

**ADAPTIVE MANAGEMENT- A PRIORITY
FOR THE LOCAL AUTHORITIES IN
DANUBE DELTA BIOSPHERE RESERVE**

Abstract

Danube Delta Biosphere Reserve, one of the most important protected areas in the world, is the subject of increasingly acute environmental degradation processes through the influence of different factors that trigger this phenomenon. Adaptive management, comes to stop this process through the local government by intervening on the causes and harmful effects that the Delta ecosystem. But the result of very complex action frame creates difficulties in implementing local action plans, requiring the support of higher authorities.

Keywords: adaptive management, Danube Delta, authorities, management plan, depletion

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**MANAGEMENTUL
ADAPTIV-PRIORITATE A
AUTORITĂȚILOR PUBLICE
LOCALE ÎN REZERVAȚIA
BIOSFEREI DELTA
DUNĂRII**

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Rezumat

Rezervația Biosferei Delta Dunării, una dintre cele mai importante arii protejate din lume, este supusă din ce în ce mai acut proceselor de degradare a mediului înconjurător prin prisma influenței diferiților factori ce declanșează acest fenomen. Managementul adaptiv, prin prisma autorităților publice locale vine în sprijinul stopării acestui proces, intervenind asupra cauzelor și, respectiv, efectelor dăunătoare ecosistemului deltaic. Însă cadrul de acțiune foarte complex determină dificultăți în implementarea planurilor de acțiune la nivel local, fiind necesar sprijinul autorităților de rang superior.

Cuvinte cheie: management adaptiv, Delta Dunării, autorități, plan de management, degradare.



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1.INTRODUCTION

In the Danube Delta nature protection activity has been organized since 1938 when Letea was declared a protected area by the Romanian Academy, which is the second national protected area after Retezat Mountains (1935). Protected areas in the Danube Delta area increased to approx. 40,000 ha after the Second World War, many of the new protected areas have been declared in the last decades of the twentieth century. In 1978, pelican colonies from Rosca Letea Buhaiova and were declared first biosphere reserve in Romania.



FIGURE 1 - DANUBE DELTA BIOSPHERE RESERVE
Source: Ivanov and Doroftei, 2012

In 1990, Delta and other parts adjacent to the area of about 580,000 hectares, was declared a biosphere reserve.

One of the reasons that Delta has become a biosphere reserve is that, compared with other deltas of Europe and the Earth has retained a higher biodiversity, thereby understanding a large number of species from a wide variety systematic units. Moreover, Delta strikes by high density in many species that are rare or absent in other parts of the continent, although due to the effects of human activities in recent decades and the numbers of these species as their habitats have been severely affected.

Since 1991 has started an inventory of flora and fauna DDBR, the action continues today with two major objectives: knowledge of an important component of the natural heritage in a biosphere reserve and highlighting species requiring protective measures and conservation.

Delta is the largest and best preserved delta in Europe. In terms of climate change amid deepening and impact they have manifested on the environment in general and in particular the Danube Delta has been necessary to implement a strategy of protection against these changes and adapt to them. Issues raised are diminishing the impact on biodiversity, limiting pollution, conservation of natural resources and cultural heritage, public awareness, and finally limiting the environmental impact. To achieve this objective it is necessary to implement a sustainable management system that is composed of an integrated plan for the ecosystem environment management concerned in accordance with the requirements of sustainable development.

Danube Delta Biosphere Reserve, one of the most important protected areas in the world, is the subject of increasingly acute environmental degradation processes through the influence of different factors that trigger this phenomenon. Adaptive management, comes to stop this process through the local government by intervening on the causes and harmful effects that the Delta ecosystem. But the result of very complex action frame creates difficulties in implementing local action plans, requiring the support of higher authorities.

2. INSTITUTIONAL FRAME IN DANUBE DELTA BIOSPHERE RESERVE

Public institutions that are involved in the management of the Danube Delta Biosphere Reserve are (DDBR Action Plan, 2010)

DDBR Administration:

- Office of International Projects;
- Service Inspection and Environmental Security;
- Reglementation Department and authorization.

National Environmental Guard:

- Commissioner DDBR.

Ministry of Interior:

- Inspectorate of the Border Police - Tulcea.

Ministry of Agriculture, Forestry and Rural Development:

- Department of Agriculture and Rural Development - Tulcea

Tulcea County Council:

- Department of Rural Development (RDP) - Tulcea Implementation Unit;
- Department of City Planning, Forecasting and Planning;
- Department of Regional Development and European Integration.

