Critiques of science day 2

The uses of science

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Theories of Science

Autumn/Winter 2024

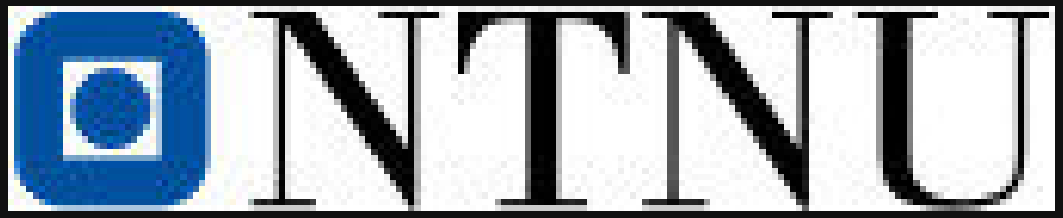
Plan for the last two hours

- Some popular uses of science in the 2020s
  - follow the money
  - case study: FMEs (Berker)
  - a critique: the innovation imperative (Pfotenhauer & Jasanoff)
- Group work (if there is time): Conference preparations

Lecture:
Some uses of science in the 2020s that are more popular than others

Following the money, a case study and a critique

1. Follow the money



in numbers

- Budget: 11 billion NOK, 3.2 external sources (Norway's defence budget: 90.8 billion NOK)
- 8054 full-time equivalents (FTEs). Two of three (5259) work with teaching, research and dissemination (academic positions), 39% are foreigners
- Facilities (owned or rented) totalling 734 000 m2 (ca 100 football pitches)
- The funding is roughly speaking distributed internally based on a base sum + production of students + other incentives

