and influence as it represents a significant means to develop local economies. At the same time, it is a factor of stress negatively affecting the landscape and contributing to increased global pollution levels.

#### ***Context:***

The Alpine Convention includes, among others, a protocol on tourism aiming to promote the development of sustainable tourism in the alpine region through guidelines, development programmes and sector plans which foresee the co-operation of various actors and states. The Protocol has not yet been ratified by Italy, Switzerland, France and Slovenia.

Many alpine ski resorts are in danger due to climate change. This has been clearly shown in recent research carried out by Rolf Burki, Hans Elsasser and Bruno Abegg of Zurich University, promoted by the UNEP (United Nations Environmental Programme). This paper estimates that in the near future, between thirty-seven and fifty-six per cent of alpine ski resorts could have so little snow that many of them will have increasing difficulty attracting tourists.

This is why we wish to present a project in the context of the INTEREG – Alpine Space Programme.

#### ***Strategic goal:***

To promote the adoption and implementation of the Tourism Protocol as part of the Alps Agreement by alpine states through a definition of strategies and intervention tools which may enhance international co-operation on this issue.

#### ***Operational goals:***

1. analyse the present situation of sustainable tourism in the Alps (reports, papers, studies, stakeholders, best practices etc);
2. identify future development of sustainable tourism in the Alps, especially during non snow seasons;
3. define plans to develop socio-economically and environmentally sustainable tourism at both local and regional levels in pilot areas.

## **Interreg III B Alpine Space, Alpine Awareness Project, Priority 2, Measure 1**

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Transport, particularly motorised traffic, has a substantial impact on the environment (air quality, noise, ...) and health in the alpine region. Awareness of causes and effects of this impact is often low among both the local population and tourists. In order to raise and strengthen awareness of this problem, it is important to spread information on sustainable development with particular attention to transport and tourism, and on experiences and best practices in this field.

The twelve partners in the project Alpine Awareness, from different alpine countries and coordinated by the Provincia di Belluno as Lead Partner, are willing to contribute to this objective at transboundary level in the sustainable mobility sector, cooperating with the transport and tourist sectors and focusing their attention on the education of young people.

The project aims to elaborate solutions for sustainable spatial development, promoting environment-friendly forms of mobility. Investing in education and information, the project partners also intend to act at a cultural level, with the long-term goal of changing mobility habits.

### ***Projects modules:***

The project is divided into six working packages: the first two mostly deal with organisation and coordination, the other four represent fields of action.

- WP1: transnational project preparation activities  
Responsible partner: Provincia di Belluno, Belluno (Lead partner);
- WP2: Project Management  
Responsible partner: Provincia di Belluno, Belluno (Lead partner);
- WP3: dissemination activities  
Responsible partner: Rhônald'énergie-Environnement, Lyon;
- WP4: young people and mobility  
Responsible partner: Bundesministerium für Land- und Forstwirtschaft, Umwelt und Wasserwirtschaft – Abteilung V/5, Verkehr, Mobilität, Siedlungswesen und Lärm, Vienna;
- WP5: employees in transport and tourism  
Responsible partner: Zukunft Biosphäre Gesellschaft zur nachhaltigen Entwicklung mbH, Bischofswiesen/D;
- WP6: sustainable mobility – a future proposal  
Responsible partner: Regione Autonoma Friuli Venezia Giulia, Trieste.

## **VIA ALPINA - a hiking trail to discover eight alpine countries**

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For more than thirty years, hiking tourism has been providing sustainable development opportunities in mountain settlements, with low-cost investments, upgrading of existing infrastructure, and benefits flowing directly to local service providers – and a substantial contribution to the environmental awareness both of the general public and the local population.

As more and more people with little previous knowledge of the mountains have become attracted to hiking holidays, demand for more organised services has increased. This creates new economic opportunities, but also requires a level of professionalism not all areas can provide. Indeed, while tourists are in search of unspoilt traditional environments, it is often especially difficult for the most remote and less developed communities to gain access to required expertise and publicity. Therefore, there is a need for structuring hiking tourism in order to channel economic benefits towards the regions which need them most.

Via Alpina is the first initiative of the eight alpine countries to jointly promote hiking in the Alps. It is managed by an international steering committee with representatives from each country's public administrations, hiking associations and tourist promotion agencies.



### **3 main project objectives:**

- generate income for mountain regions through quality improvement of hiking tourism;
- improve public awareness of the alpine natural and cultural heritage and its challenges;
- establish a permanent, cross-sectorial network for transnational collaboration.

### **Project development:**

- 1999-2000: feasibility studies.
- 2001-2004: 1st project stage (Interreg IIIB Alpine Space project „Via Alpina, co-funded by the European Union [European Regional Development Fund] and the eight alpine countries): establish the Via Alpina product, a 5,000 km hiking trail linking the eight alpine countries: database set-up, trail signposting, information panels, website, basic publications, communication events, decentralised management.
- 2005-2007: 2nd project stage (Interreg application „Viadventure, submitted in July 2004): implement this product in the field to promote local development, together with local stakeholders, and prepare the long term: coordinated information and publicity strategies; environmental education tools; development and marketing of specific tourist products; training, expansion of partnership network; impact evaluation process; establishment of a permanent collaboration structure.
- In the long term: from 2007, routine management of the Via Alpina tourist product itself will be integrated in the tourist systems of all alpine regions. Transnational collaboration shall continue within an appropriate structure in order to develop new activities.

## **CULTURALP – Knowledge and enhancement of historical settlements and cultural landscape in the Alpine space**

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The concept of territorial cohesion in Europe continues to gain importance; the draft European Constitution affirms that this is an area of 'shared competence' among Member States and the European Union. Its significance is further stressed in the Third Report on Economic and Social Cohesion. While the consequences of this process not yet clear, at least it can be asserted that territorial cohesion and territorial matters will play an important role in the negotiations for the structural funds programmes 2007-2011.

The course promoted by the Structural Funds (in particular Interreg 2000-2006) in sustaining the territorial cohesion process and cooperative approach 'to encourage harmonious and balanced development of the European territory' looks promising. Within the SF, the Interreg IIIB Programme (ESDP-based) aims to establish alliances amongst regions, strengthening the concepts of transnational cooperation in planning. The 'little Europes' (cooperation regions) established by the programme were drafted on the basis of homogeneous spatial characteristics beyond state political borders to promote transversal working modalities.

