

Summary study

of the qualitative research made under the project of „Mapping and Assessment of Ecosystem Services in Natura 2000 sites of the Niraj – Tarnava Mica Region”



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Introduction

The present study was prepared for the project "Mapping and Assessment of Ecosystem Services in the Natura 2000 sites of the Niraj-Tarnava Mica region" funded by the EEA Grants. This report aims to summarize the first results of the ecosystem service assessment project using sociological methods. We made interviews with the users and most important stakeholders of the Natura 2000 sites of the Niraj-Tarnava Mica regional landscape to learn which ecosystem services they value the most, and what changes in the landscape have they noticed in the previous years or decades.

Besides investigating stakeholders, our study also compiles additional useful information brought forth during the data gathering, such as mentions of ecosystem services or social-economical changes.

In the study we first introduce the methods applied for the data collection and basic properties of the research area. Next we briefly describe each stakeholder group and the relations between them, before presenting the actual results of the first phase in the ecosystem service assessment, the identified main socio-economical issues and possible rural development directions of local proposal.

We would hereby like to express our thanks to all our interviewees and locals for sharing their thoughts and opinions with us, helping us accomplishing these results.

Methods

The empirical data gathering was carried out with semi-structured interviews (Babbie 1995, Héra & Ligeti 2005, Kvale 2005, Heltai & Tarjáni 2004, Mason 2005). The interviews were made by the team members of the Milvus Group, who is the local partner of the project. The interview guideline contained the following key topics:

1. Introduction: Some personal questions about the interviewee and his/her professional background. These questions aimed to get to know the interviewee closer and start the interview
2. Local natural values and ecosystem services: these questions were created to explore the local natural and cultural values. They aimed to collect the ecosystem services that are the most important for the interviewee.
3. Changes of the natural environment: questions about the changes of landscape and land use. The aim of this group of questions was to explore what kind of changes (eg. transformation of forest management and agriculture, changes in the community, in the society, in the economy) and causes of changes are realised by the locals.
4. Closing the interview: questions about the future visions. It aimed to talk about the requirements and close the conversation.

Between 26 May and 31 August 2015 30 semi-structured interviews were made with farmers, hunters, beekeepers, forest managers, majors, colleagues of micro-region associations, local governments. Numbers of interviews were divided as follows:

- agriculture: 9
 - farmers: 4
 - commonage (*composesorate*): 1
 - beekeepers: 3
 - agricultural expert: 1
- game management: 5
 - senior expert: 1
 - professional hunters: 4
- forest manager: 1
- education, community development: 3
 - teacher: 1
 - journalist: 1
 - local historian: 1
- local governments: 6
- micro-region associations, non-governmental organisations: 4
- water association: 1
- parson: 1

In the selection of the interviewees we tried to cover as wide range of stakeholders of the land users as we can. The snowball method was used to get more and more interviewees

(Babbie 2003, Patton 2002). The process of interviewing were continued until we got the saturation point (Kvale 2005). The interviews were conducted anonymously.

Every interview were led by two interviewers. If the interviewee gave his/her permission, the conversations were recorded (3 interviews were not recorded because of the lack of permission). The average length of interviews was 1-1,5 hour. A written summary was made from every interview that collected the information were mentioned during the conversation. If it was needed, interviewers made clarifications on the summary based on the recording.

The analysis was made by the social scientist of the MTA Centre for Ecological Research with simple qualitative content analysis (Mayring 2000, Forman and Darmschroder 2008). In the first step of the analysis ecosystem services mentioned by the interviewers were collected. In the next step the analyst identified the most frequently mentioned topics (such as the problems of agriculture, forest management, water management etc.) and summarized all of the information related to these themes.

The next chapters present the thoughts, opinions, knowledges of interviewees that might differ from the reality. Despite this misinterpretations (or another kind of interpretations), our goal is to give a voice to the locals and present their views about the life in the Niraj and Tarnava Mic valleys as they see.

Results

Results of the interviews

The most important stakeholder groups and their relationships

In the following we define and describe shortly the most important land user groups of Niraj and Tarnava-Mica. At the end of the description a stakeholder map (figure 1.) visualize the relationships between the groups.

Farmers – (stakeholders of agriculture in a broad sense)

This is a summary name of those who do livestock farming or produce crop. Most of the inhabitants of the research area are part of this group as almost every family have some lands, do some farming or home gardening, grow vegetables or fruit for their own needs¹. The majority of the locals have domestic animals. Farmers usually produce wheat, oat, corn and keep sheep and some cattle on the pastures. As the amount of the animal subsidies will change soon (more money will be available for cattle keepers), a turn in the proportion of sheep and cattle is expected.

Farmers are connected with the APIA (*Agenția de Plăți și Intervenție pentru Agricultură*), the acquirers, and the land lessor. In case a farmer has forest and sells the wood, then he or she is connected with the logging companies.

Land holders without land use activities

Farmers who were active before but now retired are part of this group. They do not use their lands at all because of their age or bad health conditions. Many of them do not let out or sell their lands (because of emotional reasons) that contributes to the increase of land abandonment. Due to the abandonments invasive plant species were spread on the arable fields, and pastures started to become a bushy area.

Land holders without any agricultural background or who not live in the area are also part of this stakeholder group. They usually let out their lands. These land holders are in contact just with the lessee.

