SOCIO-ECONOMIC BENEFITS OF NATURA 2000

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CASE STUDY ON THE ECOSYSTEM SERVICES PROVIDED BY OAŞ-GUTÂI PLATEAU AND IGNIŞ SITE, MARAMURES, ROMANIA

Output of the EC project

Financing Natura 2000: Cost estimate and benefits of Natura 2000

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This case study has been developed based on the following guidance that helps to explore the different economic and social benefits of Natura 2000 sites:

Kettunen, M., Bassi, S., Gantioler, S. & ten Brink, P. 2009. Assessing Socio-economic Benefits of Natura 2000 – a Toolkit for Practitioners. Output of the European Commission project Financing Natura 2000: Cost estimate and benefits of Natura 2000 (Contract No: 070307/2007/484403/MAR/B2). Institute for European Environmental Policy (IEEP), Brussels, Belgium. 191 pp. + Annexes.

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1. INTRODUCTION

1.1. Description of Oaş-Gutâi Plateau and Igniş site, Maramures, Romania

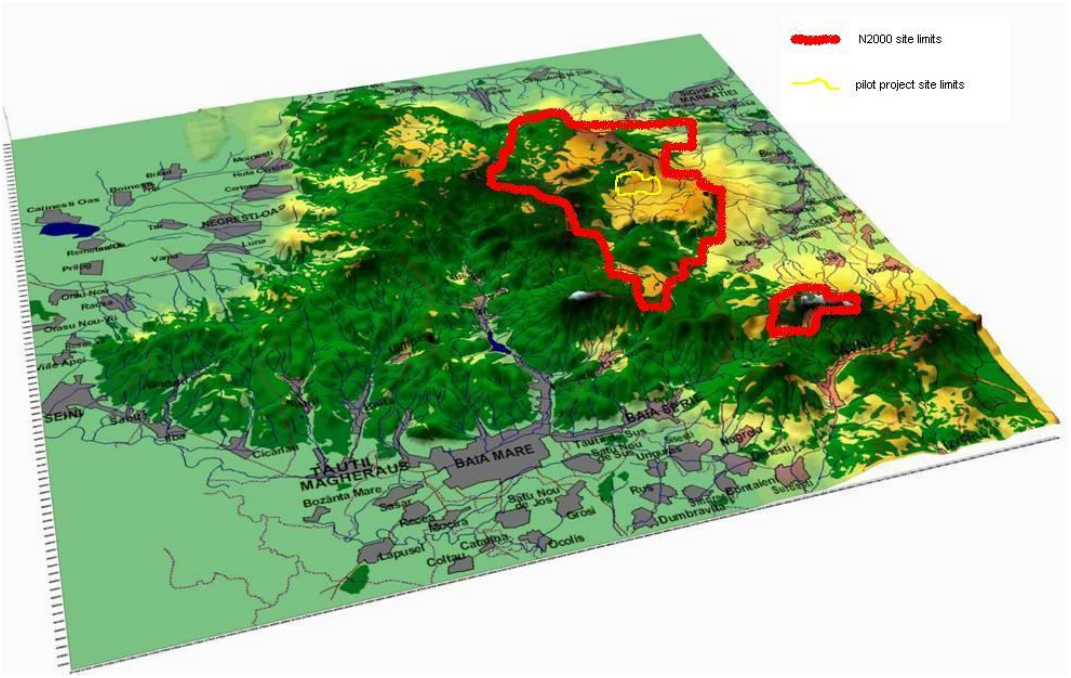
The Igniş Natura 2000 site is situated on the Oaş-Gutâi Plateau in the North West Carpathians in Romania, on the edge of Transylvania near the Ukrainian and Hungarian borders. The region is one of the few remaining locations in Europe that provides sanctuary to a number of rare and endangered animals, such as the Carpathian newt, eagle, ermine, dormouse, wolf, brown bear, stag, deer, wild boar, European otter and wild cat.

The Igniş area has been nominated as a Natura 2000 site as it hosts several rare habitats and species of both European and global value. Over 90 per cent of Romania's endemic, quasi-endemic and threatened plant species and more than 66 per cent of the globally threatened plant species (IUCN Red List, EU Habitats Directive) still present in Romania are found on the plateau. Similarly, 65 of the vertebrate species within the Plateau are vulnerable or rare.

The area is also distinguished by its rich cultural heritage, including exceptional wooden architecture, with wooden churches, carved wooden houses and monumental wooden gates that have been included in the UNESCO World Heritage List.

The Igniş site is a mosaic landscape (e.g. several high nature value pastures) covering 20,295 hectares in the eastern part of the plateau. The main goals of the site are to maintain and restore biodiversity and retain the flood control functions and water retention ability of the ecosystem whilst also preserving the open parkland landscape of the Oaş-Gutâi plateau. To achieve these goals it is necessary to both maintain the area's forest cover and wetlands and to preserve sufficient open areas of grassland habitats.

