

The strategic responses of Aarhus University to the challenges ahead
*How does agri-food research adopt to
change of challenges?*

From research stations
to a multi-faculty University

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in Prague 27 September 2011

Outline

1. Today's research challenges in the Agri-food sector

- SCAR 3rd foresight; food, feed, fuel and fiber to be produced under resource constraints

2. Organizational changes in agricultural research in DK in the last decades

- Changing demands led to changing structures

3. Pros and cons for agricultural sector research in a university structure

Challenges for agricultural research

(3rd SCAR Foresight Exercise, 2011)

- Increased demands for biomass have to be met.....
 - Estimated 70% increase in food demand
 - Increased demand for bio fuel
 - Increased demand for industrial material

- Production scarcities
 - Land, water, energy, N, P

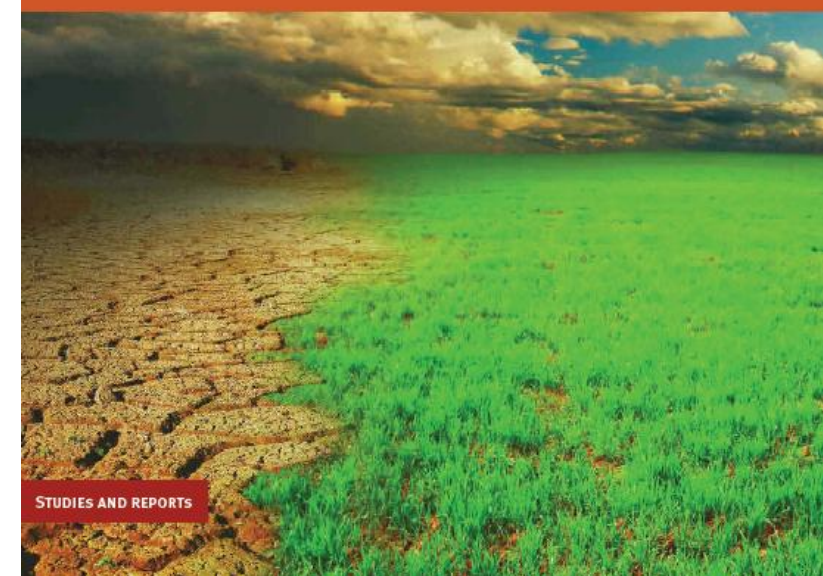
- 'Systemic' scarcities
 - Climate change,
 - Biodiversity

- Socio-economic and policy limitations
 - Governance (local – global scale),
 - Agricultural knowledge systems,
 - Consumption patterns,
 - Policies

 EUROPEAN COMMISSION / Research & Innovation / Food, Agriculture & Fisheries, & Biotechnology

Sustainable food
consumption
and production
in a resource-constrained
world

3rd SCAR Foresight Exercise



Conclusions

(Yesterdays præsentation by Annette Freibauer on Scars 3rd foresigt)

- **A radical change in food consumption and production in Europe is unavoidable to**
 - meet the challenges of scarcities and
 - make the European agro-food system more resilient in times of increasing instability and surprise.
- **Sufficiency-oriented research, innovation and communication must become the priority**

Need for change in society from.....

