

UNESCO's Man and the Biosphere (MAB) programme in the mountains of Central and Eastern Europe: past experiences and future possibilities

Program UNESCO Člověk a biosféra (MAB) v horách střední a východní Evropy: získané zkušenosti a další možnosti

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Abstract

Within UNESCO's Man and the Biosphere (MAB) Programme, Project Area 6 (MAB-6), which focussed on mountain regions, was one of the first to begin its activities. The objectives of MAB-6, set in 1973, placed a strong emphasis on applied interdisciplinary research, involving natural and social scientists, which considered the needs of local people. In the mountains of Central and Eastern Europe, very little research was done within the framework of MAB-6, for a variety of linked political and institutional reasons. However, a number of biosphere reserves were established. In the current era of rapid changes in Central and Eastern Europe, many of the results of MAB-6 in the Alps and Pyrenees could be very valuable in helping to define new strategies and policies for resource management. The existence of biosphere reserves in the mountains of Central and Eastern Europe, especially those which straddle national frontiers, provides an additional stimulus in this direction.

Key words: biosphere reserves, environmental policy, interdisciplinary research, public participation, scenarios

Introduction

The United Nations Educational, Scientific and Cultural Organisation (UNESCO) launched its Man and the Biosphere (MAB) programme in 1971. Its immediate origins can be traced back to the International Council of Scientific Unions' International Biological Programme (IBP: 1964 to 1974), and UNESCO's Biosphere Conference, held in Paris in 1968. The conference recognised that, while the IBP had led to major advances in biology and ecology (WORTHINGTON 1975), people play important roles in influencing environmental processes and are, in turn, significantly affected by them. The MAB programme was therefore proposed as the first international interdisciplinary programme involving both natural and social scientists in conducting applied research. It was divided into 14 'Project Areas', each relating to human interactions in specific zones of the biosphere (e.g. islands, tropical and sub-tropical forests, urban systems) or to processes occurring in all parts of the biosphere (e.g. perception of environmental quality, pest management and fertiliser use, conservation of natural areas and genetic material) (UNESCO 1987). Within the MAB programme, mountain ecosystems were principally considered within Project Area 6 (MAB-6): „Impact of human activities on mountain and tundra ecosystems“.

MAB in temperate mountains; objectives and organization

Project 6 was among the first MAB Projects to begin its activities. On the recommendation of the first session of the International Coordinating Council (ICC) of the MAB programme in November 1971, a 'panel of experts' on MAB-6 met in Salzburg, Austria, in January 1973 (UNESCO 1973), and prepared a draft report. The ICC considered this at its second session in April 1973, identified Project 6 as one of four to which immediate attention should be given, and convened a working group to plan the programme. In Lillehammer, Norway, in November 1973, the working group identified three 'problem areas' as a basis for a core programme of internationally-coordinated activities:

- 1) resource development and human settlement in tropical mountain regions;
- 2) tourism, technology and land use alternatives in temperate mountains;
- 3) land use in high-latitude mountain and tundra ecosystems, with special reference to grazing, industrial development and recreation.

The general objective for work in temperate mountains, the 'problem area' of primary concern in Europe, was „to give a better knowledge of the mountain ecosystems in the temperate zone in relation to human use, so that present ecosystems can be conserved and new stable ecosystems devised to replace old systems which are no longer socially relevant and economically viable. In essence, this research should make it possible to give management prescriptions to achieve desired aims in the management of the ecosystems of mountains in the temperate zone.“ It was proposed that research should concentrate on the impacts of tourism, through the co-operation of natural and social scientists. Particular attention needed to be given to critical factors and threshold points in the process of change, through analysis of carrying capacity. A prime concern was to meet the needs of local people, and their control of the environment or the means by which this control is lost. The main framework was to be the spatially integrated unit: a village and its hinterland, a mountain valley, or a region with similar or contrasting levels of change. Serious attention also needed to be given to the time dimension (UNESCO 1974b: 33–34).

There were also MAB meetings in the USA (IVES & STITES 1975), Nepal (UNESCO 1977), and South America, and many participants in early MAB-6 meetings have continued to communicate and co-operate through the International Mountain Society and other organisations and programmes (IVES & MESSERLI 1990; IVES 1995).

At the national scale, the extent to which MAB-6 projects followed the general principles of the MAB programme, or recommendations of themes and approaches for projects, was largely left to national MAB committees. This decentralised approach provided potential for stimulating new approaches, but also meant that national MAB committees often designated research programmes and projects although they were not especially interdisciplinary (involving both social and natural scientists) and/or did not emphasise interactions between humankind and the biosphere.

