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Alpine research today: planning, international coordination and anchor projects

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Abstract : Alpine research benefits from several international coordination networks, only one of which – ISCAR (the International Scientific Committee on Research in the Alps) – works solely in the Alpine arc. The creation of ISCAR is a consequence of the input and involvement of various Alpine partners around the Alpine Convention. Alpine research now aims to promote an integrated vision of Alpine territories focusing on creating and maintaining spatial and temporal networks of sustainable relationships between humans and the other components of the ecosphere. It combines resource usage with conservation of the biological and cultural diversity that makes up

the Alpine identity. This article aims to show: (1) how international Alpine research coordination is organised; (2) the role played by the Alpine Convention as a framework of reference for specifically Alpine research; and (3) the role that the ISCAR international committee and the Interreg “Alpine Space” programmes play in uniting research around territorial challenges relating to biodiversity conservation and territorial development.

Keywords : Alpine Convention, Alpine research, research agenda, relationship engineering, ecological, social and economic observatories.



The expression “Alpine research” is used in this article to mean “research on the Alps”. It is defined as research conducted by national and international institutions into questions relating to mountain regions and for which the Alpine area offers an exceptional field of study and reference. Alpine research is set apart from other research in mountain areas around the world by the fact that it is geographically limited to the European Alps. The notions of *Territoire* (territory) and *Paysage* (landscape) in French-speaking spheres and the concept of *Kulturlandschaft* (cultural landscape) in German-speaking spheres constitute the foundation of many interdisciplinary projects.

Alpine territorial systems are currently characterised by an ever-increasing tension between economic development imperatives on the one hand, and the need to preserve an exceptional natural heritage that is particularly sensitive to global change on the other. Over recent years, Alpine research, rooted in the challenges set out by the Alpine Convention, has offered original approaches for regional development that fully integrate environmental considerations and their management.

Context and motivation for Alpine research

MOUNTAINS: A GLOBAL CHALLENGE AND AN INDICATOR OF PLANETARY CHANGES

The Alpine massif as defined in the Alpine Convention covers 191,000 km² and is home to 13 million inhabitants. Including regions adjacent to the Alpine region, the figures increase to 450,000 km² and 70 million inhabitants (Vanier, 2006). The Alps and mountain areas in general represent a major international challenge in terms of the environment, natural resources and sustainable development for many societies.

In fact, mountains are considered to be fragile and unstable areas due to their glaciers, snow cover, scree and landslides. They are also considered to be subject to fluctuating climatic conditions, as well as potentially irreversible soil and vegetation damage, and are seen as the origin of intense geodynamic phenomena that can trigger natural disasters. Their morphology makes them difficult to access and concentrates terrestrial transit and industrial activity in corridors that are subject to natural hazards and that are often congested and polluted. Agricultural production is sometimes difficult in the Alps and must set itself apart from agriculture in flatter areas in order to be profitable.

However, these fragile and sometimes hostile areas also represent exceptional wealth. Due to their altitude, mountains experience gradients of temperature, precipitation and sunshine that create stratified climatic systems and in turn great biological and habitat diversity. Their relative isolation has helped to preserve their integrity and cultural heritage, their wealth of natural resources such as water and minerals, and their biodiversity, the latter being characterised by many endemic species. Their characteristics make mountains extremely sensitive to any poor management of their resources and territories, as well as to any major planetary changes.

Local authorities in the mountains have learnt to adapt to an environment and conditions that are both demanding and ever-changing. Global effects such as the climate change associated with global warming, and major trends such as economic globalisation, the information and communication technology boom, urbanisation, agricultural decline and the development of tourism, are now global realities that take on a greater significance in mountain regions. Studies of their influence on sensitive zones are of obvious interest in relation to sustainable development in the mountains and surrounding areas. Furthermore, they are of interest to the entire planet, as mountains act as indicators and precursors of changes, and as a laboratory for analysing and anticipating changes on a planetary scale (CCS, the Mountain Institute, 2000).

