

## **Adaptation of protected area management: methods and challenges**

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### **Abstract**

Protected areas play a major role in the effort to preserve biodiversity but also for sustainable regional development. Management of protected areas aims to safeguard endangered species, habitats and landscapes either by non-utilization or by maintenance of sustainable and biodiversity-friendly land-use practices. But protected areas are under pressure by observed and expected climatic changes. Species loss and migration, decoupling of functional relations and spreading of invasive species are predicted impacts of climate change.

As all other sectors and institutions, protected area management has to adapt to climate change and to integrate climate change information into management planning for the area. Though modeling of future climatic scenarios is available for most regions and many scientific approaches to assess potential impacts of climate change are published, protected area management cannot benefit yet from this information. The transfer of scientific knowledge into protected area management is hindered by many reasons: Awareness and acceptance of climate change is often lacking; scenarios are not site-specific enough; academic language is not understood by protected area managers and stakeholders; only few methods and approaches are successfully tested and validated, so far very little “best-practice” to follow is available.

A major challenge in adaptation to climate change is the assessment of potential impacts of climate change on natural assets like species, habitats or water resources. Protected areas are not yet prepared and equipped to identify and monitor climate induced changes. Little is known about the sensitivity of different natural assets to extreme events and changing climatic conditions.

Protected areas therefore need active support to overcome these obstacles. Management under climate change must be enabled to obtain relevant knowledge.

To plan and implement effective adaptation activities to prepare protected areas for climate change, new and practice oriented approaches are needed. Adaptation can only be effective and beneficial for protected areas if:

1) All land-users and stakeholders affected are involved in the process of adaptation from the very beginning. Awareness and acceptance of all stakeholders are prerequisite to master the challenge of adaptation. Participation and communication as parts of an intensive stakeholder involvement are essential components of an adaptive management that should be introduced to protected area management.

2) Climate induced changes and management effectiveness are permanently monitored. Monitoring data must be stored, managed and provided to all relevant institutions and stakeholders in order to enhance knowledge about climate impacts and effectiveness management.

The presentation will focus on methodological approaches to adapt management planning of protected areas to climate change. On the basis of profound experience gathered in a science-practice-partnership in an EU funded Interreg project (HABIT-CHANGE) the main challenges of the adaptation process will be described and a methodological approach to assess potential impacts of climate change in protected areas is presented. The approach allows identifying essential strategies for adaptation to make protected areas more resilient to climate change.

Main elements of the approach presented are:

- Use of climate change impacts assessments as instruments for awareness-raising and prioritisation;
- Methods for the intensification of stakeholder involvement and coordination of adaptation strategies of different sectors;
- Introduction of an adaptive management approach to reduce uncertainties and knowledge gaps, to establish a strategic monitoring and to improve management effectiveness;
- Management of water resources;
- Establishment of a coherent network that allows migration of climate sensitive species.
- Reduction of existing non-climatic pressures to increase resilience. Land use pressures are still the main driver for biodiversity loss. If management succeeds in effectively reducing land use pressures from drainage, agriculture, forestry and recreational uses, the effects of climate change may cause less harm.