Within the Interreg IIIB Alpine Space Programme, the CulturALP project is a useful practical example to demonstrate the strengths and weaknesses of the general idea of territorial cohesion. This paper therefore focuses on the operative methodological approach adopted in the project, underlining the relationships between spatial planning and cultural heritage management.

Assuming as principal aims of the programme the enhancement of the alpine macro-region, and adopting a problem-solving approach in transnational cooperation, specific goals of CulturALP are to protect and enhance alpine historical centres through a cooperative, transnational approach, improving

knowledge and promoting integrated and sustainable policies in a comprehensive view integrating cultural, socio-economic and environmental aspects.

Within this framework, the main challenges are:

- effective communication for cooperation amongst the partners (different legislations and traditions in planning and cultural heritage management, different languages);
- defining concrete and truly shared issues in a transnational perspective;
- implementing the multidisciplinary approach with effective results (territorial and landscape planners, cultural heritage experts, economists, geographers).

## **METEORISK, mitigation of meteorological risks**

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Extreme meteorological events often originate in the southern part of the Alps and proceed over the alpine crest to the North. The effects of these events are inundations, landslides, avalanches and other alpine natural hazards which do not occur in this form outside these areas. Forecasting these events is strongly limited by the different organisational structures of the weather services in the alpine areas and the lack online data. The objective of METEORISK is to establish a network of automatic meteorological stations which will provide online data distributed to regional forecast centres. Together with improved interpretation of regional models and optimised communication channels between forecasters, better forecasts will be provided to the general public and civil protection authorities. Adequate instruction materials for the general public and civil authorities is a further tool to disseminate improved forecasts to all interested users. A statistical analysis of extreme events will provide the basis for this research.

Forecasting extreme meteorological events in the alpine region is strongly limited by the topography of the Alps. The alpine crest and adjacent mountain ranges form a barrier which inhibits free airflow causing strong updrafts which can result in strong precipitation. Meteorological models only partly account for these effects as – for reasons of resolution – the model topography has to be rather smooth and can therefore only partly represent the strong updrafts on the alpine crest. Meteorological input by experienced forecasters therefore very strongly affects the quality of the forecasts. Also, the structures of the weather services along the alpine crest differ greatly as they cover partly different fields of meteorological interests, ranging from environmental issues to hydrological forecasting. At present communication channels between these services are narrow, mainly due to a lack of communication structures.

Standards, number and quality of observing stations, databanks, communication lines etc. at these centres vary to the same degree as contacts of these centres to outside users of forecast products, i.e. civil authorities, the media and the public. Exchange of opinions among weather services would be extremely useful in the case of extreme events, but is at present limited due to a lack in communication tools.

The principal goal of the METEORISKproject with its improved forewarning abilities for weather services in eight alpine regions is to facilitate transnational know-how transfer among interested organisations. It should directly improve the safety of settlements and infrastructure for enhanced use of available, but not currently easily accessible data accumulated by various organisations. The idea is to use Internet networking technology to establish two on-line datacenters accessible in case of extreme events. Public authorities were already involved in the planning stage and during the execution of the statistical part, such as the Avalanche and Torrent Control Authority in Austria, or local governments' Flood Warning agencies operating on river basin scale. Improved forecast results will be made available directly to those in charge of civil protection services, and to the general public.

## **7.2. Biodiversity networks – challenges for the future: how to implement biodiversity visions?**

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### **Tracking surrogates for intraspecific biodiversity: towards efficient selection strategies for the conservation of natural genetic resources using comparative mapping and modelling approaches – a project preview**

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Species richness is the most widely used measure for biodiversity assessment. However, it is intraspecific diversity (genetic polymorphism) which represents the evolutionary and adaptive potential of each species in changing environments. We are studying possible correlations between intraspecific diversity and species richness or habitat variation. Using the Alps and the Carpathians as model systems, we will ask:

- (i) is there a congruence between biodiversity at the intra- and interspecific level?
- (ii) do areas of high endemism, often coinciding with glacial refugia, harbour a great portion of the intraspecific diversity?
- (iii) is habitat variation, characterised by environmental parameters, a good surrogate for intra- and interspecific diversity?

On a regular grid cell system, we assess intraspecific variability for twenty-five alpine species (three individuals per species and grid cell) using amplified fragment length polymorphisms (AFLP); existing data on species occurrences is compiled, which will also result in distribution maps of some 1,300 alpine taxa. Environmental diversity is modelled using biophysical data sets, e.g. elevation, inclination, geology, soil, temperature, precipitation, etc. Based on modelling and simulation techniques, we will develop a web-based public platform for the efficient selection of nature reserve networks which comprise the highest proportion of both intra- and interspecific diversities. Our integrative approach should help to better understand and predict ecosystem patterns on a large scale. The established platform will provide an innovative and efficient tool for biodiversity observation and management.

## **Swiss Biodiversity Forum**

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The Swiss Biodiversity Forum has established a nationwide information and communication platform for biodiversity experts of all disciplines. It is an interface between science on the one hand and practitioners, federal institutions, policy and public. The Swiss Biodiversity Forum intends to promote scientific knowledge on biological diversity and its maintenance, to stimulate

interdisciplinary and transdisciplinary research projects, to provide scientific support for the implementation of the Convention on Biological Diversity CBD and to intensify communication between researchers, land-users, nature and landscape conservation agencies, administrative authorities, policy-makers, and the public. The Biodiversity Forum offers its network and collaboration to initiatives fostering the conservation of biodiversity in the Alps.

### **7.3. Global change research in mountain areas**

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## **Global change in mountain regions: The Mountain Research Initiative**

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Many mountain systems today are threatened by an array of anthropogenic changes ranging from land-use to climatic changes. In mountains high rates of environmental change are coupled with strong economic changes which may significantly alter the ability of mountain regions to provide critical goods and services, both to the local population and lowland communities.

Mountain regions provide unique opportunities for studying Global Change. Strong altitudinal gradients result in strong changes of physical and biological conditions over short distances. As boundaries between these systems shift due to environmental change, they may be used as sensitive indicators of forcing mechanisms. Also, the higher parts of many mountain ranges are not affected by direct human activities, providing locations for the study of environmental impacts of climate change alone. Interrelated with physical changes are changes in socio-economic conditions: land use and land management, resource exploitation and tourism.

There are significant efforts to monitor changes in mountain regions, to study change processes and to model socio-economic trajectories of livelihoods. However, these research activities could benefit from coordination; especially the development of sustainable management strategies. Accordingly, the Mountain Research Initiative's objectives are to develop integrated strategies for detecting signals of global change in mountain environments, to define consequences of these changes for mountain regions and dependent lowland areas, and to facilitate the development of sustainable resource management regimes for mountain regions.

