

European tundra and boreal forest ecosystems will experience one of the strongest impacts of climate change on the Earth. These habitats and northern temperate ecosystems will become disproportionately warmer compared with other global biomes according to the general averaged climate change scenarios. Because living organisms exhibit physiological optima for temperature and specific requirements for habitat quality, rapid shifts in vegetation and entire biomes pose the greatest challenges to cope with under global change.

In the current epoch of unprecedentedly rapid climate change, further human interventions may offer both threats and opportunities to restore ecosystem services and mitigate ecological and economic damage. We, the humans, can control much of the greenhouse gas emissions related to land use shifts, agricultural and forestry practices by determining and implementing climate-friendly ways of management and sustainable use of soil resources in agriculture and forestry from the global change perspective. Due to their effect on both productivity and soil processes, certain land use and forest management practices can be helpful for promoting soil carbon storage.

Project title:

Sustainable use of soil resources in the changing climate (acronym SUCC)

Project number:

EMP442

Duration:

1 January, 2020 – 31 December, 2023

Project area:

Biosciences and environment

Funding:

The project EMP442 has received funding from the European Economic Area (EEA) Financial Mechanism Baltic Research Programme in Estonia.

The institution that administers invitation for an application:

Estonian Research Council, acting as Implementing Agency pursuant to the Agreement No. 1.4-6/19/2 with the Ministry of Education and Research.

Budget:

Total project budget 907947 EUR; Lithuanian part of project budget 145270 EUR.

Project goals:

1. To develop novel molecular methods for rapid abundance assessment of various microbial groups and their potential of organic degradation and carbon release.

2. To determine shifts in carbon allocation in plants and carbon sequestration in soil along the latitudinal gradient in response to climate change.
3. To evaluate the economic costs and benefits of changing climate on various aspects of forestry and soil carbon balance.
4. To determine ecological sustainability of afforestation of former agricultural land.
5. To develop sustainable forestry and other land use practices to mitigate the negative effects of climate change on one hand and securing forest productivity on the other hand.

Results:

Publication, presentations, media et cetera.

Project participants:

Project promoter and principal executor:

University of Tartu (<https://www.ut.ee/en>)

Project leader: Prof. Leho Tedersoo, Institute of Ecology and Earth Sciences (IEES), University of Tartu

Project partners:

Arctic University of Norway, Department of Arctic and Marine Biology (AMB), Tromsø, led by Prof. Kari Anne Bråthen (<https://en.uit.no/startside>)

Latvian State Forest Research Institute “Silava”, led by Dr. biol. Dainis Ruņģis (<http://www.silava.lv/mainen/aboutus.aspx>)

Lithuanian Research Centre for Agriculture and Forestry (LAMMC), led by Dr. Jelena Ankuda and Dr. Kęstutis Armolaitis (<https://www.lammc.lt/en>)

Third parties:

University of Copenhagen, Prof. Lars Vesterdal (<https://www.ku.dk/english/>)

Natural Resources Institute Finland, Prof. Taina Pennanen (<https://www.luke.fi/en/>)

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Link to the official project page: <https://sisu.ut.ee/emp422succ/main-page>