*Interreg III B "Alpine Space*

**DIAMONT - Data Infrastructure for the Alps /**
**Mountain Orientated Network Technology**

# Analysis of Expert's Estimations on Alpine Development (WP6)

# Work-package report

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Interreg III B

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# Executive summary

The Alps rank among the most sensitive ecosystems in Europe. By signing the Alpine Convention in 1991, seven Alpine states and the European Union agreed on a sustainable development of the Alpine regions. In various protocols they defined common objectives for relevant sectors, like agriculture, tourism, transport, energy supply or nature conservation. But even 15 years later these protocols have not yet been ratified by all Alpine states. Despite stressing the necessity of intergovernmental solutions for common problems there is always the risk that problems are changing in course of the ongoing elongated political processes.

Thus, DIAMONT questions if the current challenges in the Alpine space are the same as they have been identified 15 years ago. The general objective of DIAMONT`s work package six (WP6) was to identify the key issues of the development in the Alpine regions referring to the present and future problems, challenges and even chances. In addition to the identification of the most relevant processes influencing Alpine development WP 6 also analysed the main trends lying behind these issues and their possible evolution in the future.

WP6 also had to draw operational conclusions for DIAMONT subsequent tasks, for example in identifying indicators illustrating these issues and help to reveal them at regional level. Finally, the results of WP6 helped to choose a specific key issue, which will be investigated in more detail in the course of the project.

**Method: Delphi survey**

To identify current Alpine development issues, WP6 did not base on literature, policy documents or existing surveys, but on opinions expressed by a panel of experts in a Delphi survey. The Delphi survey technique allows performing a scientific analysis of individual and subjective opinions expressed by an experts group in order to identify convergent opinions and reasons for divergences. Up to about 60 experts from all Alpine countries, composed of scientists, stakeholders, civil officers, representatives of NGOs, etc., participated in the survey.

Delphi surveys consult in successive rounds several times the same experts by collecting their opinion on the basis of questionnaires drawn up successively and while bringing to their attention the results of the preceding investigations. In WP6, three rounds were realised:

- In the first round the general appreciation on Alpine issues was collected with respect to various thematic domains; The results revealed a deep convergence between experts in identifying some issues, as for example the abandonment of cultivated land or the disappearance of cultural diversity and Alpine identities. However, there was a wider range of opinions about the causes of these issues, their actual stage and the consequences of their possible development.
- That is why in the second round we analysed some issues identified in formulating 'theses' concerning the actual stage of these issues, their main causes and their possible consequences. These theses focused on those issues which seemed the most important for the future of the Alps, but whose causes and consequences might be debatable. Experts opinions on the theses helped to analyse more in depth questions and problems related to these issues, the way they are interlinked and the variety of their expressions within the Alps. They made it possible to arrange particular issues in a coherent scheme

where each issue is referred to more general sustainable development issues prominent for the future of the Alps.

- The last round consisted in ranking the current and future importance of proposed lists of phenomena describing the main issues. The most relevant ones give a concrete meaning to the main issues and should be observed through data and indicators, noticeably at regional or even local level, revealing to which degree main issues combine and superimpose within Alpine territories.

**Assessing experts opinions**

Obviously, in identifying these issues and analysing them with the help of experts opinions expressed in a Delphi survey, WP6 had to cope with the fact that all these issues were not perceived in the same manner by the experts. Since a wide variety of issues came out from the first round, not all experts had the same competence in assessing each issue. That is why we adapted Delphi surveys techniques, since it appeared illusive to apply the usual sequence of a Delphi survey, which consists in deepening stepwise opinions on pre-identified phenomena or issues, in order to develop a common understanding and to make it possible to rank these phenomena. Experts` answers revealed rather the variety of aspects than real divergences in opinions on the nature and the importance of Alpine issues and related problems. The experts did not evaluate so far these problems, but acted above all as informants helping us to develop the analysis. In this respect, most valuable information came more from comments accompanying the answers than from the quantitative codes through which experts were asked to rank the relevance of investigated theses or phenomena.

Moreover, to compare the answers, we had to pay attention to those factors possibly influencing experts` opinions. Individual opinions differed often from one expert to another, thus it made no sense to base solely on statistical averages. We asked for reasons for different opinions, by taking into account various criteria that could explain some differences. These were the profile of the experts, by distinguishing scientists and other profiles (stakeholders, government officers, NGOs representatives, etc), their nationality, the competence they considered they had in the domain. We tried to assess if the opinions were influenced by these criteria. We tried also to assess to which degree there were divergences in opinions according to the geographical and temporal dimensions they refer to. Some experts expressed opinions concerning only their own region or country, declaring they were not in position to give appreciations for the whole Alpine Space. Some experts analysed the current situation, declaring they could not have firm opinions on future developments.

However, no general conclusion emerged: in some cases, these criteria play a role in other cases their role is less perceptible. That is why we considered that divergences in opinions result more from individual differences in sensibility than from more 'objective' factors. We interpreted this as revealing the complexity of the issues approached, and the absence of 'unique thinking' thereabout within the experts group.

**Main Alpine issues identified**

Obviously, Alpine Space issues are diverse; for example, the Alpine Convention concentrates on the maintenance of the natural heritage and the living environment of Alpine population, whereas European, national or regional policies have a focus on economic or social conditions underpinning sustainable development in the Alps. Although some issues have been possibly left over by the experts, the size and the setting-up of the DIAMONT panel guaranteed a wide variety of opinions expressed and issues dealt with.

Basing on results of this survey, WP6 resulted in identifying and analysing eight main issues. The first ones have a clear territorial dimension since they refer to some types of areas:

- the *marginalisation of rural peripheral areas,* which is a general concern for those Alpine areas which are comprised neither in periurbanisation processes nor in touristy development, and for which main trends are e g agriculture land abandonment, low accessibility to current services, emigration of active population, etc;

- the *maintenance of Alpine forests,* since there is a tendency towards an extension of wooded areas, that questions on the way the forest cover will be managed in the long run and will meet functions assigned to forests;

- the *urbanisation processes, which* question about urban-rural relationships, side effects of urban expansion against villages or small traditional centres, efficiency of land planning in urban regions, role of agglomerations as economical focal points in a region where area available in valleys and basins is limited;

- the *tourism sustainability,* since tourism is an important economic sector in many Alpine regions which symbolises the necessity to conciliate economic competitiveness with the respect of fundamental natural and social values which underpin its sustainability;

- and finally, the *transport pressures*; which do not originate only from outside of the Alps, and are emblematic of difficulties to cope with increases in mobility, openness and attractiveness of the Alpine region;

The last ones have above all a thematic dimension and concern the Alpine space as a whole; nevertheless, they are differently developed within the Alpine regions:

- the *innovative and competitive economic activities,* insofar as well in the Alps as elsewhere, innovation and competitiveness are a mainstream in economic development which allows firms to compete in a more and more global market;

- the *maintenance and development of natural and cultural heritage, since this* issue obviously should not be missed in the Alps and questions on the flimsiness of both natural and cultural heritages, which cannot be seen as static;

- and finally, the *climate change effect, that* cannot be predictable but may differ from those outside the Alps, due to the specific conditions of Alpine environment and economy.

Obviously, all these issues cover a variety of detailed issues: within each main issue, problems are interrelated and can be analysed in a coherent way. In fact, these main issues are more perennial than evolutional, since they emerge from factors and conditions that do not change quickly. They are in link with general trends, as for example globalisation or rising awareness of threats on biodiversity or cultural diversity, and express their significance for the Alps.

We assumed in WP6 that all these main issues could be handled with a limited set of phenomena that are trends, facts or events, which precise their meaning, both at the moment and in the future. For that, WP6 identified series of relevant phenomena; among these, some are still in phase of emergence, and are likely to grow in importance in the future, as for example increases in retirement in-migration flows in favourable areas. Thus, even when key issues do not change drastically over time, different questions may arise in the future. Sustainability questions have to deal with problems, which are meaningful at the moment and in the future. Besides, differences within the Alps have to be considered. In fact, all these issues superimpose more or less in Alpine regions. By means of appropriate indicators and data, their importance is to be revealed at regional or even local level.

**Summary of relevant problems specified against main issues**

Nevertheless, the main outcome of WP6 consists in specifying within main issues identified the main current or future problems of the Alpine regions.

● For *Marginalisation of rural peripheral area, t*he experts feared that public subsidies may rather slow down land abandonment processes than definitely preventing them. Main threats are depopulation, aging and isolation, since for economic reasons, services concentrate in more central areas. For the future it will be crucial to reduce these disparities by improving the competitiveness of rural areas. Agricultural production, for example, could be more efficiently combined with tourism activities to gain second income sources. Specific regional products should be labelled and brought to market and finally, adequate education as well as access to vital services, like health care, has to be offered in rural areas.

● About the *Maintenance of Alpine forests,* experts assessed it is crucial to maintain the multifunctionality of Alpine forests that is their productive, recreational, ecological and protective functions. The on-going expansion of forests cover in the Alpine regions is seen as a chance to recreate sanctuaries for forest habitats. From an economical point of view, the profitability of mountain forests is still rather low at the moment. But the development of biomass energy may reveal new income opportunities in the future. However, maintenance of protective function will remain an important issue in areas where this function is not supplemented by other functions that would help to valuate the forest cover.

● Concerning *urbanisation processes*, experts consider the Alpine agglomerations will not cease to attract more people in the future since they offer job opportunities and act also as cultural centres located in vicinity of natural environment. Yet, pollution, noise or the high costs of living do not significantly reduce their attractiveness. However, the urban sprawl results in an increasing competition for favourable lands in the valleys. Some experts consider the land use pressure, caused by housing and industrialised agriculture, a minor threat than some decades ago, since the most severe landscape changes happened already in the past and land planning nowadays makes it possible to cope with negative side effects. Another issue underscored by the experts is territorial inequities, resulting from growing polarization of population, activities and services in central urban regions, leaving out smaller centres and more distant areas.

● With respect to *tourism sustainability*, the experts referred to the coexistence of different forms of tourism. On the one hand, there is a powerful tourism industry, which has to invest and find new markets to be able to compete with other destinations. Climate change effects will force this industry to concentrate winter tourism in higher elevation resorts. On the other hand, there are small scale tourism activities, based on certain niches, like agro-tourism or hiking. The experts predicted a rising demand for agro-tourism, although it will never become a mainstream in tourism development. Limits in capacity are still not reached, but some promising solutions are hampered by a lack of professional skills of the suppliers. Often leisure activities result in over-frequented sites which call for efficient solutions to cope with these pressures on landscapes and nature.

● Concerning *transport pressures*, where opinions are widely consensual, the experts expected an increase in traffic on transit routes and thus were in favour of severe measures to limit traffic flows, like EU wide regulations, rising taxes and fees or the extension of the railway network, since they do not foresee possible changes attitudes against mobility and are rather doubtful on effects of measures that would promote public personal transport.

● As for *innovation and competitive economic activities*, experts opinions revealed on-going changes in economic activities, where 'innovation' or niche activities would play an important role, in comparison with traditional activities, even when these aspects are not very salient in the present state, since for example they feel that at the moment the Alps are not really

engaged in high tech activities. In contrast to the present state, these changes would have noteworthy effects in the future. Another challenge is growing importance of economic relationships with other regions, and even interdependence, in the future. Even when support to local SMEs should not be neglected, attention should be paid to growing importance of external (extra-Alpine) investments in developing new activities, as well as to involvement of local governments in economic development projects that could catch opportunities which could come from increasing interdependence.

● Concerning the main issue *maintenance and development of natural and cultural heritage*, experts appreciations were more or less in contrast to each other. They underscore the development of environment friendly agriculture techniques or the participation of local population as actors in cultural events, but there is a balance between diverse opinions concerning other phenomena related to natural heritage and resources, as for example layouts regulating space consumption or acceptance by the local population of traditions shown in tourism events. However, they consider that education is one of the key-factors to raise awareness for local culture, which is not necessarily shared by Alpine residents but often more perceived by immigrants.

● Finally, although the concrete *climate change effects* are not predictable on a regional scale, changing rainfall regimes are expected to happen in combination with climate warming. These changes can have severe consequences in terms of natural hazards or a loss of biodiversity. Thus, the experts recommended observing carefully certain evidences, such as shortening of winter ski seasons or frequency of extreme events like intense rainfalls or floods. But they also warned to take preventive action now, like the implementation of energy saving options in public and private transport or housing.

In fact, some of these problems have already been more or less considered in some policy documents, as the Alpine Convention or the ESDP. However, experts focused on aspects which seemed of utmost importance in the Alpine context, leaving out other aspects which are to take into account but which are not specific to the Alps. For example, they did not focus so far on social inequities in link with unemployment or lack of access to tertiary education. Conversely, they focus on territorial unbalances within urban or rural regions, which are not so far focused on in the ESDP. This is one of the reasons why DIAMONT decided to focus, in following tasks, one an important and comprehensive issue revealed through the outcomes of WP6 analyses, which is 'local centres and fringes between competence and cooperation'.

# 1. Introduction: Objectives and activities

Since the Alps are recognised as one of the sensitive regions in Europe, a sustainable development of this region including several nationalities, languages, cultures, governance systems needs more thorough knowledge on the specific structures and problems of the Alpine space. The overall task of DIAMONT project is to observe development trends and relevant issues in the Alpine Space and thus to allow the assessment of the sustainability of the future of this region. In this respect, DIAMONT has started with two pre-studies, aimed at providing basic information on the development of Alpine regions. They consist, in work-package 5, in assessing how cultural differences like norms, administration systems and values influence regional policy development, and in work-package 6, in gathering experts estimations on challenges, problems and chances existing or maybe arising in the future of the Alpine Space. These pre-studies will help in defining in the course of the project suitable development indicators to describe these processes and thereafter to elaborate and optimise indicator based and qualitative tools to stimulate and steer regional development that will be evaluated in chosen test-regions.

## 1.1. Task and objectives statement

The question of the sustainability of the development of the Alpine Space takes a major importance. Obviously, this question can express itself differently from a region to the other one or according to the variety of cultures, but refers to main issues that concern the whole Alpine region development. Alpine sustainability issues have led to policy initiatives, as for example the Alpine Convention (AC), but past attempts to analyse these have chiefly drawn on AC norms and definitions and which did not necessarily take into account the demands of the Alpine population and possible changes in main trends that can affect the Alpine region. That is why it has been wished to develop in DIAMONT a more comprehensive approach that would take into account more in-depth key issues considered particularly significant in terms of sustainability, and give them a more operational reach.

That is why WP6 consists in analysing experts estimations on the key issues for the future regional development in the Alpine Space. It bases on a Delphi survey where a panel of international experts for regional development will be interviewed on the nature and the possible future development of main Alpine issues. This survey aims to establish the perception and weighting of main Alpine issues by these experts for their well-founded attitudes on the current and future focal points of and challenges for regional development in the Alps.

Based on information gathered in this survey, four objectives were assigned to WP6 analyses:

- Summarizing Alpine key issues, the forms they take at present and their desirable forms for the future, assuming that experts are in position to depart from short term visions of Alpine issues and express them in scrutinizing Alpine population expectations through the lens of their scientific competence or experience in dealing with tensions or even problems related to Alpine development;
- Analysing these issues, in identifying related problems and in considering, as far as possible, as well EU, AC and single countries regional or sectorial policy responses

against these problems as current attitudes or expectations which cannot be expressed directly in terms of policy aims;

- Identify through the variety of experts opinions main reasons for convergence or divergence in the perception and in the weighting of Alpine key issues, which would be revealed;
- And finally, draw operational conclusions in headlining links between Alpine issues and ways to illustrate key issues through indicators based on existing data, and provide elements to help to choose which key issue would be especially focused on in DIAMONT following steps.

## 1.2. Main activities of work-package 6

To identify the most common issues for the Alpine development, it was planned to base on a Delphi survey. These surveys are aimed to facilitate the expression of a collective judgment or opinion, by putting in evidence the convergences or the differences of opinion within groups of experts interrogated in an independent way, and by allowing outlining the possibilities of a possible consensus. The same experts are surveyed several times on the basis of questionnaires drawn up successively while bringing to their attention the results of the preceding investigations. At the beginning, it is a question of collecting overall appreciations on Alpine issues in various thematic domains; thereafter to clarify their formulation and then to headline convergences or divergences of appreciations with regard to all the questioned experts.

The Delphi method allows, by the successive returns of information ('Delphi rounds'), to organize a form of communication within a group of experts in order to develop individual answers face to collective opinions. Thus, activities consisted in preparing, launching and monitoring successive rounds of the survey, and in analysing the results in the light of the abovementioned objectives.

The survey was organised in a decentralised form, since each DIAMONT team was in charge of launching the survey in his country, sending the questionnaires and gathering the answers, but all the results were analysed by the French team, who was responsible for WP6 and get support for the general management of the tasks from the Italian partner. It included three successive rounds. The first round consisted in establishing a general overview of Alpine problems and issues. The second consisted in analysing some selected issues and in identifying relevant comprehensive main issues, while the last round consisted in providing elements making it possible to asses the importance of the main issues, through ranking the relevance of phenomena referred to these issues.

Main activities consisted in:

- At first, *selecting the experts panel*:

DIAMONT teams were in charge of identifying experts who agreed to participate to the survey, calling for experts well acquainted to debates on Alpine development and sustainability issues, who could be either scientists or stakeholders, representatives of NGOs, etc.

The expert group was selected on a voluntary basis, and thus was not intended to represent all possible tendencies or sympathies. However, the inclusion of experts coming from different countries, with a wide range of thematic interests and competences, guaranteed not to express an 'uniform thinking'. The teams convinced more than 60 experts to express their opinions [1], with an average of 10 experts per country. Table 1 presents the list of experts who participated at least to one round of the survey.

[1] However, the experts panel comprised only few Swiss experts, since the DIAMONT Swiss partner had no possibility to launch himself the survey in his country. These experts were selected by the Austrian or the French partners.

Table 1 - Delphi survey experts panel

| *Country* | *Name* | *profile* | *Institute / Expertise* |
|---|---|---|---|
| Austria | Roland Psenner | scientist | Innsbruck, expert for Alpine Space |
| | Marina Fischer-Kowalski | scientist | Vienna, expert in social ecology |
| | Johann Stötter | scientist | Innsbruck, expert in natural hazards |
| | Ulrike Pröbstl | scientist | Vienna, expert in tourism |
| | Gerlind Weber | scientist | Vienna, expert in spatial planning |
| | Felix Jülg | scientist | Expert for regional development |
| | Ronald Blab | scientist | Vienna, expert in transport |
| | Ulrike Mast-Attlmayr | stakeholder | Government of Vorarlberg, expert in spatial planning |
| | Norbert Weixlbaumer | stakeholder | CIPRA Austria |
| France | Françoise Gerbeaux | scientist | Grenoble, expert in political science |
| | Gérard Brugnot | scientist | Grenoble, expert for natural hazards |
| | Claude Brand | scientist | Chambéry, expert in spatial planning |
| | Emmanuelle George-Marcelpoil | scientist | Grenoble, expert in tourism |
| | Jean-Jacques Brun | scientist | Grenoble, expert in landscape ecology |
| | Marie-Christine Fourny-Kolber | scientist | Grenoble, expert in geography |
| | Frédéric Bonhoure | stakeholder | Région Rhône-Alpes, Direction du Tourisme |
| | Guido Plassmann | stakeholder | Gap, Réseau Alpin des Espaces Protégés |
| | François Gillet | stakeholder | Grenoble, Comité du Massif des Alpes |
| | Guillaume Le Réveillé | stakeholder | Lyon, Direction Régionale de l'Environnement |
| | Vincent Neyrinck | stakeholder | Grenoble, Mountain Wilderness, Comité du Massif des Alpes |
| | Jean-Marie Ritschard | stakeholder | Grenoble, Commissariat à l'aménagement des Alpes |
| Germany | Wolfgang Haber | scientist | Munich, expert in landscape ecology |
| | Hubert Job | scientist | Munich, expert in economic geography (regional development and tourism) |
| | Michael Klaus | scientist | Munich, expert in regional development sustainability |
| | Jürgen Berlitz | scientist | Expert in transport planning |
| | Thomas Müller | stakeholder | Mayor of Oberstdorf |
| | Silvia Reppe | stakeholder | Berlin, Federal Ministry for the Environment, Nature Conservation and Nuclear Safety |
| | Herrmann Steinmaßl | stakeholder | Traunstein, President EuRegio Salzburg-Berchtesgadener Land-Traunstein |
| | Isabella Timm-Guri | stakeholder | Farmers association |
| | Michael Vogel | stakeholder | Nationalpark Berchtesgaden, leader Interreg IIIb "Habitalp" |
| | Stefan Witty | stakeholder | Munich, German Alpine Association |
| | Martin Wölzmüller | stakeholder | Munich, Bayerischer Landesverein für Heimatpflege |
| | Konrad Goppel and/or Gerlinde Bartel | stakeholder | Munich, Bavarian Ministry of Economic Affairs, Infrastructure, Transport and Technology |
| | Michael Hinterstoißer | stakeholder | Miesbach, agriculture, mountain farming |
| | Stefan Koehler | stakeholder | CIPRA Germany |
| | Birgit Wegner and/or Ilona Authried | stakeholder | EuRegio Via Salina |
| | Walter Grath | stakeholder | Mayor |
| Italy | Oswald Lechner | scientist | IRE (istituto di ricerca economica) - WIFO, Bolzano |
| | Antonio Massarutto | scientist | Università di Udine, Dipartimento di Scienze Economiche |
| | Harald Pechlaner | scientist | Eurac, Institute for Management and Tourism |
| | Maria Bruna Zolin | scientist | Università degli Studi di Venezia, Dipartimento di Scienze Economiche |
| | Paolo Angelini | stakeholder | Ministero Italiano dell'Ambiente e della Tutela del Territorio |
| | Ester Cason Angelini | stakeholder | Fondazione Angelini |
| | Walter Huber | stakeholder | Provincia Autonoma di Bolzano, Dipartimento all'urbanistica, ambiente ed energia |
| | Walter Weiss | stakeholder | Rete di comuni "Alleanza nelle Alpi", mayor of Naturns |
| | Luciano Caveri | stakeholder | President of Autonomous Region of Valle D`Aosta |
| | Enzo Marsilio | stakeholder | Regional Minister for Agriculture and Mountain of Autonomous Region Friuli |
| Slovenia | Boštjan Pokorny | scientist | Expert in forestry |
| | Frank Lobnik | scientist | Expert in geochemistry and soil development |
| | Marjan Ravbar | scientist | Expert in urban geography |
| | Andreja Ferreira | scientist | Expert in forestry |
| | Dejan Cigale | scientist | Expert in geography |
| | Albina Štiftar | stakeholder | Tourist farms association |
| | Aša Mansoor | stakeholder | Ministry of the Environment and Spatial Planning |
| | Jernej Stritih | stakeholder | CIPRA Slovenia |
| | Jure Žerjav | stakeholder | Mayor |
| | Lucijan Rejec | stakeholder | Fishing club |
| | Tea Lukan Klavžer | stakeholder | National Park officer |
| Switzerland | Manfred Perlik | scientist | Bern, expert for spatial development |
| | Thomas Scheurer | scientist | Expert in ecology |
| | Rita Schneider-Sliwa | scientist | Basel, expert for governance |
| | Bruno Messerli | scientist | Bern, expert in geography |
| | Bernard Debarbieux | scientist | Geneva, expert in geography |

The teams were also in charge of convincing the experts to participate to all successive rounds of the survey, and thus to encourage to answer those experts who felt uncomfortable or even criticized the method. The table 2 indicates that all efforts were not fully successful, since the size of the panel reduced above all between the first and the second round. However, only few experts who participated to the second round did not answer the last round questionnaire; many experts indicated they were inpatient to get the final results of the survey.

Albeit there was a balance between scientists and other exerts in the experts panel, this was not the case in some countries, depending on the rounds. For example, Austrian and Swiss experts who participated to the second and third round were exclusively scientists, while other profiles were the majority amongst German experts. In spite of attempts, the French partner did not manage to get answers from mayors, contrarily to the German or Slovenian partners.

Table 2 - Experts participation to the Delphi survey

Number of experts

| Round | Type of expert | Country | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | AT | CH | DE | FR | IT | SL | All |
| Third round | All | 5 | 4 | 13 | 9 | 8 | 7 | 46 |
| Second round | | 7 | 6 | 14 | 8 | 9 | 7 | 51 |
| First round | | 11 | 5 | 15 | 10 | 10 | 11 | 62 |
| Third round | Scientists | 5 | 4 | 3 | 5 | 3 | 4 | 24 |
| Second round | | 7 | 5 | 4 | 5 | 5 | 4 | 30 |
| First round | | 2 | 5 | 3 | 5 | 4 | 5 | 24 |
| Third round | Others | 0 | 0 | 10 | 4 | 5 | 3 | 22 |
| Second round | | 0 | 1 | 10 | 3 | 4 | 3 | 21 |
| First round | | 9 | 0 | 12 | 5 | 6 | 6 | 38 |

- Preparing the *first round questionnaire*, which aimed in gathering overall appreciations on Alpine development issues:

It consisted in asking the experts to give shortlists of main difficulties or issues with which, according to their opinion, the Alps are at present confronted, and to assess briefly their future development and possible consequences. The questionnaire was structured into several thematic domains, defined in reference to the scope of the Alpine Convention. However, since the AC does not deal especially with topics as competitiveness or ancient industries restructuring, one further domain was added, to take into account economic development cross issues, as well as possible other issues left over in the headlines of the questionnaire.

The first round was launched in June 2005. Experts` answers were analysed in July. Results will be presented in the next chapter. They consist mainly in lists of relevant issues, which encompass not only those commonly found in regional development policies objectives, and deal with a wide variety of topics.

However, since the experts added few comments to their answers, and noticeably rarely appreciated the future state of the future importance of the issues they headlined, decisions had to be taken on the way to clarify the formulation and further analyse these issues in following Delphi survey rounds.

- Preparing the *second round questionnaire:*

Launched in September 2005, it departed from the usual sequence of Delphi survey questionnaires, which aim at putting in evidence convergences or divergences in opinions on problems or issues revealed in the first round and analyse reasons for divergences. In fact, the first round revealed a great variety of issues, and besides a lack of common understanding, through the experts` answers, or their meaning against Alpine region sustainability. That is second round questionnaire focused only on those issues identified in the third round which the experts could have considered as important for the future of the Alpine region, and besides which were rather controversial. It was intended to analyse problems in relation with these issues, their causes and their possible consequences. To stimulate reactions from the experts, the questionnaire included series of theses, where analyses of some problems were proposed, against which experts were invited to debate through assessing their relevance. Discussed in the DIAMONT meeting held in Bolzano in September 2005, the questionnaire was launched afterwards and answers were analysed up to mid-November 2005.

Results made it possible to identify a set of main issues, to analyse related issues, problems in link with them, their interrelations and the variety of their expressions within the Alpine space. Chapter 3 will present in detail these results. So far, DIAMONT teams considered that identifying these main issues, which cover a variety of detailed issues and make it possible to analyse in a coherent way related problems, met sufficiently the above mentioned objective of 'summarizing Alpine key issues, the forms they take at present and their desirable forms for the future'.

