Current challenges of urban energy planning in a Norwegian municipality

transitions to sustainable low-emission communities

Eirik Resch – PhD candidate
Inger Andresen - Professor

NTNU
Norwegian University of Science and Technology

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Motivation

- Transitioning urban areas into sustainable communities
- Ambitious energy and emission reduction goals
- Seeks to uncover
  - how goals are incorporated in the planning practice in the municipality,
  - and underlying challenges

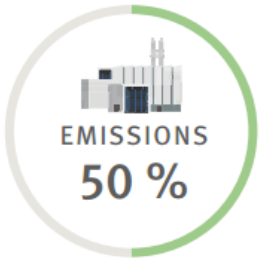
Method

- Interviews with key energy planners
- Document analysis

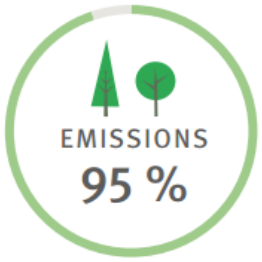
Climate and energy strategy
Oslo municipality (Norway's capital)

Being a city rich in resources, in a country with abundant access to renewable energy, gives Oslo a unique position, with the potential for developing innovative solutions and be a leading city internationally. Our unique position comes with a responsibility – one we should and will embrace.

The targets of the Climate and Energy Strategy for Oslo:

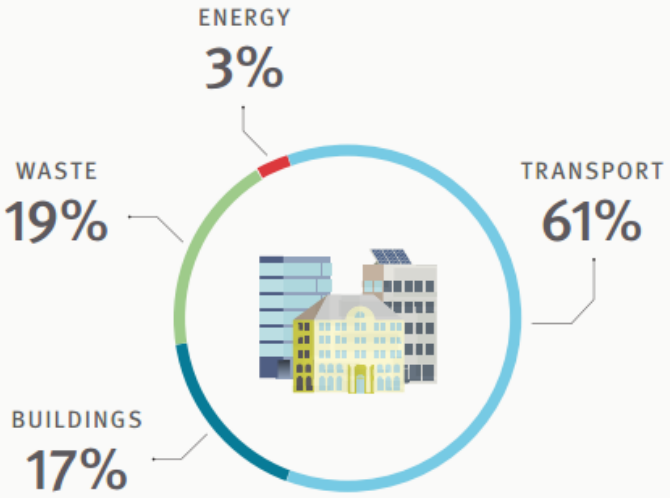


To reduce greenhouse gas emissions by 50 per cent by 2020



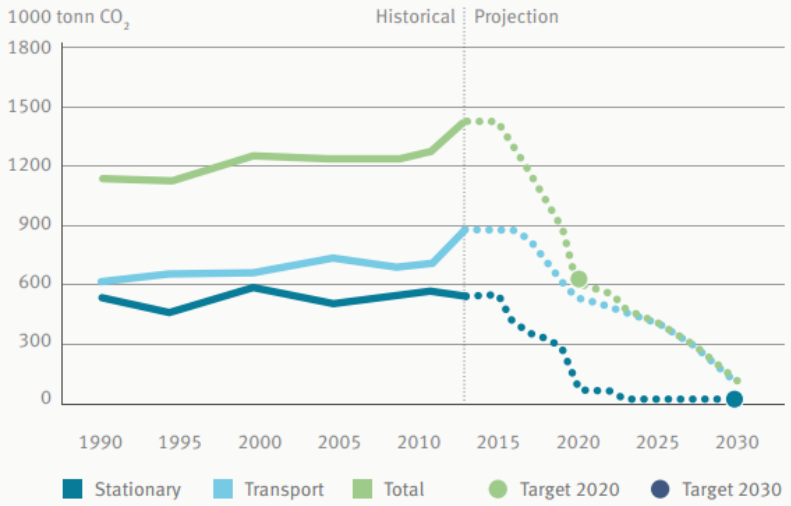
and by 95 per cent by 2030.

Main sources of greenhouse gas emissions in Oslo



Source: Statistics Norway combined with The City of Oslo´s own numbers , 2013.

Historical and projected emissions curve 1990–2030



Source: Statistics Norway, 2013.

