

## **Methodology for Evaluating the Social and Economic Significance of Forest Ecosystem Services in the Czech Republic**

In principle, the methodology is designed to express and assess a wider social and economic significance of forest ecosystem services compared to the significance of non-forest parts of the landscape. It expresses the social and economic significance of blocks of forest ecosystem services in comparison with non-forest ecosystem services in the landscape within the Czech Republic.

The main landscape ecosystems such as forestland, grassland, arable land, and solid soil cover were included. The differences in ecosystem services were valued by the methodology created by the research team and certified in the Czech Republic in 2017 by the Ministry of Agriculture.

The following main services were included: production services (both market, and non-market – non-wood forest products), game management and hunting, hydrological services, soil protection services, air protection – CO<sub>2</sub> sequestration services, health-hygienic (recreational services), cultural-educational services (based on nature-protection service closely related to biodiversity, important in educational, scientific and institutional points of view).

### **The benefits for the society include:**

- identification of socio-economic harm and damage induced by a reduced performance of forest services from deforestation or destruction of the forest and its services;
- utilization in the sphere of socio-economic instruments of forest protection and fulfilment of forest services (including economic consequences, i.e. fees for withdrawal of forest services);
- expression of social and economic significance, efficiency, of providing public financial support for forest restoration, forest protection and forest improvement measures with regard to social services;
- Improvement and objectification of decision-making processes of relevant governmental and non-governmental bodies and organizations on the allocation of public funds, subsidies and payments, to support the forest as an ecosystem, and to support multifunctional forest management as an activity ensuring the desirable performance of forest services within forest management.

The nature of the methodology has been already experimentally applied in practice for the evaluation of socio-economic environmental forestry operations efficiency in the landscape under the Rural Development Programme (RDP) in the Czech Republic. The efficiency evaluation is based on forestry environmental operations costs provided by the Ministry of Agriculture for all the Czech Republic in years 2015-2017, considering the future socio-economic improvements of the respective environmental landscape ecosystem services' socio-economic values (both market and non-market) expressed by their differences.

The socio-economic efficiency represents a relationship between public financial inputs (subsidies) into the forestry environmental measures on the one hand and enhancement of respective landscape ecosystems services' socio-economic values expressed in money terms on the other hand.

The calculations of socio-economic efficiency evaluation of environmental forestry operations measures include qualitative improvements of forest stands structure and reforestation activities related to climate change and forests disasters in the Czech Republic. The results show that the selected forestry measures within the RDP significantly improve the given landscape services' socio-economic values within the Czech Republic and that all measures' value benefits are higher than the public funds invested.

The results were used by the Ministry of Agriculture of the Czech Republic, the Forestry Sector. The nature of the methodology and the application results were presented in international conferences including the XXV IUFRO World Congress in Curitiba, Brasil, in 2019.

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