

CLIMATE CHANGES' IMPACT ON MANAGEMENT AND ACTIVITIES IN PROTECTED AREAS: MANAGERS' AND STAKEHOLDERS' ATTITUDES



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1. INTRODUCTION

Protected areas

- faces major **risks and uncertainties** in front of **current and future climate changes**
- have been **established as an efficient and effective means** of ecosystem management.
- can be used as the **main means of climate change mitigation and adaptation**



The **current management of protected areas** is based on **previous practices** that have **developed in recent climatic conditions**

Major challenges for managers and other institutions and organizations in the **nature conservation sector**:

- **implementing** appropriate **activities** in protected areas
- **improving the system of support** for protected areas management

Aim of the study

Examine the respondents' **attitudes** towards **climate changes' impact on protected areas**, managers' and stakeholders' **activities**, as well as towards the **need for improvements of the protected areas management system**.

2. METHODS

20 in-depth interviews



January – March 2021

Purposive (judgmental) sampling



Comparative method



Qualitative content analysis



Table 1. Overview of institutions/organizations and the number of respondents who participated in the study

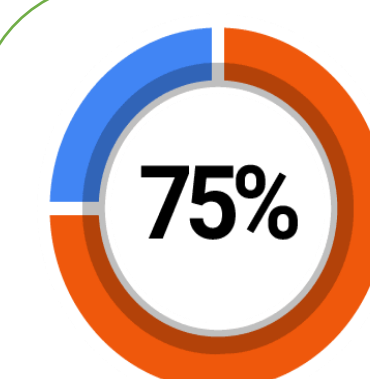
Institutions	
Public administration	Ministry of environmental protection
	Provincila secretariat for urbanism and enviromental protection
Public service	Institute for nature conservation
	Provincial institute for nature conservation
Organizations	
Protected areas managers	Public enterprise „Srbijašume“
	Public enterprise „Vojvodinašume“
	Public enterprise „Palić-Ludaš“
	Public enterprise „National park Tara“
	Public enterprise „National park Kopaonik“
	Public enterprise „National park Đerdap“
	Public enterprise „National park Fruška Gora“
Civil society organizations	Green Movement of Sremska Mitrovica
	Young researchers of Serbia
	Green Movement of Vojvodina
Educational and research organizations	WWF Adria Serbia
	Institute for lowland forestry and environment protection
	Institute for forestry
	University in Belgrade – Faculty of forestry
	University in Novi Sad – Faculty of sciences
	University in Belgrade – Faculty of philosophy

3. RESULTS

Respondents had experiences with the **negative impact of climate change on protected areas**, primarily in relation to environmental and economic ones, while their social consequences are the least visible.

Table 2. Consequences of climate change impacts on protected areas

Ecological consequences	Economical consequences	Social consequences
Changes in ecosystems	Higher costs	Poverty of local population
Changes of natural proceses	Reduced income	Destroyed property
Changes related to species	Higher market placement of raw materials	Reduced scope of implementation of activities related to tourism, recreation and education



PA's managers believe that the **negative effects of climate change influence their business activities**



PA's managers **do not plan to adjust management activities**, although they have the need for or it will not happen in the next short term

PA's managers introduced changes in PA management:

- changes related to the use of resources
- implementation of active protection measures
- activities related to the local population
- administrative changes (eg new documentation)
- staff changes

Civil society organizations' activities:

- volunteer camps
- work with the local community
- public awareness campaigns
- lobbying



Climate change will affect the management system of protected areas. The need to **improve certain PA management system segments**:

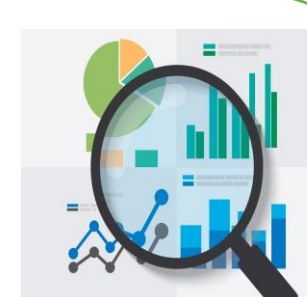
- provision of **financing and support measures**;
- improving the **financial and human resources of PA managers**
- improving **regulatory and institutional frameworks**
- introducing the **adaptive management, nature-based solutions, science-based management** of PAs, transition **from passive to active management**
- changes in cooperation with stakeholders

Public servise's activities:

- protection of species and habitat types
- designation of new protected areas
- introduction of prohibitions and restrictions
- participation in working groups
- implementation of international projects

Educational and research organizations activities:

- realization of new scientific researches (impact and predictions)
- monitoring
- adjustment of educational activities
- public awareness campaigns



4. CONCLUSIONS



- **climate changes** already have a **significant impact on protected areas** in Serbia.
- the research results may indicate the **possibility that climate change issues are not fully accepted at all levels of protected area management systems**
- it can be expected that **protected areas management will face great challenges in the future** which will primarily **imply the change of protected areas management system**.



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