

# THE RESEARCH AREA

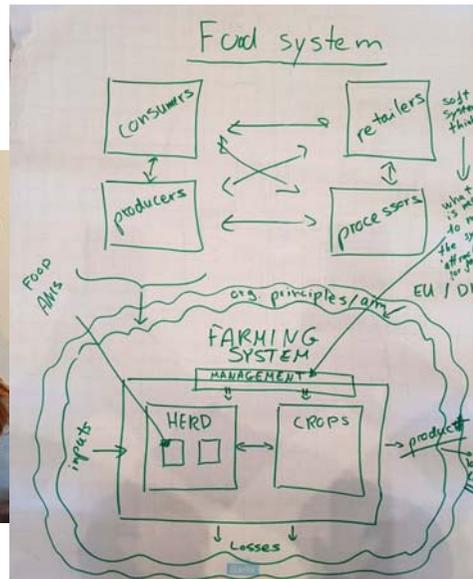


# AGRICULTURAL SYSTEMS AND SUSTAINABILITY

Section Manager  
Tommy Dalgaard



# THE RESEARCH AREA

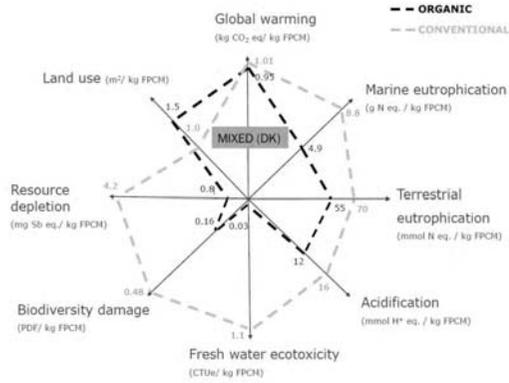


# THE SYSTEM GROUP

- 6-8 Seniors
- 4-6 Young scientists
- 8-10 PhD students
- 2-5 Students projects and internships
- 2-4 Technical staff
- International visitors
- Co-supervised students and PhDs



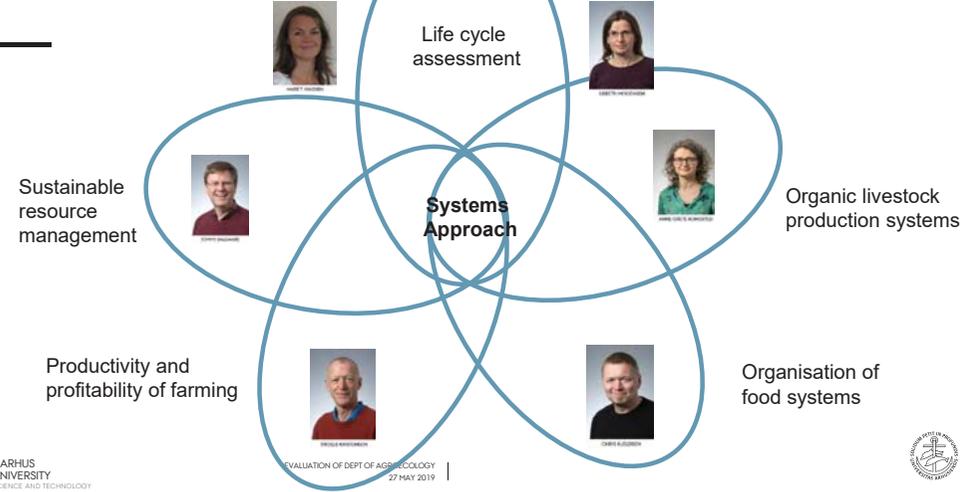
# ENVIRONMENTAL IMPACT OF MILK



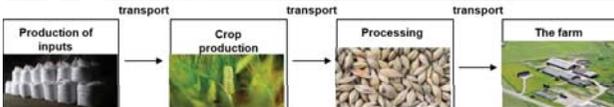
Source: Knudsen et al. 2019. J Clean Prod 215