The subsidies of the European Union brought many transformations in the land use. Firstly, the amount of the abandoned lands started to decline in the last few years, as money that can be received for the land cultivation gave a motivation to the land owners/farmers. However, this opportunity has some negative impacts as well. According to the locals, some people bought lands just because of the subsidies, and they do not do any agricultural activities. They get other local farmers to cultivate their lands without official lease

¹ Inhabitants who aimed to grow plants or keep animals solely for themselves are part of this group. Farmers, who has some farming land (size between a few *ári* – a special Transylvanian area units) besides their home garden are also part of this group. These latter group sometimes sell their home made products in the local markets or for the other members of the community. Inhabitants, who farming actively are engaged in this group.

agreement. The 'invisible' farmer gets the harvest without any rental payments, the owner gets the subsidies. These owners are connected with the 'invisible' farmers and the APIA.

Commonages (composesorate)

In the research area 11 commonages exist. Three leaders of commonages (Scaunul Muresului - *Marosszék*, Eremitu - *Nyárádremete*, Hodosa - *Hodos*) were interviewed. The commonage is a legal form of land ownership sharing that has a centuries-old history in Transylvania ([http1](#)). The main advantage of this form of farming is that on the one hand it is easier to gain the agricultural subsidies, and on the other hand farmers have a stronger law and interest enforcement power. The Commonages mostly do pasture and forest management. Some commonage, such as the Scaunul Muresului Commonage has game hunting sector as well, so they are entitled to hunt on their area. Commonages are in contact with the APIA, the logging companies, the acquirers, the hunters, and other entitled hunter organisations.

APIA: Agenția de Plăți și Intervenție pentru Agricultură

This organisation belongs to the Ministry of Environment, Water Management and Forestry. Its main task is to manage the payment process of the agricultural subsidies and controlling. The organisation is in contact with the farmers, the leaders of the commonages and the land owners.

Acquirers

As local small-scale processing plants, slaughterhouses are not exist in the research area, farmers usually sell their row products to acquirers. The biggest milk acquirer and processing plant is the Hochland and the Gabriella cheese factory. Usually the meat is bought up by foreign acquires. Occasionally (for example before public holidays) the meat is bought up by the Petry company, the Dósa at Chibed (*Kibéd*) and the Fazekas Company at Târgu-Mureș (*Marosvásárhely*). The acquires are in contact with the farmers, the commonage and the resellers.

Foresters

Forests in the research area are owned by private owners (individuals or commonage) and the Romanian State. The owners are obliged to apply a state forest expert or a private forest organisation who manage their forests ([http3](#)). Owners also have to get a contract with the regional Directorate of Forestry. This latter specifies and controls the wood can be cut annually.

State Forestry

The state forests and those private forest, whose owner got contract with a state forestry, are managed by the Forestry Office. The management and the cutting is separated in the case of state forests, as the cutting is carried out by logging companies. The State Forestry is connected with the logging companies, the game managers, the wild edible fruit pickers, the Ministry of Environment, Water Management and Forestry (MMAF – Ministerul Mediului, Apelor si Padurilor).

Private Foresters

After the political regime changed in 1990 app. half of the forests went back again to the private owners. The legal framework of private forestry created in 2001. The private owners can use the forests for their own purposes or they sell the standing timber for logging companies. The private foresters are in contact with the logging companies and the game managers.

Logging companies

Logging companies are those organisations who contracts with the forest owners and have the right to cut the wood legally. These companies are often critiqued by the locals as it is said that they use unfavourable method of cutting. They make the cuttings in a rough way that causes damages in the forests and creeks, and destroy the roads. The companies are in contact with the state and private foresters.

Game managers

Game management was led by a national association and the forestry offices until 2010. After this year it became possible to found private hunting organisations. These organisations have to and are allowed to do the game management on their own hunting ground. A major part of their income is come from the guest hunters who pay money for the right of hunting. Therefore these organisations are interested to keep the number of game in a high position and host as many guest hunter as they can serve. The other major part of the income is come from the membership fee.

The hunter organisations often get in conflicts with the farmers because of the agricultural damages caused by the games. According to the farmers the biggest problem is the process of the damage adjustment as it is too bureaucratic and complex and farmers do not get any help to the administration of the damages. Moreover, hunter organisations often try to take the advantage of this chaotic process and avoid the compensation of the damage. They are obliged to pay the compensation of the damage caused by defined games. Damages made by protected animals are compensated by the State. A hunter organisation is connected with the farmers (in the case of damages) and the guest hunters.

Poachers

Poachers must be differentiated from hunters as they do their activities illegally. They use traps and sometimes guns to hunt for game. Usually they hunt for their own consumes or because they want to decrease or prevent the agricultural damages made by the games. It is also occur that official hunters hunt illegally with not-permissioned gun. Poachers sell the trophies and meat illegally. They are only contact with these illegal consumers.

Beekeepers

The number of beekeepers in the last few years increased suddenly due to the subsidies introduced some years ago. The majority of beekeepers are travelling with the beehives to find better and better places for the bees. Two associations, called Niraj Beekeeper Association (*Asociația Apicultorilor de pe Valea Nirajulu*) and Tarnava Beekeeper Association (*Asociația Apicultorilor Târnavă Mică*), represent the interests of beekeepers. The most important plants that give the best honey are oilseed rape, black locust (Robinia), wild flowers, linden (Tilia), fruit trees, sunflower, alfalfa, sainfoin (Onobrychis) and ratchet (Lotus corniculatus). According to the beekeepers the most valuable plant is the black locust. Beekeepers and farmers are in an interdependent situation. On the one hand, the bees are fundamentally important for farmers because of the pollination. On the other hand, the crops and other habitats maintained by the farmers are essential for the bees. Conflicts between these two stakeholder groups can emerge in case of chemical spraying that can be harmful for the bees. The beekeepers are in direct contact with the national or foreign honey acquirer companies and local consumers. The travelling beekeepers are in contact with the local governments as they have to get a permission before they fix the beehive.

