

## AGRICULTURE AROUND PROTECTED AREAS IN ALBANIA - CHANGING POLICY

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### Abstract

There are several protected areas in Albanian surrounded by agricultural lands. It is beyond argument that the issue of safeguarding the biodiversity and the landscape of such areas is inseparable from farming as the performance of this latter is primarily dependent on the status of natural resources and at the same time affects the surrounding environment, the diversity and stability of natural ecosystems. On the other hand, rural people in these regions have to make their living principally from agriculture in the future, too. The research presented here is based on an analysis of the agricultural development of the last twenty years of a protected area and assessed the trend in the use of mechanization, fertilizer, pesticides as well as changes in the structure of crops and livestock. The analysis has enabled us to properly evaluate the environmental performance of agriculture in this particular region. The study offers many recommendations on the right policies and appropriate economic incentives to improve its future agricultural outputs while making the sector economically efficient, socially acceptable and environmental friendly. The main strategic directions for increasing farm revenues in the rural areas surrounding the Lake, taking into account the tradition and the development trends of private farms, should focus on adapting the agricultural production to the development of agro-tourism, in order to exploit the opportunities offered by the nature of the region; increasing the number of associations of rural areas production and services in order to strengthen cooperation among producers and encourage better marketing.

**Keywords:** *nature conservation, agricultural policy, agri-environment indicators*

### Introduction

The present study is focused on the the ecosystems of Ohrid Lake, Prespa Lake and Shebenik which includes areas bordering the above lakes and Shebenik mountain on their Western side. Administratively, the Region under study includes 1 municipality, 10 communes and 75 villages with a total of 40178 inhabitants living in the city (32.3%) and 77155 in the villages (65.8%). In general, this Region is distinguished for its diverse and dynamic natural and human resources. It is a border Region with the Republic of Macedonia (FYROM) and Greece. The north-western part of this Region is dominated by forests.

The outstanding environment and nature of this most interesting region and significance for Europe's biodiversity is known since long and has been pointed out in recent publications (Gjikhuri, et al. 1997, Crivelli and Catsadorakis, 1997, Fremuth et al., 1999). The Ohrid and Prespa region belongs to the Balkan sub-division of the Sub-Mediterranean vegetation zone (Meusel et al. 1965) with three phytoclimatic zones (for details see Mersinllari, 1997, Pavlides, 1997, Rizovski et al., 1997).

In total, the Region has very suitable geographic position, which is very important for the economic development. The main land uses include park land and protected areas, forest, pastures, irrigated land, scattered small industries, fish farming and coastal tourism. Pogradec city comprises the most built-up area, with its industrial zone. Land use in Ohrid watershed is mixed and comprises mainly agricultural and urban uses. About 40% is water, 9% arable

land, 5% pastures, 37% forests, 5% enterprises and about 2% buildings. The high demographic movement during transition has radically changed land use in this Region. Parts of the watershed are quite developed whereas others are virtually undisturbed.

Most of the land in this Region is devoted to agricultural activities. Therefore, the following analysis will concentrate mostly on agriculture (including livestock), food processing industry and other industries as a source of pollution for the ecosystems trying to assess the current status and future trends and how the latest could affect these ecosystems.

### **Material and Methods**

Although there have been a large number of projects on the ecosystems of Ohrid and Prespa Lakes as well as that of Shebenik Natural Park, during our literature review we did not find any analyses of the impact of agriculture and related industries on these ecosystems, except for Sulce et al., 2011 for Prespa Lake. Although the objective of conserving the Lake and developing agriculture are inherently incongruous, the paper was written without taking sides.