MAB research in the mountains of Central and Eastern Europe

The problem areas and objectives of MAB-6 were defined by scientists from many regions of the world, but these did not include any representatives from the former communist countries of Central or Eastern Europe except the USSR. Nevertheless, during the second half of the 1970s, MAB-6 projects began in the region. By late 1975, the Polish National MAB Committee had prepared an interdisciplinary group for studies in the Carpathian mountains, and was seeking to develop a co-ordinated regional research programme with Czechoslovak, Romanian, and Soviet scientists (UNESCO 1976). In 1977, the first meeting of MAB Na-

tional Committees of socialist countries (except Romania) took place in Moscow. At this meeting, responsibility for the coordination of each MAB Project was given to a specific country; for MAB-6, to Poland (GVISHIANI & SOKOLOV 1979).

In the late 1970s and early 1980s, Prof. Zabierowski of Krakow, who was responsible for MAB-6 in Poland, retained responsibility for co-ordinating MAB-6 projects throughout eastern Europe and the USSR (UNESCO 1978; 1980). Opportunities for such coordination were also provided by successive conferences of the MAB Committees of the socialist countries in Warsaw, Poland (1979), Budapest, Hungary (1981), Klinke, East Germany (1983), Sofia, Bulgaria (1984), Brno, Czechoslovakia (1986), Havana, Cuba (1988), and Kiev, Ukraine (1990). Proceedings were only published for the first two of these meetings. At the 1979 meeting, hydrology (particularly the effects of reservoirs), sustainable agriculture, and tourism and recreation were identified as priority areas for research in mountain areas (GVISHIANI & SOKOLOV 1981). Yet, while the need for collaborative studies was emphasized at many of these meetings, substantive cooperative and collaborative activities generally remained limited throughout the communist era, and attempts at coordination were given up by the Polish coordination centre in Krakow in 1985, when the Institute of Geography of the USSR Academy of Sciences – and specifically the Institute's Laboratory for Mountain Geosystems, formed in 1986 – assumed this responsibility (Soviet National MAB Committee 1989).

In two countries, National MAB Committees established sub-committees responsible for coordinating MAB-6 research. As mentioned above, one was Poland, where six projects were organized in various parts of the Carpathians. These four- to six-year projects, intended to start in 1976 or 1977, were to focus on the impacts of tourism, reservoirs, and other land uses on mountain environments (UNESCO 1981). However, while papers on these topics were published by contributing scientists (e.g., Polish National MAB Committee 1981), these projects do not appear to have resulted in publications that identify their MAB-6 origins. In Czechoslovakia, three individuals successively held the post of chairman of the MAB-6 sub-committee, but none ever convened the sub-committee (Czechoslovak National MAB Committee 1990). However, a significant of work in the Little Carpathians and Bohemian-Moravian uplands was connected with MAB within the scope of Project 2 (temperate forests) (e.g., NOSEK 1986; PRAX & RAEV 1985); and the Institute of Forest Ecology in Brno became UNESCO's Information Centre for Temperate Forests of the Northern Hemisphere in 1976.

In the mountains of Central and Eastern Europe, the main foci of research that can be said to have been connected to MAB were the biosphere reserves of Bulgaria, the Czech Republic, Poland, and Slovakia. Biosphere reserves derive from MAB Project 8, „Conservation of natural areas and the genetic material they contain“. The definitions and objectives of biosphere reserves have evolved considerably since the first set of objectives was defined in 1974 (UNESCO 1974a), when their focus was very much towards what would now be called biodiversity (PRICE 1996). In this early era, when conservation themes were dominant in the biosphere reserve concept, one biosphere reserve was established in the mountains of Poland, and 14 in the mountains of Bulgaria (Table 1). All of these reserves were small, and represented an additional designation for existing protected areas. More recently, after the Scientific Advisory Panel on Biosphere Reserves had stated, *inter alia*, that biosphere reserves should be „demonstration sites of harmonious, long-lasting relationships between man and the natural environment“ (UNESCO 1986, p. 69), four much larger biosphere reserves were established in the Czech Republic, Slovakia, and Poland. Three of these reserves are multinational.

During the communist era, research that was done in the mountain biosphere reserves of Central and Eastern Europe was mainly within the natural sciences, with a far lesser emphasis on resource management or the social sciences, especially in Bulgaria (PRICE 1995b: Ta-

Table 1. – Mountain Biosphere Reserves in Central and Eastern Europe.
Tabulka 1. – Horské biosférické rezervace ve střední a východní Evropě.

