

Research on mountain development in Europe: Overview of issues and priorities

Thomas Dax

Federal Institute for Less-Favoured and Mountainous Areas, Vienna, Austria

2002

thomas.dax@babf.bmlfuw.gv.at

Keywords: mountain development, mountain ecosystems, mountain agenda, mountain regions, mountain policies, natural resource management, organisations, Europe.

Introduction

Over the last years, the recognition of goods and services provided by mountain areas meeting increased social demand has risen considerably. With the United Nation's International Year of the Mountains (IYM) 2002 the international awareness for mountain ecosystems and the inter-relationship to lowland developments attained high political levels and priority. This process requires a high degree of inter-disciplinary research, experience from application through practitioners and institutional development. In order to supply a sound basis for dissemination of results from the ISDEMA project, an analysis of the respective mountain development research focusing on the European scale, has been carried out. The following paper gives an overview in this situation, and discusses main tendencies and gaps of the respective research activities.

Mountain regions are fragile ecosystems and an important source of water, energy and biological diversity. They are a source of key resources such as minerals, forest and agricultural products, as well as being landscapes for tourism and recreation. As major ecosystems representing the complex and interrelated ecology of our planet, mountain environments are essential to the survival of the global ecosystem. Occupying about one-fifth of the world's land surface area, mountains provide a direct life-support base for about one-tenth of humankind as well as goods and services to more than half the world's population.

Mountain ecosystems are, however, heavily influenced by local and global changes. The rapid pace of globalization, urbanization and mass tourism are threatening mountain communities and the resources they depend on. There is widespread poverty among mountain inhabitants and loss of indigenous knowledge. As a result, most global mountain areas face increasing marginalization, economic decline and environmental degradation. Hence, the

proper management of mountain resources and socio-economic development of the people deserves immediate action.

Mountain regions are of great importance within the European Union (about 20 % of the utilized agricultural area is defined as mountain area and 27 % of all farms are situated in the mountain areas). In five member countries - Greece, Austria, Italy, Spain and Portugal - mountain areas comprise even more than 50 % of the territory. Cultural landscapes in these territories develop and change over time as a result of the interplay of socio-economic, cultural and natural factors and can thus only be understood as a process. Since changes are often irreversible, any change and interference demands careful consideration. Many parts of mountain regions have long been more than just an agricultural area. Rather they constitute a fully integrated living and working space, whose geographical characteristics do not lead to separation in a structural economic sense. They express themselves much more in the limited space available for settlement and industry, the handicaps on agriculture and forestry, in an expensive infrastructure and a particularly sensitive landscape. However, the various component areas display great differences in structure and development. Policies to safeguard environmental and cultural achievements, as well as sustainable rural development, can thus only be effective in the long term by the embedding of spatially oriented sector policies in integrated regional development strategies (Dax et. al.1999).

As principal land use, agriculture and forestry are main pillars of mountain communities and mountain development. Beyond its unfavourable natural situation increasingly their importance lies in the fulfillment of multifunctional tasks. Mountain agriculture provides employment, essential goods and services for the quality of life, through the production of high quality goods, maintenance of the cultural heritage, preservation of habitats and landscapes with high ecological and amenity values. Many of the services are not remunerated directly or through income from production.

Raising international awareness for mountain ecosystems

The United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in 1992 started the long-term process of raising public awareness and ensuring adequate political, institutional and financial commitment for concrete action towards implementing sustainable mountain development. The inclusion of Chapter 13: "Managing Fragile Ecosystems - Sustainable Mountain Development" in Agenda 21 meant that, for the first time, mountain regions were accorded equal priority in the global environment-development agenda with other global change topics such as climate change, desertification, or deforestation. Since then, a number of dynamic processes and activities related to mountain issues have been initiated, culminating in the proclamation of the year 2002 as the International

