



BIOLOGICAL OBSERVATIONS AND SURVEYS

## DISCUSSING DIVERSE ISSUES AND PROSPECT FOR SUSTAINABLE SOCIAL ECONOMIC DEVELOPMENT IN PRESPA NATIONAL PARK, ALBANIA

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### SYNOPSIS

**Key words:**

Prespa Lakes,  
Albania,  
tourism,  
pollution,  
wastewater treatment.

Albanian part of Prespa Park (AL-Prespa), located in the southeastern corner of Albania, is a good case study, as it is a protected wetland area of high biodiversity and long human history. It is a unique environment with significant natural and cultural elements that are being seriously threatened. The past symbiotic relationship between the natural environment and the local communities located within the park boundaries has changed with the advent of human activities. This case study attempts to examine stakeholder perspectives and human ecological interactions in order to better understand the sources of conflict and environmental problems in the area, to assess the issues, the main driving forces, the basic development prospects, the environmental situation and opportunities for sustainable social-economic development in AL-Prespa.

### INTRODUCTION

Protected areas management are characterized by problem solving and decision-making in regard to natural resources, including the management of human interactions with these resources. Slocombe (1993) asserts that understanding the state and dynamics of the ecological and institutional aspects of an ecosystem is essential for determining the obstacles against more sustainable management practices. According to McNeely (1994), detailed knowledge of the people, whose lives are affected by the establishment of protected areas, is as important to protected area management, as information on the plant and animal species which have to be conserved. Lee (1995) suggests that the quest for sustainable development requires a better appreciation of humans' relationships with the environment and amongst each other.

Conflicts between resource and environmental management are usually over values, either ecological or human, rather than clashes over numbers (Sexton, 1998). Frequently, there is a serious incompatibility of views among regulatory agencies, affected communities, businesses and environmental groups (Grimble & Wellard, 1997). Local cultural contexts can play a significant role in shaping beliefs and perceptions concerning environmental values and conservation (Floyd et al., 1997). Investigations into the historical and contemporary land use patterns of an area, and the attitudes and aspirations of resident people can contribute to the understanding of people-park conflicts (Peters, 1999). Thus, the identification of key stakeholder attitudes, beliefs, and values could be an important first step in determining the future directions for specific protected area planning and management projects.

AL-Prespa is located in the southeastern corner of Albania bordering the Republic of Macedonia and Greece (Fig. 1). The Albanian government officially declared Lakes Prespa and a peripheral zone as a National Park in 1999. On World Wetlands Day in February 2nd of 2000, a new transboundary Prespa Park was officially announced by Albania, Greece and Macedonia. This 55,830 ha reserve, containing the two Prespa lakes, is the first transboundary protected area in the Balkans and includes the AL-Prespa, which is the focus of this study.

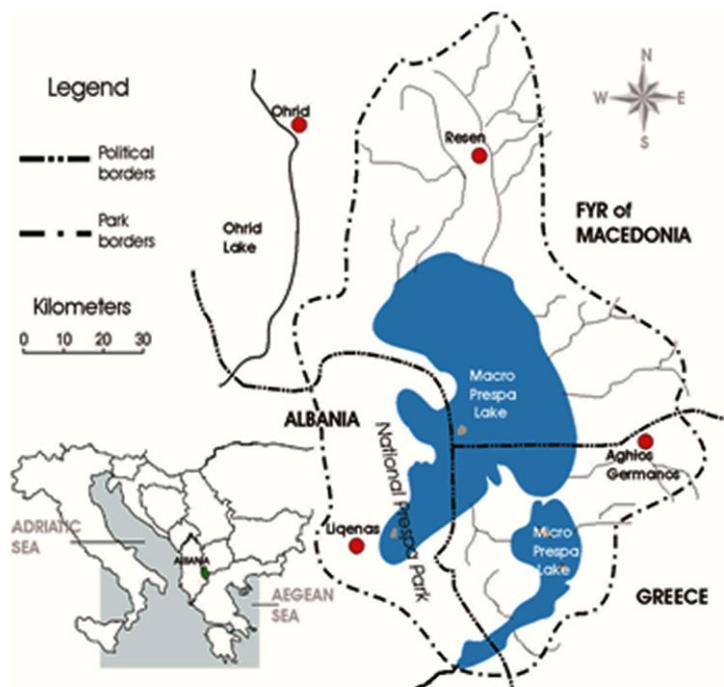


Figure 1:  
Prespa Park region.

The climate shows characteristics of a hot and dry Mediterranean type during the summer and Mid-European type during the winter with long periods of high

rainfall, snow, increased cloudiness and low temperatures (Hollis and Stevenson, 1997). The number and diversity of animal species in Prespa is commonly attributed to the high variety of habitats, the existence of relatively large areas with shallow water around the lake and the existence of mountainous habitats nearby (Catsadorakis, 1997).

