Value creation and the role of universities: 
potential for global food security and safety

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Role of universities

- Traditional role: teaching students in a discipline and how to think in an academic way, critically and independently
- Doing scientific research is an essential part in which students participate and contribute
- Extension and outreach of scientific knowledge has been actively done the past 200 years, in particular by agricultural universities
- So, three core tasks have developed over the years
Did something change?

- Society has changed in its attitude towards universities
  - Strong increase in student numbers
  - Reduced budgets, less government involvement
  - Funding from outside the universities
  - Globalisation of knowledge, open access, open educational resources
  - Strong urge from society that science and universities work for the benefit of society

- The response of universities is value creation (or valorisation)
3 core tasks

Research

Education

Value Creation
So, what is value creation?

A term from business economics:

- selling products and services to customers, while creating value for shareholders.
- strictly financially speaking: value is created when a business earns a return on capital that exceeds expenses.

Is this valid for universities as well?

Value creation needs to be interpreted more broadly for universities, it is not only about making money.
Beyond monetary values alone..

• **Social values**: Health, education, social cohesion, recreation.

• **Economic values**: New business models (food production, recreation, heating, etc.). New companies, new entrepreneurs, new jobs.

• **Environmental values**: Energy saving in buildings, energy saving in transportation. CO2 fixation by crops, new materials from waste biomass...

• **Other considerations**: urban planning, metropolitan solutions, ....
Forms of value creation by universities

- By **educating and training** students, thereby supplying industry and society-at-large with new experts
- By offering industry and non-profit organisations **access to knowledge** infrastructure (facilities, tools, expertise)
- By **transferring knowledge/technologies** to both (long-standing or new) companies and non-profit organisations, where new applications can be realised for the benefit of society
- By stimulating **co-creation** together with stakeholders
Education and training

- BSc, MSc, PhD
- Post graduate
- Corporate programmes
- Capacity Building
- Education for professionals
- Life long learning
Access to knowledge infrastructure

- Facility sharing
- Joint research projects
- Contract research (public/private)
- Tools-spin off (app/web)
- Open access knowledge
- Outreach knowledge sharing
Transferring knowledge and technologies

- IP-sales & licensing
- Spin off & startup companies
- Centre of Entrepreneurship
- Contract research
- Lab-contracting
- PreSeed investment funds
Stimulating co-creation

- Campus ecosystem
- Co-hosting companies
- Joint events
Campus ecosystem

University
- Students / scientists
- Education
- International
- Known worldwide
- Fundamental research
- High quality / high rankings

Research institutes
- Research employees
- Translation research from fundamental to applied
- Shared research facilities
- Pre-competitive & confidential projects

Startups
- StartLife
- Support & coaching starters
- Incubator
- Interaction & learning
- (Seed) capital

(Inter)national companies
- R&D departments
- Researchers
- Own & shared facilities
- Looking for interaction and confidential surrounding

Related to Agro, Food, Nutrition, Biobased and Healthy Living Environment
About co-creation

- It may be internationally very different in how far universities and companies can work together.
- A discussion about Technology Readiness Levels (TRL) may be helpful: it is a discussion about maturity of technology.
Technology Readiness Levels (TRL)

- TRL 1: basic principles observed
- TRL 2: technology concept formulated
- TRL 3: experimental proof of concept
- TRL 4: technology validated in lab
- TRL 5: technology validated in relevant environment
- TRL 6: technology demonstrated in relevant environment
- TRL 7: system prototype demonstration in operational environment
- TRL 8: system complete and qualified
- TRL 9: actual system proven in operational environment

Source: Annex for Work Programme Horizon 2020
About co-creation

- It may be internationally very different in how far universities and companies can work together
- A discussion about Technology Readiness Levels (TRL) may be helpful: it is a discussion about maturity of technology
- Universities usually go up to TRL 2-3, companies become only interested when a level of TRL 5-6 is reached
- A discussion about ownership is essential for a discussion about the next phase. TRLs can help to find a common language
So, what is new about value creation?

- Value creation has been there at universities already for quite some time, but perhaps a bit hidden.
- It is now made more explicit and the biggest change is the emphasis on developing entrepreneurship.
- As an example, Wageningen University offers now:
  - A minor on entrepreneurship in BSc programmes
  - An entrepreneurship track in MSc programmes
  - Starthub and StartLife to help developing student ideas
  - Student challenges
  - **green student challenge** in 2018 during the centennial of Wageningen University & Research
Green Student Challenge in 2018: Design the Ultimate Urban Greenhouse!

An urban greenhouse design which:

• Brings professional food production in a circular city.

• Encourages citizens to engage with sustainable production and consume healthy food.

• International event in August 2018, open to anyone!
So, what about food security and safety?

- Obviously, training and educating students in the field of food security and safety is value creation.
- Likewise for research programmes.
- However, stimulating entrepreneurship as a means to improve food security and food safety may be new:
  - Entrepreneurship as an asset, not commercial goal.
  - Start-up companies to use sidestreams (reduce food waste), introduce circular economy.
  - Start-up companies to reduce losses (preservation, packaging, shelf life extension,...), saving water and energy, new resources for food and feed (insects, leaves, grass, ...).
  - Use of big data, ICT.
Conclusion

- Society pushes universities in a different role
- Value creation is demanded
- Action of universities needed to educate students and staff in an entrepreneurial way
- Teaching and learning to apply acquired knowledge to create societal and economical value
- Food security and food safety can be greatly improved by developing entrepreneurial capacity at universities!
Director Value
Creation of WUR, Sebastiaan Berendse, is gratefully acknowledged for his input!

Thank you for your attention!