Strategic Positioning of Universities of Agriculture and Life Sciences

Case Copenhagen

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Dean
Faculty of Life Sciences
University of Copenhagen
Agenda

1. The Mission of Universities

2. Agricultural University → Life Sciences University 1773 - 2000

3. Strategic Developments 2000 - 2010

4. Challenges of the Present 2010

5. Challenges of the Future 2010 -

6. Q&A
1. The Mission of Universities

1. Repository of the Knowledge of Mankind

2. Generate New Knowledge

3. Transfer of Knowledge to Next Generation

4. Transfer of Knowledge to Society

5. Generate $\Delta$ GDP

HOW BEST TO ACHIEVE THE MISSION FOR UNIVERSITIES OF LIFE SCIENCES?
Agenda

1. The Mission of Universities

2. Agricultural University → Life Sciences University
   2.1 Why were we founded?
   2.2 A century of advances in Natural and Technical Sciences
   2.3 Monopoly to Diversification
   2.4 Declining student numbers

3. Strategic Developments
   2000 - 2010

4. Challenges of the Present
   2010

5. Challenges of the Future
   2010 -

6. Q&A
2. Agricultural University → University of Life Sciences
2.1 Why were we founded?

1. KVL founded in

- 1773: Veterinary Science
- 1858: Agricultural Sciences

2. KVL founded because of

- Continuous and devastating European wars → lack of selfsufficency in food production → famine, starvation, rampant epidemics, poverty, immigration

- A century of advances in Natural and Technical Sciences
2.2 A Century of Advances in Natural and Technical Sciences

Investing in Danish Universities in the 1800’s

1479 University of Copenhagen
1829 **Technical University of Denmark**
1858 **Royal Veterinary and Agricultural University (KVL)**
1892 **Danish Pharmaceutical University**
1917 Copenhagen Business School
1928 University of Aarhus
1939 Aarhus School of Business
1966 University of Southern Denmark
1972 Roskilde University
1974 Aalborg University
1999 IT University of Copenhagen
2000 Danish University of Paedagogics
2.3 Monopoly to Diversification

*LIFE M.Sc. programmes – spot the trend?*

Veterinary medicine 1773

Agricultural sciences 1858
Horticultural Sciences 1863
Forestry 1863

Dairy science 1921
Landscape Architecture 1960
Food Science 1971
Food Economics 1992
Environmental Chemistry 1995
Human Nutrition 1996
Landscape Management 2000
Biology - Biotechnology 2002
Parasitology 2002
Agricultural Development 2002
Environmental and Natural Resource Economics 2003
Clinical Nutrition 2004
Process Analytical Technology (PAT) 2006
Sustainable Development in Agriculture (EM: AGRIS MUNDUS) 2006
Sustainable Tropical Forestry (EM: SUTROFOR) 2006
Sustainable Forest and Nature Management (EM: SUFRONAMA) 2006
Gastronomy and Health 2007
Soil, Water and Biodiversity 2007
2.3 Monopoly to Diversification
Trends over 230 years

**Veterinary medicine**
Production animal health
- pet animal health
- animal models
- human health and medicine

**Agricultural sciences**
Primary production
- multifunctional land use
- biosystems services
- recreation and lifestyle
- biological production
- raw materials for bio-refinery

**Food science**
Production efficiency
- food safety, food security
- human nutrition and health
- novel foods and gastronomy
2.4 Declining student numbers
BSc admissions at UC-LIFE

Admissions BSc

- Agricultural Science
- Forestry
- Horticultural Sciences
- Natural Resources
- Food Science
- Landscape Architecture
- Agricultural Economics
- Biology - Biotechnology
- Veterinary Medicine
Agenda

1. The Mission of Universities

2. Agricultural University → Life Sciences University
   1773 - 2000

3. Strategic Developments
   2000 - 2010
   3.1 Internationalisation/globalisation
   A 4 step strategy for UC-LIFE
   Some results of the Strategy
   3.2 Monopoly to Diversification to Amalgamation

4. Challenges of the Present
   2010

5. Challenges of the Future
   2010 -

6. Q & A
3.1 Internationalisation/globalisation

A 4 step strategy for LIFE

1. Curriculum development: from national to transnational issues
2. Language policy
3. e-Learning
4. International networks/Strategic partners
3.1 Internationalisation/globalisation
Language – MSc Programmes in English

15 MSc programmes:

1. Agricultural Development
2. Agriculture
3. Biology-biotechnology
4. Clinical Nutrition
5. Environmental and Natural Resource Economics
6. Environmental Chemistry and Health
7. Food Science
8. Gastronomy and Health
9. Human Nutrition
10. Agricultural Economics
11. Landscape Architecture
12. Landscape Management
13. Parasitology
14. Forest and Nature Management
15. Veterinary Science

