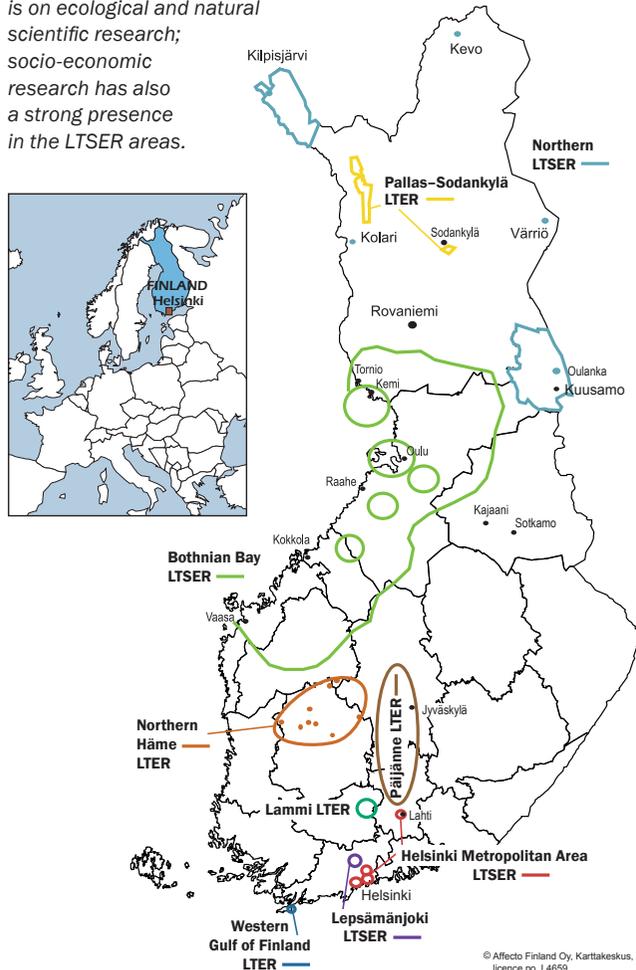


Research institutes and studied areas

The VACCIA project analysed the vulnerability of nature's ecosystem services and means of livelihood, as well as adapting to climate change. In addition to the Finnish Environment Institute, which coordinated the project, the following organisations were involved as partners: the Finnish Meteorological Institute and the universities of Helsinki, Jyväskylä and Oulu. About one hundred researchers around Finland were involved as actors in the project over the three years of the project (2009–2011).

The evaluation was carried out in nine long-term environmental research network areas (see map image) belonging to the Finnish national research infrastructure (FinLTSER).

The focus in the LTER area is on ecological and natural scientific research; socio-economic research has also a strong presence in the LTSE areas.



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VACCIA actions

Project leadership

Martin Forsius, Finnish Environment Institute (SYKE)
martin.forsius@ymparisto.fi

Actions

1. General Project Management

Jussi Vuorenmaa, Finnish Environment Institute SYKE
jussi.vuorenmaa@ymparisto.fi

2. Remote sensing

Saku Anttila, Finnish Environment Institute SYKE
saku.anttila@ymparisto.fi

3. Climate Scenarios

Kirsti Jylhä, Finnish Meteorological Institute
kirsti.jylha@fmi.fi

4. Synthesis and Dissemination

Irina Bergström, Finnish Environment Institute SYKE
irina.bergstrom@ymparisto.fi

5. Coastal Ecosystems – Western Gulf of Finland LTER

Marko Reinikainen, University of Helsinki
marko.j.reinikainen@helsinki.fi

6. Urban Environments – Helsinki Metropolitan Area LTSE

Jussi Kulonpalo, University of Helsinki
jussi.kulonpalo@helsinki.fi

7. Agricultural Production – Lepsämäenjoki LTSE

Juha Helenius, University of Helsinki
juha.helenius@helsinki.fi

8. Catchments and Lakes – Lammi LTER

Lauri Arvola, University of Helsinki, lauri.arvola@helsinki.fi

9. Forest Production – Northern Häme LTER – Northern LTSE

Eero Nikinmaa, University of Helsinki, eero.nikinmaa@helsinki.fi

10. Fisheries Production – Päijänne LTER

Juha Karjalainen, University of Jyväskylä, juha.karjalainen@juu.fi

11. Biodiversity of Coastal Regions – Bothnian Bay LTSE,

Marko Hyvärinen, University of Oulu and University of Helsinki
marko.hyvarinen@helsinki.fi

12. Tourism – Northern LTSE,

Hannu Heikkinen, University of Oulu, hannu.i.heikkinen@oulu.fi

13. Pollution Transport – Pallas-Sodankylä LTER

Hannele Hakola, Finnish Meteorological Institute
hannele.hakola@fmi.fi



Text: Eerika Niemelä, Irina Bergström, Tuja Mattsson, Jussi Vuorenmaa ja Martin Forsius
Photos (front cover): Mark Einböck/Plugki
Graphic design: Marja Vierimaa • Printed by Vammalan Kirjapaino Oy, Sastamala 2011

