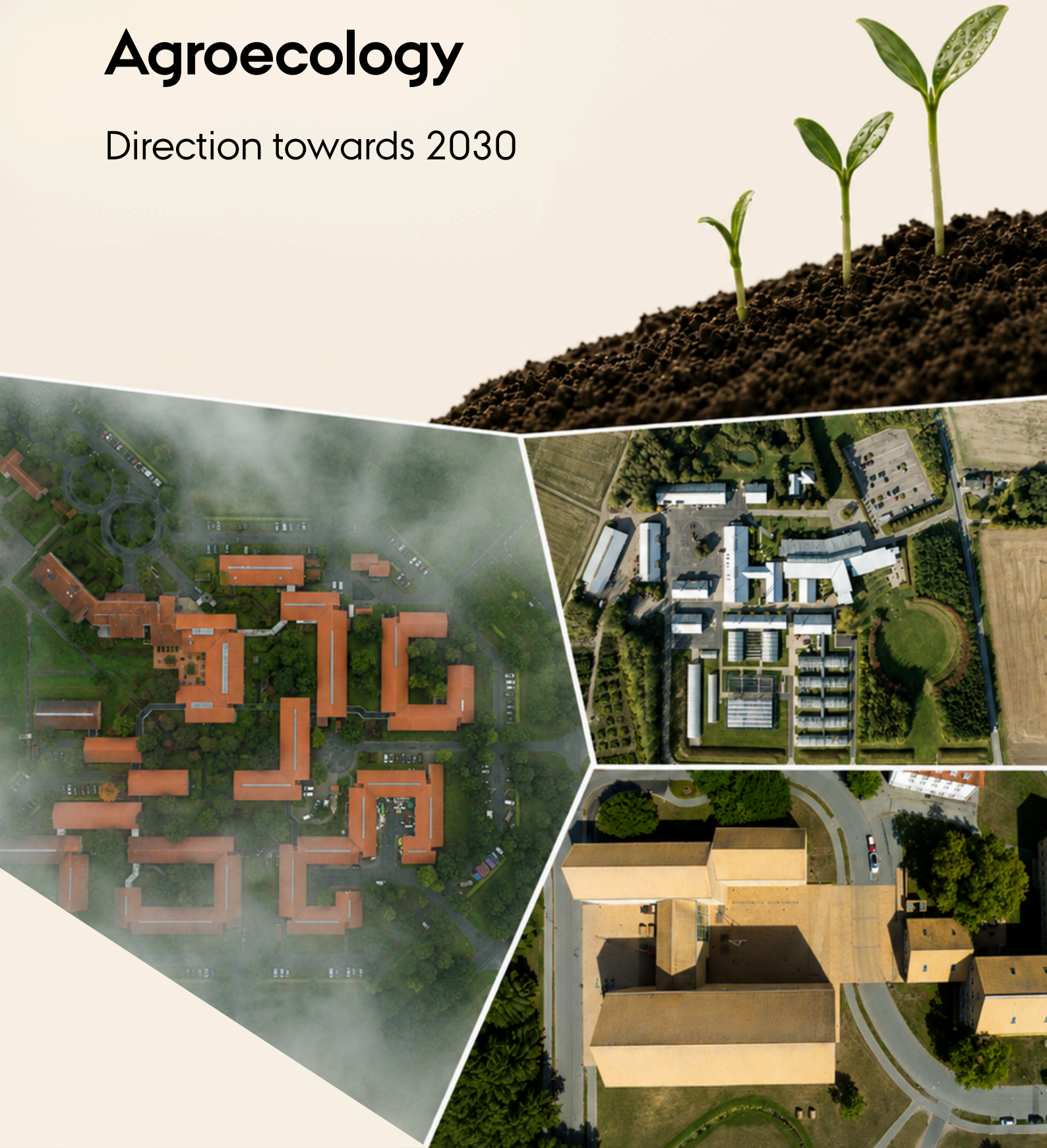


Department of Agroecology

Direction towards 2030

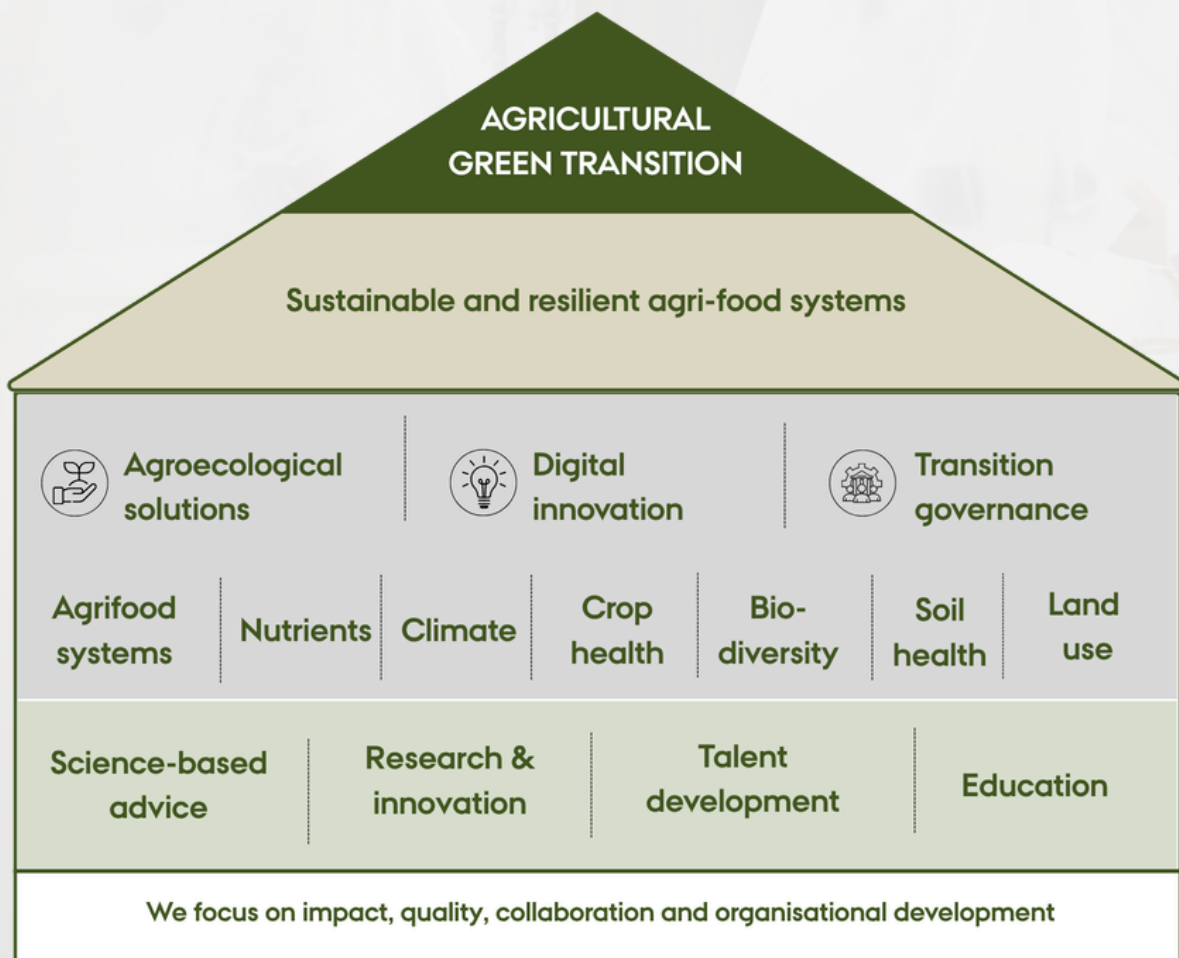


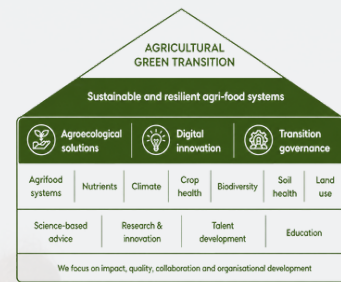
Introduction

We study agroecology encompassing the interactions between plants, soil, animals, the environment, climate and people in the agricultural landscape. We develop sustainable and resilient solutions based on agroecological principles that support society's green transition.