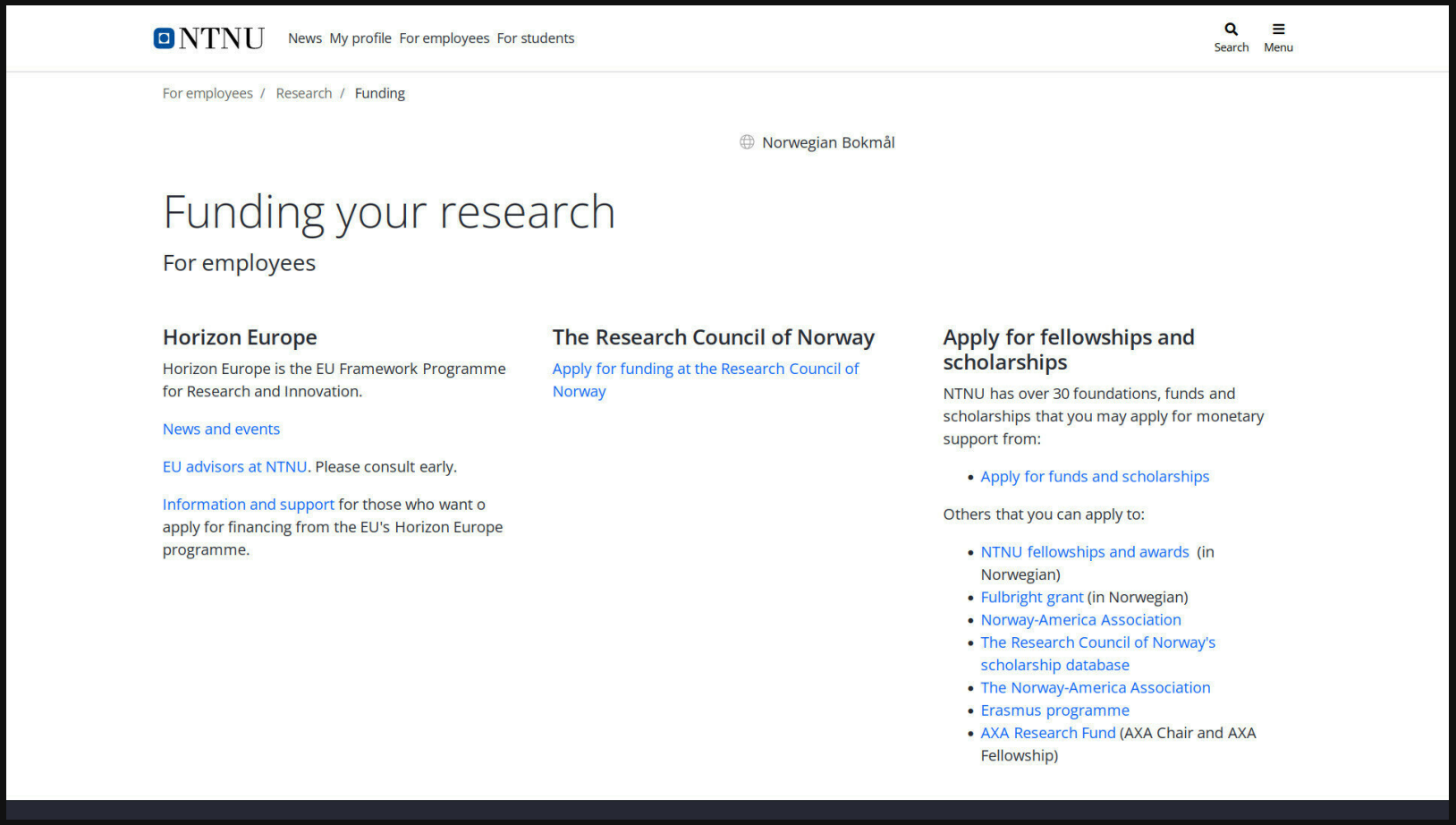
https://www.ntnu.edu/facts

Follow the money: The government (ca 75%)

Funds administration, teaching, operation and research

- ca. 50% of a regular professor's time is for research
- departments have different routines regarding their employees' "resource budget"
- strategic funding distributed according to the university's priorities: Civil security, Ocean and Coast, Community, Energy, Health and Life Science

Other sources for "funding your research"



https://i.ntnu.no/forskningsmidler

Follow the money: external funding (ca 25%)

- RCN & EU & various smaller sources
- A strong push towards EU funding ("fresh money") is increasingly seen critical (needs subsidies)
- The majority of research grants is awarded to consortia involving other R&D institutions, businesses, local governments, non-profits, etc., which each have their own agendas and motivations for contributing
- "Free" funding (fripro) for individual researchers has been reduced and restricted recently

Horizon Europe (21-27)

- Tackles climate change
- Helps to achieve the UN's Sustainable Development Goals
- Boosts the EU's competitiveness and growth
- Facilitates collaboration and strengthens the impact of research and innovation in developing, supporting and implementing EU policies while tackling global challenges
- Supports the creation and better diffusion of excellent knowledge and technologies
- Creates jobs, fully engages the EU's talent pool, boosts economic growth, promotes industrial competitiveness and optimises investment impact within a strengthened European Research Area.

https://research-and-innovation.ec.europa.eu/system/files/2022-06/ec_rtd_he-investing-to-shape-our-future_0.pdf

Long term plan for Norwegian research and higher education (2023-2032)