Year of Mountains (IYM) by the United Nations. The IYM concept implies that "sustainable mountain development includes a wide range of topics, calling for interdisciplinary, integrated approaches." Moreover, the World Summit on Sustainable Development in Johannesburg in this year provided the opportunity to reaffirm the political priority for mountain issues through the inclusion of a specific paragraph in its final document on mountain development (para 40) and the start of the International Partnership for Sustainable Mountain Development (<http://www.johannesburgsummit.org/>). IYM represented an important step in the long-term process initiated by the 1992 Earth Summit in Rio de Janeiro and reinforced the activities of already existing networks. Rather than a period of isolated events, it should serve as a springboard and catalyst for long-term, sustained and concrete action that will extend far beyond 2002 (www.mountains2002.org). The year 2002 has also been declared the International Year of Ecotourism. Since in some mountain areas, like in Austria, Switzerland or France, large portions of tourist activity occur in mountain areas this coincidence provides an important opportunity to benefit from synergies in the observance of both events (www.ecotourism-mountains.at).

International networking

Since the 1992 Rio Earth Summit mountain development has acquired increased interest and networking on mountain issues has advanced significantly. A number of respective activities underline the rising concern for the issue and reflect that such international coordination is the base to enhanced research activities. The following selection is done through a European viewpoint of influential institutions. Particularly at national level many additional coordination initiatives have been taken recently. It is important to realize institutional work as a patchwork of overlapping activities which draws useful incentives from this exchange of different views.

Mountain Forum: The global Mountain Forum was founded in 1995 as a decentralized network of networks to provide mutual support, information-sharing and advocacy for mountain peoples, environments and sustainable development. Membership is voluntary, and the basic premise is that members benefit from each other through mutual support, exchange of information and advocacy. This network is composed of thousands of people, professionals and organizations from over 100 countries. To provide a basic level of communications services, a few organizations serve as nodes, or coordination centers, for each region. The Mountain Forum's electronic information services include global, regional and thematic e-mail discussion lists, focused electronic conferencing, a calendar of events, and a rapidly growing on-line library of mountain resources. It is divided into five regional networks. The co-ordination for Europe is based in Switzerland (www.mtnforum.org and <http://mtnforum.org/europe>).

Euromontana: This European association for co-operation between mountain regions has been established following an FAO workshop on mountain farming in 1953, and acted for decades as working group of the European Confederation of Agriculture (CEA). Since 1996 it has a legal identity in order to facilitate the efficient continuation of its action (14 European countries are founder members: Albania, Bulgaria, Scotland, the Spanish Basque country, France, Greece, Italy, Macedonia, Poland, Romania, Slovakia, Slovenia, Switzerland, and the Czech Republic). It brings together regional and national organizations of mountain people: social-professional organizations, in particular agriculture, rural development centres, associations, territorial authorities, research institutes, etc. It includes organizations from Western Europe as well as from Central and Eastern European Countries in an effort to develop international co-operation in anticipation of the enlargement of the European Union. Recent initiatives include a series of thematic seminars on the issue of quality and rural development in mountain regions and the 3rd European Mountain Convention in May 2002 in Inverness, Scotland (www.euromontana.org).

Alpine Convention (Convention on the Protection of the Alps): The Alpine Convention was signed in Salzburg in 1991. The signatories are Germany, France, Italy, Liechtenstein, Monaco, Austria, Slovenia, Switzerland and the European Union. The Convention serves as a platform for a trans-national policy covering joint ecological and economic problems. The goal of the Convention is a comprehensive policy on the protection and sustainable development of the Alps which are aimed at by thematic implementation protocols: on land use planning, mountain forests, the protection of nature and landscape, tourism and leisure activities, soil protection, energy, transport and agriculture. Information on the Convention is collected by the "System for the Observation of and Information on the Alps (SOIA)" (www.abis.int), established by the signatories, and also available from the International Commission for the Protection of the Alps (CIPRA). In November 2002 the location of the permanent secretariat of the Alpine Convention has been decided (Innsbruck, Austria and Bolzano, Italy) (www.cipra.org).