The entire plateau is a remarkable place for nature with self-regulating ecosystems hosting large carnivores and herbivores. However, perhaps first and foremost the Oaş-Gutâi plateau is a cultural landscape: a home for people, a living workplace and an important economic resource. Persistence of traditional husbandry over centuries, with cultivation that does not rely on chemical inputs and heavy machinery, has preserved much of the landscape here in its earlier form and health.



Map 1. The Igniş Natura 2000 site is located in the eastern part of the Oas-Gutâi plateau

1.2. Why are the Oaş-Gutâi Plateau and the Igniş Natura 2000 site of socio-economic importance?

The local population is largely dependent on the plateau for their livelihoods. Traditional sources of subsistence include mountain animal husbandry and dairy processing, traditional handicrafts and timber extraction both for local and industrial use. Locals also continue to gather herbs, mushrooms and wild forest fruits offered by the nature.

Since the EU accession, the conventional form of agriculture with small subsistence farms is no longer economically viable. Also, traditional milk and dairy production does not meet the EU standards on hygiene and animal welfare. Rapid economic development, political and social changes and pressure for quick profits are already pushing landowners and land-users to undertake activities that often have negative environmental impacts (e.g. intensification of land use practices on more accessible areas). The current pressures can also lead to land abandonment and, consequently, the loss of valuable landscape features maintained by extensive farming practices.

The plateau provides drinking water for approximately two thirds of the population of the Baia Mare municipality. There are two watersheds on the plateau and the traditional low intensity farming and forestry practices have contributed to the maintenance of good quality drinking water in the area. The ground water resources in the region are limited, therefore maintaining the Oaş-Gutâi plateau fresh water reservoir is of high importance. Furthermore, the extensively grazed wetlands play an important role in controlling floods in the area, functioning as a ‘natural sponge’ for the region. The recent introduction of legislation protecting the drinking water catchment areas led to a decrease in the use of the available timber resources to only

40 per cent of all timber. The compensation for such a decrease is stipulated in the legislation but is yet to happen in practice.

The combination of extensive farming practices and the use of wood for domestic purposes has created a valuable cultural landscape and contributed to the development of a unique wooden craftwork culture that has also led to the designation of the region as a UNESCO heritage site. The centuries old practices have created a landscape beauty that offers aesthetic, recreational and spiritual benefits and attracts tourists both from Romania and outside the country. Additionally, it is of interest for scientists who want to better understand the connection between the coexistence of biodiversity rich areas and extensive farming practices.

Currently, the main financial support for the management of the high nature value pastures in the Igniş Natura 2000 site is expected to stem from the Romanian agri-environmental measures[1]. However, the agri-environmental payments alone are not suitable for supporting the maintenance of the range of ecosystem services provided by the Oaş-Gutâi Plateau. Therefore, it is necessary to improve the understanding and knowledge of the area's ecosystem services in order to design an appropriate long-term vision for the protection and management of the area (e.g. possible financing and compensation schemes for conservation activities).

2. SOCIO-ECONOMIC BENEFITS OF OAŞ-GUTÂI PLATEAU AND IGNIŞ NATURA 2000 SITE, MARAMURES

2.1. Overview of the site's socio-economic benefits

Overall, the Igniş Natura 2000 site provides a range of locally and regionally important ecosystem services. The diagram presented in Figure 2.1 illustrates the importance of these services on a scale of zero to five[2]. This diagram has been developed on the basis of information available (see Section 2.2. for more details) and our general understanding of the case.

Currently, provisioning services (e.g. food, firewood, natural medicines and ornamental resources) are the most important ecosystem services in the area. However, given their predominantly subsistence and semi-subsistence character it is very likely that in the future the importance of the provisioning services will decrease significantly unless special markets are developed.

The second most important category is the cultural services. Most of the area's cultural values have been created over the past centuries due to the extensive farming practices in the region. Therefore, the maintenance of these services is also closely linked to the maintenance of the extensive food production systems responsible for creating the landscapes that tourists appreciate and value today. It is likely that the decrease in the importance of the provisioning services will also lead to the

