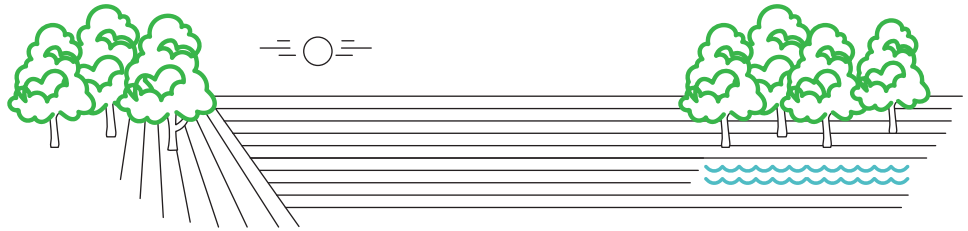
Designing land use for nature and society

– reducing the environmental impacts of land use

Research, innovation and development



UNIVERSITY OF COPENHAGEN

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CHALLENGES

- How do we prioritize land use in Denmark to reach climate and biodiversity targets?
- How do we balance agricultural productivity, rural economy, biodiversity conservation, water quality, and mitigation of greenhouse gases to achieve net-zero emissions by 2050 and a transition towards a sustainable future?
- How do we ensure a coherent land governance and ownership framework to facilitate a transition towards sustainable land management?
- What are the immediate and long-term effects of changing water, soil and vegetation management, such as rewetting carbon-rich soils, on carbon capture, greenhouse gases, and phosphorous emissions?

ACTIONS

- Integrate climate and biodiversity goals in N and P policies and regulation of agricultural land and soil management
- Identify governance frameworks and planning practices that facilitate or impede sustainable land use
- Understand farmer motivations for implementing emissions reduction management practices
- Develop accurate and differentiated soil-related emission factors
- Establish long-term observations of land use intervention impacts on environment, biodiversity conservation, and climate effects
- A coherent land use plan for Denmark to reach climate, environment, and biodiversity targets

IMPACTS

- Reduced greenhouse gas and nutrient emissions and reversed loss of biodiversity balanced with sustained agricultural productivity
- Improved soil management to unlock its potential for emission reductions in agriculture
- Enhanced transparency and predictability of land use decisions and outcomes for stakeholders
- Better land management, spatial planning at the national level, and land sharing measures to avoid problematic tradeoffs between C sequestration in lowland areas and upstream water retention (avoidance of flooding of downstream urban areas), e.g., creating higher likeliness of wet/hot spots in the agricultural catchment.

BEST PRACTICES

- Improved overall land and soil management with focus on high soil C sequestration and retention, minimal nutrient exports, low N emissions as well as improved biodiversity.
- More efficient rewetting practices for variable lowland soil conditions to maximize effects on soil and vegetation C sequestration, minimizing CH4 and N2O production and reducing the risk of phosphorus leakage.
- More efficient mitigation of N2O from mineral and organic fertilizers, e.g., inhibitors, slow/controlled-release, precision farming, avoidance of N2O hot spots.
- Improved monitoring and verification of best practices.

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