# Thematic Report on Mountain Ecosystems

# Please provide the following details on the origin of this report.

Contracting Party:	Germany			
National Focal Point				
Full name of the institution:	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety			
Name and title of contact officer:	Dirk Schwenzfeier Head of Division			
Mailing address:	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety Division N I 6 Godesberger Allee 90 53175 Bonn Germany			
Telephone:	+49-228-305-2611			
Fax:	+49-228-305-2694			
E-mail:	Dirk.Schwenzfeier@bmu.bund.de			
Contact officer for n	national report (if different)			
Full name of the institution:				
Name and title of contact officer:				
Mailing address:				
Telephone:				
Fax:				
E-mail:				
S	Submission Submission			
Signature of officer responsible for submitting national report:				
Date of submission:				

Please provide summary information on the process by which this report has been prepared, including information on the types of stakeholders who have been actively involved in its preparation and on material which was used as a basis for the report.

A draft version of this report was prepared by the Federal Agency for Nature Conservation. The information given has been collected from sources of the Bavarian State Ministry for Regional Development and Environmental Affairs, the Federal Ministry of Consumer Protection, Food and Agriculture, the International Commission for the Protection of the Alps, the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, the Federal Agency for Nature Conservation, the Federal Environmental Agency, the community network "Alliance in the Alps", the European Observatory of Mountain Forests (EOMF), the Federal Ministry of Economics and Technology, UNEP and the Council of Europe.
As a second step the draft was coordinated within the German government and with the German Federal States (Laender) concerned. The Report was finalized by 18 December 2002.

#### Mountain Ecosystems

1.	1. What is the relative priority your country accords to the conservation and sustainable use of biological diversity in mountain ecosystems?										
a) I	High			b) M	edium	l	X		c) Low		
2.	2. How does your country assess the resources available for conservation and sustainable use of biological diversity in mountain ecosystems, both domestic and international?										
a) (	Good		b) Adequate			c) Li	miting	X	d) Severely limiting		
3.	3. Has your country requested financial assistance from GEF for funding the activities for conservation and sustainable use of biological diversity in mountain ecosystems?										
	a) no						X				
	b) yes, please provide details										

#### Assessment, Identification and Monitoring

4.	Has your country undertaken any assessment of direct and underlying causes of do of biological diversity of mountain ecosystems?	egradation and loss
	a) no, please specify the reasons	
	b) yes, please specify major threats and their relative importance, as well as gaps	X

Research has been conducted on causes of threat to individual species of mountain ecosystems with a special focus on threatened species and plant communities. On the level of ecosystems the red list of endangered types of biotope in the Federal Republic of Germany includes information on the conservation status of and threats to mountain biotopes.

According to a definition of mountains as areas with an average altitude of more than 700 m and geoclimatic handicaps, Germany has a mountain area of 1.6 mio. hectares, of which 0.5 mio. hectares are situated in the Alps (source: "White Book 2000 on mountain forests in Europe" by the European Observatory of Mountain Forests).

The biotope types of low mountain ranges ("Mittelgebirge"), which make up the larger part of Germany's mountain areas, have been analyzed in the red data book together with lowland biotopes and show similar causes of threat.

Among the major factors of threat for the biotope types with a predominantly alpine distribution are the following:

- intensive recreational use including winter sports (the Alps are one of the most frequented tourism destinations world-wide)
- intensive pastoral/agricultural or forestry use
- abandonment of areas that were formerly under extensive use
- air-borne pollution
- in the case of water bodies and riparian vegetation including floodplain forests: physical alteration such as straightening or lining of stream courses and construction of dams

Further strain on mountain biotopes may be expected as a consequence of climatic changes and of human reactions to climatic change such as the shifting of winter sports activities to higher altitudes. Like almost all biotope types in Germany, the biotopes of mountain regions are also significantly affected by land depletion for settlement and transport, especially in accessible valleys.