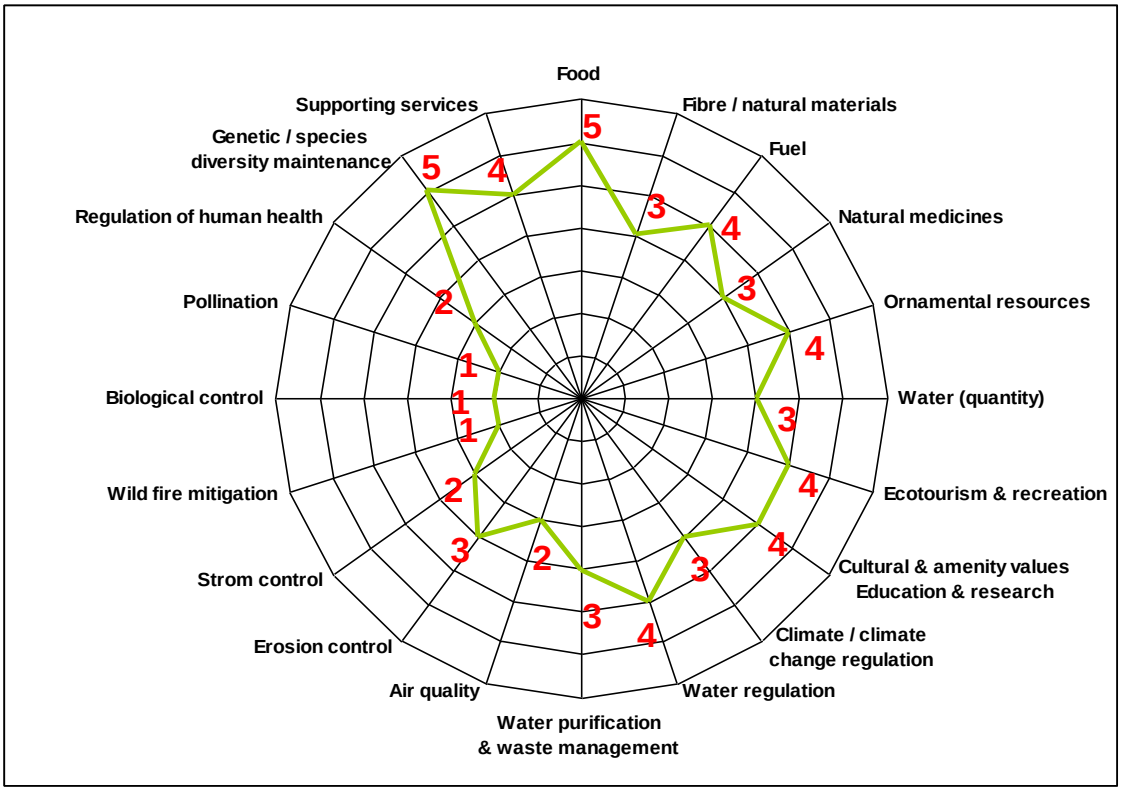
[1] The Natura 2000 compensation measures are not introduced by the Romanian government yet.

[2] 0 = service is not relevant at the site, 1 = service is of very limited significance, 2 = service is of limited significance 3 = service is of moderate significance, 4 = service is of high significance and 5 = service is of very high significance

degradation of the cultural values of the region, i.e. the abandonment of the extensive grazing will change the landscape and result in the degradation of the biodiversity rich and culturally valuable habitats.

The value of regulating services is estimated to be only of moderate importance at the moment. However, it is likely that the importance of these services (e.g. water, climate and erosion regulation) will increase significantly in the coming decades due to the intensification of land use practices and the possible impacts of climate change. For example, the role of Oaş-Gutâi Plateau and the Igniş Natura 2000 site in mitigating floods and securing drinking water has already been recognised.

Figure 2.1 The overall socio-economic benefits provided by the site (on scale 1-5)



In general, different ecosystem services can be maintained by different stakeholders (e.g. farmers, foresters, municipalities). In addition, a totally different variety of local, regional, national and even global stakeholders can benefit from the existence of these services. Therefore, it is of utmost importance to understand the geographic "distribution" of the benefits and to whom the benefits accrue. This helps, for example, to identify stakeholders to whom the benefits would need to be communicated, e.g. to increase public support for the site. In addition, it might help to identify possible beneficiaries that could financially contribute to the maintenance of these benefits, e.g. create a basis for measures to reward previously unrecognised benefits.

In the case of the Oaş-Gutâi Plateau and the Igniş Natura 2000 site the benefits created by farmers are mostly for direct use locally and regionally (Table 2.1).

However, there are also some services which are of importance at the European level, including the site's role in hosting habitats and species with special EU interest. In addition, the region is also valuable for research and science and it is considered an important place for studying biodiversity in European agricultural ecosystems. In particular, the Igniş Natura 2000 site is especially important for researchers studying different farming systems and aiming to develop schemes for restoration of extensive farming practices and related biodiversity.

Forest managers are responsible for supplying timber for export and national use as well as for ensuring sufficient protection of forested drinking water catchment areas and forest-related biodiversity. The main beneficiary from the reduced timber use is the Baia Mare municipality that depends on the Oaş-Gutâi Plateau for their fresh water.

The region is attractive for tourists as it provides many nature-related benefits that cannot be seen elsewhere: the cultural landscape and the tasty and healthy food both result from traditional farming practices, wooded architecture, crafts and art, opportunities to enjoy nature and potentially see brown bears, wolves, etc. Some of these values need to be interpreted for tourist that are not primarily interested in nature and this would be the role of the Natura 2000 site managers. So far (as of April 2009) there is no management body of the Igniş Natura 2000 site, but this is in progress.