Prespa contains over 1300 species of plants (Pavlidis, 1997) and more than 40 species of mammals, including brown bear (*Ursus arctos*), wolf (*Canis lupus*), chamois (*Rupicapra rupicapra*), wild boar (*Sus scrofa*). Extensive areas of common reed (*Phragmites australis*) and many shallow lagoons in Prespa create important marshlands for large colonies of breeding birds. Among the 261 bird species that have been observed in the Prespa area since the late 1960s, 164 breed in the park including the internationally important Dalmatian Pelican (*Pelecanus crispus*), Great White Pelican (*Pelecanus onocrotalus*) and Pygmy Cormorant (*Phalacrocorax pygmaeus*) (Catsadorakis, 1997b).

Human activities, over many centuries, have played a key role in shaping the natural environment of AL-Prespa. Byzantine churches, monasteries, 15th century wall paintings, hermitages and traditional stone buildings survive as evidence of Prespa's long cultural history. Currently there are thirteen communities in the park with a resident population of approximately 5300 people (Grazhdani, 2013). AL-Prespa Park is located in a contentious border area and the twentieth century proved to be quite a difficult time for the people of the area with conflict and depopulation as a result of the First and Second Balkan Wars, and the two World Wars.

The Prespa region had a traditional subsistence economy, which combined crop farming with livestock breeding, fishing, and collecting from nature (Valaoras, 1998). This drastically changed in the early 1970s when a surface irrigation network was established to convert rain fed crops to irrigated ones in order to increase production and farmer's incomes. Most of the cultivated area is now on the lowlands which are immediately adjacent to the lake's eastern shores and, therefore, to the park nucleus. This has increased the non-point source agricultural pollution to the wetland and fake areas. Currently, the Prespa farmers cultivate a total land area of approximately 1.4 ha fragmented in about three plots. Land redistribution took place after 1992. The small farm size and the even smaller average size of each plot, constrain the development of mechanization and the productivity of the crop production sector. The designation of the area as a National Park did not affect land ownership status and part of this land is still privately owned.

There has also been considerable human modification to the hydrology of the region. Loffler et al. (1998) state the water level of Lakes Prespa has dropped 6 m since the 1950s and attributes the drop to the steady expansion of irrigation networks. Lakes Prespa is believed to have entered a critical stage of eutrophication due to agricultural runoff (IUCN, 1987; Loffler et al., 1998; Michaloudi et al., 1997;

Tryfon & Moustaka-Gouni, 1997), however more research and better testing of the water quality of the lakes are required (Golterman, 2001).

Fisheries have long existed on the two Prespa lakes. Since 1992, the number of active fishermen has constantly decreased and it is difficult to know how many currently continue fishing on the Prespa lakes (Crivelli et al., 1997). Most fish are sold by the fishers themselves but some are sold to merchants who drive around locally and sell their fish. Fishermen sometimes supplement their income by taking visitors on their boats for trips on the lake and others keep fish taverns where they cook part of their catch.

The scenic and natural values of the area eventually gained more public recognition, especially after the designation of the National Park in 1999, and attracted mainly foreign birdwatchers and naturalists who were accommodated in the old family-hospitality way. Gradually, hotels, private rooms, and restaurants began to be established. In 2012, which is still lower than the demand in peak season (Grazhdani, 2013). The National Park infrastructure for visitors is scarce, although the quality of services is improving.

This paper attempts to identify the fundamental roles and perspectives of different stakeholder groups in AL-Prespa Park in order to better understand the basis of environmental problems and conflicts in the area. Through an overview of the study area and a discussion of interactions between different groups and with their environment this paper provides a snapshot of the variety of factors that may influence future park management goals and initiatives.

## **MATERIAL AND METHODS**

The study is carried out in a three-year period (2009 – 2011) using the following methods: **1)** literature survey. This included a review of the past reports, government documents, and literature concerning the AL-Prespa park and related issues; **2)** cases comparison: workshops organized with local stakeholders; **3)** consultation of experts: qualitative assessments of interactions between local stakeholders and land-uses were derived as expert judgments using staff from various institutions including Universities, Ministries, other research institutions, government land management agencies, and other stakeholders, and **4)** field survey: an appropriate guidance sheet in the form of a “questionnaire” with 24 questions, was prepared and distributed to a small network of people (278), which included individuals from associated government bodies, non-governmental organizations (NGOs), and local communities.

The questionnaire consisted of five parts. Part 1 contained 5 demographic and socio-economic respondents' characteristics. Part 2 consists of 6 questions about agricultural sector (farming and livestock breeding). Part 3 of the questionnaire

contained 5 questions with respect to forestry and pasture. Part 4 consisted of 1 question, which was focused on fishing and part 5 of 7 questions on tourism.