# c) If yes, please specify the measures your country has taken to control the causes of loss of mountain biodiversity

Several large-scale federal nature protection projects under the programme for "establishing and safeguarding valuable components of nature and landscape that are of nation-wide representative significance" are being implemented in mountain regions, for example the project "Eastern Erzgebirge mountain meadows" in Saxony or the project "Murnauer Moos" in the largest complex of bog- and moorland on the northern border of the Alps.

Mountain biodiversity considerations are included in the conservation plans and programmes of the German Federal States, such as the programme for the conservation of species and biotopes of Bavaria (which is the only German Federal State with a territorial share of the Alps). The Bavarian programme demands the elaboration of a framework of measures for all administrative districts (Landkreise) and their presentation in the form of maps and explanatory texts. A programme for the establishment of projects that contribute to a biotope network in Bavaria includes about 200 projects, many of which are situated in the Alps or in the low mountain ranges of Bavaria. Targeted species protection programmes are also enacted for species of high conservation value such as the Golden Eagle in the Alps and the lynx in the low mountain ranges of the Bavarian Forest and the Harz.

Mountain biodiversity is also addressed in other sectoral policies and programmes.

For the whole of Germany, the issue of mountain and hill farming is also addressed by support to agriculture in less-favoured areas under the "Joint Task for the Improvement of Agricultural Structures and Coastal Protection". This measure is co-financed by the European Union (Regulation No. 1257/1999). Germany has ratified the Protocol of Mountain Farming of the Alpine Convention in 2002 (rf question 13).

Most German Federal States are operating cultural landscape schemes to promote the integration of nature conservation, agriculture and landscape management. The cultural landscape scheme of Bavaria includes a special group of measures on alpine pastures with the aim of maintaining agricultural use on ecologically valuable sites of the cultural landscape.

Resolution S4 of the Ministerial Conference for the Protection of Forests in Europe places Germany under an obligation to provide for the sustainable use of mountain forests. For the alpine region, Germany has ratified the Protocol on Mountain Forests of the Alpine Convention in 2002 (cf. question 13), thereby pledging to maintain the protective, social and ecological functions as well as the use values of mountain forests and to establish an adequate number of natural forest reserves.

Under the Federal Forestry Act, forests which are important for the protection against dangers such as landslides or avalanches may be declared "protective forests", in which certain activities such as clear-cutting are forbidden. About 60 % of the forest area in the Bavarian Alps is included in this category.

Conflicts between recreational uses and conservation of biodiversity (especially concerning wild animals) have been the subject of voluntary agreements between conservation authorities, conservation NGOs and sports federations or associations of alpinists as well as other stakeholders. Examples for this are the project for environmentally friendly tour skiing with a focus on the protection of grouse species and the agreements for the protection of vulnerable rock habitats in low mountain ranges which include restrictions on rock climbing in certain areas.

5.	Has your country identified taxonomic needs for conservation and sustainable use of biological diversity of mountain ecosystems?		
	a) no, please specify the reasons	X	
	b) yes, please specify		
	The process of establishing a national focal point for the Global Taxonomy Initiat underway in Germany. A country-based assessment of taxonomic needs for conse sustainable use is being carried out.		
6.	Has your country made any assessment of the vulnerability or fragility of the mou country?	ntains in your	
	a) no, please specify the reasons		
	b) yes, please specify the results and observed impacts on mountain biodiversity	X	
	Assessments have been made concerning the risk of extreme natural disturbances in mountains, such as rock avalanches, mudflows, earth slides, floods and heavy avalanches. These assessments have concentrated on the Alpine region. Land use regulations such as the Bavarian Alpine plan which prohibits further traffic development throughout 42 % of the Bavarian Alps are the result of human safety considerations. They also reduce the risk of human-induced natural disasters and have a positive impact on mountain biodiversity by protecting large areas from development pressure and land depletion.		
	The Protocol on Soil Conservation of the Alpine Convention (cf. question 13) places the parties under an obligation to map areas which are endangered by geological, hydrogeological and hydrological risks, and to designate danger zones, if necessary. A working group "Avalanches, Floods, Rock Fall and Landslides" has been established, in which Germany is taking part.		
	Quelle: www.umweltministerium.bayern.de; deutsch.cipra.org; Auskünfte von UB	A FG II 1.1	
7.	. Has your country made any assessment important for conservation of biological diversity of mountain ecosystems at the genetic, species and ecosystem levels? (You may wish to use the Annex I of the Convention for categories of biodiversity important for conservation)		
	a) no, please specify the reasons		
	b) yes, some assessments or monitoring undertaken (please specify)		
	c) yes, comprehensive assessments or monitoring programmes undertaken (please specify where results can be found, and opportunities and obstacles, if any)	X	