13 out of our 15 MSc programmes are in English and more will follow
3.1 Internationalisation/globalisation
Language - Courses in English

![Graph showing the increase in courses offered in English from 1999-00 to 2010-11.](chart.png)
3.1 Internationalisation/globalisation
E-learning at UC-LIFE anno 2011

Three modes of e-learning

- All courses (~350)
- >100 courses
- IT supported teaching
- Blended learning
- Online learning

A complete list of LIFEs 100% online courses

**Master courses:**
5. Food Safety, Chemical and Microbiological – 7,5 ECTS (2010)

**Continuing education:**
3.1 Internationalisation/globalisation
E-learning at UC-LIFE and Student nationality 2010

25 different nationalities on the 2010 online course: Climate Change – Impacts, Adaptation and Mitigation
### 3.1 Internationalisation/globalisation
**Focus partners and Strategic partners of UC-LIFE**

<table>
<thead>
<tr>
<th>Country</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>University of Melbourne</td>
</tr>
<tr>
<td>Australia</td>
<td>ANU</td>
</tr>
<tr>
<td>Australia</td>
<td>University of Tasmania</td>
</tr>
<tr>
<td>Canada</td>
<td>University of British Columbia</td>
</tr>
<tr>
<td>Canada</td>
<td>University of Guelph</td>
</tr>
<tr>
<td>China</td>
<td>CAU</td>
</tr>
<tr>
<td>NZ</td>
<td>Lincoln University</td>
</tr>
<tr>
<td>USA</td>
<td>Cornell University</td>
</tr>
<tr>
<td>USA</td>
<td>UC Davis</td>
</tr>
<tr>
<td>Europe</td>
<td>ELLS network</td>
</tr>
<tr>
<td>Europe</td>
<td>NOVA network</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Country</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>NL</td>
<td>Wageningen</td>
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</tbody>
</table>
### 3.1 Internationalisation/globalisation
ELLS, NOVA, and STRAPA networks

#### ELLS PARTNERS

<table>
<thead>
<tr>
<th>Country</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Austria</td>
<td>BOKU</td>
</tr>
<tr>
<td>Czech Rep.</td>
<td>CULS</td>
</tr>
<tr>
<td>Denmark</td>
<td>LIFE</td>
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<tr>
<td>Germany</td>
<td>UHOH</td>
</tr>
<tr>
<td>Netherlands</td>
<td>WUR</td>
</tr>
<tr>
<td>Poland</td>
<td>WULS-SGGW</td>
</tr>
<tr>
<td>Sweden</td>
<td>SLU</td>
</tr>
</tbody>
</table>

#### NOVA PARTNERS

<table>
<thead>
<tr>
<th>Country</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>UC-LIFE</td>
</tr>
<tr>
<td>Denmark</td>
<td>University of Aarhus (Faculty of Agr. Sci.)</td>
</tr>
<tr>
<td>Finland</td>
<td>University of Helsinki (Faculty of Agr. and Forestry)</td>
</tr>
<tr>
<td>Finland</td>
<td>University of Helsinki (Faculty of Vet. Med.)</td>
</tr>
<tr>
<td>Finland</td>
<td>University of Eastern Finland (School of Forest Sciences)</td>
</tr>
<tr>
<td>Iceland</td>
<td>Agricultural University of Iceland</td>
</tr>
<tr>
<td>Norway</td>
<td>Norwegian University of Life Sciences</td>
</tr>
<tr>
<td>Norway</td>
<td>Norwegian School of Veterinay Sciences</td>
</tr>
<tr>
<td>Sweden</td>
<td>SLU</td>
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</tbody>
</table>

#### STRAPA PARTNERS

<table>
<thead>
<tr>
<th>Country</th>
<th>University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uganda</td>
<td>Makerere University</td>
</tr>
<tr>
<td>Kenya</td>
<td>University of Nairobi</td>
</tr>
<tr>
<td>Tanzania</td>
<td>Sokoine University of Agriculture</td>
</tr>
</tbody>
</table>
### 3.1 Internationalisation/globalisation