## **Undercooled scree slope ecosystems and climate change impact research: towards a European network of experimental sites**

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Climate change is expected to seriously affect mountain regions; its impact on biodiversity and soil organic matter dynamics will be complex and varied. Long-term ecosystem research networks have proved their efficiency for the investigation of climate – ecosystem interactions. Recently, the

need of mountainous site networks for monitoring climate change impacts was focused and networks such as GTOS – GLORIA, UNESCO – MRI Global Change Research in Mountain Biosphere, DIVERSITAS – GMBA and EU/MRI – GLOCHAMORE have been created.

Undercooled scree slopes are low-altitude blocky debris characterised by reversible air circulation which split the scree area in five ground thermal zones corresponding to a mosaic of adjacent ecosystems, from island biotopes of boreo-alpine flora with dwarf trees on sporadic permafrost to climatic forests. Numerous sites have been studied in Europe (France, Switzerland, Germany, Czech Republic, Italy) and worldwide (Japan, Canada, Russia), each presenting the same ground thermal conditions. These geo-ecosystems offer the unique opportunity to study in-situ ground temperature, vegetation and soil process relationships under the same climatic conditions (exposition, slope, precipitation, air temperature). Experimental (soil transplantations) and gradient methods between and/or within sites will be used to elucidate both short and long-term soil microclimate control on ecosystem dynamics. Several geo-ecological parameters are already being studied as standardised monitoring indicators.

Networking those sites at a European scale will allow:

- the conservation of the specific gene resources and the biodiversity of this exceptional habitat;
- the comprehension of soil temperature and moisture effects on ecosystems under different climates, land use and vegetation history.

## **GLORIA – The Global Observation Research Initiative in Alpine Environments**

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The purpose of GLORIA is to establish and maintain a world-wide long-term monitoring network in alpine environments. Vegetation and temperature data are collected at GLORIA sites to discern trends in species diversity and temperature. The data will be used to assess and predict climate change-induced threats to fragile alpine ecosystems including biodiversity losses.

Funded by the European Commission and with support from the Austrian government and the Austrian Academy of Sciences, seventy-one long-term observation sites in summit habitats of eighteen alpine target regions distributed across Europe were established between 2001 and 2002. Meanwhile five regions have been added to the European network and the establishment of the global GLORIA network has started. Two target regions have already been defined in New Zealand, with another one in Australia, and a fourth in the southern Peruvian Andes. A North American chapter of GLORIA is emerging, with sites established in the Montana Rocky Mountains and most recently in the Californian Sierra Nevada and in the White Mountains. In the forthcoming years, more GLORIA target regions are to be established in the Americas, in Asia and Africa, with a particular focus on UNESCO-MaB biosphere reserves.

The GLORIA sites and data sets are an investment for the next generations by providing an extensive baseline for future monitoring at decadal intervals. Apart from this future benefit, standardised data sets are analysed for large-scale comparisons and for the development of risk assessments for biodiversity losses.

## **Fish from sensitive ecosystems as bioindicators of global climate change (High-Arctic 1997-2004)**

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Global Warming and the long-range transport of pollutants are processes causing fundamental changes even in regions far from direct anthropogenic impact. Global Circulation Models (GMCs) predict maximum warming in high mountain and polar regions. Studies on fish (Arctic char *Salvelinus alpinus*) from Austrian high mountain lakes have shown that water temperature is the driving force of excessive metal accumulation in these fish. Rising water temperatures during summer lead to increased metabolic rates and thus pumping of higher volumes of water across their gills, which in turn leads to increased uptake of metals from the water.

Due to similar environmental characteristics (e.g. long ice-cover, oligotrophy), both high-altitude and high-latitude lakes are very sensitive ecosystems whose function may be substantially affected by even slight environmental changes (e.g. input of pollutants, climate change). Climate change could therefore severely impact on fish populations in terms of their habitat and the changing rate of accumulation of both natural and man-made toxicants from water and diet.

HIGH-ARCTIC, a multi-year study of small sensitive lake ecosystems in the Canadian Arctic Archipelago, is aimed to explain the interactions between short and longer term variation in lake water temperature, the bioaccumulation of metals, biochemical stress indicators and energy status in land-locked populations of Arctic char.

Comparison of metal levels (e.g. Cd, Zn) in char collected from 1997-2003 in Canadian Arctic lakes indicate marked seasonal and interannual trends in the turn-over of metals. Furthermore we found significant stress responses (e.g. glutathione) in the liver. The observed between-year variation in lake temperature, metal uptake and stress response parallels intra-annual co-variations, which correspond to the temperature-driven metal accumulation previously found in Arctic char from Austrian high mountain lakes.

The study illustrates that global warming may endanger fish populations from Arctic lakes by leading to an increase of both metal accumulation and stress. Our results indicate metal accumulation and level of stress to be higher the warmer the summers in the Canadian Arctic are. The observed effects provide clues as to what would happen to the extremely vulnerable land-locked char populations in the event of a longer-term, synoptic warming trend associated with global climate change. We speculate that the steep increase of temperatures within the next decades as predicted by various GMCs, as well as higher frequencies of atypically warm summers in the Arctic could be a serious threat to the stability of Arctic char populations in high-latitude lakes.

This Austrian-Canadian research cooperation carried out within the framework of IGBP – the International Geosphere-Biosphere Programme – is financed by the Austrian Academy of Science and the Ministry of Education, Science and the Arts, and is supported by Polar Continental Shelf Project – Canada and Northern Contaminants Program – Canada, Parks Canada, the governments of Tyrol and Upper Austria, the city of Gmunden, and AMIS Financial Consulting.

## **Impact of Global Change on European freshwater ecosystems**

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Freshwater ecosystems, already under stress from land-use change and pollution, now face additional pressure from climate change, directly and through interaction with other drivers of change. Euro-limpacs (European Project to Evaluate Impacts of Global Change on Freshwater Ecosystems) is concerned with the science required to understand and manage the ecological consequences of these interactions. It is relevant to the Water Framework Directive and other European and wider international directives and protocols, and supports the EU's Charter on Sustainable Development.