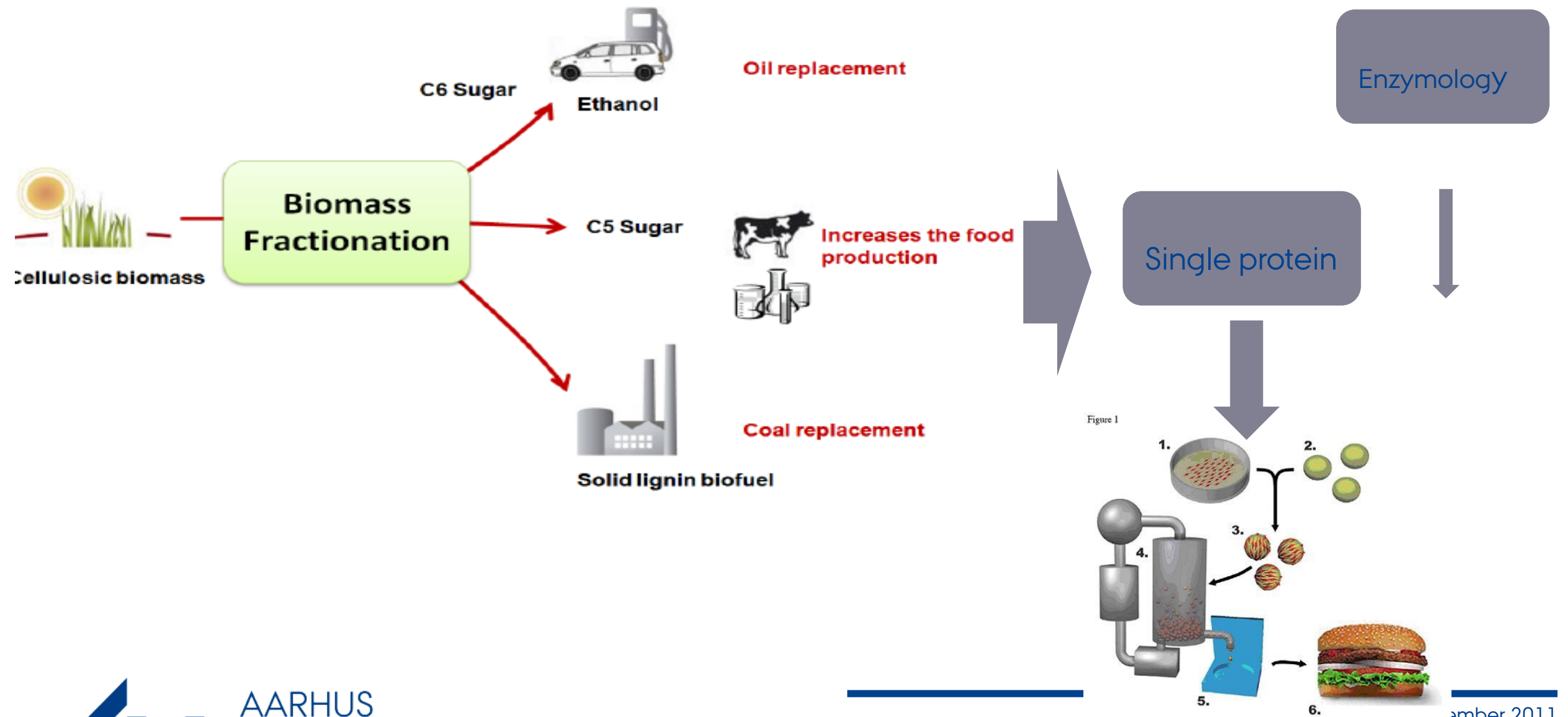
Fossil energy-based society

Biobased society



Source: Renew Europe, 2011

Biorefinery – an example of a new opportunity



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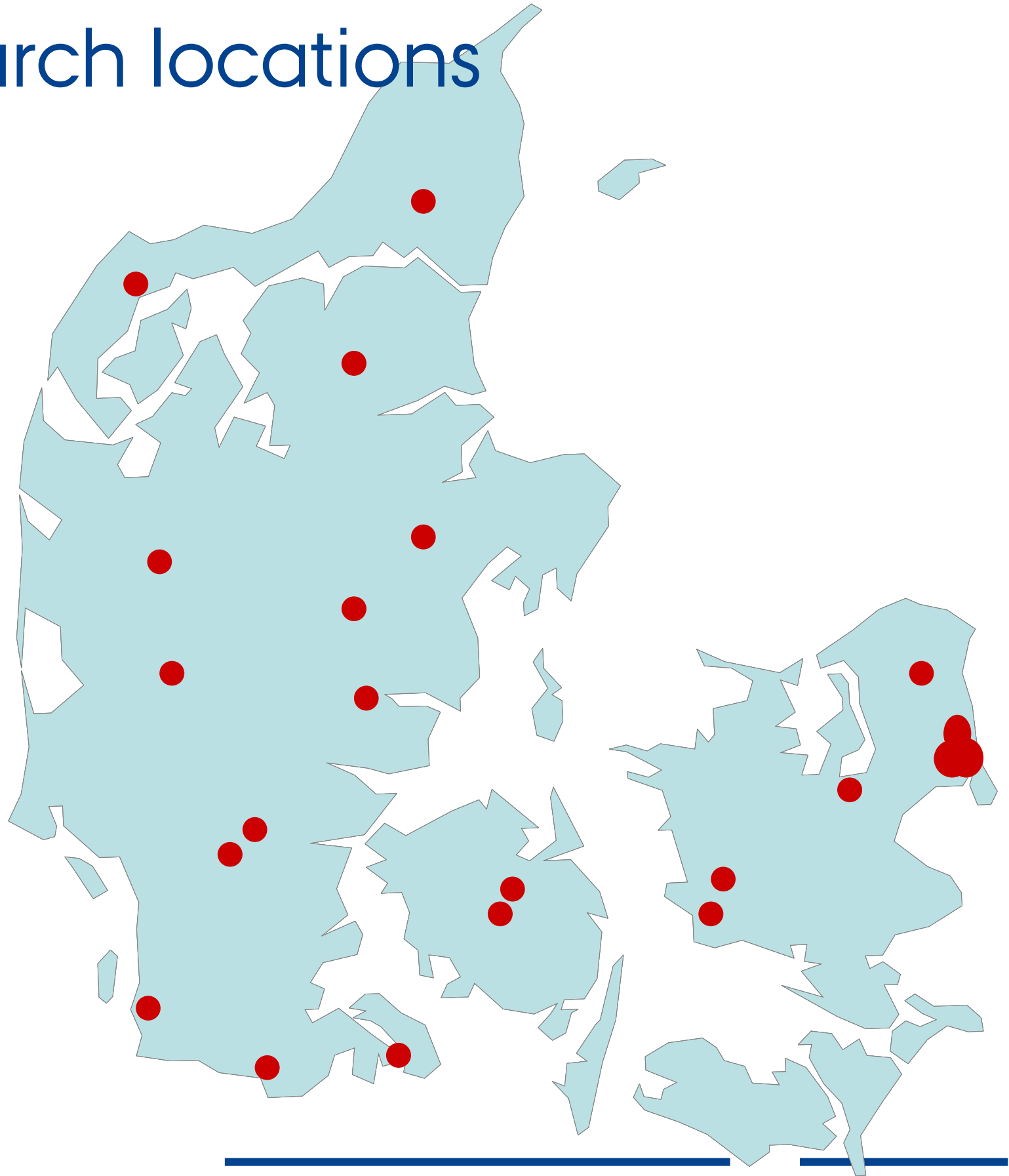
Agricultural research locations in the late 1960's