Tulcea City Hall:

- Department for European Integration.

LOCAL COUNCILS

- County Association Hunting and Fishing:
 - CAHF - Tulcea branch.

National Administration "ROMANIAN WATER", Director of EPA Dobrogea Litoral:

- Water Management System - Tulcea.

National Directorate for Tourism

National Forest - ROMSILVA:

Tulcea Forestry.

ROMANIAN Naval Authority:

- Authority's territorial Naval - Tulcea.

Health Department Tulcea

The ARBDD was founded according to the Government Decision no. 983 in August 1990, which together with the organization of the Ministry of Environment, art. 5 provides for the establishment of the Danube Delta Biosphere Reserve, with its own administration and a Scientific Council.

The main tasks of DDBRA as presented in the DDBR Master Plan are:

- Management and conservation of natural heritage: conservation of natural habitats, flora and fauna and integration of Natura 2000 network of protected areas, capitalizing renewable natural resources, developing research program in action.
- Regulation and licensing of economic activities taking place in DDBR (ensuring conditions for sustainable exploitation of renewable natural resources; economic activities authorization).
- Running program to improve the environmental conditions in aquatic and ecological complexes.
- Environmental guarding (compliance with regulatory provisions on environmental protection and management of protected areas);
- Compliance with regulatory provisions on the use of resources from natural sources (fish, reeds etc., updating inventory of flora and fauna of DDBR, protection and conservation of species flocks of major ecological interest).
- Increase public awareness, information and environmental education (promoting its natural and socio-cultural values through information and public awareness, increase awareness and involvement of students and young raising public awareness and promoting the natural, cultural and aesthetic DDBR; providing public access to environmental information).
- Develop international collaboration (development of international cooperation, at regional and European level;
- Increased international support for the implementation of management objectives.

3. ADAPTIVE MANAGEMENT IN DANUBE DELTA BIOSPHERE RESERVE- A PRIORITY FOR THE LOCAL AUTHORITIES

The strategy which aims to put into practice the environmental management dimension of Danube Delta territory is realized by implementing an integrated management plan that aims to preserve and protect the natural heritage of great scientific value and promote sustainable use of resources, productivity of natural ecosystems, ecological restoration of damaged habitats.

The Action Plan for the Danube Delta finds important the following sustainable management goals that must be achieved:

- preserving the health conditions of the people

- sustainable development
- avoid pollution through preventive measures
- biodiversity
- preservation of the cultural and historical heritage
- apply the basic principles of ecology environment (eg polluter pays)
- stimulation of altered ecosystem rehabilitation

A management plan should act as a guide, a tool and an incentive for protected area management team to work efficiently and productively to achieve a clear goal.

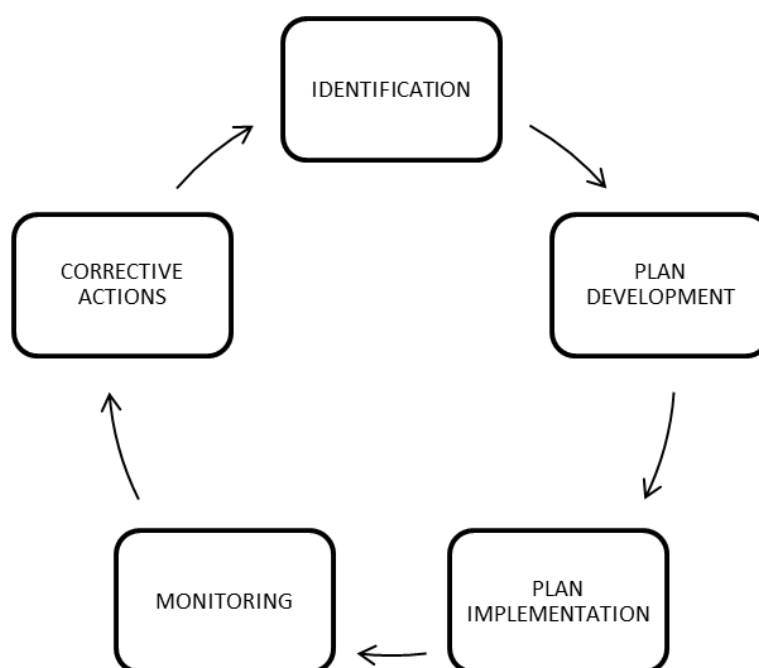


FIGURE 2 - THE ACHIEVEMENT OF THE ENVIRONMENTAL MANAGEMENT PLAN
Source: Fisheries and Oceans Canada, 2010

This traditional approach to environmental management plans implemented so far unfortunately do not include practices that take into account the ability to predict the consequences and effects, unpredictability becoming an important part.(Stankey et al., 2005)

The concept of adaptive management is linking accumulation of knowledge and the implementation and development of coherent policies regarding measures implementation of the results.

