

Five ZEN

...on the way to **Z**ero **E**mission
Neighbourhoods (ZEN) in Norway

Daniela Baer - SINTEF Byggforsk
ANNEX 63 meeting in Trondheim, 16.10.2017

The Vision...

**«Sustainable
neighbourhoods with
zero greenhouse gas
emissions»**

Research Scope

1

BUILDINGS

Resource efficient new and existing residential, commercial and public buildings.

2

USERS

Neighbourhoods for sustainable living with homes and places to socialize and work.

3

ENERGY SYSTEMS

Neighbourhood energy systems and their role in the larger energy systems.

4

DEMONSTRATION

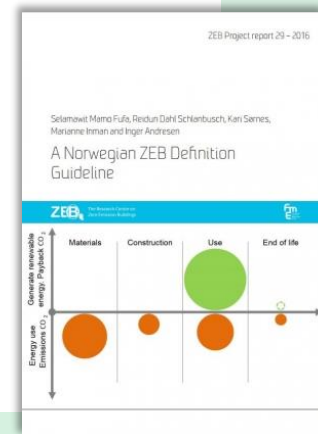
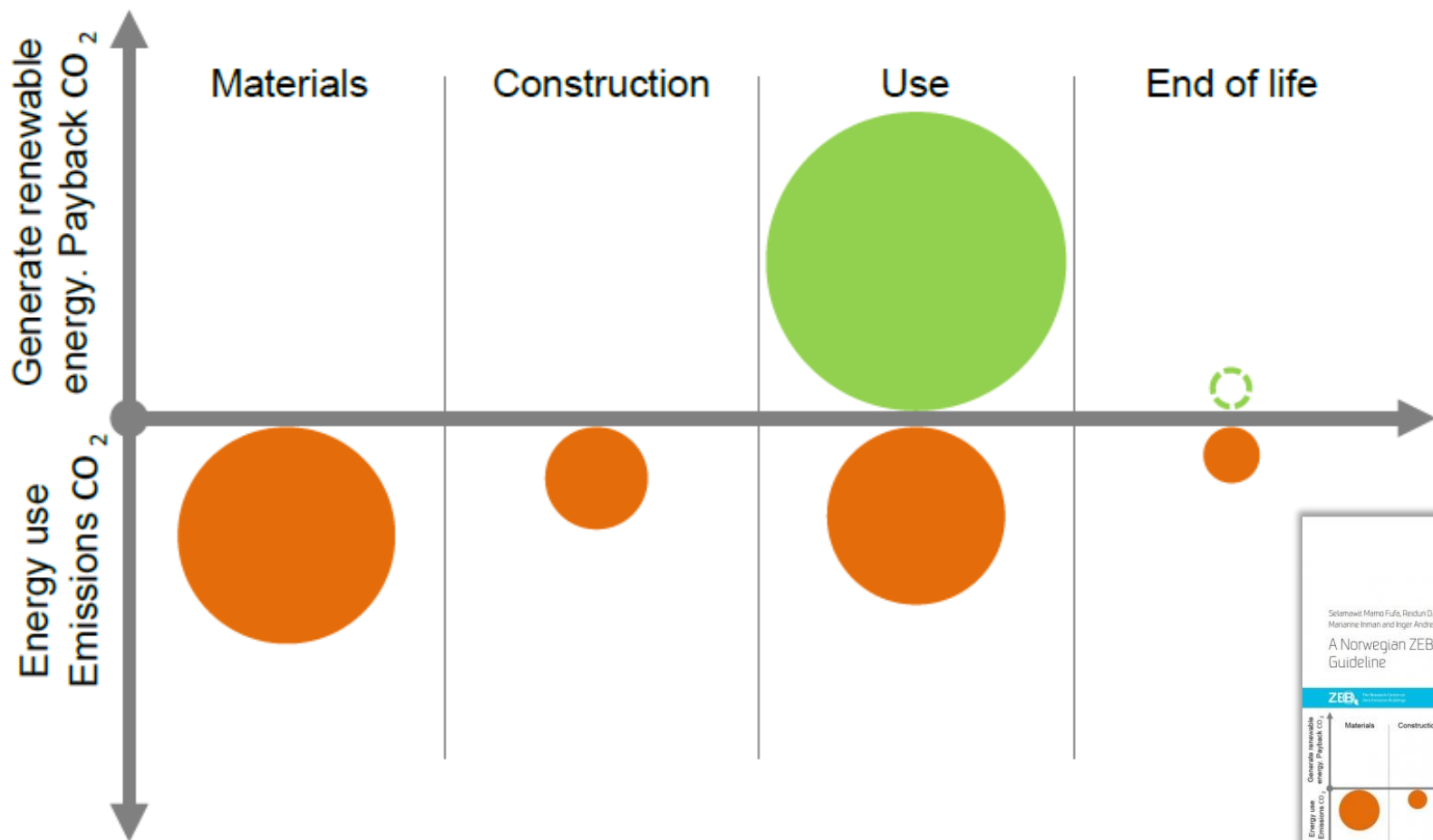
Pilot projects and living labs as innovation hubs and lighthouse projects.