Phase 1 of the research was used to review all existing data, reports, studies on the Region under study as well as relevant international experience. Phase 2 was designed as a data collection through an institutional survey and supplemented by in-depth face-to-face interviews with various stakeholders in the Region under study. The survey ran from October to December 2013 and achieved a relatively high response rate of 90%. Tables with total rows may not sum exactly to 100% due to rounding. The goal of the survey was to gain a deeper insight into the crop structures and changes in the last decade due to competitiveness, levels of intensification, use of good practices, etc. There are three comparative periods, data immediately before 1990 (1985 – 1988) and current data (2010 – 2011) showing the current status of development of agriculture and related industries in order to possibly quantify their impact on the environment, particularly the Lake. Compared to the period before 1990 it serves to demonstrate the level of intensification, especially in terms of fertilizers and pesticide usage. Compared to 1998 shows the trend in crop pattern and the future prospect of development in agriculture and related industries. It is also useful for drawing conclusions and recommendations about the policies. Wherever data is collected through the survey and is not a routine statistic report periodically it is referred as “survey data”. In Phase 3, based on theoretical reviews and assessment of the context we have compiled a list of findings and recommendations which could apply to the Region’s economy, stakeholder dynamics as well as agricultural and environmental policy context.

### **Results and Discussions**

The main agronomical problems in this Region are related to land degradation due to uncontrolled deforestation, livestock grazing, and illegal construction and rapid urbanization. Moreover, national and local governments and local residents in both countries see tourism as the main engine for economic development of the Lakes’ area, and national spatial and sectorial strategies identify it as a priority special interest area to develop nature, culture, and recreation-based tourism, which depends heavily on environmental quality. Increased number of tourists, including rapid population growth will increase the demand for agricultural products and therefore land exploitation.

Land abandonment and the withdrawal of historic management have become a threat to large areas of farmland in Albania (Kullaj, 2005). An extrapolation of current farming trends in the Region under study would indicate that without intervention, a further concentration of agricultural production on the best soils and in the most productive herds is likely to occur, leading to an irreversible loss of high nature value farming systems. The rich natural heritage of this Region can only be preserved if the present traditional, or low-input, farming systems are maintained or adapted in a sustainable way (Kullaj, 2007). The high nature value systems that remain in this Region are at risk if the same transformation of

agriculture which has occurred in Western Europe is allowed to take place, so it is important this is avoided and lessons can be learnt from past experience. The EU is currently spending considerable amounts of money within Member States on reviving nature that has previously been sacrificed for short-term agricultural interests (OECD 1998b). In order to avoid this, it is important that measures to minimise the potential impact of agriculture policies on wildlife are put in place to ensure the valuable natural capital of this Region is conserved.

*Agricultural mechanisation*

Nowadays, development of agricultural mechanisation plays a key role in its development in terms of productivity, effectiveness, quantity and development. Figure 1 shows the changes in the possession of tractors between the two comparing periods. Communes of Ohrid and Prespa ecosystems are more agriculturally-oriented and the use of tractors has increased. On the contrary, being more isolated, communes of Shebenik ecosystem have reduced the level of mechanisation compared to 1990.

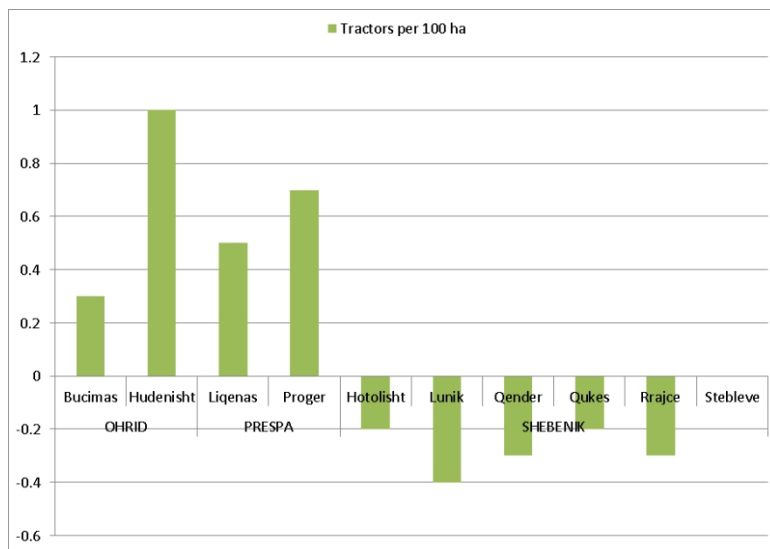


Figure 1. Developments in agricultural mechanization in the Region in the last 20 years