The Project brings together a consortium of leading scientists aiming to integrate river, lake and wetland ecosystem science at the catchment scale. It focuses on the key drivers of aquatic ecosystem change (land-use, nutrients, acid deposition and toxic substances), and examines their interactions with global, especially climate, change using time-series analysis, space-for-time substitution, palaeolimnology, experiments and process modelling. It considers these interactions at three critical time-scales: (i) hours/days, concerned with changes in the magnitude and frequency of extreme events; (ii) seasons, concerned with changes in ecosystem function and life-cycle strategies of freshwater biota; and (iii) years/decades, concerned with ecological response to environmental pressure, including stress reduction and ecosystem recovery.

A central activity is the development of an innovative toolkit for integrated catchment analysis and modelling to simulate hydrological, hydrochemical and ecological processes at the catchment scale for use in assessing the potential impact of global change under different climate and socio-economic scenarios. A unified system of ecological indicators to monitor freshwater ecosystem health, and new methods for defining reference conditions and restoration strategies will also be developed. These will take into account the probable impact of future climate change and the need for a holistic approach to restoration based on habitat connectivity. The Project will also develop other practical tools for management based on a decision support system. Users and stakeholders will be involved in the development of these tools, which will be demonstrated at study catchments. An integrated, comprehensive training programme will be part of it, and all products and information generated during the Project will be fully and freely disseminated.

### **7.4. Cultural and social change in the Alps**

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### **Tourism project “Cultural Routes in Switzerland”**

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*ViaStoria – centre for transport history* was created in collaboration between the Institutes of Geography and of History at the University of Bern in 1984. Since then the organisation has committed itself to the improvement and appropriate use of historical traffic routes, and to research in this domain. On a mandate from the Swiss government it has also produced an inventory of such routes in Switzerland (IVS).

Under the label 'Cultural Routes in Switzerland', ViaStoria is planning to establish a network of twelve historical routes linking objects of interest for their natural and cultural landscapes in all regions of Switzerland, with examples of earlier modes of transportation. ViaStoria promotes these routes in the context of 'soft tourism'.

'Cultural Routes in Switzerland' gives access to natural and cultural curiosities of the landscape, to Swiss cultural and historical peculiarities, to spectacular sights and landscapes along the traffic routes, to familiar and less conventional historical means of transportation, to the history of regional customs and to the products of the various regions.

With a core of twelve national cultural routes ('Via Routes'), 'Cultural Routes in Switzerland' provides synoptic, thematic and spatial access to the main curiosities of the Swiss history, culture and traffic. A regional network ('ViaRegio Routes') subordinated to the national network allows for a greater variety on the regional or local scale.

The ten Via routes chosen up to now are the following:

- ViaJacobi, «the Spiritual» Lake Constance–Geneva
- ViaStockalper, «the Royal» Brig–Simplon–Gondo
- ViaSpluga, «the Daredevil» Thusis–Splügen–Chiavenna
- ViaValtellina, «the Pleasant» Schruns–Schlappiner Joch–Scalettapass–Bernina–Tirano
- ViaCook, «the Classic» Geneva–Lucerne–Pontarlier
- ViaSalina, «the Essential» Salins-les-Bains–Ste-Croix–Bern
- ViaGottardo, «the Mythical» Basle–Gothard–Chiasso
- ViaFrancigena, «the European» Pontarlier–Grand-St-Bernard–Aoste
- ViaSbrinz, «the Primordial» Central Switzerland–Brünig–Grimsel–Gries–Val Formazza
- ViaRomana, «the Ancient» Geneva–Avenches–Jura Passes–Augst

The aim of «Cultural Routes in Switzerland» is the political and economical valorisation of IVS and of other federal inventories (ISOS, BLN) of hiking routes, of bike routes and of public transportation. The program «Cultural Routes in Switzerland» contributes to the promotion and reinforcement of the competitiveness of Switzerland as a touristic destination, in touristic regions generally and in the immediate surroundings of the «Via routes», in particular. By systematically integrating the various offers of historical transportation infrastructures (steam trains and steam boats, stagecoaches, draught-animals, etc.), as well as the specific offers in their surroundings, and by clearly placing the product «cultural routes» on the market, the program creates an offer of international importance.

The project «Cultural Routes in Switzerland» raises much interest among the professionals of the tourist industry. It opens a market for a tourism for which experts foresee a growth of 10% or more in the years to come, and it helps to protect and to use historical traffic routes. The project started in February 2004 and the twelve routes of national interest should be open sometime before 2007.

## **La contribution de l'ethnoécologie dans les démarches de développement durable**

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Just as the economy ceases to be a science and becomes instead an ideology as soon as it takes a greater interest in theoretical constructs than in its own object: money, so ecology ceases to be a science when it denies or decides to disregard certain aspects of reality, including those of traditional usages.



Science is the analysis and description of what we may decide to call reality. The object of ecology is therefore not a particular plant or formation. The object is our own knowledge of that plant or of the formation in question.

It may be that little notice is taken of the human and cultural sciences in regional development, studies and programmes.

Falling back on an ideology is the response to all forms of fear. Building a mythology, a world of illusion is a natural reflex of human beings. In our view, it is the reason why ethno-ecology is finding it so difficult to take the place which it should rightfully occupy in a scientific rather than an ideological approach.

In the studies and forecasts which take on board sustainable development, it has always proved a delicate or difficult matter to arrange any cross-linking between the natural sciences and the human and cultural sciences. What is more, as a general rule, the position of the latter – in terms of credits and number of lines – has been minimal compared to the space reserved for the former. Relatively few meetings have been organized on applied ethno-ecology and the latest on French territory dates back to March 2000 when the international colloquy on “Cultural mediation in ethno-ecology” was held. The bilingual record of that colloquy is due to be published shortly.

We are submitting the most significant results of research performed on three French sites within the scope of Natura 2000, as part of a research partnership agreement between the French Ministry of Culture and the ONF (French National Forestry Department).

The sites concerned are the Mont Ventoux, the Montagne de Lure and the Massif de Gap-Dévoluy, in the South Eastern part of France. The aim was to develop a reproducible method for sensitive spaces which takes on board the empirical and trans-generational experience of the local populations. After eighteen months of work, the main outcomes can be put forward in a few theorems.

The most important is certainly this: “In the mountains – albeit within the limits of the *ekumene* – there subsists only what has been retained, i.e. not eliminated, by the human group”. A particular territory must now be regarded from a new viewpoint: the human group has retained only what was useful to it. The rest has been burnt, gathered, patiently eliminated with a sickle or by hand: the hands of women, the hands of men, the hands of children and of old people, the teeth of donkeys, the teeth of goats etc. What remains before our eyes is merely the result of a selection made by the human group over a very long period.