	YEAR OF ESTABLISHMENT	AREA (ha)
POLAND		
Babia Gora	1976	1,741
BULGARIA		
Pirin		
Alibotouch	1977	1,628
Douпки-Djindiritsa	1977	2,873
Rhodopes		
Doupkata	1977	1,867
Koupena	1977	2,800
Mantaritza	1977	1,082
Tchervenata Stena	1977	3,029
Rila		
Marichini Lakes	1977	2,500
Parangalitza	1977	2,767
Stara Planina		
Boatine	1977	1,597
Djendema	1977	4,220
Steneto	1977	6,101
Tchouprene	1977	1,982
Tsaritchina	1977	3,419
Bistricho Branishte	1977	1,177
CZECH REPUBLIC		
Šumava	1990	167,117
CZECH REPUBLIC-POLAND		
Krkonoše/Karkonosze	1992	60,351
POLAND-SLOVAKIA		
High Tatras	1992	126,056
POLAND-SLOVAKIA-UKRAINE		
Eastern Carpathians	1992/3	153,775

ble 2). The only significant publication that obviously derived from MAB activities in the mountains of Central and Eastern Europe is the proceedings (three volumes, in Bulgarian, with English summaries) of a major symposium in Vratsa, Bulgaria 1983.

Almost none of the research recorded in the proceedings of the Vratsa symposium or conducted in the mountain biosphere reserves of Central and Eastern Europe can be described as applied and interdisciplinary, particularly involving both natural and social scientists. Such research was intended to be the hallmark of the MAB programme in general, and MAB-6 in particular, and a number of linked reasons can be identified for its lack in the region. First,

Table 2. – Topics of research in biosphere reserves: Czech Republic, Poland, Slovakia, Bulgaria.
Tabulka 2. – Okruhy výzkumu v biosférických rezervacích: Česká republika, Polsko, Slovensko, Bulharsko.

	Czech	Poland	Poland	Slovak	Bulgaria				
	GIANT MTS.		TATRAS		PIR	RHO	RIL	STA	VIT
GEOLOGY	X	X	X	X	X				
GEOMORPHOLOGY	X	X	X	X					
PEDOLOGY	X	X	X	X	X	X			
METEOROLOGY	X	X	X	X	X	X			
HYDROLOGY	X	X	X	X	X	X			
ENTOMOLOGY	X	X	X	X	X	X	X		
ZOOLOGY	X	X	X	X	X	X			
BOTANY	X	X	X	X	X	X	X		
FOREST ECOLOGY	X	X	X	X	X	X	X	X	
FOREST MANAGEMENT	X	X	X	X					
GRAZING IMPACTS	X		X						
POLLUTION IMPACTS	X	X							
RECREATION IMPACTS	X	X	X	X					
NATURE PROTECTION	X	X	X						
RECREATION/TOURISM	X	X	X	X					
ETHNOGRAPHY	X	X	X						
HISTORY	X								

KEY: **Czech** = Czech Republic, **Slovak** = Slovakia, GIANT MTS. = Giant Mountains, PIR = Pirin, RHO = Rhodopes, RIL = Rila, STA = Stara Planina, VIT = Vitosha

scientific research, like other sectors of communist economies, was organized according to the five-year plans of individual research institutes. There was a tradition of independent research, with little cooperation between institutions – or even between scientists working in different parts of the same institution. Second, the proposed emphasis of MAB-6 on the assessment of small regions, with concern for their future, was contradictory to a national centralized system of planning and management. Third, responsibility for MAB-6 programmes was generally given to natural scientists, who often were also not active in mountain research or based in a strong institution. Finally, few if any funds were allocated specifically for MAB activities (also a problem in many other countries).

Nevertheless, the interdisciplinary concepts of the MAB programme, and those of biosphere reserves in particular, have been disseminated in Central and Eastern Europe through the participation of scientists from the region in a number of meetings. These have included the First International Biosphere Reserve Congress in Minsk, Byelorussia, in 1983 (UNESCO-UNEP 1984), and the International Conference on Biosphere Reserves in Sevilla, Spain, in 1995, as well as regional meetings on biosphere reserves, including those in Blagoevgrad, Bulgaria in 1985 (NEDIALKOV & al. 1985); České Budějovice, Czechoslovakia, in 1986; and Špindlerův Mlýn, Czech Republic, in 1993 (FLOUSEK & ROBERTS 1996). In addition, the biennial meetings of European MAB (EuroMAB) Committees since 1987 – including Třeboň, Czechoslovakia in 1989 and Zakopane, Poland, in 1993 – have provided further possibilities for interaction between scientists involved in MAB activities in different European mountain ranges.