Alpine Forum: The collaboration is enhanced through the scientific congresses of Alpine Forum every two years (since 1994) within the Alps. At the Forum in 2000 (Bergamo, Italy) it was made clear that research in European mountain regions is not to be only measured by scientific standards, but essential to guaranteeing success for IYM. The opening of conference for the first time to representatives of other important regional mountain organizations around the world via the special symposium "Moving toward worldwide cooperation in mountain research" at that conference was continued at the recent Alpine Forum 2002 in Alpbach, Austria (www.montagna.org).

Charter for the protection of the Pyrenees: The Conseil International Associatif pour la Protection des Pyrenées (CIAPP) has elaborated in 1995 a charter for the Pyrenees (www.mtnforum.org/resources/library/ciapp95.htm). Meanwhile

a number of regional institutions have taken part, in cooperation with the CIAPP, in the European intergovernmental process on sustainable mountain development.

Carpathian Ecoregion Initiative: The Carpathian Ecoregion Initiative is bringing together people to secure conservation and sustainable development in the Carpathians. Through this initiative, conservation of one of the most important natural areas of Europe is being combined with actions to support the local economy and culture. Launched by the Danube Carpathian Programme of World Wide Fund for Nature (WWF), the Carpathian Ecoregion Initiative is a partnership of key-decision-makers and or-generations from within the region, working alongside international experts (www.carpathians.org).

The elaboration of mountain policies

In many European countries mountain policies have been developed, starting already with some active-ties of forest policy in mountain areas of France in the 19th century (Barruet 1995, p. 231). In particular, over the last three decades respective mountain policies have been established and extended all over Europe which led to the development of European Community policy. The LFA scheme (Dax and Hellegers 1999) developed since 1975 represents the core of mountain policy measures in agriculture aiming at compensating less-favoured production conditions in mountain areas and safeguarding the development of cultural landscapes, and rural amenity in general, which are particularly valued in mountain regions.

However, the recent policy trends have shown the need for a more integrative approach which tries to apply a stronger territorial viewpoint towards mountain policies. These (new) policies have largely been inspired and enhanced by "bottom-up" activities and regional policies at a small geographical level in several European countries, like Central Europe (e.g. Austria, Bundeskanzleramt 1980, Switzerland) since the end of the 1970s. Such pilot schemes have also been developed by "alternative" groups in remote mountain areas of France (c.f. magazine *alternative paysannes*) and Spain. The ensuing discussion of those first initiatives laid the basis to the respective policy reform and changes in attitude towards mountain policy (and also rural development) approach at the European level.

Since the reform of the Structural Funds in 1988 and the EU-document the "Future of Rural Society" (CEC 1988) mountain policy is generally understood to comprise both agricultural and also all other territorial specific policies aiming at mountain development. Also at that time the widely discussed report on mountain policy was published (Amato 1988). The thrust of recent discussion of mountain policy is taking the need for such an integrated approach as granted (Dax et al. 1999) and evaluation of mountain policies reflects this concern (Bazin 1999; OECD 1998 and 2002, Hovorka 1998, and Müh-linghaus 2002).

As referred to in the introduction of this paper the notion of sustainability gained worldwide increasing importance since the UN Conference in Rio in 1992 and mountain policies acquired momentum in many parts of the world. The discussion on chapter 13 (sustainable development for mountain areas) and also on other chapters (like chapter 10 "Integrated Planning and Management of Land Resources" and chapter 14 "Sustainable Agriculture and Rural Development"), all having been taken account in the Agenda 21 process, have been carried out on many levels and reached particular attention at the European level (Backmeroff et al. 1997). Also the discussion of diverse resolutions and charters in favour of mountain area support, launched by the Council of Europe and the Committee of Regions (1997) of the European Union has reflected the rising commitment for the issue. With the wave of mountain memoranda by national governments (Italy, Austria, France and Portugal) in 1996/1997 priority for mountain policy measures was aimed at the then starting discussions for CAP and Structural Funds reform, as well as 5th Framework Programme for RTD (1999-2002). In many respects this discourse was not just about the question of appropriate support schemes but also the necessity for providing adequate institutions at an intermediate level to facilitate mountain development.