System boundaries

- Only count direct emissions within municipality boundaries
- Electricity considered zero emission
- District heating considered zero emission

- Indirect emissions are neglected

- Two-fold:
  - Reduce direct emissions
  - Reduce electricity consumption

Uncovered challenges

- Transforming existing built areas
- Poor integration between energy planning and land-use planning
- Comparing the uncomparable and the need for a common understaning of GHG accounting
- Prioritizations of actions made on insufficient basis

Uncovered challenge 1

- Zoning restrictions
- Inhabitants unwillingness to change
- Long payback times on investments
- Strong resistance to densification from neighbors

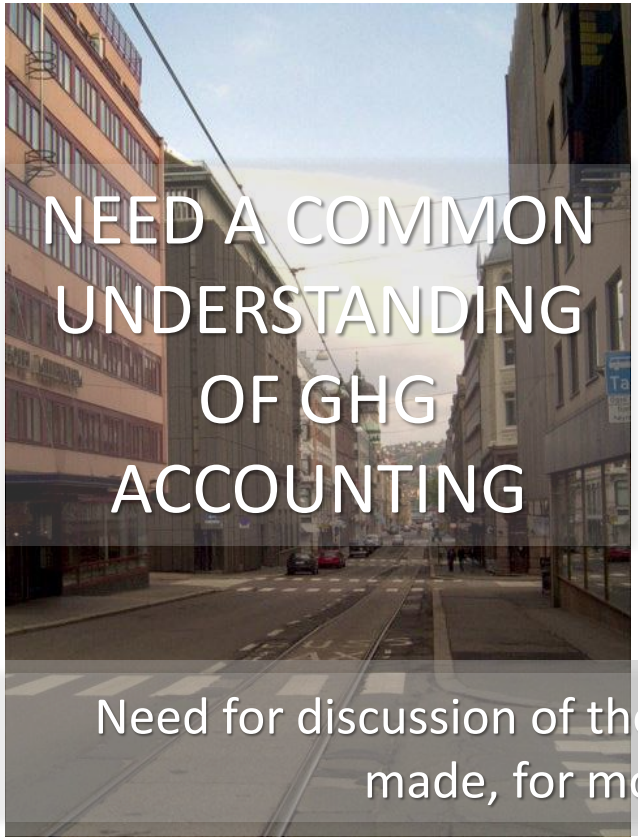
Need planning instruments for application in existing areas, especially to tackle problems associated with the structure of ownership

Uncovered challenge 2

- Stated in documents, but not transferred into practice
- Energy use not prioritized in land-use planning

Need stronger focus on energy use in land-use planning, and as well as assessment tools for predicting energy performance

Uncovered challenge 3



- Comparing the incomparable:
  - No common framework for comparing different options in the right way
- Related to the system boundaries:
  - Emissions not counted
  - Emissions counted differently
  - Emissions shifted
- Electricity zero emission?
- District heating zero emission?

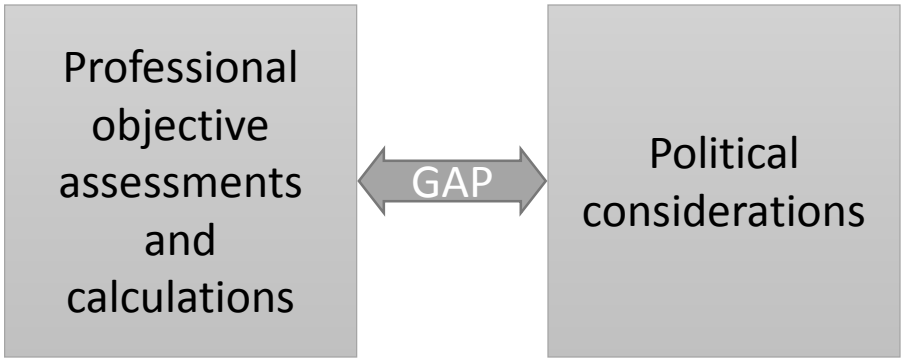
Need for discussion of the principles on which these decisions are made, for more well-informed incentives

Uncovered challenge 4

- Not a good basis on which important decisions on prioritization of resources are being made
- Spectacular lighthouse projects, and too little focus on what actually has an effect

Need cold, objective evaluations on what measures will be most important for reaching the goals


Need planning instruments for application in existing areas, especially to tackle problems associated with the structure of ownership
Need stronger focus on energy use in land-use planning, and as well as assessment tools for predicting energy performance
Need for discussion of the principles on which these decisions are made, for more well-informed incentives
Need cold, objective evaluations on what measures will be most important for reaching the goals



GAP:

- a clear framework for evaluating alternatives
- a holistic calculation tool for determining the effects of policy choices
- energy not sufficiently prioritized in planning processes

Main conclusions

- Scope and system boundaries have large effect on the outcome of GHG accounting
- Inconsistency when electricity and district heating are considered emission free
- GHG reduction potential of reduced energy use can be compared with direct emission reduction by a conversion factor (Graabak et al. 2014)
- Should have a scientific basis for the effect of these measures, and align our goals and actions thereafter
- Urban energy systems modeling should move from single disciplinary approaches to a sophisticated integrated perspective

Thank you

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