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

Activity 3.2. Assessment of spatial distribution of carbon-rich ecosystems

Summary of the report

The report presents analysis as well as spatial distribution of organic carbon content in terrestrial ecosystems of Lithuania. Analysis is based on spatial datasets received from the State institutions or available at Lithuanian spatial data geoportal. Organic carbon stocks were evaluated using spatial analysis methods for the following categories:

1. Average stocks of organic carbon in 0-30 cm layer of forest soils;
2. Average stocks of organic carbon in forest biomass;
3. Average stocks of organic carbon in 0-30 cm layer of non-forest soils;
4. Average stocks of organic carbon in residues of perennial grasslands (non-forest soils);
5. Average stocks of organic carbon in peatlands (layer below 30 cm).

The organic carbon stocks in the soil layer below 30 cm were estimated in prospected peat deposits as no scientifically sound data is available to make calculations in other areas.

The report outlines the principles and methods used to calculate stocks of organic carbon as well as data sources and data processing procedures.

Estimated organic carbon stocks in forest overground and underground biomass were 182,193,280 tonnes in 2021. Additionally, 221,169,704 tonnes of organic carbon were stored in forest soil and forest litter. Average organic carbon stocks in the non-forest soil (0-30 cm layer) and residues of the perennial grasslands are estimated to be 258,336,565 tonnes. Organic carbon content of prospected peat deposits (below 30 cm) is estimated to be 176,691,789 tonnes.

The report presents number of maps to illustrate the spatial distribution of the organic carbon stocks in Lithuania.

Extension of the protected areas network in Lithuania may contribute to protection of the organic carbon stocks:

- It would be sensible to restrict logging of the forests with high organic carbon content and ensure stability of the biomass of the old forests especially in the areas with habitats of Community importance.
- Hydrological regime should be restored in the peatlands that are not used for pear extraction. Re-wettening of the dry peat significantly reduces emission of the greenhouse gasses.
- It would be sensible to restore and protect grasslands in carbon rich mineral soils.
- Arable agriculture should be ceased, and permanent vegetation cover should be established in the organic (peat) soils used for agriculture. Disturbance of peat soils contributes to aerobic peat decomposing and increase of greenhouse gas emissions.