In many countries Structural Funds programmes and Community Initiatives, like particularly Leader and Interreg are most relevant in mountain areas (e.g. Dax 1997, Mantino and Zumpano 2001). Recent discourse has shifted towards improving the process of regional development programmes, implementation and in particular, concentrate on issues like monitoring and new kinds of experiences of evaluation (techniques and models). Evaluation has not just got a meaning of formal assessment of achieving the programmes goals (and indicators) but also a means to actively provide an input to the implementation and, more generally speaking, the process of mountain development in itself. It therefore can become a kind of dialogue tool and learning mechanism (Ray 1999) supporting innovative local activities.

This last point addresses the questions of the appropriate levels and interrelation of measures and programmes, and the issue of governance for rural, mountain areas. Due to the varying topographical situation in mountain areas in many respects a rather small-scaled territorial analysis is required. Thus isolation and remoteness may occur locally and have to be assessed by appropriate policy design.

Finally, it is also important to note that environmental performance and environmental effects of economic activities and policies are of increasing importance for this topic (Dax and Wiesinger 1998, EUROMONTANA 1998). The attention attached to mountain issues in this respect is specifically related to the high ecological sensibility of mountain areas and its impact on global change (Price 1999).

The following survey on relevant projects and project areas intends to capture, in particular, some significant examples on the recent increase of mountain development research in Europe. The list of projects analyzed is far from being complete as information from respective research data sources is rather scattered and not yet available at a cross-national comparative level. Moreover institutional development in this field has been particularly expressed over recent years and due to mainly national research programmes a European viewpoint requires an increased collaborative analytical effort.

Survey on European mountain development research

The increase of activities and the political discussion of the mountain regions as a priority focus of a number of European countries have led to the inclusion of mountains in the programme designation within the 5th Framework Programme of the EU. The key action "Sustainable agriculture, fisheries and forestry, and integrated development of rural areas, including mountain areas" within the Quality of Life Programme reflects this concern. However, the sole nomination in the title of the key action did hardly result in an increase of relevant projects. Nevertheless, a significant growth of the number of projects relating to rural development measures could be assessed over the past period (Bryden 2001). Many of those are of direct impact to mountain areas.

The following analyses mentions some of the most interesting events relating to mountain research and furthermore was based on a search of research data bases, information on national programmes, as well as information from partners and colleagues.

Main events on mountain development:

In recent years some important international conferences regarding mountain regions have been organized in Europe.

- European Inter-governmental Consultation 1996 on Sustainable Mountain Development "To-wards sustainable mountain development in Europe" in Trento, October 1996.
- European Conference on Environmental and Societal Change in Mountain Regions, December 1997 in Oxford
- World Mountain Forum and International Mountain Research Workshop "Mountain regions - a research subject?" in June 2000 in Paris, Chambéry and Grenoble.
- 3rd European Mountain Convention: "Our mountains - A Future Strength of European Rural Development", organized by Euromontana, Inverness, Scotland, 16-18 May 2002
- International Conference on Sustainable Agriculture and Rural Development in Mountain Regions (SARD-Mountains 2002), a contribution to the International Year of the Mountains 2002 and in preparation for

the IYM, 16 - 20 June 2002, Adelboden, Switzerland (<http://www.sard-m2002.ch>)

- EU Conference "Community policies and Mountain areas", organized by DG Regio and DG Agri, 17-18 October 2002, Brussels.
- In particular during the *International Year of the Mountains 2002* a number of high-ranking and focused international events and additionally a series of national events has taken place and addressed a wide range of aspects of sustainable mountain development. Worldwide events were, the Bishkek World Conference in October/November, and world-wide events at the high summit during the action week in May 2002.