Agricultural Green Transition

We are an internationally recognized research environment for the green transition of agrifood systems, addressing current and future global and local sustainability challenges arising from the growing demand for food, energy, and biomaterials. Through research, innovation, policy advisory services, education, talent development, industry collaboration, and public outreach, we enable society to achieve a wide range of sustainability goals.





Ambitions

We address the need for resilient production of food, energy, and biomaterials while reducing reliance on non-renewable resources and lowering negative environmental and climate impacts. We achieve this through interdisciplinary collaboration nationally and internationally. We work across spatial scales – from the molecular and organisms to field, farm and landscape level – and seek to integrate research across all disciplines, including the natural, technical and social sciences, and the humanities.

We strengthen the visibility and societal impact of our research by actively engaging with decision makers, industry, civil society, and the broader public. We support researchers in communicating their findings to stakeholders and the public.

Sustainable and resilient agrifood systems

We generate and mobilise knowledge and innovation that enables the development of sustainable and resilient agrifood systems. We do this through research and innovation partnerships across sectors and scales.



Agroecological solutions and technologies

We provide solutions that are rooted in ecological processes to develop agricultural systems that will deliver stable, high yields – emphasizing intrinsic regulation of pests and pathogens, efficient resource utilization and low emission levels, while supporting biodiversity. This is based on fundamental research that we translate into operational solutions for crops, soil, cropping systems and whole landscapes.



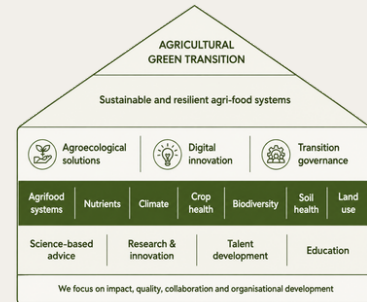
Transition governance

The green transition affects a wide range of stakeholders, interests, and land-use considerations, placing significant demands on collaboration, legitimacy, and collective decision-making processes. We study how policy frameworks, advisory services, market requirements, local partnerships, and institutional structures can support an effective and equitable transition of agriculture.



Digital innovations

We support digital innovation for the green transition using artificial intelligence, remote and proximal sensing, digital twins, and big data analytics to support data-driven and research-based decision-making across agricultural and environmental systems.



Approaches

We apply a portfolio of approaches and solution pathways integrating fundamental and applied research through which we generate research-based solutions and innovations.

1

Agrifood systems

We study how cropping systems may be developed and integrated into viable biomass processing streams providing plant-rich foods and supporting biomass for energy and biomaterials. We contribute to the development of crop production systems, crop varieties, and innovative processing solutions that support the transition towards healthier and more sustainable diets while ensuring food security and resource use efficiency.

2

Nutrients

Our research on nutrients targets interactions between crop growth, soil fertility, and the biogeochemistry of nutrient and organic matter turnover in agroecosystems. Key aspects are enhanced nutrient use efficiency in plant residues, mineral fertilizers, digestates and animal manure, in addition to reduction of gaseous and leaching losses of nutrients to the environment.

3

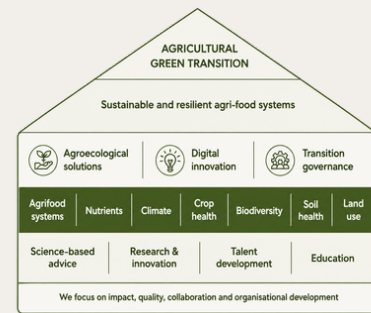
Climate mitigation and adaptation

We study how agricultural greenhouse gas emissions are affected by biogeochemical conditions and how they can be mitigated through changes in management and application of novel technologies. We explore how cropping systems are challenged by climate change, including greater climatic variability and more frequent extreme weather events. We focus on the resource base (landscapes, soils, and genetics) to develop solutions that strengthen the resilience of agroecosystems.

