

## **Work Package 3: Proposal for integrated development of the network of protected areas in Lithuania**

### **Activity 3.1. Assessment of spatial distribution of relevant ecosystem services**

#### **Summary of the report**

The report presents analysis and spatial distribution of ecosystem services relevant to development of the protected areas network in Lithuania. The assessment focuses on key regulating ecosystem services (Chapter 3.1) but also analyses provisional (Chapter 3.2) and cultural services (Chapter 3.3). Maps of ecosystem service supply, demand and potential are provided where relevant. The maps are provided in grid format with the cell size 100 x 100m and show normalized values on the scale from 0 (lowest) to 1 (highest).

The Protected Area status does not automatically toggle on or off the ecosystem services. Some practices will need to be changed in order to increase the magnitude of the ecosystem services, for example area of the arable land on the steep slopes needs to be reduced to improve erosion control or drained peatlands need to be rewetted to reduce emission of the greenhouse gases. However, establishment of a protected area may serve as a catalyst for the desired development of the ecosystem services or as a safeguard to protect the existing ecosystem services from degradation.

There are several aspects how the ecosystem services may be important for expansion of the protected areas network:

- New protected areas may ensure continuity of the existing ecosystem services, for example soil erosion protection, flood protection, assimilation and accumulation of nutrients and pollutants from agricultural sources or prevention of greenhouse gas emissions due to decomposition of the peat.
- Change of land use practices in the areas with high ecosystem service potential may increase magnitude of the ecosystem services. For example, reduce soil erosion, reduce risk of flooding, reduce pollution of water bodies by nutrients from agricultural fields, and reduce emission of greenhouse gases (by rewetting of drained peatlands).
- Expansion of the protected areas may have a negative impact on provisional ecosystem services. The impact for food production may be minimised by establishing new protected areas in the territories with a low potential of the ecosystem services “Cultivated terrestrial plants grown for nutritional purposes, materials or energy production”. Increase of the age limit for the forest cutting is likely to have a negative impact on accumulation of carbon in long life wood products. This impact may be minimised by setting the age limits in the areas with the low potential of the ecosystem service “Regulation of chemical composition of atmosphere and oceans”. On the other hand information on potential negative impacts on ecosystem services is needed for priority setting and cost assessment of the Protected Areas expansion.
- Information on spatial distribution of the outdoor activities may be relevant for establishment of the new protected areas or connectivity between existing ones but also for assessment of potential negative impact on sensitive species of habitats.
- Map of potential of the ecosystem service “Characteristics of living systems that enable activities promoting health, recuperation or enjoyment through active or immersive interactions” may help to bridge the demands for protected areas network expansion and population needs for green areas.

The ecosystem service maps presented in this report will be used as an input to multicriteria analysis of the pre-selected candidates of the new protected areas and will contribute to priorities for development of the protected areas network in Lithuania.