Directorate of Maros River basing (Administrația Bazinală de Apă Mureș)

Along the Niraj and Tarnava-Mica water managers follow the classical engineers' view as fast run-off of the creeks and rivers must be provided in order to prevent the flood damages. This requires to dredge out and control the river beds from time to time. Due to the dredging valuable wetlands and natural areas disappeared, bushes and trees along the creeks and rivers were cut. However, the flood risk was reduced, the natural nutrition supply declined. These changes are in opposite with the interests of nature conservationists and farmers and cause conflicts them.

Water managers are connected with the municipalities and the locals through formal administrative processes and public hearings. Water managers have a contact with the processing plants too, as processing plants can work legally if they get a permission from the water authority. The Directorate are also in a contact with the Natura 2000 Management Associate, the micro-regional associations and the environmental NGOs.

Municipalities

116 settlements (3 cities and 32 administrative units comprising of several villages each) can be found in the research area. One of the main interests of the municipalities is to build up a strong cooperation between the settlements and achieve rural development purposes that can decrease the amount of unemployment and the migration of locals.

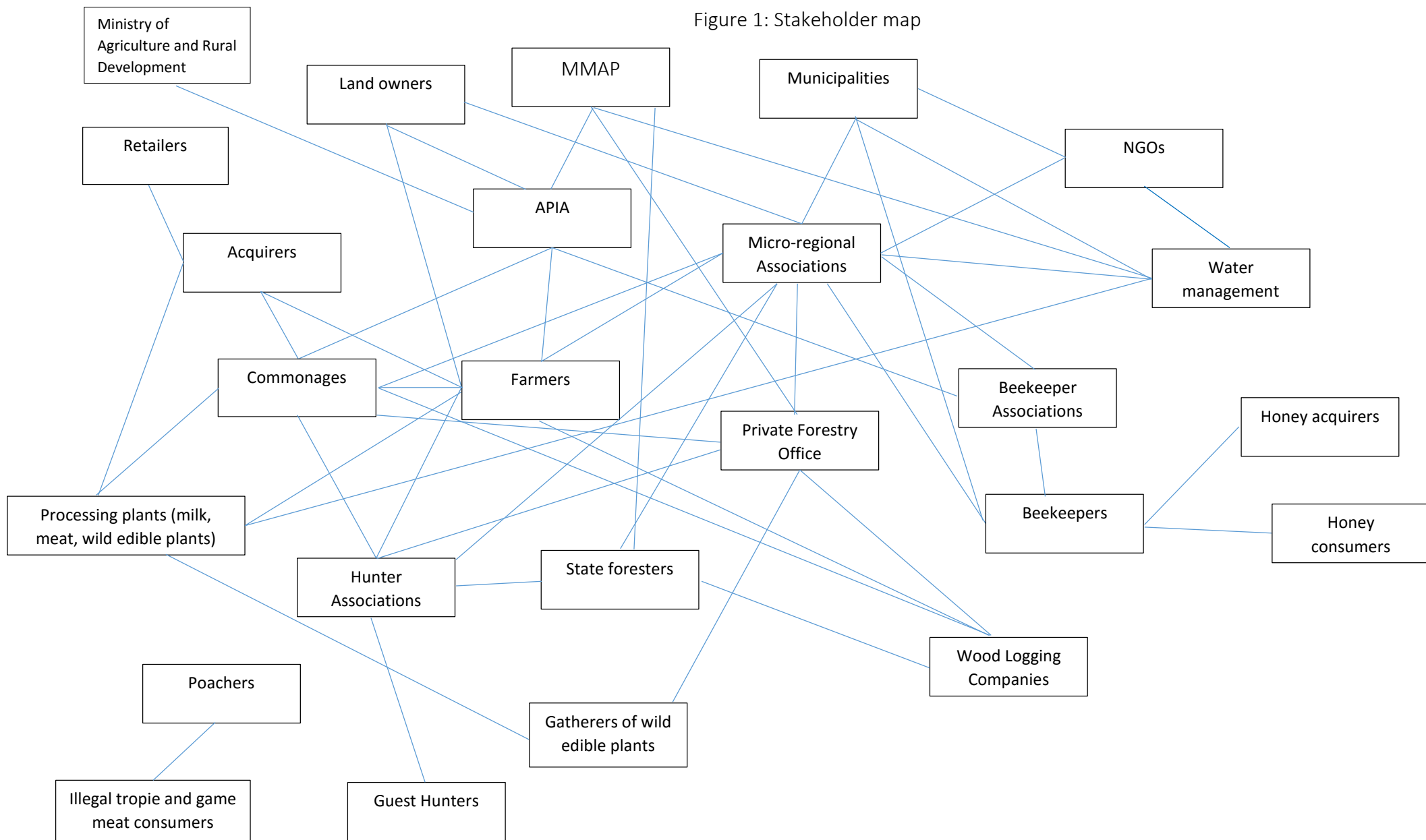
Micro-regional associations

Two micro-regional associations exist in the research area. The Niraj Mirco-Regional Association (*Asociația Microregiunea Valea Nirajului*) was founded in 2002 with the cooperation of 13 settlements. The Tarnava-Mica Micro Regional Association (*Asociația Microregiunea Târnava Mică*) was founded by 6 municipalities and 27 individuals in 2001. The overall aim of these associations is to strengthen the cooperation between the civil organisations, the entrepreneur sector and the municipalities in order to encourage rural development initiatives, increase the quality of life, develop the local health care services and build a cohesive community. The associations have an important role in strengthening the social network and the organized care of elderly, and they give a hand for farmers in the application of agricultural subsidies. The Niraj Micro-Regional Association participate actively in the administration of Natura 2000 areas. Their activities are mainly financed by the European Union and other projects. Micro-regional associations get in contact with all the other stakeholder groups but they mainly work with the local municipalities, the NGOs, the local entrepreneurs and the public institutions.