- Preparing the *third round questionnaire:*

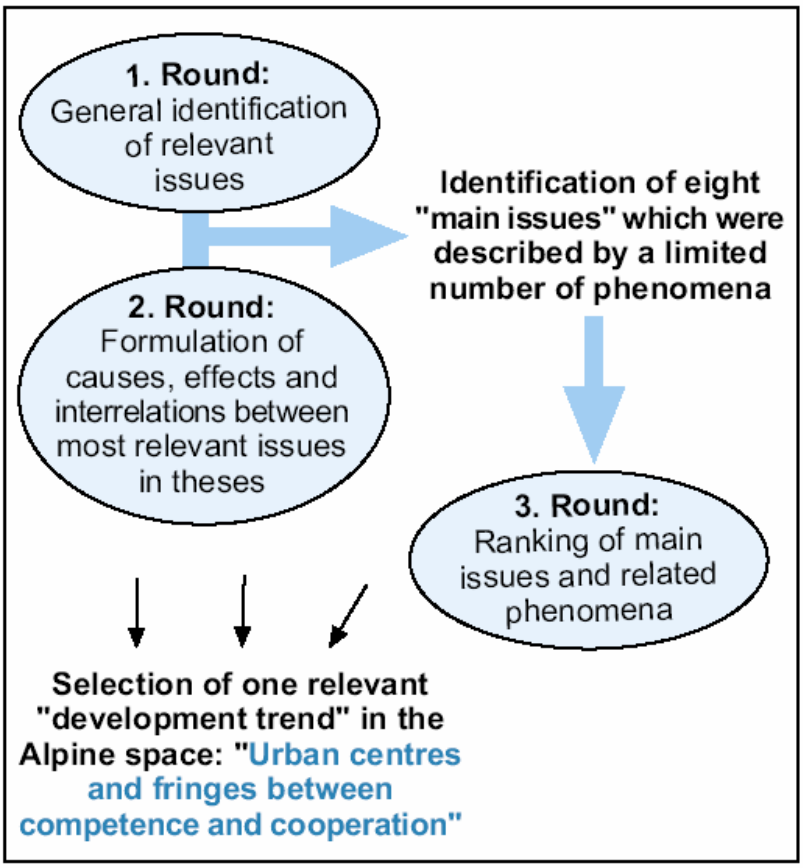
However, the second round results were insufficient to identify main reasons for convergence or divergence in the perception and in the weighting of Alpine main issues. To make it possible to meet this objective, we assumed that the importance of main Alpine development issues could be described by a limited set of phenomena, that are trends or facts or events which can be meaningful against the issues they refer to. The last round consisted in assessing the relevance of sets of phenomena to describe the main issues and furthermore to assess their importance both at the moment or in the future. In the last questionnaire, experts were invited to react on lists of suggested phenomena.

The questionnaire was discussed end of November 2005 and launched at the end of the year. Answers were analysed in February 2006; main results were discussed in the DIAMONT meeting held in March 2006 in Ljubljana and disseminated through some information documents sent to the experts. Results are presented in chapter 4. They help to describe more in depth the main issues and besides to prepare further DIAMONT WPs, since phenomena considered as important against main issues will be in turn described as far as possible with the help of existing data or indicators. The present or foreseen magnitude of relevant phenomena will inform on the importance of the issues, notably at regions level or even locally.

Besides, these results lead to decide to focus, in further DIAMONT steps, on one important development issue revealed by the survey, which is competition and cooperation between local centres and fringe areas.

## 1.3. Main outcomes of the survey and meaning of the results

The figure below describes the analytic sequence of the survey. Main outcomes, which are commented thereafter, consist in identifying eight main issues and describing them by a limited number of phenomena.




Analytic sequence in the Delphi survey

### 1.3.1. Main issues identified

Since we define development as a "change of state over time which may be described by information on structures and/or processes", we identified through experts opinions on Alpine development some key issues referred to processes that both influence Alpine development and are in their turn influenced by development trends, which raise important questions in terms of sustainability. The main issues identified are at first, the *marginalisation of rural peripheral areas*; the *maintenance of Alpine forests*; the *urbanisation processes*; the *tourism sustainability*; and finally, the *transport pressures*; the *innovative and competitive economic activities*; the *maintenance and development of natural and cultural heritage*; and the *climate change effects*.

These are general issues which concern the Alpine Space as a whole. But obviously, due to differences in local conditions, they do not concern in a similar manner every Alpine region. The first set of issues have above all a territorial dimension, since they refer to certain types of territories, whereas the second set have more a thematic dimension, although they are within the Alps differences in situations against these issues.

Obviously, all these issues cover a variety of detailed issues. Within each main issue, problems are interrelated and can be analysed in a coherent way. For example, urbanisation processes question about Alpine cities attractiveness and quality of life in cities, about polarizing effects of urban development, about urban pressures in terms of land use, about unbalances within urban regions, etc. Moreover, due to the fact that these issues emerge from factors and conditions that do not change quickly, which are in their turn in link with general trends that affect the Alpine Space in the long run, as for example globalisation or rising awareness of threats on biodiversity or cultural diversity, these main issues revealed more perennial than evolutional. The purpose was to express significant issues that are likely to have developments to cope with in the future.

In fact, WP6 distinguishes from other studies, as for example the Alpine prospective study (Bausch et alii, 2005), since we did not base on literature surveys or existing documents to complete our analyses of on-going trends that influence regional development in the Alps, of their effects in Alpine territories, how they are perceived and how they are considered in policies. Moreover, we did not lead prospective exercises, in establishing various scenarios. WP6 bases on information obtained from a panel of experts, coming from all Alpine countries, which expressed their opinions on problems, challenges and chances for a sustainable development of the Alpine region. In expressing their own views, they reacted in fact on questions or problems which have a specific meaning for the Alps, leaving more or less over other aspects where differences in situations between Alpine and extra-Alpine regions would be less perceptive. For example, experts did not focus especially on some issues like access to tertiary education, which is underscored in the EU Lisbon strategy to get better chances to catch employment opportunities providing high added value and thus enhancing economic competitiveness. Spatial unbalances were not analysed in the same terms as in the ESDP; our study focused more on spatial differentiations within urban or rural regions.

### 1.3.2. Specifying and ranking the issues

To specify these issues, since we assumed that all of them could be handled with a limited set of phenomena, which precise their meaning, both at the moment and in the future, our purpose was to identify series of relevant phenomena in relation to these issues. The most relevant ones give a concrete meaning to the main issues and should be observed through data and indicators. They help also to identify which detailed issues have a prominent importance within each main issue.

Among these phenomena, some are still in phase of emergence, and are likely to grow in importance in the future, as for example increases in retirement in-migration flows in favourable areas. Thus, even when key issues do not change drastically over time, questions which arise are evolving and are to be reformulated in times, since sustainability has to consider problems which are meaningful both at the moment and for the future. That is why, for example, the Alpine Convention, which intends to promote sustainable development in the Alps, has to revise periodically the questions to which it had to deal with from the beginning. For example, the AC working programme for 2005-2010 focuses noticeably on mobility, accessibility or transit traffic, since related problems are worsening and call for more efficient answers.

Besides, sustainability has to consider differences within the Alps. In fact, all these issues superimpose more or less in Alpine regions. Their importance is to be revealed, at single regions level or even locally, through relevant phenomena which express them. Existing data and indicators referred to the economic, social and environmental spheres which inform on the magnitude of these phenomena will help to show differences in positions against these issues within the Alpine Space.

By this way, it will be possible to assess the importance of respective issues, at regions or even at local level: most important issues are those for which related phenomena have a great magnitude,

which in turn can be evaluated through quantitative data or through qualitative appreciations. Differences in ranking the issue, through the importance of referred phenomena, may be meaningful at regions or at local level. However, we do not consider it make sense to rank the identified issues for the whole Alpine region: we considered all these issues are relevant, although they do not concern in the same manner all Alpine territories.

### 1.3.3. Differences in perception of the issues

That does not mean that all these issues were perceived in the same manner by all experts. We had to take into account differences in sensibility face to these issues revealed through the experts answers. For example, experts` opinions on possible effects of metropolitan processes differed from one country to another, depending on the strength of relationships with those metropolitan areas which are likely to exert strong influences on Alpine development. Since Vienna, Milano, Torino or Munich are peri-Alpine metropolises, there was a tendency to focus on stronger dependence from these metropolises, whereas the Sillon Alpin, which is an inner Alpine metropolitan area within the French Alps, was considered as a powerful engine enhancing economic development for its region.

In theory, Delphi survey techniques help to reduce the subjectivity in opinions expressed by experts, through confronting them to collective opinions coming from the whole experts group. Experts were selected according to their general competence in questions related to Alpine development, but since already a wide variety of issues came out from the first round, nobody could imagine all experts could have the same competence in assessing each issue and in identifying those which will grow in importance in the future.

To overcome difficulties due to the variety of issues, to levels of competence different from experts and to their own sensibility to the topics analysed, we had in fact to depart slightly from Delphi surveys usual aims, which are to rank problems which have got a common understanding within the experts group. Experts` answers revealed more different aspects to take into account to go deeper in analysing the issues than real divergences in opinions on the nature and the importance of Alpine issues and related problems. The experts did not evaluate so far these problems, but acted above all as informers which helped us to develop the analysis. In this respect, most valuable information came more from comments accompanying the answers than from the quantitative codes through which experts were asked to rank the relevance of investigated theses or phenomena.

Moreover, to compare the answers, we had to pay attention to some factors which possibly influence experts` opinions. Individual opinions differ often from one expert to another. We questioned about reasons for divergences in opinions, by introducing in the second and third round questionnaires various criteria that could explain these divergences. These were not only the profile of the experts, by distinguishing scientists and other profiles (stakeholders, government officers, NGOs representatives, etc) or their nationality, but also the competence level they considered they had in the domain. We tried to assess if the opinions were influenced by these criteria. Besides, some experts declared they expressed opinions concerning only their own region or country, arguing they were not in position to give appreciations for the whole Alpine Space. In the same way, some experts analysed the current situation, declaring they could not have firm opinions on future developments. This invited us to assess to which degree there were divergences in opinions according to the geographical and temporal dimensions they refer to.

However, no general conclusion emerged: in some cases, these criteria play a role in other cases their role is less perceptible. That is why we considered that divergences in opinions result more from individual differences in sensibility than from more 'objective' factors. We interpreted this as revealing the complexity of the issues approached, and as a testimony of absence of 'unique thinking' thereabout within an arena of well-informed experts.

# 2. The first round: A general identification of Alpine issues

The Alpine Convention identifies some main stakes for Alpine sustainable development and includes, in its application protocols, rules and measures to deal with these stakes. Its main aim is to define a general sustainable development strategy that would take into account the multiplicity and the variety of domains that are in touch with these stakes. Within these domains, some issues have a particular importance, whether they require immediate action, or they demonstrate interactions between various aspects of sustainable development, or they mark especially the Alps, or finally they are capable to reinforce the sense of belonging to the Alps. Some fall within regions or local government remits, some have to be handled internationally.

With the help of a consultation of experts having a wide knowledge about the state of the art in the discussion concerning the regional development in the Alps, WP6 intended to collect in the first round of the survey a material that will help to widen the reflection on Alpine sustainable development, by setting up an overview of what can be considered, on experts opinions, as issues addressing sustainability, present obstacles and possible difficulties that may arise in the future. Obviously, the start point was the Alpine Convention, but experts were invited to consider also those issues or problems which are not especially put to the fore in the AC, or in other policy documents.

## 2.1. The questionnaire and the answers

The first round questionnaire (see appendix 1) was designed to gather overall appreciations on Alpine questions, problems and issues, in form of shortlists with only few comments. The questionnaire was designed to gather experts` opinions on main difficulties or issues with which the Alps are at present confronted, and their opinions on their possible future development and consequences. Furthermore, the questionnaire invited the experts to anticipate other issues confronting Alps. The questionnaire was structured into several thematic domains, which were defined at first in reference to the Alpine Convention. These were Agriculture, forestry, nature and rural landscape; Tourism, leisure activities and sports; Mobility, accessibility and transit; Population, living conditions and cultural identities; Natural resources and natural hazards; and finally general economic development or other general cross issues, as for example governance, which are in fact much more in the scope of EU or of national / regional policies than of the Alpine Convention.

All thematic domains were introduced by a short presentation of the present state of the Alps, inspired from Alpine Convention documents. With the help of some examples, experts were invited to consider environmental, social and economic aspects within all these domains in establishing shortlists of problems and issues which seemed relevant for the Alps.

### 2.1.1. Quality of answers

It appeared that most experts were not radically disappointed by the wideness and the variety of the themes taken into account or by the absence, in the questionnaire, of pre-identification of some issues on which they could react. However, some experts reacted mainly on those examples of problems or issues which were suggested in the questionnaire, but a majority of

experts quoted several problems within each domain, as far as they considered they had a sufficient knowledge in the thematic field.

Generally, experts did not differentiate so far present problems and issues from those which are likely to occur in the future, in considering that same issues would be equally relevant at the moment or in next years. Besides, few experts felt competent in assessing possible worsening or alleviation of the problems they focused on, except for certain issues as for example climate warming and effects on Alpine species where there was a wide consensus in considering situation will get worse in the future. Other difficulties arose from the fact that 'the future' was not referred to a definite time span. Some experts quoted that issues may change in nature over times; but in fact most experts had in view prospects for the coming years, and not for a longer period.

In fact, experts considered different types of issues. Some interpreted as issues pendant questions or problems that mark development processes, and have rather negative effects in terms of sustainability. Others had more in mind effectiveness of policies and measures addressing Alpine issues, and focused more on difficulties in implementing these policies than on the importance or the continuity of issues addressed. Last but not least, since the questionnaire was translated by the teams in Alpine languages, from an original version written in English, there were in some cases uncertainties in giving a correct expression to certain terms. For example, the French term *enjeu* is more or less equivalent to the English term *stake*, which is stronger than the term *issue*, while the German term *Frage* corresponds more to the English term *issue*.

For all these reasons, taken all together, the experts` answers provided heterogeneous information on Alpine problems and issues. They revealed in some cases deep differences in the meaning and in the expression of questions related to the development of the Alpine Space. Sometimes, we could assume that some issues as for example depopulation or agriculture land abandonment in remote areas had doubtless the same meaning for all the experts, but there were some divergences in considering other issues, as for example beneficial or negative effects of tourism development, which questioned on differences in nature of the issues that individual experts had in mind. A deep heterogeneity in answers is the price of free expression of individual opinions, without precise guidelines that could have helped to formulate them more precisely, and thus to make it possible to compare them.

### 2.1.2. Analysing the answers

On the other hand, diversity in opinions, even when they cannot be directly compared, can be seen as revealing the complexity of issues considered and the possible links between them. The rather open structure of the questionnaire gave the experts the possibility to develop stepwise their opinions, starting with opinions referred to the first topics (agriculture, tourism, transport, etc), which referred to *sectors*, and coming up to more general opinions on Alpine development, in the last parts of the questionnaire. Analysing the answers had to cope with the structure of the questionnaire, which invited in fact the experts to develop opinions against rather sectorial issues, and thereafter, based on these opinions, to widen their reflection and to question about sustainable development, which is an encompassing issue.

The analysis performed by the Italian partners consisted, at first, in sorting information from the answers in several tables inspired from the structure of the questionnaire. The first tables refer to sectors, the last ones refer to *integrative cross issues*, which are the economic development; the sustainability of development; and finally, the regional development. Each table comprises four 'information fields', namely 'statement of problem'; 'causes'; 'consequences'; and finally, 'interpretative hypotheses' that create logical relations between 'problems', 'causes' and 'consequences'.

Sorting in this way information drawn from experts answers aimed to eliminate redundancies and to aggregate opinions coming from different experts, since they referred to similar problems and called for the same interpretative hypotheses, and thus could be considered relating to the same concepts, in spite of formal differences in their expression. It made it possible also to develop general diagnoses on problems identified, taking into account the variety of causes or consequences quoted by different experts, as far as they do not contradict.

This analysis resulted in identifying series of problem fields referred to respective sectors, while the last tables, referred to cross issues, included at the beginning only information coming from the last parts of the questionnaires. Thus, the question was to create bridges between sectorial and cross issues, considering the first ones are different facets of more comprehensive cross issues and thus can be incorporated within them.

The last stage of the analysis consisted in identifying elements that could contribute to detail or to comment suitably 'problems', 'causes', 'consequences' and 'interpretative hypotheses' referred to cross issues individuated in the last tables. It led also in some case to merge parts of these tables, since corresponding cross issues were detailed through same elements coming from sectorial tables. In fact, the last stage resulted in identifying above all cross issues to take into account to orient policies, but information drawn from the answers did not allow did not allow to go farther than a very general formulation of essential cross issues, as for example 'social sustainability' or 'awareness of the environment in public policies', referring to single sectors for more concrete expressions of problems and issues more directly perceived by the experts.

## 2.2. The results: main problems fields for the Alpine Space

### 2.2.1. The problems fields identified

Results of the analysis consist above all in lists of Alpine issues the experts taken all together felt relevant. The table 3, below, is drawn from an intermediate stage of the analysis performed as described above; it identifies, in form of a shortlist of problem fields, more sectorial than really integrative issues, which are partially linked. However, it reveals a wide range of issues in relation with problems raised by the development of the Alpine Space evoked sometimes by few experts, sometimes more recurrently. This shows differences in perception of these problems and questions further on differences in appreciating the importance attached to these problems.

At a first glance, this shortlist conveys a vision of the Alps as a region faced with similar problems as many other regions. For example, growing urbanisation is a general trend that can be observed almost everywhere in Europe, as well as difficulties in maintaining biodiversity against anthropogenic pressures or abandonment processes. However, some important questions that underpin sustainable development do not appear directly in this list, as for example unemployment, income inequities or differences in access to tertiary education, although they are central in EU policies and considered as key issues for example in the EU sustainable strategy. They are as well present in regional development policies objectives. Thus, it may look surprising that experts did not put these questions to the fore.

In fact, experts focused above all questions and issues which could have a specific meaning in the Alps, due to particular characteristics of this region. For example, they paid attention to questions in line with threats on Alpine natural heritage and landscapes, whose value is well acknowledged. Experts evoked renewable energies options, since they perceive their interest for the Alpine region even when energy resources are yet abundant in the Alps and economic conditions do not favour necessarily the development of wind or solar energy. In the same way, soft tourism development is seen as a chance for the Alps, since it has to do with sustainability issues referring to land uses and management, local resources and initiatives, or relationships with other regions, as well as development of niche activities that are envisaged by certain experts as a

panacea to resist face to more and more stronger competition in tourism as well as in other activities.

Other example, transport pressures are evoked by a lot of experts, but they focus mainly on transit traffic, due to difficulties to cope with questions raised by increase in freight flows in Alpine valleys. Experts insisted on nuisances caused by these flows, in everyday life for the inhabitants as well as in the future, due to pollutions and greenhouse gas effects. But only few experts evoked directly climate change effects, or focused above all on protection against natural hazards which is a perennial issue, leaving out other possible effects of climate change – as well as protection against industrial risks, which may cause important disasters in some Alpine valleys.

Table 3 - Main problems fields identified for the Alps

| Thematic domain | Relevant questions and issues |
|---|---|
| Agriculture and forestry | Increasing competition between agriculture production zones, glut in agriculture markets<br>Decrease in agricultural land uses, agriculture land abandonment, competition with more profitable land uses<br>Changes in agriculture structures and production systems<br>Low prices of wood resources and decrease in forest management |
| Landscapes | Impacts of urbanisation<br>Downgrading rural landscapes due to decrease in maintenance by agriculture |
| Climate change and natural hazards | Rise in climate extreme events frequency<br>Rise in cost of prevention against natural hazards |
| Nature, media and human environments | Damages to biodiversity, soil and water pollution, noise nuisances, atmospheric pollution<br>Over-exploitation of natural resources, renewable energies<br>Downgrading living environments of Alpine inhabitants |
| Population and society | Ageing population, emigration flows, integration of new residents<br>Polarisation in main centres and decline of local traditional centres<br>New rationales in supplying current services<br>Maintenance of local cultures<br>Relations between different social groups |
| Economic activities | Decline in traditional activities<br>Spatial unbalances in link with polarization in mainspring activities<br>Competitiveness and economic promotion of the Alps<br>Increasing role of innovation in economic development<br>Relationships between local enterprises and extra-Alpine firms |
| Tourism development | Adaptability against change in demand, development of soft tourism options<br>Quality and competitiveness in tourism services<br>Environmental impacts of tourism<br>Local beneficial and negative consequences of tourism development |
| Transport and traffic | Rise in traffic and mobility and related costs<br>Ways to deal with increase in traffic |

To sum up, the shortlist presented in the table is not necessarily exhaustive. One could imagine supplementing it in introducing other issues. However, it identifies some main trends to consider in analysing the development of Alpine Space and leads to question about the way problematic effects of these trends are taken into account in development or regional policies.

Although the experts were not especially invited to express opinions on these policies, some did not hesitate to question their effectiveness. They put to the fore for example insufficient coordination of development policies, lack of meaningful concepts taking into account Alpine specificities, as well as bureaucratic aspects inherent to these policies. In fact, experts focused on

issues and problems they consider important for the whole Alpine Space and with regard to these, complained about differences in regional policies and about ways they are implemented in Alpine countries, since they reduce the effectiveness of policy responses against general Alpine issues.

### 2.2.2. A first step towards a general analysis of development in the Alpine Space

Problems evoked above due to the quality of answers did not make it possible to detail extensively the issues identified, their causes and consequences, to assess to which degree they could have different expressions in times, although they come out from factors that are more perennial than evolutional. The purpose was not either to detail problems at single regions level, taking into account differences in importance identified issues between Alpine regions.

However, valuable information drawn from experts` opinions did not result only in establishing a shortlist of problems fields. Since some experts accompanied their opinions with arguments or comments, all these elements were taken into account in analysing main characteristics of the on-going development trends in the Alpine Space. They represent the first contribution to the general analysis of these trends within the Alps which was completed stepwise throughout WP6. Main aspects referred to respective sectors underscored through the experts` opinions and comments will be presented below. They were used to return to the experts, in the second round questionnaire, the of the first round.

- *Agriculture and forestry*

Experts identified main causes of decline of agriculture as a lack of competitiveness of mountain agriculture face to lowland farming, due to natural conditions, in a context of market saturation, prices drop and increasing competition between agricultural products, especially in markets that are far away from production sites. Besides, farmers are not sufficiently paid for collective services they render to landscapes. Thus degradation in agriculture economic conditions, combined with progressive ageing of the farming population, leads to a decrease in agriculture land uses, notably in pastoral stock farming, and even agriculture land abandonment, as in high altitude areas, or in some cases changes in more competitive land uses, as for building. This results in the disappearance of the rural landscape and the decline of the meaning of agriculture as a backbone of the rural economy. Reactions to degradation of economic conditions, through modernisation or changes in production methods have in turn important consequences, in terms of landscapes or diversity of cultivated species, development of new production methods or intensification.

Concerning the forests, the experts observed two main trends in the Alps. In better accessible areas and forests owned by state authorities, there is an increasing industrialisation of logging and increase of mono-cultured forests, whereas in large parts of the Alps, the low cost-benefit relation results in decline of forest maintenance and over-ageing of mountain forests. The last mentioned development is enforced by private ownership.

- *Recreation and tourism*

In experts` views, tourism activities have to deal with an increase in competition with other destinations and to adapt to on-going changes in demand. That is why experts identify the quality of tourism services, as well as the development of eco-tourism activities as main issues to maintain the attractiveness and competitiveness of Alpine resorts. Thus, they are sensible to unbalances in tourism development, like seasonal and spatial concentration of tourist flows, price rise of tourist services and facilities, or growing opposition between mass tourism development and demand for high quality environment, and to difficulties for local tourism enterprises to resist to the competition of the outside operators.

Experts insisted on effects of tourism developments. On the social point of view, it has important consequences in terms of accommodation problems for the local residents, tax burden and

increase of the cost of living for the local community, and changes in original features and lifestyles in mountain villages. In the same time, increases in environmental pressures and harmful to the environment activities have negative effect on visitors interested to the quality and authenticity of the place. That calls for a more efficient regulation of land uses and for raising awareness of the importance of maintaining a good quality environment.

- *Energy, industry and services activities*

In a general context of globalisation in the production of economic goods, traditional industry is disappearing and mined mineral resources are declining, while comparative advantages of Alpine hydro-energy resources are reducing. Development of new economic activities depends more and more on external investment and is hampered in the Alps by several factors, among which lack of suitable areas for production facilities, inadequate labour supply and fragmentation of enterprises, costs for energy, communication and transportation services, and inadequate economic promotion of the Alps.

For these reasons, Alpine mountain areas suffer lack of competitiveness compared to enterprises and institutions of the urban areas. These concentrate economic activities and develop interdependence with the European and world economic centres, while peripheral areas are left with low value industrial and tourist sectors. Solutions are to be found to develop an identity based on high value added products or to disseminate innovative production and communication technologies that would facilitate the economic integration of the Alps. Conversely, since this integration could mean stronger dependence from metropolises which are powerful engines for economic development, some experts questioned about relationships to develop with peri-Alpine metropolises.

- *Mobility and transport*

The Alps have to cope with massive increase of mobility and of transport flows, that result from different causes, as for example increases of dependence in terms of jobs and services of rural lands on urban centres or cities, increases in tourism or leisure displacements, as well as growth of transit traffic through the Alps valleys. Thus mobility and transport flows seem out of control, and result in high pressures, especially air and noise pollutions, concentrating in main transport axes and transit routes, while in the same time the most mountainous areas or secondary valleys suffer from inadequate transport links and access.

Efficient solutions to these problems have to take into account unfavourable structural conditions that increase costs of infrastructure and the absence of means of transport that would be an alternative to the road mode, together sometimes with increasing opposition of the political and ecological sectors to infrastructure development the Alps, to improve accessibility and enhance Alpine integration while reducing at the same time reduce social as well as ecological charges caused by transport and mobility.

- *Population and society*

The experts identified the accelerated aging of population, the concentration of people in favourable sites and seasons, the exodus from peripheral and higher locations, the immigration of new residents seeking accommodation for retirement or recreation and the difficulties in some places to integrate them to their new social and natural environments as major issues. It was clearly stated, that most of these processes differ in time and space and are caused by complex social and economic forces. The urban growth and sprawl and the emigration of the younger and better educated parts of the population to Alpine urban areas and to the metropolises outside the Alps are mentioned in this context.

Society in the Alps is facing the loss of cultural diversity in terms of traditions, values, dialects and customs. This becomes apparent through the standardisation and globalisation of lifestyles.

Increasing social disparities partly re-enforced by the crisis of Alpine agriculture and industry and the noticeable wealth gap between local and immigrated population evoked by some experts are identified as tensions sources for the social balance within the Alps. As participation at local and regional level, as well as the regional involvement in national democratic decisions are still low, personal and "Alpine" interests have difficulties to be expressed and acknowledged.