One of the definitions of adaptive management that counts the learning and effective implementation states that “adaptive management does not postpone action until ‘enough’ is known, but acknowledges that time and resources are too short to defer some action” (Lee 1999: 5).

As presented by Stankey et al. (2005), in “Adaptive management of natural resources”, Holling (1978) and Walters (1986) specified two major components to the adaptive management process:

1. An effort to integrate existing interdisciplinary experience and scientific information into dynamic models to frame predictions about the impacts of alternative policies; this step performs three key functions:
 - Problem clarification and enhanced communication among scientists, managers, and other stakeholders.
 - Policy screening to eliminate options unlikely of doing much good because of inadequate scale or type of impacts.
 - Identification of key knowledge gaps that make predictions suspect.
2. Design of a specific management experiment.

The third component appears from the management practices carried out in order to reveal the actual results of the study. It resumes to the adaptive process of policymaking.

As can be seen in the figure below, the process of developing an adaptive management plan is more complex than a common management plan, the first depending on many factors according to which they can reconsidering the actions provided to be carried out.

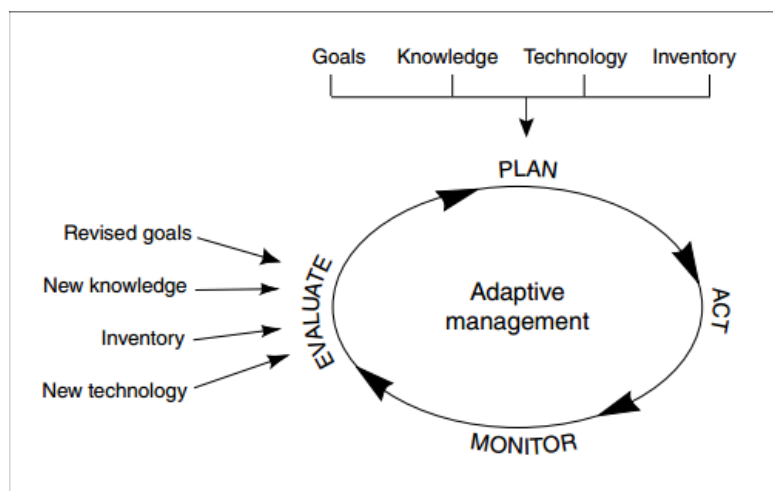


FIGURE 3 - ADAPTIVE MANAGEMENT CYCLE
Source: Stankey et al, 2005

Adaptive management practices in Danube Delta Biosphere Reserve implies a social and a political component, involving the local authorities and other stakeholders and also, for a holistic approach the expertise of the central authorities.

In order to build coherence and credibility throughout the entire action frame, including here the social component mainly and also to be able to create a proper action plan that is in complete understanding of the current problems facing in the area an inclusive approach is needed (Van Cleve et al. 2003, MacKay et al. 2003).

Because natural resource management problems are social in origin and potential solutions are framed in a social context, effective management programs must embrace both biophysical and social elements. (Stankey et al, 2005).

Agee (1999, p. 292) argued adaptive management can only work "if simultaneously adopted in the sociopolitical world" and although "the political world does not have to embrace uncertainty itself...it must fund activities that reduce or define uncertainty..."

This has proven challenging because of the reluctance of parties to work collaboratively and because organizational and professional biases continue to define problems in technical, scientific terms (Miller, 1999).

CONCLUSION

Danube Delta Biosphere Reserve is an ecosystem that is increasingly faced with the problem of the damage to the ecological balance of the climate by pollution, human impact. Authorities at local, regional, national level try to face the rapid pace of deterioration in conditions in which response plans are increasingly difficult.

Experts find solutions to problems, but putting them into practice is proving to be difficult both in terms of time and understanding of the phenomenon on which it wants to intervene. For this process to be simplified to the past in developing management plans for affected areas, which are a way of widening imbalances of the manifested decrease.

As stated above, management plans make possible effective application of ecological recovery and beyond, through the combination of actions developed in the management process.

Management should consider aspects such as economic, social and environmental sustainability to be most important in the due context.

Representing the foundation of social and economic progress, preserving ecological balance is a major problem that Danube Delta Biosphere Reserve is facing today.

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