

Regional Case Study of Greater Copenhagen (DK)

Gate 21



Description of case study area

- The case study comprises a land area 2,568 km² or approximately 6% of the nation's land area. It has a coastline of 554 km and a population of 1,718,418 (2012) expected to rise to 2,008,047 in 2040. The Capital Region of Greater Copenhagen has an elected Regional Council of 41 members. It holds the authority to conduct regional development planning and setting the framework for development planning in the 29 municipalities in the area.
- The development planning, including the strategic energy planning, is supervised by a standing committee for the Environment and Green Growth which has the responsibility to plan for and follow up on the region's environmental and climate efforts.
- The other stakeholders involved in the strategic energy planning are the 29 municipalities, 9 energy supply utilities, 2 national/regional public transport companies, universities and private consulting companies.

Case Study area

Some of the 29 local authorities in the Greater Copenhagen Region (the case study region) have up to now developed local energy plans. However, these are rather traditional municipal energy plans that don't ensure a *coherent* energy planning for major geographic areas nor do they have clear strategies for cross-sectorial integration, and therefore there is a risk that the municipal energy action plans unwittingly counteract each other or cause sub-optimum solutions.

At the national and regional levels general objectives and targets complying with EU policies have been endorsed, but very little has been agreed on the strategies for implementation at the local/regional level on how to contribute to the high level targets.

The Capital Region of Denmark is characterised as follows:

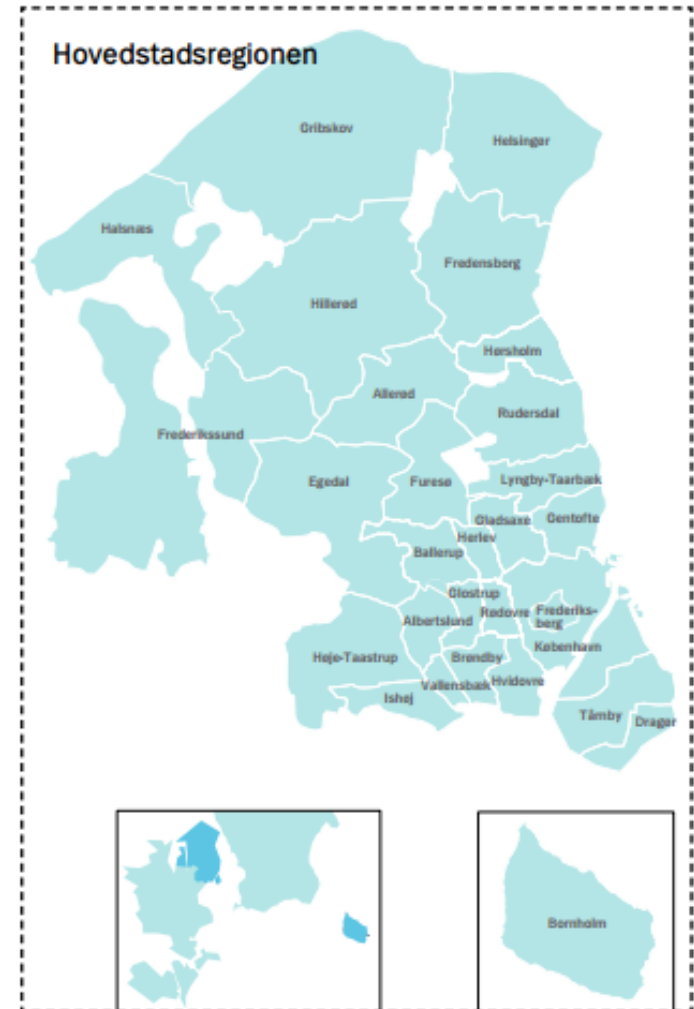
Highest population density in Denmark: Almost 700 inhab./km² which is 8-9 times the other regions.

Lowest average housing area per inhabitant in the country: Approx. 50 m²/inhab.

More than half of the inhabitants are living in multi-storey buildings (53%), - the national average is 31%;