If we give thought to the matter, the latter theorem must prevail: as culture is a belated construct of nature and merely one adaptation among many, it is only logical for it to function according to the law of the latter. The discourse of our study will be based on this first assumption.

We hope that an institution will be interested in the continuation, completion and publication of the study. Cooperation with naturalists on site, archeologists and historians remains essential.

## **Neglect and change in alpine cultural landscapes. Study of the knowledge and conservation of local building traditions in Comelico valley (Belluno, Italy)**

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Sponsored by IMONT, Istituto Nazionale per la Montagna – Roma.

More and more often local communities find themselves facing complex issues, deriving from the regulation of upgrading processes to mitigate rural landscape neglect.

Change is considered the inevitable antidote to neglect, but it has often generated regrettable loss of authenticity in the preservation of material culture. Only too often, due to general unawareness fed

by clichés, does the ‘urban way’ provide the model. Public administrations have to face this challenge; they must also deal with growing scepticism towards planning rules which do not seem to be appropriate to manage and safeguard complex traditions.

How can the ever-increasing homogenisation of buildings, fences, floorings and retaining walls be stemmed? Is it possible to return to the landscape it’s meaning, both as a safeguard of local identity and as its unique expression? Can local building traditions be preserved?

In 2003 the Italian IMONT (National Institute for Mountains) funded the research presented here. Moving from analysis and comparison of handbooks created especially for Italian alpine areas in the past decades, the authors carried out a pioneering study experimentally devising a method for recovering and handing down technical know-how of alpine building traditions in two sample-areas selected in the mountains of the Veneto Region. The aim is to highlight the preservation of historical contents and to give priority to the preservation and conservation of material culture, paying due respect to local identities and their economic reality.

In order to obtain effective results, suitable strategies may be the following: a deeper knowledge of objects and their relationship with the landscape; a correct evaluation of their state of deterioration; an accurate look at the local community’s cultural and economical situation, including residual technical know-how; a thorough and respectful way of gathering information while involving the local people.

**Working group:** arch. Andrea Turato, dott. Evelin Vardanega, arch. Daniele Zannin

**Consultants:** ing. Margaretha Breil, prof. arch. Edoardo Danzi

## **Farmhouse Research**

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### ***Goals***

Anthropology-oriented rural building research focuses on traditional buildings, building groups and settlements as well as historical and current aspects of everyday farm life. An inventory of rural dwellings and agricultural buildings is taken and then investigated relative to design and building history as well as to how their inhabitants use and furnish them. Supplementary information from archives of building regulations, property ownership and economic factors add depth to the picture thus obtained of rural building form development. This documentation as well as extensive design material and photographic archives are made available to private individuals, schools, universities and government agencies. Individual volumes in the thirty-seven volume series *Die Bauernhäuser der Schweiz – Les maisons rurales de Suisse* (Farmhouses of Switzerland) are published by the Swiss Association for Ethnology. The series should be completed by 2015.

### ***Research project***

Each research project basically consists of three stages: inventorisation, evaluation and publication. Inventorisation includes not only dwellings and agricultural buildings, but also settlements forming typological building groups. Documentation consists of photos, designs and descriptions as well as supplementary information from relevant archives and literature.

### ***Funding and project status***

The research work is funded by the twenty-six cantons of Switzerland and the Swiss National Foundation for the Promotion of Scientific Research. By 2004, the Swiss Association for Ethnology

published twenty-seven volumes in the series Farmhouses of Switzerland. Research on farmhouses is currently being performed in the cantons of Appenzell (Outer and Inner Rhoden), Bern (volumes 3 and 4, i.e. Mittelland and Jura regions), Geneva, Jura, Valais (volume 3), and Neuchâtel. The cantons of St. Gallen, Schaffhausen and Solothurn are still waiting to be dealt with.

## **Cultural landscape in Swiss mountain areas characterised by agriculture: today and in the future**

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Structural change in agriculture leads to changes of the intensity and the systems of agricultural land use and has a direct impact on biodiversity and landscape.

The SULAPS project develops a quantitative agrarian structure model for typical grassland regions permitting the spatially explicit illustration and assessment of the effects of changes on farming practice and policy.

Main results of the project are the discussion of alternatives for farming practice and the legal framework in view of an efficient use of resources, taking into account land-use and agrarian policy as well as targeted landscape development.

## **E-learning as an opportunity for peripheral regions: the case of the Polo Poschiavo – Switzerland**

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Polo Poschiavo is a regional center for continuing education and programme support situated in the Poschiavo Valley, a peripheral valley of the Swiss canton of Graubünden (Grisons).

Polo Poschiavo (PP) is a public service agency sponsored by the following official institutions: the cantonal government of the Grisons; Istituto Svizzero di Pedagogia per la Formazione Professionale ISFPF Lugano (Swiss Pedagogical Institute for Professional Education, the Italian and Rhaethian-language Division of SIPB, the Swiss Institute for Profession-oriented Pedagogy); Regione Valle di Poschiavo (Regional Association of the Poschiavo Valley); Regione Bregaglia (Regional Association of the Bregaglia Valley); the municipalities of Poschiavo and of Brusio; the Poschiavo Valley Chamber of Commerce, and the Poschiavo Valley Regional Economic Authority.

In its Legal Guidelines to Professional Education, the cantonal government of the Grisons officially recognized PP as a primary and continuing professional education institution.

PP and its goals grew out of the Progetto Poschiavo (Poschiavo Project). It guarantees continuity from project to project, particularly with respect to continuing professional education, by collaborating with ISFPF in Lugano and with the movingAlps project in the Bregaglia and Müstair valleys.

Moreover, PP takes a leading role in the research and development of novel instructional and operational technology, especially in conjunction with the European Union's Interreg III Initiative.

All areas of PP, its logistic, administrative, and operational aspects, are housed in the Poschiavo Trade School, which guarantees close contact between administration and educational staff.

In 2003 PP organized a total of thirty courses attended by 315 participants (population in Valposchiavo: 5,000, in Bregaglia: 1,700).

## **Vulnerability of the alpine landscape and habitat - simulation of spatial development in learning processes for regional decision-making (ALPSCAPE)**

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An integrated modelling framework for the development of mountain regions, which considers processes of landscape change, resources and socio-economy, would be highly valuable to scientifically approach sustainability issues in regional development. So far, the accomplishment of such integrated models often failed, mainly because of data and model-integration problems.