4

Soil health

We study the interactions between soil biota, soil functions and management practices, combined with geographical and functional characterization of different soil types across landscapes. We research how different cropping systems and management practices can improve soil health. This informs sustainable production systems, enhancing resilience to environmental change and safeguarding the long-term productivity of agricultural land.



5

Crop health

We support crop health by focusing on developing crop protection strategies aimed at reducing reliance on pesticides while safeguarding production, human health and the environment. We develop new solutions at both field and landscape scales to maintain effective pest, disease, and weed management. This integrates a range of existing and novel technologies and tools with intrinsic system regulation and biological control agents.

7

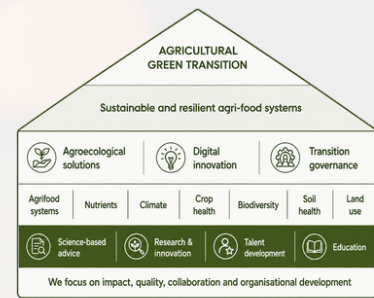
Land use

Growing demands for food, feed, biobased products, renewable energy, biodiversity conservation, climate mitigation, water protection, and recreation are placing increasing pressure on land resources. This is further challenged by climate change and environmental degradation. We study the opportunities to optimize land use by enhancing synergies between agricultural production, biodiversity, water management, and ecosystem resilience through multifunctional landscapes.

6

Biodiversity

Biodiversity in soils, flora, and fauna across agricultural landscapes is essential for the functioning and resilience of future farming systems and for the viability of non-cultivated habitats and ecosystems. We study how biodiversity can be enhanced across agricultural landscapes and how this can support sustainable agriculture, strengthen ecosystem services, and benefit food production.



Foundation



Research and innovation

We conduct independent and impartial research to support the green transition of agrifood systems. To achieve this objective, we work to strengthen and further develop international collaborations and promote scientific breakthroughs.



Science-based advice

We support the green transition through science-based advice to the Danish Ministries and in relevant contexts at the European scale. We seek to strengthen the relevance and impact of this advice by drawing on a broader range of expertise across scientific disciplines, research groups, and university departments. We involve early-career researchers in the advisory activities to ensure the continuous development and renewal of competencies.



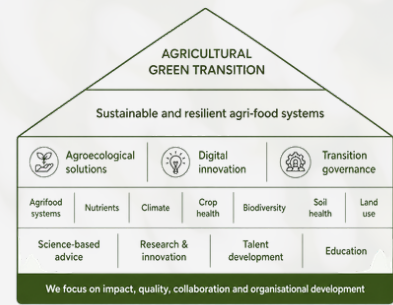
Talent development

Educating students and fostering the development of emerging talent are core elements of our commitment to ensuring long-term societal capacity for the green transition. We develop talent for both academia, industry, and public administration through high-quality educational programmes, dedicated supervision, and a structured mentoring programme.



Educations

Our educational programmes are closely aligned with our focus on the green transition of agrifood systems. We maintain BSc and MSc programmes attracting both Danish and international students for supporting the Danish job market.



Values

We focus our daily work on impact, quality, collaboration, and organisational development as the guiding principles.

Impact means creating societal value – now and in the future.

Quality ensures that our work is professional, reliable, and continuously rooted in research.

Collaboration strengthens our ability to achieve better results through shared knowledge and partnerships.

Organisational development enables us to build capabilities, improve processes and build resilience in the way we work. To further develop our organization, we focus on the adoption of new technologies in both research and administration, and the continuous development of an attractive and inclusive workplace in an increasingly international research environment.



**Green transition of agrifood
systems through research,
innovation, advisory and
educations.**

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