Overarching goals

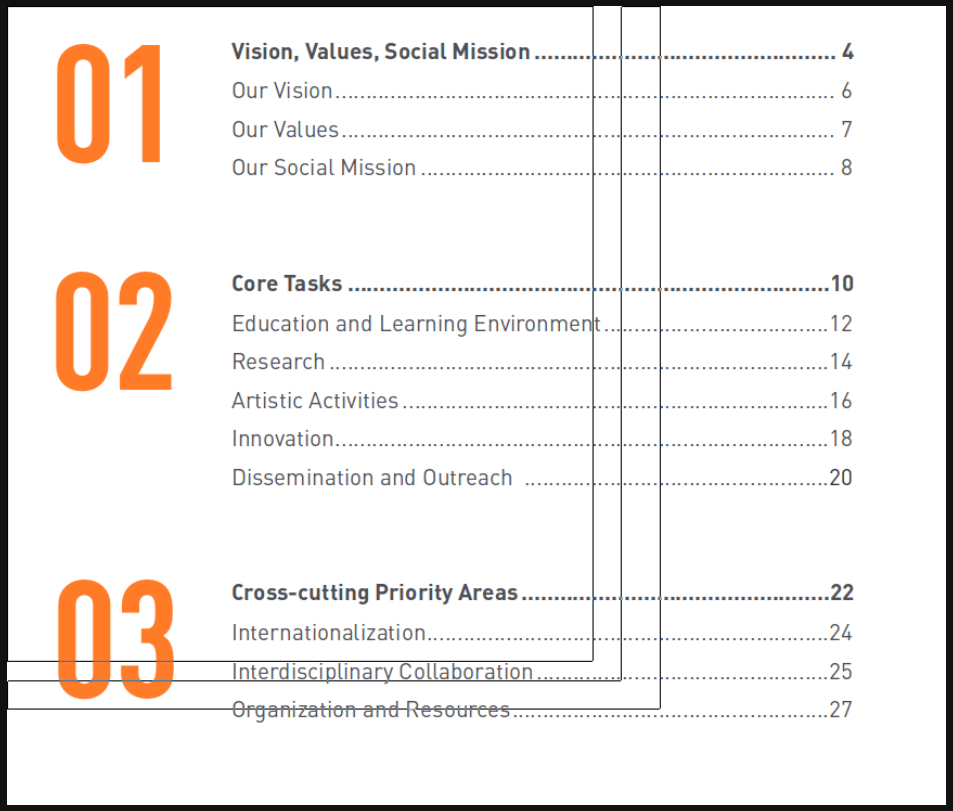
- Strengthened competitiveness and innovative capacity
- Sustainability
- High quality and accessibility

Focus areas:
Ocean and coast, Health, Climate-environment-energy, Industrial technologies, Societal safety and readiness, Trust and community

https://www.regjeringen.no/no/tema/forskning/innsiktsartikler/langtidsplanen-for-forskning-og-hoyere-utdanning-2023-2032/id2929453/

The humanities

HF, NTNU, Strategy 2018-25



01

02

03

Innovative humanities

STRATEGIC DEVELOPMENT GOALS

The Faculty of Humanities will:

Include social and cultural entrepreneurship and innovation in our programmes of study and our research where it is relevant

Strengthen our cooperation with the business community, the cultural sector and public-sector organizations

Humanistic innovation contributes to positive changes and provides benefits to the economy, society, culture, public services, well-being, environment and quality of life outside the academic world.

The education, research and artistic activities at our Faculty give us a solid basis for meeting societal challenges. Interdisciplinarity is a prerequisite for success. Our knowledge about humanity, its values and its ways of thinking forms the foundation for our approach to innovation.

Summary: Follow the money

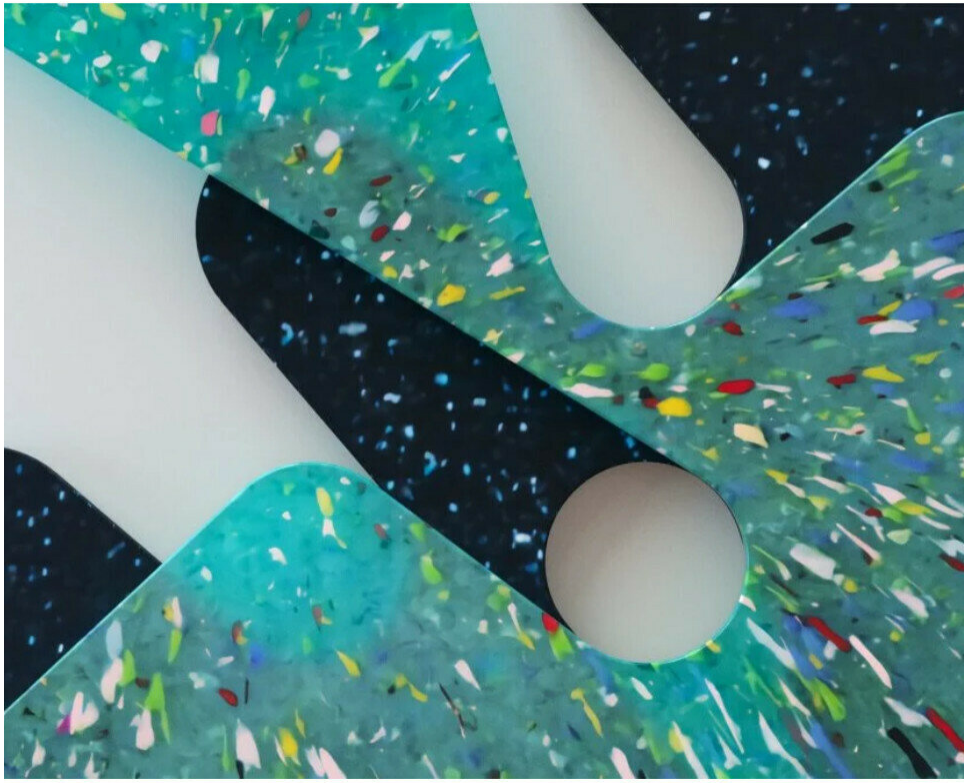
- What science should be used for:
  - Competitiveness and innovation, job creation
  - Norway: Ocean and coast, health, safety, sustainability, community
- Of course these are *plans* for the future and not the future, there is a lot of inertia in the systems