- *Urban and rural settlement*

Growing concentration of population and activities in easy access valleys and central areas and periurbanisation processes result in increasing contrasts within the Alps between central and peripheral areas and in increasing direct dependence of rural land to cities. Thus there is a worsening in living conditions in remote rural areas, with a lack of employment, educational, shops and medical facilities. Even some small or medium size cities enter into marginalisation processes.

These periurbanisation processes have important consequences in terms of pressures on land uses, as for example, conversions of agriculture land in built-up areas or urban sprawl, that lead to disappearance rural landscape characteristics and in some case to tensions, as they may lead to the implementation of settlement in areas which are unsuitable for residential use. On their side, marginalisation processes may lead to increase oppositions between abandoned areas and those areas which concentrate locally economic activities and services.

- *Natural and cultural heritage*

The awareness of the high value of natural and cultural heritage of the Alpine region, the demand for high quality environment and its contradictions with attitudes considering nature as a consumer product increases the sensibility at the risks of degradation of the environment. A variety of degradation factors are evoked.

For example, there is deterioration of the fauna and the flora, which results from changes in the overall ecosystem, with shifts in the vegetation borders, loss of natural dynamics of the species in their living space and destruction of their fundamental home ranges. Men are widely responsible for it, through the construction of structures that become geographical barriers for the migration of species or, more generally, through human activities that result in strong ecological load in sensitive areas, e.g. use of some protected or wild areas for tourism and recreation purposes. Thus lack of education at all stages of life for the respect of nature and environment is a main issue.

As regards the landscapes, the immediate causes of degradation are more evident: Changes in land uses and in landscape aesthetics are due, above all, to reduction in agriculture activities, irregular and unmethodical shrub reforestation, overbuilding in tourism resorts or development of scattered building in rural areas. They result in disappearance of the rural landscape, which was the traditional reference and for which no substitute appears.

- *Health and quality of life*

Experts` comments underline the way the quality of life of the inhabitants of the Alps is affected. Traffic is considered as a main cause of air and noise pollutions, with important consequences in terms of health and quality of life. The value attached to the quality of the living environment makes it sensitive not only to landscape issues, but also to further requirements concerning economic activities, as regards industrial emissions, quality of drinking water, poisonous substances or heavy metal residues, as well as to requirements to improve protection face to natural hazards.

These aspects do not have to make forget other requirements, e.g. to improve accessibility to current services, as far as isolation is considered as a threat in some areas, or to recreate social links within communities, as those which existed previously in rural communities, or even to

participate more directly in the public decisions. Besides more general issues concerning equity in access to labour market or education, or more efficient policies to reduce disparities in living conditions and family resources, all these aspects are considered as contributing to enhance quality of life in the Alps.

In conclusion, it seems that experts did not reveal necessarily genuine traits of development processes in the Alps, since most of those they headlined can already be found in studies and in the literature. However, gathering opinions of experts of different countries and profiles and returning the results to single experts made some of them conscious that some questions they did not envisage themselves could be relevant, or at least are worth being analysed in detail. This was the purpose of the second round of the Delphi survey.

# 3. The second round: An analysis of important issues

Since the purpose of the first round of the Delphi survey was to draw up a panorama of what the experts consider as being important issues for Alpine regional development, it resulted in collecting overall appreciations on the variety of Alpine issues tracked down in scientific experts and in Alpine stakeholders` opinions. These results invited to analyse more in detail these issues.

Obviously, there was a deep convergence between experts in identifying some main issues, as for example agriculture land abandonment or disappearance of cultural diversity and references to Alpine identities, but since some issues were identified only by few experts, it could not be guaranteed that other experts would have considered them as relevant. Besides, there was a wider range of opinions about the causes of the issues which were focused on by at least some experts, their actual stage and the consequences of their possible development. Does this reflect real divergences in opinions on these issues, or differences in situations within the Alps?

Normally, successive rounds of Delphi surveys intend to formulate more and more precisely problems roughly identified in a first round. Since the wide range of the subject – development trends in the Alps – made illusive to analyse all issues referred, we decided to focus on those sectorial issues, identified by some experts in the first round, whose causes and consequences were debatable and that could not be assigned precisely to cross issues identified in the first round.

However, a first attempt, made in August 2005, showed that asking the experts to react on sectorial issues coming from the first round in giving more precise opinions on their causes, effects and possible development would not necessarily result in gathering answers that could be compared between experts and that would be easy to interpret. That is why DIAMONT teams decided, in a meeting held in Bolzano in September 2005, to guide the experts analysis in suggesting interpretations of some issues through formulating some theses or statements concerning the actual stage of these issues, their main causes and their possible consequences, and then in asking the experts to react on these theses and to comment the proposed analyses, with the final objective to identify interrelations between these issues and to group them into main issues making them consistent.

## 3.1. The questionnaire and the analysis of the answers

The second round questionnaire (see appendix 2) consisted in series of theses, related to some sectorial issues, which were designed to suggest an interpretation of the issues and against which the experts were invited to appreciate their relevance. The questionnaire was designed to make it possible to complete at first statistical analyses of the answers, which proved impossible in the first questionnaire answers, to be supplemented with the help of comments and remarks accompanying each expert answers. It was designed too to make it possible to assess the quality of the answers.

### 3.1.1. Guidelines in the questionnaire

The questionnaire was structured in those thematic domains, coming from the problem fields identified in the first round, for which a first analysis has been proposed above in point 2.2.2. Within each domain, it focused on those issues which seemed, according to experts opinions expressed in the first round, the most important for the future of the Alps, who makes problem but whose causes and consequences are debatable.

Within each domain, three theses were proposed to the experts` sagacity, which referred to some issues and did not pretend to encompass all the issues in identified by the experts in the respective domain. They were introduced by short comments on development trends in the respective domain, acting as a return of first round results.

These theses were formulated and discussed by DIAMONT teams in the Bolzano meeting. For example, in the domain population and society, the first thesis stipulated that 'The dimensions of aging in the Alps do not differ significantly from aging trends outside the Alps. But within the Alps aging, accelerated through the immigration of retired persons, has more polarising effects on the development of population and economy than in the Extra-Alpine regions'. Some theses were more concise; for example, in the domain recreation and tourism, a thesis asserted that 'Winter or summer tourism employment opportunities and incomes benefit only partially to the farmers and to the residents'. All together, 24 theses were proposed, which resulted in a rather long questionnaire.

Experts were asked to express their opinion on the relevance of these theses, at first with the help of short qualitative appreciations ('correct', 'partially correct', 'rather not correct', and 'totally not correct'), then with the help of comments on causes and consequences of each thesis. They had the possibility to propose a reformulation of the thesis, and to stipulate on which arguments they base for their approval or rejection.

- Proposing at first theses on which experts had to react proved a powerful incentive which acted as an efficient guideline for the analysis of respective issues.

Theses were more or less complex, but all of them did not consist only in a single statement without any development. Some theses were formulated in a rather provocative manner, thus experts did not hesitate to criticize or even to reformulate them. In many cases, they introduced some nuances, developed some arguments or indicated under which conditions the thesis would be valid. All theses were abundantly commented by the experts. Besides, the questionnaire guidelines invited them to appreciate the theses relevance in the light of the social, environmental, economical dimensions of sustainability and in the light of the importance of the problems focused on.

- Further guidelines were introduced to assess the quality of the answers.

In the light of the first round experience, the experts were asked to precise which territorial and temporal dimension is considered in their appreciation. They had to indicate if their opinion deals for the Alps in their region or in their country, or for the whole Alps. In the same way, they had to precise whether problems evoked through the theses are perceptible at the moment or will emerge in the future.

Furthermore, as it was illusive each expert could have a deep knowledge for all the domains investigated, they were invited to indicate their own competence in the thematic field the thesis referred to, with the help of a qualitative marks ('high', 'fairly high', 'moderate' or 'poor'). Obviously, experts kept the possibility to indicate they had no opinion on the theses.

### 3.1.2. Statistical analyses and summaries of comments

In contrast to the first round answers, and due to the guidelines in the questionnaire, the quality of the experts answers was fairly good, and made it possible to make comparisons between experts. Each DIAMONT team was in charge in gathering responses to the questionnaires in his country, of encoding the answers to the closed questions (general appreciation of the thesis, its regional and temporal dimension, the experts competence self estimation) in form of numeric values, and to complete, for each thesis, a synthesis of all national experts arguments and comments that would underscore main analytic elements drawn from the answers. The French team was in charge of general statistical analyses and of summarizing all experts comments.

- Statistical analyses, which concerned answers to the closed questions, consisted in establishing different 'score indexes', quantifying the overall appreciation of the thesis with the help of code values assigned to single experts appreciations.

For each thesis, besides a general score index, based on all experts answers, separate score indexes were calculated with respect to the different countries, to the different geographical and temporal dimensions, to the different competence levels, and also to the expert profile (scientists or other profiles). These series of indexes were intended to reveal to which degree there is a variation in the appreciations according to these criteria, or, in other words, to which degree these criteria explain differences in appreciations. However, due to the small number of answers according to value codes of some of these criteria, respective separate score indexes had no sense, on a statistical point of view. Furthermore, it had no sense to detail further these indexes in combining several criteria. That is why we stick above all on distinctions with respect to the experts` country [2].

The same technique was applied to quantify the average geographical and temporal dimensions of the answers and the average competence level of the experts. Irrespective to the nature of the appreciation of the theses, these score indexes were intended to compare the prevailing geographical and temporal dimensions in reference to which these theses have been appreciated, as well as the competence level of the experts who appreciated them.

In fact, as it will be quoted in the next section, differences in appreciations do not result so far from differences in link with these criteria. They result above all from individual differences between experts, which may be due to their own sensibility or interest against problems evoked.

- Experts comments provided in fact the most valuable information to analyse the issues to which theses referred

With their comments, they acted as informers who helped to reveal different facets or aspects of these issues and sometimes quoted relevant facts or phenomena in link with these issues or that would have a meaning in the future [3]. Like as in the first round, experts comments rarely contradicted themselves, but above all supplemented. Since experts comments focuses on theses they had to appreciate, they avoided digressions on various topics and thus were more easy to summarize.

However, there were differences between experts in terms of deepness of their comments or argumentation. They may be due to their familiarity with the thematic domains. For example,

[2] Depending on the thesis, differences between countries in average appreciations were more or less important. To compare country averages with the general average, we recalculated this general average in weighing equally all alpine countries. That means we overweighed the Swiss experts appreciations, since only 6 experts answered the second round questionnaire, while we under weighed the German experts appreciations, since not less than 14 German experts reacted on the theses.

[3] However, some comments had only a rather anecdotic value. For example, one expert complained on the difficulty to get Alpine typical dishes in peak season in some famous alpine resorts.

Swiss experts seemed keen to talk for ever on traffic flows pressures and ways to cope with them, German experts proved a high sensibility to all problems in link with climate change. The less talkative were not necessarily those who declared a poor competence in the investigated domain. Besides, in certain cases, experts comments did not really justify their overall appreciation of the theses, since even when they approved them, they gave more arguments for their rejection, and vice versa.

In fact, since many theses were complex and encompassed often several problems or issues, overall appreciations of these theses given by the experts had only an indicative value. Some experts reformulated certain theses, in splitting them in several parts that could be assessed separately. Finally, the main benefit of this exercise lies in the fact that comments on the theses made it possible to underscore which aspects make problem at the moment or will possibly make problem, and to identify more precisely which development trends are at the origin or exert influences on this problems.

## 3.2. Assessment of the theses

For abovementioned reasons, assessment of respective theses bases at first on comments and developments made by the experts, score indexes playing more a role in comparing the relevance of different theses as they were formulated. In this section, we present at first, for each domain, tables of score indexes for respective theses. Later we interpret them notably in summarizing main elements coming from experts` comments on each thesis.

### 3.2.1. Population and society

*Table of quantitative indexes*

- *Average appreciation score indexes*: values are comprised between 1 (meaning not correct) and 4 (meaning correct)
- *Average dimensions of the appreciations*: values are comprised between 1 (meaning region or country for the regional dimension, and present period for the temporal dimension) and 2 (meaning the whole Alps or the future)
- *Average experts competence self estimation*: values are comprised between 1 (meaning poor competence) and 4 (meaning high competence)

| Average appreciation score index | | | | | % of appreciations | | Average dimensions of the appreciation | | Average experts competence self estimation |
|---|---|---|---|---|---|---|---|---|---|
| All countries | Highest score | Lowest score | Scientists | Other profiles | Correct or partially correct | Not correct or rather not correct | Geographical dimension | Temporal dimension | |
| *First thesis: The dimensions of aging in the Alps do not differ significantly from aging trends outside the Alps. But within the Alps aging, accelerated through the immigration of retired persons, has more polarising effects on the development of population and economy than in the Extra-Alpine regions.* | | | | | | | | | |
| 3,0 | 3,4 - CH | 2,2 - FR | 2,9 | 3,2 | 78 | 20 | 1,5 | 1,6 | 2,7 |
| *Second thesis: Due to the ongoing concentration of economic and political power in the Alps (urbanisation, empowerment of agglomerations) the spatial and social disparities are polarising. At the same time there is a process of an Alpine-wide standardisation of lifestyles. The above mentioned processes provoke significant social tensions and changes in rural-urban relationships.* | | | | | | | | | |
| 2,9 | 3,9 - SL | 2,,3 - DE | 3,2 | 2,5 | 72 | 28 | 1,5 | 1,4 | 2,9 |
| *Third thesis: The heterogeneity of the different social groups (traditional and modern oriented groups) in the Alpine space and its attractiveness bears the great potential of innovative initiatives. To be able to use this potential there is a great need for communication and participation processes at the local level to exchange ideas and visions.* | | | | | | | | | |
| 3,2 | 3,7 - SL | 2,8 - DE | 3,2 | 3,3 | 76 | 24 | 1,5 | 1,4 | 2,9 |

- *First thesis: effects on aging in the Alps*

The first thesis in the domain population and society was appreciated rather positively by most experts. Geographical and temporal score indexes of the appreciations are well balanced. Most experts agreed largely that the aging of the population will be a problem in the future due to socio-demographic factors, although non specific to the Alps. However, they do not focus so far on immigration flows of retired persons, which may stimulate new developments and bring money into the regions: main problems are the emigration of the younger population, which affects remote areas without employment opportunities whereas centres offer better opportunities.

- *Second thesis: spatial and social disparities*

This thesis was appreciated fairly positively, but some experts introduced some nuances or rejected it. Generally, experts agree that experts the disparities between urban and rural areas will still increase and that the cultural diversity will decrease in the remote regions, contrasts of urban and rural lifestyle loosing their importance. However, differences do not have to imply social tensions. Main reasons evoked by those experts who rejected the thesis are that ongoing concentration of economic and political influence does not lie in the Alps, but outside the Alpine Space, except for Switzerland, which is, in their opinion, the main cause of social and spatial disparities that are likely to affect the Alps.

- *Third thesis: social heterogeneity and initiative potential*

This thesis did not meet in fact an general agreement. Even, when the experts agreed that cultural heterogeneity is a great potential, they argued that innovation may be more triggered by the pressure of global change phenomena and financial incentives. The social coherence and the participation processes are considered gaining higher importance in the acceptance of innovation carried by persons or institutions, if such initiatives do not lead to severe interest conflicts. Some experts focus on the innovation potential to enhance social coherence and quality of life; other focus on innovative initiatives in terms of marketing that would help to compete on the global market and call for pooling these initiatives on a supra-regional level.

### 3.2.2. Agriculture and forestry

*Table of quantitative indexes*

| Average appreciation score index | | | | | % of appreciations | | Average dimensions of the appreciation | | Average experts competence self estimation |
|---|---|---|---|---|---|---|---|---|---|
| All countries | Highest score | Lowest score | Scientists | Other profiles | Correct or partially correct | Not correct or rather not correct | Geographical dimension | Temporal dimension | |
| *First thesis: Although decline of agriculture has already taken place all over the Alps, the difference between marginal and favoured areas is more and more pronounced. This results in large scale land abandonment in steep and remote regions, whereas the valley bottoms and plains face strong competition between industrialized agriculture and urban sprawl. In spite of singular innovative initiatives and subsidies for maintaining the landscapes the process is very unlikely to be stopped.* | | | | | | | | | |
| 3,4 | 4 - SL | 3 - FR IT | 3, 6 | 3,2 | 91 | 9 | 1,5 | 1,5 | 2,9 |
| *Second thesis: Due to global market conditions, mountain forests are less and less attractive from the economic point of view. Therefore forest management is decreasing, leading to a natural succession. During intermediate phases of this succession potential risks increase. Only in the long-run the more natural structured and composed forests will be ecologically more stable, more attractive for recreation and tourism and more valuable as natural heritage.* | | | | | | | | | |
| 3,1 | 3,6 - IT | 2,9 - CH | 3,2 | 3,01 | 76 | 24 | 1,6 | 1,5 | 2,9 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Third thesis: Large scale abandonment of managed land is a great risk for the development of tourism and recreation (change of open land into forested). Therefore the tourism industry has an important role to support generously agriculture.* | | | | | | | | | |
| 2,7 | 3,4 - SL | 1,8 - AT | 2,6 | 2,8 | 57 | 43 | 1,5 | 1,5 | 3,0 |

- *First thesis: increase in differences between marginal and favoured areas*

This thesis met a general agreement, especially from the scientists, and got one of the highest appreciation indexes. Most experts agreed with these statements, but argued, for instance, that subsidies could only, in the best cases, delay agriculture land abandonment processes. Mountain agriculture will remain hampered by its lack of competitiveness, by increasing costs of production and in some cases by difficulties to find manpower. Assuming a steady decline of traditional agriculture the maintenance of the cultural landscapes will depend will depend mainly on the willingness to pay subsidies.

- *Second thesis: decrease in forest management*

There was more diversity and nuances in opinions about this thesis. Most experts tempered it. On the one hand they agreed that at the moment the use of mountain forests is still only attractive for special niches. On the other hand an increase in wood demand and a trend towards alternative uses of the resource, like the production of biomass energy, may enhance its economic attractiveness. However, forest use will increase only in forests with good accessibility. Many experts considered the importance of mountain forests for natural hazards prevention much higher than for a contribution to biodiversity, recreation or tourism amenities.

- *Third thesis: role of tourism industry in support to agriculture*

Some experts reacted rather harshly on this thesis they felt irrelevant and besides provocative. For example, Austrian experts rejected it. In fact, most experts forecasted that the tourism industry will not likely subsidize traditional agriculture practices. In place of agriculture there are other low cost alternatives to maintain an attractive cultivated landscape. Besides more wilderness areas will not discourage the tourists. Therefore it is important to strengthen mountain agriculture by developing other strategies, as for example direct marketing of niche products.

### 3.2.3. Mobility and transport

*Table of quantitative indexes*

| Average appreciation score index | | | | | % of appreciations | | Average dimensions of the appreciation | | Average experts competence self estimation |
|---|---|---|---|---|---|---|---|---|---|
| All countries | Highest score | Lowest score | Scientists | Other profiles | Correct or partially correct | Not correct or rather not correct | Geographical dimension | Temporal dimension | |
| *First thesis: The attitude that people have towards private transportation does not change in the direction of higher use of public transportation neither in the field of inner Alpine traffic nor of transit traffic. Changes are not apparent in spite of all incentives to promote public transport.* | | | | | | | | | |
| 3,1 | 3,4 - DE | 2,2 - CH | 3,,0 | 3,2 | 74 | 26 | 1,6 | 1,4 | 3,0 |
| *Second thesis: The price of petrol is rising and may exceed USD100 per barrel in the near future, causing a huge reduction of mobility. This strengthens the depopulation of remote areas and may even slow down processes of sub-urbanisation, as these trends provoke a concentration of traffic in the main valleys and densely populated areas.* | | | | | | | | | |
| 2,5 | 3,4 - SL | 1,3 - CH | 2,5 | 2,5 | 53 | 47 | 1,6 | 1,7 | 2,9 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| *Third thesis: On one side, development in new transport technologies (e.g. hydrogen, electrical cars, and hybrid technologies) find a broader application connected with the suitable infrastructure, that enables strong reduction of air and noise pollution. On the other side, the problems of land used for traffic infrastructure and of landscape fragmentation cannot be solved efficiently.* | | | | | | | | | |
| 3,1 | 3,4 - DE | 2,7 - SL | 3,2 | 3,1 | 78 | 22 | 1,6 | 1,6 | 2,8 |

- *First thesis: attitudes against public transport*

This thesis was in general appreciated positively, except from Swiss experts where public transport has got more audience than in other countries. Most experts consented at least partially to this thesis. On one hand, they argued that private transportation will increase as people live, work and relax in different places, and that public transport quality is not in line with the expectations and the demand. On the other hand, they consider that the promotion of public transport is a long lasting process. It can be organised, for passenger transport, only in large valleys but not in the whole Alps area. For goods transport, an improved competitiveness is expected from large railway projects, but containing pressures resulting from increase in freight transit or inner traffic would call for further measures, as for example higher fees or redirecting to freight trains.

- *Second thesis: effects of increases in oil prices*

It asserted that *important increases in oil prices would reduce the mobility and lead to further concentrations in densely populated areas*. Most experts rejected this assertion, noticeably the Swiss experts. They consider that there is a low elasticity between petrol prices and private mobility. Higher prices would rather reduce traffic on the main transit routes than inner traffic, which results, above all, from changes in the settlement structure within the Alps. They argue that higher petrol prices will stimulate innovative, less fuel consuming technologies or strengthen the development of public transport or alternative solutions (bike, car sharing). Nevertheless there will be no significant effects on private mobility in all areas where residents are not self sufficient to meet their current needs.

- *Third thesis: new transport technologies*

The thesis focused on those new technologies that could reduce pollutions caused by transport. It asserted that these new transport technologies could find a broader application, since they are connected with the suitable infrastructure, but would not solve other problems (noise, landscape fragmentation). Most experts agreed on this thesis, but tempered the positive effects of the development of these new technologies. They cannot be an all-purpose panacea, since they may not be applicable in mountainous areas. Thus, the problem of land consumption for traffic infrastructure calls for a reorganisation of existing infrastructure which concentrates in the valleys, and, above all, for limitations of the road traffic.

### 3.2.4. Recreation and tourism

*Table of quantitative indexes*

| Average appreciation score index | | | | | % of appreciations | | Average dimensions of the appreciation | | Average experts competence self estimation |
|---|---|---|---|---|---|---|---|---|---|
| All countries | Highest score | Lowest score | Scientists | Other profiles | Correct or partially correct | Not correct or rather not correct | Geographical dimension | Temporal dimension | |
| *First thesis: In summer tourism, economic stagnation in the countries the tourists come from causes a decrease in demand for fitness and recreation tourism, while at the same time agro tourism, which creates lesser added value, experiences a rise in demand but is already approaching its capacity limits.* | | | | | | | | | |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2,7 | 2,9 - SL | 2,5 - DE | 2,6 | 2,8 | 60 | 40 | 1,4 | 1,3 | 3,1 |
| *Second thesis: In areas with high winter tourism value, industrial tourism (skiing, snowboard…) defines the market and concentrates tourists flows and capital and seasonal employment opportunities, while soft tourism (hiking, snowshoe or Nordic walking…) is rather considered to be a niche and not the mainstream in tourism development. This reinforces competition in mass tourism, with an increase in risks of environmental hazards.* | | | | | | | | | |
| 3,0 | 3,,7 - SL | 2,8 - IT | 2,9 | 3,1 | 77 | 23 | 1,6 | 1,3 | 2,9 |
| *Third thesis: Winter or summer tourism employment opportunities and incomes benefit only partially to the farmers and to the residents. This lack of integration leads to conflicts between tourism actors and the rest of the population.* | | | | | | | | | |
| 3,0 | 3,7 - FR | 2,6 - IT | 3,1 | 3,0 | 68 | 32 | 1,4 | 1,3 | 2,9 |

In this domain, experts appreciations refer much more to the experts region or country or to the present situation than to the whole Alps or to the future. Experts insisted on differences against tourism issues within the Alps.

- *First thesis: changes in demand in summer tourism*

Not all experts appreciated positively this thesis. Since it asserted that summer tourism would decline, due to the economic situation, while at the same time there is a rise in demand for agro-tourism, although capacity limits are approaching, most experts rejected it, although for different reasons. They agreed on a severe competition in holidays destinations, which however may result in a more diversified tourism offer in the Alps. They considered not all tourism facilities to be under pressure as there are still competing tourism options for the Alps. However, new developments in mass tourism would not be welcome, due to its environmental burden, and also to its uncertain economic profitability. Thus most promising developments are more to be sought in some niches, as for example hiking tourism or agro-tourism. For this sector, most experts consider that in fact, capacity limits are not reached, but that some bottlenecks exist, due to the excessive fragmentation of this sector, the lack of professional skill, and in some cases difficulties to combine agro-tourism and farm activities. However, some experts considered that in the future, benefits of developing so-called soft tourism options can be questionable, since it would become a common standard and lead to the same excesses as those that they criticised in mass tourism.

- *Second thesis: winter tourism industry versus soft tourism options*

In parallel with the previous thesis, it asserted that mass 'industrial' tourism (skiing, snowboard, etc) defines the market and that soft tourism options (snowshoe, Nordic walking) would not be the mainstream in tourism development. Experts` appreciations differed widely. They agreed on the existence of a high competition between mass winter tourism centres, and emphasised the need to balance the economic benefit and the environmental sustainability of winter tourism. With regard to environmental sustainability, some experts considered all kinds of winter tourism may have negative impacts. However industrial tourism has the advantage to concentrate these impacts. With regard to competition, experts consider that soft winter tourism options are developing in ski resorts, as a response for change in demand and also to compensate the decreasing Alpine skiing, thus both types of tourism may coexist.

- *Third thesis: distribution of benefits from tourism activities*

This thesis considered the distribution of tourism economic incomes and employment opportunities, asserting that they benefit only partially to the farmers and the residents, this resulting in conflicts between tourism actors and local population. Once more, there were mixed reactions from the experts. Most experts agreed that there are tensions between the benefiting and the non-benefiting groups, depending on their possibilities to catch tourism employment and financial opportunities. But real conflicts mainly will arise in cases of investments of big tourism

groups acting without the participation of the local population. Some experts underscored other sources of tensions, as for example in areas where seasonal employees work for very low wages or rise in real estate prices make it difficult to find housings. On the other hand, the experts considered that in many cases, residents gained wealth through tourism and that it raises opportunities to complement agriculture activities out of accommodation and selling regional products.