**International programmes with foreign universities**

<table>
<thead>
<tr>
<th>Year</th>
<th>Programme</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>2006</td>
<td>AGRIS MUNDUS</td>
<td>Sustainable Development in Agriculture</td>
</tr>
<tr>
<td>2006</td>
<td>SUTROFOR</td>
<td>Sustainable Tropical Forestry</td>
</tr>
<tr>
<td>2006</td>
<td>SUFONAMA</td>
<td>Sustainable Forestry and Nature Management</td>
</tr>
<tr>
<td>2007</td>
<td>EnvEuro</td>
<td>Soil, Water and Biodiversity ELLS</td>
</tr>
<tr>
<td>2007</td>
<td>SIFC</td>
<td>Safety in the Food Chain ELLS</td>
</tr>
<tr>
<td>2009</td>
<td>Lactitech</td>
<td>Dairy Technology</td>
</tr>
<tr>
<td>2009</td>
<td>Sensory Science</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>Food of Life</td>
<td>The Science of Animal-Derived Foods</td>
</tr>
<tr>
<td>2010</td>
<td>FONASO</td>
<td>Forest and Nature for Society (PhD)</td>
</tr>
<tr>
<td>2011</td>
<td>AgTraIn</td>
<td>Agricultural Transformation by Innovation (PhD)</td>
</tr>
</tbody>
</table>

* Erasmus Mundus programmes in **bold**
3.1 Internationalisation/globalisation

International students

The Challenge of Reciprocity

Language – Courses in English

Exchange students 2006-2008, top 10
3.1 Internationalisation/globalisation

Where do LIFE students go?

PhD graduates and study abroad

International PhD students

International academic staff april 2009
3. Strategic Developments
3.2 Monopoly to Diversification to Amalgamation

The New University of Copenhagen

BEFORE

The Royal Veterinary and Agricultural University
The Pharmaceutical University
The University of Copenhagen

THE NEW UNIVERSITY OF COPENHAGEN

8 faculties

The largest university in Scandinavia in number of researchers with app. 5,500 researchers (incl. PhD) and 40,000 students

One of Europe’s largest university clusters within Health and Life Sciences
Agenda

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4. Challenges of the Present 2010
   4.1 Grand challenges

5. Challenges of the Future 2010 -

6. Q&A
### 4. Challenges of the Present

#### 4.1 Grand challenges

<table>
<thead>
<tr>
<th>No</th>
<th>Grand Challenges</th>
<th>Strategic Importance</th>
<th>Time Frame</th>
</tr>
</thead>
</table>
| 1  | **Food Safety + Food Security**  
*The Core Fabric of the Function of Societies* | ★★★★★★               | 0-         |
| 2  | **Food & Health, Food Design**                                                  | ★★★★                 | 0-20+      |
| 3  | **Water: Quality, Scarcity, Management**                                        | ★★★★                 | 10-20      |
| 4  | **Biological Production → Biosustainability → Biorefinery**                     | ★★★★                 | 10-20      |
| 5  | **Bioenergy**                                                                   | ★★★                  | 10-20      |
| 6  | **Biotechnology, GMO, Ethics**                                                  | ★★                   | 0-         |
| 7  | **Environment, Biodiversity, Ecology**                                         | ★★★                  | 0-         |
| 8  | **Climate Change**                                                             | ★★★★★★              | 0-50       |
| 9  | **Multifunctional Agriculture → Land Use Management → Rural Development, Tourism** | ★                     | 0-         |
Agenda

1. The Mission of Universities

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3. Strategic Developments 2000 - 2010

4. Challenges of the Present 2010

5. Challenges of the Future 2010 -
   5.1 Industrial collaboration & securing employability
   5.2 Ability to attract bright students in the mass-University era
   5.3 Dilemma of Life Science Universities
   5.4 A challenge to all Western Societies

6. Q&A
5. Challenges of the Future
5.1 Industrial collaboration & securing employability

Danish Agricultural Council
Danish Association of the Pharmaceutical Industry (Lif)
Confederation of Danish Industries (DI)
5. Challenges of the Future

5.2 Ability to attract bright students in the Mass-University era

Grade point average - upper secondary education (7-point grading scale)

- All admitted at BSc
- Admitted at BSc Veterinary Medicine
- All admitted at BSc except Veterinary
- The National Grade Point average - upper secondary education
5. Challenges of the Future
5.3 Dilemma of Life Science Universities

1. Original clear core profile $\rightarrow$ fussy profile

   From Monopoly $\rightarrow$ Diversification & Multidisciplinarity $\rightarrow$
   Amalgamation $\rightarrow$ ?

   From National $\rightarrow$ International $\rightarrow$ Networks $\rightarrow$ ?

2. Breaking up of the multidisciplinary Life Science Universities/Faculties into its disciplinary components?

   Natural, Technical, Health, Social Sciences, and Humanities

3. Do not underestimate “The danger of Preserving the Status Quo”
5. Challenges of the Future

5.4 A challenge to all western societies

Life Sciences at the core of Grand Challenges

versus

The ability of Societies to Invest in the FUTURE?
W.S. Churchill, Harvard 1943

‘The empires of the future are the empires of the mind’
Q&A