- **Challenges**

- Increased production
- Mechanisation
- Local advise and demonstration

- **Structure**, Agri-food Ministry's national institute for:

- Plant science
- Animal Science (Cph.)
- Agricultural mechanisation
- Agricultural economics
- Pest management



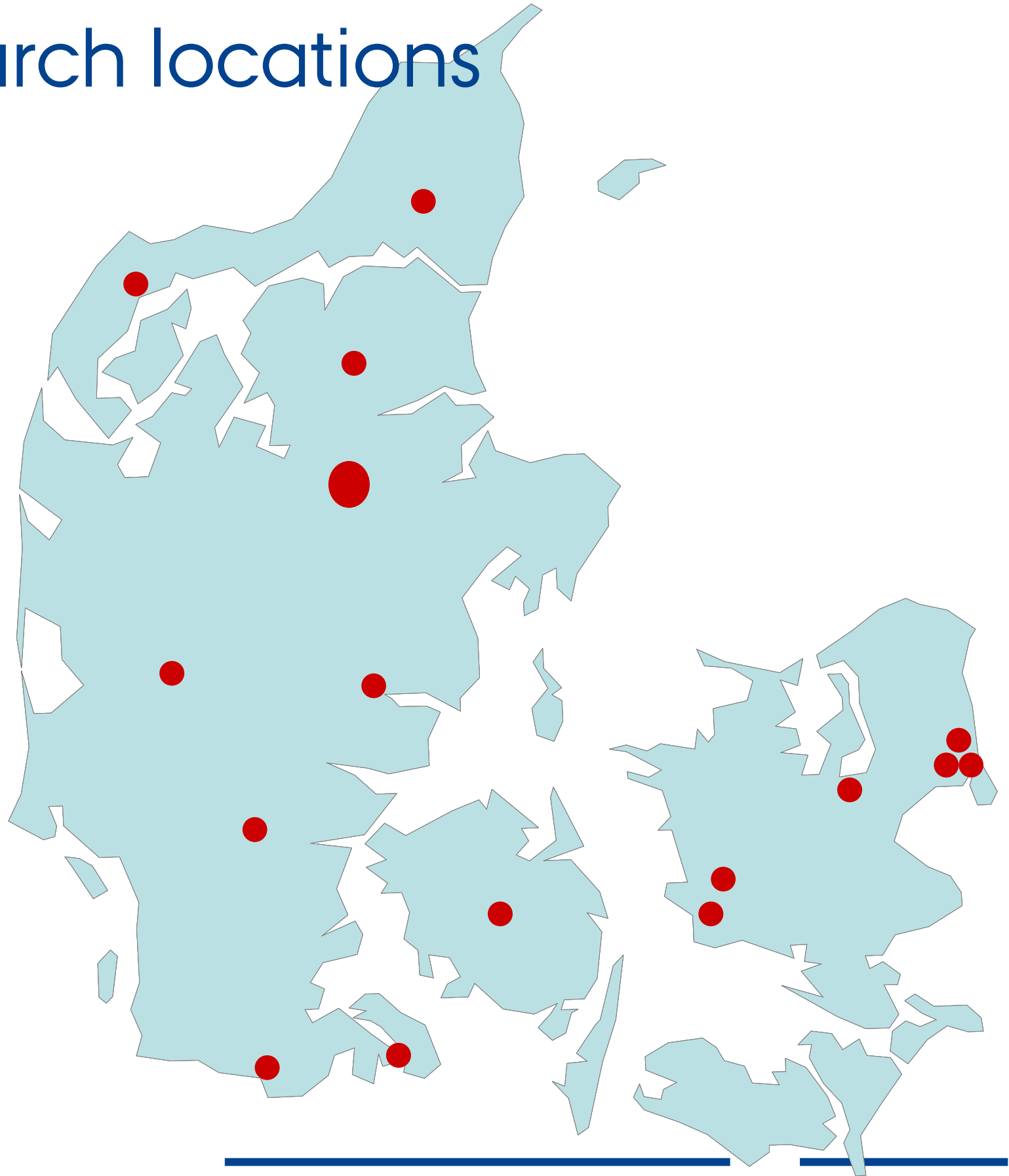
Agricultural research locations in the mid 1980's

- **Challenges**

- Increased production
- Improvement of efficiency
- Local advise and demonstration

- **Structure**, Agri-food Ministry's national institute for:

- Plant science
- Animal Science (Foulum)
- Agricultural mechanisation
- Agricultural economics
- Pest management