### 3.2.5. Energy, industry and services activities

*Table of quantitative indexes*

| Average appreciation score index | | | | | % of appreciations | | Average dimensions of the appreciation | | Average experts competence self estimation |
|---|---|---|---|---|---|---|---|---|---|
| All countries | Highest score | Lowest score | Scientists | Other profiles | Correct or partially correct | Not correct or rather not correct | Geographical dimension | Temporal dimension | |
| *First thesis: The energy production in the Alps is still mainly based on the hydro-electrical potential, whereas consistently increases in energy importation, even from third countries, restrain the opportunities to develop in the Alps other clean energy options (e.g. biomass fuel, photovoltaic, solar, geothermic).* | | | | | | | | | |
| 2,4 | 3,0 – FR | 1,8 - DE | 2,6 | 2,3 | 45 | 55 | 1,5 | 1,4 | 2,9 |
| *Second thesis: There is a paradox between the actual crisis of Alpine economy and the existence of highly valuable resources (e.g. landscape, clean water and air) for modern industry and service activities in the Alpine area. These resources are not recognized or even valuated so far as opportunities to attract new economic activities which would meet with sustainability issues.* | | | | | | | | | |
| 2,6 | 3,5 - FR | 2,0 – ATCH | 2,5 | 2,7 | 60 | 40 | 1,6 | 1,4 | 2,9 |
| *Third thesis: The Alps are in general interdependence with outside areas for economic activities. They have developed functional economic complementarities with these areas, e. g. in terms of recreation services, drinking water supply or even energy production. The Alps are in position to develop new activities, as far as they would complement and not compete with those exerted outside, and would create more added value.* | | | | | | | | | |
| 3,4 | 3,9 - IT | 2,8 - FR | 3,3 | 3,4 | 82 | 18 | 1,7 | 1,5 | 3,0 |

- *First thesis: clean energy options*

The thesis asserted that, apart from the important hydro-electrical potential which has been already valuated, opportunities to develop other clean energy options are hindered by constant increases in energy importation. Most experts rejected the thesis as it was formulated, arguing that the Alps cannot be regarded separately, as Europe is a coherent energy network where imports of fossil energy or nuclear power generation provide cheap solutions to meet the demand. At the moment, Alpine hydro-electric energy is used mainly in peak periods; regenerative energies are decentralists solutions which could be implemented in the Alps, but which are less competitive than other energy sources. Thus, rising price of oil may lead to more emphasize the development of alternative solutions, but it will depend above all on political decisions. However, some experts recalled that it can cause severe conflicts with nature or landscape protection, although biomass is considered as a suitable energy.

- *Second thesis: valuation of natural resource to attract new activities*

The second thesis considered that *in a context of a crisis of the Alpine economy, natural resources (landscape, clean water and air) are not recognised or valuated as chances to attract new economic activities*. Most experts rejected or at least criticized the thesis, arguing that main location factors are connection to good transport networks, construction and environmental regulations, level of wages, labour legislation or educational level, for which the Alps are not especially advantaged. Development in service activities will not depend on resources which are available in the Alps; even modern activities prefer the benefits of agglomeration in innovation

sites, and will not easily settle in remote areas. Another reason for rejection of the thesis is that local resources either have already disappeared (mining industry), or are yet used in agriculture, energy or tourism, thus the question is more to imagine new opportunities to further develop these activities.

- *Third thesis: functional economic complementarities with outside areas*

Although some experts rejected this thesis, it was generally accepted, in spite of divergences in opinions concerning the links between the Alpine economy and other economic places. The Alpine space cannot be viewed completely disconnected from extra Alpine areas, but it is first and foremost strongly differentiated. For regions close to inner or extra Alpine agglomerations, the strategy of economic complementarities may be promising, but this is not suitable in peripheral areas which have to seek for more autonomous forms of development, for example competitive niche products, and need assistance. However some experts considered the Alps have a strong position in specific activities oriented towards the 'global market' in fields connected to the Alpine structure (all-seasons skiing), or even to innovation and research. Moreover, the fourth sector and the development of IT may alter to a certain degree the lack of competitiveness of the Alpine area.

### 3.2.6. Urban and rural settlement

*Table of quantitative indexes*

| Average appreciation score index | | | | | % of appreciations | | Average dimensions of the appreciation | | Average experts competence self estimation |
|---|---|---|---|---|---|---|---|---|---|
| All countries | Highest score | Lowest score | Scientists | Other profiles | Correct or partially correct | Not correct or rather not correct | Geographical dimension | Temporal dimension | |
| *First thesis: The effects of demographic development engrave changes in the settlement structure. Losers are not only remote rural areas but also the traditional urban centres, whereas settlement and economic growth take place in axes following the valley like 'urban fingers'.* | | | | | | | | | |
| 3,2 | 3,7 – AT | 2,5 - CH | 3,3 | 3,1 | 84 | 16 | 1,5 | 1,4 | 2,8 |
| *Second thesis: Within the globalisation process, concentration or depopulation processes result in many Alpine regions more from the gravitation forces of the outer Alpine metropolises (Milano, Munich, Vienna, Zürich, etc) than from gravitation forces of the inner-Alpine centres or from local factors. Thus, attempts to regulate the effects of these processes must more and more take into account dynamics stimulated by outer Alpine metropolises.* | | | | | | | | | |
| 3,4 | 3,7 - SL | 3,1 - IT | 3,5 | 3,4 | 88 | 12 | 1,6 | 1,4 | 2,7 |
| *Third thesis: Rural settlements change their appearance in architectural forms and structure, because of economic change, change of lifestyles, mobility, and new infrastructure. This leads to a stronger differentiation within rural areas between those which benefit from development opportunities and remote areas, however general consequences are a loose of regional identity and consciousness.* | | | | | | | | | |
| 3,1 | 3,9 - SL | 1,8 - AT | 2,8 | 3,5 | 76 | 24 | 1,6 | 1,5 | 2,9 |

- *First thesis: effects of demographic development on settlement structure*

Most experts agreed that *effects of demographic development would disadvantage traditional urban centres, whereas settlement and economic development would take place in suburban areas located near transport axes*, as far as it headlines the results of a wrong urban development and a lack of efficient urban planning principles. But they also detected new trends, as for example compact city or urban renewal policies, which result in revitalising the city centres. So far, for some experts, a main concern would rather be those suburban areas, which keep a rural character and are less linked up to city centres.

- *Second thesis: gravitation forces of outer Alpine metropolises and of inner centres*

The experts agreed on growing political and economic influences of outer metropolises, but tempered the importance of their effects, since intra-Alpine migration is much more important than emigration to outer metropolises. This demonstrates the potential influence of Alpine centres and their role within the regional circuits. Thus, effects of these gravitation forces on Alpine regions appear being of major concern, regardless of which centres they emanate.

- *Third thesis: change in rural settlements and stronger differentiation within rural areas*

Experts agreed on the phenomenon, which is a stronger differentiation within rural areas resulting from economic change, change of lifestyles, mobility, and new infrastructure, but estimated controversially its consequences. The structural changes do not necessarily result in a loss of regional identity, since existing potentials for alternative developments can enhance regional identity. The blurring of appearances may also be a chance for return to regional peculiarities. Besides, identity is nothing stable and permanent but has to change over the years.

### 3.2.7. Natural & cultural heritage

*Table of quantitative indexes*

| Average appreciation score index | | | | | % of appreciations | | Average dimensions of the appreciation | | Average experts competence self estimation |
|---|---|---|---|---|---|---|---|---|---|
| All countries | Highest score | Lowest score | Scientists | Other profiles | Correct or partially correct | Not correct or rather not correct | Geographical dimension | Temporal dimension | |
| *First thesis: Globalisation and stronger competition result in more intensive and industry oriented or residential land uses in the favourable areas (valleys). This leads to a loss of the traditional landscape and biodiversity as well as an increase in soil sealing and even pollution. Simultaneously, unfavourable areas are abandoned and regenerated by the potential natural vegetation.* | | | | | | | | | |
| 3,3 | 4,0 - SL | 2,9 - IT | 3,4 | 3,1 | 89 | 11 | 1,6 | 1,4 | 3,0 |
| *Second thesis: For the preservation of cultural heritage and of its diversity, main threats are the loss of local identity (dialects, spiritual values, customs, etc.) and the standardization of life styles; they are a consequence of aging and migration processes like abandonment of rural areas, concentration of the population in cities, influences of foreign immigrants.* | | | | | | | | | |
| 3,1 | 3,9 - SL | 2,5 - CH | 3,2 | 3,1 | 77 | 23 | 1,6 | 1,5 | 2,8 |
| *Third thesis: Tourism can be seen as a chance to preserve cultural diversity and traditional land use forms, and to make it possible to find solutions to reconcile the respect for the territorial identities and the development of new cultural references.* | | | | | | | | | |
| 3,2 | 3,6 - IT | 2,6 - FR | 3,1 | 3,3 | 78 | 22 | 1,6 | 1,3 | 3,0 |

- *First thesis: loss of the traditional landscape and biodiversity*

Since the thesis asserted that globalisation and stronger competition will exacerbate tensions in land uses in favourable areas, like the valleys, with loss of traditional landscapes and biodiversity as well as increase in soil sealing and even pollution, experts expressed rather conflicting opinions. Notably, some argued that the tensions (industry oriented or intensive agriculture practices, increase in residential land uses) already arose years ago and resulted in changes in the landscape; presently, industrialised agriculture and increased urbanisation processes do not mean necessarily further threats to landscapes and biodiversity. Nevertheless, the degree to which intensification will further alter the landscapes will depend on subsidies and on urban planning efficiency.

- *Second thesis: loss of local identity*

Most experts agreed on the statement that lifestyles have changed over times and are more and more marked by global than by local references, thus local identities are vanishing. However, some experts do not see the process of assimilation of lifestyles as necessarily negative, since it may lead to a current renaissance of values more in line with the contemporary society, its fears and its expectations. That is why they consider that immigrants can also enrich and diversify the cultural heritage culture, since newcomers can recreate social links and bring innovation in rural areas. Other experts focused on efforts to maintain local identities, through the involvement in local associations or other initiatives, as for example museums or school books in dialects.

- *Third thesis: tourism and preservation of preserve cultural diversity*

Most experts agreed on this thesis, which asserted that *tourism is a chance to preserve cultural* diversity and traditional land use forms, and to make it possible to find solutions to reconcile the respect for territorial identities and the development of new cultural references, insofar it would concern soft tourism, and not mass tourism, arguing that cultural identity is an important location factor for tourism and that its appreciation from outside can strengthen the consciousness of own cultures. However, they consider that in tourist areas, changes in culture and in traditional land use are more intense than in other areas; there is a danger that tourism would incite to a customisation, and not to a conservation, of culture. Finally, they argue that tourism can contribute to a higher level of living which may improve the premises to conserve cultural identity, but that preserving cultural diversity and raising the tourists awareness of local cultures requires mutual assistance of social players, of the educational system, and a great innovation capacity.

### 3.2.8. Health and quality of life

*Table of quantitative indexes*

| Average appreciation score index | | | | | % of appreciations | | Average dimensions of the appreciation | | Average experts competence self estimation |
|---|---|---|---|---|---|---|---|---|---|
| All countries | Highest score | Lowest score | Scientists | Other profiles | Correct or partially correct | Not correct or rather not correct | Geographical dimension | Temporal dimension | |
| *First thesis: Topographic situations in some valleys cause high concentration of toxic emissions. Solutions to deal with these issues differ from one site to another. Their results can appear only in the long term; meanwhile, they conflict with different economic interests, face to which they are considered as constraints.* | | | | | | | | | |
| 3,5 | 3,8 - CH | 2,9 - DE | 3,5 | 3,3 | 90 | 10 | 1,5 | 1,3 | 2,7 |
| *Second thesis: The drop in the quality of life is more important and more widely felt in highly populated areas. Due to the increase of traffic, to pollution and to risks of natural hazards, these areas will become less attractive* | | | | | | | | | |
| 3,0 | 3,6 - SL | 2,4 - AT | 2,9 | 3,2 | 70 | 30 | 1,6 | 1,5 | 3,0 |
| *Third thesis: Inhabitants of rural areas run the risk to loose access to vital services like schools, hospitals, banks, etc. as well as last employment opportunities, insofar they are no substitutes to the agricultural sector as economic basis needed to maintain the abovementioned public services and to guarantee the vitality of these zones.* | | | | | | | | | |
| 3,1 | 3,8 - AT | 2,6 - IT | 3,4 | 2,8 | 81 | 19 | 1,5 | 1,5 | 2,9 |

- *First thesis: concentration of toxic emissions*

The thesis which asserts that solutions to deal with concentration of toxic emissions in valleys conflict with economic interests is consented as correct or partially correct by most experts. Although, some experts focus on the role of domestic activities, arguing that most difficulties do not arise from the economic actors but from the local population who rejects regulations as they

feel limited in their habits and customs. Besides, the thesis is not true where there are possibilities for ecology friendly industry.

- *Second thesis: drop in quality of life in populated areas*

The thesis asserted that pollutions, increases in traffic and risks of natural hazards will make these areas less attractive. The experts agreed on the impact of pollutions and traffic nuisances in urban areas, although noise affects all areas located near transit routes. Still, they stressed the role of domestic activities (heating, private displacements) which contribute to a larger extent to the disturbing emissions than economic activities (industries). Some experts added further causes for the decreasing attractiveness of highly populated area, for example side effects of urban expansion in terms of rise in real estate prices. In contrast, they considered that risks of natural hazards remain underestimated by the cities residents. In fact, they feel that there is a higher tolerance for air pollution, urban congestion or traffic problems, since citizens have more in mind advantages like attractive working places, closeness of natural landscapes or recreation opportunities which upgrade the subjective attractiveness of the cities.

- *Third thesis: vital services in rural areas*

It suggested that inhabitants of rural areas risk to loose access to vital services, since no substitutes appear to the agricultural sector as a backbone of the rural economy that could guarantee the vitality of these areas. Most experts agreed that the offered services no longer meet the needs, and that isolation, ageing and depopulation are a threat for low populated areas. Some experts, however, disagreed argued that these processes are not related to the declining agriculture. They occur also in areas in industrial crisis and result more from public services relocations to 'central places', for economic reasons. As a lot of administration issues can be dealt with Internet, the crucial factor will be the supply with sanitary services.

## 3.3. The identification of main issues

In reacting on the theses, experts quoted more precise issues than those they identified in the first round, and besides they described these issues through the problems related, their causes and effects.

For example, information gathered in the second round gives means to analyse further agriculture land abandonment. This issue was just named in the first round. The second round interprets the meaning of this issue, as concerning above all those rural areas which cannot maintain agriculture activities, due to the fact they cannot compete with more favourable areas and do not benefit from suitable support, in terms for example of second incomes for the farmers, or labelled products, since public subsidies can only slow down, but not prevent agriculture land abandonment. Paradoxically, agriculture land abandonment may be interpreted as a chance to recreate wilderness areas and new forms of tourism, even if this form of tourism is going to attract only the elite of the society. However, a precondition would be to maintain tolerable living conditions for the farmers and inhabitants of remote areas, that questions about public services, notably health care, which must keep locally available.

Analyses performed in the first round did not manage in fact to identify which comprehensive key issues would be of utmost importance against Alpine development processes. The second round results gave the opportunity to resume the previous attempt, to be in position to respond to WP6 objectives. On a scientific point of view, the deal was to conceptualise factors or trends which underpin sustainable development in the Alps and thus lie behind investigated problems and issues. In other terms, it was a question of identifying mega-trends against which Alpine issues could be put in coherence.

This question was discussed between some DIAMONT partners, in a meeting held in Munich in November 2005, on the base of the second round results. Starting from general trends that concern not only the Alps, but which percolated through the experts appreciations, as for example globalisation, rising awareness to threats on natural or cultural heritage, increase in mobility for goods and persons, intensification of competition between firms and possibly regions, demographic slow down, or change in meaning of local identities or even lifestyles standardisation, or agriculture multifunctionality, we tried to reinterpret these trends in the context of the Alps and to reformulate them.

Basing on the first analysis of problem fields performed in the first round and on issues analysed in the second round, we considered that main issues in Alpine development can be identified through the fact they have a particular resonance for certain types of territories and areas in the Alpine region or that they may result more from external factors and thus concern the Alps as a whole, although their effects can be spatially differentiated. For example, the experts confirmed widely distinctions suggested in various theses between rural and remote areas and more central areas, or the importance of effects of increase of transport for the Alps, or the role of Alpine cities for the spatial development. Finally, these analyses and internal discussions resulted in deciding to express main Alpine issues as follows:

- *Marginalisation of rural peripheral areas*, which is a general concern for those Alpine areas which are comprised neither in periurbanisation processes nor in touristy development, and for which main trends are e g agriculture land abandonment, low accessibility to current services, emigration of active population, etc;
- *Maintenance of Alpine forests*, since there is a tendency towards an extension of wooded areas, that questions on the way the forest cover will be managed in the long run and will meet functions assigned to forests;
- *Urbanisation processes*, that questions about urban-rural relationships, side effects of urban expansion against villages or small traditional centres, efficiency of land planning in urban regions, role of agglomerations as economical focal points in a region where area available in valleys and basins is limited;
- *Tourism sustainability*, since tourism is an important economic sector in many Alpine regions which symbolises the necessity to conciliate economic competitiveness with the respect of fundamental natural and social values which underpin its sustainability;
- *Transport pressures*, which do not originate only from outside of the Alps, and are emblematic of difficulties to cope with increases in mobility, openness and attractiveness of the Alpine region;
- *Innovation and competitive economic activities*, as far as innovation and competitiveness are a mainstream in economic development which allows firms to compete in a more and more global market;
- *Maintenance and development of natural and cultural resources*, a main issue that obviously should not be missed in the Alps and questions on the flimsiness of both natural and cultural heritages, which cannot be seen as static;
- And finally, *climate change effects*, that cannot be predictable but may differ from those outside the Alps, due to the specific conditions of Alpine environment and economy.

We considered these general sustainable development issues are prominent for the future of the Alps, due major trends affecting the Alpine region. As indicated before, the first ones have above

all a strong territorial dimension, while the last ones have a more general significance for the whole Alps, although their effects can be spatially differentiated.

Taking into account these main issues, we intended to specify them through relevant related phenomena in the third round of the Delphi survey.

# 4. The third round: An assessment of phenomena to consider against main issues

Since we identified some main issues, which taken all together concern the whole Alpine Space, we considered rather irrelevant and besides illusive to rank in a general manner their importance for the Alps, without analysing them at regions level and drawing conclusions from the way they are combined. Although some of these concern a priori above all certain types of regions within the Alps, it is obvious that these main issues superimpose in respective Alpine regions, but, due to differences in local conditions, they do not have the same effects or consequences for every Alpine region.

The last objective assigned to WP6 was to analyse how experts weighed Alpine issues. In the third round of the Delphi survey, we asked the experts to express their opinions about possible ranking of the main issues, and on relevant criteria that would help to rank them. But, as we feared that results would be deceptive, we decided to reformulate WP6 last objective in defining a method that would help to reveal the importance of respective main issues, which could be applied at regions level.

We considered their importance is to be revealed through phenomena which express them, that would help to specify these issues at regions level or even locally. For that, we assumed that in spite of their complexity, Alpine main issues identified could be handled by a limited number of *phenomena* describing their important characteristics and possible developments. As phenomena, we consider facts or trends that are observed or well perceived, that will inform on relevant aspects to take into account in analysing these issues. Thus, the third round questionnaire focused on such phenomena whose relevant was to be assessed by the experts. Taking into account relevant phenomena related to main issues would make it possible to assess the importance of these issues.

## 4.1. The last round questionnaire and the analysis of the answers

Phenomena through which main characteristics and possible developments of Alpine main issues could be assessed are those that inform on relevant aspects to take into account in analysing these issues, and thus which can reveal differences in position within the Alpine region face to these issues. The last round questionnaire consisted in ranking lists of phenomena according to their relevance against the main issues, at the moment or in the future. The most relevant ones give a concrete meaning to the main issues and should be observed through data and indicators. They help also to identify which detailed issues have a prominent importance within each main issue.

### 4.1.1. The questionnaire

The last round questionnaire (see appendix 3) comprises two parts.

- In the first part, it proposes shortlists of phenomena related to each main issue

Experts were asked to give their opinion on their relevance, with the help of qualitative appreciations ('very low', 'low', 'rather high' and 'very high', given the possibility to indicate they estimate the phenomenon is irrelevant). For each main issue, leaving out the best known phenomena, we had selected through the experts comments on the second round theses or in some cases on the first round questionnaire, further phenomena the experts invited to take into account, or they considered themselves in analysing the investigated issues. They relate either to the economic dimension of sustainability, or to its social, or environmental, or even institutional dimension. All selected phenomena that come out from the experts comments, are listed in tables structured in sub-issues. Obviously, experts could propose other phenomena.

As they proved efficient to enhance the preciseness and the quality of the answers, and to analyse them, we inspired, in this part of the questionnaire, from the same guidelines as those introduced in the second round questionnaire. We asked the experts to indicate if their appreciation of each phenomenon concerned above all their own region or country or dealt for the whole Alpine region, and to make an overall estimation of their competence in the thematic field which the issue refers to. But since up to now, it proved difficult, through the results, to distinguish actual state and future developments of some investigated issues, we were more strict in asking the experts to indicate their appreciation both for the present (now and first next years) and for the future (for next 10 to 20 years). We wished to identify which phenomena are in phase of emergence and will become meaningful in the future.

- The second part of the questionnaire, much shorter, was devoted to criteria that could be used in ranking the main issues

Being aware it would be hazardous to rank these issues in an absolute manner, we proposed to the experts to base their ranking on two optional criteria: at first, a ranking based on the comprehensiveness of the issues; and finally, a ranking based on the importance to attach to respective issues in regional policies development. We asked the experts to qualify the relevance of these criteria, and possibly to suggest other criteria.

### 4.1.2. The analysis of the answers

Compared to the second round questionnaire, the third round questionnaire was rather easy to fill up by the experts. In most cases, they expressed their opinion on the relevance of the phenomena against main issues (less than 7 % of no responses), while in not more than 2 % of the answers the experts declared the investigated phenomena were irrelevant. Since the questionnaire – at least the first part – was quite a 'closed' questionnaire, and since experts added few comments, answers were analysed above all through statistical methods. In the same manner as in analysing the second round questionnaire answers, we calculated appreciation score indexes that rank the average relevance of respective phenomena, for all experts or for those of each country, and other indexes qualifying the average regional dimension of the appreciations or the average competence level of the experts.

Since experts gave more or less systematically their opinion on the relevance of the phenomena both in the present state and in the future, we could establish two series of appreciation score indexes, to make comparisons allowing identifying those phenomena that will become more relevant in the future.

As far as averages may mask important differences between experts, this quantitative analysis is supplemented with the help of breakdowns of the answers according to each code value, for all the appreciations. Besides, main differences according to the experts` country are revealed by indicating in which the score indexes or the regional average dimensions of the appreciations have either the highest or the lowest values. But taking into account the limited number of participants, for all Alpine countries and even more at each country level, statistical averages are to be handled cautiously. More important was to examine where there are divergences in

opinions, which are often revealed trough the results, than to focus on tendencies illustrated by average values.

Obviously, although the analysis bases above all on quantitative data coming from statistical processing, some experts added some comments which, in some cases, explain reasons why they attach more or less importance to some phenomena, in other cases suggest to take into account other phenomena which did not seem having been considered for the main issues, or concern in a general way Alpine issues. Naturally, they helped to complete the analysis.

The second part of the questionnaire was filled in fact by a limited number of experts. It appeared that establishing average rankings would not be significant. It seemed more important to content to draw some short conclusions inspired from the diversity of the answers, insofar they did not reveal precise tendencies.

## 4.2. Relevant phenomena identified

Results presented in this section are at first tables of appreciation score indexes, then comments on these tables and summarised analyses of the phenomena appreciated by the experts**.**

### 4.2.1. Main issue Marginalisation of rural peripheral areas

*Table of quantitative indexes - Main issue marginalisation of rural peripheral areas*

- *Appreciations score indexes* can range from 1 to 4, 1 meaning low relevance and 4 very high relevance. They have been established leaving out phenomena on which experts had no opinion or felt the phenomenon irrelevant.
- In the same way, *Regional average dimension of the appreciation* is an index which can range from 1 to 2, the highest values meaning that a majority of experts gave appreciations for the whole Alps, the lowest that they considered above all their own region or country.

| Phenomenon | Temporal dimension of the appreciation | Appreciation average score indexes | | | % of appreciations: | | Regional average dimension of the appreciations | | |
|---|---|---|---|---|---|---|---|---|---|
| | | General score | Highest score | Lowest score | very high of high relevance | low or very low relevance | General average dimension | Highest index | Lowest index |
| Growing isolation due to low accessibility | in present state | 2,36 | 3,13 - IT | 2,00 - AT | 47 | 47 | 1,6 | 2 - CH | 1,4 - DE |
| | in the future | 2,43 | 2,86 - IT | 2,18 - DE | 40 | 49 | 1,5 | 1,8 - CH | 1,4 - FR |
| Growing isolation due to weakening of social links | in present state | 2,40 | 3,11 - FR | 1,55 - DE | 45 | 51 | 1,6 | 2 - CH | 1,4 - DE |
| | in the future | 2,67 | 3,25 - IT | 2,09 - DE | 55 | 40 | 1,6 | 1,8 - CH | 1,4 - FR |
| Decreasing efficiency in public and private service provision | in present state | 2,79 | 3,00 - IT | 2,50 - CH | 64 | 36 | 1,5 | 2 - CH | 1,4 - DE |
| | in the future | 3,04 | 3,25 - IT | 2,86 - SL | 70 | 28 | 1,5 | 1,8 - CH | 1,4 - IT |
| Change in demands for local services due to increase of the share of elderly people | in present state | 2,55 | 3,00 - SL | 2,17 - AT | 49 | 51 | 1,5 | 2 - CH | 1,4 - DE |
| | in the future | 3,02 | 3,43 - SL | 2,75 - IT | 85 | 13 | 1,6 | 1,8 - CH | 1,5 - DE |
| Lack of local opportunities for workplaces | in present state | 2,83 | 3,50 - SL | 2,42 - DE | 64 | 34 | 1,5 | 2 - CH | 1,2 - FR |
| | in the future | 2,98 | 3,50 - CH | 2,77 - DE | 70 | 28 | 1,5 | 2 - CH | 1,3 - FR |
| Decreasing importance of agriculture as fundamental economic basis | in present state | 2,98 | 3,13 - IT | 2,50 - AT | 66 | 30 | 1,5 | 1,8 - CH | 1,3 - IT |
| | in the future | 3,07 | 3,38 - DE | 2,50 - AT | 68 | 26 | 1,6 | 1,8 - CH | 1,5 - DE |
| Uncertainties in public funds | in present state | 2,50 | 3,75 - SL | 2,38 - DE | 45 | 53 | 1,5 | 1,8 - CH | 1,4 - DE |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| provision to support rural development | in the future | 2,93 | 3,75 - CH | 2,14 - IT | 62 | 32 | 1,6 | 1,8 - CH | 1,5 - DE |
| Decreasing competitiveness | in present state | 2,73 | 3,00 - SL | 2,38 - FR | 55 | 40 | 1,5 | 1,8 - CH | 1,4 - FR |
| | in the future | 2,91 | 3,31 - DE | 2,20 - AT | 62 | 32 | 1,6 | 1,8 - CH | 1,5 - AT |
| Increasing importance of second incomes in maintaining agricultural activities | in present state | 3,02 | 3,50 - IT | 2,00 - CH | 72 | 23 | 1,5 | 1,8 - CH | 1,3 - FR |
| | in the future | 3,34 | 4,00 - AT | 2,50 - CH | 77 | 17 | 1,6 | 1,8 - CH | 1,4 - FR |
| Increasing promotion of regional and local labels - brands for agriculture products | in present state | 2,90 | 3,25 - SL | 2,67 - AT | 69 | 31 | 1,5 | 1,8 - CH | 1,4 - DE |
| | in the future | 3,36 | 3,88 - FR | 3,00 - DE | 83 | 15 | 1,6 | 1,8 - CH | 1,5 - AT |
| Devaluation and abandonment of less productive agriculture land pieces | in present state | 2,80 | 3,14 - IT | 2,63 - FR | 60 | 36 | 1,5 | 1,8 - CH | 1,4 - FR |
| | in the future | 3,04 | 3,29 - SL | 2,33 - AT | 70 | 26 | 1,6 | 1,8 - CH | 1,4 - IT |

- *Important phenomena in the present state*

Experts did not put any phenomena especially to the fore or to the end. A majority of experts attach importance to service provision (including opportunities for employment), to phenomena in link with changes in agriculture. In contrast, opinions are more varied about some phenomena which affect social life, e g isolation, or uncertainties in public support to rural development.