THE ALPINE CONVENTION: AN EXEMPLARY APPROACH FOR SUSTAINABLE DEVELOPMENT IN THE ALPINE ARC

Demands for the adoption of a convention to protect the Alps date back to the 1950s. NGOs such as CIPRA (the International Commission for the Protection of the Alps) were

very active in the process. But it was not until 1988 that a European Parliament resolution asked the European Commission to present a draft convention to protect one of Europe's most important ecosystems. The Alpine Convention that was signed in 1991 is therefore the result of a long-term project that recognises the Alps as an area of global significance; an area where nature, the economy and culture are interlinked and interdependent, where its diverse characteristics make up an identity whose needs in terms of protection transcend national borders. This is why the Alpine Convention was fully integrated into the global process that was initiated during the Rio Summit of 1992. It is therefore closely associated with Agenda 21 with regard to "Managing Fragile Ecosystems: Sustainable Mountain Development".

The Alpine Convention is not a political declaration of intention, but a binding international treaty. It contains general obligations that the contracting parties must respect, with the aim of setting out solutions to problems relating to the conservation and protection of the Alps. The approach adopted since the signing of the Alpine Convention shows the indissociable nature of the "development" and "environment" agendas that become more concrete with the ever greater involvement of stakeholders around questions relating to mountain territories. It is both a source of inspiration for national policies and legislation, and a tool for cooperation and coherence between policies in Alpine countries, promoting sustainable development in the Alpine region. All of the Alpine countries must commit to translating it into national law and to undertaking concrete action, including both regional and local authorities, as well as socio-economic stakeholders.

In 2004, the adoption of the multi-annual work programme was an important step towards better visibility for the Alpine Convention and more constructive targeted action. The multi-annual programme is implemented thanks to multilateral projects created by the contracting parties (e.g. the ecological corridors platform), working group activities (e.g. the transport working group) and activities organised by the permanent secretariat. The multi-annual programme aims to develop cross-border cooperation. It acts as a public and group action lever that enables the protection problems that are currently facing the Alpine arc to be tackled comprehensively and coherently, whilst also ensuring that the required balance between development and the environment is maintained.

International coordination of Alpine research

Alpine research benefits from several different but complementary levels of coordination. These networks draw their legitimacy from the fact that they are all based on an international convention or declaration. We can cite the following bodies:

- **The GMBA (Global Mountain Biodiversity Assessment) international network** that coordinates initiatives relating to biodiversity conservation. It is based on the Convention on Biological Diversity (1992). It works on a global scale and the Alps do not represent a specific coordination level.
- **The MRI (Mountain Research Initiative) international network** that coordinates initiatives relating to global change. It is based on the Perth Declaration (2005) that advocates

an international research strategy on global changes in mountain regions. It works mainly at European level and the Alps do not represent a specific coordination level.

– **The ISCAR (International Scientific Committee on Research in the Alps) international network** that coordinates initiatives related to Alpine research. It is based on the Alpine Convention (1991). It works at Alpine level and the Alps represent its sole coordination and action level.

The GMBA biodiversity network considers the Alps to be an important biodiversity “hotspot” among other equally significant mountain hotspots. The MRI network on global change considers the Alps and the researchers that work within them to be a crucial but non-exclusive entity within the networks that it coordinates in Europe and around the world. Only the ISCAR network places the Alpine arc and its communities of researchers at the heart of the action and coordination that it promotes. This is why we have gone into greater detail on it in this presentation.

THE GLOBAL MOUNTAIN BIODIVERSITY ASSESSMENT (GMBA) NETWORK: A NETWORK COORDINATING RESEARCH ON BIODIVERSITY IN MOUNTAIN AREAS AROUND THE WORLD

The Global Mountain Biodiversity Assessment (GMBA) network was founded by the Swiss Academy of Sciences and inaugurated by DIVERSITAS in 2000 in application of Agenda 21 that was proposed during the Rio Summit of 1992. The network’s activities were officially presented during the convocation of the first international conference on mountain biodiversity that was held in Rigi Kaltbad-LU (Switzerland) in 2000. GMBA is part of DIVERSITAS which is an international non-governmental programme which promotes and integrates sciences linked to biodiversity. It is a research network forming part of this programme, dealing with cross-disciplinary questions on mountain biodiversity. GMBA’s office is located at the University of Basel in Switzerland. It is involved in the management and coordination of the global network.

It also coordinates an international programme on planetary change focusing on biodiversity sciences. More specifically, this programme aims to:

- explore and explain the great biological wealth of the mountains of the world and their responses to global changes;
- summarise the scattered and fragmented results of research into mountain biodiversity;
- forge a global business identity for a scattered research community;
- increase the visibility of questions relating to mountain biological diversity;
- promote studies on the impact of humankind upon natural and cultural landscapes in the mountains;
- encourage sustainable development in rural mountain areas, and provide information to decision-makers and stakeholders.