The questionnaire items were sent to a panel of experts to check the content and construct validity. Following the judgments and recommendations from the panel of experts, the questionnaire was revised as necessary. A field test was used to assess the face and content validity. 25 people were chosen to make comments on the questionnaire's clarity and ease of use. The suggested changes from the panel of experts and the field test were incorporated into the final draft of the questionnaire.

## RESULTS AND DISCUSSION

### GENERAL PROFILE OF THE RESPONDENTS

The sample is relatively balanced between genders. Men comprise 53.3 percent of the sample and females comprise 46.7 percent of the sample. The majority of respondents (74.5 percent) are between the ages of 20 and 65. The majority of the respondents (67.8 percent) are lifelong residents. Persons living in the province for ten years or more account for three fourths of the sample population (78.1 percent). Of the respondents, 15.7 percent are living in the area 10 years or fewer. Respondents are well educated. The majority of respondents are graduates with high school diploma (87.4 percent); the remaining are university graduates (18.4 percent).

Nearly 86% of the residents reported a yearly income less than €1000. 73.64% reported their yearly income €600, 15.45% reported their yearly income between €600 - €1000, 6.97% reported their yearly income between €1000 - €1,500, 1.61% reported their yearly income between €1,500 - €2,000, 1.53% reported their yearly income between €2,000 - €2,500, 0.80% reported their yearly income between €2,500 - €3,000, and none of them reported their yearly income over €3,000.

### AGRICULTURAL SECTOR

According to the survey data, the total number of agricultural holdings are 1,273 and they are all mixed holdings (agriculture and stock - breeding) with almost 2,185 ha of total land.

In order to determine the level of agricultural farming in AL-Prespa, in part 2 of questionnaire, there were 2 questions regarding agricultural sector. The survey included the question regarding the crop structure. According to the respondents' response, the cereals (i.e. wheat, corn, barely and rye) are the main crops covering 69.7% of the total land. The remaining 30% is cultivated with potatoes (1.4%), dry beans (3.2%), vegetables (8.2%), alfalfa (9.6%), fruits (0.9%) and vineyards (6.9%).

The next question explored, asked respondents to answer about the main problems faced by agriculture. The majority of those surveyed (57%), said the existence of an agricultural farm with minimal size (1.4 ha), fragmented, closed in itself and oriented towards the fulfillment of the family needs; 28%, the existence of a considerably large family which needs to operate in the micro farm, and 15%, the lack of irrigation system. Under these conditions, the farmers have found the adoption of very complex production systems including a large number of crops and animals.

#### LIVESTOCK BREEDING

Livestock is very important for all the community of AL-Prespa Basin, where an extensive way rearing animals is very common. Depending on terrain characteristics and availability of meadows/pastures of the different villages, households keep 1-2 dairy cows and normally a small flock of sheep and/or goats. They provide fresh milk, homemade dairy products and meat for the family round the year. Rearing of caws, sheep and goats destined to livestock market are not common because the far distance from markets and lack of slotter houses, cooling and processing facilities.

In AL-Prespa, the breeding systems for the small ruminants are still traditional: exploitation of the summer and winter meadows, low grazing in the considerable area of non-cultivated agricultural land, tree lopping and a relatively limited use of concentration and dry feed.

The Prespa habitants use to grow-up those kinds of domestic animals that can better adapt to the environmental conditions in the area. Among them the most important are goats. During centuries there has been consolidated a very interesting goat, with a robust constitution, able to cover kilometers in slope rocks every day in search of fodder. "Prespa black goat" represents a genetically pure material. Its weight is 35-40 kg, annual milk production, 100-120 l and reproduction, 120 %. Its fodder base is the oak's leaf. There are no interventions aiming to improve the race. The import of some cultivated breeds as Alpine goat, Ile de France etc. has already started and some families are carrying out the breeding in the Prespa region.

The sheep arrangement continues to be still one of the main livestock activities. Until the year 1960 the common type "reckë", small body and rough wool dominated the region. Its weight is 25-30 kg, annual milk production, 50-70 l and reproduction, 120 %.

The people of Prespa area have also arranged and cows. The cows are used for milk, meat and work. The cow type "Busha" of the region represents an animal grey in color, color which became deeper on neck and on head, very resistant and adopted to the climate of the region, similar to cow living in the mountain areas of Korça and to that of Prespa area in Greece (Grunenfelder, 2006). The annual production is: milk, 1000 l and meat, 100 kg. During these last 30-40 years there

have been efforts to crossbreed it with Jersey, Oberental and others, but couldn't assimilate the cow of the region.

The following survey questions helped to establish a relationship between livestock and the local economy. Question 1 of this section asked the respondents: *"Is livestock structure changing?"* - 87% responded "yes". Concerning the question 2: *"Please, refer to the possibly perspectives – solutions for the near future?"* - 54% estimated that the total number of sheep and goats in the research area will decrease, 34% said the total number of cows may increase or remain stable, and 17% said that some farmers will enlarge their stockbreeding size and specialize their farm, increasing the number of cows and sheep rather than the number of goats.

