

Actual situation and future perspectives for sustainable development in the Divjaka National Park, Albania

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Abstract

The analysis of the present state of nature and the impacts of the land use in the Divjaka National Park, aimed to identify its scenarios for the future development. The used methodology was Land Use Planning Process (LUPP), which consists on the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select the best land use options. For this diagnosis, we have collected the relevant information on the situation of the land, land use, biodiversity and the socio-economic framework conditions. The applied methods during the fieldwork comprised site and vegetation surveys on selected sample plots and open interviews with local representatives of the major interest groups. The collected data served as the basis for the following planning process. Following the "FAO Guidelines for land - use planning 1993", there were distinguished the major different land mapping units (LMUs) and their qualities, as well the major land utilization types (LUTs) and their requirements. The results show that in the Divjaka National Park there were distinguished 9 LMUs and 8 LUTs. Through the matching of the LMUs with the LUTs, the potential land use situation was compared to the actual, there were identified the major land use conflicts. Based on the land use planning carried out in the Divjaka National Park, there are proposed three different scenarios for possible future development, focused on: a. Maximum Tourism Development; b. Strict Nature Protection; c. Integrated Ecotourism Concept.

Keyword: land use planning, analysis, land units, assessment, conflicts, scenarios.

Introduction

The Divjaka-Karavasta National Park is the largest and most important wetland in Albania. It is situated on the central albanian coastline of the Adriatic Sea. Looking on the landscape, the area is surrounded by Shkumbini river in the north, hills of Divjaka in the east, and a large drainage canal in the south [5]. The Adriatic Sea borders in the west.

Divjaka, a small town nearby, that is around five kilometres away and the distance to the capital Tirana is about 90 km. The park is composed of complex ecosystems like lagoon, forests, agriculture areas, wetland etc, very in biodiversity and natural habitats [4].

By the new territorial division, Divjaka-Karavasta National Park extends in the territory of Divjaka municipality and is administrated by the

Administration of Regional Directory of Protected Areas Lushnje.

This paper presents the land use plan for the Divjaka National Park, which analyses the present state of nature and the impacts of land use in order to suggest possible future development strategies.

Material and Methods

The methodology used for this paper follows the structure of the Land Use Planning Process (LUPP) as suggested in the "FAO Guidelines for land-use planning 1993" [2].

At the beginning of the work we started with collection of necessary maps of area, background information followed the data gathering phase. During the gathering phase we collected the relevant information on the situation

of land, land use, biodiversity and the socio-economic framework conditions.

The applied methods during the fieldwork comprised site and vegetation surveys on selected sample plots and open interviews with local representatives of the major interest groups. The collected data served as the basis for the following planning process.

“*Land Use Planning is the systematic assessment of land and water potential, alternatives for land use and economic and social conditions in order to select the best land use options*” (FAO 1993) [2].

After data gathering, it was continued with the first step of Land Use Planning (LUP), with identification the major different land mapping units (LMUs) and their land qualities. Secondly, there were identified the major land utilisation types (LUTs) and their land requirements. In the subsequent matching of the LMUs with the LUTs, the potential land use situation was compared to the actual, thus identifying the major land use conflicts.

The major interest groups were characterized and their conceptions about the present and future options of conflicts of land use were taken into consideration.

As the last step, three different scenarios for possible future development were suggested and

discussed in order to point out the opportunities and obstacles of sustainable development in the Divjaka national park.

Results and discussion

Based on the used methodology [2], there were undertaken all the required steps following the LUP structure.

Land Mapping Units & Land Qualities

Land unit is an area of land which possesses specific land characteristics and land qualities and which can be mapped [2]. In the Divjaka National Park, there were distinguished nine major land mapping units (LMUs shown in the Table 1. The land qualities of the LMUs are described according to different distinguishable vegetation associations, which represent distinct site conditions.

Land quality is a usually complex property of land which determines the stability of the land for different uses [2].