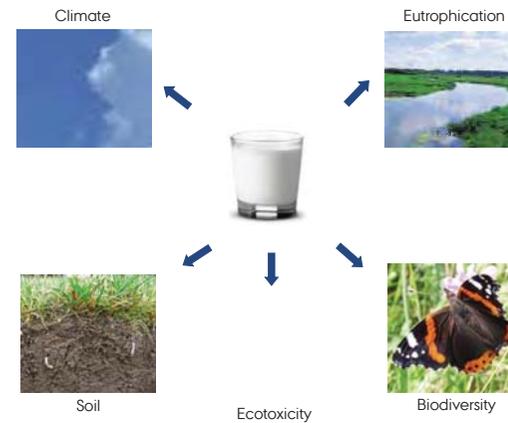
# ORGANISATION



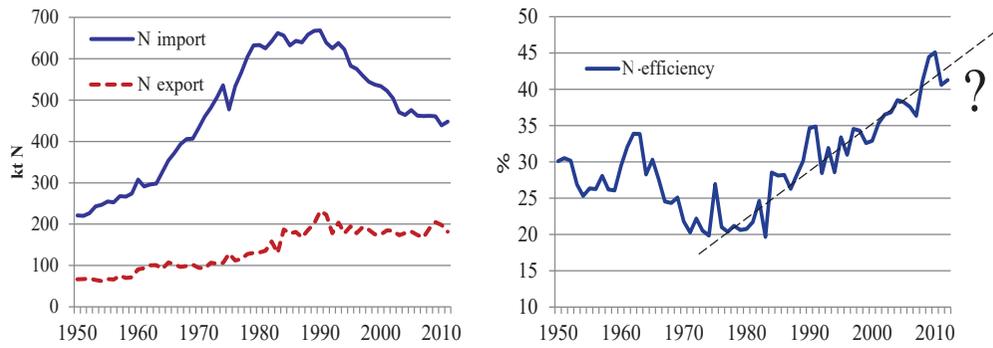
# FARMING SUSTAINABILITY PARAMETERS



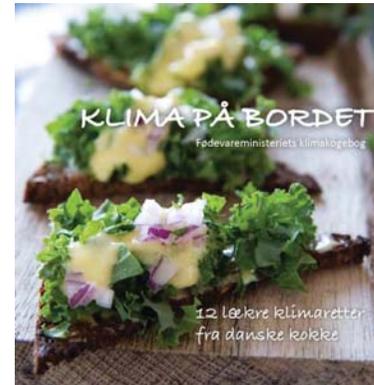
# LIFE CYCLE ASSESSMENTS



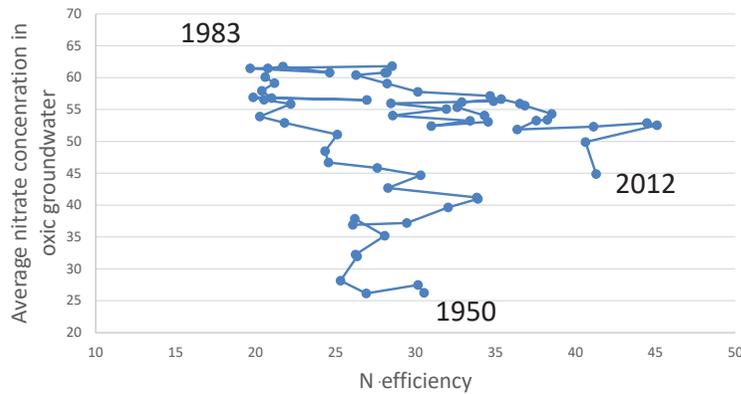
# N SURPLUS AND EFFICIENCY



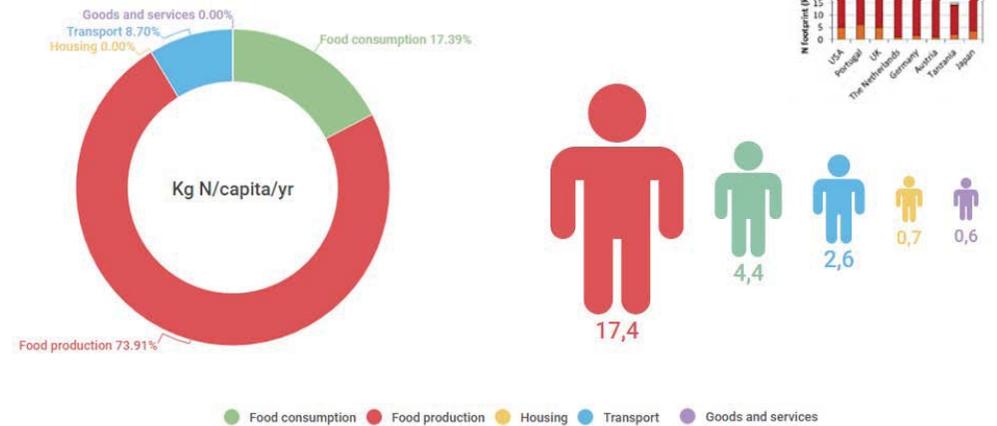
# CLIMATE COOKBOOK



# NITRATE AND EFFICIENCY



# THE DANISH N FOOTPRINT

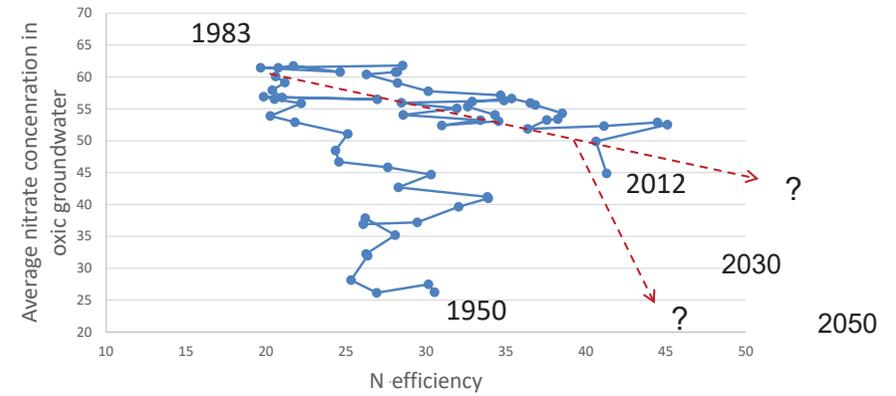


## INTEGRATING AGROFORESTRY AND ORGANIC PIG PRODUCTION – ENVIRONMENTAL AND ANIMAL BENEFITS FROM MIXED SYSTEMS

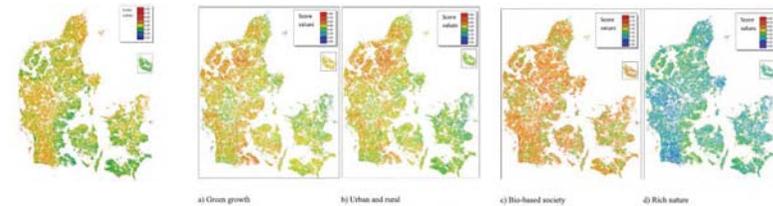
Sow paddocks	Grass zone	Poplar zone
Nitrate leaching, kg N ha <sup>-1</sup>	138-285	71



## SOLUTION SCENARIOS



## MULTI-CRITERIA ASSESSMENT AND GIS MAPPING



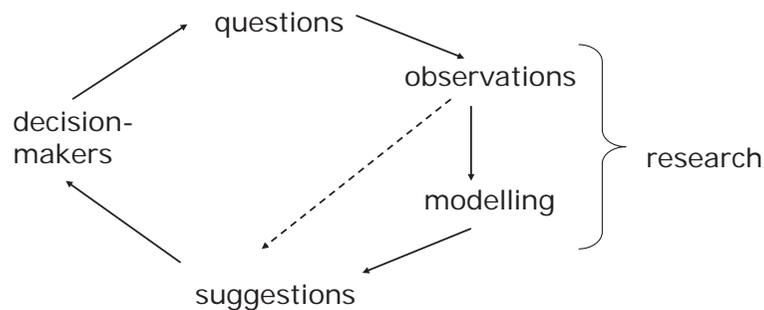
Criterion	Biodiversity	Aquatic environment	Soil fertility	Climate	Economics	Scenario objectives
0.20	0.20	0.20	0.20	0.20	0.20	Baseline
0.10	0.35	0.10	0.10	0.35	0.10	Enhanced, sustainable productivity
0.20	0.40	0.00	0.20	0.20	0.20	Rural development, organic circular farming
0.05	0.05	0.20	0.20	0.20	0.50	Renewable bio-energy production
0.50	0.25	0.10	0.10	0.05	0.10	Increased biodiversity

# MAJOR EXTERNAL GRANTS

- Innovation Fund Denmark Grand Solutions (for example Provenance, Mapfield, Buffertech, GrazyDaisy), and the [www.dNmark.org](http://www.dNmark.org) Strategic Research Alliance (30 mio. DKK; 10 mio DKK from private and public partners).