GMBA's activities are supervised by a scientific steering committee made up of 12 members. They combine excellent scientific expertise and represent the various mountain regions of the world. The committee decides on the direction to be taken by the programme as a whole. The committee stimulates, assesses and approves new joint research projects in order to facilitate national and international funding options. Workshops on the subject of biological mountain biodiversity are planned and organised with the GMBA secretariat and its staff.

THE MOUNTAIN RESEARCH INITIATIVE (MRI): COORDINATION FOR RESEARCH ON GLOBAL CHANGES WITH STRONG INVOLVEMENT AT EUROPEAN LEVEL

The MRI is a multidisciplinary scientific organisation that deals with questions relating to global changes in mountain regions around the world. It endeavours to support the design of integrated research strategies and programmes that improve our understanding of the impacts that global changes have on mountain regions and that help to achieve tangible results for users and managers. The MRI is a programme that is affiliated to two large international programmes: IHDP (the International Human Dimensions Programme) and IGBP (the International Geosphere-Biosphere Programme). The MRI is supported by the Swiss National Science Foundation.

In 2006, The Europe MRI created the "Global Change Research Network for European Mountains" (GCRN_EM). This network's aims are:

- to gather together European scientists working on mountains in Europe;
- to identify potential partners for joint research projects;
- to improve the efficient use of existing resources through exchanges and cooperation;
- to implement the most urgent research questions from the research strategy "Global Change in Mountain Regions" (GLOCHAMORE).

The MRI offers services for scientists, including:

- the GCRN_EM website and a monthly e-newsletter called "MRI Flash" that connects 5,400 scientists around the world;
- a database of the scientists involved in mountain research (800 experts);
- seminars to enable researchers to network and to stimulate initiatives.

THE INTERNATIONAL SCIENTIFIC COMMITTEE ON RESEARCH IN THE ALPS (ISCAR): COORDINATION AT THE HEART OF RESEARCH IN THE ALPINE ARC

Founded by the Swiss Academy of Sciences in 1994, the International Scientific Committee on Research in the Alps connects six countries in the Alpine arc, namely Germany,

Austria, France, Italy, Slovenia and Switzerland. It has a rotating presidency that changes every 4 years.

Since 2000, ISCAR has been recognised as an official observer of the Alpine Convention. As such, ISCAR representatives participate in sessions of the permanent committee and in the Conference of Ministers. Experts authorized by ISCAR also take part in work done by reflection platforms and working groups.

The committee aims to promote trans-Alpine and interdisciplinary cooperation with regard to Alpine research, as well as to transfer the results of this work to responsible authorities and the general public. It works primarily on research subjects connected to the Alpine Convention and the organs of the Alpine Convention. The committee's other mission is to review progress in Alpine research and to unite competences in order to produce international expertise in the field of sustainable development and the management of global changes in the Alps.

In 2005, the 13th Alpine Conference entrusted ISCAR with the creation of the multi-annual (2005-2010) research agenda. This research agenda tackles subjects that need to be studied via a multidisciplinary approach within the entire Alpine arc. It has been conceived as a research reference instrument that aims to develop programmes, projects and partnerships within which the questions raised by the Alpine Convention are duly taken into consideration. It is aimed at both researchers and national and European institutions in charge of promoting research.

For the permanent secretariat, the research agenda is an instrument for structuring cooperation with the scientific community and institutions in charge of promoting research. It is divided into four main subject areas relating to the following:

1. Mobility, accessibility, travel and transit
2. Society, culture and identity
3. Tourism, leisure and sport
4. Nature, agriculture, forestry and cultural landscapes

These divisions are not rigid, and bridges exist between these four major themes. The long-term aim of this programme framework is to contribute to a better understanding of the Alps so that they can be seen as a "territorial system" as set out by the GLP (Global Land Project) programme. Several multidisciplinary themes can currently be identified:

- global changes in mountain regions;
- sustainable regional development;
- usage and conservation of biodiversity;
- urbanisation and lifestyle in the mountains;
- water – cycles, usage and cleanliness.

The subjects put forward by the research agenda have already been integrated into the propositions presented to Europe (FP7 (7th research framework programme); Interreg “Alpine Space”; and COST (European Cooperation in the field of Scientific and Technical Research) actions).