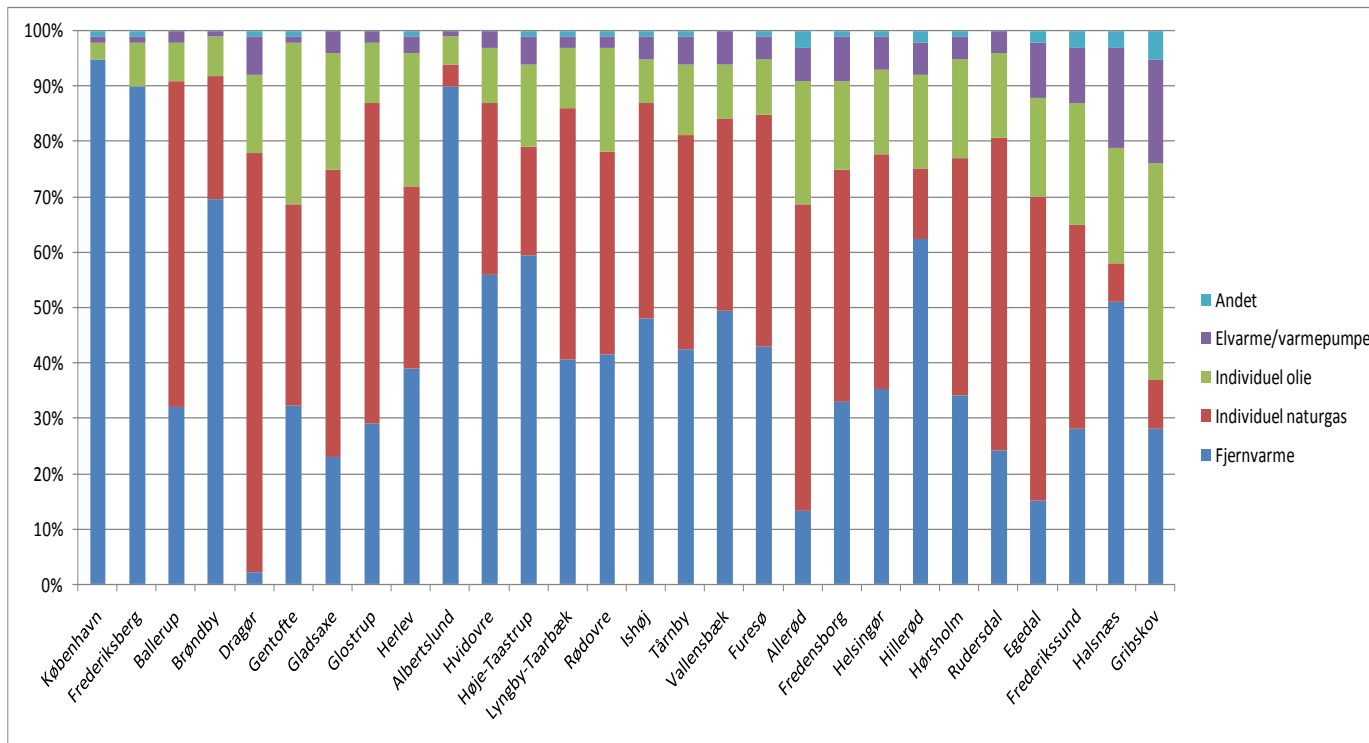
The only region in Denmark with a forecasted significant increase in inhabitants (+18% by 2040).

The electricity consumption totals 30.000 TJ/yr., mainly for households, public and private service sectors; this gives an average of approx. 17 GJ/inhab./yr.



Case Study Area

The heating method, fuel and technology varies greatly form municipality to municipality:

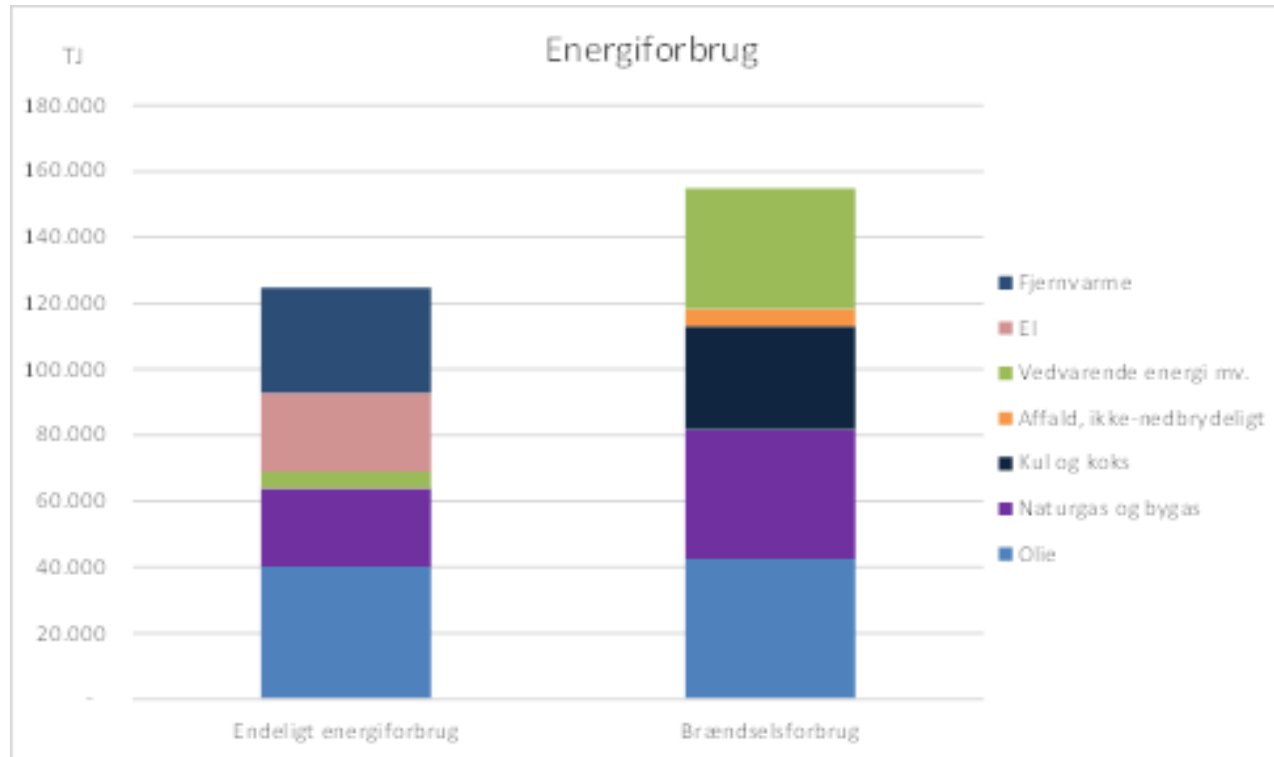


Legend:

'Andet' = Others; 'Elvarme/varmepumpe' = Elec./heat pumps; 'Individuel olie' = Individual oil furnaces; 'Individuel naturgas' = Individual gas furnaces; 'Fjernvarme' = District heating.

Case Study area

The total annual energy consumption in the region has been calculated for the year of 2012:

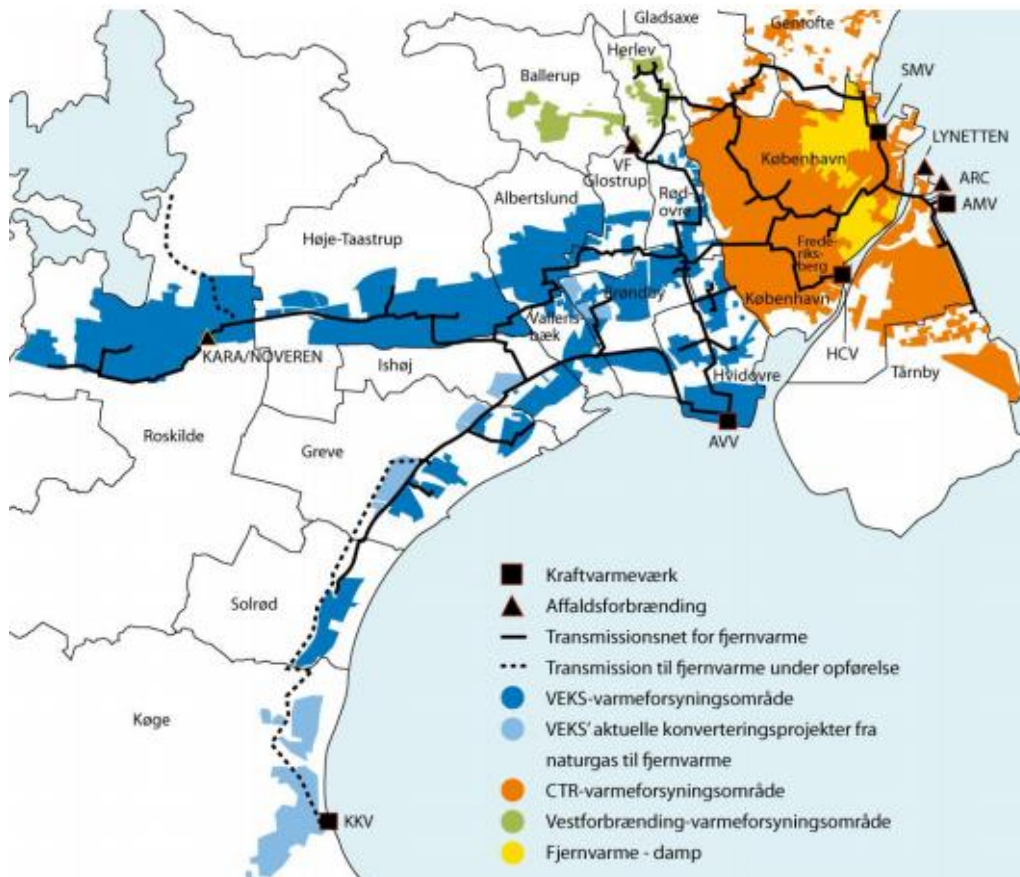


Legend:

'Energiforbrug' = Energy consumption; 'Endeligt energiforbrug' = Total consumption; 'Brændselsforbrug' = Fuel consumption; 'Fjernvarme' = District heating; 'El' = Electricity; 'Vedvarende energi mv.' = Renewable energy etc; 'Affald' = Waste (incineration); 'Kul og koks' = Coal and coke; 'Naturgas og bygas' = Natural gas; 'Olie' = Oil.