Non-governmental organisations (NGOs)

NGOs have a significant role in the community development, rural development and in the nature protection. They financed themselves by project money. They are in close relation with the micro-regional associations.

Figure 1: Stakeholder map



Local perception of ecosystem services – the past and the present

Interviews with local people reflect the richness of ecosystem services provided by the Niraj – Tarnava-Mica landscape. Altogether 38 ES and benefits were uncovered by 30 interviews, all considered locally important in the past or in the present. This 38 can be broken into four main categories: provisioning services (12), cultural services (15), regulating services (8) and benefits (3). For ES classification this study takes CICES (Common International Classification of Ecosystem Services², a classification system widely used at EU level) as a basis but customizes it at a great level to better fit the local situation. CICES identifies 3 main categories of ES:

1. Regulating services: the ways in which living organisms mediate or moderate the ambient environment that affects human performance. It covers the degradation of wastes and toxic substances as well as the mediation of flows in soil, water and air, thus contribute to detoxification and regulation of climate and water flows. Another important group of regulation services are the maintenance of biological conditions serving as natural pest control or pollination.
2. Provisioning services: nutritional, material and energetic outputs from living systems, such as food, drinking water, timber, fibres or Physical labour provided by animals.
3. Cultural services: non-material outputs of ecosystems that affect physical and mental states of people, such as spiritual, symbolic or religious identity of certain species or natural areas; recreation, beauty and inspiration experienced in nature; subjects of science and education provided by certain species or ecosystems; cultural heritage preserved in natural areas.

In the following section ES identified by interviewees are presented following the above drafted structure. Lastly, some benefits mentioned by interviewees are also presented, despite not having direct connection to the underlying ecosystem functions, processes and structures that generate them. The reason for including these benefits in the study is that they are derived from local ES and contribute to local wellbeing at individual or societal level.

Cultural services

- Capacity of ecosystems to provide recreation and opportunities for tourism
 - recreational hunting
This ES was mentioned by 2 interviewees, one having a hunting license himself, driven by the motivation of being outdoors in fresh air and good company, the other reckoning hunting as good opportunity for tourism.
 - recreation provided by riverbanks
Intact banks of local rivers, especially of the river Niraj, has been famous among locals for bathing at summertime, offering opportunities for social recreation.
 - birdwatching

² Haines-Young, R., Potschin, M. (2013). Common International Classification of Ecosystem Services (CICES): Consultation of Version 4, August-December 2012. EEA Framework Contract No EEA/IEA/09/003, URL: www.cices.eu

The landscape hosts good birdwatching sites, offering opportunities for recreation and local income generation as an attraction for tourists.

- recreational fishing
Offers physical and mental recreation and entertainment.
- nature photography
The picturesque landscape with its diversity of plant and animal species is rich in photo subjects, offering also opportunities for local income generation as an attraction for tourists.
- recreation provided by solitary trees and clumps of trees
Old shady trees are places of rest and relaxation for livestock and people alike, contributing to physical and mental wellbeing.
- living memories of traditional land use
The landscape has preserved several traditional and eco-friendly land use types, having formed rich diversity of semi-natural habitats for centuries. Some of these traditions are still alive and offer touristic attraction.
- Intrinsic value of nature, spiritual, religious and symbolic identity
 - spiritual peace and serenity
Listening to the wind blowing through the pines brings peace and serenity.
 - silence and calmness
The silence and calmness of the landscape was mentioned by several interviewees, contributing to their mental and spiritual wellbeing.
 - existence of forests, grasslands and waters
The existence of habitats typical for this landscape is appreciated and considered important by local people even if they don't derive any material benefit from them.
 - beauty of the landscape
Aesthetic value mentioned by several interviewees, contributing to mental wellbeing.
 - diversity of species, including rare and protected plants and animals
Intrinsic value of local species.
- Nature as subject of education and local knowledge
 - environmental education
Local natural environment offers excellent subjects for education, however this capacity is mostly mentioned as an underused one. Besides organized education, nature teaches kids, by its existence, to live in harmony.
 - traditional knowledge
It is mentioned mostly related to traditional agriculture techniques and medical herbs. Several local farmers still follow old management traditions and some has great knowledge of herbs.

Provisioning services

- Nutrition
 - wild edible plants and animals: berries, mushrooms and snails

Berries, fruits and mushrooms picked in the area were mentioned exceptionally often. An old tradition kept today mostly by the roma population, picking supplies own needs and roadside sales. Some types of berries are purchased by local food processing companies. Rarely, tourists pick mushrooms too. Mushrooms most frequently picked are agaricus, Lepiota, pink-gilled mushroom, blewit, boletus, chanterelles, milk cap mushrooms and Russula. Berries and fruits most frequently picked are strawberries, blackberries, wild pears, rosehips, black thorn. Animals: snail.

→ game meat

Game represents material and existence value for the locals on one hand, agricultural damages on the other. Game meat supplies local needs and that of tourists, as a side benefit of hunting tourism.

→ fish

Typical service of waters though rarely mentioned. Fish supplies local needs and that of tourists, as a side benefit of fishing tourism. Fish stock has decreased recently, as stated by some interviewees.

→ honey

Beekeeping is famous among locals to supply their own needs and for selling.