Just like any international coordination network, ISCAR encounters difficulties in mobilising the Alpine scientific community around subjects belonging to a research agenda based on an international convention, the design and utility of which is still poorly understood by scientists.

However, in order to overcome these difficulties, ISCAR has developed a motivational strategy to facilitate the implementation of international research promoting biodiversity management at Alpine level. In fact, in November 2006, the creation of the “Ecological Network” platform by the Alpine Convention enabled ISCAR, in partnership with other bodies such as CIPRA (the International Commission for the Protection of the Alps), ALPARC (the Alpine Network of Protected Areas) and WWF (World Wildlife Fund), to conduct a project dedicated to making an inventory of available knowledge in order to design and implement a trans-Alpine ecological network. This initial work was funded by the Swiss nature foundation MAVA. In 2008, using the initial results of this study, the ECONNECT project was successfully submitted to the call for proposals of the Interreg IV B “Alpine Space” programme (see paragraph 3.2 hereafter). This success marked the start of large scale collaboration between research institutes and protected Alpine areas. Over the years to come, this dynamic – which was initiated around one of the Alpine Convention’s priorities – will mobilise many public and private partners, as well as NGOs. This collaboration is a perfect illustration of the partnership coordination and facilitation role that ISCAR can play in close association with the priorities set out by the Alpine Convention.

Some anchor projects for Alpine research

The Interreg III B and IV B “Alpine Space” Community initiative programme is a powerful tool for structuring Alpine research. The programme sets out four major objectives that usefully combine the aims of the Alpine Convention and of ISCAR:

- Make the Alpine region attractive in the European network of development zones: this requires a joint approach to the role of the Alpine region in terms of spatial development, as well as active promotion via the implementation of various activities and measures.
- Promote sustainable spatial development in the Alpine region that takes account of relationships between the peri-Alpine belt and the central zone, by implementing transnational activities that combine community and local approaches and that tackle the most pressing questions raised by Alpine development.
- Improve the internal and external accessibility of the Alpine region, particularly using sustainable modes of transport and information technologies.
- Protect the incomparable wealth of the Alps’ natural and cultural heritage, and preserve the Alpine population from natural risks by developing joint tools and sharing experience and information.

I will now present two recent Interreg projects that include subjects from the research agenda and that each take an original approach to the questions set out in the Alpine Convention.

THE DIAMONT PROJECT FROM THE INTERREG III B “ALPINE SPACE” PROGRAMME (2004-2008)

This project was also prepared with close links to the Alpine Convention. Its primary aim was to contribute to a better definition of an information system covering the whole of the Alps, in order to identify questions that the development of Alpine regions raises and to find ways to respond to these questions using existing or innovative tools (Borsdorf, Lange, 2006).

It was carried out from 2005 to 2008 by a multidisciplinary team in various Alpine countries under the leadership of Professor Axel Borsdorf (Innsbruck, Austria). It endeavoured to answer these questions by providing decision-makers with certified knowledge relating to the challenges of development in the Alpine massif and the translation of these challenges into regional policies, and by the establishment of joint indicators and databases on development tools. The DIAMONT project is an emblematic example of a project that gives direction to policies, aims to consolidate economic and social cohesion, to preserve the natural basis of cultural life and heritage, and to promote balanced competition in Alpine regions, whilst also taking into account the differences in culture and modes of governance throughout the Alps.

The important place occupied by research into the development of Alpine regions is due, in particular, to the permanent need to guide public action on a territorial level in response to the challenges of sustainable development in the massif and of European integration (Briquel, 2006). Although the Alpine Convention sets out the principles to be respected in order to ensure sustainable development in the Alps, it is still necessary to develop projects that are securely rooted in the regions. To this end, DIAMONT promotes bottom-up approaches to development based on the participation of decision-makers, businesses and inhabitants in the regions, in order to effectively mobilise knowledge. This action is in the objective of setting out and implementing good practices to ensure the sustainable development of the regions, and to this end, to develop cooperation between different municipalities and cooperation at other administrative and decision-making levels.

THE ECONNECT PROJECT FROM THE INTERREG IV B PROGRAMME (2007-2013): DESIGNING AND IMPLEMENTING THE ECOLOGICAL CORRIDORS OF TOMORROW

Connecting habitat areas within the Alps to form ecological networks is a central theme of the implementation of the environmental protection objectives that form part of the Alpine Convention. Initially, in order to promote collaboration for the creation of an ecological network at Alpine level, the “Ecological Network” platform was created in line with the Alpine Convention in 2007.