To determine the reasons for reducing animals, the survey included question 3: *"What are the reasons for the livestock number change in your opinion? Which is the most important reason?"* - 66% of the total respondents rated their answer at "changes in the society". Working with livestock is associated with long working hours, "dirty" circumstances. Young people prefer to live and work in urban areas or migrate to foreign countries; 18%, "there are either not enough young people for taking care of animals or they are engaged in other activities or they do not like the job". Some young people rather pay for the rotation of minding livestock than doing it themselves; 12%, "not profitable or not profitable enough", and 4% "not enough land for making fodder". However, in looking at the response to this question it is important to keep in mind a number of factors.

Next, he or she would go to question 4 to explain the most important current problems that the area's livestock breeding faces. For 46% of the respondents, forage production, one of the main sources of livestock fodder, is not sufficient to meet the needs for livestock food even in the summer time because of the lack of irrigation water. This has caused not only the decrease of fodder but also great pressure on forests; for 24% was the bad experience acquired in communist times with joined community herds; for 14% was livestock keeping at a small scale (8 – 10 sheep and goats, and 1 cow on the average) is not seen as profitable enough to justify the increased cost of paying a shepherd, organizing milking etc.; and for 8% livestock-related work is mostly done by old people and women.

#### FORESTRY AND PASTURE

According survey data, the total forest land inside AL-Prespa is 13,500 ha, from which 9,399 ha (69.6%) belongs to state forest land, 3,721 ha (27.6%) to communal and 380 ha (2.8%) to private forest land. At least 5,300 people dependence on fuel wood and fodder from an already degraded forest.

In preparing the survey to explore the forestry and pasture status in AL-Prespa, it was addressed to effective actions which will be taken to control sustainable forest management. To touch upon this matter those surveyed were asked: *"Do you think the following action would be effective in controlling the forest*

*sustainable management? Which is more effective?*” The response to this question was undoubtedly mixed with 43% of respondents answering “grazing of animals (goats, sheep, and cows) inside the forest land”, 33% “lopping of fodder (branches and leaves) for livestock”, 18% “illegal wood cutting” and 6% “non-timber forest products”.

These three practices carried out by the local population for subsistence economy but also for income generation (selling of firewood) had led to a severe degradation of the forest areas. More than 50% of the forest cannot be called forest anymore.

a. GRAZING IN FORESTLANDS

In addition to the information provided in table 1, some browsing and grazing pressure comes from outside the AL- Prespa. Several of the bordering villages from the west side of the Mali i Thatë Mountain send their animals on the mountain slopes outside and inside the national park. In summary, the impression obtained is that the livestock pressure on the forests from outside the national park is less important than the livestock pressure from the villages inside the park and that in total the number of livestock, especially of goats and sheep is decreasing, due to a changing lifestyle of younger people.

**Table 1: Livestock data according to the various villages in AL – Prespa.**

Village	Cows	Sheep	Goats	Horse	Pigs	Poultry	LSU*	LSU/HH**
Liçenasi	700	800	450	320	50	700	1210	4.77
Zaroshka	190	390	80	20	300	20	381.7	4.56
Lajthiza	120	35	320	50	20	200	216.3	3.84
Gorica e Madhe	400	570	420	98	30	500	641	5.32
Gollomboçi	200	10	280	60	-	100	290.5	4.48
Kallamasi	500	600	250	120	40	800	757	4.69
Gorica e Vogël	210	400	150	70	20	450	366.5	6.88
Cerje	50	200	20	100		100	183	2.04
Diellasi	320	250	790	160	40	500	615.5	4.99
Buzliçeni	70	500	150	40	300	340	305.2	7.24
Shueci	40	550	400	30	100	260	227.5	3.20
Rakicka	70	600	800	40	100	280	315	6.59
<b>Total</b>	<b>2870</b>	<b>4905</b>	<b>4110</b>	<b>1018</b>	<b>1000</b>	<b>4723</b>	<b>5484</b>	<b>4.7</b>

\* Livestock unit: cows, horse = 1; pigs = 0.35; sheep = 0.15, goat = 0.1; poultry = 0.01;

\*\* household.

Taking into account that at least half of the cattle and about all the horses, donkeys and mules are kept in the households the total present livestock pressure

from inside the park is estimated at 5,484 livestock units (LSU) and another 1,000 LSU may come from outside the national park (Grazhdani, 2013).

The 6,480 LSU are not equally spread over a grazing area of 1,880 ha and a forest area of 13,500 ha. However, abandoned lands and inhabited areas (4,950 ha) and cultivable land (1,800 ha) are available as well as pasture in the AL-Prespa, thus relieving the pressure on the forest rangelands and pastures. This results in a total grazing area of about 20,250 ha, giving a theoretical livestock charge of 0.3 LSU/ha (= 1.5 Sheep Equivalent Units (SEU)/ha).