Mountain development research projects

The search of the CORDIS - RTD- projects data base on the term "mountain" was successful for 182 projects. Many of those projects have already been carried out in the 1980s and a great number can be attributed to natural sciences or implementation projects for specific technical applications within mountain regions. More in-depth information on a smaller number of projects reveals significance on development issues for fewer projects (see list of 42 projects in Dax 2002b). All over the programme areas mountain projects have been carried out, but only few have a socio-economic dimension. The information does not include all accompanying measures and demonstration projects, and studies directly commissioned by other Commission directorates than Directorate Research. Mountain development recently also seems to have become an important issue for the European Parliament and the Committee of the Regions. With the preparation for the 6th Framework Programme discussion of re-search programming regained momentum and the call for Expressions of Interests in June 2002 was seized by many research institutions as opportunity to focus on mountain concerns. Analysis of the proposals shows that the main priority selected is on "Global Change and ecosystems" and include some proposals on development issues. The following selected list of examples starts with influential *research activities* either commissioned by the European Commission or by other international organizations, and continues with some research proposal titles selected from Expressions of Interests for future research:

- Sustainable Agricultural Land Use in Alpine Mountain Regions (SAGRI-ALP, 1998-2000)
- A comparative analysis of the European Union's and Switzerland's instruments in terms of their influence on a sustainable agriculture in the Alpine arc (SUSTALP)
- Integration of Environmental Concerns into Mountain Agriculture (coordinated by Euromontana) " Regional development and cultural landscape change: the example of the Alps (REGALP, 2001-2004)

- Tools for evaluating investment in Mediterranean mountain areas - an integrated framework for sustainable development (MEDMONT, 2001-2004); the MEDEF network (first half of the 1990s).
- Diversification and reorganization of husbandry activities in less-favoured areas (DIVOR-DEF, 1997-2000) " Research projects in Portuguese mountain areas on diversification of farms and socio-economic development: "valorization of goat production in the Caldeirão mountain" (PECTA), and "Sustainable agriculture development - methodologies and definition of intervention criteria for mountain zones" (PENEDA) "
- Entrepreneurship in Mountain Areas of Southern Europe" (EMASE, 1999-2001)
- The Cultural Landscape in the Mountain Area of Austria - Policies for the Environment and Rural Development. A national report for the OECD - Group of the Council on Rural Development (1998)
- case study on the Greek mountain area of Tzoumerka by OECD Group of the Council on Rural Development (2000)
- PANOS Institute Oral Testimony Programme; some 250 interviews conducted by local people in local languages (www.mountainvoices.org)
- Biodiversity, Landscapes and Ecosystem Services of Agriculture and Forestry in the Austrian Alpine Region - An Approach to Economic (E)Valuation, national report for the OECD - Working Group on Economic Aspects of Biodiversity (2001)
- evaluation of mountain policies over three decades in France (Bazin 1999) *selected Expressions of Interests* (6th FP, Sub-priority "Global Change and ecosystems):
- Global Change in Mountain Regions (MRI), ETH Zürich, CH
- Strategies for sustainable land management in mountain areas (SLAMA), A (Dax 2002a)
- Natural Hazards Management in Mountain Areas under Global Change Conditions (NHMiMA), Institute of Geography, University of Innsbruck, A
- Mountainous natural hazards related to rapid gravitational mass movements (GRANAH), Cemagref, F
- Czech mountain National Parks and Biosphere Reserves - interaction between biodiversity and socio-economic development, Institute of Environmental Studies, CZ
- Integration models of border mountain ranges (INBOM), Inst. of Physical Planning and Municipal Economy, Krakow, PL
- Long-term sensitivity predictions for mountainous landscapes: implications for European policy (EuroMont), University of Edinburgh, UK
- The world-wide dimension of the Global Observation Research Initiative in Alpine Environments - a contribution to GTOS (GLORIA-WORLDwide), Inst. of Ecology, Univ. of Vienna, A