→ medical herbs

Wild herbs are picked to supply own needs in most cases, although some herbs are purchased by local herb processing companies. Herbs are used as tea for home remedies. Frequently used herbs are rosehip, nettle, milfoil, camomile, Plantago, Hippophae, centaury, Lycopodium, elder, black locust, lime tree, chicory, Pulmonaria.

→ fodder (hay and grass) for livestock (converted to meat and dairy products)

Extensive cattle and sheep keeping based on grazing and hay cutting are elements of traditional land use of the area, which has largely formed the landscape. The reason why fodder is discussed under the section 'nutrients' is that it is eventually converted into meat and dairy products. These final products are often regarded as ecosystem services themselves, however we decided to identify fodder as the service directly linked to the ecosystems and all later stage products are identified as goods and benefits originating from the production system. This way we avoid double counting of essentially the same service.

- Energy and fuel

- Wood fuel

- Wood represents clear and direct material value in the perception of locals, as household heating is mostly fuelled by wood. There are also some negative associations with wood due to the illegal cutting getting more frequent and bigger scale, according to some interviewees.

- Raw materials

- Timber

- Often mentioned as a service having direct monetary value and thus generating important source of local income, although local timber processing

industries are said to be in recent decline. Timber is linked to a number of local crafts and traditions as well as local timber processing enterprises.

- Water
 - Well water for households
Almost all households are equipped with wells, providing water for washing, irrigation, to supply domestic animals and, if in good quality, for drinking.
 - Water of rivers for agriculture and industry
Local agriculture and industry extracts water from rivers, sometimes illegally.
 - Hot springs
Utilized primarily as touristic attraction.
 - Springs
Water provided by springs is crucial for livestock. Tourists and locals also drink spring water it occasionally. Drying of springs was mentioned as a problem.

Regulating services

- Air quality maintenance
 - Forests provide biological filtration of air pollutants and supply of oxygen.
- Climate regulation
 - Forests and trees moderate micro climate and provide protection against wind storms.
 - Vegetation and soils sequester and store CO₂, thus contributing to climate regulation at global level.
- Water protection
 - mediation of waste
Intensive agricultural techniques (fertilizers, pesticides, stalled livestock) result in increasing pollution pressure on soils and waters. Limits of natural remediation capacities have to be considered.
 - mediation of water flows
Appropriate vegetation cover prevents downstream floods by capturing rainfall and moderating heavy flows.
- Soil protection
 - Erosion protection
Vegetation cover, especially forests, protect fertile layers of soil against erosion.
 - Natural soil fertilization by rivers
Intact rivers and small streams used to supply agricultural fields with fertile layers during their regular floods, contributing to better yields.
- Maintaining habitats and lifecycle of species
 - Maintaining biological and structural diversity of habitats
High diversity of landscapes and occurrence of special habitats with high naturalness allow reproduction and gene pool protection of vast number of plant and animal species.
 - Pollination

Wild bees and other insects as well as honey bees pollinate crops and wild plants, thus allowing their reproduction. Pollination is vital for agriculture.

Benefits of the above services, contributing to human wellbeing

- Local identity
Exceedingly high number of interviewees expressed their strong emotional bond towards the local landscape, highlighting features such as rivers, forests and traditional villages. This emotional connection was considered as the biggest gift of local nature by several of them.
- Safety
Mentioned by three interviewees, the landscape, the view of mountains around together with the local community gives people a sense of safety from global problems.
- Cultural heritage and built environment
Built environment is in harmony with local tradition, rich cultural heritage and the natural environment.

The most important issues emerging during the interviews

Agriculture

Agriculture in the Niraj-Tarnava-Mica region from the 20th Century until today

Interviews with local residents from the Niraj-Tarnava-Mica region gave also the opportunity to learn about bygone agriculture. During the discussions it revealed, that farming was the basis of the livelihood of people living in the region. Almost all of the families owned smaller or larger lands, vegetable gardens, backyard livestock, which played an important role in their own food supply. Famous fruit grower villages were Vădaş (*Vadasd*), Ghineşti (*Geges*), Sărăţeni (*Sóvárád*), Chibed (*Kibéd*), Ghindari (*Makfalva*), Trei Sate (*Hármasfalú*), where plum, apple, walnut, peanut, pear, and cherry was produced and sold in Târgu-Mureş (*Marosvásárhely*) and Gheorgheni (*Gyergyó*). Sângeorgiu de Pădure (*Erdőszentgyörgy*) was renowned for its vineyards.

All these small farms were completely destroyed by the collectivization of the communism. The traditionally managed small-scale farms were replaced by intensive agriculture, which resulted in significant changes in landscape structure and in the lives of the residents as well. Most of the orchards, vineyards and pastures disappeared and were replaced by arable crop production. The landscape has been changed significantly, the diversity and the mosaic structure of the natural agricultural habitats decreased drastically. Land has been managed with intensive tools and with excessive use of chemicals and fertilizers.

Collectivization also affected negatively the lives of the communities: social inequalities sharpened, relations within the communities weakened.

After the end of communism, due to the unregulated system of collectivism and because of the privatization of the lands, locals didn't believe in community agriculture anymore, mutual trust disappeared. After the returning of the lands, a strong individualization was evolving and those who returned to agriculture were trying to rebuild their farms individually. Despite the fact that several community initiatives – e.g. regional associations - strive to maintain and develop local small-scale farms, agriculture couldn't be stabilized again, according to the interviewed farmers. This effort was hitherto only enough to slow down the deterioration of agriculture.