These phenomena are not fully appreciated in the same manner in all Alpine countries. Experts from France, Italy or Slovenia attach more importance to them than experts of other countries.

In most cases, there is a well balanced mix between local or regional appreciations and overall appreciations for the whole Alps. However, there is no clear link between the appreciations and the regional dimension taken into account.

Note that three experts considered growing isolation due to low accessibility was an irrelevant phenomenon in the present state.

- *Important phenomena in the future*

For this main issue, as for other main issues, most listed phenomena will gain more importance, in experts opinions, in the future. That would be the case e g for change in demands for local services due to increase of the share of elderly people, to which experts do not attach a too prominent importance in the present state but that they consider in fact as an *emerging* phenomenon, to which attention is to be paid in the future.

- *Summary of experts comments*

The experts made many comments for this issue. For example, they insisted on changes in agriculture, cutbacks in public funds for agriculture and opportunities to develop environmentally friendly techniques. They insisted on the lack of integrated strategies, which could promote e g training for jobs in national parks or new innovative enterprises.

Some experts focused on social issues, which are more or less put to the end in public policies which focus more on economic development, since they consider that in fact changes in living conditions will become more and more determining factors in these areas.

*Experts competence for the issue*

The table below presents national averages of the competence codes for this issue, which range from 1, for poor competence, to 4, for high competence. In fact, marginalisation of rural peripheral areas is one of the main issues for which experts competences are rather high, in

comparison with other main issues. However, we considered that no major importance was to be attached to differences in experts competence self appreciations, since statistical analysis did not reveal strong correlations between experts competence average values and appreciation average score indexes.

Experts` competence codes average values

| AT | CH | DE | FR | IT | SL | All |
|---|---|---|---|---|---|---|
| 2,80 | 3,25 | 2,85 | 2,50 | 2,75 | 2,14 | 2,68 |

### 4.2.2. Main issue Maintenance of Alpine forests

*Table of quantitative indexes - Main issue maintenance of Alpine forests*

| Phenomenon | Temporal dimension of the appreciation | Appreciation average score indexes | | | % of appreciations: | | Regional average dimension of the appreciations | | |
|---|---|---|---|---|---|---|---|---|---|
| | | General score | Highest score | Lowest score | very high of high relevance | low or very low relevance | General average dimension | Highest index | Lowest index |
| Decline of value of crop forest | in present state | 2,61 | 3,50 - CH | 2,10 - DE | 43 | 34 | 1,4 | 1,8 - CH | 1,3 - FR |
| | in the future | 2,30 | 3,00 - FR | 1,80 - DE | 23 | 47 | 1,4 | 1,8 - CH | 1,1 - FR |
| No profitability of steep slopes forests | in present state | 2,68 | 3,00 - SL | 1,67 - AT | 47 | 32 | 1,5 | 1,8 - CH | 1,3 - FR |
| | in the future | 2,69 | 3,00 - CH | 1,67 - AT | 46 | 30 | 1,5 | 1,8 - CH | 1,1 - FR |
| New uses of the forests as an environment friendly resource - biomass, etc | in present state | 2,40 | 3,00 - IT | 1,67 - CH | 38 | 51 | 1,5 | 2 - CH | 1,3 - SL |
| | in the future | 3,43 | 3,71 - FR | 3,00 - CH | 81 | 9 | 1,6 | 2 - CH | 1,3 - SL |
| Low management due to fragmented ownership | in present state | 2,58 | 3,00 - IT | 2,00 - DE | 45 | 36 | 1,3 | 1,8 - CH | 1 - SL |
| | in the future | 2,51 | 3,00 - IT | 1,60 - AT | 38 | 40 | 1,4 | 1,8 - CH | 1 - SL |
| Higher proportion of natural and semi-natural forests without any sylvicultural management | in present state | 2,21 | 3,33 - SL | 1,67 - AT | 26 | 55 | 1,4 | 1,8 - CH | 1 - SL |
| | in the future | 2,55 | 3,43 - FR | 2,00 - AT | 45 | 36 | 1,4 | 1,8 - CH | 1 - SL |
| Increase of risks due to the impacts of low management - e.g. by game, in temporary phases of decay | in present state | 2,28 | 2,71 - IT | 1,91 - DE | 32 | 53 | 1,4 | 2 - CH | 1 - SL |
| | in the future | 2,59 | 2,83 - AT | 2,00 - CH | 47 | 36 | 1,5 | 2 - CH | 1 - SL |
| Increase of management costs due to the impacts of climate change - beetle infestations, damages by storms, snow loads, etc | in present state | 2,42 | 2,67 - SL | 2,33 - AT | 36 | 45 | 1,6 | 2 - CH | 1,3 - SL |
| | in the future | 2,97 | 3,17 - AT | 2,40 - IT | 54 | 24 | 1,5 | 1,8 - CH | 1,3 - SL |
| Increase in effects of toxic pollutions - acid rains, etc | in present state | 2,35 | 2,67 - AT | 1,91 - DE | 30 | 49 | 1,5 | 2 - CH | 1,3 - IT |
| | in the future | 2,36 | 2,67 - AT | 2,00 - IT | 35 | 40 | 1,6 | 2 - CH | 1,3 - SL |
| Rising interest on new wilderness areas as tourist attractions | in present state | 2,17 | 2,63 - IT | 1,45 - DE | 31 | 65 | 1,5 | 1,8 - CH | 1,3 - SL |
| | in the future | 2,42 | 3,14 - SL | 1,64 - DE | 41 | 52 | 1,6 | 1,8 - CH | 1,3 - SL |
| Awareness of benefit from ample forest cover for natural hazards prevention | in present state | 2,59 | 3,00 - IT | 2,00 - CH | 55 | 43 | 1,6 | 2 - CH | 1,4 - IT |
| | in the future | 3,09 | 3,43 - SL | 2,50 - CH | 72 | 23 | 1,7 | 2 - CH | 1,5 - SL |
| Changes in forest | in present state | 1,93 | 2,75 - SL | 1,69 - DE | 19 | 70 | 1,6 | 1,8 - CH | 1,4 - IT |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| composition in link with climate warming | in the future | 2,55 | 3,29 - FR | 1,80 - IT | 40 | 45 | 1,6 | 1,8 - CH | 1,5 - IT |
| Increasing interest paid to wooded areas in densely populated valleys, to maintain ecological corridors and for citizens oxygenation | in present state | 2,18 | 2,63 - IT | 1,73 - DE | 32 | 64 | 1,5 | 2 - CH | 1,4 - DE |
| | in the future | 2,64 | 3,29 - SL | 2,17 - DE | 53 | 43 | 1,6 | 2 - CH | 1,4 - DE |

- *Important phenomena in the present state*

Experts got less enthusiastic for this second main issue, since no phenomenon, except awareness of benefit from ample forest cover for natural hazards prevention, gave rise to a majority of positive appreciations of their importance in the present state. Especially, phenomena which relate to slow change processes, as for example those in link with climate warning, would not worth being particularly focused on. Experts feel a bit more sensible to economic issues for the forest albeit less than half of the experts considered related phenomena, e g decline of value of crop forest or new uses of the forests as an environment friendly resource (biomass, etc), as important. Moreover, some experts felt that some phenomena were debatable, or even irrelevant for the Alps. These appreciations concern the decline of value of crop forest or increase in effects of toxic pollutions (acid rains, etc); rising interest on new wilderness areas as tourist attractions seems to some experts rather anecdotic than a general trend.

Their appreciations concern more their region or their country, in the case of phenomena related to profitability or management issues, and refer more to the whole Alps for the phenomena in link with multifunctionality of Alpine forests.

- *Important phenomena in the future*

Only some phenomena would grow in importance in the future. These are above all those related to low management of the resource, or to functions to which forest contribute (natural hazards prevention, ecological corridors and citizens oxygenation), and besides to new uses of the forest as an environment friendly resource, which is an emerging phenomenon.

Conversely, experts are not convinced that, in the future, decline in value of crop forest would be worth being considered.

- *Summary of experts comments*

Some experts insisted on damages caused by chase and on possible chase-forest conflicts. They suggested not to isolate prevention of natural risks by forest from another phenomenon, which is appropriate the organisation of the whole territory, and not to neglect urbanisation and tourism development (clearing of forests) or economic activities inhibiting or supporting forestry, as they feel that in the future, there will be a growing opposition between those forest which have an economic value and those which would be above all wilderness areas.

Besides, they quoted some bottlenecks in an efficient forest management, which are lack of skilled labour or reluctance of forest owners to develop human activities in their forest estates.

*Experts` competence for the issue*

In comparison with other main issues, averages values of the competence codes differ widely between countries.

Experts competence codes average values

| AT | CH | DE | FR | IT | SL | All |
|---|---|---|---|---|---|---|
| 3,40 | 3,25 | 2,46 | 1,56 | 2,13 | 1,86 | 2,30 |

### 4.2.3. Main issue Urbanisation processes

*Table of quantitative indexes - Main issue urbanisation processes*

| Phenomenon | Temporal dimension of the appreciation | Appreciation average score indexes | | | % of appreciations: | | Regional average dimension of the appreciations | | |
|---|---|---|---|---|---|---|---|---|---|
| | | General score | Highest score | Lowest score | very high of high relevance | low or very low relevance | General average dimension | Highest index | Lowest index |
| Further extent of urbanisation in sensitive areas - valleys slopes, flood expansion fields, etc | in present state | 2,80 | 3,50 - AT | 2,25 - DE | 62 | 36 | 1,4 | 1,6 - SL | 1,3 - IT |
| | in the future | 3,07 | 3,63 - FR | 2,14 - IT | 68 | 26 | 1,5 | 1,7 - AT | 1,4 - FR |
| Setting up planning documents including cities peripheries | in present state | 2,98 | 3,80 - AT | 2,75 - DE | 66 | 30 | 1,5 | 1,8 - CH | 1,3 - IT |
| | in the future | 3,30 | 3,88 - FR | 3,00 - DE | 79 | 13 | 1,6 | 1,8 - CH | 1,3 - IT |
| Development of new services activities polarizing in cities peripheries | in present state | 2,70 | 2,86 - DE | 2,29 - FR | 40 | 38 | 1,5 | 1,6 - SL | 1,3 - IT |
| | in the future | 2,92 | 3,86 - SL | 2,50 - AT | 47 | 30 | 1,5 | 1,6 - SL | 1,3 - DE |
| Difficulties in maintaining fertile soils for agriculture activities in urban areas | in present state | 2,86 | 3,33 - FR | 2,25 - SL | 60 | 32 | 1,4 | 1,5 - AT | 1,2 - IT |
| | in the future | 2,98 | 3,63 - FR | 2,25 - CH | 66 | 23 | 1,5 | 1,7 - AT | 1,4 - DE |
| Uncontrolled urban sprawl with effects on landscapes aesthetics | in present state | 3,07 | 3,56 - FR | 2,50 - DE | 74 | 23 | 1,4 | 1,8 - CH | 1,3 - IT |
| | in the future | 3,09 | 3,67 - AT | 2,67 - DE | 68 | 28 | 1,5 | 1,8 - CH | 1,4 - FR |
| Coalescence of traditional villages into suburban areas | in present state | 2,73 | 3,00 - CH | 2,50 - AT | 53 | 40 | 1,4 | 1,8 - CH | 1,3 - DE |
| | in the future | 2,91 | 3,25 - FR | 2,50 - DE | 62 | 32 | 1,5 | 1,7 - AT | 1,4 - DE |
| Loss of social cohesion as a former rural quality in the suburban areas | in present state | 2,44 | 2,78 - FR | 1,75 - CH | 36 | 60 | 1,4 | 1,6 - SL | 1,3 - DE |
| | in the future | 2,59 | 3,13 - FR | 2,00 - CH | 51 | 43 | 1,5 | 1,7 - AT | 1,3 - FR |
| Rise in attractiveness of the Alpine agglomerations for the extra-Alpine population - e.g. due to their attractive landscape | in present state | 2,67 | 3,22 - FR | 1,83 - AT | 57 | 40 | 1,5 | 2 - CH | 1,3 - DE |
| | in the future | 2,91 | 3,57 - SL | 1,83 - AT | 66 | 30 | 1,5 | 1,8 - CH | 1,4 - DE |
| Creation of high tech business parks in Alpine urban areas | in present state | 2,40 | 3,13 - FR | 1,75 - CH | 36 | 53 | 1,5 | 1,8 - CH | 1,3 - SL |
| | in the future | 2,78 | 3,29 - FR | 2,29 - SL | 57 | 30 | 1,5 | 1,8 - CH | 1,3 - IT |
| Inclusion into metropolises commuters catchment areas | in present state | 2,26 | 3,50 - SL | 1,67 - AT | 34 | 55 | 1,5 | 1,8 - CH | 1,3 - AT |
| | in the future | 2,85 | 3,50 - CH | 2,45 - DE | 61 | 28 | 1,5 | 1,8 - CH | 1,3 - IT |

- *Important phenomena in the present state*

Experts appreciated in a positive way most listed phenomena. Only phenomena as for example development of new services activities polarizing in cities peripheries, loss of social cohesion as a former rural quality in the suburban areas, creation of high tech business parks in Alpine urban areas, and finally inclusion into metropolises commuters catchment areas did not reach a majority of positive appreciations, but with some contrasts between countries.

This could mean, for example, that French experts had in mind above all metropolisation processes, which are present within the French Alps but are developing in other countries in peri-Alpine regions. Besides, French experts appreciations lead to consider that these processes have important effects in terms of maintaining fertile soils for agriculture or on landscape aesthetics, which would be less manifest in other countries, where urbanisation processes have not the same magnitude. Furthermore, average values of regional dimension of the appreciations codes show that most experts express opinions concerning their country or region, but not the whole Alps.

- *Important phenomena in the future*

Experts` appreciations do not differ significantly, whether they concern the present state or the future, since urban pressures are already obvious. However, increase in importance attached to some of the listed phenomena, which are setting up planning documents including cities peripheries, loss of social cohesion as a former rural quality in the suburban areas, and finally inclusion into metropolises commuter catchment areas can reveal some fears concerning efficient control of further urban expansion and related social changes.

For its part, growing importance attached to creation of high tech business parks in Alpine urban areas can mean that experts consider these developments are more likely to occur in the future in urban areas, even when till now they were not obvious.

- *Summary of experts comments*

Some experts insisted on certain aspects, which are not headlined through the listed phenomena. For example, they felt that, whether urban expansion is stimulated by metropolises or is more endogenous, main issues are in link with increase in commuters displacements, as far as road infrastructure is at the same time used for transit traffic. They expressed that control of urban expansion questions above all on the efficiency of the implementation of existing tools and instruments that are already provided in planning documents. Other experts reacted on some phenomena, e g coalescence of traditional villages into suburban areas, and indicated that social changes in link with urban expansion processes relate only very partly to rural versus urban lifestyle, since immigrants settling up come above from other cities.

*Experts` competence for the issue*

In spite of some differences between countries, experts felt, in general, they had a rather high competence in regard to this issue.

Experts` competence codes average values

| AT | CH | DE | FR | IT | SL | All |
|---|---|---|---|---|---|---|
| 3,20 | 3,00 | 2,75 | 2,61 | 2,25 | 2,86 | 2,72 |

### 4.2.4. Main issue Tourism sustainability

*Table of quantitative indexes - Main issue tourism sustainability*

| Phenomenon | Temporal dimension of the appreciation | Appreciation average score indexes | | | % of appreciations: | | Regional average dimension of the appreciations | | |
|---|---|---|---|---|---|---|---|---|---|
| | | General score | Highest score | Lowest score | very high of high relevance | low or very low relevance | General average dimension | Highest index | Lowest index |
| Decrease in number of arrivals from distant areas | in present state | 1,71 | 2,00 - SL | 1,55 - DE | 11 | 77 | 1,5 | 1,8 - CH | 1,5 - DE |
| | in the future | 1,83 | 2,20 - AT | 1,45 - DE | 21 | 64 | 1,6 | 1,8 - CH | 1,4 - DE |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| New accommodation capacities created by local residents | in present state | 2,14 | 2,75 - IT | 1,64 - DE | 30 | 62 | 1,4 | 1,8 - CH | 1,3 - IT |
| | in the future | 2,34 | 3,00 - SL | 1,55 - DE | 36 | 51 | 1,5 | 1,6 - FR | 1,4 - DE |
| Changes in origin of seasonal workers | in present state | 1,99 | 2,71 - IT | 1,67 - AT | 23 | 60 | 1,5 | 1,8 - CH | 1,3 - SL |
| | in the future | 2,41 | 3,00 - IT | 1,83 - AT | 41 | 39 | 1,5 | 1,8 - CH | 1,3 - AT |
| Development of innovative formula to meet fast changing tourism demands | in present state | 2,67 | 3,75 - SL | 2,13 - FR | 55 | 40 | 1,5 | 1,8 - CH | 1,4 - DE |
| | in the future | 3,30 | 3,75 - CH | 2,86 - FR | 89 | 4 | 1,6 | 1,8 - CH | 1,4 - DE |
| Concentration of agricultural subsidies on rural areas with great importance for tourism | in present state | 1,88 | 2,17 - FR | 1,00 - AT | 21 | 64 | 1,4 | 1,8 - CH | 1,3 - SL |
| | in the future | 2,15 | 2,71 - SL | 1,25 - CH | 30 | 53 | 1,5 | 1,8 - CH | 1,3 - SL |
| Efforts to contain over frequentation of high value tourism sites | in present state | 2,26 | 2,83 - AT | 1,64 - DE | 34 | 57 | 1,5 | 2 - CH | 1,4 - DE |
| | in the future | 2,88 | 3,29 - FR | 2,45 - DE | 60 | 32 | 1,5 | 1,8 - CH | 1,4 - DE |
| Reduction of negative environmental effects due to the abandonment of areas unfavourable for further tourism development | in present state | 2,03 | 3,00 - SL | 1,86 - FR | 24 | 61 | 1,5 | 1,8 - CH | 1,4 - DE |
| | in the future | 2,44 | 3,00 - CH | 2,00 - DE | 44 | 42 | 1,5 | 1,8 - CH | 1,4 - DE |
| Excessive exploitation of drinking water in tourism agglomerations | in present state | 2,28 | 3,00 - FR | 1,33 - AT | 36 | 55 | 1,5 | 1,8 - CH | 1,3 - AT |
| | in the future | 2,63 | 3,69 - FR | 1,50 - AT | 51 | 38 | 1,5 | 1,8 - CH | 1,3 - AT |
| Higher importance of soft tourism options - agro-tourism and cultural tourism as a additional source of local income | in present state | 2,44 | 2,88 - IT | 2,00 - CH | 38 | 57 | 1,5 | 2 - CH | 1,4 - DE |
| | in the future | 2,80 | 3,43 - SL | 2,17 - AT | 57 | 38 | 1,5 | 2 - CH | 1,4 - DE |
| Better possibilities for financing environmental protection measures due to economic potentials in intensively used touristy areas | in present state | 2,02 | 2,25 - IT | 1,00 - CH | 28 | 66 | 1,4 | 1,8 - CH | 1,3 - IT |
| | in the future | 2,64 | 3,29 - SL | 2,25 - CH | 62 | 32 | 1,4 | 1,8 - CH | 1,3 - SL |
| Enforcement of local culture and traditions due to increased awareness of their value in tourist areas | in present state | 2,20 | 3,67 - SL | 1,67 - AT | 27 | 65 | 1,4 | 1,8 - CH | 1,3 - SL |
| | in the future | 2,64 | 3,67 - CH | 2,17 - AT | 49 | 40 | 1,5 | 1,8 - CH | 1,3 - SL |

- *Important phenomena in the present state*

Experts were rather doubtful about the importance to be attached to the listed phenomena. They do not put really to the fore any of these phenomena, with the exception of development of innovative formula to meet fast changing tourism demands which got a correct score. In comparison, other phenomena as for example decrease in number of arrivals from distant areas and concentration of agricultural subsidies on rural areas with great importance for tourism, have been considered by some experts either as irrelevant or as of minor importance. For example, they feel Alpine tourism industry is opening to distant markets. Even higher importance of soft tourism options (agro-tourism and cultural tourism) as an additional source of local income is not considered as an important phenomenon, in the present state, with a mix between local or regional and Alpine wide appreciations.

- *Important phenomena in the future*

Some phenomena would have higher relevance or importance in the future, since they can be interpreted as possible responses to tourism issues that would have a great significance in the future, as for example efforts to contain over frequentation of high value tourism sites, higher importance of soft tourism options or better possibilities for financing environmental protection measures due to economic potentials in intensively used touristy areas. However, experts do not attach more importance in the future than in the present state to other phenomena, e g new accommodation capacities created by local residents or change in origins of seasonal workers. Moreover, relations between tourism and local cultures would remain as ambiguous as in the present state, except in the mind of Swiss experts who consider that tourism helps in enforcing awareness of local culture and traditions.

- *Summary of experts comments*

Some experts reacted on listed phenomena, arguing these are not clearly in link with tourism sustainability issues which question about concentration of tourism activities in certain intensively used areas and thus create unbalances, and on spatial planning and restrictions which would preserve tourism sites. They considered that listed phenomena focus too much on holiday tourism, excluding current leisure activities, second homes attendance or even day trips for shopping. They insisted on risks of customisation of local cultures and on tourism negative effects coming from excessive competition between local operators with insufficient links with tourism marketing. Besides, some experts evoked urban planning issues and regulations and urban pressures, which could lead to condition further developments in tourism resorts.

*Experts` competence for the issue*

Experts appreciated in diverse ways their competence for this issue, although most of them considered they were rather competent.

Experts` competence codes average values

| AT | CH | DE | FR | IT | SL | All |
|---|---|---|---|---|---|---|
| 3,20 | 3,00 | 2,85 | 3,08 | 2,25 | 2,57 | 2,82 |

### 4.2.5. Main issue Transport pressures

*Table of quantitative indexes - Main issue transport pressures*

| Phenomenon | Temporal dimension of the appreciation | Appreciation average score indexes | | | % of appreciations: | | Regional average dimension of the appreciations | | |
|---|---|---|---|---|---|---|---|---|---|
| | | General score | Highest score | Lowest score | very high of high relevance | low or very low relevance | General average dimension | Highest index | Lowest index |
| Increase in pollution in steep-sided valleys on transit routes | in present state | 3,13 | 3,50 - AT | 2,85 - DE | 81 | 19 | 1,6 | 2 - CH | 1,3 - AT |
| | in the future | 3,39 | 4,00 - AT | 3,13 - IT | 81 | 17 | 1,5 | 2 - CH | 1,3 - AT |
| Efforts to limit traffic flows in sensitive areas | in present state | 2,54 | 3,17 - AT | 2,13 - FR | 47 | 51 | 1,6 | 2 - CH | 1,4 - IT |
| | in the future | 3,14 | 3,33 - AT | 2,92 - DE | 74 | 19 | 1,6 | 2 - CH | 1,3 - IT |
| Decreasing negative effects of transport by the extension of railway transport network | in present state | 2,27 | 2,75 - IT | 1,86 - FR | 36 | 57 | 1,6 | 2 - CH | 1,4 - IT |
| | in the future | 2,64 | 3,13 - IT | 2,29 - SL | 53 | 43 | 1,5 | 1,8 - CH | 1,3 - IT |
| Internalisation of transport | in present state | 2,21 | 3,00 - SL | 1,86 - FR | 38 | 51 | 1,6 | 2 - CH | 1,3 - SL |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| prices by increasing taxes and fees for transport | in the future | 2,93 | 3,13 - IT | 2,00 - SL | 60 | 28 | 1,6 | 2 - CH | 1,3 - SL |
| Development of alternatives to individual car transport - train + bike, car sharing, regional transport cards, etc | in present state | 2,22 | 3,00 - SL | 2,00 - CH | 34 | 62 | 1,5 | 2 - CH | 1,4 - IT |
| | in the future | 2,81 | 3,33 - AT | 2,17 - SL | 64 | 28 | 1,5 | 1,8 - CH | 1,3 - IT |
| Changes in modal split of travel to work displacements | in present state | 2,14 | 2,50 - IT | 2,00 - AT | 23 | 68 | 1,5 | 1,8 - CH | 1,3 - SL |
| | in the future | 2,64 | 3,11 - FR | 1,71 - SL | 49 | 40 | 1,5 | 1,8 - CH | 1,3 - SL |
| Adaptations in vehicles to reduce GEG emissions | in present state | 2,30 | 2,86 - IT | 2,00 - CH | 34 | 60 | 1,6 | 2 - CH | 1,4 - SL |
| | in the future | 2,84 | 3,29 - IT | 2,43 - SL | 64 | 32 | 1,6 | 2 - CH | 1,5 - AT |
| Development of transport saving options meeting current needs (e-commerce, IT) | in present state | 1,75 | 2,33 - FR | 1,33 - AT | 15 | 79 | 1,6 | 2 - CH | 1,3 - SL |
| | in the future | 2,47 | 3,33 - FR | 1,83 - AT | 45 | 47 | 1,6 | 2 - CH | 1,4 - SL |

- *Important phenomena in the present state*

Experts considered most listed phenomena as of minor importance in the present state, since they do not feel they are already manifest. Only one phenomenon, which is increase in pollution in steep-sided valleys on transit routes, was considered as important by a majority of experts, whereas there was a balance between positive and negative appreciations of the importance to attach to efforts to limit traffic flows in sensitive areas.

Swiss experts appreciated the importance of these phenomena for the whole Alps, whereas experts from other countries privileged local or regional appreciations. However, these differences did not result fundamentally in differences in appreciations of the importance to be attached to most listed phenomena, since opinions were rather unanimous in favour of a minor importance.

- *Important phenomena in the future*

Differences according to the time period considered mean, in some cases, that some phenomena are to be considered as emerging phenomena, whose premises are already more or less obvious, while other phenomena, although they would gain more importance in the future, relate to trends which could become only more salient in a indeterminate future and thus are to be kept in reserve.