Research and institutional development

With the rise of mountain development issues on the political agenda the need for adequate institutional support and research infrastructures became obvious. Mountain initiatives and programmes spread all over the mountain ranges of the world and have been particularly fostered by the establishment of the Mountain Forum, acting as a worldwide network of researchers and institutes on mountain issues (Jayalakshmi 2002). In many regions a lack of a sound research basis and institutes was experienced. Impacts from climate change effects and changes in mountain ecological and societal systems have been revealed by different research disciplines. The great variety of different aspects and dimensions involved called for a more integrated and focused research approach. Only a few countries or regions had developed major research activities explicitly addressing mountain development. However, in recent years the vivid international debate and the close relation to regional development activities led to the foundation of research centres in several countries, mainly with an integrated re-search concept. However, most of research centres are oriented at the national level and more international coordination is required. The exploration of the state-of -the-art in research on the sustainable use and management of mountain areas, summarized in The Abisko Agenda (The Royal Swedish Academy of Sciences 2002) provides a common understanding of major research priorities, approaches and needs in mountain development. It reveals also the requirement of inter- and trans-disciplinary work programmes and a continuity of research commitment which is maintained well beyond programmes' stereotypic 3-5 year life cycles. Closer cooperation and international collaboration will be required to cope with the increasing environmental, economic and societal problems of mountain areas which affect both mountain regions and lowlands.

The European Research Area - an incentive to integrative approaches

The European Conference on Environmental and Societal Change in Mountain Regions, in Oxford in 1997, stressed needs and opportunities for integrated interdisciplinary research and identified four sets of key issues for global change research in mountain regions:

- Inventory and collection of baseline data on global change
- Research on processes of change in interacting environmental and societal systems
- Research on global change and mountain communities
- Implementation of interdisciplinary research

In the past, research for rural areas has been dominated by agricultural research and less attention has been paid to the other economic and social dimensions of rural change and development, particularly in the mountain regions. However, with the shift of the regional development paradigm towards bottom-up approaches and greater local participation and the rising awareness

of the multiple tasks some countries engaged in integrated research concepts on mountain development very early. Switzerland, Austria and France are examples for this development. In Austria, a federal research institute has been established in 1979 to focus on research issues of mountain and less-favoured areas, committed to an integrated research programme for all parts of population of these areas. The Bundesanstalt für Bergbauernfragen thus worked on a wide scope of research issues with an impact on mountain development.

In recent years the integrated approach and assessment of mountain policies led to a significant institutional development in many countries. New research organizations have been built which are characterized by an integration of economic, agricultural, forestry and environmental development issues. The best known are the Centro di Ecologia Alpina in Trento (Italy), the Centre for Mountain Studies at Perth College (Scotland), Istituto Nazionale per la Ricerca Scientifica e Tecnologica sulla Montagna (INRM, Italy), l'Institut de la Montagne in Chambéry (France) and the Strategic Planning Center in the Pindos Mountains (Greece).

It will be important that future mountain research addresses to an increasing extent the international dimension, reflecting the concept of the European Research Area. This can be achieved through the application of the new kinds of research instruments necessitating an increased effort to achieve greater and more comprehensive cooperation among researchers.

Such new approaches will have to take into account the following important conclusions from analysis of the previous research priorities:

- to achieve a balance between natural sciences and socio-economic research tasks
- to combine scattered research initiatives, and focus more specifically on mountains and the territorial impacts
- to engage in comparable studies, raising in-depth analysis of policy impacts and development issues
- to address the main issues, like diversification, landscape development, local participation, environmental integration, inter-relation of different levels, cultural dimension and policy assessment and strategies, with inter- and trans-disciplinary research methods
- to improve dissemination of research, particularly through the integration of local actors and the inclusion of an action-research strategy

With regard to the development of the European Research Area the expression of interest "Strategies for sustainable land management in mountain areas" (SLAMA) has been proposed aiming at increased cooperation of European mountain research centres (Dax 2002a).

The new European research commitment and the concern for the development of mountain policies may provide an opportunity for integrated interdisciplinary research regarding mountain development. This includes the consideration of the multifunctionality of mountain farming as prime issues in research projects and in policies for a sustainable mountain development and the focus on international comparative research activities.