The collection of genetic data with a potential for use in biodiversity conservation is conducted only for selected species in Germany. With regard to mountain ecosystems, the research activities on genetic resources of forest tree and shrub species are probably most important. Information on these activities is available on the internet at <a href="http://www.genres.de/fgrdeu">http://www.genres.de/fgrdeu</a>. This link is also provided on the web pages of the German clearing-house mechanism (<a href="http://www.biodiv-chm.de">http://www.biodiv-chm.de</a>).

Data on the genetic resources of crops and farm animals in Germany are being collected in databases by several research institutions. These databases include information on genetic resources from mountain areas. A federal information system on genetic resources (BIG) is being developed (http://www.big-flora.de).

Mapping programmes are conducted for a range of species of conservation interest. For vascular plants, Germany is collecting information on distribution, populations and population development on a countrywide basis and making them available in a central database (FLORKAT). Cf. also http://www.floraweb.de.

A monitoring of ecosystems and species important for conservation will be established on the sites of the Natura 2000 European network of protected areas. Many of the sites proposed by the German Federal States as part of this ecological network are situated in mountain regions (cf. question 18).

Ecosystem-based monitoring programmes currently exist in a number of biosphere reserves, for example the Rhoen biosphere reserve which protects the cultural landscape of a low mountain range in central Germany. The monitoring approach applied in the Rhoen mountains was developed taking into account the results of the ecosystem research conducted in the Berchtesgaden Alps as part of the Man and Biosphere Project Area 6 (cf. question 9).

Germany is also taking part in the System for the Observation of and Information on the Alps (SOIA), a decentralized scientific network established under the Alpine Convention and consisting of eight national Communication Centers (cf. question 13). The tasks of SOIA include documentation of existing research results, the production of an Alpine Geographic Information System and an Alpine Catalogue of Data Sources, the constitution of harmonized indicators and thematic work on topics such as water, climate, natural hazards and protection of wild species. Programmes for the mapping of biotopes are implemented on the level of the German Federal States. The data provided by these activities are a valuable basis for decisions concerning biodiversity conservation. For example, the state of Bavaria is conducting a mapping of ecologically valuable biotopes in the Alps on a scale of 1:5000.

A problem-oriented assessment of the ecological state and aesthetic qualities of skiing slopes is being carried out in the major skiing areas of Bavaria since 1990.

#### Regulatory and Information System and Action Plan

8.	Has your country developed regulations, policies and programs for conservation a	nd sustainable use
	of biological diversity in mountain ecosystems?	
	a) no	

a) no
b) yes, please specify sectors
X

Most of the programmes for conservation and sustainable use of biological diversity in mountain ecosystems of Germany are part of more comprehensive programmes which include the biodiversity of lowland regions as well. The programmes for the conservation of species and biotopes and the programmes of the forestry and agricultural sectors have already been described in reply to question 4c. On the establishment of protected areas in mountain ecosystems, cf. also question 18.

Germany supports the Pan-European Biological and Landscape Diversity Strategy (PEBLDS) and has ratified the protocols of the Alpine Convention in 2002 (cf. question 12 and 13).