Grazing capacity of wooded lands, namely high and coppice forests as well as scrublands is generally estimated to about 1.3 SEU/ha. On the contrary, the grazing capacity of pasture and meadows officially accepted by the AL-Park administration is 3.66 SEU/ha. The actual grazing capacity under the present degraded state of shrub forests and pastures, however, is estimated to be much less, about 0.9 SEU/ha. In future, some 1,000 ha of the grazed forest land bordering Greece may fall into the core protection zone of the national park, and should therefore be excluded from the available rangeland, resulting in a livestock charge of 1.6 SEU/ha.

From this estimation, it is clear that the present grazing pressure is probably still too high for the generally degraded vegetation resources. A continuation of the trend of decreasing livestock numbers and/or improvement of the grazing schemes and thus the state of the pastures will be necessary to resolve this situation.

Over-grazing of sub-alpine and alpine meadows detrimentally affects the naturally fragile alpine ecosystems of the AL-Prespa Park. It has been investigated how feasible it is to reactivate alpine pastures for livestock grazing from the socio-economic perspective. In order to explore further respondents' opinion on grazing, they were asked: "*What is your opinion on constraints/restrictions of grazing on sub-alpine meadows?*" In total, 74% answered that the highest constrain is "Bad experience made in communist times with joined community herds"; 18%, the medium constrain is "livestock keeping at a small scale (average 8-10 goat & sheep, 1 cow)", and 8%, the low priority is "the number of sheep and goat is going to increase even more in the future".

Next question closely relates to the last, and again asks respondents to offer their perception, was: "*Do you think the following advantages of grazing on alpine meadows would be effective? Which is more effective?*" The response to this question was undoubtedly mixed with 53% of respondents answering "Higher quality of milk (because grass is better, milk smells nicer)", 33% "healthier animals and possibly higher productivity", 8% "less moving of livestock can lead to faster growth, more meat", and 6% "fresh air".

The survey also was addressed to effective actions which will be taken to build and control the needed infrastructure on alpine meadows. A majority of the respondents (85%) feel that, the first activity was maintenance and establishment of water ponds; the second, was the building of some overnight place for shepherd; and the third was the construction of the new roads and footpaths. Those who were surveyed were also asked on the infrastructure needed for cheese production: "*What are your priorities with*

*regards to the improvement of the infrastructure needed for cheese production?"* In total, 64% answered that the highest priority is "milk factory in the villages", 28% the medium priority is "drinking water", and 8% the low priority is "production and cool storage place for making cheese".

#### B. LOPPING OF FODDER

Tree lopping for winter fodder production is considered a problem in the Albanian part of the basin, where oak branches are reported to supply about 80% of winter fodder requirements. As a result, woodland near the villages is degraded. Dry foliage of oak branches cut in August or September are fed at a rate up to 80% of the winter diet of goats, and to a lesser extent to sheep. About 200 kg of dry branches (a small pile) is needed per animal for which an area of 600 m<sup>2</sup> has to be cut. For the estimated number of 4,110 goats a lopping area of 247 ha should be provided annually and for the 4,905 sheep another 294 ha may be needed. These cuts can be executed every 5 years on the same area. Thus, a total oak bush area of 2,705 ha should be foreseen for lopping, which is about 49% of the 5,500 ha of oak shrubs in the park.

In future, some leaf fodder could be provided through the scheduled clear-cutting and releasing (singling of coppices) work in the managed oak stands and later on by green pruning.

#### C. ILLEGAL WOOD CUTTING

Wood in the Prespa lakes basin is mainly used for fuel, through legal and illegal cutting. The average annual wood needs of the 1 148 families of the association has been estimated at 13,181 m<sup>3</sup> sterc of firewood (= 11.5 m<sup>3</sup> sterc/family/year) and 2,633 m<sup>3</sup> of construction wood (= 2.3 m<sup>3</sup>/family/year). About half of the firewood is estimated to be obtained legally, generating an annual income to the Forest Directorate of Korça of about 0.36 million Leks (5 m<sup>3</sup> sterc of dead wood/family).

The total number of families in the AL-Prespa is about 1,273 (Liqenas 1,148, Buzeligeni 50, Shueci 35, Rakicka 40). Their total wood needs can be estimated at 12,900 m<sup>3</sup>/year. According to estimates of the Park Director, the amount of self-consumed wood inside the AL-Prespa is around 10,000 m<sup>3</sup> sterc. Additionally, 1,000 m<sup>3</sup> sterc is cut and sold to outside communities and an amount of mostly illegally cut wood of 4,000 m<sup>3</sup> sterc/year is taken out by some neighboring communities like Zvesda, Bitincka or Tren.