For the first category, examples are efforts to limit traffic flows in sensitive areas, decreasing negative effects of transport by the extension of railway transport network, development of alternatives to individual car transport, or even internalisation of transport prices by increasing taxes and fees for transport, for which most opinions are in favour of attaching importance to these phenomena in the future, in contrast to the present state. The second category would concern changes in modal split of travel to work displacements, or development of transport saving options meeting current needs, which require more radical changes in attitudes towards mobility, which are less likely to be perceptible in a foreseeable future.

- *Summary of experts comments*

Experts insisted on some difficulties to meet some important issues for transport, as for example lack of wide EU regulation of traffic flows, limited or lacking public budgets or lack of coordination between public transport operators.

They evoked besides crucial factors such as control of urban sprawl, or of second home development or of transit traffic, which are preconditions in alleviating transport pressures in the Alps.

*Experts` competence for the issue*

Experts appreciated in diverse ways their competence for this issue. Most Austrian experts felt themselves competent. However differences in competence do not result significantly in differences in appreciations.

Experts` competence codes average values

| AT | CH | DE | FR | IT | SL | All |
|---|---|---|---|---|---|---|
| 3,20 | 2,75 | 2,62 | 2,13 | 2,50 | 2,43 | 2,56 |

### 4.2.6. Main issue Innovation and competitive economic activities

*Table of quantitative indexes - Main issue innovation and competitive economic activities*

| Phenomenon | Temporal dimension of the appreciation | Appreciation average score indexes | | | % of appreciations: | | Regional average dimension of the appreciations | | |
|---|---|---|---|---|---|---|---|---|---|
| | | General score | Highest score | Lowest score | very high of high relevance | low or very low relevance | General average dimension | Highest index | Lowest index |
| Decrease of emissions by industries due to the closing down of 'dirty industries | in present state | 2,24 | 2,75 - IT | 1,92 - DE | 38 | 57 | 1,5 | 1,8 - CH | 1,4 - FR |
| | in the future | 2,05 | 2,57 - SL | 1,50 - AT | 34 | 60 | 1,5 | 1,8 - CH | 1,4 - IT |
| Increasing part of 'clean industries' and businesses - especially IT-enterprises | in present state | 2,28 | 2,75 - IT | 2,00 - DE | 38 | 60 | 1,5 | 1,8 - CH | 1,4 - FR |
| | in the future | 2,67 | 3,29 - SL | 2,23 - DE | 62 | 36 | 1,6 | 1,8 - CH | 1,4 - SL |
| Concentration of high innovative activities in already favoured areas | in present state | 2,58 | 3,25 - SL | 2,33 - AT | 49 | 47 | 1,5 | 1,8 - CH | 1,3 - AT |
| | in the future | 3,02 | 3,57 - SL | 2,67 - AT | 74 | 17 | 1,6 | 1,8 - CH | 1,3 - AT |
| Innovative potential in agriculture due to combination of traditional and modern forms of production | in present state | 2,18 | 2,43 - FR | 2,00 - DE | 32 | 62 | 1,5 | 1,8 - CH | 1,3 - AT |
| | in the future | 2,50 | 3,29 - FR | 2,00 - CH | 51 | 43 | 1,5 | 1,8 - CH | 1,3 - AT |
| New opportunities to develop niche activities | in present state | 2,54 | 2,88 - IT | 2,25 - CH | 49 | 46 | 1,5 | 1,8 - CH | 1,3 - AT |
| | in the future | 2,98 | 3,50 - IT | 2,50 - DE | 70 | 23 | 1,5 | 1,8 - CH | 1,3 - AT |
| Competition between municipalities to attract new firms | in present state | 2,63 | 3,06 - FR | 2,25 - CH | 49 | 45 | 1,5 | 1,8 - CH | 1,3 - AT |
| | in the future | 2,83 | 3,57 - FR | 2,25 - CH | 53 | 36 | 1,5 | 1,8 - CH | 1,3 - AT |
| Spreading effects from main innovation poles | in present state | 2,51 | 3,00 - SL | 2,17 - AT | 40 | 45 | 1,5 | 1,6 - SL | 1,3 - FR |
| | in the future | 2,82 | 3,20 - FR | 2,33 - AT | 57 | 23 | 1,5 | 1,6 - SL | 1,4 - DE |
| Decrease of entrepreneurial participation of the Alpine population | in present state | 1,94 | 2,50 - CH | 1,57 - DE | 11 | 66 | 1,4 | 1,8 - CH | 1,3 - DE |
| | in the future | 1,97 | 2,60 - AT | 1,67 - FR | 19 | 60 | 1,5 | 1,8 - CH | 1,3 - FR |
| Growing importance of | in present state | 2,42 | 3,75 - SL | 2,00 - AT | 40 | 51 | 1,5 | 2 - CH | 1,3 - FR |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| external - extra-Alpine investments in developing new activities | in the future | 2,72 | 3,75 - CH | 2,00 - AT | 60 | 32 | 1,5 | 1,8 - CH | 1,3 - FR |
| Stronger integration of agriculture activities in food processing industry | in present state | 2,28 | 2,57 - IT | 2,00 - CH | 32 | 60 | 1,4 | 1,8 - CH | 1,2 - IT |
| | in the future | 2,51 | 2,83 - IT | 1,80 - AT | 50 | 39 | 1,5 | 1,8 - CH | 1,3 - IT |
| Increase in supports to SMEs and assistance to local enterprises | in present state | 2,49 | 2,75 - IT | 1,50 - SL | 43 | 50 | 1,5 | 2 - CH | 1,3 - FR |
| | in the future | 2,60 | 3,00 - AT | 1,50 - CH | 51 | 40 | 1,4 | 1,8 - CH | 1,3 - FR |
| Involvement of local governments in economic development projects | in present state | 2,43 | 2,75 - IT | 1,75 - CH | 43 | 51 | 1,4 | 2 - CH | 1,3 - FR |
| | in the future | 3,02 | 3,57 - IT | 2,67 - AT | 70 | 17 | 1,4 | 1,8 - CH | 1,3 - IT |

- *Important phenomena in the present state*

There is in some cases a balance between opinions in favour of a major importance to attach to the phenomena and those in favour of a minor importance, whereas in other cases, the last ones predominate. This is the case for innovative potential in agriculture due to combination of traditional and modern forms of production, stronger integration of agriculture activities in food processing industry, and above all for decrease of entrepreneurial participation of the Alpine population, which four experts considered as an irrelevant phenomenon, while ten experts had no opinion about it.

These opinions can be interpreted as revealing on-going changes in economic activities, where 'innovation' or niche activities would play an important role, in comparison with traditional activities, even when these aspects are not very salient in the present state, since for example they feel that at the moment the Alps are not really engaged in high tech activities.

- *Important phenomena in the future*

In contrast to the present state, these changes would have noteworthy effects in the future, thus related phenomena are to be considered, as for example increasing part of 'clean industries' and businesses, concentration of high innovative activities in already favoured areas, which would not be in contradiction with another phenomenon, which is spreading effects from main innovation poles.

Another trend which is revealed by differences between the present state and the future in experts appreciations is growing importance of economic relationships with other regions, and even interdependence, in the future. Although some experts feel that support to local SMEs should not be neglected, a majority of experts think that attention should be paid to growing importance of external (extra-Alpine) investments in developing new activities, as well as to involvement of local governments in economic development projects that could catch opportunities which could come from increasing interdependence. That is why, in this context, for some experts, lack of entrepreneurship spirit in the Alps would not be an important disadvantage.

- *Summary of experts comments*

Some experts raised issues in terms of keeping high quality and well paid jobs in the Alps, where traditional activities have still a great importance and cannot adapt quickly to changes. Thus, innovative and clean industry activities can mainly be found outside the Alps.

Other remarks concerned specific financial subsidies the mountain regions which would make it possible to develop autonomously and thus limit negative effects of strong economic dependence from global market forces.

*Experts` competence for the issue*

In fact most experts confessed they did not feel themselves specialists in domains in link with this issue.

Experts` competence codes average values

| AT | CH | DE | FR | IT | SL | All |
|---|---|---|---|---|---|---|
| 2,40 | 2,50 | 2,15 | 2,06 | 2,75 | 2,00 | 2,27 |

### 4.2.7. Main issue Maintenance and development of natural and cultural resources

*Table of quantitative indexes - Main issue maintenance and development of natural and cultural resources*

| Phenomenon | Temporal dimension of the appreciation | Appreciation average score indexes | | | % of appreciations: | | Regional average dimension of the appreciations | | |
|---|---|---|---|---|---|---|---|---|---|
| | | General score | Highest score | Lowest score | very high of high relevance | low or very low relevance | General average dimension | Highest index | Lowest index |
| Development of environment friendly agriculture techniques - organic farming, etc | in present state | 2,70 | 3,25 - SL | 2,38 - DE | 60 | 40 | 1,5 | 2 - CH | 1,4 - FR |
| | in the future | 3,15 | 3,50 - IT | 2,54 - DE | 79 | 19 | 1,6 | 2 - CH | 1,4 - SL |
| Maintaining open spaces connectivity in valleys and densely populated areas | in present state | 2,64 | 3,29 - FR | 2,29 - IT | 47 | 47 | 1,6 | 2 - CH | 1,4 - SL |
| | in the future | 3,14 | 3,50 - AT | 2,83 - DE | 72 | 17 | 1,5 | 1,8 - CH | 1,4 - SL |
| Layouts regulating space consumption | in present state | 2,77 | 3,17 - AT | 2,00 - CH | 53 | 47 | 1,5 | 2 - CH | 1,4 - DE |
| | in the future | 3,20 | 3,83 - AT | 2,25 - CH | 77 | 21 | 1,6 | 2 - CH | 1,4 - SL |
| Implementation of water quality management programmes | in present state | 2,61 | 2,86 - IT | 1,67 - CH | 46 | 50 | 1,5 | 1,8 - CH | 1,3 - DE |
| | in the future | 3,23 | 3,63 - FR | 2,75 - CH | 87 | 6 | 1,5 | 1,8 - CH | 1,4 - DE |
| Participation of local population as actors in cultural events | in present state | 2,67 | 3,13 - IT | 2,00 - CH | 60 | 38 | 1,5 | 2 - CH | 1,3 - SL |
| | in the future | 2,70 | 3,00 - SL | 2,50 - CH | 64 | 34 | 1,5 | 2 - CH | 1,3 - SL |
| Courses and educational programmes oriented towards local cultures and traditions | in present state | 2,14 | 3,00 - SL | 1,67 - FR | 26 | 68 | 1,5 | 2 - CH | 1,3 - SL |
| | in the future | 2,55 | 3,00 - IT | 2,13 - FR | 47 | 47 | 1,5 | 2 - CH | 1,3 - SL |
| Involvement of non or new residents in local associations | in present state | 2,26 | 2,63 - IT | 2,00 - DE | 38 | 60 | 1,5 | 2 - CH | 1,4 - DE |
| | in the future | 2,49 | 3,00 - IT | 2,00 - CH | 49 | 47 | 1,5 | 1,8 - CH | 1,4 - SL |
| Participation of local associations to actions in other mountain regions | in present state | 1,96 | 2,38 - IT | 1,54 - DE | 28 | 72 | 1,5 | 1,8 - CH | 1,4 - IT |
| | in the future | 2,30 | 2,88 - IT | 1,69 - DE | 45 | 53 | 1,5 | 1,8 - CH | 1,4 - IT |

- *Important phenomena in the present state*

Experts appreciations of the importance to attach to the phenomena are more or less contrasted. Development of environment friendly agriculture techniques (organic farming, etc) or participation of local population as actors in cultural events are more appreciated as important phenomena than other phenomena related to local and other cultures, as for example courses and educational programmes oriented towards local cultures and traditions or participation of local associations to actions in other mountain regions, which do not seem salient phenomena.

There is a balance between diverse opinions concerning other phenomena related to natural heritage and resources, as for example layouts regulating space consumption.

Once more, Swiss experts appreciated the importance to attach to these phenomena for the whole Alps; however, differences in regional dimensions of the appreciations have little incidence.

- *Important phenomena in the future*

In experts` opinions, importance to attach to most listed phenomena will grow in the future. Experts` appreciations are more unanimous concerning some phenomena where there were contrasting opinions for the present state, as for example maintaining open spaces connectivity in valleys and densely populated areas or implementation of water quality management programmes. However, listed phenomena related to local and other cultures do not seem gain radically more importance in the future.

- *Summary of experts comments*

Since listed phenomena related to culture seemed to some experts of minor importance or not in relation with important issues, comments consisted above all in suggesting other aspects in analysing cultural issues. For example, some experts evoked the acceptance by the local population of tradition shown in tourism events. This would question about education, which would develop awareness of local culture, which is not necessarily shared by Alpine residents, especially in-migrants that develop new cultural habits. Finally, some experts expressed that culture issues should not be dissociated from natural heritage conservation issues, so far local traditions and ways of life, and even new cultural habits, are to be appreciated in regard to the degree to which they show consideration to natural heritage values.

*Experts competence for the issue*

Data express that most experts felt rather competent in this domain, even when some countries averages are higher than those of other countries.

Experts competence codes average values

| AT | CH | DE | FR | IT | SL | All |
|---|---|---|---|---|---|---|
| 3,20 | 3,50 | 2,69 | 2,33 | 2,63 | 2,43 | 2,70 |

### 4.2.8. Main issue Climate change effects

*Table of quantitative indexes - Main issue climate change effects*

| Phenomenon | Temporal dimension of the appreciation | Appreciation average score indexes | | | % of appreciations: | | Regional average dimension of the appreciations | | |
|---|---|---|---|---|---|---|---|---|---|
| | | General score | Highest score | Lowest score | very high of high relevance | low or very low relevance | General average dimension | Highest index | Lowest index |
| Changing species composition and diversity due to migration especially in summit areas | in present state | 2,21 | 2,50 - SL | 2,00 - CH | 28 | 62 | 1,6 | 2 - CH | 1,3 - SL |
| | in the future | 2,80 | 3,29 - FR | 2,40 - IT | 60 | 26 | 1,6 | 2 - CH | 1,3 - SL |
| Change of species compositions and structure of forests | in present state | 2,21 | 2,50 - SL | 2,00 - IT | 28 | 62 | 1,6 | 2 - CH | 1,3 - SL |
| | in the future | 2,83 | 3,36 - FR | 2,25 - IT | 65 | 18 | 1,6 | 2 - CH | 1,3 - SL |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| High vegetation damages due to storms and snow loads | in present state | 2,21 | 2,83 - AT | 1,75 - CH | 23 | 57 | 1,5 | 2 - CH | 1,3 - IT |
| | in the future | 2,86 | 3,50 - AT | 1,86 - SL | 55 | 21 | 1,6 | 2 - CH | 1,2 - SL |
| Higher safety risks of natural hazards - landslides, mudflows and floods | in present state | 2,75 | 3,25 - SL | 2,46 - DE | 57 | 36 | 1,6 | 2 - CH | 1,3 - SL |
| | in the future | 3,35 | 3,67 - AT | 3,17 - IT | 85 | 6 | 1,7 | 2 - CH | 1,3 - SL |
| Shortening winter seasons in ski resorts | in present state | 2,53 | 3,75 - SL | 2,17 - DE | 47 | 38 | 1,6 | 2 - CH | 1,3 - SL |
| | in the future | 3,15 | 3,83 - FR | 2,50 - IT | 66 | 19 | 1,6 | 2 - CH | 1,3 - SL |
| Higher pressure of winter tourism on protected areas in higher elevations | in present state | 2,70 | 4,00 - SL | 2,33 - DE | 51 | 40 | 1,5 | 2 - CH | 1,3 - AT |
| | in the future | 3,23 | 4,00 - CH | 3,00 - AT | 74 | 17 | 1,6 | 2 - CH | 1,3 - AT |
| Difficulties in high quality water supply and energy use of water due to lack of water | in present state | 2,07 | 3,00 - SL | 1,73 - DE | 26 | 64 | 1,5 | 1,8 - CH | 1,3 - AT |
| | in the future | 2,98 | 3,86 - FR | 2,27 - DE | 64 | 23 | 1,6 | 1,9 - FR | 1,3 - AT |
| Stronger restrictions for building in areas exposed to risks of natural hazards | in present state | 2,52 | 3,75 - SL | 2,33 - AT | 38 | 55 | 1,6 | 2 - CH | 1,4 - DE |
| | in the future | 3,30 | 3,75 - CH | 2,83 - AT | 81 | 13 | 1,6 | 2 - CH | 1,4 - SL |
| Further development of energy saving options for transport or for housing | in present state | 2,53 | 3,25 - SL | 2,14 - FR | 45 | 47 | 1,6 | 2 - CH | 1,4 - SL |
| | in the future | 3,32 | 3,62 - DE | 3,00 - AT | 83 | 11 | 1,6 | 2 - CH | 1,4 - SL |
| Higher investment in GHG-reducing technologies | in present state | 2,52 | 2,86 - IT | 2,00 - AT | 45 | 51 | 1,6 | 2 - CH | 1,4 - SL |
| | in the future | 3,16 | 3,29 - SL | 2,75 - CH | 79 | 15 | 1,6 | 1,9 - FR | 1,4 - SL |

- *Important phenomena in the present state*

Experts did not put especially many listed phenomena to the fore in their appreciations of their importance in the present state. Even higher safety risks of natural hazards (landslides, mudflows and floods, or higher pressure of winter tourism on protected areas in higher elevations, which could have been considered as obvious, did not meet a crushing majority of positive appreciations.

Thus, long term effects of climate changes, illustrated through some of the listed phenomena, as for example changing species composition and diversity, high vegetation damages due to storms and snow loads or difficulties in high quality water supply and energy use of water due to lack of water, did not seem phenomena of major importance in the present state. Difficulties in high quality water supply and energy use of water due to lack of water was even considered an irrelevant phenomenon by three experts. However, experts were less unanimous in attaching a minor importance to stronger restrictions for building in areas exposed to risks of natural hazards, to further development of energy saving options for transport or for housing , and to higher investment in GHG-reducing technologies, so far these phenomena concern possible effects of climate change on human activities, to which experts they are more sensible.

Note also that, for this issue, appreciations refer more often to the whole Alpine space than for other issues.

- *Important phenomena in the future*

In contrast to the low importance experts attached to the listed phenomena in the present state, they give a great importance to these in the future. That deals as well for phenomena related to

effects on the environment as for those related to effects on human activities, with, also for the future, appreciations often referred to the whole Alps. That is why we may consider that most listed phenomena are emerging phenomena, some one those would have effects only in the long run, while others could have already a great significance in next years, especially those related to human activities.

- *Summary of experts comments*

Comments concern the period which is to be taken into account, since some experts think that foreseeable effects will not be obvious before 10 to 20 years. Other comments suggest taking into account, within suggested phenomena, causes of climate changes, e g behaviour, increase in air emissions, etc, rather than consequences on environmental media. Lastly, some experts suggested considering emblematic phenomena, which are melting of glaciers or permafrost soils, or snow cannons, that are means to approach climate change issues.

*Experts` competence for the issue*

Some experts confessed they did not feel themselves specialists in domains in link with climate change, thus averages are a bit lower in this issue, in comparison to other issues.

Experts competence codes average values

| AT | CH | DE | FR | IT | SL | All |
|---|---|---|---|---|---|---|
| 3,00 | 3,00 | 2,67 | 2,22 | 2,25 | 2,14 | 2,49 |

### 4.2.9. Conclusions in terms of ranking of main issues

As indicated, the questionnaire invited the experts to rank the importance of Alpine main issues investigated.

Quantitative results, in terms of score indexes, which are presented in the table 4 below, come from 37 experts, since some experts did not answer this part of the questionnaire. Score indexes are averages of code values; as far as main issues were ranked through codes ranging from 1 to 8, with 1 for the most important, low score index values designate best scores, i.e. great importance attached to a given issue.

Table 4 -Ranking of main issues

| Main issue | Ranking criterion | Number of appreciations by ranking code value | | Ranking score index | | |
|---|---|---|---|---|---|---|
| | | High ranking code: 1 to 4 | Low ranking code: 5 to 8 | All countries | Best score | Worse score |
| Marginalisation of rural peripheral areas | comprehensiveness of the issue | 15 | 19 | 4,7 | 2,0 - CH | 6,3 - AT |
| | importance for regional policies | 14 | 13 | 4,5 | 2,7 - SL | 6,3 - AT |
| Maintenance of Alpine forests | comprehensiveness of the issue | 9 | 25 | 5,6 | 4,8 - SL | 6,5 - AT, IT |
| | importance for regional policies | 7 | 20 | 5,8 | 4,3 - SL | 6,8 - FR |
| Urbanisation processes | comprehensiveness of the issue | 18 | 16 | 4,4 | 3,8 - SL | 5,0 - DE |
| | importance for regional policies | 14 | 14 | 4,4 | 4 - CH | 5 - DE |

| | | | | | | |
|---|---|---|---|---|---|---|
| Tourism sustainability | comprehensiveness of the issue | 19 | 15 | 4,1 | 3,0 - CH | 5,0 - DE |
| | importance for regional policies | 15 | 12 | 4,2 | 2,2 - FR | 5,2 - IT |
| Transport pressures | comprehensiveness of the issue | 24 | 10 | 3,4 | 1,9 - FR | 5 - AT |
| | importance for regional policies | 16 | 12 | 4,2 | 3,5 - SL | 5,2 - IT |
| Innovation and competitive economic activities | comprehensiveness of the issue | 18 | 16 | 4,3 | 3,2 - SL | 5,1 - AT |
| | importance for regional policies | 19 | 9 | 3,5 | 2,0 - CH | 4,8 - FR |
| Maintenance and development of natural and cultural resources | comprehensiveness of the issue | 19 | 15 | 4,3 | 3,0 - CH | 5,5 - SL |
| | importance for regional policies | 16 | 11 | 4,2 | 3,5 - CH, DE, IT | 5,9 - AT |
| Climate change effects | comprehensiveness of the issue | 18 | 16 | 4,4 | 3,5 - DE, FR | 5,5 - AT, IT |
| | importance for regional policies | 11 | 16 | 5,1 | 2,8 - FR | 6 - CH |

In spite of their fragility, interesting conclusions can be driven from this exercise. At first, most issues are ranked in fact comparably, whereas few issues are put especially to the fore or to the end. Considering the first criterion, comprehensiveness, transport pressures are higher ranked than other issues, especially maintenance of Alpine forest, which comes to the end. Considering the second criterion, importance for regional development, innovation and economic activities is brought to the fore, while climate change effects and above all, once more, maintenance of Alpine forest comes at the end.

Second conclusion, ranking depends from the criterion taken into account. Thus, the comprehensiveness criterion leads to privilege transport pressures, since they concern most Alpine regions and issues have a sound importance in regard to other issues, as for example urbanisation processes or even marginalisation of rural peripheral areas, as well as, obviously, climate change effects. Conversely, the importance for regional development and policy criterion privileges more shorter term issues, those which are most linked to economic activities, and leaves over long term issues or issues which have been more focused on since long times in regional policies, since they concern above all rural areas.

Last conclusion, rankings differ widely between experts. That is illustrated by differences in ranking score indexes according to the country. Considering the second criterion, tourism sustainability issues are very high ranked in France, where intensive tourism industry is particularly developed, while in the same time rural peripheral areas or Alpine forests seem of a great concern in Slovenia.

However, experts make few comments or gave few explanations on the rankings they proposed. Thus, differences in ranking are not so easy to interpret. Nevertheless, diversity in experts opinions symbolizes differences in situations and between regions, and possibly lack, in the present state, of shared prospective vision of the Alps, even when everyone will agree that main issues investigated have an important significance for the future.

## 4.3. Main issues and sub-issues

Subsequent DIAMONT WPs, noticeably WP7 *Identification and selection of indicators* and WP8 *Specification and test of data for an Alpine wide information system*, will take into account the lists of relevant phenomena to look for existing indicators and data which could illustrate them, to make it possible to develop an issue-oriented approach at regions level or even locally. Obviously, besides those indicators, the planned information system will integrate common available statistical indicators and those indicators which have already developed within the Alpine Observation and Information System of the Alpine Convention, and incorporate them in a data management system. These tasks will possibly lead to refine and to precise the lists of relevant phenomena identified by the experts.

However, even when these phenomena contribute to give a concrete meaning to Alpine main issues, these issues are still expressed in general terms, and could be further detailed.

In the third round questionnaire, assessed phenomena were grouped, within each main issue, in several headings, referred to thematic domains, that helps to make more explicit these issues. These sub-issues are listed in the table 5 below. However, it appeared that even when identifying thematic domains addressed by the phenomena can help to search indicators that could illustrate them, since indicator sets are often structured in thematic domains, an issue oriented approach implies to address information rather to problems which can concern different thematic domains. In this respect, in concluding the analysis of the results of the Delphi survey, we tried to re-assign phenomena investigated in the third round or evoked in the second round to the problem fields identified in the first round form which we departed in the course of the Delphi survey.

Table 5 – Thematic sub-issues grouping investigated phenomena

| Main issue | Sub-issues |
|---|---|
| Marginalisation of rural peripheral areas | *Living conditions*<br>*Economic conditions*<br>*Agriculture activities* |
| Maintenance of Alpine forests | *Profitability of Alpine forests*<br>*Management of the resource*<br>*Multifunctionality of Alpine forests*: |
| Urbanisation processes | *Urban expansion*<br>*Urban pressures*<br>*Urban areas attractiveness* |
| Tourism sustainability | *Tourism economy*<br>*Tourism pressures*<br>*Beneficial effects of tourism* |
| Transport pressures | *Alleviation of transport pressures*<br>*New attitudes towards mobility* |
| Innovation and competitive economic activities | *Effects of structural changes in the economy*<br>*Competing advantages and disadvantages*<br>*Autonomous forms of economic development* |
| Maintenance and development of natural and cultural resources | *Natural heritage and resources conservation*<br>*Local cultures and embracing other cultures* |
| Climate change effects | *Effects on the environment*<br>*Effects on human activities* |

Table 6 presents synthetic results of this assignment exercise. It makes more explicit the main issues, and headlines some similarities between different issues, since some problems listed in the table are related to several issues, due to the fact different phenomena evoke similar problems, but in various contexts.

