The Academic Circle: A Strong Participant

The university’s role in building strong clusters?

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Background and premises for policy makers....

Universities part of eco system

Cluster-development

Innovation and competitiveness

Regional and national development

Regional (or national) innovation systems foster this process....
Clusters

Life cycle:
1. Establishment of the first firms in the area
2. Growth in firms and employment
3. Establishment of support/knowledge infrastructure
4. Growth or decline depending on ability to renew

Clusters need different policies in their lifecycle

Success factors: Upgrading mechanisms are crucial
1. Complementarity
2. Knowledge diffusion
3. Innovation pressure

Also depends on:
- Scale – geographical spread
- Scope – industries included

Need to avoid lock-in
Innovation

One definition: ‘An innovation is the introduction of a new or significantly improved product, process, organizational method, or marketing method by your enterprise.’ (The Community Innovation Survey 2010, Eurostat).

Types: Often divided into radical and incremental innovation

Innovation mode: Ways to organise and carry out innovation activity in firms often divided into:

• Science–Technology–Innovation (STI)
• Doing–Using–Interacting (DUI)
• Combined–Complex–Innovation (CCI)
Science based innovation: STI

- *Typical innovation process:* R&D projects in firms’ R&D departments and firm – university/research institute cooperation

- *Typical internal organisation:* R&D departments, linear innovation as technology push

- *Core competence:* Scientific knowledge

- *Example:* The biotechnology industry
Experience based: DUI

• *Typical innovation process:* In daily work and to adapt products and services to customers

• *Typical internal organization:* Flat structures, decentralized responsibility, skilled workers

• *Core competence:* Experience based knowledge for stepwise improvements

• *Example:* The oil & gas equipment and oil service industry
Combination of STI og DUI....

• ‘It is the firm that combines a strong version of the STI-mode with a strong version of the DUI-mode that excels in product innovation’ (Jensen, Johnson, Lorenz, Lundvall, 2007, p. 685).

• This may help universities to define their role in the innovation ecosystem
Combined: CCI

• *Typical innovation process*: Build technology platforms by linking of science based and experience based knowledge

• Typical *internal organisation*: Innovation projects including individuals and actors with different competence

• *Core competence*: The capability to link complex parts of knowledge

• *Example*: The food industry
Regional Innovation System (RIS)

- Innovation systems stimulate wealth - ‘countries possessing national and regional innovation systems in specific sectors will become wealthier’ (Niosi 2010, s. 43)

- Can be defined narrow and broad (Lundwall, 2007)
  - Narrow - organizations occupied with R&D activities
  - Broad - all actors/activities affecting learning, knowledge creation and innovation in a region

- Need (firm and non-firm) actors to stimulate new path development, i.e. secure future wealth – and actors need systems to make a difference

- But innovation systems can ‘lock-in’ to path extension
Regional Innovation System (RIS) - three subsystems (Nilsson & Moodysson, 2011):

**Production structure**
Firms in main industries and clusters in a region

**Knowledge infrastructure**
Universities, R&D institutes and training organizations

**Support structure**
Organizations, often publicly funded - supporting system
How and where can academia take a position to reinforce and strengthen cluster development and innovation? It depends on the context....
Regional ecosystems for cooperation (IRIS Goup, 2014)

National frameworks
Regional strategies & framework

Knowledge Bridges:

University strategy
- Incentives for cooperation
- Culture
- Goals & Mission
- Organization
- Research strengths

Industry Structure
- Strength and profile
- No. of SMBs
- Innovation preparedness
- Share with higher education

Results
New products, firms, productivity, growth

Education and life-long learning
Implementation/Technology transfer
R & D cooperation
Research based knowledge service
Strengthening the CCI innovation mode - one way to think

STI mode

Build learning organisations beyond the R&D departments to be able to absorb and use experience based knowledge

CCI mode

Increase the ability to utilise scientific knowledge by recruiting higher educated personnel, and closer links between firms and academia

DUI mode
GCE NODE
-Norwegian Offshore Drilling Engineering

• ARENA in 2006 – NCE in 2009 and GCE in 2014
• In 2016 there are 77 companies in the cluster
• Companies are suppliers of equipment to the oil & gas industry
  • Drilling
  • Loading/unloading
  • Anchoring and wave compensating
• Cooperation with University in Agder (UiA) very important – developed Master/PhD in Mechatronics together
• Senter for Research Based Innovation (SFI) with UiA in 2014
  • Project over 8 years and 7 workpackages
• Mechatronics Innovation Lab – with the industry ++
Mechatronics Innovation Lab

• The Mechatronics Innovation Lab fills a void in the Norwegian innovation system. There is a need for more pilot-testing, not only in the oil and gas industry. Several companies also intend to install equipment in the lab, and we are in a dialogue with other labs to co-locate with our pilot-test lab, says Anne-Grete Ellingsen, CEO of GCE NODE.

• The University of Agder will host the lab, to be built in conjunction with Campus Grimstad. This secures the lab’s neutrality, as well as a high level of competence.

• Our vision is to create a Norwegian centre of technology for research and innovation. The lab will provide a unique infrastructure, which should be interesting for several industries, says Ellingsen.
Our region – cluster in Oil & Gas
-cooperation with the university

Arena

NCE

GCE

Education

Research projects

Co-creation & co-investments
Some reflections

• Import to define some common ground first
• Trust and willingness to share is important
• Context important
• Affect development path in a region – path renewal or creation
• Different phases in a cluster – need for different means
• Need to match industry structure and university profile to get the most out of the cooperation
• Define regional versus national clusters – and/or both?

.....and it is a long term process
THANK YOU FOR YOUR ATTENTION😊