- Extensive farming sector, industry and private funded activities (Grassmilk, future dairy farm, CowCalf, prolonged lactation, Arla, Danish Crown, Velux Samsø etc.)
- National Research and Green Development Programs, (for example GUDP SustainOrganic, ClimateVeg, Biosubstrate, BEGROME, CSR Pork, Supergrasspork)
- EU projects (for example Marie Curie, ERA-net, INTERREG DairyClim, and H2020 projects; for e.g. Fairway, SoilCare, NitroPortugal etc.)
- Other international funding (for example the UN-GEF INMS, Nordic BONUS and Danida projects)
- + Significant education and public sector consultancy activities



# THE CYCLE OF APPLIED RESEARCH



# SUMMARY OF SCIENTIFIC HIGHLIGHTS

- New LCA methods and results, for e.g. contribution to the EU Commission Product Environmental Footprint (PEF) methodology development
- Coordination of the [www.dNmark.org](http://www.dNmark.org) Nitrogen Research Alliance and related activities of the UN-ECE Task Force on Reactive Nitrogen and the International Nitrogen Management System
- Innovations in integrated farming systems, e.g. organic mixed livestock and crop production, landscape and regional scale scenarios
- Development of a provenance food atlas



130 participants from 27 countries in the dNmark conference in Aarhus



## SUSTAINABLE DEVELOPMENT GOALS



## HAPPY ENDING...