A popular use of science: Sustainability and innovation

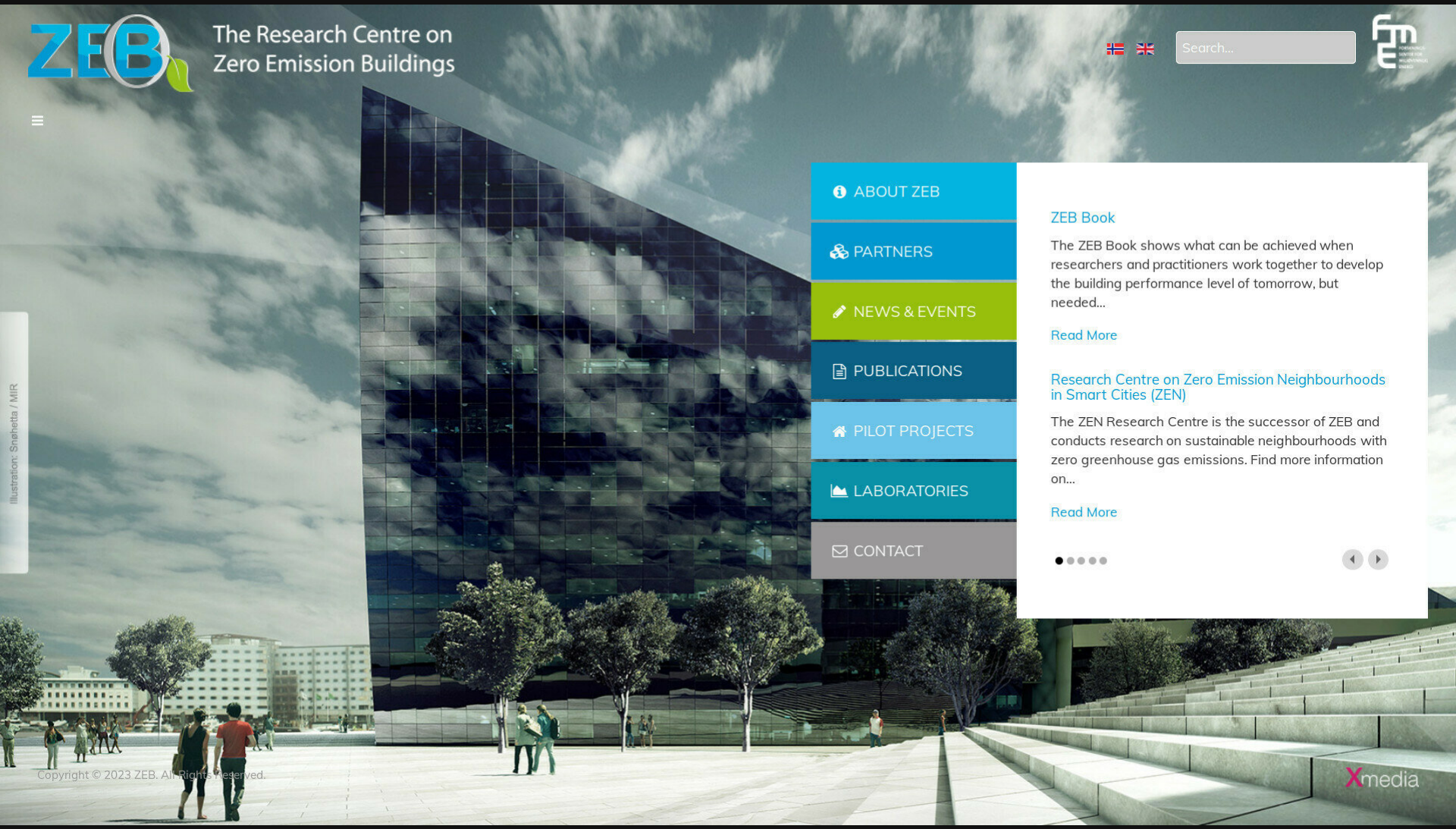
A case study

Case study
Two Research Centres for environmentally friendly energy

Centres for Environment-friendly Energy Research



The Centres for Environment-friendly Energy Research (FME) carry out long-term research targeted towards renewable energy, energy efficiency, CCS and social science aspects of energy research. The centres selected for