Since the soil situation of the area is not known in detail (only a rough estimation of soil properties could take place due to the lack of time and facilities for laboratory analysis), this method is the most precise and adequate solution.

Table 1. Land Mapping Units at Divjaka National Park

<i>No</i>	<i>Land Mapping Units (LMUs)</i>
A	Coastal zone of the Adriatic Sea
B	Karavasta Lagoon
C	Beach belt on the Adriatic coast with psamophyl plants
D	Lagoon banks with halophyl plants
E	Sand dunes covered by <i>Juniperus oxycedrus</i> and <i>Pinus pinea</i>
F	Seasonal wetlands covered by mixed forests
G	Terrestrial areas covered by pine forests
H	Channels covered by <i>Tamarix dalmatica</i> associations
I	Pasture land with high salinisation

For each of the identified LMUs in the Divjaka National Park was given a general description, land quality and their characteristics. The

location of LMUs in the project area is shown in the Figure 1.



Figure 1: Land Mapping Units (LMUs) in Divjaka National Park

Land Utilisation Types

Through the landscape analysis, we can see ten major land utilisation types (LUTs), which have been distinguished in the project area. Tourism and agriculture comprise several LUTs.

A common characteristic of all LUTs is their dependence on ownership, except nature conservation and military. Despite of the official protection status, the whole area suffers from intensive use, for example illegal hunting, fishing and waste deposition. Most of the actual land uses are not sustainable.

Table 2. Land Utilisation Types in the Divjaka Nation Park

No	LUT	Requirements	Impacts
1	Fishery for subsistence and sale	Water areas, favourable climate, fish (quality & quantity), infrastructure	Abusive use, over-fishing, destabilisation of ecological balance
2	Agriculture		
2a	Land cultivation for subsistence and local income	Equipment, marketing, utilisation rights, favourable environmental conditions (climate) fertile soils, sweet water	Fertiliser input
2b	Pasture use for livestock	Livestock, utilisation rights, sufficient fodder	Grazing, soil compaction
3	Forest use for subsistence and profit	Forests, demand for timber/firewood, NWFP	Forest destruction
4	Hunting of animals for fun, profit or subsistence	Laws & regulations, areas without settlements, sufficient game, birds	Reduction of diversity, related waste (ammo), killing of animal individuals
5	Tourism & Infrastructure		
5a	Swimming in water areas	Water/sea (quality), nice white beaches without stones/garbage	Eutrophication, pollution
5b	Construction of hotels, restaurants, roads & related	Cleared land, proximity to favourable areas for tourism	Betonisation, separation of habitats, road kill
5c	Human presence in natural environment for Recreation	Silence, scenic landscape, walking trails, attraction species	Changing of animal behaviour
6	Nature conservation on different levels through	High biodiversity, rare species, undisturbed natural habitats, laws & reg	Reduction of tourism, landscape consumption
7	Military terrain occupation for training	Big areas, camouflage, infrastructure	Soil compaction, no public access
8	Waste deposition of organic & inorganic material	Areas, garbage collection	Soil alteration & pollution

Remarks on Divjakas Biodiversity

We can underline, that the biodiversity in the research area is relatively high (measured by exemplary species groups like plants, birds, fishes & herpetofauna). One reason for this status is the big area of approximately 22,230.24 ha [4], which is declared as a National Park. Such framework conditions are directly connected with much lower utilisation pressure compared to the surrounding land.

Furthermore there are a few different types of habitats according to the land units, e.g. forests, beach, and sea. Nevertheless, a high number of ecological niches provide opportunities for a high biodiversity to. This leads to special qualities and quantities of species.

In lagoon areas, different fish species occur, and many birds (including migratory species) use this for breeding. The occurrence of *Pelicanus crispus* shall serve as an excellent evidence for the quality of this biotope [5].

Exception from this rule is the arable land. Before it's melioration, it was temporary flooded swampland with a very high biological productivity & biodiversity. Today we have here a degraded area, which can only be used for grazing. Psamophyle plants & bare parts show the level of salinity and degradation.