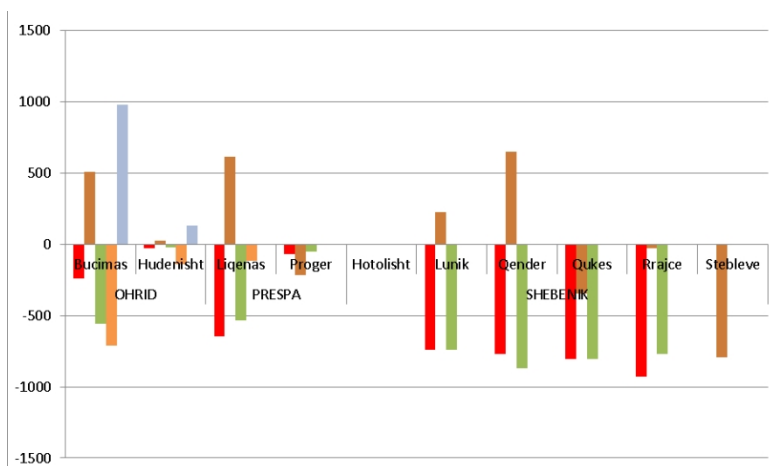


Figure 2. Developments in the use of irrigation in the Region (1990 – 2011)

*Irrigation and Drainage*

At the current stage, the irrigation potential capability in the entire Region is 62% while before 1990 was 74% considering also that the cultivated surface was about 650 ha higher. Progress or regress in terms of irrigation coverage is shown in Figure 2. More than 84% of the surface was irrigated through a network of canals and only about 700 ha were irrigated with sprinkler irrigation. In 2011, the irrigated surface has been reduced by 10% compared to the cultivated land in 2011 but it should be taken into consideration the reduction of the latest by about 650 ha. No investments have been made in sprinkler/drip irrigation.

Surface irrigation, especially furrow irrigation as the dominating method in the Region under study has low efficiency in distribution and application as well as higher environmental impact. This traditional methods (flooding) should be replaced by irrigation techniques like sprinkler or use of pressurized tubes, despite the investment and maintenance costs. The irrigation should meet but not exceed crop needs. Governmental

subsidies should be in place in order to save on environmental costs, i.e. save on the amount of water, improve the quality of the water, reduce erosion, leaching, pollution of underground waters, etc.

### Fertilizers and Pesticides

Data on the use of fertilizers and pesticides are shown in Figure 3 and 4. To summarize, the

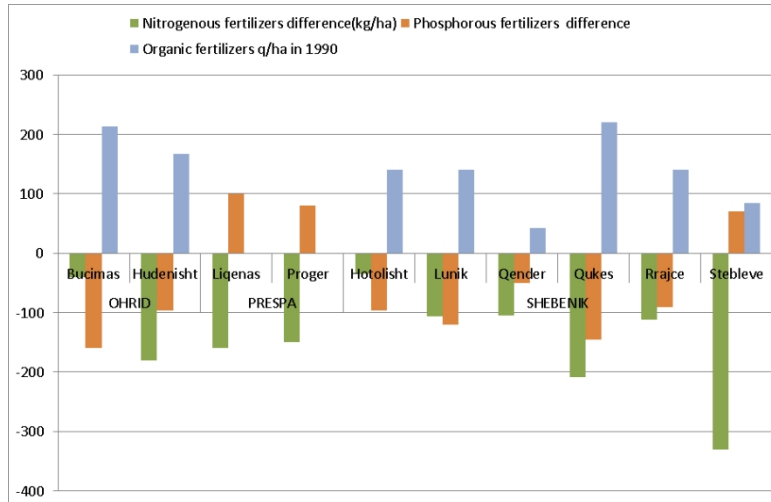


Figure 3. Developments in the use of chemical fertilizers in the Region (1990 – 2011)

Region under study receives a total of 1581 tons of nitrogenous fertilizers and 2221 tons of phosphorous fertilizers. If we further analyse the data we can see that the amount of chemical, especially nitrogenous fertilizers has decreased. On the contrary, organic fertilizers has increased. This means that more and more farms are applying fertilizers but at almost the same rate as in the previous years. Such phenomena can be explained with the recent developments in agriculture where a large

surface of land has been cultivated only recently and with more and more farmers having the financial conditions and market access to justify the use of chemical fertilizers. Use of soil tests should be enforced by law in order that N rates are based on these tests and reasonable yield potential. Variable rates should be applied also depending on each zone and specific technology.