funding must demonstrate the potential for innovation and value creation. Research activities are carried out in close collaboration between research groups, trade and industry, and the public administration, and key tasks include international cooperation and researcher training. The centres are established for a period of maximum eight years (5 + 3).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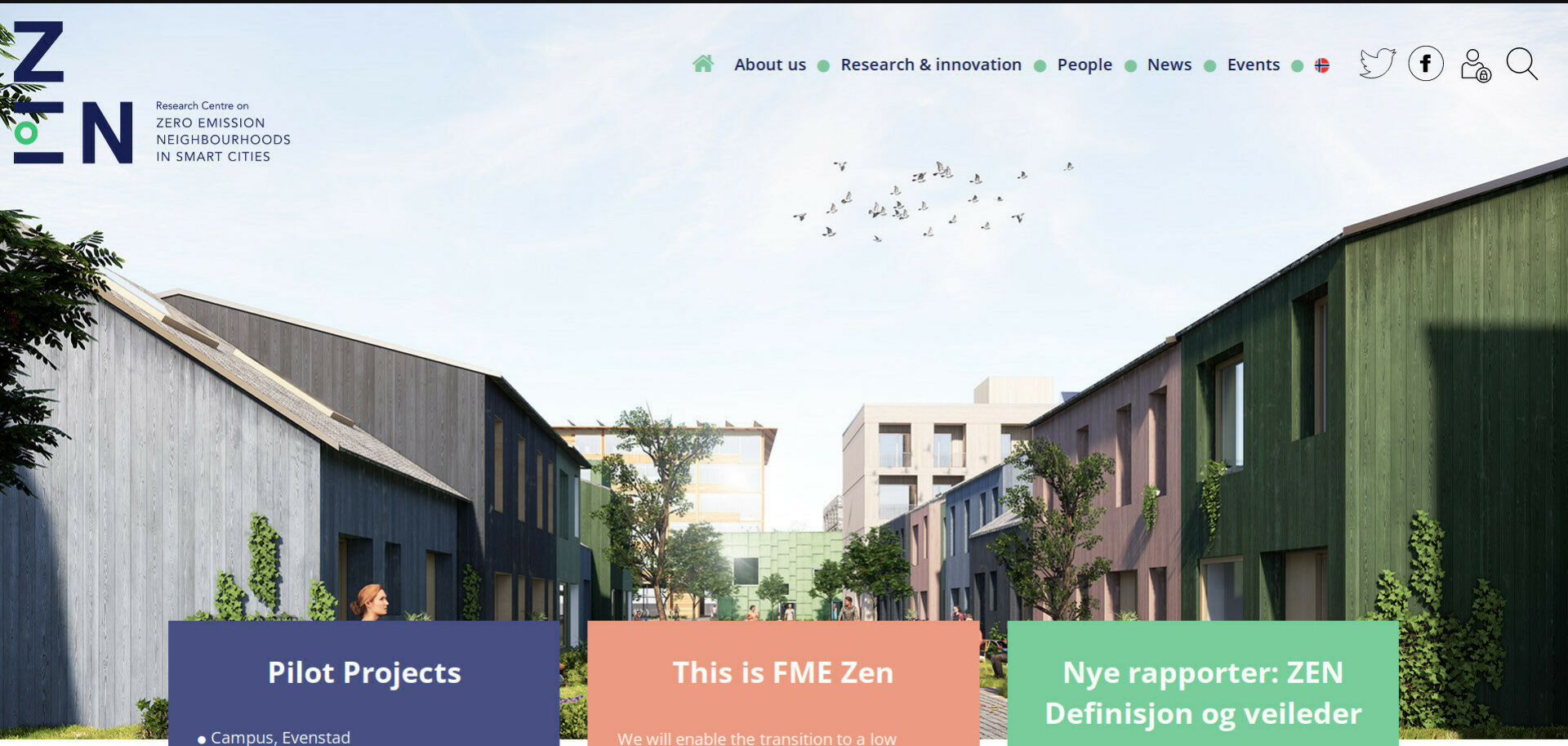