ALPSCAPE is an integral modeling framework which links sub-models of land-use allocation (regression-based approach), material and energy (material flux analysis, energy flux analysis) and economy (input/output analysis) to simulate the development of the Landschaft Davos, a community in the Swiss Alps highly influenced by winter-sports. Three different types of links have proved to be useful: i) sub-models of actors' choices allow land-use demand identification and the subsequent simulation of relations where processes are driven by individual decisions; ii) sub-models of economy and resources are linked to the sub-model of land-use allocation by the demand on land for different activities; iii) flows of information between the sub-models of economy and resources allow to model production and consumption in function of corresponding stocks.

With the modeling framework of ALPSCAPE we address the current state of the Landschaft Davos as well as various future scenarios for development over the next fifty years. Scenarios include i) a land-use scenario (decrease in governmental subsidies for agriculture and forestry); ii) a climate scenario (temperature increase), and iii) a spatial planning scenario (Olympic winter games in Davos). The scenarios are based on chains of rules partly derived from a transdisciplinary process with different actor groups of the study area. A set of global and spatially explicit indicators (ecosystem services) allows us to evaluate different aspects of sustainability in each of these scenarios.

ALPSCAPE is essential to the development of a practicable learning tool for regional development, and allows early anticipation of detrimental consequences of regional development.

## **Work and life worlds: memory, change and present**

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The past five decades have brought modernisation processes to the alpine regions of Switzerland, and significant social and cultural changes. What was an agricultural world before (and often wrongly considered archaic) has evolved into an urbanized, service-oriented society. Mass tourism, entertainment, urbanization and, more recently, environmental awareness has greatly influenced mountain living.

From a scientific perspective, these changes have been analyzed mainly in terms of social and economic structures. Rarely has the focus been on internal reflection – how people cope with everyday

life and its changes, how they view their social and cultural environment, and how they express their views.

The project Work and Life Worlds: Memory, Change and Present conducted in the context of the Swiss National Research Program) aims to fill that gap. In qualitative interviews, men and women from different villages and small towns in the Swiss canton of Valais discuss shared values, norms, attitudes, emotions and feelings in terms of their own surroundings. All interviews have been recorded on digital videotape and will be spliced with other footage to show aspects of everyday life. The resulting ethnographical film will run for some sixty minutes.

One of the main conclusions is that those changing times were accompanied by different cultural strategies. On the one hand, there is a great readiness for adaptation to modern ways (even the negative aspects), while specific images, memories or objects of the past continue to play an important role in representing people's present identities.

## **7.5. An observatory for the Alps: building the SOIA network** *Moderation: Ruggero Schleicher-Tappeser*

### **An observatory for the Alps: building the SOIA network**

#### ***Ruggero Schleicher-Tappeser***

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The new System for the Observation of the Alps is a function of the Permanent Secretariat of the Alpine Convention. Its objectives are:

- to monitor the Alpine Space with regard to all dimensions of sustainable development;
- to provide decision relevant information and competent judgements for politics, the public, administration and business;
- to provide the scientific bases for regular Reports on the State of the Alps;
- to provide information and working instruments for experts who promote a comprehensive consideration of the Alpine Space;
- to develop a platform for the scientific discussion of the development of the Alps;
- to develop suggestions for Alpine research.

The main task of the small coordination team in Bolzano will be to develop networks with institutions providing data and with thematic experts. These networks will be essential for devising methods and a comprehensive picture of the essential development in the Alps. On the other hand, the SOIA will provide useful working tools to the experts: on-line GIS platform with basic maps and data as well as opportunities for discussion and diffusion of own results. Effectively starting in 2005, the SOIA hopes to motivate a wide range of experts to contribute to this long-term endeavour and to create an important platform for the discussion of the future of the Alpine area.

## **DIAMONT – an Interreg IIIb Proposal**

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Conceived with the steering bodies of the Alpine Convention (AC), DIAMONT aims to give a vital impulse to the relaunch of SOIA (System for Observation of and Information on the Alps). In consistence with SOIA's new aims and the European Spatial Development Perspective (ESDP), DIAMONT will take into account the expectations of experts for regional development as well as the needs of the alpine population. The DIAMONT network of specialists on alpine development will advise SOIA on the creation of an information system covering the entire alpine area, and on the selection of relevant data with adequate validity and aptitude for harmonisation. This process will involve a test of pilot tools for regional development and discussions with the population in the test regions. DIAMONT integrates cultural, regional and local factors into the analysis and preparation of sustainable regional development. The project results will provide a method adaptable to other European mountain areas.

## **WEB-GIS and Internet databases - perfect tools for data presentation**

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The RAUMALP project provides scientifically sound knowledge essential for regional implementation of the Alpine Convention. The RAUMALP results are the first to allow direct comparison between different communities and thus may trigger learning processes and coordinated implementation strategies. Extensive data mining within the RAUMALP project has resulted in what is probably the most comprehensive public database on Austrian communities currently available. Comprising more than 1,200 different attributes for all Austrian communities, it contains data on settlement, demography, tourism, agriculture, land use, ecology and biodiversity. One of the key goals of the RAUMALP study was to make this database available to the public and to visualise all attributes via maps. More than 1,200 different attributes generate more than 1,200 different maps, without even taking into account all possible calculations, which increase the number infinitely. This quantity of data exceeds the capacities of ordinary websites. However, Web-Gis and internet databases proved to be optimum tools to achieve this aim. We used Esri ArcIMS® 4 technology and Macromedia's ColdFusion® MX software to establish a hybrid application between an internet database and a Web-Gis. The basic application was programmed in JAVA Script using XML for data exchange between the database and the Internet map server. The resulting application, GALPIS-WEB, is available at <http://arcims.isr.oeaw.ac.at/website/>. Since no additional plug-ins are needed, anyone can view dynamically generated maps via the Internet by using ordinary browsers. GALPIS-WEB allows data browsing by way of a tree view to deal with the quantity and complexity of data. Widely known from the Windows environment, this database explorer facilitates fast and intuitive access to the database. The complexity and quantity of the database requires a very flexible and open data structure. Hence, contrasting ordinary Web-Gis applications, GALPIS-WEB strictly differentiates between thematic information, exclusively stored in the database, and geographical data managed by the GIS-software. Database queries are processed and translated into XML codes used by the ArcIMS® application to render the maps. Avoiding static map designs has many advantages with regard to interactive calculations, user-driven map design and the introduction of new data. The GALPIS Web-Gis application facilitates interactive map design by providing a tool for selecting colours, numbers of different classes and transparency. Also, users can choose between two kinds of presentation: proportional symbols or ordinary maps with colour-rendered polygons. Moreover,

dynamic rendering also allows the calculation of new topics. The GALPIS-Web application includes a calculator with full access to all variables stored in the database. To be up to the standards of data documentation, the application permanently supplies meta data, including definitions and source, as well as basic statistics for all variables. For copyright reasons, access to tabular data is password protected. However, research groups in different localities can apply for access to all attributes of the database.