Matching & Evaluation

Land suitability is the fitness of a given type of the land for combination with a specified type of land utilization [2].

Table 3: Land Suitability & Status Classification

<i>Category 1</i>	<i>Suitability</i>	<i>Category 2</i>	<i>Status</i>
S1	Highly suitable	F	Frequent
S2	Moderately suitable	R	Rare
S3	Marginally suitable	A	Absent
N1	Currently not suitable	0	Unknown
N2	Permanently not suitable		

The table 4 summarises the potential land use situation. Thus it identifies the optimal LUTs, which are best adapted to each LMU ("matching") and organise them in a ranking. Compared with the actual land use status, these potential land uses reveal where the option for intervention and management is high, since the optimal LUT is not existent on a LMU (value combination for example S1/A or S2/A), and where it is low, since the optimal LUT already is existent on the LMU (value combination for example S1/F or S2/R). If two opposite LUTs are suitable and frequent on the same LMU, a land use conflict is clearly detected.

Scenarios for Future Development

The actual situation of land use in the Divjaka National Park is considered much better than 15 years ago, when the situation was really critical . Each scenario summarises the goals, the necessary measures and the possible effects for the ecological, economic and social aspects of future development. It is concluded which impacts these scenarios do have on the sustainability of the development.

In the following matching matrix, the suitability of a distinct LUT for a certain LMU is checked. The evaluation of the potential land use situation makes use of the FAO categories for land suitability classification. Secondly, the present status of the LUT on the LMU is included, which is described with an own classification. In the table 3, these values are presented in the following form: suitability/status.

Scenario I: Maximum Tourism Development

The whole region is separated into planning zones and areas which become target planning of the strategically planning for biodiversity protection, urban and tourism development [3]. The Scenario I is the theoretical situation, if the actual protection status of the national park would be strictly implemented by force, against all interests and needs of the local community. This vision is an extreme example of a management approach, which follows its only priority of nature conservation without taking into consideration the socio-economic framework. As a concept it can only be successful, if very high inputs for the balancing of the future social conflicts are available and are included in the planning in advance.

Scenario II: Strict Nature Protection

The protection and restoration of biodiversity along the coastal area is taken into consideration as well as environmental problems and issues [3].

The second scenario gives a preview on the future situation of the national park, if the current development tendencies take their course without any substantial intervention of the responsible agencies.

Table 4: Land Suitability & Status in the Divjaka Karavasta National Park

		A	B	C	D	E	F	G	H	I
<i>No</i>	<i>LMUs</i> <i>LUTs</i>	Coastal zone of the Adriatic Sea	Karavasta Lagoon	Beach belt on the Adriatic coast with psamophyl	Lagoon banks with halophyl plants	Sand dunes covered by <i>Juniperus oxycedrus</i> and <i>Pinus pinea</i>	Seasonal wetlands covered by mixed forests	Terrestrial areas covered by pine forests	Channels covered by <i>Tamarix dahmanica</i>	Pasture land with high salinisation
1	Fishery for subsistence and sale	S1 / F	S1 / F	N2 / A	N2 / A	N2 / A	N2 / A	N2 / A	S3 / A	N2 / A
2	Agriculture									
2a	Land cultivation for subsistence and local income	N2 / A	N2 / A	N2 / A	N2 / A	N2 / A	S3 / A	<u>S1 / A</u>	N2 / A	NI / A
2b	Pasture use for livestock	N2 / A	N2 / A	S3 / R	S3 / R	S3 / R	S2 / 0	S3 / 0	N2 / A	S3 / F
3	Forest use for subsistence and profit	N2 / A	N2 / A	N2 / A	N2 / A	S3 / R	S3 / R	S2 / R	S3 / A	NI / A
4	Hunting of animals for fun, profit	S1 / R	S1 / F	S2 / F	S1 / F	S3 / F	S1 / F	S2 / F	S2 / F	S2 / F
5	Tourism & Infrastructure									
5a	Swimming in water areas	S1 / F	<u>S2 / A</u>	N2 / A	N2 / A	N2 / A	N2 / A	N2 / A	N2 / A	N2 / A
5b	Construction of hotels, restaurants, roads & related facilities	N2 / A	N2 / A	<u>S2 / A</u>	S3 / A	NI / A	N2 / A	S1 / F	N2 / A	S3 / A
5c	Human presence in natural environment for Recreation	S3 / A	<u>S1 / A</u>	S1 / F	S2 / R	S2 / F	S2 / F	S2 / F	S3 / R	S3 / A
6	Nature protection on different levels through	<u>S1 / A</u>	S1 / F	S2 / R	S1 / F	S2 / F	S1 / F	S1 / F	S2 / F	S3 / A
7	Military terrain occupation for training	S2 / 0	S3 / 0	S2 / 0	S3 / 0	S3 / 0	S2 / 0	S1 / F	S3 / 0	S3 / 0
8	Waste deposition of organic & inorganic material	S2 / R	S2 / R	S2 / F	S3 / R	S3 / F	S3 / R	S3 / F	S3 / R	S3 / R