9. Has your country applied the ecosystem approach (adopted at COP 5) in the conservation and sustainable use of biological diversity in mountain ecosystems?

a) no	
b) yes, please provide some cases or examples	X

Several studies have been commissioned by the Federal Agency for Nature Conservation in order to examine to what extent current conservation practices and programs are compatible with the ecosystem approach, and to elaborate suggestions for further improvement.

The subjects of these studies include the management of the Bavarian forest national park, biosphere reserve and nature park, the Alpine Convention and its implications for Germany and application possibilities of the CBD's international tourism guidelines in mountain regions.

The first results of these studies show that, although some shortcomings can be detected, many principles of the ecosystem approach are already being put into practice in Germany. In the legal framework of the Alpine Convention, the principles are covered almost completely by corresponding provisions. However, conflicting interests for example in the traffic, energy and tourism sectors will require substantial efforts to ensure that the relevant provisions of the Alpine Convention are fully implemented.

The scientific foundation for application of the ecosystem approach in mountain areas of Germany has been enlarged by the long-term ecosystem research project "Impact of human activities on high mountain ecosystems". This project was conducted between 1981 and 1991 in the Berchtesgaden Alps as part of the Man and Biosphere Project Area 6 dealing with mountain and tundra ecosystems. The research included ecological, socio-economic and methodological aspects and produced planning and development tools for the region of the Berchtesgaden National Park.

10. Does your national biodiversity strategy and action plan cover mountain biological diversity?		
a) no, please specify why		
b) yes, please give some information on the strategy and plan, in particular on mountain biodiversity	X	
Mountains are implicitly dealt with in strategies for implementing the CBD in Germany under the respective approaches for nature conservation agriculture, forestry, tourism and other sectors.		
11. Has your country disseminated the relevant information concerning management practices, plans and programmes for conservation and sustainable use of components of biological diversity in mountain ecosystems?		
a) no		
b) yes, please provide details where information can be retrieved concerning management practices, plans and programmes	X	

Information on the Alpine Convention can be retrieved via a link on the web pages of the German clearing-house mechanism (<a href="http://www.biodiv-chm.de">http://www.biodiv-chm.de</a>).

A manual of "good practice" for sustainable regional development in the Alps has been developed in 2001 in a collaborative effort between regions of Germany, Italy and Austria and the European Union. The manual is seen as a contribution to Chapter 13 of Agenda 21 and is based on the description of pilot projects which serve the goals of improving quality of life, strengthening the regional economy and safeguarding the ecological assets of the Alps. The projects cover the subjects of eight out of nine protocols of the Alpine Convention, including conservation, transport, energy and soil conservation. The manual is available on the internet at http://www.provincia.tn.it/agenda21/E/inden.htm.

#### Cooperation

12. Has your country undertaken any collaboration with other Parties for conservation use of biological diversity in mountain ecosystems at the regional level or within mountains?	
a) no	
b) yes, please specify the objectives of this collaboration and achievements	X
Germany is cooperating with neighbouring states on the subject of management practices in protected areas in mountain regions, for example in the Palatinate Forest/Northern Vosges (France) transboundary biosphere reserve, or in the Bavarian Forest National Park together with the Bohemian Forest National Park in the Czech Republic.	
Germany is supporting the Pan-European Biological and Landscape Diversity Str. Action Theme 10 of the first action plan of the PEBLDS was focused on mountain	<b>23</b> \
Concerning collaboration with other Parties in order to promote sustainable tourism in mountain regions, cf. question 15.	
Concerning collaboration within the framework of the Alpine Convention, cf. que	estion 13.
See also question 19	

13. Has your country signed or ratified any regional or international treaty concerning mountains?		
a) no		
b) yes, please specify which treaty and provide as much as possible a report on the progress in the implementation of the treaties, including any major constraints in the implementation of the treaties	X	