References

- Amato, A. (1988), *Eine Politik für das Bergland*, Europäische Gemeinschaften, Wirtschafts- und Sozialausschuss, Brüssel, 144pp.
- Backmeroff, C., Chemini, C. and La Spada, P. (eds.) (1997), *Proceedings of the final Trento session of the European Intergovernmental Consultation on Sustainable Mountain Development*. Trento, 7-11 October 1996. Provincia Autonoma di Trento e Centro di Ecologia Alpina, 256 pp. (Italian/English/French/German).
- Barruet, J. (1995), Politiques de la Montagne, L'enjeu européen et transfrontalier, in: Barruet, J. (ed.), *Montagne, Laboratoire de la diversité*, Cemagref, Grenoble, pp. 227-238.
- Bazin, G. (1999), *La politique de la montagne*, Rapport d'évaluation, La documentation Française, Paris, 815pp.
- Bryden, J. (2001), Prospects for Research and Development, paper to workshop "European Rural Development, Problems, Chances, research Needs", organised by International Institute for Applied Systems Analysis, Austria, Polish Academy of Sciences and Polish Institute of Agricultural and Food Economics, Warsaw, 7-9 May.
- Bundeskanzleramt. *Entwicklungsschwache ländliche Räume in Berggebieten*; Series of the Federal Chancellery (Sektion IV/Dept. 6) No. 1/80: Wien, 1980.
- Commission of European Communities (1988), *The Future of Rural Society*, COM(88)601 final/2, Brussels.
- Dax, T. (1997a), Mountain Policies in Austria - experiences and outlook on an integrated policy approach, intervento al seminario internazionale "Quale futuro per l'agricoltura montana in Europa: politiche di sviluppo, di sostegno o di tutela", 7 ottobre, Milano.
- Dax, T. (2002a), Strategies for sustainable land management in mountain areas, expression of interest within the call for preparation to FP6, Vienna.
- Dax, T. (2002b), Mountain development research, listing of projects and project areas, in: Koutsouris, A. (ed.), *Innovative Structures for Sustainable Development of Mountainous Areas, Volume I*, proceedings of the ISDEMA Seminar in Thessaloniki, Greece, 17-18 March, University of Athens, pp. 189-212.
- Dax, T. and Hellegers, P. (2000), Policies for Less-Favoured Areas, in: Brouwer, F. and Lowe, P. (eds.), *CAP Regimes and the European Countryside, Prospects for Integration between Agricultural, Regional and Environmental Policies*, CAB International: Wallingford, pp. 179-197.
- Dax, T., Hovorka, G. and Loibl, E. (1999), Regional dynamics in mountain areas and the need for integrated policies, paper presented at the 39th ERSA

Conference, 23-27 August, Dublin.

Dax, T. and Wiesinger, G. (eds). (1998), *Mountain Farming and the Environment: Towards Integration*, research report no. 44, Bundesanstalt für Bergbauernfragen: Wien.

Euromontana (1998), L'integration des préoccupations environnementales dans l'agriculture de montagne, Etude réalisée pour la Commission Européenne DG XI, Paris/Bruxelles, 105pp.

Hovorka, G. (1998), *Die Kulturlandschaft im Berggebiet in Österreich*, OECD-Fallstudie, Forschungsbericht Nr. 43, Bundesanstalt für Bergbauernfragen, Wien, 189 pp.

Jayalakshmi, C.P. (2002), Networking as a tool for Sustainable Mountain Development: The case study of Mountain Forum, in: The Organization - special pullout; International Year of Mountains 2002: Vol. 5 Issue 2, pp.13-17.

Mantino, F. and Zumpano, C. (2001), La riforma dei Fondi Strutturali a favore dell'agricoltura di montagna in Italia: problemi e prospettive, in: Euromontana (ed.), *Mountain Agriculture towards Sustainable Development*, seminar final report, Capracotta, Italy, 21-24 Giugno, pp.71-89.

Mountain Agenda (1997), *Mountains of the World. Challenges for the 21st Century*. A contribution to Chapter 13, Agenda 21, Bern.

Mountain Agenda (2002), *Mountains of the World, Sustainable Development in Mountain Areas, The Need for Adequate Policies and Instruments*, Bern, 55pp.

