



Opening remarks
SJTU-NTNU Joint Research Centre
in Sustainable Energy
- Energy Research at NTNU
- The European Arena

Opening seminar, 4 June 2012, Shanghai
Torbjørn Digernes, Rector, NTNU



Energy research at NTNU and in Norway

Internationalization for quality and relevance

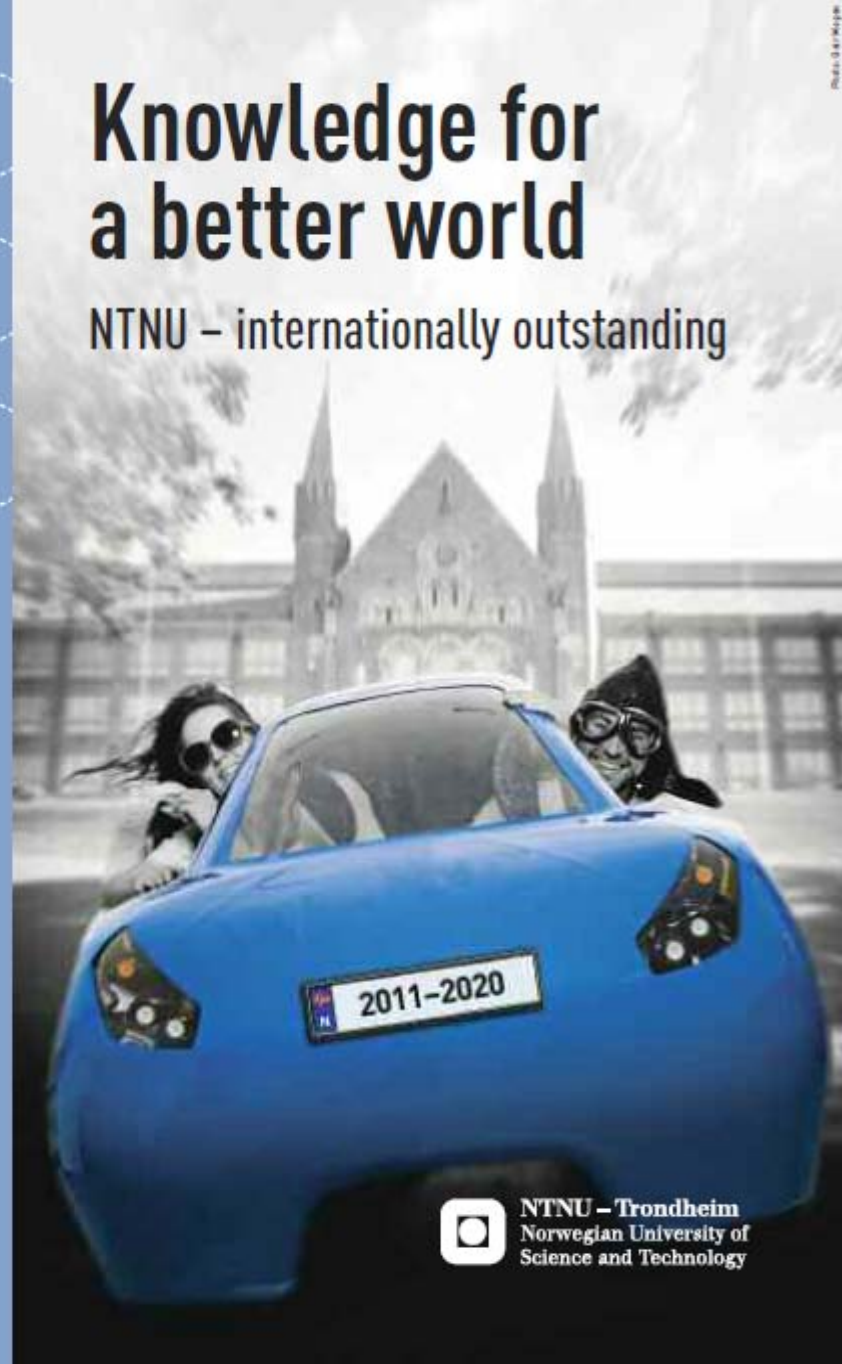
Strategy

Strategy 2011–2020 for the Norwegian University of Science and Technology – NTNU

Approved by the Board of NTNU on 30 March 2011

Knowledge for a better world

NTNU – internationally outstanding



NTNU – Trondheim
Norwegian University of
Science and Technology



NTNU's International strategy 2011 -2014

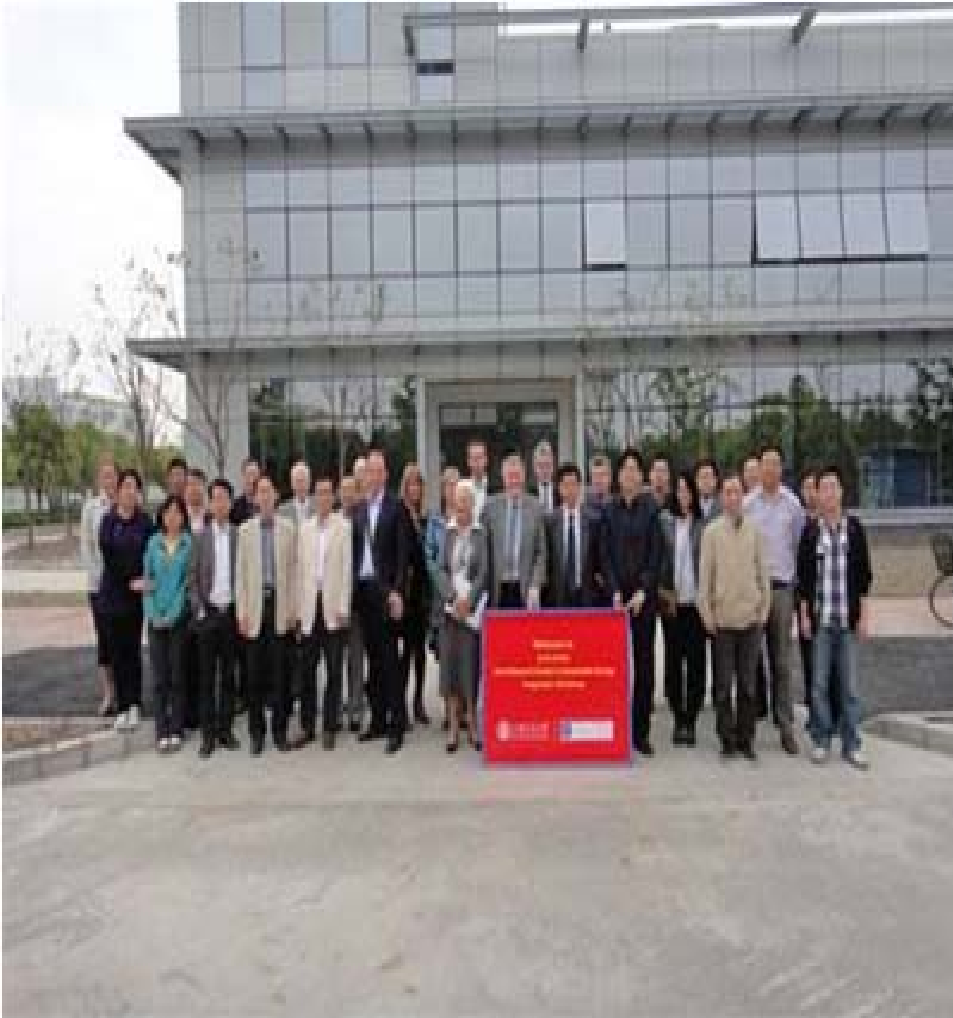
- Long-term strategic partnerships
- Broad-based cooperation, research, education and innovation

Internationali-zation integrated in all academic activities





Strong academia-industry
cooperation



International mobility for students and researchers

- Kina løftes fram



Vil ha mer. Rektorene Torbjørn Digernes og Zhang Jie ved NTNU og Jiao Tong signerer samarbeidsavtale våren 2010. Nå vil Digernes ha mer og sterkere samarbeid med Kina.
FOTO: TORE OKSHOLEN

Samarbeidet med universiteter i Norden, India, Japan og utviklingsland blir ikke prioritert i NTNUs nye internasjonale handlingsplan. Universitets aller viktigste samarbeidspartnere i årene som kommer, ligger i Kina

og Europa.