Agriculture in the Niraj-Tarnava-Mica region today

After the uncertain conditions of communism and the regime change, the region's agriculture stepped into a transition time (from 1990 until 2007 - accession to the EU) when the small farms began to be revived. The returning of the lands began, whereby residents received their previously confiscated lands. As a result, today's mosaic landscape has been formed: before the collectivism, a family owned more than one parcel of land, scattered in the area, in order to decrease the effects of natural disasters (e.g. hail). However, without any livestock and tools, and under unsettled land tenures it was difficult to rebuild a farm, and those who

moved to cities in the meantime, were not engaged in agriculture anymore and leased their lands or completely gave up on them.

A slow rearrangement was evolving among the farmer society. A group of small-scale farmers has been formed, who were slowly rebuilding their previously confiscated farms. Nowadays they are mostly engaged in traditional, extensive agriculture on an average of four hectares, and run a farm mostly for self-sufficiency.

Several commonages exist in the project area, which are the results of the pre-communism time. Today's commonages have been revived from these.

The region's commonages maintain only pasture and forestry activities and do not deal with arable crop production. The total areas have different sizes, the largest is the Scaunul Muresului Commonage, which manages a land on 8947 hectares. Commonages have higher chances in agricultural schemes, nevertheless, most people do not participate in these form of farming as it results in less work if the lands are leased.

The accession to the European Union means another new, significant era in agriculture. This developmental phase of agriculture seems to be unsettled according to the interviewees, and farmers also question the nature conservation regulations and economic benefits of the accession to the EU.

The accession to the EU in 2007 resulted in some changes but its positive effects are still doubted among farmers. On the other hand, many are optimistic as agriculture is still one of the most important sector in the region, not only because of economic, but also because of cultural reasons. Despite the drastic changes and ordeals in the past half century, people are still attached to the land and to farming due to cultural reasons. According to the interviewees, the majority of people are engaged in farming in some ways, and almost everybody does home gardening and many have still backyard livestock. Among others, Ghinești (*Geges*), Sânsimion (*Nyárádszentsimon*), Măgherani (*Nyárádmagyarós*), Rigmani (*Rigmány*), Vădaș (*Vadasd*), Neaua (*Havad*), Sângeorgiu de Pădure (*Erdőszentgyörgy*) and Chibed (*Kibéd*) settlements still have herds. On the arable fields mostly wheat, oat, triticale, sugar beet and corn is grown, although, the latter two are sowed constantly less due to game damage and lack of buyers. Except of some large-scale farmers, crop is mainly produced to feed own livestock. Grazing animal species have significantly changed in the latter years; cattle is progressively replaced with sheep due to several reasons: low market price of milk and the restricted possibilities to sell milk directly from the farm; i.e. it became unprofitable to keep cattle. On the other hand, support programs provide better conditions for keeping sheep, while environmental conditions would suit for cattle grazing.

Some interviewees also mentioned vegetable and flower growing, which are both present along the Niraj and the Tarnava-Mica rivers.

The once large fruit grower lands did not revive even after the change of regime. Main reason for this is that farmers lost their interest, as most of them had a knowledge in crop production or keeping livestock. On the other hand, lack of processing industry makes it unprofitable to deal with fruit production. Other problems are the difficulty to acquire the traditional species

and to avoid game damage (which is in orchards mainly bear). In addition, there are only a few farmers with a great knowledge about traditional, extensive fruit production.

As a result of all the above mentioned, the farmer society and the landscape is in continuous transformation. On one hand, the abandonment of pastures and succession is still a problem on areas close to the settlements. These lands are owned by elder farmers who are not able cultivate their lands anymore due to health problems, but do not want to give up the land because of emotional reasons. On the other hand, another group of farmers evolved who's only focus is to meet the minimal requirements of agri-environmental programs but actually they are not active producers (e.g. they mow, but don't keep animals).

Another negative consequence of the abandonment of lands is the appearance and the spreading of invasive plant species, which is a threat to agriculture and for nature conservation as well.

The constantly rearranged agricultural system is strongly affected by economic and social circumstances, i.e. social circumstances also rearrange. One of the biggest fears of locals is that such a farmer society will evolve who have no interest in small-scale traditional farming and in maintaining the culture, who are not locals i.e. have no attachment to the land and whose only goal is to make economic profit.

According to the locals, agricultural subsidies should be more targeted for helping farmers keeping their lands. With the help of the agri-environmental programs the abandonment of lands seems to decrease, and some farms could utilize grants and seem to develop slowly. Nevertheless, according to the interviewees, small-scale farmers are not ready yet for exploiting the opportunities provided by the EU; moreover Romanian and EU background policy does not support a system in which grants can actually be received by families running a small-scale farm. Despite 70-80 percent of the locals are more or less engaged in agriculture, only those can apply to grants who work in a community (commonage); or bigger farmers who are able to apply independently (e.g. for machines). Another fear of the locals is that small-scale farms will be unable to function with the conditions of the current agricultural support system and with the current economic circumstances, they fear that their lands will be taken over by larger farms and as a consequence the mosaic feature of the landscape will be lost. Further critic to the existing grants is that target areas are not well designated and that application requirements do not apply to local conditions. The current system is unable to filter out whether a land was only bought to win grants but actual or adequate farming is not implemented.

Further, the exploitation of the subsidies is difficult for small-scale farmers because regulation systems are not transparent, the constantly changing requirements are difficult to follow. However, regional associations, rural development- and community building associations can provide professional help regarding giving information about the applications and in writing the applications.

Production, selling and processing of agricultural products do not build an integral, closed system which further hinders farmers in development. The lack of processing factors, slaughterhouses and milk collectors result in the low price of the raw materials which are sold

unprocessed. Another sales problem considering livestock is that a group of farmers only keep beef cattle to feed them up but after reaching the weight of slaughter the animals end up in the same company from where they were bought as a calf.