Table 6 – Assignment of problems to the main issues

| Main issue | Problems related to referred phenomena | |
|---|---|---|
| Alpine forests | Changes in wood species | Quality of living environment in urban areas |
| | Decrease in forest management | Environmentally friendly energy sources |
| | Forest damages | Profitability of forestry |
| | Landscape aesthetics deterioration | Climate change effects on biodiversity |
| | Threats for biodiversity in high urban pressure areas | Climate change effects on environmental media |
| | Natural hazards prevention function of forests | Pressure on water resources |
| | Recreative functions of forests | |
| Climate change | Vegetation damages due to natural events | Environmentally friendly options in human activities |
| | Climate change effects on natural hazards | GHG reducing options |
| | Vulnerability to natural hazards | |
| Heritage | Environmentally friendly options in agriculture | Local culture and traditions valuation |
| | Threats for biodiversity in high urban pressure areas | Social and cultural changes |
| | Pressure on environmental media | Partnership with other mountain areas |
| Innovation Competitiveness | Economic dependence of agriculture from refunds and subsidies | Polarization of manufacture activities |
| | Dissemination of innovative formula in agriculture | Polarization of business services activities |
| | Changes in agriculture production / operation processes | Polarization in innovative activities |
| | Pressure on water resources in intensive agriculture areas | New markets for local products |
| | Areas in industrial conversion | Access to telecommunication networks |
| | Traditional economic activities | Economic dependence from extra Alpine firms |
| | Air pollution due to manufacture activities | Energy dependence from extra Alpine areas |
| | Attractiveness for economic activities | Local competition for economic development |
| | Modern economic activities | Promotion of local SMEs |
| | Environmentally friendly energy sources | Pull effects of the 4th sector on the Alpine economy |
| Marginalisation | Change in fauna flora in peripheral areas | Attractiveness of peripheral areas |
| | Agricultural land use abandonment | Economic development in peripheral areas |
| | Maintenance of agriculture in peripheral areas | Financial resources adequacy in peripheral areas |
| | Polarization in agriculture land use in peripheral areas | Service provision in peripheral areas |
| | Polarization of agriculture subsidies | Demographic decline in peripheral areas |
| | New markets for mountain agriculture products | Social and cultural change in peripheral areas |
| | Agriculture diversification | Social inequities in relation with transport |
| | Dissemination of innovative formula in agriculture | Urban-rural complementarities |

| | | |
|---|---|---|
| Tourism | Influence of the macro-economic environment on tourism activities | Market share of Alpine tourism |
| | Change in tourism demand | Market share of local tourist operators |
| | Change in tourism services | Air pollution in high tourism pressure areas |
| | Bottlenecks in developing tourism activities | Environmental effects of tourism polarization |
| | Polarization of tourism activities | Pressure on water resources in tourism areas |
| | Profitability of tourism activities | Local beneficial effects of tourism activities |
| | Seasonality in tourism activities | Local culture and traditions valuation |
| | Service provision in tourism areas | |
| Transport | Threats for biodiversity due to infrastructure | Promotion of public transport |
| | Air pollution due to traffic | Public transport quality |
| | Environmental effects of transport alleviation | Social inequities in relation with transport |
| | Alpine traffic management | Transport costs for the society |
| | Personal mobility | Transport infrastructure development |
| | Attitudes towards individual passenger transport | Transport saving options |
| | New technologies for transport | |
| Urbanisation | Threats for biodiversity in high urban pressure areas | Effects of metropolitan development |
| | Landscape aesthetics deterioration in high urban pressure areas | Polarization in economic development |
| | Pressure on water resources in high urban pressure areas | Polarization in population location |
| | Natural hazards in high urban pressure areas | Polarization in service provision |
| | Limiting space consumption in high urban pressure areas | Urban areas attractiveness |
| | Control of urban expansion side effects | Quality of living environment in urban areas |
| | Change in activities in urban areas | Social and cultural change in urban areas |
| | Control of urban expansion effects | Social unbalances within urban regions |

# 5. Conclusions: A specification of Alpine main issues

Main results of the general analysis of Alpine issue performed throughout WP6 will be briefly summarized below. They consist, more or less, in a specification of Alpine main issues, which puts to the fore important questions against these issues to which development in the Alps is faced or will be faced in the future and suggest relevant phenomena to observe against these questions.

- *Main issue Marginalisation of rural peripheral areas*

Rural areas in the Alps currently develop in very different ways. In the catchment areas of urban regions and agglomerations some of them are undergoing periurbanisation processes. Others do capitalise on touristy development. This main issue focuses only on such rural areas which are comprised neither in periurbanisation processes nor in touristy development.

This type of rural area, regarded as disfavoured areas by the EU, is characterised by the abandonment of traditional agriculture and often by population decline and aging, due to emigration of younger people. On the one hand these zones suffer push effects due to the lack of attractive economic alternatives to agriculture and the decrease of public and private services. On the other hand they are influenced by pull effects arising from increasing social and economic possibilities offered by urban and suburban areas in or outside the Alps. Nevertheless, these unfavourable conditions create new opportunities: structural changes and modern communication technologies create new economic and social perspectives. The abandonment of agriculture is also the chance of developing and expanding more natural habitats and new wilderness.

In this respect, the experts feared that public subsidies may indeed slow down land abandonment processes, but definitely will not prevent them. Main threats are depopulation, aging and isolation, since for economic reasons, services concentrate in more central areas. For the future it will be crucial to reduce these disparities by improving the competitiveness of rural areas. Agricultural production, for example, could be more efficiently combined with tourism activities to gain second income sources, specific regional products should be labelled and brought to market and adequate education as well as access to vital services (like health care) have to be offered in rural areas.

Thus, relevant phenomena to assess further development of this issues would be for example the importance of second income sources in agriculture holdings, the implementation of brands or labels for agriculture products, keeping public funds in favour of rural development, generation of off-farm jobs, and providing locally access to basic services, notably for old persons.

- *Main issue Maintenance of Alpine forests*

The decline of agriculture in and the marginalisation of rural areas is expected to lead to an extension of wooded areas. Regarding the further development of Alpine forests these tendencies are to be seen in the context of the three functions which are taken by forests.

Considering the function of recreation, the increment of forest area is creating new wilderness regions providing habitat for woodland species. These wilderness areas also are of high attractiveness for eco-tourism and recreation.

But Alpine forests also take economical and protecting functions. The first ones are dependant on external parameters, as for example world prices of wood resources, and also on internal parameters, as for example demand from local wood manufacturing industries. At the moment, profitability of Alpine forests is rather low, but in the long run, a growing demand for wood is expected, which is a renewable resource. The latter ones are strongly dependent on a sustainable and regular management of forest areas, in particular at steep slopes and in the vicinity of settlements, traffic routes or other technical constructions (e.g. tourism centres or water reservoirs).

Nevertheless, forests which are of high importance for the protective function are often only partly attractive for economical or recreation uses; the expansion of forests might also foster a concentration of economically based forest management on certain areas. Thus, main concerns are means to fulfil these three functions and, in particular, to cover the costs of a preventive forest management also in areas of low economic outcome.

In experts views, main questions to deal with are means all ensuring the Alpine forests multifunctionality that is their productive, recreational, ecological and protective functions. The on-going expansion of forests cover in the Alpine regions is seen as a chance to recreate sanctuaries for forest habitats. From an economical point of view, the profitability of mountain forests is still rather low at the moment. But the development of biomass energy may reveal new income opportunities in the future. However, maintenance of protective function will remain an important issue in areas where this function is not supplemented by other functions that would help to valuate the forest cover.

New uses of the forest resource could be an emerging phenomenon, which could have important effects in the future. At the moment, attention is to be paid to the cost of an efficient multifunctional management of Alpine forests, all the more management costs tend to increase due to stronger requirements concerning natural hazards prevention, and that climate change effects may create important disruptions in the future.

- *Main issue Urbanisation processes*,

Alpine cities gain more and more in importance in terms of economic and social development. Due to the concentration of population, services, infrastructure and economic performance the Alpine cities provide comparatively attractive conditions for investment and innovation and become important economic focal points within the Alps. In this regard they are generally comparable with extra-Alpine cities and have to assert their position against the agglomerations outside the Alps.

At some places the expansion of Alpine agglomerations is strongly linked with spatial problems due to the limited area available in valleys and basins. Furthermore, urban expansion always comes along with negative environmental impacts such as fragmentation of ecosystems, loss of natural and semi-natural biotopes, contamination of air, soil and water as well as noise pollution.

In this context, urban sprawl means the expansive, either explosive or step by step, growth of agglomerations leading to new spatial structures. Within the agglomerations the developments in the core cities and the surrounding suburban areas differ. Besides, rural areas or local centres located outside agglomerations perimeters enter into stronger interrelationships with cities, that makes them, at first, more dependant from these for their future development.

Experts consider the Alpine agglomerations will not cease to attract more people in the future since they offer job opportunities and act also as cultural centres located in vicinity of natural environment. Yet, pollution, noise or the high costs of living do not significantly reduce their attractiveness. However, the urban sprawl results in an increasing competition for favourable lands in the valleys. Some experts consider the land use pressure, caused by housing and industrialised agriculture, a minor threat than some decades ago, since the most severe landscape changes happened already in the past and land planning nowadays makes it possible

to cope with negative side effects. Another issue underscored by the experts is territorial inequities, resulting from growing polarization of population, activities and services in central urban regions, leaving out smaller centres and more distant areas.

Against this issue, experts attach importance to phenomena as for example setting up planning documents for whole urban regions, enhancing co-operation with metropolises or creating new development nodes, as for example high tech activities parks that could contribute to a wider dissemination of innovative technologies.

- *Main issue Tourism sustainability*

The Alps are regarded as the most frequented coherent recreation area in central Europe. Nevertheless tourism in the Alps is - from the economic point of view – an often overestimated sector. The highly developed touristy centres are concentrated on some locations, where tourism dominates the whole local or regional economy due to the good natural and infrastructure conditions (i.e. concerning sufficient snow cover). However, in other regions exists no or an only very decentralized tourism infrastructure, which is economically of inferior importance.

The whole tourism sector in the Alps faces immense pressure by competition on the international as much as on the inner-Alpine level. On the one hand, this results in the abandonment of tourism infrastructure in locations, which cannot compete. On the other hand, there is a constant process of concentration and intensification of tourism supply. As a positive effect, this can result in economic investment power and high utilisation rates and enable tourism enterprises to follow the permanently changing and fastidious tourist and leisure demands. But it also leads to serious disadvantages such as ecological and social impacts, as (over-) development tends to overstrain the existing structures. That is why tourism steers in the direction of further decentralization, even if, agro-tourism is not as visible as the 'industrial' tourism sector.

The experts referred to the coexistence of different forms of tourism. On the one hand, there is a powerful tourism industry, which has to invest and find new markets to be able to compete with other destinations. Climate change effects will force this industry to concentrate winter tourism in higher elevation resorts. On the other hand, there are small scale tourism activities, based on certain niches, like agro-tourism or hiking. The experts predicted a rising demand for agro-tourism, although it will never become a mainstream in tourism development. Limits in capacity are still not reached, but some promising solutions are hampered by a lack of professional skills of the suppliers. Often leisure activities result in over-frequented sites which call for efficient solutions to cope with these pressures on landscapes and nature.

Important phenomena to observe would be capacity to develop new formula in response to change in tourism demand, in combination with efforts to limit over-frequentation of nature sites and to limit excessive pressures on water resources in tourism resorts. Another relevant phenomenon would be widening the dissemination of benefits from tourism activities, in favour of local farmers or residents.

- *Main issue Transport pressures*

Even if the proportion of transit traffic is low in the whole Alpine transport, its concentration on few single supra-regional and supra-national corridors (crossroads) has to be seen as a unique phenomenon in whole Europe. The functional interconnections of the Alpine economy with the extra-Alpine and global markets will intensify more and more in the future, leading also to an increasing demand for transport. In this context further infrastructure development is expected as part of the European transport policy, which aims to strengthen the international transport corridors to the eastern European countries.

The quantity and the negative effects of inner-Alpine traffic are often underestimated in comparison to the trans-Alpine traffic. Due to the fact that the individual mobility is increasing and the tourists habits and demands are changing (decreasing duration of stay, higher frequency of stays), the volume of inner-Alpine traffic is also growing. As traffic infrastructures are well developed on the transit corridors, traffic induced by tourism and leisure as much as inner-Alpine traffic add partly to the supra-regional transport on a large scale. As a consequence population and environment in these regions suffer strongly from the impacts caused by the high traffic densities.

On the one hand the main issue aims to describe the development of passenger and freight transport on the main Alpine transit corridors (including rail and road transport) as much as its impacts on the environment (especially noise and air pollution), economy (establishment of enterprises along the corridors) and society in the vicinity of the transport corridors. On the other hand inner-Alpine, tourist and leisure transport are considered as they contribute to the major part of the whole Alpine traffic.

Experts opinions on transport pressures are widely consensual, since they expect an increase in traffic on transit routes and thus were in favour of severe measures to limit traffic flows, like EU wide regulations, internalisation of costs of transports trough taxes or fees or the extension of the railway network, since they do not foresee possible changes attitudes against mobility and are rather doubtful on effects of measures that would promote public personal transport. However, since transport flows contribute also to ozone depletion, experts did not miss to recommend to observe changes in attitudes in favour of less polluting transport options

- *Main issue Innovation and competitive economic activities*

This main issue focuses on the overall development of old and new economic sectors (except tourism) in the Alps, its dependence on social, environmental, technical, infrastructure and political conditions and on the questions, to which extent the Alps develop to a self contained economic area.

With regard to this issue, in some valleys and basins the Alpine agriculture meets favourable conditions of production similar to those outside the Alps, which led to develop an 'industrialised' agriculture, characterised by a high level of specialisation promising high economic profit. Nevertheless it is not very labour-intensive, so it does not provide places of employment. Concerning its environmental impacts, industrialised agriculture in the Alps does not differ from extra-Alpine agriculture in principle. Only land-use conflicts can be more serious because of the high concentrations of different spatial demands in the valleys and basins of the Alps.

For its part, historically industry played a prominent role in the economic development of the Alps. During the 19$^{th}$ and 20$^{th}$ century nearly all large and easy accessible longitudinal valleys in the Alps have been industrially developed. In the meantime several former advantages (like labour surplus, direct access to hydropower and mineral resources) are no decisive location factors for modern enterprises any more. However, trade and industry remained an important and often underestimated part of the Alpine economy. That is why, due to its economic importance, crises in industrial development have serious consequences for the economic stability of Alpine regions

A great question consists in the dependency of many companies from headquarters outside the Alps. Thus, the risk of abandonment of Alpine branches in cases of economic crises is evident. Otherwise there also exist new perspectives for entrepreneurial evolution. Thanks to an increasing independence of modern enterprises from distances and material transport also relatively remote locations can gain attractiveness e.g. for consulting and service enterprises such as much as high specialised component suppliers. Developing these perspectives primarily depends on the innovative potential in the Alpine regions, and on the capacity of Alpine firms to catch new development opportunities in line with global market orientations.

Experts` opinions revealed on-going changes in economic activities, where 'innovation' or niche activities would play an important role, in comparison with traditional activities, even when these aspects are not very salient in the present state, since for example they feel that at the moment the Alps are not really engaged in high tech activities. In contrast to the present state, these changes would have noteworthy effects in the future. Another challenge is growing importance of economic relationships with other regions, and even interdependence, in the future. Even when support to local SMEs should not be neglected, attention should be paid to growing importance of external (extra-Alpine) investments in developing new activities, as well as to involvement of local governments in economic development projects that could catch opportunities which could come from increasing interdependence.

- *Main issue Maintenance and development of natural and cultural heritage*

Natural and cultural assets are obviously of great importance in Alpine region development, which can be assessed in different manners. The importance of Alpine natural and cultural heritage is widely recognised, as the Alps are an unique space in Europe, with distinctive characteristics that have been maintained since times through a careful use of Alpine natural resources and a high consciousness of Alpine identity. Due to changes in society, increases in communication, tourism flows, and also due to higher human pressure in some parts of the Alps, there is a greater awareness of the flimsiness of both natural and cultural heritages, and a risk of progressive loss of the sense of values attached to it.

Reactions to these, in terms of protective measures, may lead to conflicts in interests, thus efforts have been made to find solutions that could ensure a balance between development expectations and maintenance of Alpine original values. In fact, they call for innovative solutions, that will consider that Alpine heritage is nor static nor to be musealised, but can develop, in line with residents aspirations to live in an high value environment and at the same time to take all potential advantages of modernity.

Experts` appreciations on this issue were more or less in contrast to each other. They underscore the development of environment friendly agriculture techniques or the participation of local population as actors in cultural events, but there is a balance between diverse opinions concerning other phenomena related to natural heritage and resources, as for example layouts regulating space consumption or acceptance by the local population of traditions shown in tourism events. However, they consider that education is one of the key-factors to raise awareness for local culture, which is not necessarily shared by Alpine residents but often more perceived by immigrants. However, they had some difficulties in identifying emerging phenomena which would mark this issue in the future.

- *Main issue Climate change effects*

The intricate topography of mountain environments complicates weather patterns and confuses climate models, making it more difficult to project the specific impact of climate change on these regions. Nevertheless, it is clear that climate change will add to the current stress factors on the Alps and its impacts will partly differ from those outside the Alps due to the specific conditions of Alpine environment and economy.

This main issue on climate change focuses on the possible impacts of climate change to men and Alpine biosphere. That means, that not the often discussed details of the predicted changes of temperature and precipitation regime are of main interest, but rather the ecological, economic and partly also the social consequences of these changes.

A higher frequency and intensity of hazardous events will have strong impacts e.g. on the economy and on settlement structures. But less obvious changes of natural conditions may influence the economy an even more serious way. For example, the rising temperature, shorter periods of snow cover and a even in some cases declining stability of soils have serious

implications for the skiing industry. Drier conditions especially in summer would undermine energy and water supplies, a general melting of the permafrost would make the ground less firm and lead to difficulties for existing transport and housing infrastructure.

Although some of these effects are not predictable on a regional scale, changing rainfall regimes are expected to happen in combination with climate warming. Experts agreed that these changes can have severe consequences in terms of natural hazards or a loss of biodiversity. Thus, the experts recommended observing carefully certain evidences, such as shortening of winter ski seasons or frequency of extreme events like intense rainfalls or floods. But they also warned to take preventive action now, like the implementation of energy saving options in public and private transport or housing.

*To conclude, experts focused on aspects which seemed of utmost importance in the Alpine context, and will determine its future development, leaving out other aspects which are to take into account but which are not specific to the Alps. For example, they did not focus so far on social inequities in link with unemployment or lack of access to tertiary education. Conversely, they focus on territorial unbalances within urban or rural regions, which are not so far focused on in the ESDP. This is one of the reasons why DIAMONT decided to focus, in following tasks, one an important and comprehensive issue revealed through the outcomes of WP6 analyses, which is 'local centres and fringes between competence and cooperation'.*

# Appendix 1 – First round questionnaire


## Alpine issues general identification

**Country :**

**Expert :** Scientist which domain?
Politician/elected
Member of organisations of the Alps
Member of ONG
Professional
Civil servant
Other (specify)

### Agriculture, forestry, nature and rural landscape

Nature and rural landscape are the most prominent resources in the Alpine region. From times, they have been affected by human activities exerted, notably agriculture and forestry; since last decades, their main characteristics and their diversity are less and less upheld by human pressure.

- Which are according to your opinion the main issues with which the Alps are at present confronted in this domain (for example, the agriculture land abandonment, the agricultural mono-activity, the ageing of forests, the absence of recognition of the value attached to the open spaces or to the landscapes in land planning documents, etc)?

| |
|---|
| |

- Do you think that these issues will go by aggravating or by easing during the next years (for example, accentuation of the competition between farm produces, acceleration of the consumption of agriculture surfaces, etc)? Do you anticipate other issues with which the Alps will then be confronted (for example, effects of the climate change on the variety of the cultivated plant species)?

| |
|---|
| |

### Tourism, leisure activities and sports

The tourism is not only an economic activity, but it also has cultural and social very important dimensions in regard with development opportunities it offers in the Alps. On the other hand, it also depends on an intact nature; therefore, it refers to the various dimensions of the development and the living conditions in the Alps. From their part, the new sports practices confront planners, defenders of the nature, investors and tourist operators with new questions.

- Which are according to your opinion the main issues with which the Alps are at present confronted in this domain (for example, the over-concentration of the equipment and of the frequentation in limited number of tourism resorts, stations, the development of uncontrolled practices which are prejudicial to the environment, etc)?

- Do you think that these issues will go by aggravating or by easing during the next years (for example, increase of the competition with the other tourist destinations, the development of short duration stays, etc)? Do you anticipate the other questions with which the Alps will then be confronted ?

## Mobility, accessibility and transit

Transport issues concerns directly the Alpine populations, in connection notably with the excessive nuisances which the traffic of transit implies for certain corridors. Another subject which requires the attention is the volume and the effects of the intra-Alpine traffic. Furthermore, these issues and that of accessibility to goods and the services raises questions concerning land planning and regional development concepts, urbanisation modes, about the quality of infrastructures and about the local supply of basic services.

- Which are according to your opinion the main issues with which the Alps are at present confronted in this domain? Can you indicate, according to you, which factors play a role determining face to face of these issues (for example, the integration of markets, the socio-economic development and that of leisure activities, the absence of alternative solutions of the road transports, etc)?

- Do you think that these issues will go by aggravating or by easing during the next years? Do you anticipate the other questions with which the Alps will then be confronted ? Which factors will possibly, according to you, alleviate or strengthen probably the pressures linked with transport in the Alpine region during the next years (for example, decoupling of the economic growth and the evolution of transport, permanent increases of the prices of fuels, development of the piggy back traffic, new developments of settlements away from the centres, etc)?

## Population, living conditions and cultural identities

Promotion of cultural and social identities of the population, guarantee of its fundamental resources and of the living environment of the inhabitants, as well as equality of chances are common objectives of European or regional policies, that concern the Alps as well as other regions. The question is how the issues that refer to these objectives can be expressed specifically in the Alpine region.

- In reference to more or less general issues in these domains, and to the objectives which could ensue from, which are according to you the main difficulties or the main problems with which are confronted the Alps (for example, demographic decline in some places and over-concentration of population in other places, urban

expansion effects, ageing population, differences in living conditions and households resources within the Alpine region, the way in which cultural references merge into more common references, the maladjustment of the offer of current services to the needs for the residents, etc)?

- Do you think that these issues will go by aggravating or by easing during the next years, and what could be their possible consequences (for instance, the accentuation of the social splits within the population, disappearance of Alpine cultural references)?

## Natural resources, natural hazards

Due to their physical and climatic characteristics, the Alps are endowed with a vast hydrological potential, which constitutes an important resource at the European scale. On the other hand, as in any mountain zone, Alpine soils are relatively fragile. Besides, natural hazards are present almost everywhere. Moreover, atmospheric pollutions generate particularly important nuisances in certain Alpine valleys. Besides, the characteristics of the Alps impose to take particularly care of the nature and of the landscapes in the domains of the production, the distribution and the use of the energy and in that of waste collection and treatment.

- Which are according to your opinion the main difficulties or issues with which the Alps are at present confronted within the aforementioned domains (for example, the eutrophication of lakes, the decline of the quality of surface or ground waters, lack of efficient prevention of natural hazards, etc)?

- Do you think that these issues will go by aggravating or by easing during the next years (for instance, increase of air pollution in transport corridors)? What could be their possible consequences?

## Economic development cross issues

Sustainability means also forms of economic development that do not increase pressures on resources and that ensure competitiveness and economic attractiveness of Alpine territories. Unbalances may come from over-specialisations or from intensification of the competitions with other territories. There may be many other causes, that may have particular effects in the Alps.

- Which are according to your opinion the main difficulties or issues with which the Alps are at present confronted for their economic development (for example, lack of accessibility to main economic centres or markets, lack of economic promotion of the Alpine territories, difficulties in ancient industries restructuring, etc)?

- Do you think that these issues will go by aggravating or by easing during the next years (for instance, decline in agriculture or tourism sector, etc)? What could be their possible consequences?

## Other cross issues

Sustainability raises also cross issues in other domains. We can imagine that the regulation of land uses changes can be an important issue for local planning. More generally, the promotion of the sustainable development of the Alpine space and of its regions requires the implementation of sector policies coordination tools. Besides, it requires that the local population is to be in position of defining its own project of social, cultural and economic development and of participating in its implementation, in the existing institutional framework.

- Face to these questions or to other cross questions, as for example governance of the mountains, legal situation of European mountain, rule of economic, public and environmental policies for the local Development, financial resources needed to steer development sustainability, which are, in you opinion, the essential factors that lead to failures or blockings in the application of sustainability of development?

- Can you quote some initiatives that would help to in order to overcome these blockings? Do they have chances to develop during next years?

## Additional issues / comments

Is there any other issue, not included in the proposed domains, that you think relevant for the Alpine regional development, or is there any general comment that, at the end of this questionnaire, you would like to make?

# Appendix 2 – Second round questionnaire

## *Domain: Population & society*

***Summary of experts opinions on issues in the domain***

The accelerated aging of population, the concentration of people in favourable sites and seasons, the exodus from peripheral and higher locations, the immigration of new residents seeking accommodation for retirement or recreation and the difficulties to integrate them to their new social and natural environments were identified as mayor issues by the experts. It was clearly stated, that most of these processes differ in time and space and are caused by complex social and economic forces. The urban growth and sprawl and the emigration of the younger and better educated parts of the population to Alpine urban areas and to the metropolises outside the Alps are mentioned in this context.

Society in the Alps is facing the loss of cultural diversity in terms of traditions, values, dialects and customs. This get apparent through the standardisation and globalisation of lifestyles. Increasing social disparities partly re-enforced by the crisis of Alpine agriculture and industry and the remarkable wealth gap between local and immigrated population are identified as striking tensions for the social balance within the Alps. As participation at local and regional level, as well as the regional involvement in national democratic decisions are still low, personal and "Alpine" interests have difficulties to be expressed and acknowledged.

***Three theses for Population & society***

**First thesis**

***The dimensions of aging in the Alps do not differ significantly from aging trends outside the Alps. But within the Alps aging, accelerated through the immigration of retired persons, has more polarising effects on the development of population and economy than in the Extra-Alpine regions.***

**Appreciation**

| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
|---|---|---|
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |

**Causes and consequences:**

**Main arguments for approval or rejection and possible reformulation of the thesis:**

*I estimate my competence on this thematic field is:*

☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor*

☐ *I have no opinion on this thesis*

| **Second thesis** | | |
|---|---|---|
| ***Due to the ongoing concentration of economic and political power in the Alps (urbanisation, empowerment of agglomerations) the spatial and social disparities are polarising. At the same time there is a process of an Alpine-wide standardisation of lifestyles. The above mentioned processes provoke significant social tensions and changes in rural-urban relationships.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

| **Third thesis** | | |
|---|---|---|
| ***The heterogeneity of the different social groups (traditional and modern oriented groups) in the Alpine space and its attractiveness bears the great potential of innovative initiatives. To be able to use this potential there is a great need for communication and participation processes at the local level to exchange ideas and visions.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

## *Domain: Agriculture & forestry*

***Summary of experts opinions on issues in the domain***

Main causes of decline of agriculture are identified as a lack of competitiveness of mountain agriculture face to lowland farming, due to natural conditions, in a context of market saturation, prices drop and increasing competition between agricultural products, especially in markets that are far away from production sites. Besides, farmers are not sufficiently paid for collective services they render to landscapes. Thus degradation in agriculture economic conditions, combined with progressive ageing of the farming population, leads to decrease in agriculture land uses, notably in pastoral stock farming, and even agriculture land abandonment, as in high altitude areas, or in some cases changes in more competitive land uses, as for building. All these results in disappearance of the rural landscape and decline of the meaning of agriculture as a backbone of the rural economy. Reactions to degradation of economic conditions, through modernisation or changes in production methods have in turn important consequences, in terms of landscapes or diversity of cultivated species, development of new production methods or intensification.

