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ANALYSIS OF SUSTAINABLE MANAGEMENT FORMS ON PROTECTED AREAS

ABSTRACT. Protected areas have a huge socio-economic significance. Therefore, they should subject to protection within an essential range in order to sustain natural capital function-restitution and should be used in a rational way. Restrictions on the ways of managing protected areas mainly concern ventures of higher intensification of management and new investments, which have to be assessed from environmental point of view.

The aim of this article is to diagnose possible modes to accomplish forms of management for protected areas, which are in accordance with legal laws. Statistical analysis will be conducted for each business activity, and the possibility to accomplish it on protected areas.

Introduction – nature of protected areas

Protected areas have a huge socio-economic significance. Therefore, they should subject to protection within an essential range in order to sustain natural capital function-restitution and should be used in a rational way.

In accordance with current law in natural protection systems, the following forms can be distinguished (Zielińska, 2007):

1) Forms of spatial protection, including:

- traditional forms of protection (national parks and nature reserves),
- newer forms of protection (landscape parks and protected area landscapes),
- European forms of protection (Nature 2000 areas);

2) Individual forms of protection, including: natural monuments, documentary positions, ecological lands, nature and landscape complexes;

3) Forms of protection of plants, animals and mushrooms species, which have two possible solutions:

- *in situ* protection, meaning protection of ecosystems and natural species habitats, and the keeping and restitution of populations able to live in their natural environment, versus domesticated or farm species that live in a surrounding, where they developed their specific features,
- *ex situ* protection, meaning protection of biological diversity components beyond their natural environment.

Protected areas play several different functions, which are of socio-economic character, such as: tourism and entertainment, aesthetic and spiritual, medical, climatic, scientific and educational, agricultural, forestry and protection. The most important function off these areas is a protective function, which puts many restrictions on business activity. Implementation of certain kinds of pro-ecological activity depends on the form of the protected area. Managing protected areas is possible through economic ecologization.

Ecologization influences the economic development of local societies' and improves quality of life. Society finds additional employment and income from the pro-ecological sphere of business activity (Zielińska, 2010).

However, the concentration of many tasks, such as: environmental, economic, social, institutional and spatial, on relatively small, protected areas, leads to a rise in conflicts, such as: social and spatial ones. One should take into account people, who live within these areas and have worked there for ages; that is why one should cultivate traditional forms of managing, which will be in accordance with sustainable development principles and will not influence protected areas destructively. That is also, why, effective functioning of protected areas is dependent on local society, which has to be sure that existence of these areas is a chance for development and quality of life improvement.

Nowadays, local communities can often view forms of protected areas as obstacle to development. A cause of such a view is low ecological awareness. Society is not aware that a loss of natural environmental resources often has irreversible character and in a long period of time deprives certain regions of chances for development. That is why, a concept of sustainable development, where economic, environmental and social aspects interpenetrate each other, should be a constant educational element (Zielińska, 2013).

Restrictions on the ways of managing protected areas mainly concern ventures of higher intensification of management and new investments, which have to be assessed from an environmental point of view.

The aim of this article is to diagnose possibilities to accomplish forms of managing protected areas, which are in accordance with legal laws. Statistical analysis will be conducted for each business activity, and the possibility to accomplish it on protected areas.

Sustainable management on protected areas

Forms of environmental protection have distinguished allowable and forbidden ways of management, in the form of many restrictions and prohibitions, regulated in Poland's act on environmental protection (Journal of Law, 2009) (*Table 1* in Annex). One should pay attention that a subject managing a certain area "chooses", from a presented list, those prohibitions, which he/she assumes to be the right ones.

Sustainable management of protected areas is accomplished thanks to such fields like: agriculture and its ecologization, forest management and its ecologization, light industry and environmentally associated trade, service activity that is environmentally sustainable, settlement that is spatially and environmentally correct, and transport and sustainable transport (more: Zielińska, 2009, pp. 108-113; Zielińska, 2010, pp. 161-171; Zielińska, 2011, pp. 172-182; Zielińska, 2012, pp. 159-166; Zielińska, 2013, pp. 179-214).

Ecological agriculture

Ecological agriculture is a system of management of active natural productive mechanisms, by which applying natural sources, which are not technologically processed, provides durable richness of soil and animal health, and also high biological quality of products (Sołtysiak, 1993).

Ecological agriculture contributes to production of safe food of very high quality. The best promotion of ecological agriculture is demand for food coming from certified farms. Products from ecological farms are usually more expensive than those from conventional cultivation, about 30-50% higher in price. This kind of agriculture is a way for develop protected areas.

About 1/3 of the surface constitutes arable lands in landscape parks and protected landscape areas, which is a significant economic potential for ecological agriculture development and for production of healthy food.

A basic benefit of protected areas is cleanness of soil and air connected with a ban of any industrial activity and significant restrictions concerning other kinds of business activity. The higher cleanness of natural environment, contributes to the higher quality of produced food one has, and it results in higher market value and better possibilities to sell ecological products. Ecological farms contribute to an increase in competitiveness of protected areas (Zielińska, 2013).