Table 2.1 Overview of stakeholders responsible of managing the benefits provided by the site and the different beneficiaries.

Benefits "managers / providers"	Ecosystem service / benefit	Possible beneficiaries	Scope of the benefit	Examples
Local Natura 2000 site managers	Provisioning of biodiversity and natural resources & Regulating- Genetic Species diversity	National and European conservation authorities	National/ European	Secure the existence of species and habitats of national and European and global importance
		Local farmers/foresters and communities	Local (Regional)	Secure the existence of natural grasslands and wild herbs and mushrooms for local gathering
	Regulating – supporting services	Local communities	Local (Regional)	Support the functioning of the natural processes in the region

Farmers	Provisioning of food	Local communities Regional urban consumers	Local (Regional)	Provide milk, cheese and meat products from extensive grazing systems and associated cultural landscape
	Provisioning of water	Local communities Regional urban water consumers	Local (Regional)	The sustainable use of the grasslands ensures that sufficient quantities and quality of water is provided to the communities in the drinking water catchment area.
	Cultural – ecotourism and recreation	Local communities Accommodation providers Tourism companies Tourists Authorities	Local (Regional) National/ international (for tourists)	The cultural landscapes created by the extensive farming practices attracts tourists from the country and abroad thus providing income to local business and indirectly income in tax payments to authorities.
Foresters	Provisioning – food and fuel/firewood	Local population	Local (Regional)	Collection of wild fruits, herbs and mushrooms as well as firewood is important for the livelihoods of the local population.
	Provisioning - water	Local communities Regional urban water consumers	Local (Regional)	The sustainable management of forests ensures that sufficient quantities and quality of water is provided to the communities in the drinking water catchment area.
	Cultural – ecotourism	Local communities Accommodation providers Tourism companies Tourists Authorities	Local (Regional) National/ international (for tourists)	The cultural landscapes created by the sustainable forest management attracts tourists from the country and abroad thus providing income to local business and indirectly income in tax payments to authorities.

	Cultural – art	Local craftsmen	Local (Regional) International	The site is a UNESCO heritage site for its wooden architecture and designs.
Local craftsmen	Cultural – art and amenity values	Local population Tourists National heritage organizations Authorities	Local (Regional) National/ international (for tourists)	The site is a UNESCO heritage site for its wooden architecture and designs.

2.2. Detailed valuation of different benefits

The main land uses covering almost equal shares are forests (52 per cent) and grasslands (48 per cent). The Oaş-Gutâi Plateau is situated in the broad-leaved forest region – subsequently, the main species are beech with more than 70 per cent, oak eight per cent, hard species of broad-leaved five per cent.

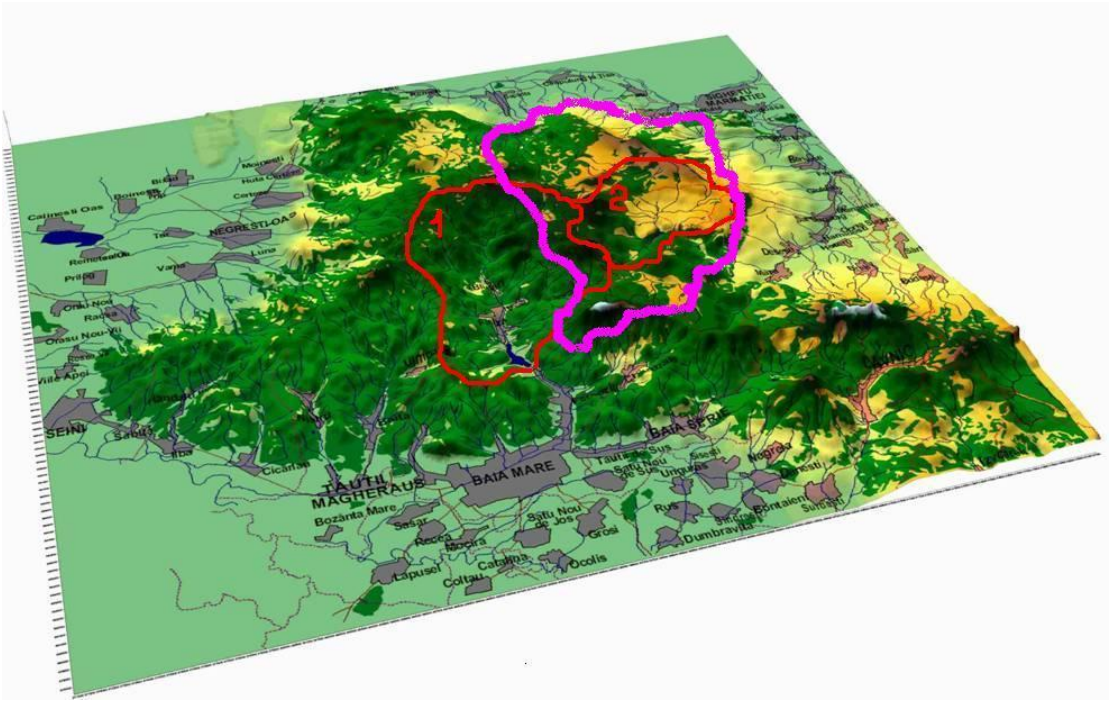
Half of all forests on the plateau have been identified as **forests with a protection role** according to the current legislation:

- watershed protection (38.7 per cent)
- soil protection (29.1 per cent)
- climate protection (26.6 per cent)

Additionally four per cent of the forests are of special interest for recreation purposes and 1.7 per cent of the forests are of scientific interest.