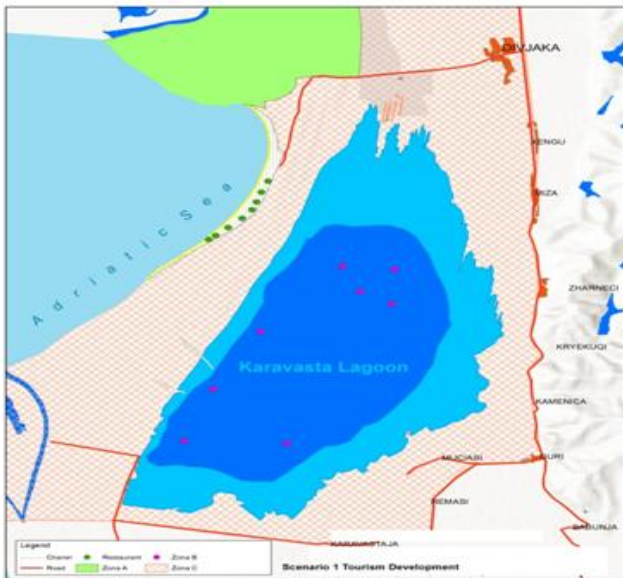


Figure 2: Scenario I: Tourism Development

Today it is obvious, that the park administration, in other words the forest service, is in a better position than the administrations of other national parks in Albania. Thus, the strong development of mass tourism and resource utilisation in coastal areas can flourish without any control within the protected areas, for the sake of an overexploited, deteriorating nature.

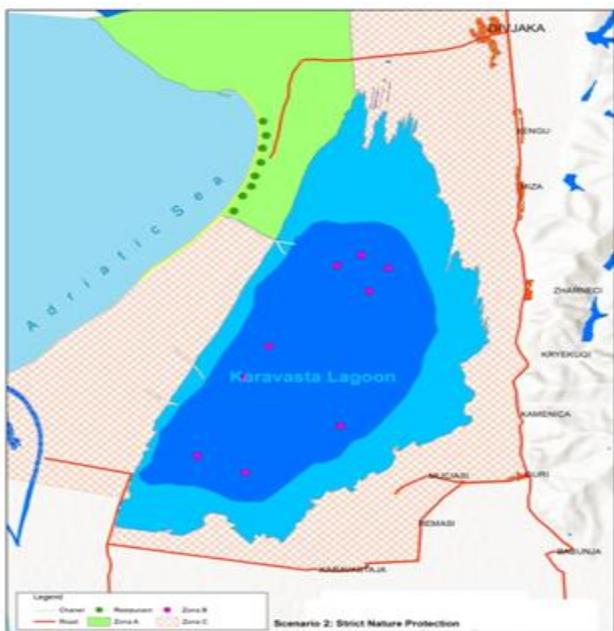


Figure 3: Scenario II: Strict Nature Protection

Scenario III: Integrated Ecotourism Concept

The definition of the International Ecotourism Society that ecotourism is responsible travel to natural areas that conserves the environment and sustains the well being of local people [1]. The scenario III