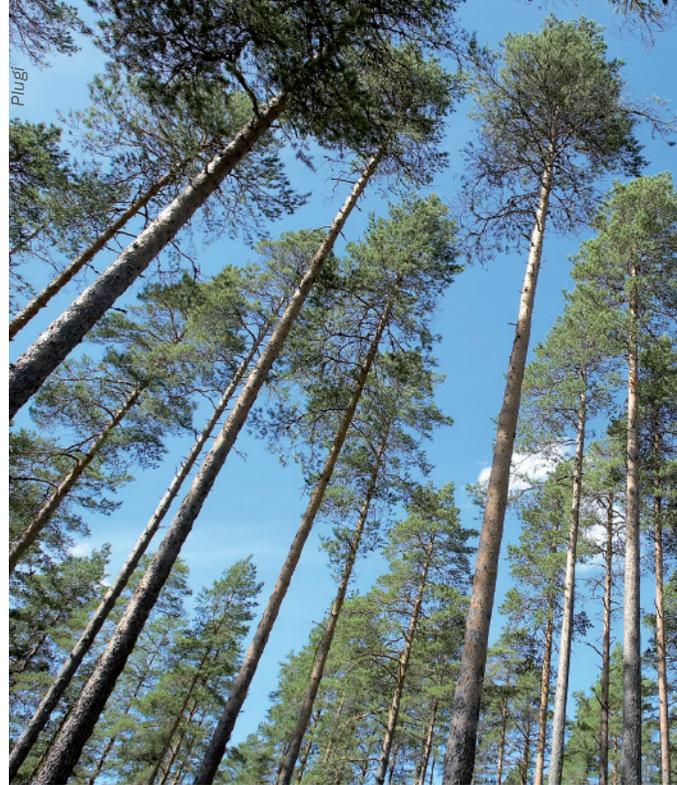
Climate change is here already. Will ecosystem services be disturbed, will we adapt to change?

Key results

VACCIA



Vulnerability Assessment of Ecosystem Services for Climate Change Impacts and Adaptation – VACCIA



Climate change requires adaptation

Climate change is reflected in the shifting ecosystems in the services and commodities provided by nature, and further in the means of livelihood dependent on them, such as agriculture, forestry, fisheries and tourism. Multifunctional ecosystems, good-quality water resources and the urban environment water economy are also threatened.

The three-year VACCIA project (2009–2011), funded by the EU LIFE+ programme, analysed the vulnerability of nature's ecosystem services and means of livelihood and adaptation to climate change in thirteen sub-projects. In addition to the Finnish Environment Institute, which coordinated the project, the following were involved as partners: the Finnish Meteorological Institute and the universities of Helsinki, Jyväskylä and Oulu. The project emphasised vulnerability and adaptation studies, not only at the national level, but especially at regional and local levels, and it was anticipated that the results would be useful when making political decisions on adaptation to climate change strategies.

Objectives of the project

- Assess the impacts of climate change in ecosystem services.
- Outline the means of adaptation and convey information to decision-makers and the general public.
- Produce environmental change scenarios and develop modelling, GIS and database solutions to assess the changes.
- Generate information for adaptation strategies at the national and EU level and support local and regional-scale planning and decision making.

Key results

- Boreal watersheds are sensitive to climate change. Changes in precipitation, evaporation, runoff and land use affect the ecosystem services of water bodies.
- Turbidity and eutrophication in coastal waters increase. The combined effect of changes can be seen in the fauna.
- In the Bothnian Bay, humidity conditions of low-lying meadows change and wind-raise floods can become more frequent. The change endangers the living environments of threatened shore species.
- In cities, ecosystem services provided by soil are threatened. Higher precipitation combined with the accelerating rate of urbanisation will increase the amount of storm water and impair its quality.
- *Ex situ* protection (protection of an organism outside its natural habitat) of biodiversity is insufficient in Finland. In support of protection measures, a national *ex situ* action plan was drawn up for the conservation of Finnish flora.

- The prospects for Finnish agriculture brought about by climate change were analysed by four different cultivation scenarios produced by the project. Climate change enables the introduction of new species and autumn seeding varieties, but brings challenges to agriculture water protection.
- According to model calculations based on climate change scenarios, the growth of growing stock accelerates across the whole country. Growth can be limited by temperature and the amount of nitrogen, but not so much by drought.
- Changes in temperature and ice cover and higher eutrophication affect the behaviour of fish, the fishing industry and fisheries.
- A changing climate creates challenges for operational preconditions of nature tourism in northern Finland. Developing tourism into a year-round activity is one of the adaptation measures of livelihood.
- Air quality has improved over the last 10 to 20 years, and according to climate models, less pollution currents from the Kola Peninsula to northern Finland. However, ship emissions are expected to increase in the Arctic sea areas.

You can access more information on the project results in the reports and publications produced by the sub-projects, which can be found on the following pages

www.environment.fi/syke/vaccia
> Reports and Publications