The plateau comprises the catchment areas of two rivers – Firiza and Runcu which provide the **drinking water** for almost the entire municipality of Baia Mare and neighbouring areas and is covered by forest and field habitats with a high natural value. The two catchment areas neighbour each other and are connected by a pipe between the two dams. The dam of Runcu (2 on Map 2) currently provides approximately 30 per cent of the water consumed in the Baia Mare municipality and its catchment area (8,200 ha) falls entirely within the Igniş Natura 2000 site. Grasslands cover two thirds of the catchment area and forest the remaining third. There are no human settlements in the catchment area. However, there are seven sheepfolds and a herd of cattle and horses.

The Igniş Natura 2000 site also covers a small part of the Firiza river catchment area which is dominated by forests. The main issue in the Firiza water dam is water siltation caused by improper forest practices.



Map 2. Baia Mare municipality drinking water catchment areas (1) Firiza, (2) Runcu and Igniş Natura 2000 site (in lilac)

In the forests with no special protection function, **timber extraction** is the main economic activity. Industrial harvesting dominates the sector; only 19 per cent of the timber is used for local population needs (firewood, house building, roofs, traditional wooden gates, sculpture, etc). The annual income generated by timber extraction is estimated at around 2,400,000 Euro which demonstrates that the forest sector is of critical importance for the local economy, environment and society. A significant share of the extracted timber is exported to other European countries.

There is a considerable **hunting potential** in the region (e.g. bear, wolf, stag, roe deer, wild boar, rabbit, partridge, and pheasant). This potential is particularly associated with the forestry habitats available.

Wild forest fruits, berries and mushrooms are frequently collected both for selling purposes and own use (e.g. wild berries and mushrooms are important resources of food during the winter). The wild berry and fruit market is controlled by the National Forest Administration, but mushrooms are marketed freely.

Climate change and carbon flows. There is a trend aiming to maintain the natural structures and species composition in the area in order to make forests more adaptable to climate change. The plateau is also one of the most representative and rich regions in peat bog formations in Romania with 56 peat bogs (260 ha) identified as grazed wetlands. These ecosystems contribute to the mitigation of climate change as they are an important global carbon storage (peat lands store more carbon per unit area than other ecosystem).

Flood protection and mitigation: The Oaş-Gutâi Plateau wetlands are acting as "natural sponges" upstream of the human settlements. These mountain wetlands play a significant role in absorbing precipitation and reducing the risk of floods downstream. However, the importance of these natural sponges seems to be poorly recognised locally.

Traditional farming practices maintain the landscape and the habitats for biodiversity important species. Hard working farmers still follow the traditional calendar for grazing and mowing respecting the cycles of nature. Livestock on the plateau include 35,078 sheep, 16,676 cows and 3,917 horses but these numbers are constantly decreasing. The main **sources of farmers' income** include mountain animal husbandry and dairy processing.

Milk production is monitored only for the producers that have contracts with dairy companies. The average production of milk in the Oaş-Gutâi Plateau is 13-15 l/day from one cow[3]. This is much lower than the normal production that can allow farmers to make a profit (20 – 25 l/day). Dairy cattle that are adapted to the hard conditions of mountain grazing cannot produce the quantities of milk that intensive breeds can. The production of **beef from natural grazing systems** is being introduced at pilot level in the region and its effects on local income are still to be seen.

Sheep breeding is a widely spread activity in the plateau. Farmers raising sheep prefer the traditional methods developed centuries ago. Each spring, the sheep from every village are joined in large units and go on the mountain pastures. The natural pastures are used up to the end of the autumn when the sheep are brought back to the village for the winter period, and fed with hay mowed from the plateau's grasslands.

Most of the living traditions are based on the sheep life cycle and many people engage in activities related to the sheep products. The wool, milk, skin and meat from sheep are generating activities with added value for villages.

Craftwork is one of the region's special attractions. Wool from the indigenous breed of sheep Ţurcana is used for manufacturing specific carpets and traditional winter wears for local people.

Every householder knows how to manufacture most necessary objects themselves – wood carving is learned in early childhood.