MAB-6 in Western Europe: models, people, and policies

Since 1971, when the MAB programme began, the political and institutional systems of Western Europe have largely been very different to those of Central and Eastern Europe. However, it would be incorrect to give the impression that the type of research envisaged by the working group in Lillehammer was successfully conducted in all of the Western European countries where MAB-6 research took place. There were many projects in which research was not applied and, if inter- or multi-disciplinary, only involved natural or social scientists. The needs of local people were often not considered, and the impacts of tourism were not always a focus of research (PRICE 1995b). However, MAB-6 projects in the Alps and the Pyrenees did lead to some very important results, and many of the concepts and approaches could be of considerable future relevance for research in the mountains to their east.

Of particular relevance are the holistic conceptual models of regional people-environment systems, whose evolution began in Obergurgl, Austria (HIMAMOWA 1974; PATZELT 1987) and were further developed and applied in the Swiss MAB programme (Figure 1: MESSERLI 1986 1989) and in Berchtesgaden, Germany (KERNER & al. 1991). The details of the models are more fully discussed in the references cited above and in PRICE (1995b). Such models must clearly be based on well-founded and verifiable data, collected by interdisciplinary teams, which implies clear leadership and significant research budgets over a number of years. In addition, experience of the use of computer and, especially, geographic information system (GIS) technology in the development and application of these models may be of particular value if new MAB projects are to be implemented in the mountains of Central and Eastern Europe.

The models also permitted the exploration of possible futures for various study areas in the Alps, often involving local people. As mentioned above, one of the priorities for MAB-6 projects emphasized at the Lillehammer meeting was the needs of local people and their control of the environment. While this priority was not manifested in many MAB-6 projects, local people were directly involved in others, although both the extent to which this occurred, and the starting point, varied greatly. In Obergurgl, Austria (MOSER 1987), the Pays d'Enhaut, Switzerland (Direction du Project MAB-Pays d'Enhaut 1988; LIEBERHERR-GARDIOL & STUCKI 1987), and the Catalan Pyrenees (CAMPILLO & al. 1993), local people were involved throughout MAB-6 projects, from the initial definition of research themes and models. In Davos and Grindelwald, Switzerland (WILDI & EWALD 1986; WIESMANN 1988) and, to a lesser extent, in Berchtesgaden, Germany (KERNER & al. 1991), local people were brought in part-way through MAB-6 projects, either for specific sub-projects or to evaluate implications of research findings. Through such activities as developing scenarios for the future of the communities and regions under study, and direct involvement in local and regional planning, many of these MAB-6 projects have had lasting significance which is not only of scientific interest, but also of great value to local educators, planners, and citizens. However, there is certainly no 'recipe' for involving local people in such interdisciplinary applied research.

Some possibilities for the future

The MAB-6 projects in Western Europe took place in regions that had undergone huge economic, social, and cultural transformations in the period following World War II. In the 1990s, the mountain regions of Central and Eastern Europe are also undergoing very rapid transformations. Agriculture and forestry – no longer wholly under state control – and tourism – widely regarded as a desirable motor for economic development in a new capitalist