Case Study area

Overview of the present CHP plants (mainly waste incineration and biomass power plants), transmission pipelines and district heating system in the Greater Copenhagen area:

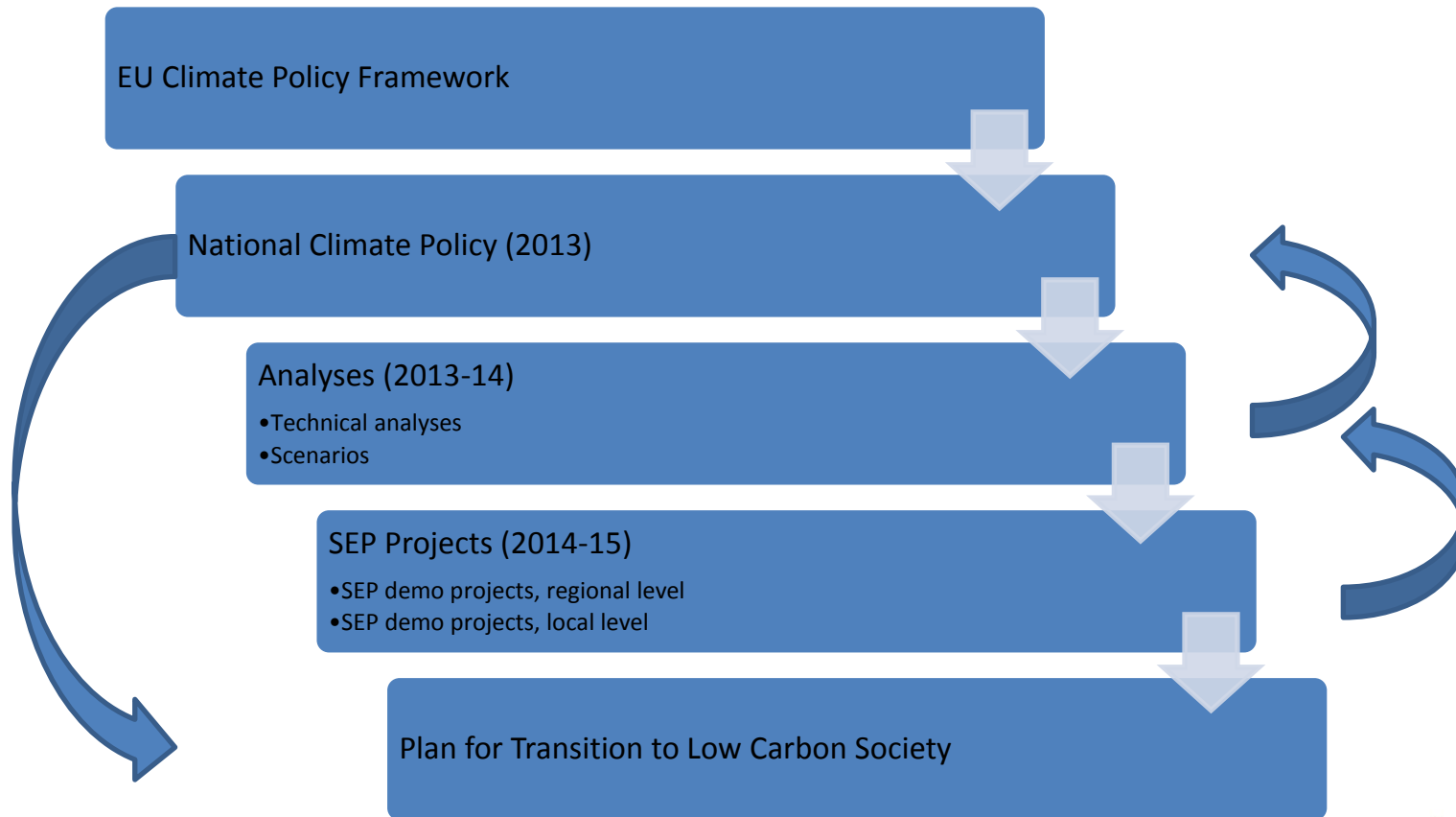


Legend:

'Kraftvarmeværk' = CHP plant; 'Affaldsforbrænding' = Waste incineration plant; 'Transmissionsnet for fjernvarme' = Transmission pipes for district heating; '... under opførelse' = ... under construction; 'VEKS' = DH transmission company in the western suburbs; 'CTR' = DH transmission company in the central area; 'Vestforbrænding' = DH production and distribution company in the NW suburbs; 'Fjernvarme - damp' = DH - steam system.