[3] The County Administration for Agriculture, Forestry and Rural Development

Table 2.2. A synthesis of the benefits of the Oaş-Gutâi Plateau and the Igniş Natura 2000 site related ecosystem services

BENEFIT CATEGORY	BENEFIT DESCRIPTION	ESTIMATED VALUE OF THE BENEFIT				WHO ARE THE BENEFICIARIES?	WHAT IS THE CURRENT STATUS OF THE BENEFIT?	IS THE IMPORTANCE OF THIS SERVICE LIKELY TO INCREASE IN THE FUTURE?
		Qualitative	**Quantitative**	**Monetary**	**Relative value of this benefit at the site** Authors' own estimate on scale 1-5			
Ecosystem service related benefits								
Provisioning services								
Food, e.g. crops, fruit, livestock, wild berries & fungi, game	- milk and cheese - meat and meat products - wild fruits and herbs - mushrooms - game	Good taste of food products produced in a traditional way	Pastures: 1653 ha Meadows: 1272 ha Forested meadows: 240 ha	Net income: Pastures: 73 euro/ha Meadows: 65 euro/ha Forested meadows: 58 euro/ha Agri-environment payments for High Nature Value grasslands: 124 euro/ha Least Favoured	**5**	- local people and relatives in regional urban centres; - local shops and cafeteria; - local tourism houses	Still well developed, under threat from introduction of EU hygiene requirements which the traditional production systems cannot easily meet	Depends on the development of the tourism sector in the region; if it remains only for subsistence use as at the moment – very likely to decrease due to population getting wealthier and introduction of EU hygiene requirements.

				Area for mountainous areas: 50 euro/ha				
Fibre / materials, e.g. wool, skins, leather, plant fibre, timber, cork	- wool and skins for production of traditional carpets and other household utilities	Distinct pattern of local wool carpets well known in Romania	No data available yet	No data available yet	**3**	- local people and relatives in regional urban centres; - local shops; - tourists – national and international	Mainly produced at home for own family needs. Small quantities aimed for marketing at the moment.	NO. It is more likely that it will remain only as a local handicraft which will reduce overall demand for raw materials although may lead to increase in price of end product
Fuel, e.g. biomass, firewood	- firewood	Critical for the livelihoods of certain groups in the communities	Forest area S.A.Baia Mare S.D. 15 600 ha; Main products volume: 25715 m^3 Conservation cutting volume: 4514 m^3 Secondary products volume: 1053 m^3	Main products: 72,77 RON/m^3 Conservation cutting: 65,50 RON/m^3 Secondary products: 27,70 RON/m^3	**4**	- local population	An important source for winter heating for local communities in the villages	Likely to remain the same in the next decade

Natural medicines	- wild herbs	Use of wild herbs for medical purposes in the region	No data available yet	No data available yet	**3**	- local consumers - medicine producers	Widely used by local people based on traditional knowledge	Likely to decrease unless a stable market is developed
Ornamental resources, e.g. wild plants, wood for handcraft, seashells	- wood for handcrafts - wild plants for colouring the wool carpets	Unique ornamental crafts with recognised cultural value (e.g. UNESCO world heritage)	No data available yet	No data available yet	**4**	- local population - local craftsmen - tourists	Well preserved wooden culture, a UNESCO heritage site on this basis	Globalisation affects the region rapidly; new houses are built in modern ways abandoning the traditional wooden culture.
Water	Drinking water for the villages and the city of Baia Mare		93% of Baia Mare citizens concerned with drinking water quality 81% willing to pay for better forest and grasslands management practices improving water quality Firiza catchment: forests 16 100 ha forest, grasslands 792 ha	No data available yet	**3**	- local population in villages - urban water users – households and businesses - water utility company in Baia Mare	Average status of service due to unsustainable forest practices	**YES.** Good water quality is a stated preference by the water consumers in Baia Mare and there is a clear willingness to pay for improving the current status

			Runcu: 8200 ha, 2/3 grasslands, 1/3 forests					
Cultural & social services								
Ecotourism & recreation	- tourists visit from Romania and international - accommodation services provided by local guest houses		Rural pensions networks: OVR, MTMM, ANTREC– 198 rural pensions Special health and sport resorts in Maramures – 14 hotels	No data available yet	**4**	- Local guesthouse owners - Local tourists - Tourists – national and international - Local shops and cafeterias	Good status. Maramures is well known for its cultural landscapes and preserved traditions	**YES.** Needs further improvement to ensure its sustainable development
Cultural values & inspirational services, e.g. education, art and research	- specific wooden culture declared as UNESCO heritage site		No data available yet	No data available yet	**4**	- Local population - Local guesthouse owners - Tourists: local, national and international - Local shops	Preserved wooden art and culture based on local traditions	**YES**. It is likely that it will become a 'niche'/specific product and will not be as widely spread in the daily life as it used to be; but still it is the basis for regional tourism development