A Zero Emission Building is a building that over its life time compensates for all greenhouse gas emissions related to production, construction and operation of the building.



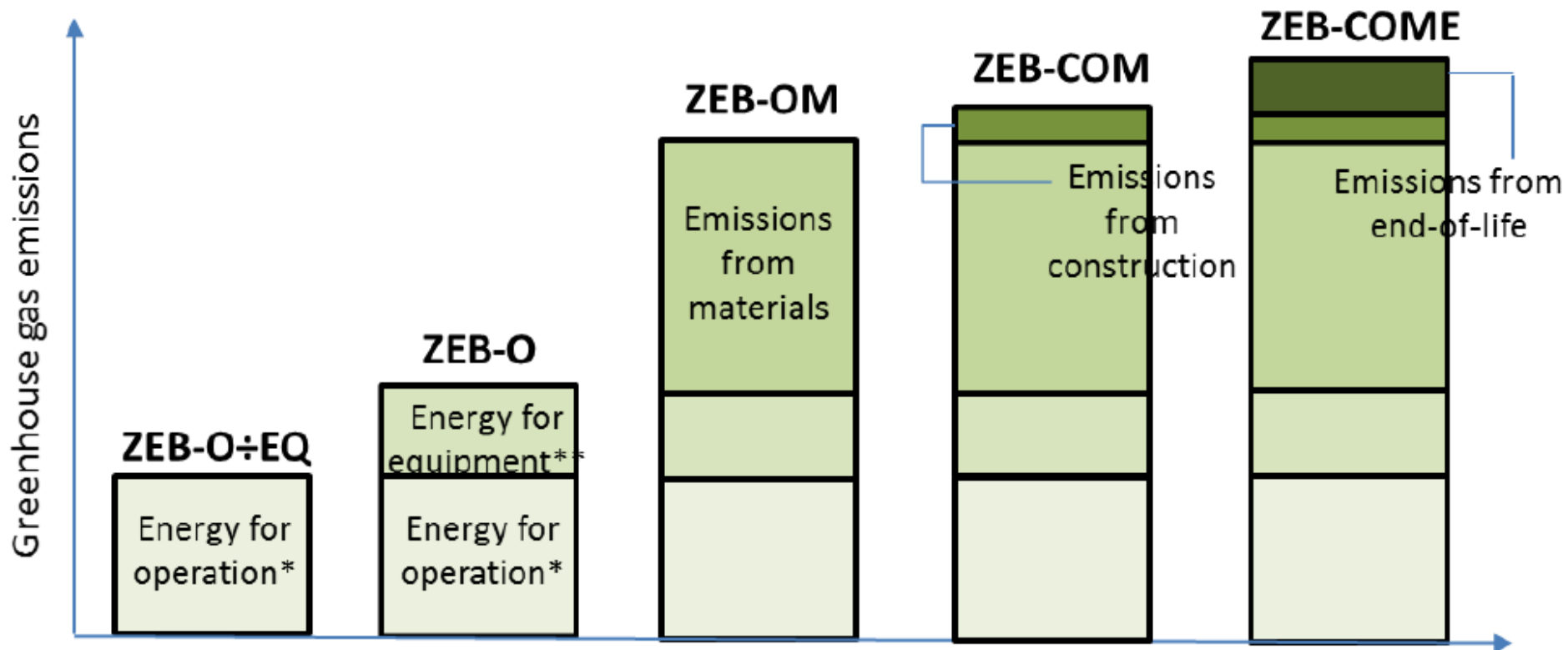
ZEB-hus Larvik
Eier: Brødrene Dahl
Arkitekt: Snøhetta

What is a ZEB?