Joint Research Centers – a key model and appropriate instrument to develop China – Norway cooperation

- Politikk
- Norden tones ned - Kina løftes fram
- Gløyde fagpersonane i omstillingsprosessen
- Selvsensur ved danske universiteter
- Vi skal bruke vår skaperkraft
- Akademikere må ta ansvar

» Politikk

- Minneord for Tomas Hägg
- Oppdaget ny havstrøm
- Hva er prisen på dette hodet?

Uniforum

- Full støtte til avisredaktør
- Framifrå UIO-senter gjer det knallgodt
- Siri Hatlen: Me gløyde fagpersonane
- Viktig med et oppdatert nettsted
- UIO-forskere på svarteliste

Studentaviser

Under Dusken

- Sensor må ha trillet terning
- Tilfredstillende løsning
- Pstereo: Energiske retter
- Verdens beste i Boogie-Woogie
- VM for swingende

Universitas

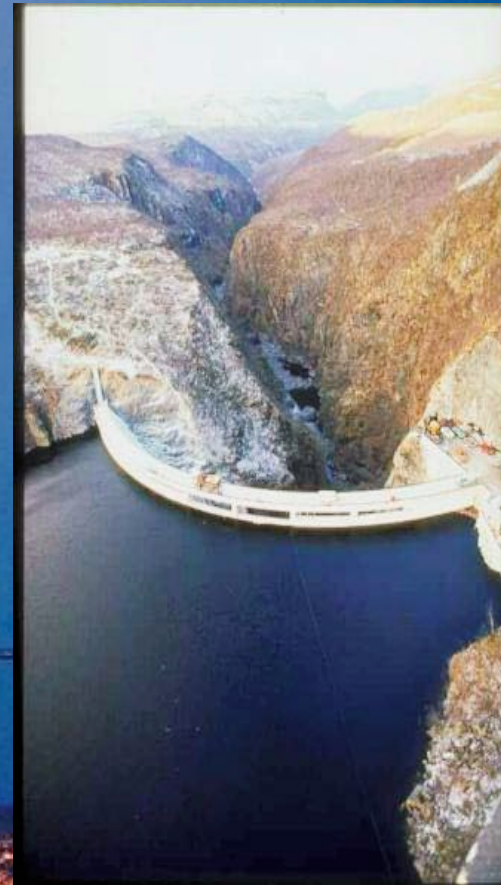
Lukkesvener i stedet for Munch-museum

Studvest

Norway - an energy nation

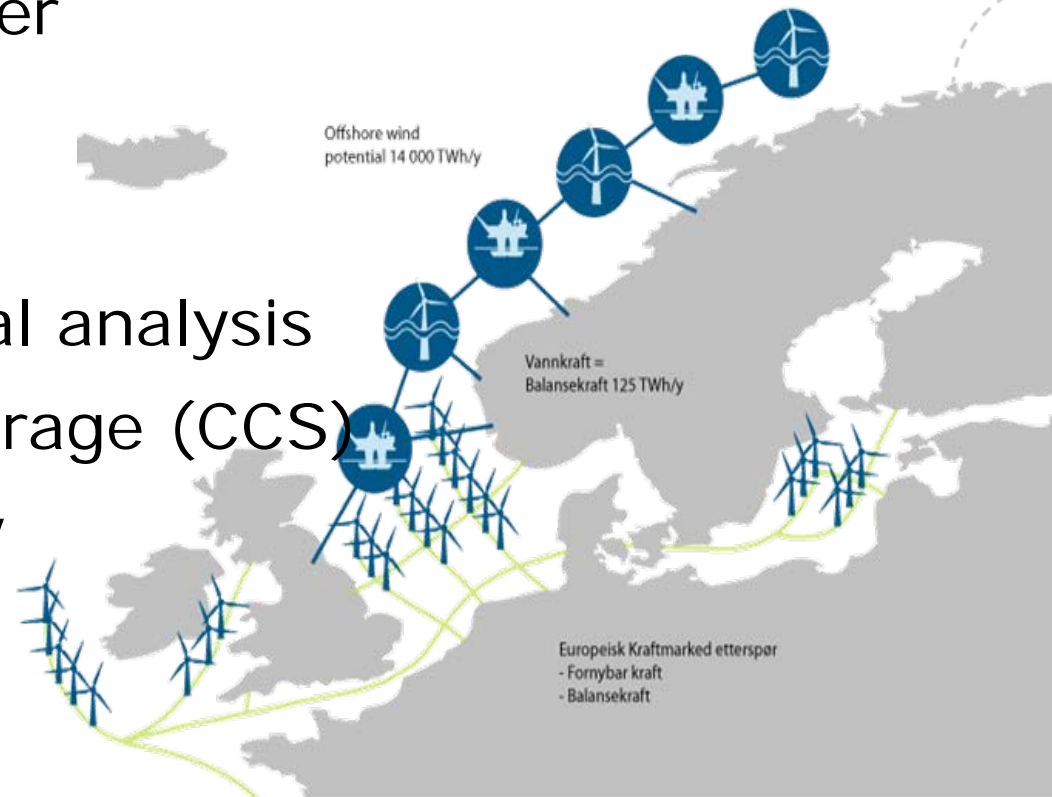
Three energy generations:

Hydro Power, Petroleum, Renewables



Targeted areas in Norwegian Energy Policy (Energi21, Climate Settlement)

- Efficient use of energy
- Climate friendly power
- CO₂-neutral heating
- Energy System
- Framework and social analysis
- CO₂-capture and storage (CCS)
- Environment friendly transportation



Trondheim – The Technology capital of Norway

SCIENCE AND TECHNOLOGY CLUSTER OF LARGE STRATEGIC IMPORTANCE TO THE NORWEGIAN SOCIETY

September 2001							October 2001							November 2001						
Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa	Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
22	23	24	25	26	27	28	29	30	1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	1	2	3

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Aune



ENERGY AND PETROLEUM - RESOURCES AND ENVIRONMENT Organisation

STRATEGIC COUNCIL

MANAGEMENT

CENTRES

**Strategic
Initiatives**

**Assosiated
activities**

CENTER FOR ENERGY AND SOCIETY

**PETROLEUM
CENTER FOR
BETTER
RESOURCE
UTILIZATION
NTNU-SINTEF**

**GAS TECHNO-
LOGY
CENTER
NTNU-
SINTEF**

**CENTER FOR
RENEWABLE
ENERGY
NTNU-
SINTEF-IFE**

**CENTER FOR
ELECTRIC
ENERGY AND
ENERGY
SYSTEMS
NTNU-
SINTEF**

**CENTER FOR
SUSTAIN-
ABLE
BUILDINGS
NTNU-
SINTEF**

Carbon Capture and Storage

Hydrogen

NanoLab

TRANSES

Green Innovation

Study programmes

Industrial ecology

Centers for Environment-friendly Energy Research



Top-level R&D groups cooperating with innovative industries established by the Research Council of Norway 2009, duration: 2009–2017

FME Centre hosted by NTNU:

- **Research Centre on Zero Emission Buildings – ZEB**
- **CenSES - Center for Sustainable Energy Studies**

FME Centres with NTNU as partner:

- **BIGCCS – International CCS Research Centre**
- **CEDREN - Centre for Environmental Design of Renewable Energy**
- **CenBio - Bioenergy Innovation Centre**
- **NOWITECH - Research Centre for Offshore Wind Technology**
- **The Norwegian Research Centre for Solar Cell Technology**