Altogether the GALPIS-WEB application provides both a user-friendly interface to an information playground for common users and a sophisticated analytical tool for the more scientifically interested users, while still satisfying cartographic demands.

## **7.6. Further poster presentations**

### **Natural monument Dovžan Gorge: petrified past with a promising future**

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For over a century Dovžan gorge has attracted scientists and visitors from all over the world. Due to its unique geological, geomorphologic and biological heritage in 1988 the Tržič Municipality proclaimed the area a natural monument.

The area may be integrated into the planned Karavanke landscape park and Kamniško-Savinjske Alpe. The poster presents questionnaire survey results revealing the area's main problems and positive and negative aspects of living in the protected area; it also presents a development plan for a sustainable future.

### **Watersheds and their neglected relevance to sustaining the world**

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Watersheds in Cameroon and some other parts of the world are the main sources of fresh water and the immediate source of sustainability for the entire population within the communities, especially in their upper reaches.

In Cameroon, watersheds account for over seventy per cent of the remaining forest and forest resources and the cultural heritage of the people. Over ninety-eight per cent of the population engage in subsistence peasant agriculture for their entire livelihood, especially in the South West Province of Cameroon, where Mt Cameroon, Mt Rumpi and Mt Kupe Manenguba are the main sources of fresh water supporting larger rivers like the Meme, Ndian and Manyu rivers, to name just a few.

These communities depend directly or indirectly on the watersheds since they are cut off from the towns due to lack of accessible roads for goods and services, absence of social amenities like schools, hospitals and communication services. They therefore use local materials provided by the forests to construct their houses; gathering wild fruit and other non-timber forests products (NTFP) to supplement their diet and to sell on the local markets. The fish caught in the rivers increases their protein level.

Mainly due to poverty, watershed externalities are common within the communities. In their fight for survival people indiscriminately exploit forest resources. Poor irrigation practices, deforestation, overgrazing and over-tilling are very common, leading to land degradation and the subsequent disappearance of important species.

Governance and decentralization as well as the alleviation of poverty are serious issues to be considered in maintaining watersheds around the world.

## **Long term land-use changes in Slovenia's Alps - complex changes reflected in the landscape**

***Franci Petek***

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The paper deals with changes in land use in the 19th and 20th centuries in Slovenia's alpine region. The aim of the research was not only to study the changes in land use but also to determine the relationship between changes in land use and relief elements and their connection with sociogeographical factors and their development.

Land use is a dynamic element of the landscape. It is studied with the help of various resources. Special attention was given to determining the accuracy of the sources used to enable a correct interpretation of the results. Because of uniform and only slightly changed data-collection methods employed since the first established stable (Franciscan) cadastre in the first half of the 19th century, the data on land use from the land register is a very suitable source, primarily to establish changes in land use over longer periods and for larger spatial units (mezzo-regions, regions), in spite of its otherwise lagging behind the current situation. To establish the latest land-use situation, we employed the 2000 land-use map based on aerial photography. Although this source also has its deficiencies, it may be considered the best current source of rural land-use data. With the aid of the Geographical Information System, we were thus able to establish direct linkage of land-use categories in a larger area to altitude (a confirmation of previously established altitude limits) and discover new facts regarding the distribution of individual land-use categories according to inclination, exposition and types of bedrock.

Between 1827 and 1900, changes in land use were minimal (less than half a per cent of the surface area). Intensification dominated among processes involved in land-use change, primarily involving the transformation of grassland into cultivated fields. This occurred due to the transition from pasture to stable stock farming and the introduction of new cultures, agrarian over-population, and transition-related decline of traditional non-farming activities of the time. The extent of arable land was greatest at the end of the 19th century.

The time from 1900 to 1953 was a period of selective limitation of cultivated fields to only the most favourable land. Abandoned fields became grassland (primarily meadows); grassing-over dominated during this period. The earliest industrial centers developed (Jesenice, Tržič, Kamnik, Kranj), but a rural population still dominated in Slovenia. Due to the development of industrial centers, differences in the character of the landscapes in the alpine world began to increase (Posočje, Gorenjska, Upper Savinja Valley, and Mežiška Valley regions). During this period, varying social conditions had the greatest influence on changes in land use.

Between 1953 and 2000, changes in land use were the greatest, dominated by afforestation. However, we established a difference in the degree of afforestation between the first and the second half of this period: in the first half, land-use changes were generally the most intensive of the entire study period. Between 1953 and 1979, the largest proportion of agricultural land was transformed to forest. This can be attributed to major changes brought about by the new political-administrative situation following World War II as political decisions had the most influence on land-use changes during this period. Agriculture was initially neglected ideological-political reasons, while industry was



stimulated, as was forestry rather than farming. Two key political measures worth mentioning indirectly had a very strong influence on land use in Slovenia's alpine regions, i.e. maximum land ownership of ten –hectares, and a law forbidding forest pasturing. Between 1979 and 2000, afforestation slowed slightly, possibly due to the laws and measures adopted after 1970 to stimulate agriculture. We established that the selective abandonment of farm land continued, although there are numerous factors such as the development of a population of part-time farmers and increased use of farm machinery which to a large extent preserved the amount of machine-tillable agricultural land. Between 1900 and 2000, a quarter of the land in Slovenia's alpine world was subject to afforestation.

On the basis of similarities in land-use changes, sociogeographical factors, and surface features, we formed seven types (groups of cadastral municipalities) of landscape in Slovenia's alpine world. The newly-formed types of cadastral municipalities replaced the previously used mezzo-regions which were divided according to natural and geographical regions and alpine pasture regions.

## **Influence of policy on landscape change in the Isarwinkel/Bavarian Alps: past development, future scenarios and policy recommendations for sustainable landscape management**

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### ***Scientific background***

Discussion of alpine landscape change lacks detailed on-site studies considering previous landscape development and the role of policy and its instruments. The study in the Bavarian Isarwinkel is based on concrete analysis of changing landscape elements and evaluation of policy impacts on landscape, providing perspectives of future change and policy options for sustainable landscape management.