Landscape & amenity values	- traditional farming landscapes		No data available yet	No data available yet	**4**	- Local population - Local guesthouse owners - Tourists: local, national and international - Local shops	Cultural landscapes are maintained due to farmers practicing extensive livestock farming	**YES.** This is the basis for tourism development in the region and is a result of traditional farmland management
Regulating services								
Climate / climate change regulation	Carbon storage by forests and peat bogs		No data available yet	No data available yet	**3**	all stakeholders affected by climate change (global public)	Service in good status.	**YES**. due to climate change
Water regulation, e.g. flood prevention, aquifer recharge	Forests reduce magnitude and timing of runoff		260 ha of peatlands acting as a natural sponge	No data available yet	**4**	- local population and businesses - downstream communities and businesses (including cross-border)	Service in good status due to well managed wetlands and forests	**YES.** The region is under threat of flooding. It is also important for preventing large scale downstream floods.
Water purification & waste management	Sustainable forest practices can reduce siltation in water dams		No data available yet	No data available yet	**3**	- water utility company - water users in Baia Mare- population and businesses	Service in decline due to improper forest practices	**YES**. The costs of cleaning water are becoming higher.
Air quality regulation	Estimated as low importance				**2**			
Erosion control	Sustainably managed vegetation of grasslands and forests reduces erosion		No data available yet	No data available yet	**3**	- farmers - foresters - water utility company	Service in good status	**YES.** Conversion of grasslands to arable land will lead to increased demand for erosion control

Avalanche control	Not applicable in the area				**0**			
Storm damage control	Estimated as low importance				**2**			
Fire regulation	Estimated as low importance				**1**			
Biological control	Estimated as low importance				**1**			
Pollination /	Estimated as low importance				**1**			
Regulation of human health (physical and mental)	Positive impacts on human health via recreation and tourism		No data available yet	No data available yet	**2**			
Genetic / species diversity maintenance, e.g. protection of local and endemic breeds and varieties	Flora and fauna species of national and European importance		No data available yet	No data available yet	**5**	- N2K site managers - conservation authorities - local population - hunters - tourists, etc	Service in good status due to continued practicing of traditional farming practices	**YES.** Due to requirement of favourable conservation status in N2K sites
Supporting services E.g. production, decomposition, nutrient cycling, weathering / erosion, ecological interactions, evolutionary processes.					**4**			
Wider socio-economic benefits								
Direct employment supported by Natura 2000 site	The procedure for selecting the management body is undergoing				**Not applicable**			**YES.**
Indirect employment generated by Natura 2000 site	Tourism flow/info management Natural resources users		No data available yet	No data available yet		- Tourism companies - Farmers - foresters - local shops and info centres	Good status due to balanced development at the moment	**YES.** The sustainable management of the site is likely to increase the indirect

								employment in associated businesses
Direct expenditure of the reserve	Not applicable at the moment due to lack of management body.							**YES.**
Natura 2000 site's role in supporting rural and regional development	Mostly through tourism development but also production of traditional food products and handicrafts							**YES.**

3. STATUS & FUTURE TRENDS OF DIFFERENT BENEFITS

The plateau is famous for its social, cultural, biodiversity and tourist values but also faces some of the typical symptoms of "un-integrated" land management such as soil erosion, sedimentation, degradation of wetlands and pastures, illegal logging, localised river degradation and uncontrolled tourism.

Threats and pressures to traditional, nature-friendly farming and related ecosystem services

Traditional agricultural systems have long characterised the area, but are becoming increasingly marginal. In small subsistence farms, nature friendly traditional practices are applied with intensive use of labour, including manual mowing/drying, manual control of weeds, and manual harvesting of orchards. The small subsistence farms are no longer attractive for young families and the lack of alternative livelihoods is increasing pressure on the natural resources that are available.

Larger grazing areas formed by small private properties already show a strong tendency towards abandonment. Areas nearby the villages are overgrazed in parallel to abandonment of the areas further away or areas isolated by poor accessibility. This tendency threatens the grasslands with rapid landscape changes and considerable loss of biodiversity. A further pressure toward abandonment is from the changes and new requirements caused by the EU agricultural policies, which many local farmers find disorienting.

To prevent changes in landscape due to introduction of the EU agricultural policy, large scale grazing needs to be supported so that local farmers can ensure the minimum grazing levels, with low stocking rates. This will prevent undergrazing or abandonment of natural and semi-natural habitats.

Farmers in this area, similar to farmers in many other parts of Romania, use traditional methods not because they have been paid to, but because the grazing systems, the products resulting from working the land, managing the grasslands and breeding animals used to be relatively well regulated, based on reliable market niches. This system is being undermined by competition from large-scale, industrial producers, with application of the same high hygiene and animal welfare standards as for industrial farmers.

Threats and pressures to forests and related ecosystem services

Legal and illegal hunting threaten the forests that provide the habitat for wild animals. Scientific based measures and more coordinated efforts are needed in order to preserve the values of this refuge and leave them intact for the nature lovers of the future.