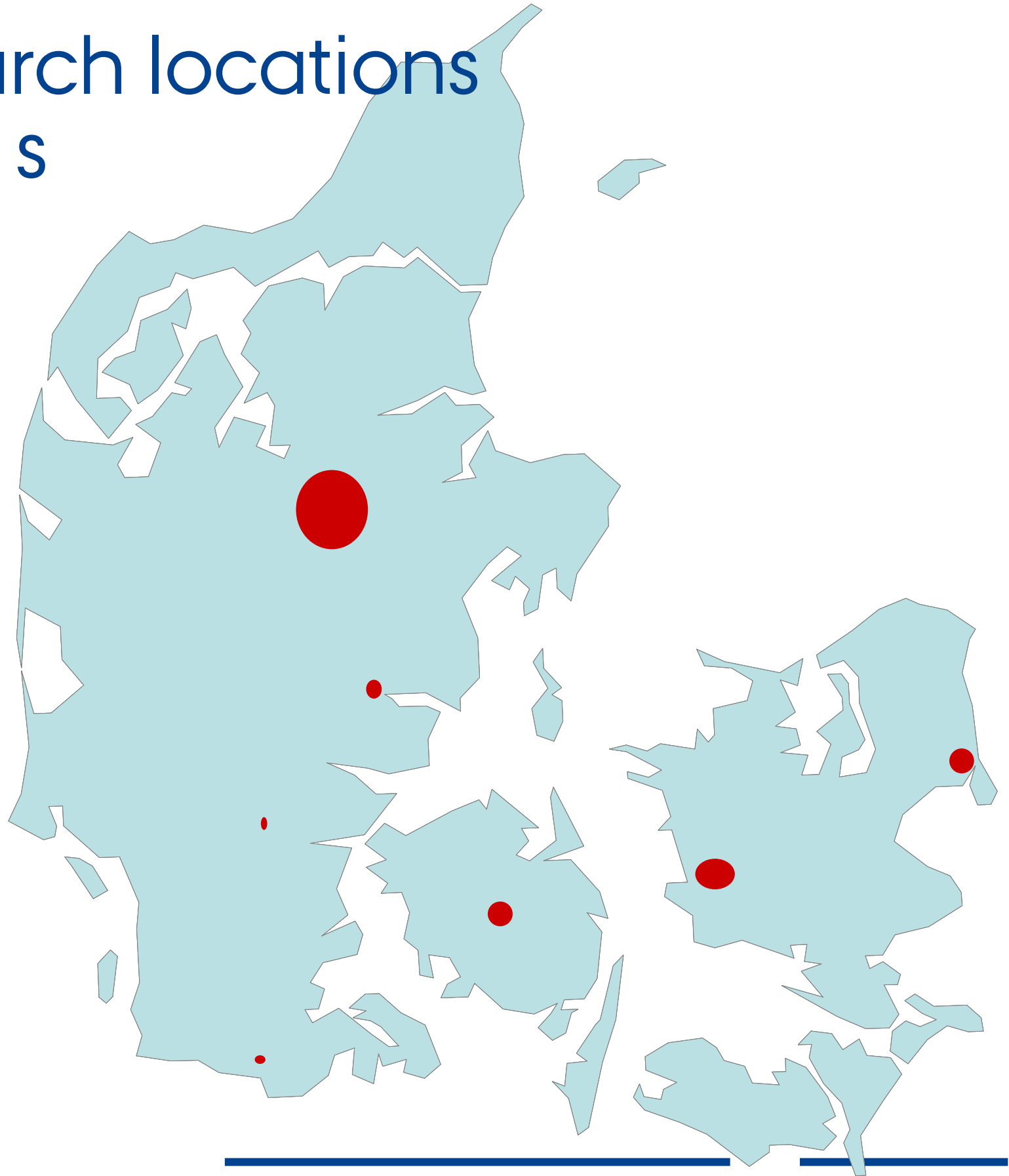
Agricultural research locations in the early 2000 s

- **Challenges**

- Improvement of efficiency
- Sustainability, environmental issues
- Organic production
- Quality and safety of food products
- Globalization

- **Structure**, Agri-food Ministry's national institute for:

- Agricultural science



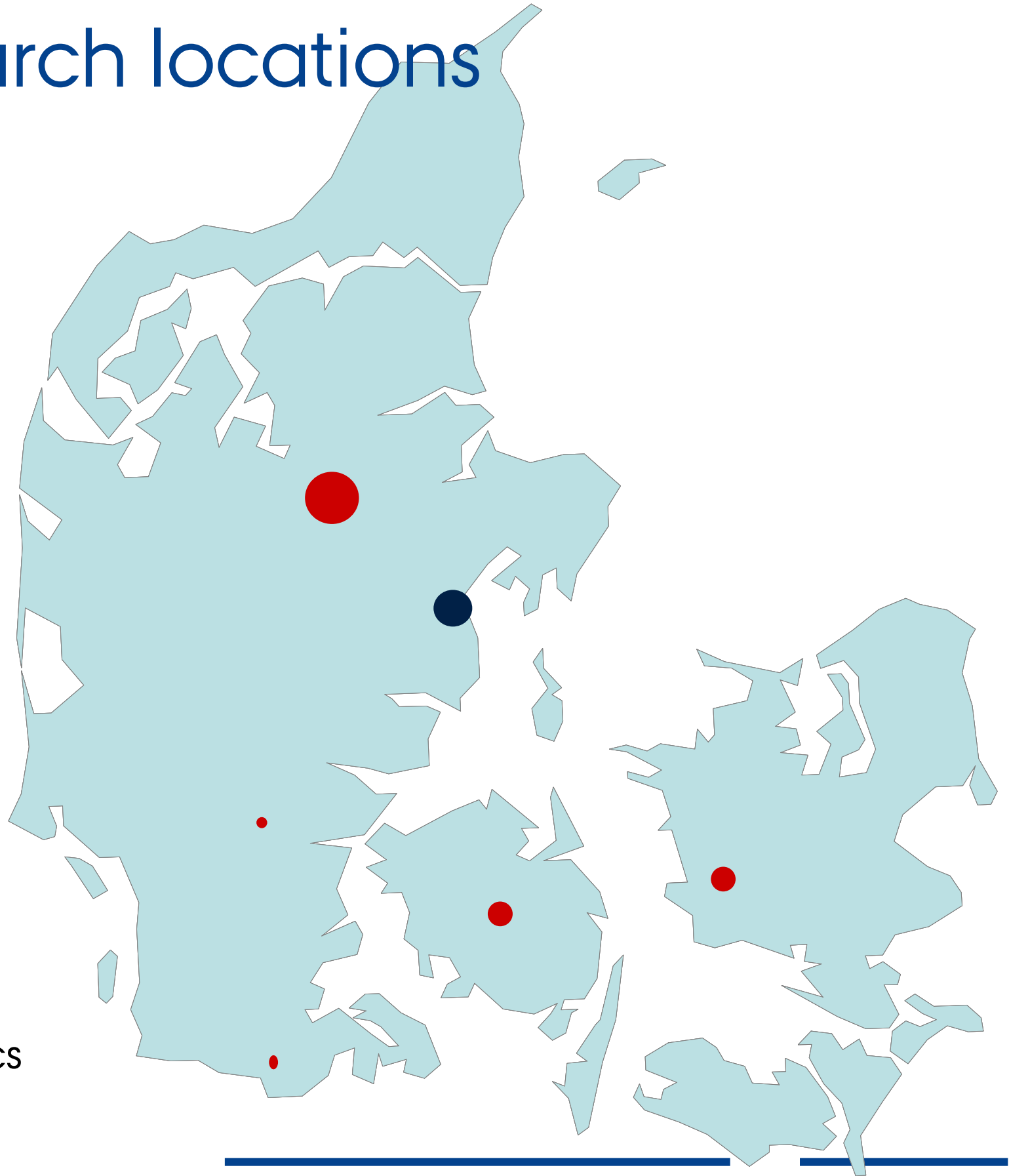
Agricultural research locations in 2011

- **Challenges**

- Globalization
- Increased demands for food and biomass
- Production & “systemic” scarcities
- Socio-economic and policy limitations

- **Structure**, Aarhus University, departments for:

- Food Science
- Animal Science
- Agroecology
- Molecular biology and Genetics
- Engineering