This platform aims to create an international Alpine network including protected areas and their corresponding connecting elements. It offers Alpine countries a framework within which they can exchange experiences, create joint approaches and methodological measures, and cooperate. It is an important link between politics, science and practices, and guarantees an effective exchange with other networks.

Within the platform, experts work together closely on three areas: scientific support for the establishment of an ecological network; implementation projects; and communications and public relations. From among its concrete missions we can cite: the extension and multiplication of cross border protected areas as part of NATURA 2000 and the “Emerald Network”; the creation of methods to connect natural areas in networks; and the application of measures to connect Alpine species and habitats in networks. Some pilot regions have already started implementing this cross border network, in particular the Isère *département* in France. The ECONNECT project of the INTERREG IV B programme supports these initiatives, helps to share knowledge and expertise, and facilitates the implementation of measures in pilot regions.

ECONNECT’s primary objective is to protect biodiversity along a trans-Alpine ecological continuum that integrates regional sites of high ecological value that have already paved the way for the implementation of ecological networks on their territories. From this perspective, it is a question of increasing ecological connectivity by surmounting both physical obstacles (natural or artificial barriers) and legal obstacles (legislation), taking into account the joint needs of the project’s partners, to achieve concrete action to implement this continuum locally. The project partners will use any feedback recorded to build a methodological and operational corpus that will be distributed to biodiversity management stakeholders across the entire Alpine arc.

In particular, the results aim to:

- establish links with institutions involved in land management and install framework conditions for the development of the Alpine region;
- scientifically justify the need to maintain and restore ecological networks and connections between them;
- validate methodological toolboxes for planning and implementing ecological networks in all Alpine countries;
- draw up political recommendations for decision-makers at local, regional and transnational levels to examine the needs and potential of ecological networks;
- study the practical details of implementation in 7 pilot regions, based on joint objectives, with harmonised methodological approaches and data in order to undertake action to improve, restore or create ecological connectivity;
- create a catalogue of measures that have been adopted and that are transferable in order to assess and reduce the effects of ecological obstacles;

– produce suitable information and educational material to train the main stakeholders and the general public in order to raise awareness of the needs and requirements of an ecological continuum.

Conclusion: what challenges face the Alpine research of tomorrow?

It is abundantly clear that Alpine research must respond to the new challenges posed by environmental and social changes within a context of globalisation and decision-making in an uncertain environment. What sets Alpine research apart is the central position that it gives to the territorial dimension that is at the heart of the Alpine Convention.

The Alpine Convention was constructed from an essentially static viewpoint: great efforts were made to negotiate an impressive collection of legislation. However, less attention was paid to the question of how the legislation could progress, how experiences could be exchanged, how innovative approaches could be developed and how cooperation and initiatives could be stimulated (Sleicher-Tappeser R., 2006). The “Alpine Space” Interreg programmes that mobilise the European Regional Development Fund and specific resources in the Alpine countries involved in the projects, are now major bases for funding the research agenda set up by ISCAR in line with the Alpine Convention.

In the future, the ISCAR committee will continue in this long-awaited dynamic to the benefit of the Alpine Convention. The challenge of this research will be to define a “relationship engineering” based on notions of vulnerability, adaptability and resistance in order to promote the creation and maintenance of a spatial and temporal network of sustainable relationships between humans and the other living and non-living components of the ecosystem. This research will be mindful of the expectations of local populations, users of the regions concerned, and representatives of these populations and users. It will enable better consideration of the diversity and diversification of these relationships, whilst also developing an increasingly integrated vision of knowledge and modes of action. It is only from the standpoint of such an investment that the Alps will truly become a laboratory for innovation at the service of sustainable territorial development (Brun J.J. and Perrin-Sanchis T., 2001).

From this perspective, we need to continue and increase our long-term observation of both natural and human systems by implementing eco-socio-economic observatories such as, for example, the LTSER (Long-Term Socio-Ecological Study Networks) of the ALTER-Net biodiversity network of excellence and the “Zones-Ateliers” (special research areas) that have been created in the French sphere. The creation of an Alpine *Zone-Atelier* represents a significant step forward by France in this area. These observatories will enable us to better understand how ecological systems and socio-economic systems interact and evolve, and therefore to test the robustness of the links that unite them within a framework of sustainability by promoting the most positive interactions.

Translation: Accent mondial

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