Original plan for the case study

Road Map for Transition to Low Carbon Society



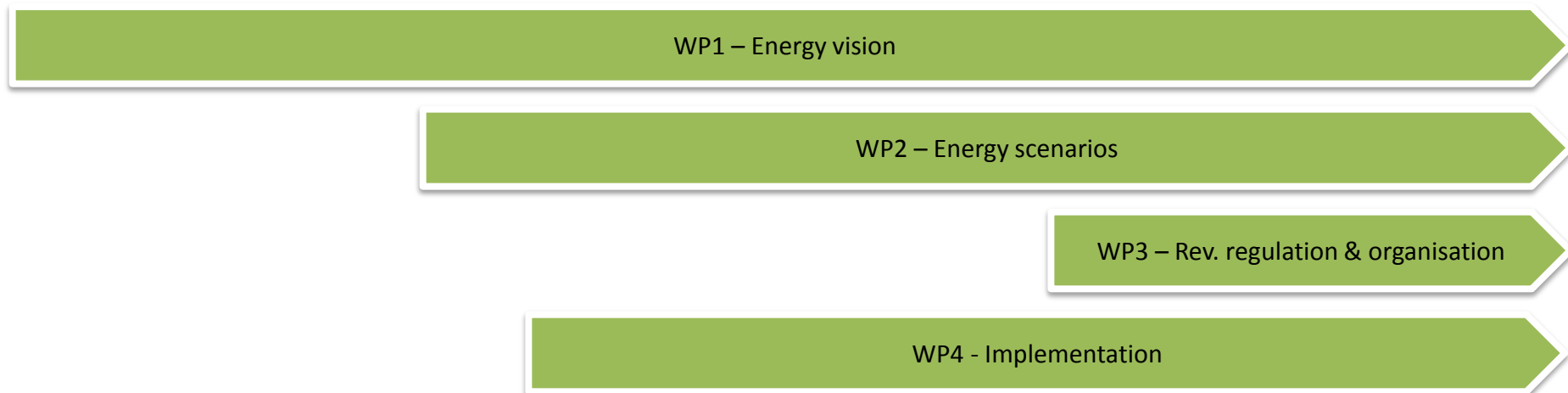
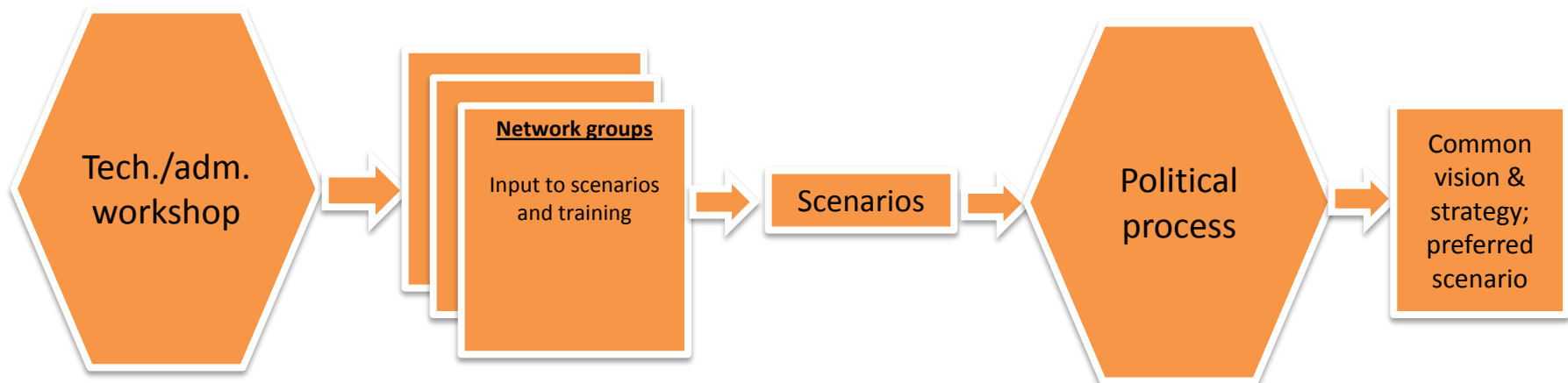
Original plan for the case study

Objectives and targets of the case study

- Objective: New practices developed for cross-municipal and cross-sectorial energy planning by municipalities in the region with focus on creating a long-term, coordinated effort between sectors in the energy supply and transport systems and across public administrations and other public or private stakeholders in developing sustainable energy solutions based upon renewable energy.
- Sustainability targets: Flexible and energy efficient energy supply and transport systems in the region based on renewable energy resources by 2050.
- Scope of work: The ambitions of the local and regional authorities are to achieve flexible and energy efficient energy supply and transport systems in the region based entirely on renewable energy resources by 2050, and by 2035 the electricity and heat supply shall be based on RE (a common vision formulated as part of the project). These ambitions shall be achieved through a comprehensive process of a local and regional strategic energy planning which will comprise of cross-municipal and cross-sectorial energy planning by the municipalities in the region with focus on creating a long-term, coordinated efforts between sectors in the energy supply and transport systems and across public administrations and other public or private stakeholders with the aim of developing sustainable energy solutions based upon RE.

Original plan for the case study

Case Study Planning Process 2014-15 (18 months)



Original plan for the case study

Project organisation

At the outset of the strategic energy planning process in the Greater Copenhagen Region, a comprehensive stakeholder analysis was conducted in order to identify groups, organisations, companies, etc. that currently and in the future can or should play a role in the energy consumption and supply market. The initiative was taken by the administration and politicians of the Greater Copenhagen regional authority (Region Hovedstaden). Currently, 29 municipalities, 9 energy supply utilities (producing and distributing power, natural gas and district heating), 2 national/regional public transport companies (trains and busses), and several universities and private consulting companies have been identified.