Germany has ratified the Alpine Convention and its Protocols. The Alpine Convention is a legally binding agreement which has been signed by the eight Alpine Countries and the European Union. Its goal is to improve transboundary cooperation in order to achieve protection of the Alps and a wise and sustainable use of their resources. It is intended as a framework convention to be complemented by protocols on important issues. So far, nine protocols to the Alpine Convention have been elaborated on the subjects of conservation of nature and the countryside, mountain farming, regional planning and sustainable development, mountain forests, tourism and recreation, energy, soil conservation, transport and dispute settlement. In 2002, all of the mentioned protocols have been ratified by Germany as well as Austria and the Principality of Liechtenstein. The ratification by three countries means that the protocols will enter into force three months after the deposition of the instruments of ratification, probably in autumn 2002.

Progress in the implementation of the Convention was somewhat slow in the first years after its signature by seven parties (including Germany) in 1991. This was partly due to controversies in the negotiation of protocols, particularly on the subject of transport. A lack of political impetus caused by economic considerations could also be noted as well as organizational problems connected with changing chairmanships and the necessity for translation of all major documents into the four official languages of the convention (i.e. French, German, Italian and Slovenian). Further need for coordination on the national level results from the federal structure of government in Germany as well as in some other member states.

The elaboration and acceptance of an agreed version for the transport protocol in the year 2000 was one of the factors which opened the way for the ratification of protocols by the parties to the convention. The establishment of a permanent secretariat, which is due to be finally settled in 2002, is also seen as an achievement which will facilitate further progress.

Successful steps towards the implementation of the provisions of the framework convention so far include the operations of the working group "Mountain-specific environmental quality targets", which was chaired by the German Federal Environmental Agency, and the establishment of the System for the Observation of and Information on the Alps (SOIA) (cf. question 7).

A network of alpine protected areas was founded in 1997 in order to promote the conservation of alpine biodiversity and to support the implementation of European directives on the field of conservation (EU Birds Directive and EU Habitats Directive) as well as a sustainable development of the alpine area in accordance with the Alpine Convention and its Protocol on Conservation of Nature and the Countryside.

On the community level, an interesting initiative is the network "Alliance in the Alps", comprising about 150 local authorities from the whole of the Alpine region. The alliance dates back to a pilot project launched by the International Commission for the Protection of the Alps, the Alpine Research Institute and a number of regional organizations. The aim of this initiative is to implement the goals of the Alpine Convention for sustainable development by improving the ecological, social and economic situation in cooperation with the local population. An important aspect of the network is the exchange of knowledge and experience in the course of meetings, conferences and excursions.

#### Relevant thematic areas and cross-cutting issues

14. Has your country taken account of mountain ecosystems while implementing thematic programmes of work on agricultural; inland waters; forest; and dry and sub-humid lands biological diversity?	
a) no	
b) yes – but in only one or two thematic programmes of work	
c) yes, included in all programmes of work	X
d) if yes, please specify details	

Most measures and regulations contributing to the implementation of the CBD's thematic programmes in Germany apply to the full range of relevant ecosystems that are present on the federal territory, thus including mountain ecosystems where appropriate. In addition, many provisions of the Alpine Convention and its protocols support compliance with the aims of the thematic programmes of work.

Some examples (cf. also the answers to question 4c, 7 and 18):

### Programme of work on agricultural biodiversity:

- According to the Alpine Convention's Protocol on Mountain Agriculture, parties undertake to promote the maintenance of animal husbandry including traditional farm animals with their characteristic diversity of breeds, and to promote research and consulting services for the conservation of genetic diversity of animal breeds and crops.

## Programme of work on inland waters biodiversity:

- All of the provisions of the EU Water Framework Directive apply to water bodies of mountain as well as lowland ecosystems. The directive calls for a consistent management of inland waters on the basis of river catchments, including transboundary cooperation where necessary.
- The Alpine Convention's Protocol on Energy demands the preservation of the ecological functions of watercourses in the case of hydroelectric development projects and the maintenance of the water balance in protected areas.