The total annual demand of wood from the Communal Forest of Liqenas has to come from a forest area of 7,500 ha, of which 1,000 ha of the grazed forest land bordering Greece will fall into one of the proposed core protection zone of the national park. This gives an average demand of 1.4-1.9 m<sup>3</sup>/ha/yr, or without core zone of 1.6-2.2 m<sup>3</sup>/ha/yr, which can hardly be met by the present growth of these

types of forests of 0.35-2.2 m<sup>3</sup>/ha/yr. However, through rehabilitation, the forest productivity could be improved up to 3-4 m<sup>3</sup>/ha/yr (Grazhdani, 2013).

A virulent problem remains the obvious large scale illegal wood cutting by the population of Rackika in the Greek Prespa Park in silent alliance with Greek livestock holders profiting from the clearing of forest trees, and to a lesser degree of the population of Shueci and Buzeligen also in the Greek Prespa Park. The Greek forest rangers are not in a position to handle this problem alone and a close cooperation with the Albanian authority is required to present economic alternatives to the people, e.g. involvement in forest management in the AL-Prespa. In Macedonian Galiçica National Park bordering with Albanian AL-Prespa, only minor illegal cuttings, probably by Albanians from the village of Kallamas, have been observed, which should be jointly addressed by the National Park Authorities of Prespa and Galiçica.

In table 2 is given firewood generation and marketing. The total firewood production in the AL-Prespa is 20,000 m<sup>3</sup>.

**Table 2: Firewood generation and marketing.**

Item	Firewood (m <sup>3</sup> stere)
Wood legally produced in AL-Prespa	11 000
Wood illegally cut in AL-Prespa by buffer zone communities	4 000
Wood illegally cut in Greek AL-Prespa	5 000
<b>Total firewood production (AL-Prespa + from Greek NPP)</b>	<b>20 000</b>
Of total: Consumption in AL-Prespa	10 000
Of total: Consumption in AL-Prespa buffer zone	4 000
Of total: Sold outside AL-Prespa	6 000

#### D. NON-TIMBER FOREST PRODUCTS

The most important non-timber forest products in the study area are wild fruits/medicinal plants (e.g. mushrooms, blueberries, mountain tea etc.). The economic value of these products indicates that there is a pressure on these resources. Except for a few people in the Park, who collect mountain tea for the market, most people only collect for home consumption. It is assumed that mountain tea and other wild fruits/medicinal plants have a certain importance for income generation. However, there is no data available on quantities and prices. It is reported that one person earns €3,000 with the production of mountain tea, which corresponds to the average household income in the region.

#### FISHING

Fishing is reported to be one of the most important sources of income for the AL-Prespa Park, contributing more than 15% of the annual per capita income.

Statistical data on fishery production and the species caught are fragmentary. In years, production and structure has gone under oscillations (Table 3, 4). In table 3 is shown fishery statistics for Macro Prespa (Kapedani & Gambetta, 1997), and in table 2 are shown fishing data for the Albanian part of Micro and Macro Prespa for year 1987, 1989 and 1990. In general, fish production in the basin has suffered a serious decrease over the last two decades or so due to a combination of ecological, social and economic factors.

**Table 3: Fishery statistics for the Albanian part of Macro Prespa.**

Years	Carp (%)	Nase (%)	Bleak (%)	Total catch (kv*)	Yield (kg/ha)
1954-1960	20	13	67	1500	3
1960-1970	13	5	82	3700	9
1971-1975	3	6	91	18072	90
1976-1980	0.5	4	95.5	25989	129
1981-1985	0.5	3	96.5	22415	112
1986-1990	4	5	91	12177	60
1991-1995	5	8	87	6933	34

1 kv = 100 kg

**Table 4: Fish catches (kg/year) for the Albanian part of Macro and Micro Prespa lakes, for three years.**

Species	1987	1989	1990
<b>Macro Prespa</b>			
<i>Squalius prespensis</i> and <i>Chondrostoma prespense</i>	7800	15411	7351
<i>Alburnus belvica</i>	237200	210314	13
<i>Carassius auratus</i>	0	702	26
Total	246700	234518	8958
Yield (kg/ha)	63.6	60.4	2.3
<b>Micro Prespa</b>			
<i>Cyprinus carpio</i>	1000	7200	6028
<i>Anguilla anguilla</i>	0	600	315
<i>Squalius prespensis</i> and <i>Chondrostoma prespense</i>	6700	5300	1854
<i>Alburnus belvica</i>	4100	19200	1434
Total	11800	32300	9631
Yield (kg/ha)	23.6	64.6	19.3

Species in low number, which are usually endemic species, are in danger of further decreasing. Fishing is controlled by a licensing system and a fishing ban. The AL-Prespa Park administration has implemented a one-month fishing ban during

the spawning season May/June. It is reported that the majority of fishermen respects the ban. Thus, there are some illegal fishing activities occurring in the area. Economically valuable fish species, such as carp (*Cyprinus carpio*), have dropped while less demanded smaller fish species have increased. It is assumed that some of presently applied fishing techniques are not sustainable because too many fishes are caught.