CenSES: Center for Sustainable Energy Studies

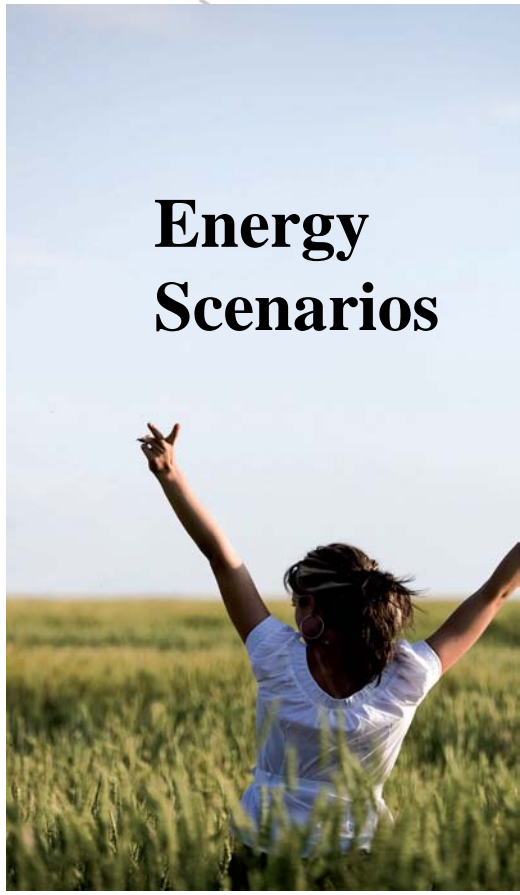


CenSES

Research areas

- Public understanding, acceptance and use
- Sustainable innovation in energy
- Governance, policy & industrial development
- Energy systems & markets modeling
- Energy demand modeling

- **NTNU host institution**
- **7 university and research institute partners**
- **Budget: NOK 20 mill/2010**
- **Funding sought from Research Council**
- **22 PhDs and 5 post docs**



Energy Scenarios

The European Arena

- European University Association (EUA)
- Europe's Strategic Energy Technology Plan
- The European Energy Research Alliance
- European Platform of Universities Engaged in Energy Research and Education (EPUE)

European University Association

- The **European University Association (EUA)** represents and supports **higher education institutions**
- Approximately 850 members in 46 countries.
- Members of EUA are European universities involved in teaching and research, national associations of rectors and other associations and networks active in higher education and research.

The European Strategic Energy Technology Plan (SET Plan) “Towards A Low Carbon Future”

- Announced by the European Union Commission in 2007
- SET-Plan objectives
 - ✓ By 2020: Greenhouse gas (GHG) emission down 20%, 20% renewable energy, 20% reduction of energy use
 - ✓ By 2050: “Decarbonized society”
Reduction of GHG emissions by 80%
- In this plan, the Commission proposed to create a **European Energy Research Alliance (EERA)** based on potential joint programmes that would “include basic *energy science*, enabling and breakthrough technologies and advanced energy efficiency.”
- **EUA joined the European Energy Research Alliance (EERA)** in an observer capacity in October 2008

Developing a roadmap for energy education and training in Europe

- The European Commission sees these challenges, and wants to develop as a part of the SET Plan a roadmap for education and training as an integral part of the SET-Plan
- For the implementation of such a roadmap to be successful, the capacity of the universities of Europe must be mobilised widely,

European Platform of Universities engaged in Energy Research (EPUE)

- **EUA** established **EPUE** as an open and transparent platform to support the activity in the European Energy Research Alliance, and to facilitate the universities' contribution to the SET Plan Energy Education and Training Initiative
- **EPUE** Main Objective:
To promote European university energy research and education, and voice the interest and role of European universities in EU energy related research, and their policy related development.

Characteristics of the EPUE (1)

- It is an **open platform** for all members of EUA
- It entails a large group – so far 168 have announced interest in the EPUE, there are more out there
- **Reaches out** into all corners of the EU27 states
- The survey of the enrolment process has shown identified **1300-1400 groups** constituting some **20 000 persons**
- Within **each** of the SET Plan **thematic areas**, there are **20 to 100 active universities**
- There is a **multitude of educational programs**, at all three cycles of university education

EPUE 2009
Questionnaire to EUA
Membership

Status of the EPUE respondents as of 15/05/2012

	Country	Number of institutions by country
EU 27 and Associated Countries	Austria	4
	Belgium	7
	Bosnia and Herzegovina	1
	Czech Republic	4
	Denmark	5
	Estonia	1
	Finland	6
	France	7
	Germany	17
	Greece	1
	Hungary	2
	Iceland	1
	Ireland	3
	Italy	20
	Lithuania	1
	Netherlands	4
	Norway	5
	Poland	18
	Portugal	3
	Slovakia	3
Slovenia	2	
Spain	22	
Sweden	3	
Turkey	4	
UK	20	
Others	Azerbaijan	1
	Georgia	1
	Russia	1
	Ukraine	1
	Total	168



Thank you for your
attention!