#### Programme of work on forest biodiversity:

- Federal and state authorities in Germany are promoting the introduction of forest certification schemes. A considerable proportion of federal, state, communal and private forests in Germany has already been certified according to various international environmental standards, including large tracts of forest in mountain areas.
- The EU Habitats Directive lists several types of mountain forest as natural habitat types of Community interest, which have to be included in the Natura 2000 European network of protected areas.

15. Has your country taken any measures to ensure that the tourism in mountains is sustainable?	
a) no, please specify why	
b) yes, but in early stages of development (please specify the reasons)	X
c) in advanced stages of development (please specify the reasons)	
d) relatively comprehensive measures being implemented (please specify the reasons)	

Germany has provided active support to the development of the CBD's international guidelines for sustainable tourism in sensitive areas including mountain ecosystems. The Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) and the Federal Agency for Nature Conservation (BfN) continue to contribute to the implementation of the guidelines by supporting workshops and case-studies on an international level. For example, an international workshop for participants from Central and Eastern European countries to be held in October 2002 will focus on the implementation of the ecosystem approach and the tourism guidelines of the CBD with regard to tourism in mountain areas. A case-study on the implementation of the tourism guidelines in the mountain region of Banska Stiavnica (Slovakia) has also been completed with support from the BMU in 2002. A training seminar on ecological tourism for protected area staff from Countries with Economies in Transission was held at the BfN on Vilm in April 2002.

On the national level, the development of concepts for sustainable tourism is mainly taking place in Germany's national parks, biosphere reserves and nature parks, many of which are situated in mountain regions. The nature park in the Frankenwald as a low mountain range is one of three German nature parks which have been chosen for the pilot-phase of the European Charter for Sustainable Tourism in Protected Areas.

In 2001, an umbrella label for environmentally friendly tourism in Germany was launched with the support of the German Federal Ministry for the Environment, Nature Conservation and Nuclear Safety. A catalogue of criteria has been developed for the granting of the label to environmentally oriented tourism offers. It is expected that the label will serve as an incentive to increase the supply and demand for sustainable tourism projects.

The protocol on tourism of the Alpine Convention demands the elaboration of overall concepts, development programmes and sectoral plans to ensure a coordinated development of touristic capacities. Special provisions are made concerning rest zones to be exempted from development, requirements for the approval of ascent support facilities, the promotion of restrictions on motor traffic in centers of tourism and conditions for the establishment of skiing slopes. Pilot projects for ecologically and socially sustainable tourism in line with the goals of the protocol have already been established, for example under the framework of the "Alliance in the Alps" (cf. question 13). One of the working-groups of the Network of Alpine Protected Areas focuses on questions such as the control of mass tourism.

On cooperation between conservation authorities and sports and alpinists' organizations, cf. also question 4c.

16. Has your country taken any measures to protect the traditional knowledge, innovations and practices of indigenous and local communities for conservation and sustainable use of biological diversity in mountain ecosystems?		
a) no		
b) not relevant	X	
c) yes, but in early stages of policy or programme development		
d) yes, in advanced stages of development		
e) some programmes being implemented		
f) comprehensive programmes being implemented		
17. Has your country developed any programmes for the protection of natural and cultural heritages in the mountains?		
a) no	X	
The industrial and cultural landscape of the Erzgebirge mountains has been placed on the German tentative list of sites to be considered in the nomination of world heritage sites to the UNESCO, but has not been nominated yet.		
A "European Landscape Convention" has been developed by the Council of Europe in order to promote landscape protection, management and planning. The convention is based on the perception of landscape as a basic component of the European natural and cultural heritage. It was adopted in the year 2000. Germany considers to sign and ratify the Convention within the near future.		
Paragraph 14 of the German Federal Nature Conservation Act states that one of the aims of landscape planning is the preservation and development of the diversity, uniqueness and beauty of nature and landscape. Landscape Protection Areas may be designated in Germany in order to protect the functioning of ecosystems and the ability of natural resources to regenerate, but also in order to protect the diversity, uniqueness and beauty of a landscape as well as its particular value in terms of cultural history.		
Within the framework of the Alpine Convention, Germany is taking part in the working-group for the elaboration of a protocol on "Population and Culture". A study on "Current Changes of Environment, Economy, Society and Population in the Alps" has been commissioned by the Federal Environmental Agency.		
b) yes, please provide some information on the programmes		
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18. Has your country established protected areas in mountains?	
a) no	
b) yes, please specify the percentage of mountains under protected areas out of total mountain areas in your country	X