Project organisation:

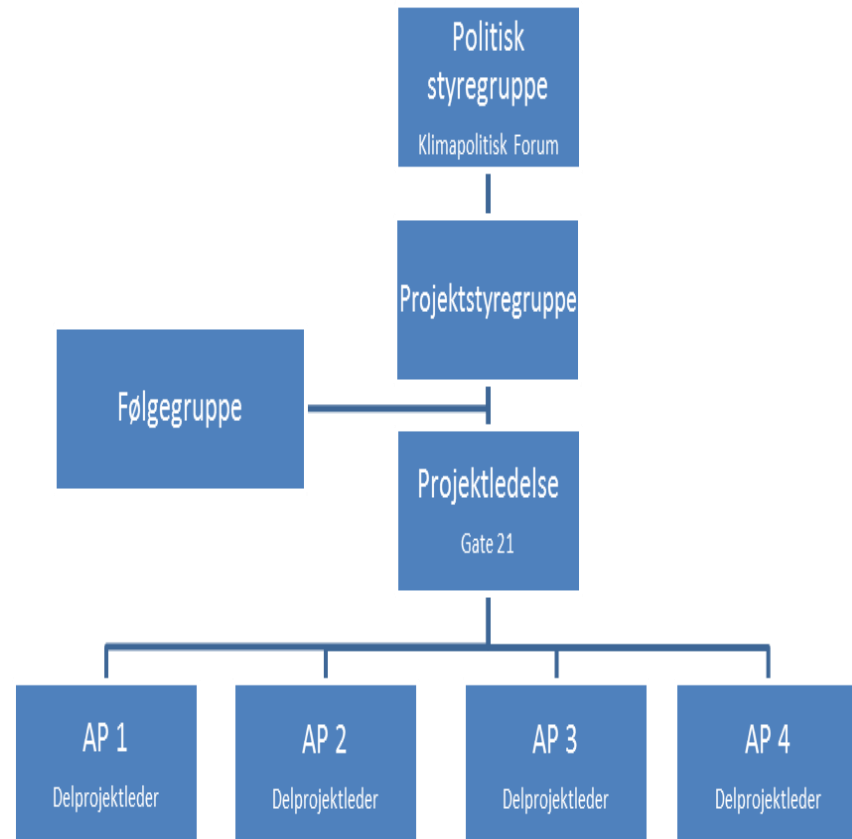
Political steering committee (Politisk styregruppe, Klimapolitisk Forum)

Project steering committee (Projektstyregruppe)

Advisory committee (Følgegruppe)

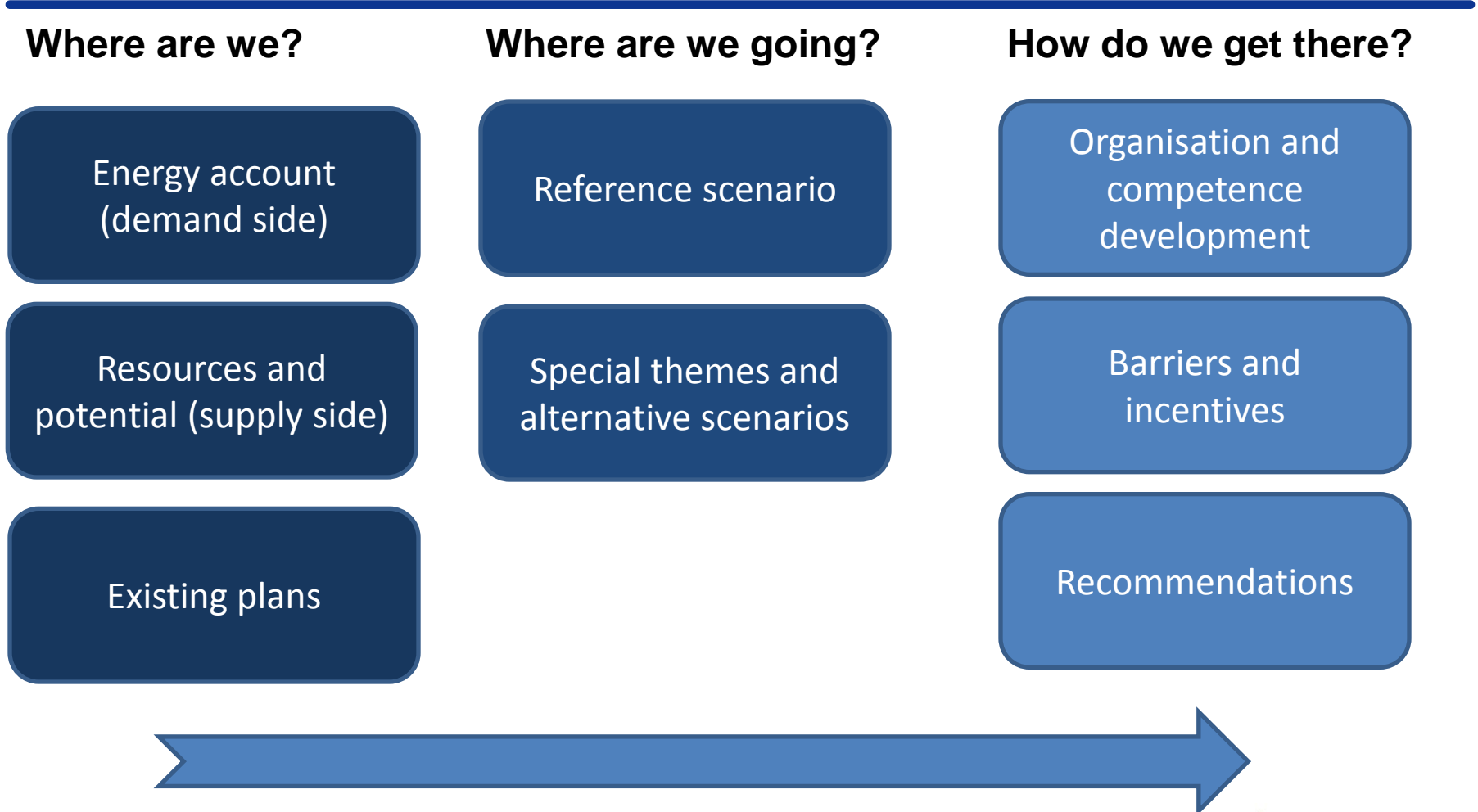
Project management team (projektledelse, Gate 21)