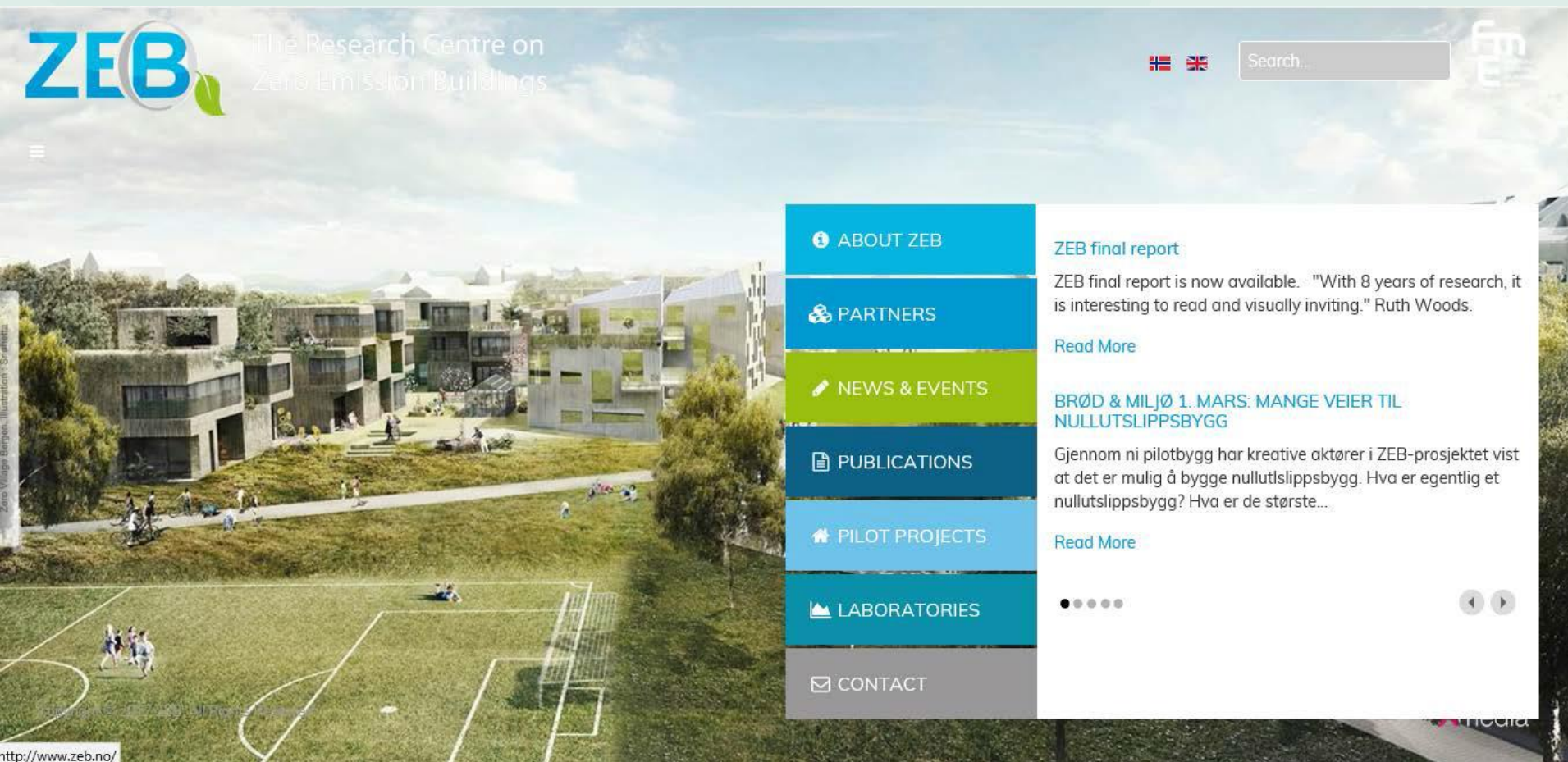
Check out the latest ZEB reports on www.zeb.no