Ecological agriculture on protected areas contributes to an increase in number of eco-farms, an increase of demand and supply for eco-products, and they contribute to the creation of local products, which will become an advertisement for a certain area.

Analysing *Table 1* in Annex, the largest number of restrictions on ecological agriculture concern national parks, nature reserves (39,1%), Nature 2000 areas (33,3%), landscape parks (28,6%) and protected landscape areas (22,2%).

Sustainable tourism

Tourism in many cases is based on nature values, mainly on landscape values, which proves a region's attractiveness. Tourism is strongly connected with natural values, because the thing which is the most interesting from a tourist's view, is at the same time the most environmentally valuable and should be protected. This domain respects principles of sustainable development on an area of tourist perception, through creating and caring for cultural heritage, tradition, and nature's wealth. In tourism, one sees a chance for sustainable management of protected areas.

Sustainable tourism has to be an expression of a compromise between competitive interests of the tourist economy and the needs of ecosystems. In a wider sense, sustainable tourism means to benefit from material and non-material environmental resources, together with keeping an appropriate balance on the following levels: ecological, social, spatial and economic (Ministry of Economy, 2006).

Tourism's contribution to environmental degradation is assumed to be 5-7% with 40% coming from industrial sites, and 15% from agriculture (Łabaj, 2003). Particularly burdensome for the environment are wrongly planned infrastructure's elements, functioning on protected areas or in their surroundings. Tourist infrastructure expansion constitutes a significant threat to environmental quality (water, air, soil and noise pollution), landscape or biodiversity state.

Possibilities of sustainable tourism development in valuable natural areas require a few conditions to be fulfilled. First of all, it is essential to create a proper image of valuable natural area. Second, it is necessary to popularize new forms of leisure among new tourism market segments. Third, there should be an increase in diversity of conducted forms of sustainable tourism. Fourth, one should ensure that the tourism season is of maximum length. Fifth, spatial mobility of tourists should be oriented, and at the same time it should influence tourism movement dislocation. Sixth, ecological awareness should be increased (more: Jalnik *et al.*, 2002, pp. 183-193).

On the basis of a statistical analysis of the implementation of restrictions related to tourist activity which follows the act outlining restrictions for protected areas (see *Table 1* in

Annex), one should notice that the biggest number of restrictions in management refers to Nature 2000 areas (100%), followed by landscape parks (64,3%), national parks and nature reserves (60,9%), and least of all, protected landscape areas (55,5%).

Forest management

Forests constitute a kind of support for many fundamental elements of biodiversity and elements of key significance for functioning of landscape or ecological processes, which created possibilities for an economic exploration of earth.

Forests, which cover 31% of the Earth's overall surface, contain 80% of all living organisms (Forests 2030..., 2011).

A system of forest exploration in the form of protected forests is made up of distinguished forest areas, which are taken under different laws or traditional and customary protection methods in order to maintain basic elements of the natural environment. Such a form constitutes the most valuable and mostly represented element of all forms of nature protection e.g. (national parks, nature reserves). Within areas of national parks, forests account for 62% of the surface, within nature reserves – 55,4%, for landscape parks – 50,2%, and within areas of protected landscape – 31,4% (GUS, 2012a, GUS, 2012b).

At the same time, on the basis of the conducted analysis, it has been noted that, the biggest number of restrictions concerning forest management listed in an act (see *Table 1* in Annex) refers to Nature 2000 areas (100%), followed by areas of protected landscape (55,6%), landscape parks (35,7%) and national parks and nature reserves (30,4%).

Light industry

The specification of protected areas justifies a need for the development of light entrepreneurship, which has a permanent place in a structure of local societies' incomes. Entrepreneurship development requires support from local authorities, and society itself.

On protected areas, one should activate already existing business activity in the form of such enterprises as: confectionaries, sawmills, furniture factories, fishing farms, fishing tourism and sports fishing. Activities oriented towards tourists concern such things as: renting and repair of tourist and sports equipment (bikes, skis, cross-country skis, and rackets for winter walking tourism), fishing equipment, and, camping equipment. Moreover, for tourists visiting protected areas there is a possibility for them to participate in work on products and activities that are common to the area (cooking traditional regional dishes;, preparation of fruits, cheese, sweets and cakes), craft products such as (wool, leather, wooden products, embroidery, etc.) (Zielińska, 2013).

As a result of the analysis that was carried out, on the basis of the presented list of restrictions (see *Table 1* in Annex), referring to light industry, the biggest number of restrictions noted in relation to Nature 2000 areas and protected landscape areas (66,7%), are landscape parks (57,1%) and national parks and nature reserves (47,8%).

