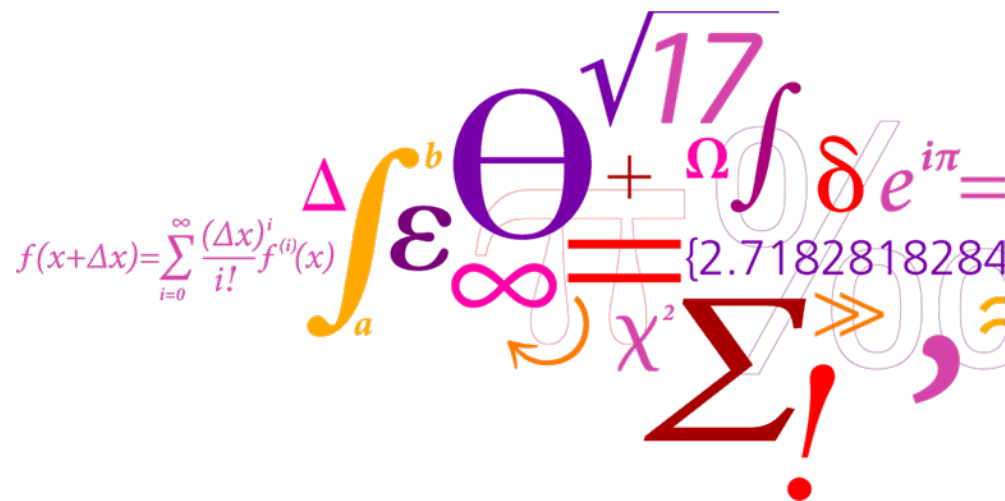


Interdisciplinarity and Energy

Presentation at the conference

Thinking Across Disciplines – Shaping our Future Welfare Together
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Energy in Europe – the Big Picture 1

Policy issues

Three classical policy areas

- Energy policy: safety of supply ('Moscow' agenda)
- Environment policy: environment and climate (Kyoto agenda)
- Industry policy: innovation (Lisbon agenda)

Three new issues (for EU)

- Agriculture policy (EU enlargement, CAP, WTO)
- EU's relations to Russia, Central Asia, Middle East & North Africa
- General foreign or geo policy

Very large business potential

- 21 trillion (21000 billion) USD to be invested in energy technology and infrastructure 2005-2030 (IEA)
- EU is a net importer of energy but a net exporter of energy technology

Energy in Europe – the Big Picture 2

New context for innovation in the energy sector

New market and industry structures

- Deregulation and unbundling of the energy sector
- From “public utilities’ to energy industry
- From public acceptance to participatory inclusion
- From energy systems planning to energy business development

Globalisation of industry and science

New university and knowledge creation structure

- Wave of university and research sector merger all over Europe

Faster, cheaper interaction

- Internet, EU’s framework programmes, cheap flight tickets

Do the energy sector need social sciences and humanities?

1996

Danish Energy Agency's

Action Plan for Wind Energy Research

- Cost reduction and technology development
- Reliable wind resource assessment
- Integration in the power grid
- Siting and offshore wind farms
- [Public acceptance and information](#)
- International relations

2008

Arms length entity – MegaWind
(Wind Energy Partnership)

Strategic research agenda

- (Higher) education and training
- Validation, test and demonstration
- Research
 - Design and construction of turbines
 - Integration in the energy system
 - Offshore technology
 - Wind loads and siting
 - Blades: aerodynamics, structural design and materials

Apparently no need for contributions from social sciences or humanities

Some socio-economic themes in energy

- Energy market and carbon trade studies
- Energy consumption & behavioural studies

- Clean development mechanisms
- Energy sector innovation studies
- Foresight and research priority setting models

- Business models in a deregulated energy sector
- Energy related services

- Public acceptance & participatory planning

Engineers have a weak understanding of markets, business development and political processes

Market understanding



Innovation Camp
at Roskilde
Festival 2004

Solar cell T-shirts
for charging
mobile phones

What is an academic discipline?

A simple Wiki definition

- An academic discipline is a branch of knowledge which is taught and researched at the university level.
- Disciplines are defined and recognized by the academic journals in which research is published, and the societies and academic departments to which their practitioners belong.

On the terms

STAKEHOLDERS INVOLVED		EPISTEMIC INTEGRATION
scientists	← MONO disciplinarity → ← MULTI disciplinarity →	disciplinary identity maintained
scientists & non-scientists	← INTER disciplinarity → ← TRANS disciplinarity →	transcendence of disciplinary mode

Rasmussen, Dannemand Andersen & Borch 2009

Barriers for inter/trans-disciplinary research

- An unclear perception of trans-disciplinary research's nature and potential in academic institutions and funding bodies
- The competition of reigning branches in the core disciplines especially within humanities and social sciences
- Negative attitude towards multi-disciplinary work in academia in general
 - Prestige and carrier patters are affiliated with disciplinary research
 - Basic science programmes more prestigious that strategic research
- A reluctance to change basic organisational patterns of universities
 - Universities are organised along disciplinary lines
 - In some countries professors have full autonomy, no hard incentives for collaboration across disciplines and across organisational divides are possible
- Trans-disciplinary research takes more time
 - Time is spend on creation of a mutual understandable language

Inspired by Andler (2005)

How can inter-disciplinary research be strengthened in the future?

Start with a clear disciplinary profile

- Social sciences and the humanities must develop its own (mono-disciplinary) research agendas targeting the energy sector
- Initiatives ought to be problem-driven and application oriented

At program level

- Include socio economic issues in calls for energy research programmes
- Encourage (and reward) inter/trans-disciplinary research proposals
- Acknowledge that inter/trans-disciplinary might produce results in a slower pace in the beginning

At university level

- Maintain and develop strong, but permeable, disciplines at universities
- Set up organisational means and incentives for trans-disciplinarity
- Set up personal incentives for professors seeking trans-disciplinary challenges

Thank you for your attention