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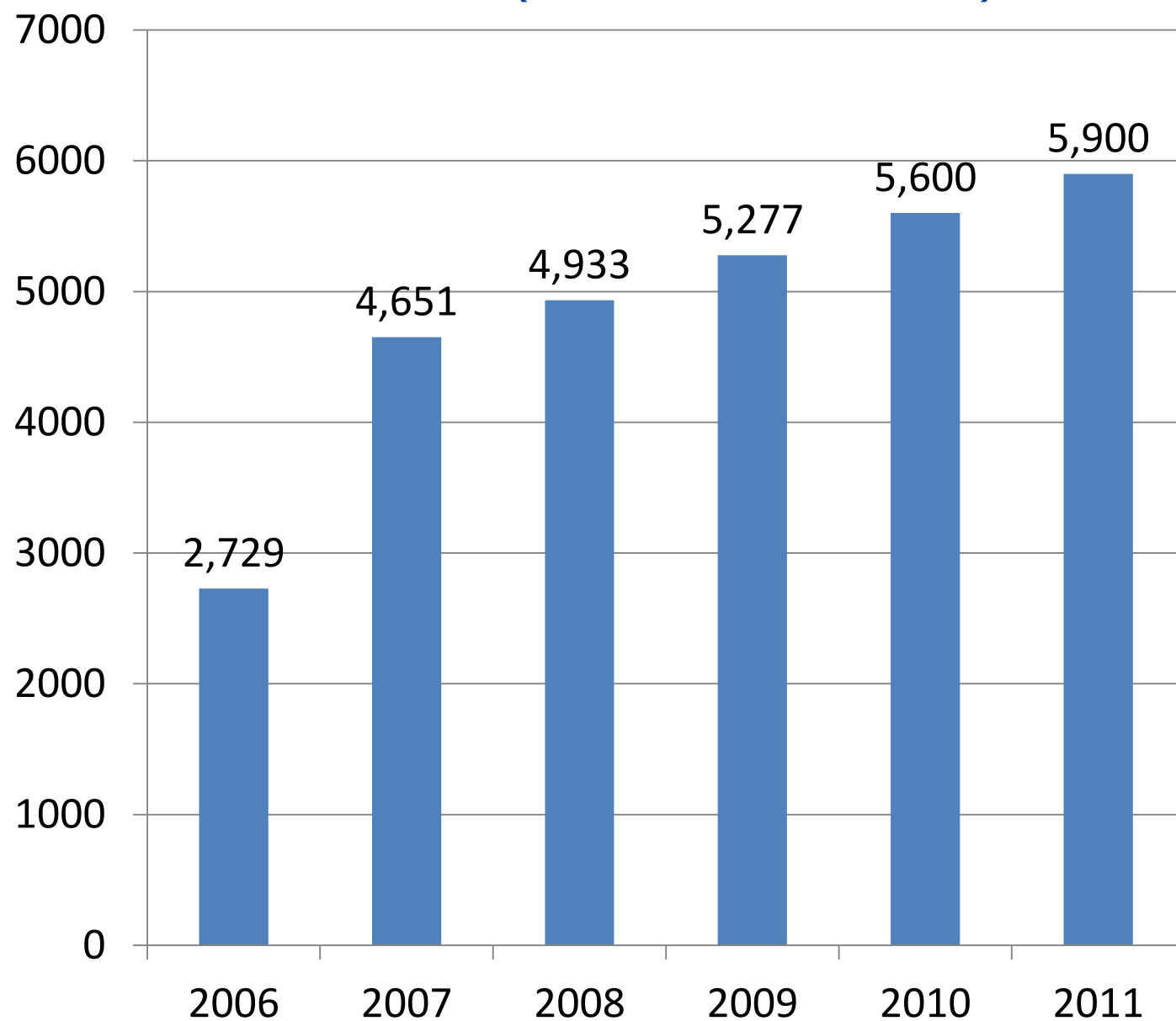
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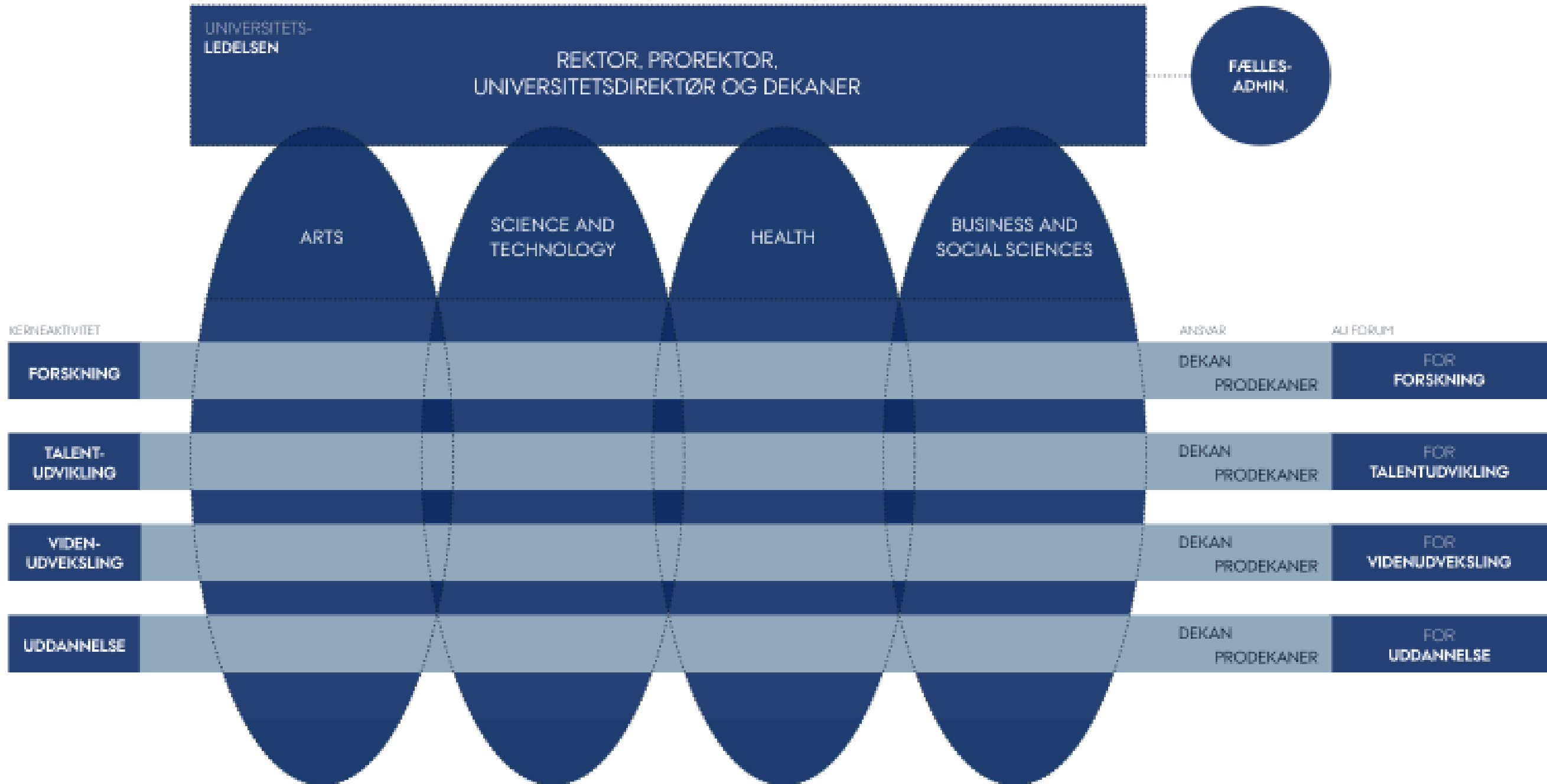
Aarhus University – some key figures