Pilot Projects

- Campus, Evenstad
- Furuset, Oslo
- Zero Village Bergen
- Knowledge Axis, Trondheim
- Ydalir, Elverum

This is FME Zen

We will enable the transition to a low carbon society by developing sustainable neighbourhoods with zero greenhouse gas emissions.

We are convinced that our future cities and

Nye rapporter: ZEN Definisjon og veileder

ZEB and ZEN

- decarbonising the built environment: from buildings (ZEB) to groups of buildings (ZEN)
- 2009-2024
- together approx. 700 mio kr
- funded by RCN and "partners" representing "all" stakeholders (businesses from the whole value chain, regulatory bodies, public institutions)
- Main outcomes: definitions, academic research, innovations, and "pilots"

Clear trends between 2009 and 2024

- More short-term, applied research initiated by partners (= trans-disciplinary research)
- Increasing importance of market research and the creation of business models
- Introduction of innovation as evaluation criterion, an innovation group, an innovation manager
- Professionalised science communication

Mission accomplished?

- No building-related successor funded in 2024
- Instead 8 new FMEs
  - GigaCCS
  - SecureEL
  - InterPlay (of energy systems)
  - RenewHydro
  - MarTrans
  - ZeMe (metal production with carbon capture)
  - SOLAR
  - Battery

CUDOS

Communism
Universalism
Disinterestedness
Organised Skepticism
(Merton, 1940s)

PLACE

Proprietary
Local problem
controlled by external Authority
Commissioned
Experts as problem solvers
(Ziman)

Tensions

(Berker 2023)

Is CUDOS still describing a set of appropriate values for the 2020s (has it ever)?

Taking a step back: A critique of the Innovation deficit model (Pfotenhauer & Jasanoff)

Science as innovation

- From science as search for truth to provider of solutions to problems
- From scientific progress to effective problem solving
- Jasanoff & Pfotenhauer: Three case studies (Luxembourg, Singapore, Denmark) and I will add Norway

Problems in need of solving

- Luxembourg: Aging population and public health, missing research mass
- Singapore: shifting but centered around security needs, technological growth to compensate for size
- Denmark: science as unexploited economic resource

- Norway: aging population and public health, high cost of welfare state, arctic threats, low-CO2 fossil fuel production

Science as solution

- Luxembourg: Bio-innovation hub, gateway to Europe
- Singapore: Import of perceived 'best practice', e.g., MIT
- Denmark: New university governance

- Norway: Maritime technology hub, gateway to arctics, CCS-pioneer

Critique

"The invisible politics of the innovation imperative" (Pfotenhauer & Jasanoff)

Effective way to prevent discussion and hide diverging interests ("what should we live of after the oil?" "think of the elderly!")

Conference formalities

- This is an arena for experimentation and learning, formal requirements are therefore minimal
- In general terms, conference papers are basically shorter pieces often produced and published quicker than journal articles
- Self-plagiarism: a bad thing when publishing but your conference paper will **not** be published
- But: Recycling of ECTS: **not** allowed!
- Which still opens for
  - publishing based on the conference paper outside the thesis
  - to treat the paper as **bad first** draft for a chapter/article in the thesis

See you on December 13!