The calculation of protected area percentages for the low mountain regions of Germany is difficult because of varying definitions of "mountains" and because some protected areas include a share of lowland as well as mountainous terrain.

In the Bavarian Alps, about 20 % of the total area are made up of designated nature conservation areas ("Naturschutzgebiete") or are included in the Berchtesgaden National Park. 30 % of the Alpine region have been proposed as sites of community interest for the Natura 2000 network of protected areas in Europe.

19. Has your country undertaken any activities to celebrate the International Year of Mountains and Eco-tourism?

a) no	
b) yes, please specify	X

The International Year of Mountains has been the occasion for a large number of events throughout Germany ranging from political meetings and scientific congresses to excursions, concerts and festivities. In June 2002, an international conference entitled "The Alpine Experience – an approach for other mountain regions?" was organized by the Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU), the Ministry for Consumer Protection, Food and Agriculture (BMVEL), UNEP, the International Commission for the Protection of the Alps, the German Agency for Technical Cooperation (GTZ), the Bavarian Government and the Berchtesgaden National Park. This conference was attended by participants from the Alps, the Carpathians, the Caucasus, the mountain systems of Central Asia, the Altai, the Himalaya and the Andes. One aim of the event was to facilitate an exchange of experiences on regional cooperation in mountain areas. The final document of the conference, the "Berchtesgaden Declaration on Mountain Range Regional Cooperation" is available on the internet at <a href="http://www.cipra.de/berchtesgaden">http://www.cipra.de/berchtesgaden</a>.

Activities which contribute to the International Year of Ecotourism have been initiated by the BMU and the Ministry of Economics and Technology (BMWI), by the governments of the German Federal States, by conservation associations, associations of touristic organizations, mountaineers, cyclists and other interest groups and by companies including the German railways company.

Several activities supported by the BMU and the Federal Agency for Nature Conservation (BfN) in 2002 in the field of sustainable tourism (cf. question 15) can be regarded as contributing to both the Year of Mountains and the Year of Ecotourism.

## Case-studies

Please provide case-studies made by your country in conservation and sustainable use of biological diversity in mountain ecosystems.

Beate Krettinger, Fritz Ludwig, Dieter Speer, Gerd Aufmkolk und Sigrid Ziesel: "Zukunft der Mittelgebirgslandschaften. Szenarien zur Entwicklung des ländlichen Raums am Beispiel der Fränkischen Alb. – BfN, 2001, 128 S. In German.
Axel Paulsch, Cornelia Dziedzioch und Thomas Plän: "Sustainable Use and Development of High-Mountain Ecosystems in Germany – A Case Study on the Ecosystem Approach"
Ralf Bögel: "Lebensraumansprüche der Gemse in Wechselwirkung zu Waldentwicklung und Tourismus" – BfN, 2001, 239 S. In German. Available on CD-ROM.
A case-study on "Conservation and Sustainable Use of Mountain Ecosystems in the Context of the Convention on Biological Diversity and the Alpine Convention" will be conducted as a research and development project coordinated by the Federal Environmental Agency. Results of this study are expected by the end of 2003.
Further comments

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