ZEB ambition levels



* Energy use for heating, cooling, ventilation, DHW, and lighting

** Energy use for appliances (white goods, IT-equipment, etc.)



ZEB The Research Centre on Zero Emission Buildings

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ZEB final report

ZEB final report is now available. "With 8 years of research, it is interesting to read and visually inviting." Ruth Woods.

[Read More](#)

BRØD & MILJØ 1. MARS: MANGE VEIER TIL NULLUTSLIPPSBYGG

Gjennom ni pilotbygg har kreative aktører i ZEB-prosjektet vist at det er mulig å bygge nullutslippsbygg. Hva er egentlig et nullutslippsbygg? Hva er de største...

[Read More](#)

<http://www.zeb.no/>

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Work Packages

① WP1 Analytical framework for design and planning of ZEN

② WP2 Policy measures, innovation and business models

③
WP3
Responsive and
energy efficient
buildings

④
WP4
Energy flexible
neighbourhoods

⑤
WP5
Local energy system
optimization within
a larger system

⑥ WP 6 Pilot projects and living labs

From Buildings to Neighbourhood

Built Environment

LCA

**Spatial planning and
localization, transport**

**Renewable energy
sources**

**Sustainable Behaviour
of its users**

**Low embodied GHG
emissions**

Energy management

Pilot projects





Ydalir, Elverum



Furuset, Oslo



FlyBy, Bodø



Sluppen, Trondheim



NTNU Campus, Trondheim



NRK site, Steinkjer