### ***Methods***

The case study combines examination of landscape change (1959-2001) with evaluation of landscape impacts by relevant policies whereby the research area (>500 sq km) covers all relevant components of an Eastern Alps landscape. The analysis of the interrelation of landscape and policy allows prediction of future landscape development related to political frameworks and proposal of policy adjustments. Applied methods are GIS analysis of landscape change with topographic maps and aerial photos (1959/'01), as well as statistical data (on land use, socio-economics). Moreover, an impact evaluation of EU, Federal and Bavarian spatial planning, agriculture and nature protection policies and instruments (compensation payments, protected areas, spatial plans etc.) is carried out. Scenarios and proposals based on macro-/alpine trends and analyses are established. Based on this variety of input, recommendations aiming at the adaptation of policies and instruments are elaborated.

### ***Interdisciplinary orientation***

The study's strong cross-sector orientation is due to its comprehensive exploration of spatial planning, agriculture, nature protection and tourism in analysis and evaluation (thus considering the manifold interrelations of cultural landscape), and its interdisciplinary approach to establishing integrated scenarios and recommendations for all policy sectors, including specific instruments, at all levels (EU to municipality).

### ***(Expected) Results***

Changes occurring are settlement growth, extension of road-/tourist infrastructure (central areas), forest growth, access to peripheral alpine pastures. Agricultural subsidies maintain environmentally sound cultivation and typical landscape as do protected areas. Spatial planning lacks efficiency. Future landscape management requires combining subsidies for sound land use, and protective and development measures.

The interdisciplinary approach of examining the interrelation of landscape and policy on-site provides manifold recommendations for policy adjustments at all relevant levels, thereby contributing to the debate and implementation of sustainable and regionally adapted development strategies for the alpine space. Results are transferable to all of the Bavarian Alps; some results will be transferable to the Eastern Alps.

## **Land use and land cover in Austria**

### ***Martin Seger***

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A land-use and land-cover dataset for the entire territory of Austria is available at the Department of Geography and Regional Studies, Klagenfurt University, Carinthia. The system of land-use units is represented as an outline of the data set (color map). The geometrical resolution as well as the accuracy of the delineation of the land-use patches is more detailed than in any other comparable data sets. A number of land-use categories are shown for the first time, such as different classes of forests (defined by the percentage of deciduous trees versus coniferous trees), or the differentiation between arable land and grassland areas.

## **The effect of UV-B radiation on Norway spruce (*Picea abies* (L.) Karst.) in mountain areas**

### ***Tadeja Trošt Sedej***

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Plants in mountain regions are exposed to high ultraviolet B (UV-B) radiation, while UV-B radiation increases with higher altitude. Plants from mountain and alpine regions are usually more tolerant to high UV radiation. The present study reports the effects of enhanced UV-B radiation on Norway spruce (*Picea abies* (L.) Karst.). Plants have been exposed to reduced and ambient UV-B levels and to UV-B level, simulating seventeen per cent ozone depletion for five years. The following parameters were monitored: light-saturated photosynthetic activity and photochemical efficiency: Fv/Fm, Y, NPQ, potential respiration, total chlorophyll content and chlorophyll a/b ratio, and methanol soluble UV-B absorbing compounds. Current research suggests that Norway spruce is rather more tolerant of enhanced UV-B radiation than other plants. Its protective mechanisms appear to be dependent on the developmental state of leaf rather than to be induced by enhanced UV-B radiation. Biosynthesis of UV-B absorbing compounds in emergent needles where UV-B radiation could penetrate into the mesophyll is related to UV-B radiation dose. Fully developed needles showed cumulative effect of ageing. Little effect of enhanced UV-B to physiological parameters was detected in this study.

## **ALPTER, Terraced landscapes of the alpine arc**

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Agricultural terracements are a form of productive land use to be found in many regions throughout the alpine arc, where they identify common morphological and cultural traits. Long ignored by scientific research and government institutions, terraced landscapes have been studied only after they were abandoned and their decay caused unexpected and harmful damage.

The Interreg Project ALPTER was created on request from local populations as well as institutions to examine this process of disappearance of agricultural terraced areas. It is a problem of great scope with effects such as loss of productive land and increase of geological risk, damage to biodiversity and to cultural heritage. A problem so disturbing deserves the attention of international organizations like UNESCO and FAO.

Working in areas all over the Alps, from the Slovenian Brda to the French Alpes Maritimes, the project intends to collect territorial knowledge prior to developing specific technologies to deal with terraced structures, and finally to realize effective examples of productive recovery.

The final aim is to promote large-scale recovery, stimulating the population and the institutions to approach sustainable management of their territory. To the same end, the project will establish a network for use by all those interested in this issue coming from different sectors, to promote exchange of information and active synergies.

- The project's step-by-step strategy:
- acquisition of base knowledge required for recovery;
- development of innovative technologies designed for terracements;
- pilot work to produce representative examples of recovery;
- diffusion of project results among institutions and stakeholders;
- construction of a network linked to international organizations.

## **Villach – an alpine town undergoing social-cultural change**

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In connection with the process of globalisation and European integration, the cities and towns in the Alpine-Adriatic region have experienced drastic economical and social-cultural change. The poster shows some aspects of the demographic and social-cultural development of Villach, the first Alpine Town of the Year 1997.

The city of Villach is characterized as a traffic junction in the so-called *Dreiländereck* where Carinthia, Slovenia and Friuli meet, and by its functional relations to Klagenfurt, the capital of Carinthia. The population of Villach has grown faster than that of Klagenfurt; qualification level and purchasing power of people from Villach are approaching Klagenfurt levels. With regard to economic development, Villach has turned to high-tech-initiatives (e.g. Silicon Alps, Micro –Electronic Cluster). Dobratsch Natural Park, which comprises four municipalities (Villach, Bad Bleiberg, Arnoldstein, Nötsch/Gailtal), is a contribution to sustainable regional development as well as the establishment of the tourist region of Villach – Faaker See – Ossiacher See. The project Alpine Town of the Year 1997 provided important impetus to this development.

The empirical study on the development of Villach was organized in preparation for a research study on larger cities in the Alpine-Adriatic core region. The Klagenfurt Department of Geography intends to concentrate their research more on the Alpine-Adriatic region.

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