Mühlinghaus, S. (2002), *Eigenständige Regionalentwicklung im Schweizer Berggebiet*, Ostschweizerische Geographische Gesellschaft, Neue Folge, Heft 7, St. Gallen, 234pp.

OECD (1998), *Rural Amenity in Austria, A Case Study of Cultural Landscape*, Paris, 115 pp.

OECD (2002), *Territorial Reviews Tzoumerka Greece*, Paris, 188pp.

Price, M. (1999), *Global Change in the Mountains*, The Parthenon Publishing Group: New York and London.

Ray, C. (1999), Reconsidering the evaluation of endogenous (rural) development - two qualitative approaches, paper to the EU COST A12 network on Rural Innovation, Newcastle upon Tyne.

The Royal Swedish Academy of Sciences (2002), *The Abisko Agenda, Research for Mountain Area Development*, a contribution to the United Nations Years of Mountains 2002, Ambio special report no. 11, 105pp.

Annex : Mountain research initiatives and institutes

- The Abisko Agenda, Research for Mountain Area Development, Rethinking Agenda 21, Chapter 13: Managing Fragile Ecosystems; Sustainable Mountain Development, The Royal Swedish Academy of Sciences, February 2002.
- International Geosphere-Biosphere Programme IGBP/IHDP/GTOS Mountain Research Initiative (2001).
- UNESCO, Man and the Biosphere Programme: Man's Impact on Mountain Ecosystem

- United Nations University (UNU) Environment and Sustainable Development Programme (<http://www.unu.edu/env/resource/resource.html>)
- Global Mountain Biodiversity Assessment (www.unibas.ch/gmba)
- Consultative Group on International Agricultural Research (CGIAR), Global Mountain Initiative (<http://www.cipotato.org/market/brochure99/world.htm>)
- International Centre for Integrated Mountain Development, ICIMOD (<http://www.icimod.org.np>)
- Mountain Forum (www.mtnforum.org)
- Forum Européen de la Montagne, established 1996, (www.europe.mtnforum.org),
- The Mountain Institute (www.mountain.org)
- Global Observation Research Initiative in Alpine Environments, GLORIA (www.gloria.ac.at)
- The International Mountain Society, Bern, Switzerland (institutional members include Swiss Agency for Development and Cooperation, SDC, United Nations University, UNU, ICIMOD, FAO, Consortium for the Sustainable Development of the Andean Ecoregion, CONDEAN, Centre for Development and Environment, CDE), publisher of the journal *Mountain Research and Development*, MRD (www.mrd-journal.org)
- Cultural Landscape Research, Austrian research initiative since 1995 (www.klf.at)
- Landscape and Habitats of the Alps, National Research Programme, Swiss National Science Foundation, implementation plan 2001 (www.snf.ch)

European mountain specific institutes

- Bundesanstalt für Bergbauernfragen (BABF), Federal institute for mountainous and less-favoured areas, founded 1979, Vienna, Austria (www.babf.bmlf.gv.at)
 - Schweizerische Arbeitsgemeinschaft für die Berggebiete (SAB), Swiss Centre for Mountain Regions, founded 1943 (www.sab.ch)
 - Centro di Ecologia Alpina (www.cealp.it), established in 1993, Trento, Italy
 - The Centre for Mountain Studies (CMS), founded 2000, at Perth College, University of the Highlands and Islands (UHI) Millennium Institute, UK (www.cms.uhi.ac.uk).
 - Pindos, Strategic Planning Center, Trikala, Greece
 - Istituto Nazionale per la Ricerca Scientifica e Tecnologica sulla Montagna (INRM), established in 2000, Roma, Italy (www.inrm.it)
 - Institut de la Montagne, founded 1999, Chambéry, France (www.institut-montagne.org)
-

Notes to readers

Federal Institute for Less-Favoured and Mountainous Areas is the English translation of Bundesanstalt fuer Bergbauernfragen.

This was a paper given at: The Innovative Structures for the Sustainable Development of Mountainous Areas (ISDEMA) Conference at Thessaloniki. 8-9 November 2002.