Timber logging in drinking water catchment areas was significantly reduced and thus associated negative impacts have also decreased. On some of the remaining timber extraction areas however, there is soil erosion due to clear cuts in the forests. This is mostly due to the fact that the companies contracted to log timber are not respecting the standard regulation of the technological processes and do not meet the environmental requirements. Protective exploitation technologies used in the past (funiculars) are too expensive compared to the modern exploitation utilities (with forest articulated tractors).

Threats and pressures to wetland functions in the region

In the last few decades, the peat mosses and wetlands of the plateau decreased in surface area, due to the increase of evaporation and a negative hydrological balance. This resulted from a decrease in the water retention capacity of the surrounding forest, replacement of old stands by seedlings, young forest and over grazing of grasslands followed by erosion.
Some degradation of the peat lands on the Plateau due to drainage and mining (peat extraction) was also registered. Threats generated by the drainage could end up in fires that release a large amount of carbon to the atmosphere. Peat lands are vulnerable to changing climate regimes (warming and drying and extreme events) and action is needed to minimize impacts.

Other pressures to the drinking water catchment area

The pressures on the water catchment area for drinking water also arise from indirect land use issues related to low awareness of the population as well as unfinished waste-treatment systems.

A very serious problem is the lack of a functional waste collection system for rural areas. This leads to waste from villages being deposited in the riverbeds and in the case of the Firiza river, in the surroundings of the water reservoir, which is further on washed into the water. Other pressures affecting water quality are coming from:

- the lack of sewage systems in the villages in the region;
- the low awareness among tourists in the area leading to abundance of picnic wastes along the rivers and streams; and
- the low awareness among local people leading to cars being washed in the rivers with all associated chemical input leaking in the water downstream.

Climate change impacts and related pressures

Climate change will have several unpredictable impacts of varying magnitude and intensity. This requires well-considered preparation for a flexible and quick reaction to the events as well as to mitigate the impact of these events. For example, it is expected that soil erosion in forested areas may increase significantly due to the combination of current unsustainable forestry practices (e.g. badly planned forest roads) and the increased and intensified rainfall cause by climate change.

Surrounding communities need to be involved in climate change mitigation initiatives in order to promote sustainable community livelihoods, water and carbon storage and sequestration.

4. KEY MESSAGES FOR THE FUTURE MANAGEMENT OF THE SITE

The rich mosaic landscape and biodiversity of the Oaş-Gutâi Plateau and Igniş Natura 2000 site provides a number of important ecosystem services, including water retention, water filtration, prevention of soil erosion as well as landscape aesthetics and recreation. The wetlands on the plateau act as "natural sponges" in the mountains, absorbing much of the rain water and thus reducing flooding for downstream human settlements. At the same time, the forested and grassland areas serve as natural filters for the drinking water that is drawn by downstream communities, including the regional capital of Baia Mare. Tourism is developing quickly, drawn by the rich natural and cultural heritage of the area, with increasing numbers of visitors from across Romania and abroad.

Potential mechanisms to ensure the delivery of one or more of these ecosystem services in to the future include:

- Providing payments that would support the maintenance of drinking water quality within the river catchment areas on the Oaş-Gutâi Plateau. This financial support would provide benefits both to local and regional inhabitants as well as tourists visiting the area. WWF Danube Carpathian Programme carried out an assessment of the willingness to pay among the water consumers in Baia Mare in 2008. The results are encouraging for taking this initiative further: more than 80 per cent of the consumers are willing to pay for improved water quality especially if it will also contribute to improved grasslands and forest management.
- Maintenance and reintroduction of extensive grazing provides benefits to nature and landscape, which in turn provides socio-economic benefits and income opportunities through additional new economy activities such as traditional and quality food, handicrafts, tourism, etc. The main beneficiaries of supporting extensive grazing practices would be the national and EU nature conservation community (including Natura 2000 site management body and the national government) as well as national and international tourists enjoying the region for its natural and cultural values. Indirectly, this will also support local communities and economies as it will keep people in the region, as opposed to the abandonment otherwise expected.
- Developing local and regional markets for good quality natural-based products (e.g. "green beef", added value products from wild fruits, mushrooms, medicinal plants, wool, milk) delivered to the agro-tourist networks and tourist businesses, creates income for the local people, which in turn will protect the nature as the source of their welfare. The target markets would be organised regionally as it will help maintain the extensive character of the production and keep the related cultural values as regional identity.

- Forest managers could be introduced to sustainable forest management recognised by forest certification schemes. The private sector increasingly demands certified products and these schemes can therefore create markets for higher value, environmentally friendly timber. This can also be introduced into the public procurement policies of the regional and national authorities.

It is believed that the sustainable development of the Maramures region will be best achieved through the implementation of all the mechanisms listed above. The development of these suggested mechanisms will require careful planning so as to ensure that supporting the maintenance of one ecosystem service (e.g. continued timber production) does not undermine the delivery of other services. The unique Maramures landscape and related ecosystem services are a direct result of the traditional land use practices in the region. Therefore, any future financing scheme should aim to maintain these practices in the long term.

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