The use of fertilizers and chemicals decreased compared to communism times, nevertheless its excessive use is still present in some areas which leads to the contamination of groundwater and water wells. Besides the intensive use of chemicals, the use of machines has also increased due to subsidies which is also a negative consequence of modernization. This not only strengthens the homogenization of the land but contributes to the weakening of farmer societies. Agricultural machines are mostly bought from grants, and as machines replace human workforce, there is no reason to ask for favours from each other anymore. Those who can not afford a machine, hire workers, thus the production costs will increase.

A serious consequence of intensive agriculture is the ploughing of the grasslands and transforming them into arable field. Although this activity is strictly forbidden, in many cases farmers don't know that they break rules with undertaking land use change.

Forestry

Because of its economic, cultural and social aspects, forests are considered to have a special value for people in the Niraj-Tarnava-Mica region. Forests provide food, timber, are the places of tradition, recreation, personal experiences, myth; they guarantee livelihood and provide job opportunities. All of the interviewees listed forests among the most important natural and cultural value.

According to our survey, forestry and forest management turned into negative directions. Logging with machines, taking advantage of timber sales, and illegal felling are serious problems. Logging is managed by certain companies. Illegal trading makes it easier to sell timber, but this way the seller not only gets a lower price for the timber but serious damages are caused to the forests. Because of the logging with machines the undergrowth and the bark of the remaining trees are damaged, the paths become impassable. Forest stream beds and banks are damaged, water is contaminated. Illegal logging is a significant problem on areas with an unsettled land tenure, on areas without forest management plans, and on areas which are not forest cultivations but the forest is a result of succession.

Interviewees agreed that the increasing bear damages are a consequence of deforestation. The animals are exposed to constant disturbance, their habitat and feeding areas decrease. As a result, they show up more often on inhabited areas.

Forest disturbance occurs also seasonally by gatherers. Mostly gipsy population collects berries, mushrooms, herbs, snails for their own consumption and for selling them. According to the non-gipsy population, besides the disturbance, a problem is the trash that they leave behind. The forest fruits gathered by people are bought by regional processing factories.

Interviewees expressed their concern that forest use and forestry becomes more and more unsustainable. They say that stricter regulations need be made immediately against forest destruction, and awareness raising is also a need in order to form the mentality of people.

Game management

Game management and hunting is one of the most important nature based activities in the Niraj-Tarnava-Mica region. The population and the number of game species in the area is quite rich. Except of the chamois, every game specie occurring in Romania is present on the area. Among others, these are the red deer, roe deer, wild boar, bear, wolf, lynx, and among the small game species the capercaillie, pheasant, rabbit, partridge and quail.

12 hunting associates operate on our research area. Some commonages own also a game management sector besides the agricultural sector.

According to the interviewees, local game management faces some serious problems. Some of these are regulation or economic problems, as well as conflicts of interest. One of the biggest conflicts are the game damages (mostly bear and wild boar). The interviewees state, that the damages occur more frequently, as the habitats of the animals decreases. The population of the wild boar is artificially too high, which derives in our opinion from the management of game, in which sector the interest is the over-propagation of the game. The artificially high population of game is an interest of hunters associations as it generates significant income.

Population size of the bear is a topic accompanied by many debates. In the opinion of the locals, the number of the bears increased in the past 4-5 years. Bears not only damage orchards, but devour poultry and swine from the yards. Locals are concerned about the presence of the bears in the villages.

There is not enough information about the overpopulation of the bears and its optimal number in the area, according to one of the main concerned nature conservation organization. The currently used national yearly population estimation is questionable, and we have insufficient information about the specie's biological and ecological needs. Thus, it is hard to tell when the population can be claimed as overpopulated. According to conservationists, damages caused by bears are seasonal: most of the damages are caused between July and November, and the scale of the damage also increases in this period. It was noticed, that the damages caused by bears are in line with the specie's ecological characteristics, most importantly, with Hyperphagia (increasing feeding demand for a successful hibernation with the approaching of winter time). In those years, when oak- and beech acorns, forest fruits, wild pear, etc. grow in large quantities, damages caused by bears decrease appreciably. Consequently, safety and avoidance of humans is still a priority for bears. As a result, it cannot be stated that bears lost their fear of humans (except of some extreme cases, in the case of the so called habituated bears). Nevertheless, it is obvious, that forest fruit collection and grazing in the forest means a direct competition for the bears, and it is a significant disturbance factor (in "poorer" years these effects are more significant). It is possible, that these factors contribute to the increasing volume of the damages. In lack of natural, undisturbed opportunities to find food, the necessity of feeding overcomes the bears' fear. However, in the past few years, the media presence of the "bear problem" became higher (real, or sometimes misunderstood stories are broadcasted), thus the sensibility of the population has also increased.

According to hunter associates, game population problems derive from central management. In order to solve it, an increased involvement of hunter authorities in local decision making is necessary. Hunter associates yearly declare their demand on shooting quota based on their own calculations, but in most cases the government gives only permission for a small proportion of these requested numbers.

The problem is with the structure of compensation for damages caused by game species. According to the farmers, the process is complicated and long, thus many don't even start the compensation process. According to the regulations of game damages, the state is obligated to compensate damages caused by protected species. Damages caused by other game species are to be compensated by the relevant hunting association in cases if the association did not fulfil their obligation to meet the national frame shooting quota. It happens, that the farmer declares the game damage as a wild boar or a deer damage in cooperation with the hunter association to spare the budget of the hunting association.

In overall it can be said, that the way of game management strongly affects farmers and the well-being of locals, as well as nature conservation. The regulation and situation of game management went through many positive changes compared to the time before the game management law in 1996, but the sector still struggles with a lot of regulation problems and conflicts of interests.