presents a balanced approach between the two opposite extreme scenarios (Tourism Dvelopment & Strict Nature Conservation), which proposes a possible solution for the critical conflicts. It imagines a development, which is steered by an integrated management concept: in the author’s opinion the suggested orientation of goals and measures can have a decisive impact on the current destructive land use, balancing the situation towards a sustainable development of nature conservation and local people’s wellbeing.

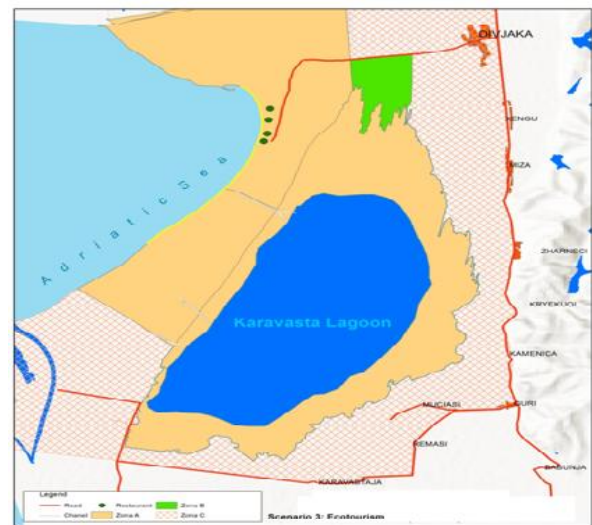


Figure 4: Scenario III: Intergrated Ecotourism Concept

Conclusions:

The matching matrix reveals several characteristic combinations of LUTs and LMUs. Several LUTs show at the same time a high suitability and a frequent status on the LMU (S1 / F). These areas are in the focus of the management, since the LUTs are most effective here. Also, these areas show the strongest land use conflicts, if two opposite LUTs compete for the same LMU.

Several LMUs are only marginally suitable for a LUT, and therefore they are rarely used (S3 / R). Many LUTs are not suitable for a certain LMU. Logically they are absent on the units (N2 / A). Some LUTs are currently not suitable for a certain LMU (N1 / A). These areas may in future become important for utilisation or cause conflicts and must therefore be monitored. The situation of some combinations of LUTs and LMUs cannot be evaluated, since the

information about the status of the LUT on the LMU is missing (S2 / 0, S3 / 0).

A few LUTs show a high suitability at several LMUs, but they are absent (S1 / A, S2 / A). These are areas with a land utilisation potential, which is currently not exploited. Within the management concept, these units can either be included in the utilisation, or another LUT is favoured instead of them. In this case it may also be possible to integrate these LUTs with a rare use.

Here it is the duty of the management concept to determine and decide, which LUT has to be promoted in favour of the other. The decisive criterion for this judgement is always the degree of sustainability on ecological, economic and social development.

Tourism land uses such as construction and waste deposition also clash with nature conservation.

They have a strong impact on nature, although it is considered to be minor than the first ones.

References:

1. Epler Wood M, : **Ecotourism: Principles, Practices & Policies for Sustainability**, UNEP, Paris, France & TIES, Burlington, VT USA 2002
2. FAO: **Guidelines for Land-use planning**, FAO Development Series 1, 1993
3. Lohmann, Jörg.,: **Landscape Planning & Nature Conservation**. 1999
4. Ministria e Mjedisit., : **Plani i Menaxhimit i Parkut Kombetar te Ekosistemit Natyror Divjake – Karavasta**, 2015
5. UNEP, : **The Region of Durresi-Vlora, Coastal Zone Management Plan**, 1996