The use of organic fertilizers in agriculture in the Region under study is diminishing due to the problems in implementing the manipulation technology and its use. The tradition of the farmers in the Region is somehow deficient and there is a lack of experience to make composting in complete parameters according to the technological requirements. Most of the

organic fertilizers are used in greenhouses and vineyards.

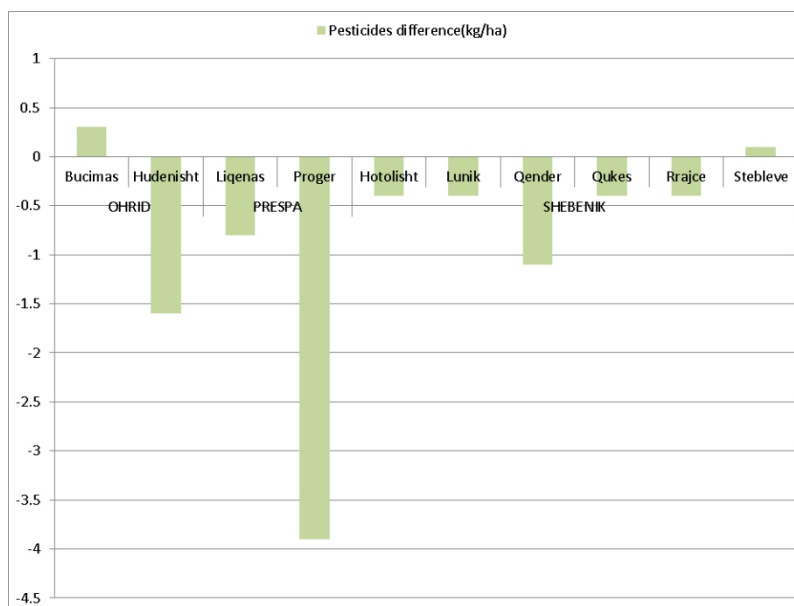


Figure 4. Developments in the use of pesticides in the Region s (1990 and 2011)

Cultivation of field vegetables requires a larger use of pesticides and herbicides to protect these crops from diseases, pests and weeds. Moreover, fruit tree and grapevine are high value crops which require a large number of treatments. Data show clearly a reduction trend in 2011 in the use of pesticides compared to 1990 levels except for Buçimas of Ohrid Ecosystem, with a reduction of total quantities for the Region from 17 to 10 tons from 1990 to 2011.

*Crops*

The cultivated surface has been reduced to about 160 ha with a slope of more than 15%, mainly found in Progër; those with a slope less than 15% found in Progër and Liqenas have also been reduced. The surface planted with wheat in 2011 is smaller compared to 1990. Moreover, maize surface has also been reduced in 2011. The surface with fruit trees has not changed compared to 1990, but there are changes to the structure of species. Forages has increased to about 650 ha compared to 1990.

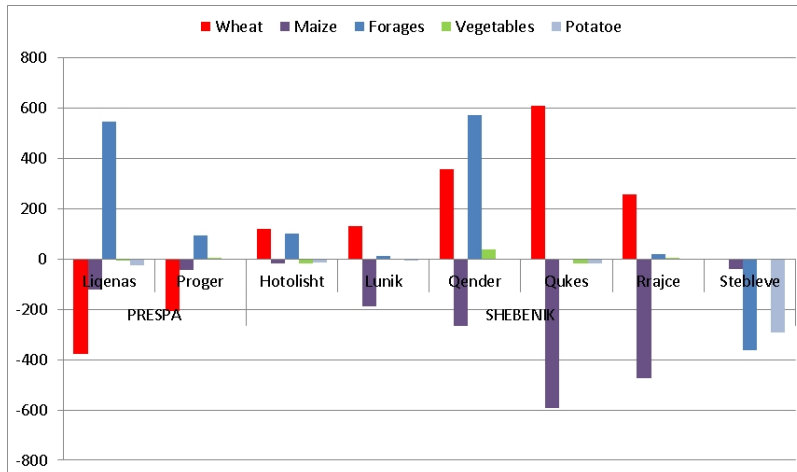


Figure 6. Developments in planting various arable crops in the Region (1990 – 2011)