Water management

Water has a particular importance among locals in the Niraj-Tarnava-Mica region. Water was mentioned many times during the interviews, proving its significance. Citizens were especially sensitized to activities and changes related to waters. The high sensitivity of the people could be explained with the strongly controversial water regulations taken place also when the interviews were made.

According to the locals, the quality and quantity of waters is affected by two main factors. The first one is the water management, which is considered as "unnecessary" among locals. As a consequence, cultural possibilities lessen, habitats disappear, the functional role of streams and rivers change, and it has a negative effect on the view of the village and landscape. Although, sudden floods caused serious damages before, mostly settlements at the downstream of the river were affected. However, today's smaller floods are considered as a consequence of the excessive deforestation and not as a consequence of lack of water regulation. A reservoir established at Bezidu Nou (*Bözödújfalu*) serves today as flood prevention.

According to water professionals an appropriate water management can be recognized from an organized, clean (free from vegetation) river bed and river bank. The engineers believe a regulated river bed is the condition of flood mitigation.

Various reasons, such as intensification of agriculture, the excessive deforestation damaging mountain streams, and the behaviour of people in general result in qualitative and quantitative deterioration of waters.

Consequently, water regulation and water contamination topics have a high priority among locals. Residents clearly agree that waters on the area should be treated with much more respect, in addition, water quality and quantity problems should be addressed respectively to local needs.

Socio-economic problems and breakout opportunities

Besides the discussions of the issues related to land use, the interviews gave also the opportunity to assess the local social and economic situation and development possibilities.

Results of the interviews show, that the local economic sector is considered as weak. According to the interviewed persons, apart from one or two exceptions, smaller factories, investors, processing industries which could provide job opportunities do not exist in the area. (Exceptions are bigger cities, e.g. Târgu-Mureş (*Marosvásárhely*)). Although the exodus of young people from the countryside is still significant, locals would not welcome foreign investors. They are afraid of utilitarian behaviours which could cause the degradation of the values on the land and an increasing contamination. Locals are attached to their lands and heritages and would not welcome foreign hands getting on the lands.

The majority thinks the solution for the economic problems would be the development of small enterprises and agriculture. Concerning the companies, those should be supported that consume local resources in a sustainable way (small-scale processing industries, local consumption of forestry raw materials.)

Concerning the agriculture, small-scale farmers should be supported. This could be achieved most efficiently with the rearrangement of the agricultural support programs. Several of the interviewees stressed out the richness of natural (protected species, diverse wildlife, diverse landscape, streams, rivers, lakes, etc.) and cultural (castles, chapels, churches, museums, activities related traditional farming and to village life) values in the region, and added that they see a potential in the development of the tourism sector.

Locals see the necessity for developing local infrastructure, meaning the development of the quality and quantity of small restaurants, establishment of nature trails, renovation and establishment of public spaces (community centre) and building of drinking wells and lavatories.

In order to start all of the above mentioned, a renewal of local communities is necessary. Social relations weakened, which contributes to hinder joint development. Community initiatives (e.g. regional- and cultural associations) that strive for the development of communities and rural areas are present in the area, nevertheless, the existence of these communities depends on the success of constant application for grants and on the active work to keep the community together.

Summary

In the previous study we summarized the outcomes of our research that was executed as part of the "Measuring and Assessment of Ecosystem Services in the Natura 2000 sites of the Niraj-Tarnava Mica region" funded by the EEA Grants.

The conclusions are based on data from 30 semi-structured interviews that we had with the region's main land users and other resident stakeholders. In our study we first introduced the applied methods of data collection, then briefly described the area's major stakeholder groups, their interests and relations. Afterwards we concluded that nature provides a prominent number of ecosystem services to locals (47). Especially high amount of provisioning services were revealed (27), which are primarily associated with material benefits. Local residents' attraction to nature and sense of local identity are also represented by the remarkable set of cultural ecosystem services captured in the interviews (15). Of the regulating services, 5 have been mentioned.

In addition to ecosystem services assessment, the interviews were also appropriate for deriving the landscape management issues most important to local people. Our study discussed these topics as well. First the current state of agriculture was described according to locals' points of view, which revealed that farmer, hence land use and landscape structure all undergo continuous changes. Agricultural subsidies take a growing role in farmholds' lives, in the exploitation of which larger ones have advantage in contrast to smallholder farmers who are harder to cope with its administrative requirements. The farmer community is aging out. Agriculture is ever less popular among the youth, who rather look for a job in cities or abroad than remain in the country. Partially due to the latter issue, landhold concentration has become characteristic, ecologically causing a less rich landscape mosaic.

Concerning grazing livestock the amount of sheep has increased, although the region would be more appropriate for the herding of cattle. The reason of the increase is again has to do with the subsidy institutions. The stock of dairy and extensive cattle heavily decreased in the last years because of unfavourable trends in the market price of milk. Thanks to adjustments in subsidy programs meanwhile, the rise of cattle population is expectable in the near future.

Forestry and wildlife management are also among the most frequently mentioned land use topics. Current trends in forestry triggered our interviewees to express their concerns over the ever less careful practices of lumbering and growing rate of deforestation. Regarding wildlife management they complained about overpopulation and game damage.

Concerning local water management most of the interviewees agreed that river regulation has significantly damaged the landscape and the rivers' cultural and ecological functionality.

To improve the current situation interviewees see the need for community and workfare development, also to keep youth in the area. They regard it necessary to targettedly support smallholder farmers and establishment of local manufacturing industries. They see numerous, yet unexploited opportunities in touristic development based on natural and cultural values.

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