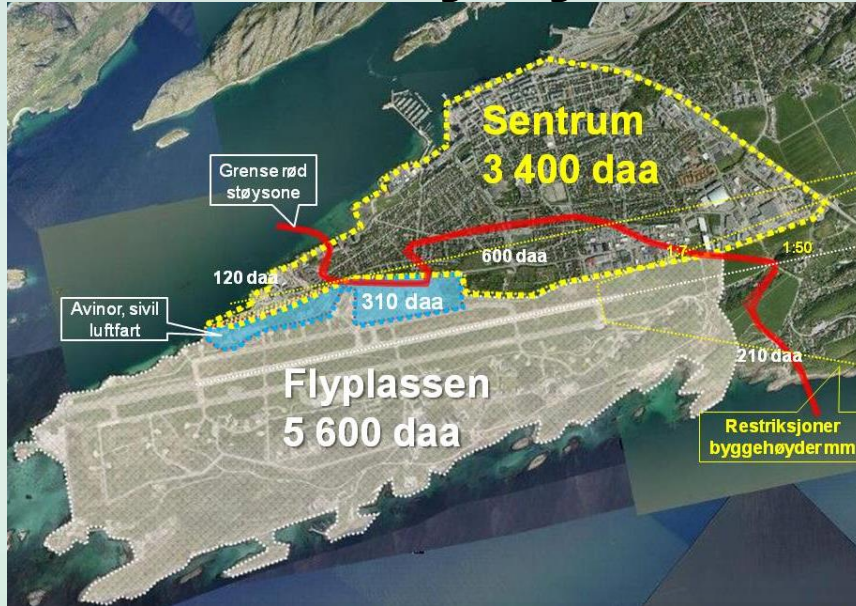


Zero Village Bergen



Campus Evenstad

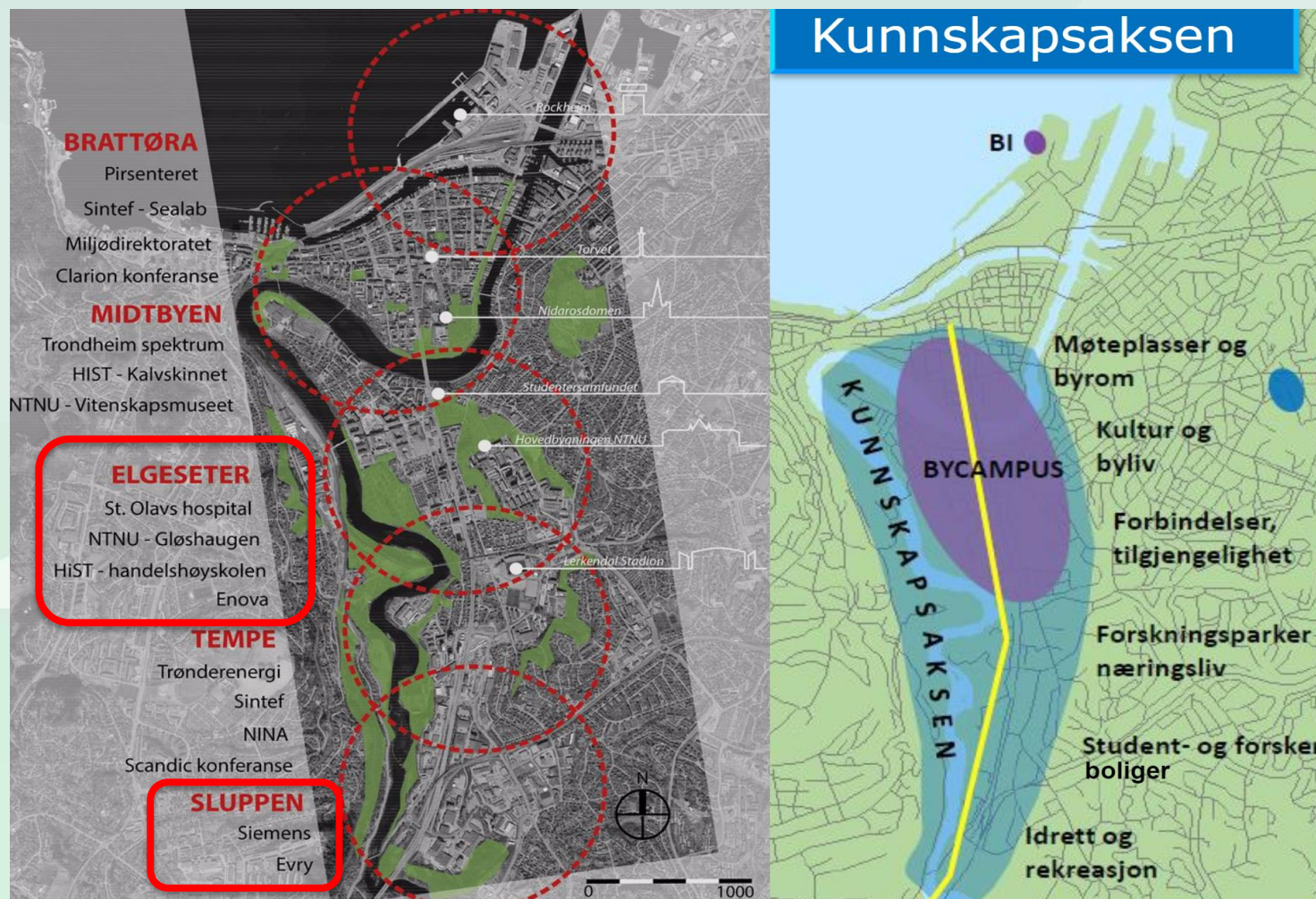
NyBy i Bodø - the situation today



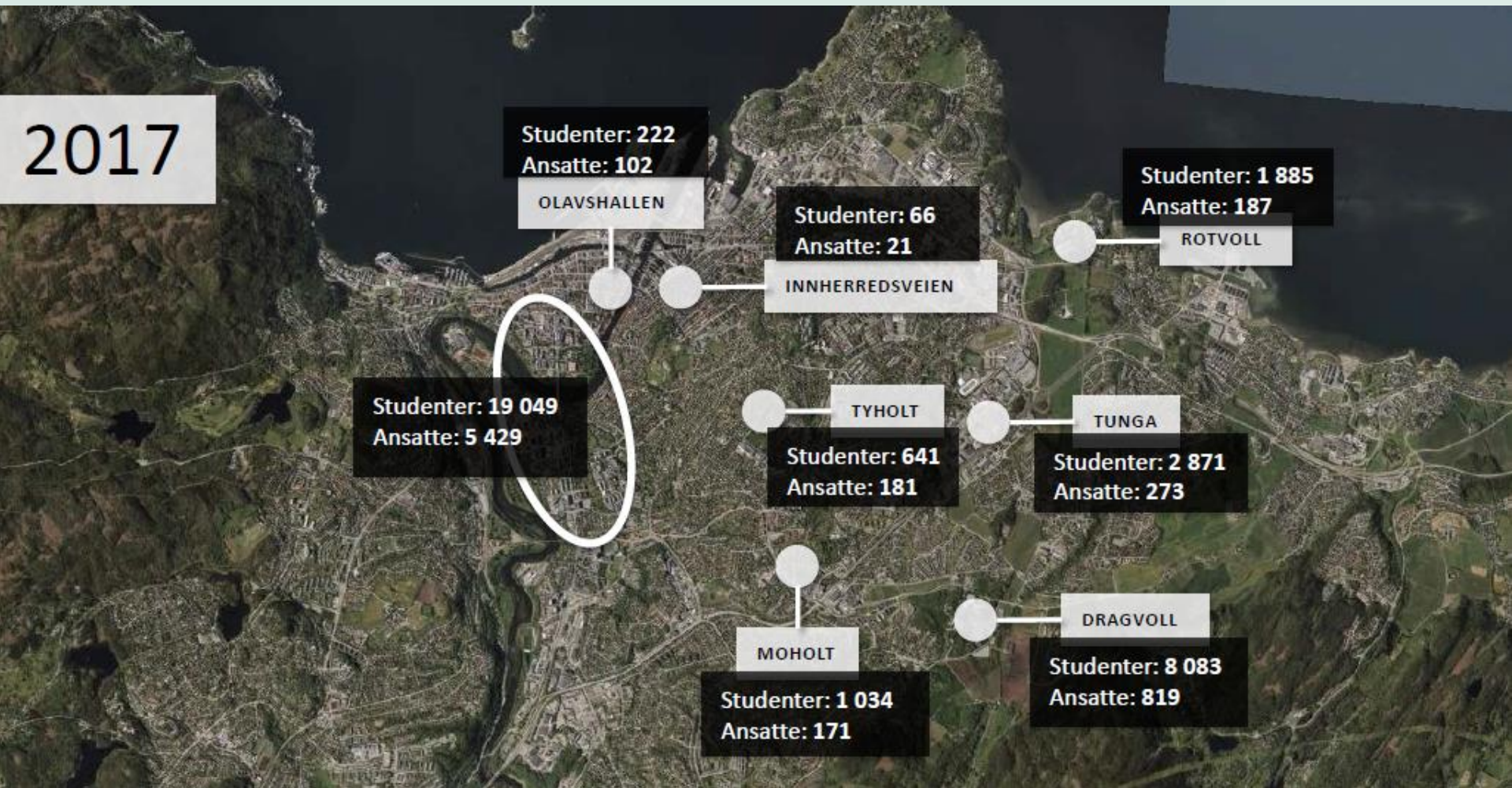
Bodø and NyBy - the future



Knowledge Axis in Trondheim



Knowledge Axis - NTNU Campus



2025: Campus Gløshaugen NTNU with 36 316 students and 7 550 employees

ZEB Flexible Lab



Knowledge Axis - Sluppen



Campus Evenstad



New administration building





Ydalir, Elverum



Furuset, Oslo



FlyBy, Bodø



Sluppen, Trondheim



NTNU Campus, Trondheim



NRK site, Steinkjer



Zero Village Bergen



Campus Evenstad

Challenges



Please contact me for further information...

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