

Powered by



Innovation Fund Denmark

sEEnergies



Funded by the European Union's
Horizon 2020 Research and
Innovation Programme under
Grant Agreement no. 846463



HOFOR



kamstrup

LOGSTOR

Vestas

ENGINEERING
TOMORROW



ACHIEVING CARBON NEUTRALITY IN CITIES: LESSONS FROM A LEADER

David Maya-Drysdale, Aalborg University



WHO IS THE LEADER?

In 2018 Sønderborg municipality in Denmark **won the Covenant Cities in the Spotlight award** for medium-sized signatory

The municipality have **achieved 51% CO₂ reduction** from 2007 levels to 2020 (<https://tinyurl.com/4k2z7yvt>)

In 2018 ProjectZero developed the **latest Strategic Energy Plan towards 2025** and 75% CO₂ reduction

On 24 August 2021 local experts and stakeholders gathered to **begin Masterplan2029 towards carbon neutrality in 2029**

RESEARCH QUESTION

How can we **generalise** the Sønderborg lessons for other cities?



BACKGROUND

Numerous research **efforts have focused on Local Energy Planning** in recent years

- Prescriptive methods, e.g. Integrated Energy Planning, Cities4Zero (SmartEnCity)
- Model suggestions, e.g. EnergyPLAN, Homer, simulation, optimisation
- Urban planning and governance research
- Energy system scenarios, e.g. Aalborg, Copenhagen, Covenant of Mayors SECAPs

Sønderborg does a **mix of these** and these can be replicated in other cities

THE PROBLEM

Local Energy Planning is very **context specific**, differing in planning capacity, energy visions, financing, stakeholders etc.

It involves **numerous iterations/advancements and evolutions** over time (years)

PREMISE OF THE STUDY

A more general approach is required for both beginner and advanced cities to help **frame and direct** local energy planning activities



WHERE CAN WE FIND GENERALITY?

I propose that generality can be found by **focusing on “overflows”**

WHAT IS AN OVERFLOW?

“Overflows” are potential disruptions to planning caused by **outside actors** bringing in contested knowledge or solutions

HOW DO WE ADDRESS “OVERFLOWS”?

Applying **Actor Network Theory** we can limit the chance of overflows

Finding and understanding the **human and non-human actor network** for the problem being addressed

An actor does not have agency unless they are **part of the network**

An actor needs to be enrolled and have agency in the network by **addressing their needs**



METHOD

Actor Network Theory was used as a lens to **frame and assess the local energy planning in Sønderborg** and identify lessons for other cities

Human and non-human actors **were identified and basic assessment of agency was carried out**

RESULTS

The Actor Network is **heavily human oriented** giving agency to diverse human actors

Non-human actors are rarely given agency thus not qualifying them as being in the network

Biomass and energy infrastructure actors are not considered in terms of the network and their needs and this can lead to “overflows” in the future

The actor network appears to be **incompletely represented and utilised for the energy planning**



CONCLUSIONS AND NEXT STEPS

Sønderborg, Denmark is in an **advanced stage of development** of local energy planning

Actor Network Theory could be a **generic approach to frame local energy planning**

It was applied to the Sønderborg case **to learn lessons for other cities around framing local energy planning**

In Sønderborg, there is **risk of “overflows”** due to the incomplete recognition of non-human actors

Further research and development of a **general Actor Network approach** to help cities frame their local energy planning is required



Powered by



Funded by the European Union's
Horizon 2020 Research and
Innovation Programme under
Grant Agreement no. 846463



THANK YOU