Work packages (AP=Arbejdspakker)



Original plan for the case study

Process of the case study activities



Bottlenecks & Opportunities

Challenges and bottlenecks:

- There's a need for a change of mind-set and methodologies in the transition from project-based development to coherent cross-municipal and cross-sectorial strategic energy planning;
- Communication of the chosen strategy to the stakeholders and convince them about the benefits of implementing the necessary measures for energy efficiency and conversion to RE;
- The relevant municipal staff have so many other responsibilities in their daily work that they are in risk of 'burning out' in their effort of conducting the sustainable urban planning.

Opportunities:

- The relevant staff in municipal administrations, in energy utilities and staff with other key stakeholders are well-trained and highly motivated for planning and executing the transition to a fossil free society.

Interlinks between training and case study

The course participants were/are all involved in the (SUSREG) case study of developing a Climate Change Strategy for the Greater Copenhagen Region (“Energi på Tværs”) or in similar projects in one of the other four Danish regions.

After the SUSREG training the participants have obtained relevant competences to participate in preparing regional strategic energy plans and local strategic energy action planning in their respective municipalities. Some of these have subscribed to the obligations under the Covenant of Mayors charter.

Furthermore, Gate 21 has been requested by the Regional Authority of Greater Copenhagen to participate in an upcoming planning process of preparing a regional growth and development strategy (“REVUS”).

To support the municipalities in formulating and later implementing local strategic energy action plans, the regional authority currently considers establishing a regional technical secretariat that can guide the process and offer capacity building of planners in the local authorities. Experience gained from the SUSREG Master classes can be of great benefit to this capacity building effort.

New issues analysed

- Besides the energy issues, the vision and strategies will also pay due consideration to the opportunities for supporting green growth and prevent sub-optimisation in relation to other sectors, e.g. waste management (incineration vs. recycling); the construction sector (financing, capacity and skills development); and possible discrepancies between financial and economic feasibility (use of financial incentives and taxation schemes).
- The Project Steering Committee has recently decided to establish a task force which will suggest ways of implementing the agreed common vision and the strategy/scenario (outcomes of the current process) by providing guidelines for preparation of municipal energy action plans as well as establishing fora for resolving selected cross-border issues. Thus, it is most likely that the regional authority and the 29 municipalities will continue their coordinated efforts with strategic energy planning well beyond the end of the current project duration (mid-2015).
- Action for local implementation: In the Municipality of Høje-Taastrup a pilot project is being implemented in parallel with the regional planning process (<http://www.htk.dk/goinggreen>); this pilot project is also financially supported by the National Energy Agency. The objective of the project is to conduct an accelerated strategic energy planning process leading to a fossil free municipality by 2050 and prepare a detailed implementation plan.