Turnover (mil. DKK 2009 level)

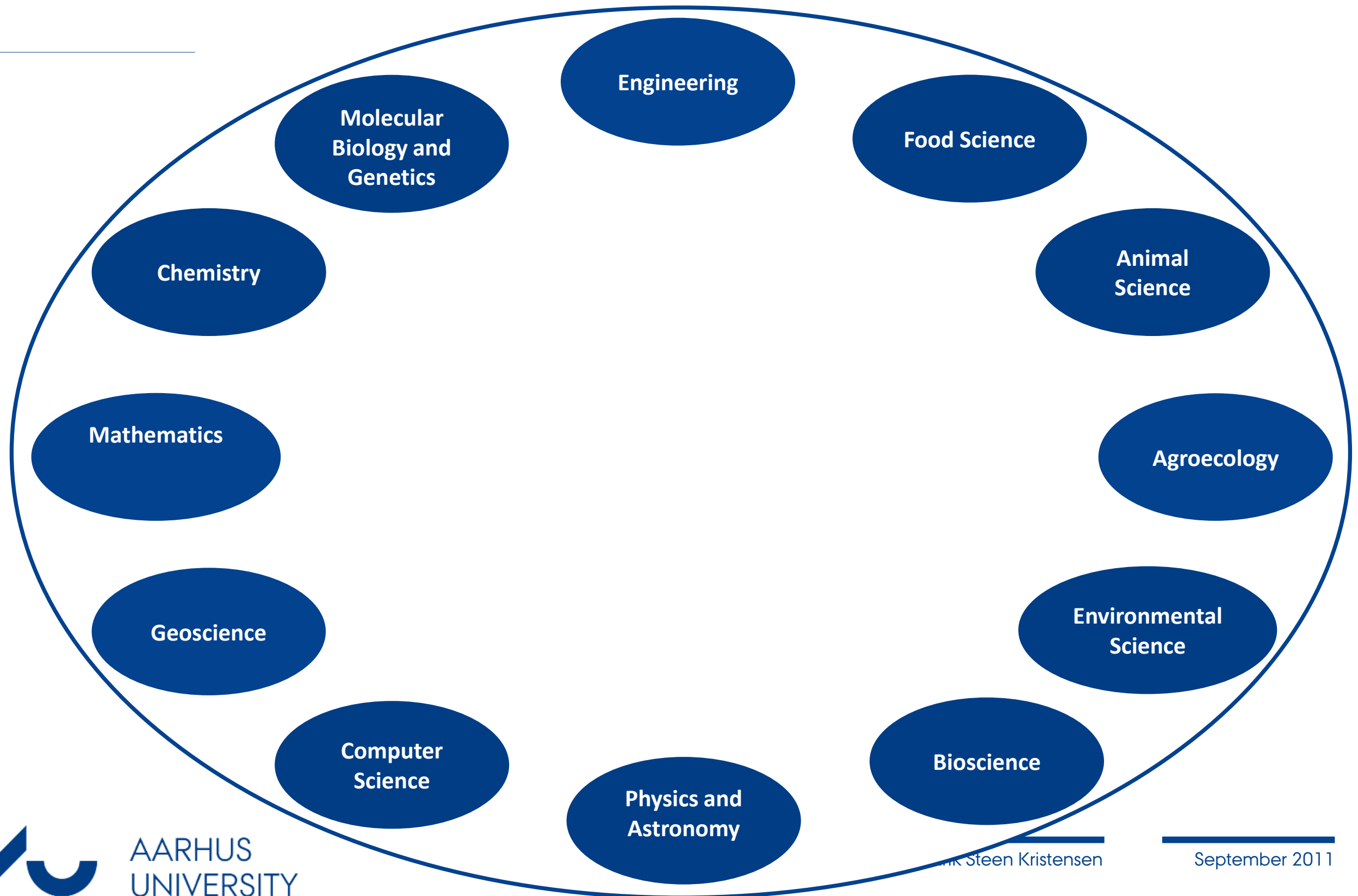


- 40,500 students of which 52% are registered at graduate level
- 1,700 PhD students and 800 post docs
- 4,000 international students
- 11,000 employees
- 11,331 publications in 2009
- Turnover 2011: 5.9 bill dkr=0.8 bill €