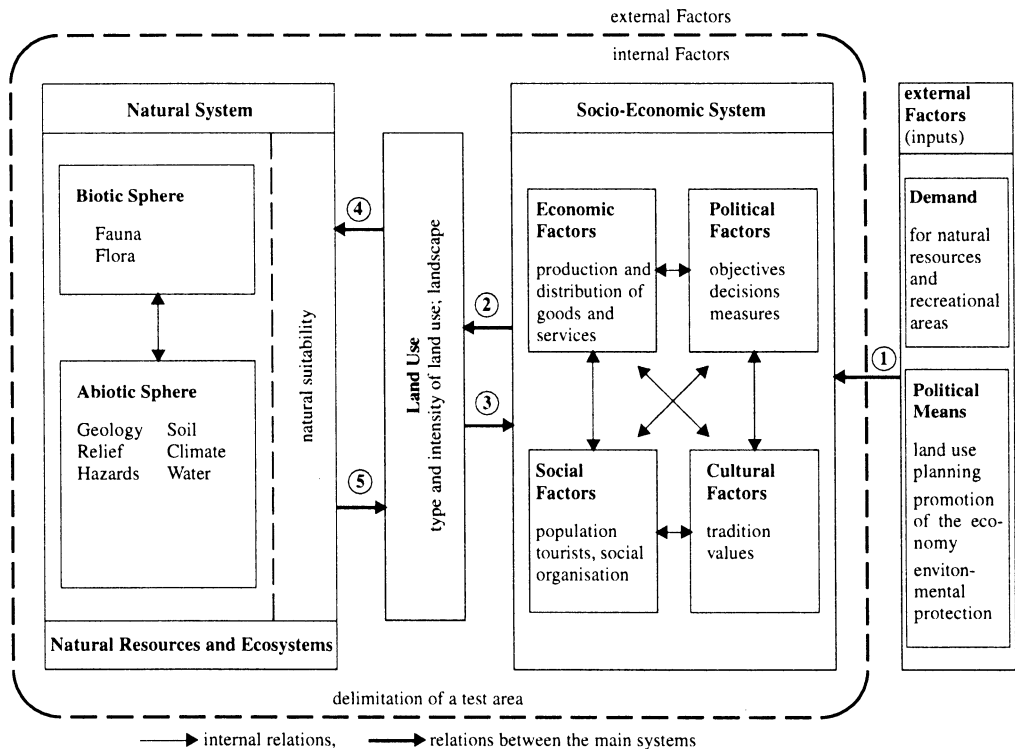


Fig. 1. – Schematic representation of a regional socio-economic ecological system (from MESSERLI et al. 1980, with permission).

Obr. 1. – Schematické znázornění regionálních socio-ekonomických systémů (podle studie MESSERLI et al. 1980).

society – have highly uncertain futures. New government policies are being enacted, often with significant environmental impacts which are not considered adequately, if at all, in advance. At the same time, much needed legislation moves only slowly through the legislative process or, once passed, cannot be implemented because of limited funds (PRICE 1995c).

In the communist era, it was barely possible to implement the localised, interdisciplinary, applied ideas of MAB-6 in Central and Eastern Europe. Today, it is essential for scientists, government officials, and members of mountain communities in this region to develop new ways of thinking and action (Fig.1). One of the most important possibilities is provided by the existing biosphere reserves, especially those which include whole massifs, crossing national boundaries. This potential has also been recognised by the Global Environment Facility: the majority of biodiversity protection projects in the Czech Republic, Poland, Slovakia, and the Ukraine are in these trans-frontier biosphere reserves (World Bank 1992, 1993, 1994a, 1994b). These projects focus not only on 'traditional' conservation themes, but also recognise that a significant proportion of many of these landscapes have been heavily influenced by human activities (JENÍK & PRICE 1994) and that they cannot be managed as 'islands'. Consequently, a better integration of agriculture, forestry, tourism, and nature conservation at the regional scale is essential (Biodiversity Support Program 1994).

A similar philosophy is evident in recent documents on the subject of biosphere reserves,

notably the 'Seville Strategy' and the Statutory Framework of the World Network of Biosphere Reserves (UNESCO 1995a, b). These recognise that the involvement of local people and institutions is an essential element of a functioning biosphere reserve. Furthermore, under the provisions of Article 9 of the Statutory Framework, each MAB member state is required to review its biosphere reserves every ten years. If the ICC considers that a biosphere reserve does not satisfy the criteria for designation, it will recommend that measures are taken to improve the situation. If this does not happen within a reasonable period, the ICC will remove the designation of biosphere reserve. It seems likely that most member states will wish to avoid this; which provides a catalyst for developing new approaches to planning and managing resources at the regional scale so that biosphere reserves fulfil all of their functions.

In conclusion, the experiences of MAB-6 projects in Western Europe and the conceptual framework of biosphere reserves could provide some valuable starting points for considering how environmental and socio-economic systems of the mountains of Central and Eastern Europe might develop together in the future. Existing biosphere reserves have the potential to be model regions where new approaches, involving local citizens and all economic sectors, could be developed. This applies particularly in the transition zone whose outer boundaries, according to the biosphere reserve concept, should be flexible, and not formally designated.

A first step in this direction has already been taken for the Bavarian Forest/Šumava/Mühlviertel region (German National MAB Committee 1994). As exemplified in this region, trans-frontier cooperation provides another complex, but often crucial, level of conceptual and practical challenges in a region where mountain ranges are discrete ecological units divided by political (though often not cultural) boundaries. In an era of change and uncertainty, there are many opportunities for the MAB programme in the mountains of Central and Eastern Europe.

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