Exchange of experiences with other countries' case studies

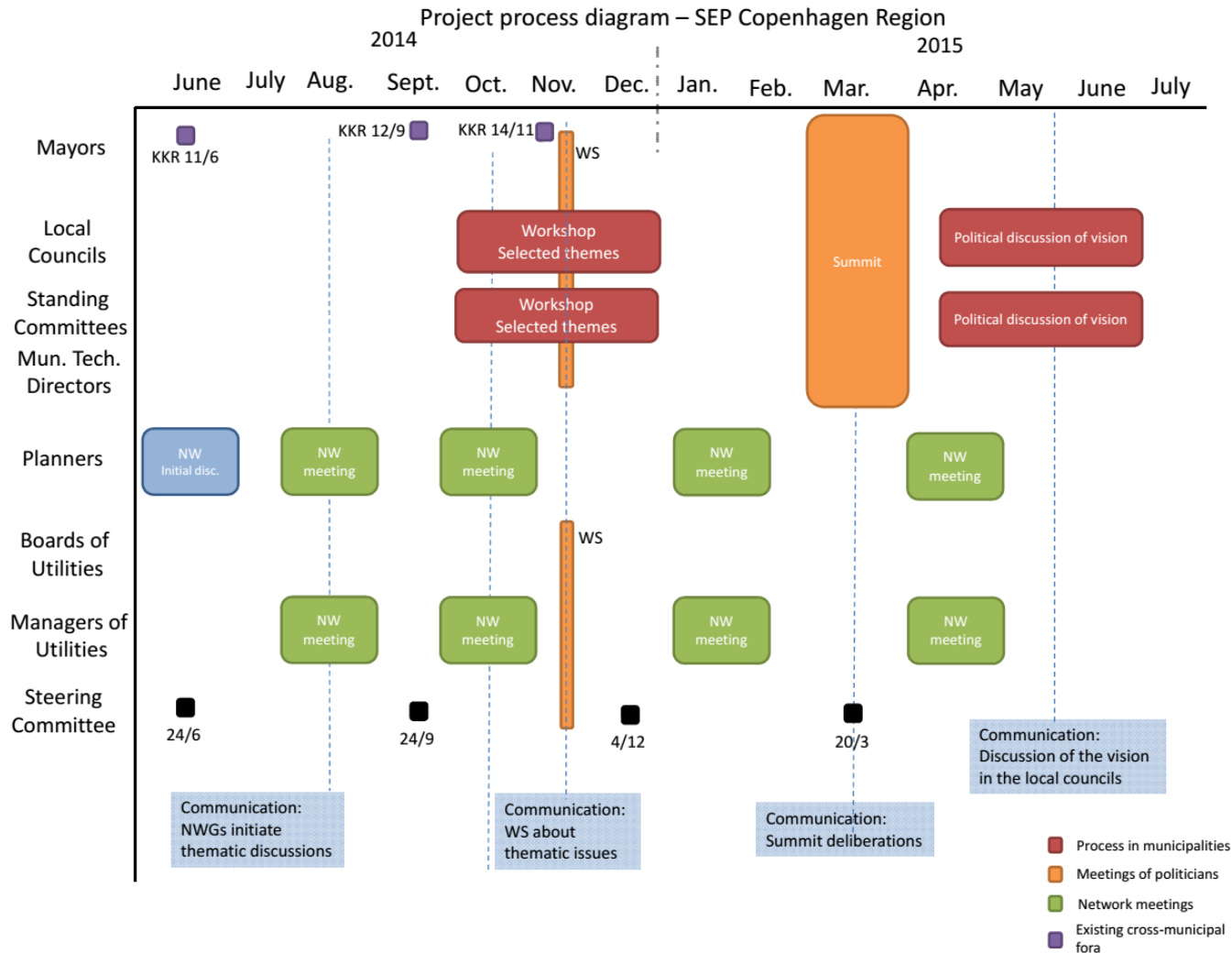
Due to the comprehensive nature of the Danish case study and its role in the national planning efforts leading to a low carbon society, it has had a broader scope, thus only to a limited extent been able to adapt the lessons learned from other SUSREG partners. (*See also the presentation about DK training activities.*)

However, it is expected that material and experience developed by other SUSREG partners in their respective case studies can be adapted to benefit the process of preparing local SEAPs starting mid-2015.

Result of the work

- The planning process in the Greater Copenhagen Region (the case study region) is progressing well. A process diagram for the remaining part of the study (up to end of 2015) has been adopted by the competent representatives.
- The first major workshop about the formulation of a common vision has been conducted. The defined work packages have been tendered and contracts signed. The comprehensive energy demand mapping is underway, and the formulation of energy demand-supply scenarios has started. The contractors will over the coming months take their findings to the technical network groups:
 - 1. Electricity supply;
 - 2. District heating;
 - 3. Waste incineration;
 - 4. Energy efficiency;
 - 5. Transportation.for discussion and verification.
- The representatives of the municipalities and utilities are actively participating in the network groups, thereby securing the general capacity development of their respective organisations.

Result of the work



Result of the work

- Draft energy vision and targets for the case study area have been developed;
- Three scenarios has been defined and are currently analysed in detail (all three are consistent with scenarios at the national level):
 - A Reference scenario ('business as usual')
 - A Wind scenario
 - A Biomass scenario

Conclusions

- The experience from the case study and other similar (pilot) projects supported by the National Energy Agency strategy planning shows that the holistic approach with both horizontal and vertical integration/coordination is possible. Although still to be proved during the forthcoming action planning and implementation phases the initiative has been well received by all stakeholders at the political as well as the tech./adm. levels and across the (public and private) sectors;
- The preparation and implementation of the SUSREG training sessions resulted in new ideas and methods benefitting the case study processes;
- It is expected that the approaches and training material developed for the Danish SUSREG training sessions can be used enhancing the capacity of municipal planners during the process of preparing local SEAPs starting mid-2015. Likewise, it is expected that material and experience developed by other SUSREG partners in their respective case studies can be adapted to benefit the process of preparing local SEAPs.