Fruit growing is not important from the land use viewpoint, remaining almost constant through the entire 20 years period of comparison. The arable land, except for Qendër commune, has been drastically reduced in the other five communes. Surfaces planted with forages have increased but the yield is low as a good part of them is left as a meadow for hay with a lower cost and income.

Although the area has been oriented toward the field vegetable production, intensification by installation of greenhouses will happen. This should not be stimulated because of the high levels of intensification in terms of the use of agricultural inputs. As for arable crops, the same goes for improvements in the technology. Arable crops need to be diversified to include deep rooted annual crops as well as consider legumes.

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*Livestock production*

In the Region under study and broader at country level, it is mainly based on the household economy with 90 % of the farms developing their activities based solely on the family labour,

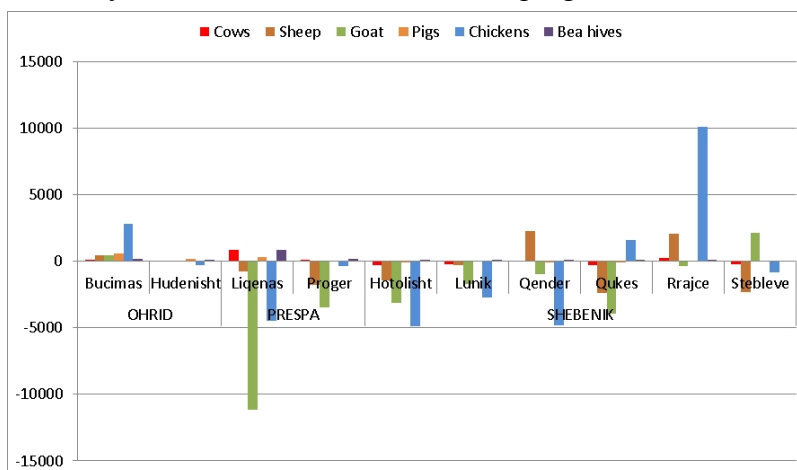


Figure 7. Change in the number of livestock in the Region

Government policies should be in place to change the livestock composition (numbers, proportion of different breeds and species in their total population) depending on the restrictions on access to

feed/fodder resources and, quantitative and qualitative change in the types and availability of fodder. These policies should strongly strengthen the crop – livestock integrated mixed farming system, with a positive impact on the environment.

### Conclusions

The Region under study is an important agricultural area of Albania. Trends and projections show an increasing growth in farm production. The agricultural landscape surrounding the ecosystems of Ohrid and Prespa Lake as well as Shebenik Park is particularly valuable as it incorporates sizeable areas of less disturbed semi-natural habitat and high nature value farming systems, usually associated with more traditional, less intensive forms of production. The systems of farming which are adopted, and the ways in which land is managed, are therefore of particular concern for nature conservation.

A soil conservation policy should be in place for highly erodible lands which will require to farmers to implement conservation plans to protect the soil. Practices like re-cropping land rather than fallow and reduced tillage should be recommended. Payments for no tillage or reduced tillage practices should be in place especially for those areas of the Region which experience high rates of natural erosion due to climate and topography. The Regional Development of Agriculture, Centre for Agricultural Technology Transfer, communes and other institutions should strengthen their role in raising the farmer's awareness on practices which minimise soil erosion.

To protect the biodiversity of the Ohrid, Prespa and Shebenik, subsidies or other incentives should be in place to substitute chemical fertilizers with biological fertilizers, used mainly for the stimulation of plant growth, rapid transition between phenological phases, and activation of soil microorganisms, which affect the rapid decomposition of fertilizers used on them. N should be credited from all other sources such as manure and previous legume crops.

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