In the Alps are observed two trends in context with forestry: In better accessible areas and forests owned by state authorities, there is an increasing industrialisation of logging and increase of mono-cultured forests, whereas in large parts of the Alps, the low cost-benefit relation results in decline of forest maintenance and over-ageing of mountain forests. The last mentioned development is enforced by private ownership

***Three theses for Agriculture & forestry***

**First thesis**

***Although decline of agriculture has already taken place all over the Alps, the difference between marginal and favoured areas is more and more pronounced. This results in large scale land abandonment in steep and remote regions, whereas the valley bottoms and plains face strong competition between industrialized agriculture and urban sprawl. In spite of singular innovative initiatives and subsidies for maintaining the landscapes the process is very unlikely to be stopped.***

**Appreciation**

| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
|---|---|---|
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |

**Causes and consequences:**

**Main arguments for approval or rejection and possible reformulation of the thesis:**

*I estimate my competence on this thematic field is:*

☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor*

☐ *I have no opinion on this thesis*

| **Second thesis** | | |
|---|---|---|
| ***Due to global market conditions, mountain forests are less and less attractive from the economic point of view. Therefore forest management is decreasing, leading to a natural succession. During intermediate phases of this succession potential risks increase. Only in the long-run the more natural structured and composed forests will be ecologically more stable, more attractive for recreation and tourism and more valuable as natural heritage.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

| **Third thesis** | | |
|---|---|---|
| ***Large scale abandonment of managed land is a great risk for the development of tourism and recreation (change of open land into forested). Therefore the tourism industry has an important role to support generously agriculture.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

## *Domain: Mobility & transport*

***Summary of experts opinions on issues in the domain***

The Alps have to cope with massive increase of mobility and of transport flows, that result from different causes, as for example increases of dependence in terms of jobs and services of rural lands on urban centres or cities, increases in tourism or leisure displacements, as well as growth of transit traffic through the Alps valleys. Thus mobility and transport flows seem out of control, and result in high pressures, especially air and noise pollutions, concentrating in main transport axes and transit routes, while in the same time the most mountainous areas or secondary valleys suffer from inadequate transport links and access.

Solutions to these problems have to take into account unfavourable structural conditions that increase costs of infrastructure and the absence of means of transport that would be an alternative to the road mode, together with increasing opposition of the political and ecological sectors to infrastructure development the Alps, to improve accessibility and enhance Alpine integration while reducing at the same time reduce social as well as ecological charges caused by transport and mobility.

***Three theses for Mobility & transport***

**First thesis**

***The attitude that people have towards private transportation does not change in the direction of higher use of public transportation neither in the field of inner Alpine traffic nor of transit traffic. Changes are not apparent in spite of all incentives to promote public transport.***

**Appreciation**

| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
|---|---|---|
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |

**Causes and consequences:**

**Main arguments for approval or rejection and possible reformulation of the thesis:**

*I estimate my competence on this thematic field is:*

☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor*

☐ *I have no opinion on this thesis*

| **Second thesis** | | |
|---|---|---|
| ***The price of petrol is rising and may exceed USD100 per barrel in the near future, causing a huge reduction of mobility. This strengthens the depopulation of remote areas and may even slow down processes of sub-urbanisation, as these trends provoke a concentration of traffic in the main valleys and densely populated areas.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

| **Third thesis** | | |
|---|---|---|
| ***On one side, development in new transport technologies (e.g. hydrogen, electrical cars, and hybrid technologies) find a broader application connected with the suitable infrastructure, that enables strong reduction of air and noise pollution. On the other side, the problems of land used for traffic infrastructure and of landscape fragmentation cannot be solved efficiently.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

## *Domain: Recreation & tourism*

***Summary of experts opinions on issues in the domain***

Tourism activities have to deal with increase in competitions with other destinations and to adapt to on-going changes in demand, thus experts identify quality of tourism services, as well as development of eco-tourism activities as main issues to maintain attractiveness and competitiveness of Alpine resorts. Thus they are sensible to unbalances in tourism development, like seasonal and spatial concentration of tourist flows, price rise of tourist services and facilities, or growing opposition between mass tourism development and demand for high quality environment, and to difficulties for local tourism enterprises to resist to the competition of the outside operators.

On the social point of view, tourism development has important consequences in terms of accommodation problems for the local residents, tax burden and increase of the cost of living for the local community, and changes in original features and lifestyles in mountain villages. In the same time, increases in environmental pressures and harmful to the environment activities have negative effect on visitors interested to the quality and authenticity of the place. That calls for a more efficient regulation of land uses and for raising awareness of the importance of maintaining a good quality environment.

***Three theses for Recreation & tourism***

**First thesis**

***In summer tourism, economic stagnation in the countries the tourists come from causes a decrease in demand for fitness and recreation tourism, while at the same time agro tourism, which creates lesser added value, experiences a rise in demand but is already approaching its capacity limits.***

**Appreciation**

| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
|---|---|---|
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |

**Causes and consequences:**

**Main arguments for approval or rejection and possible reformulation of the thesis:**

*I estimate my competence on this thematic field is:*

☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor*

☐ *I have no opinion on this thesis*

| **Second thesis** | | |
|---|---|---|
| ***In areas with high winter tourism value, industrial tourism (skiing, snowboard…) defines the market and concentrates tourists flows and capital and seasonal employment opportunities, while soft tourism (hiking, snowshoe or Nordic walking…) is rather considered to be a niche and not the mainstream in tourism development. This reinforces competition in mass tourism, with an increase in risks of environmental hazards.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

| **Third thesis** | | |
|---|---|---|
| ***Winter or summer tourism employment opportunities and incomes benefit only partially to the farmers and to the residents. This lack of integration leads to conflicts between tourism actors and the rest of the population.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

## *Domain: Energy, industry & services activities*

***Summary of experts opinions on issues in the domain***

As in other areas, in a context of globalisation in the production of economic goods, traditional industry is disappearing, mined mineral resources are declining, while comparative advantages of Alpine hydro-energy resources are reducing. Development of new economic activities depends more and more on external investment and is hampered in the Alps by several factors, among which lack of suitable areas for production facilities, inadequate labour supply and fragmentation of enterprises, costs for energy, communication and transportation services, and inadequate economic promotion of the Alps.

For these reasons, Alpine mountain areas suffer lack of competitiveness compared to enterprises and institutions of the urban areas. These concentrate economic activities and develop interdependence with the European and world economic centres, while peripheral areas are left with low value industrial and tourist sectors. Solutions are to be found to develop an identity based on high value added products or to disseminate innovative production and communication technologies that would facilitate the economic integration of the Alps.

***Three theses for Energy, industry & services activities***

**First thesis**

***The energy production in the Alps is still mainly based on the hydro-electrical potential, whereas consistently increases in energy importation, even from third countries, restrain the opportunities to develop in the Alps other clean energy options (e.g. biomass fuel, photovoltaic, solar, geothermic).***

**Appreciation**

| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
|---|---|---|
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |

**Causes and consequences:**

**Main arguments for approval or rejection and possible reformulation of the thesis:**

*I estimate my competence on this thematic field is:*

☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor*

☐ *I have no opinion on this thesis*

| **Second thesis** | | |
|---|---|---|
| ***There is a paradox between the actual crisis of Alpine economy and the existence of highly valuable resources (e.g. landscape, clean water and air) for modern industry and service activities in the Alpine area. These resources are not recognized or even valuated so far as opportunities to attract new economic activities which would meet with sustainability issues.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

| **Third thesis** | | |
|---|---|---|
| ***The Alps are in general interdependence with outside areas for economic activities. They have developed functional economic complementarities with these areas, e. g. in terms of recreation services, drinking water supply or even energy production. The Alps are in position to develop new activities, as far as they would complement and not compete with those exerted outside, and would create more added value.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

## *Domain: Urban & rural settlement*

***Summary of experts opinions on issues in the domain***

Growing concentration of population and activities in easy access valleys and central areas and sub-urbanisation processes result in increasing contrasts within the Alps between central and peripheral areas and in increasing direct dependence of rural land to cities. Thus there is a worsening in living conditions in remote rural areas, with a lack of employment, educational, shops and medical facilities. Even some small or medium size cities enter into marginalisation processes.

These sub-urbanisation processes have important consequences in terms of pressures on land uses, as for example, conversions of agriculture land in built-up areas or urban sprawl, that lead to disappearance rural landscape characteristics and in some case to tensions, as they may lead to the implementation of settlement in areas which are unsuitable for residential use. On their side, marginalisation processes may lead to increase oppositions between abandoned areas and those areas which concentrate economic activities and services.

***Three theses for Urban & rural settlement***

**First thesis**

***The effects of demographic development engrave changes in the settlement structure. Losers are not only remote rural areas but also the traditional urban centres, whereas settlement and economic growth take place in axes following the valley like 'urban fingers'.***

**Appreciation**

| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
|---|---|---|
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |

**Causes and consequences:**

**Main arguments for approval or rejection and possible reformulation of the thesis:**

*I estimate my competence on this thematic field is:*

☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor*

☐ *I have no opinion on this thesis*

| **Second thesis** | | |
|---|---|---|
| ***Within the globalisation process, concentration or depopulation processes result in many Alpine regions more from the gravitation forces of the outer Alpine metropolises (Milano, Munich, Vienna, Zürich, etc) than from gravitation forces of the inner-Alpine centres or from local factors. Thus, attempts to regulate the effects of these processes must more and more take into account dynamics stimulated by outer Alpine metropolises.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

| **Third thesis** | | |
|---|---|---|
| ***Rural settlements change their appearance in architectural forms and structure, because of economic change, change of lifestyles, mobility, and new infrastructure. This leads to a stronger differentiation within rural areas between those which benefit from development opportunities and remote areas, however general consequences are a loose of regional identity and consciousness.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

## *Domain: Natural & cultural heritage*

***Summary of experts opinions on issues in the domain***

The awareness of the high value of natural and cultural heritage of the Alpine region, the demand for high quality environment and its contradictions with attitudes considering nature as a consumer product increases the sensibility at the risks of degradation of the environment. A multiplicity of degradation factors are evoked.

For example, there is deterioration of the fauna and the flora, which results from changes in the overall ecosystem, with shifts in the vegetation borders, loss of natural dynamics of the species in their living space and destruction of their fundamental home ranges. The man are widely responsible for it, through the construction of structures that become geographical barriers for the migration of species or, more generally, through human activities that result in strong ecological load in sensitive areas, e.g. use of some protected or wild areas for tourism and recreation purposes. Thus lack of education at all stages of life for the respect of nature and environment is a main issue.

As regards the landscapes, the immediate causes of degradation are more evident: Changes in land uses and in landscape aesthetics are due, above all, to reduction in agriculture activities, irregular and unmethodical shrub reforestation, overbuilding in tourism resorts or development of scattered building in rural areas. They result in disappearance of the rural landscape, which was the traditional reference and for which no substitute appears.

***Three theses for Natural & cultural heritage***

**First thesis**

***Globalisation and stronger competition result in more intensive and industry oriented or residential land uses in the favourable areas (valleys). This leads to a loss of the traditional landscape and biodiversity as well as an increase in soil sealing and even pollution. Simultaneously, unfavourable areas are abandoned and regenerated by the potential natural vegetation.***

**Appreciation**

| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
|---|---|---|
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |

**Causes and consequences:**

**Main arguments for approval or rejection and possible reformulation of the thesis:**

*I estimate my competence on this thematic field is:*

☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor*

☐ *I have no opinion on this thesis*

| **Second thesis** | | |
|---|---|---|
| ***For the preservation of cultural heritage and of its diversity, main threats are the loss of local identity (dialects, spiritual values, customs, etc.) and the standardization of life styles; they are a consequence of aging and migration processes like abandonment of rural areas, concentration of the population in cities, influences of foreign immigrants.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

| **Third thesis** | | |
|---|---|---|
| ***Tourism can be seen as a chance to preserve cultural diversity and traditional land use forms, and to make it possible to find solutions to reconcile the respect for the territorial identities and the development of new cultural references.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

## *Domain: Health & quality of life*

***Summary of experts opinions on issues in the domain***

The previous comments underline the way the quality of life of the inhabitants of the Alps is affected. Traffic is considered as a main cause of air and noise pollutions, with important consequences in terms of health and quality of life. The value attached to the quality of the living environment makes it sensitive not only to landscape issues, but also to further requirements concerning economic activities, as regards industrial emissions, quality of drinking water, poisonous substances or heavy metal residues, as well as to requirements to improve protection face to natural hazards.

These aspects do not have to make forget other requirements, e.g. to improve accessibility to current services, as far as isolation is considered as a threat in some areas, or to recreate social links within communities, as those which existed previously in rural communities, or even to participate more directly in the public decisions. Besides more general issues concerning equity in access to labour market or education, or more efficient policies to reduce disparities in living conditions and family resources, all these aspects are considered as contributing to enhance quality of life in the Alps.

***Three theses for Health & quality of life***

**First thesis**

***Topographic situations in some valleys cause high concentration of toxic emissions. Solutions to deal with these issues differ from one site to another. Their results can appear only in the long term; meanwhile, they conflict with different economic interests, face to which they are considered as constraints.***

**Appreciation**

| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
|---|---|---|
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |

**Causes and consequences:**

**Main arguments for approval or rejection and possible reformulation of the thesis:**

*I estimate my competence on this thematic field is:*

☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor*

☐ *I have no opinion on this thesis*

| **Second thesis** | | |
|---|---|---|
| ***The drop in the quality of life is more important and more widely felt in highly populated areas. Due to the increase of traffic, to pollution and to risks of natural hazards, these areas will become less attractive.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

| **Third thesis** | | |
|---|---|---|
| ***Inhabitants of rural areas run the risk to loose access to vital services like schools, hospitals, banks, etc. as well as last employment opportunities, insofar they are no substitutes to the agricultural sector as economic basis needed to maintain the abovementioned public services and to guarantee the vitality of these zones.*** | | |
| **Appreciation** | | |
| *The regional dimension of my appreciation is:* | *This thesis is:* | *This makes a problem:* |
| ☐ the whole Alps<br>☐ the Alps in my country<br>☐ the Alps in my region | ☐ correct<br>☐ partially correct<br>☐ rather not correct<br>☐ totally not correct | ☐ at the moment<br>☐ in the future |
| **Causes and consequences:** | | |
| **Main arguments for approval or rejection and possible reformulation of the thesis:** | | |
| *I estimate my competence on this thematic field is:*<br>☐ *high* ☐ *fairly high* ☐ *moderate* ☐ *poor* | | |
| ☐ *I have no opinion on this thesis* | | |

| Other relevant theses you wish to suggest |
| --- |
| |

**Other comments and remarks**

| |
| --- |
| |

# Appendix 3 – Third round questionnaire (extracts)

## Marginalisation of rural peripheral areas

*Your appreciation of the importance of the following phenomena for this main issue*

| **Phenomenon** | **Importance of the phenomenon in present state** | | **Importance of the phenomenon for the future** | |
|---|---|---|---|---|
| | Appreciation code | Regional dimension code | Appreciation code | Regional dimension code |
| *Living conditions*: | | | | |
| • Growing isolation due to low accessibility | | | | |
| • Growing isolation due to weakening of social links | | | | |
| • Decreasing efficiency in public and private service provision | | | | |
| • Change in demands for local services due to increase of the share of elderly people | | | | |
| | | | | |
| *Economic conditions*: | | | | |
| • Lack of local opportunities for workplaces | | | | |
| • Decreasing importance of agriculture as fundamental economic basis | | | | |
| • Uncertainties in public funds provision to support rural development | | | | |
| | | | | |
| *Agriculture*: | | | | |
| • Decreasing competitiveness | | | | |
| • Increasing importance of second incomes in maintaining agricultural activities | | | | |
| • Increasing promotion of regional and local labels (brands) for agriculture products | | | | |
| • Devaluation and abandonment of less productive agriculture land pieces | | | | |
| | | | | |
| *Other important phenomena related to this issue you have in mind* (consider also phenomena listed in other headings) | | | | |
| *You estimate your competence on this issue is:* | ☐ *high* | ☐ *fairly high* | ☐ *moderate* | ☐ *poor* |

## Maintenance of Alpine forests

*Your appreciation of the importance of the following phenomena for this main issue*

| **Phenomenon** | **Importance of the phenomenon in present state** | | **Importance of the phenomenon for the future** | |
|---|---|---|---|---|
| | Appreciation code | Regional dimension code | Appreciation code | Regional dimension code |
| *Profitability of Alpine forests* : | | | | |
| • Decline of value of crop forest | | | | |
| • No profitability of steep slopes forests | | | | |
| • New uses of the forests as an environment friendly resource (biomass, etc) | | | | |
| | | | | |
| *Efficient management of the resource:* | | | | |
| • Low management due to fragmented ownership | | | | |
| • Higher proportion of natural and semi-natural forests without any sylvicultural management | | | | |
| • Increase of risks due to the impacts of low management (e.g. by game, in temporary phases of decay) | | | | |
| • Increase of management costs due to the impacts of climate change (beetle infestations, damages by storms, snow loads, etc) | | | | |
| • Increase in effects of toxic pollutions (acid rains, etc) | | | | |
| | | | | |
| *Multifunctionality of Alpine forests*: | | | | |
| • Rising interest on new wilderness areas as tourist attractions | | | | |
| • Awareness of benefit from ample forest cover for natural hazards prevention | | | | |
| • Changes in forest composition in link with climate warming | | | | |
| • Increasing interest paid to wooded areas in densely populated valleys, to maintain ecological corridors and for citizens oxygenation | | | | |
| | | | | |
| *Other important phenomena related to this issue you have in mind* (consider also phenomena listed in other headings) | | | | |
| *You estimate your competence on this issue is:* | ☐ *high* | ☐ *fairly high* | ☐ *moderate* | ☐ *poor* |

## Urbanisation processes

***Your appreciation of the importance of the following phenomena for this main issue***

| **Phenomenon** | **Importance of the phenomenon in present state** | | **Importance of the phenomenon for the future** | |
|---|---|---|---|---|
| | Appreciation code | Regional dimension code | Appreciation code | Regional dimension code |
| *Urban expansion*: | | | | |
| • Further extent of urbanisation in sensitive areas (valleys slopes, flood expansion fields, etc) | | | | |
| • Setting up planning documents including cities peripheries | | | | |
| • Development of new services activities polarizing in cities peripheries | | | | |
| | | | | |
| *Urban pressures*: | | | | |
| • Difficulties in maintaining fertile soils for agriculture activities in urban areas | | | | |
| • Uncontrolled urban sprawl with effects on landscapes aesthetics | | | | |
| • Coalescence of traditional villages into suburban areas | | | | |
| • Loss of social cohesion as a former rural quality in the suburban areas | | | | |
| | | | | |
| *Urban areas attractiveness*: | | | | |
| • Rise in attractiveness of the Alpine agglomerations for the extra-Alpine population (e.g. due to their attractive landscape) | | | | |
| • Creation of high tech business parks in Alpine urban areas | | | | |
| • Inclusion into metropolises commuters catchment areas | | | | |
| | | | | |
| *Other important phenomena related to this issue you have in mind* (consider also phenomena listed in other headings) | | | | |
| *You estimate your competence on this issue is:* | ☐ *high* | ☐ *fairly high* | ☐ *moderate* | ☐ *poor* |

## Tourism sustainability

*Your appreciation of the importance of the following phenomena for this main issue*

| Phenomenon | Importance of the phenomenon in present state | | Importance of the phenomenon for the future | |
|---|---|---|---|---|
| | Appreciation code | Regional dimension code | Appreciation code | Regional dimension code |
| *Tourism economy:* | | | | |
| • Decrease in number of arrivals from distant areas | | | | |
| • New accommodation capacities created by local residents | | | | |
| • Changes in origin of seasonal workers | | | | |
| • Development of innovative formula to meet fast changing tourism demands | | | | |
| • Concentration of agricultural subsidies on rural areas with great importance for tourism | | | | |
| | | | | |
| *Tourism pressures:* | | | | |
| • Efforts to contain over frequentation of high value tourism sites | | | | |
| • Reduction of negative environmental effects due to the abandonment of areas unfavourable for further tourism development | | | | |
| • Excessive exploitation of drinking water in tourism agglomerations | | | | |
| | | | | |
| *Beneficial effects of tourism:* | | | | |
| • Higher importance of soft tourism options (agro-tourism and cultural tourism) as a additional source of local income | | | | |
| • Better possibilities for financing environmental protection measures due to economic potentials in intensively used touristy areas | | | | |
| • Enforcement of local culture and traditions due to increased awareness of their value in tourist areas | | | | |
| | | | | |
| *Other important phenomena related to this issue you have in mind* (consider also phenomena listed in other headings) | | | | |
| *You estimate your competence on this issue is:* | ☐ *high* | ☐ *fairly high* | ☐ *moderate* | ☐ *poor* |

## Transport pressures

*Your appreciation of the importance of the following phenomena for this main issue*

| **Phenomenon** | **Importance of the phenomenon in present state** | | **Importance of the phenomenon for the future** | |
|---|---|---|---|---|
| | Appreciation code | Regional dimension code | Appreciation code | Regional dimension code |
| *Alleviation of transport pressures* | | | | |
| • Increase in pollution in steep-sided valleys on transit routes | | | | |
| • Efforts to limit traffic flows in sensitive areas | | | | |
| • Decreasing negative effects of transport by the extension of railway transport network | | | | |
| • Internalisation of transport prices by increasing taxes and fees for transport | | | | |
| • Development of alternatives to individual car transport (train + bike, car sharing, regional transport cards, etc) | | | | |
| | | | | |
| *New attitudes towards mobility* | | | | |
| • Changes in modal split of travel to work displacements | | | | |
| • Adaptations in vehicles to reduce GEG emissions | | | | |
| • Development of transport saving options meeting current needs (e-commerce, IT) | | | | |
| | | | | |
| *Other important phenomena related to this issue you have in mind* (consider also phenomena listed in other headings) | | | | |
| *You estimate your competence on this issue is:* | ☐ *high* | ☐ *fairly high* | ☐ *moderate* | ☐ *poor* |

## Innovation and competitive economic activities

*Your appreciation of the importance of the following phenomena for this main issue*

| **Phenomenon** | **Importance of the phenomenon in present state** | | **Importance of the phenomenon for the future** | |
|---|---|---|---|---|
| | Appreciation code | Regional dimension code | Appreciation code | Regional dimension code |
| *Effects of structural changes in the economy:* | | | | |
| • Decrease of emissions by industries due to the closing down of 'dirty industries | | | | |
| • Increasing part of 'clean industries' and businesses (especially IT-enterprises) | | | | |
| • Concentration of high innovative activities in already favoured areas | | | | |
| | | | | |
| *Competing advantages and disadvantages:* | | | | |
| • Innovative potential in agriculture due to combination of traditional and modern forms of production | | | | |
| • New opportunities to develop niche activities | | | | |
| • Competition between municipalities to attract new firms | | | | |
| • Spreading effects from main innovation poles | | | | |
| • Decrease of entrepreneurial participation of the Alpine population | | | | |
| | | | | |
| *Autonomous forms of economic development* | | | | |
| • Growing importance of external (extra-Alpine) investments in developing new activities | | | | |
| • Stronger integration of agriculture activities in food processing industry | | | | |
| • Increase in supports to SMEs and assistance to local enterprises | | | | |
| • Involvement of local governments in economic development projects | | | | |
| | | | | |
| *Other important phenomena related to this issue you have in mind* (consider also phenomena listed in other headings) | | | | |
| *You estimate your competence on this issue is:* | ☐ *high* | ☐ *fairly high* | ☐ *moderate* | ☐ *poor* |

## Maintenance and development of natural and cultural resources

*Your appreciation of the importance of the following phenomena for this main issue*

| **Phenomenon** | **Importance of the phenomenon in present state** | | **Importance of the phenomenon for the future** | |
|---|---|---|---|---|
| | Appreciation code | Regional dimension code | Appreciation code | Regional dimension code |
| *Natural heritage and resources conservation* | | | | |
| • Development of environment friendly agriculture techniques (organic farming, etc) | | | | |
| • Maintaining open spaces connectivity in valleys and densely populated areas | | | | |
| • Layouts regulating space consumption | | | | |
| • Implementation of water quality management programmes | | | | |
| | | | | |
| *Local cultures and embracing other cultures* | | | | |
| • Participation of local population as actors in cultural events | | | | |
| • Courses and educational programmes oriented towards local cultures and traditions | | | | |
| • Involvement of non or new residents in local associations | | | | |
| • Participation of local associations to actions in other mountain regions | | | | |
| | | | | |
| *Other important phenomena related to this issue you have in mind* (consider also phenomena listed in other headings) | | | | |
| *You estimate your competence on this issue is:* | ☐ *high* | ☐ *fairly high* | ☐ *moderate* | ☐ *poor* |

## Climate change effects

*Your appreciation of the importance of the following phenomena for this main issue*

| **Phenomenon** | **Importance of the phenomenon in present state** | | **Importance of the phenomenon for the future** | |
|---|---|---|---|---|
| | Appreciation code | Regional dimension code | Appreciation code | Regional dimension code |
| *Effects on the environment* | | | | |
| • Changing species composition and diversity due to migration especially in summit areas | | | | |
| • Change of species compositions and structure of forests | | | | |
| • High vegetation damages due to storms and snow loads | | | | |
| | | | | |
| *Effects on human activities* | | | | |
| • Higher safety risks of natural hazards (landslides, mudflows and floods) | | | | |
| • Shortening winter seasons in ski resorts | | | | |
| • Higher pressure of winter tourism on protected areas in higher elevations | | | | |
| • Difficulties in high quality water supply and energy use of water due to lack of water | | | | |
| • Stronger restrictions for building in areas exposed to risks of natural hazards | | | | |
| • Further development of energy saving options for transport or for housing | | | | |
| • Higher investment in GHG-reducing technologies | | | | |
| | | | | |
| *Other important phenomena related to this issue you have in mind* (consider also phenomena listed in other headings) | | | | |
| *You estimate your competence on this issue is:* | ☐ *high* | ☐ *fairly high* | ☐ *moderate* | ☐ *poor* |

## *Conclusion of the questionnaire*

Finally, can you rank the main issues we have described and for which the second round theses and the appreciations of phenomena listed in the previous tables will give us a valuable information for DIAMONT further steps?

We are aware that is would be hazardous to rank these issues in an absolute manner. Thus, we propose to base your ranking on two criteria: first, which main issue seems to you the most comprehensive, second, which main issue needs to be more focused on in regional policies development. Obviously, you can consider other criteria.

| **Main issue** | **Your ranking** | |
|---|---|---|
| | Appreciation code | Indicate the criteria you base on for the ranking |
| Marginalisation of rural peripheral areas | | |
| Maintenance of Alpine forests | | |
| Tourism sustainability | | |
| Urbanisation processes | | |
| Transport pressures | | |
| Innovation and competitive economic activities | | |
| Maintenance and development of natural and cultural resources | | |
| Climate changes effects | | |

**General comments on the questionnaire, on the survey and on investigated Alpine issues**

| |
|---|
| |

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