In most fishing households, at least two people are involved. While the men go fishing by boat, many women take the bus to the closest city Korça (45 minutes far) to sell the fish in the streets. They do not sell the fish on the local fish market because they do not have a business licence. Although the average price is 30% higher in Korça than in the Prespa area, it is difficult to sell the fish and means a long and hard working day. Smaller quantities of fish are sold in Prespa area. There are traders who buy the fish in the area. Some fishermen dry small fishes with salt for the winter period but only in small quantities because they need to sell the daily catch for income generation. A disproportion exists between supply, which is bigger in winter, and demand, which is higher in summer, and market fluctuations are high.

Fishery statistics are a useful tool to monitor fishery activity and in a certain extent some fish species abundance. However, the fishery statistics can be useful and efficient, only if some conditions are fulfilled. For this reason, the following question was asked: "*Refer to the main current problems the area's fishery faces in the process of sustainable fishery management*". The response was fairly mixed and rated as follows: 33% - clear fishing regulations common to the three countries should exist; 26% - the statistics should be as much as possible reliable and poaching (illegal fishing) should be reduced at strict minimum; 22% - the fishing effort is documented: the minimum data needed being the number of licensed fishermen, but better an estimation of the number of nets set per month; and 18% - a strong implementation of fishing regulations (the existing ones or new ones) with fines and confiscated fishing material including boat if needed.

The regulations of fishery management are still not guided by a joint strategy among the three countries for the preservation of this valuable ecosystem. Measures should be taken for the coordinated fishing within three countries. Specific steps should be undertaken for preservation and increasing of authentic fishes by the relevant ministries, local authorities and companies that are based on the exploitation of fish resources.

#### TOURISM

This section of the study identifies the size and characteristics of available tourism markets for AL-Prespa study area. According to the data collected by us in Lakes of AL-Prespa area, the capacities for overnight stays in hotels are 75 beds, for private accommodation 440 beds and there are 11 restaurants with 375 seats (Tab. 5). The occupancy rate for the hotels ranges from 10-20% (average 11.6%)

and for private accommodation between 0.4 and 8% (average 3%). Restaurants are reported to have about 1,000 visitors per day at the weekends during the main summer season (July and August), resulting in approximately about 11,520 visitors a year.

Tourism in the lakes area is small-scale rural and family tourism, based on a few small hotels, private accommodation and restaurants. At present, tourism to the area is mostly limited to seasonal visits by tourists. The numbers and origin of visitors indicate that the Prespa area is more demanded by domestic and in particular by regional tourists from neighbouring countries. The rate of development of this tourism potential has been slow due to the lack of proper planning and financial constraints. The foreseen increase of visitors and changes in consumption patterns, request for good planning and the development of necessary infrastructure to accommodate future needs.

This section of this study also explores the community’s attitudes towards lakes and tourism. To examine these attitudes, those surveyed were asked a number of questions specifically related to lake water use and adverse effects of the lake management.

To determine how satisfied the respondents were with environment conditions in the lakes Prespa, the survey included some questions. The first of these questions was: *“What is most appealing for you in the area?”* The response to this question was mixed, with over 69% of the respondents answering “beaches, landscapes and biodiversity”. Almost 21% said “historical and cultural heritage” and 10% said “hospitality and food”.

**Table 5: Annual income of tourism in National Park Prespa.**

Name	No. of beds	Overmigh capacity	Overnights	Employees (perm./seasonal)	Income (€)
<b>a. Accomodation</b>					
Hotels	75	12,410	1,438	10/12	14,380
Private accommodation	440	160,600	4,824		24,120
<b>Sub-total</b>	<b>515</b>	<b>173 010</b>	<b>6 262</b>	<b>10/12</b>	<b>38,500</b>
<b>b. Food</b>					
	Seats	Capacity	Visitors	Employees (perm./seasonal)	Income
Restaurants	375	136,875	11,520	<b>28/32</b>	<b>57,600</b>
<b>Total</b>				<b>38/44</b>	<b>96,100</b>

Next survey question in this section, helped to establish a relationship between tourism and the local economy, was: *“Is tourism benefiting the local economy/*

*livelihoods?*" - 97% responded "yes". The conclusion that can be made from the response above establishes that the local economy is, or is at least perceived to be intimately connected to tourism. For that reason, it is practical to ask question: "Do you think tourism should be allowed to expand/grow in the region?" This question and the perceptions it elicits, is an important piece of the economic puzzle. About 90% of respondents answered "yes", compared to only 10% "no", claiming that the businesses in AL-Prespa area are dependent on the local economy. It can be concluded that health of the local economy is dependent to the health of the local tourism. As it is, not only is the economy dependent on tourism, but so are the local people, their livelihood and their way of live.