AU's organisational structure



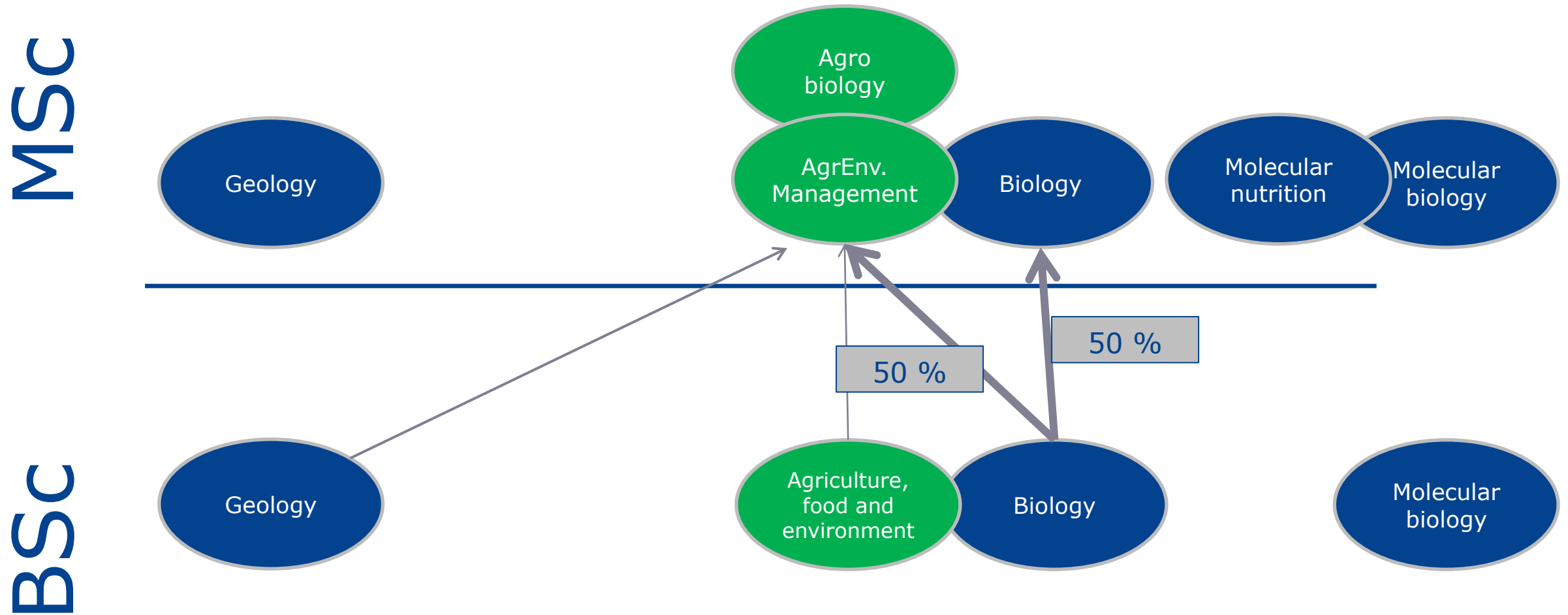
What are the advantages in the new AU: New “friends” – better opportunities for interdisciplinary research



What are the advantages in the new AU:

Education - better opportunities to recruit bachelor and masters students

Agri-food education in the future



What are the advantages in the new AU:

Talents – better opportunities to recruit PhD students, e.g. Department of Agroecology

- 2007 (before fusion): 2 students
- 2011 (4 years after fusion): 62 students+21 guest students



Pros and cons for agricultural sector research in a AU university structure

Pros

- New “friends” from other disciplines: Agricultural sector research can benefit from interdisciplinary cooperation with other departments
- Better opportunities to recruit bsc and msc students in Denmark
- Better opportunities to recruit international ph. d. students and make international specialization

Cons

- Agricultural research may disappear in a large faculty/university
- No clear entrance to the agricultural research area
- Research and researchers are evaluated by “university standards” and not by relevance to the agri-food sector
- Investments are carried out in order to meet research challenges and not only challenges in the agri-food sector

How to avoid Cons:

Establishment of Danish Centre for Food and Agriculture (DCA)

Objectives

- Act as the entrance to the university's research in food and agriculture
- Be proactive in securing interdisciplinary and holistic research that meets the demand of the sector
- Contribute to internal prioritization of research topics
- Provide quality assurance and coordination of the research-based public-sector services
- Provide support to national and international research cooperation
- Provide support to knowledge exchange and business collaboration etc.
- Support to branding, communication and mediation of research in food and agriculture

How to avoid Cons:

Establishment of Danish Centre for Food and Agriculture (DCA)

Capacity of the centre

- 15 – 20 staff in 4 support functions to:
 - Research-based consultancy and advice to the Food Ministry
 - Knowledge exchange and business cooperation
 - National and international research cooperation
 - Strategic planning and coordination
- Responsible for the distribution of the grant from the Food Ministry for research-based public-sector services within:
 - Climate and natural resources
 - Environment and bioenergy
 - Organic farming
 - Food quality
 - Livestock
 - Plants

Summary

- Today's research challenges in the agri-food sector **is more food, feed, fuel and fiber to be produced under resource constraints** (*SCAR 3rd foresight*) - and this differs significantly from what it used to be.
- Changing demands in Denmark led to huge organizational changes in agri-food research, **from more than 20 research stations in the 1960s to being a part of a multi-faculty university with more than 10,000 employees and 40,000 students.**

➤ Pros of this development is

- New “friends”: agricultural sector research can benefit from interdisciplinary cooperation
- Better opportunities to recruit bsc and msc students in Denmark
- Better opportunities to recruit international ph. d. students and make international specialization

Cons of this development is

- Risk of agricultural research disappearing in a large faculty/university
- Risk of no clear entrance to the agricultural research area
- Research and researchers are evaluated by “university standards” and not relevance
- Investments are carried out in order to meet research challenges – not sector challenges