Service activity

In protected areas the following kinds of services are offered: tourism, gastronomy, trade, transport, culture, post and telecommunication, medical and hospital, community and public administration. In order to make the services work properly, infrastructure has to function in the form of hotels, restaurants, shops, means of transport, museums, galleries, post office, means of communication and other technical infrastructure. One should pay attention

to the fact that, providing the above mentioned services generates pollution of the natural environment and degradation of its elements (Zielińska, 2013).

It is worth paying attention to service activities in protected areas as a form of eco-museums, this is a kind of a museums without walls. Nature, culture, tradition and history of regions are commonly presented, in the place of their original existence. This form of service activity can develop local “products” thanks to an interest of tourists in participation in different activities and experiences in eco-museums.

On the basis of conducted statistical analysis, legal laws are the least restricted on protected areas. Restrictions on service activities in relation to all legal bans and orders mostly refer to national parks and nature reserves (34,8%) and landscape parks (14,3%). For any other form of protected area, there is a lack of restrictions according to service activity.

Settlement

Urbanization processes also concern protected areas, and the scale of this phenomenon seriously threatens to cause a loss of their nature and landscape values (e.g. expansion of flats construction on areas situated in the neighbourhood of Kampinos National Park or The Group of Jurassic Landscape Parks) (Zielińska, 2013). Within protected areas one should limit buildings through communication routes, because such buildings disturb animal migration through ecological channels. At the same time, one should promote settlement development in these areas, in the forms of energy and passive houses, which demonstrate how modern settlement elements (housing developments, houses) go well together with the natural environment and landscape.

Contribution of restrictions concerning settlement in relation to all restrictions listed in an act on nature conservation (see *Table 1* in Annex) is the biggest for Nature 2000 areas (100%), smaller for protected landscape areas (55,6%), landscape parks (42,9%) and national parks, nature reserves (21,7%).

Transport activity

A negative impact of transport on the environment is visible in building and use of transport infrastructure on protected areas. This infrastructure leads to (Zielińska, 2013):

- disintegration of areas, crossing migration channels what causes fragmentation of habitats, what leads to deterioration of ecosystems functioning as a whole;
- air, soil and water pollution, have a destructive influence on flora and fauna.

Together with constructing and designing transport infrastructure, one should pay attention to nature conservation, especially to areas that are naturally valuable. It concerns, in particular, highways and express roads. In this range, a principle of absolute necessity is to protect the most valuable natural areas and to act in order to limit harm to a socially acceptable minimum, will have to be obeyed (Ministry of Infrastructure..., 2005).

A factor that prevent from disintegration areas phenomenon is the construction of channels for animals in the form of passes and conducts in regions of collision of communication routes with migration routes of animals.

Road network development in Poland negatively influences migration channels and protected areas. Modern construction of roads is an element of widely understood environmental protection of nature, which will lead to taking traffic out of villages and towns, at the same time keeping throughput of ecological channels.

Analysis of a number of restrictions of transport activity in relation to all legal bans and orders (see *Table 1* in Annex) showed that the biggest number of restrictions concern

Nature 2000 areas (100%), followed by protected landscape areas (77,8%), landscape parks (50,0%) and national parks, and nature reserves (34,8%).

On the basis of conducted statistical analysis, it is worth noticing, which form has the biggest number of restrictions referring to business activity (see *Table 2*).

Table 2. Contribution of number of business activity's restrictions according to protected area forms to an overall number of legal prohibitions and orders of a certain form

Area form of environmental protection	Ecological agriculture	Sustainable tourism	Forestry economics	Light industry	Service activity	Settlement	Transport activity
National park and nature reserve	39,1	60,9	30,4	47,8	34,8	21,7	34,8
Landscape park	28,6	64,3	35,7	57,1	14,3	42,9	50
Protected landscape area	22,2	55,5	55,6	66,7	100	55,6	77,8
Nature 2000 area	33,3	100	100	66,7	100	100	100

Source: own study.

On the basis of the conducted analysis (*Table 2*), the biggest number of business activity's restrictions is noted for Nature 2000 areas, followed by protected landscape areas, and landscape parks, and most surprisingly for this analysis, the least number of restrictions concern national parks and, nature reserves. It means that, the most restricted forms of business activities constitute areas for which there are the least number of legal prohibitions and orders.

Final conclusions

On the basis of the conducted theoretical analysis, one can formulate some conclusions:

- Described kinds of activities constitute an important economic potential for protected areas.
- Restrictions in the aspect of business activity mainly concern industrial production, traditional agriculture, conventional tourism, transport, building and infrastructural investments.
- Restrictions of business activity mostly concern Nature 2000 areas and protected landscape areas, on a lower level they concern landscape parks and national parks, and nature reserves.
- All components of natural environment and phenomena and processes taking place in ecosystems on protected areas are of particular care.
- One should change his/her attitude towards spatial management on protected areas.
- Local society has to be aware of the fact that, rich natural environmental resources in the long term will contribute to development of a certain region.
- There are many fields of economy, which in the future (e.g., as a result of scientific and technical progress), will also find a wide range of use in protected areas.

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