A question explored in this section, asked respondents to answer about the features of the lake area appreciated by visitors. It can be concluded that the lake water clarity (28%), scenic beauty (23%), clean air (18%), quite and peaceful environment (17%) and historical sights (14%), are the most appreciated features of the lakes.

In order to explore further respondents' opinion on environment conditions in Lakes Prespa, they were asked: "What are your priorities with regards to the improvement of the environment in the Lake Prespa?" In total, 74% answered that the highest priority is "urban waste management", 18% the medium priority is "cleaner beaches", 8% the low priority is "cleaner water in the lake".

The second question intended to gauge the community's opinion on who should take the responsibility on environment conditions in Lakes Prespa: "What sum of many (in €) would you agree to set aside a day for the improvement of the environment/water quality in the Lake Prespa?" A majority of the respondents (85%) feel that a sum of €5 it is a reasonable price to pay for the environmental/water quality in the lakes Prespa.

In preparing the survey to explore the tourism increase, it was necessary to ask a question in an effort to determine the perceptions of the local community concerning to this issue, which was: "Which obstacles would be overcome in the process of tourism increase in the AL-Prespa area?" More than 90% are aware of the current state of tourist infrastructure presents, in combination with the problems of other services in the area (telecommunications, drinking water etc.); 26% of the solid waste and wastewater disposal problems in AL- Prespa area; 23% of the lack of public investment in the conservation and restoration of tourist attractions - archaeological, historical, cultural and ecological – is aggravated by the insufficient information and promotion; and 19%, of the quality of the following services offered which calls for improvements: boat trips, swimming, guided tours of historical monuments, insufficient number of nature observation points, and small-scale conference facilities.

## CONCLUSIONS

In AL-Prespa Park agriculture is chiefly practiced at a subsistence level. Mixed farming (i.e. agriculture and livestock breeding) covers the main needs of the households. Cereals are the main crops farmed taking up 70% of the total cultivated land, whilst sheep, goat and cow breeding also plays an important role in the local people's live. From an environmental point of view, the area's forests are under high pressure mainly due to high practice of tree lopping and illegal wood cutting (wood for heating). Also, agriculture, the way it is practiced, causes environmental problems, as in many cases it is based on monoculture systems, although it should be mentioned that as far as agrochemicals are concerned, their use is still at a low level.

Wood in the Prespa lakes basin is mainly used for fuel, through legal and illegal cutting. Timber production is of minor importance. The firewood is sold also beyond the basin's borders. Thus, in some locations in the basin there could be a high pressure on forest resources. Tree looping for winter fodder production is considered a problem in the Albanian part of the basin, where oak branches are reported to supply 80% of winter fodder requirements. As a result, woodland near the villages is degraded. There is a need for active management of degraded forest areas through reforestation, rehabilitation and restoration, as well as control of forest exploitation and the development of alternative renewable energy resources, such as fuel-wood plantations.

The fish biota in the Prespa lakes basin has been under an increasing pressure from different human activities such as water abstraction, pollution, overfishing of certain species in the past, but also introduced species. Moreover, predation on endemics' eggs and fry has caused reduction in the size of, and change in the structure of the populations of some indigenous species, such as the carp, chub, Prespa barbel, and Prespa nase. Changes in fish biodiversity have affected other species, higher (birds) and lower (plankton) on the food web, resulting in disturbances in the lake ecosystem functioning. Adverse effects of the human activities are aggravated by the increasing effects of climate aridity.

The low industrialization of the area's agriculture in comparison with the shortages of basic infrastructure (i.e. irrigation, transportation etc.) and services (e.g. land market, credit availability, extension services etc.) form the main restrictive factors for the area's rural development. Under these circumstances, there is no link with the market or it is very low and almost the whole of the production is destined for own-consumption.

Based on the possibilities for the sustainable socio economic development of the Albanian part of Park Prespa and the rational use of the natural resources in order these to be of benefit for both nature and local economy it is required: Promotion of the balanced and well planed development for all the branches and

activities of production including tourism; promotion of the activities that generating a contribution to nature protection or will reduce the negative impacts to the environment; promotion of the resolution policy towards improvements of the nature resources management and particularly water quality; ecotourism development; improvement of the infrastructure; enforcement of the local human and labor capacity and increase of the local GDP; wide use of the local productions, animal races and plant varieties; increase the local human and labor capacities through training and assistance; promotion and support of the business entities; subsidiary system for the locally based population; protection of the cultural values like monuments, traditional buildings, human traditional activities and cultural elements that will be of help for the sustainable management of the natural resources.

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Received: 13 July 2013.