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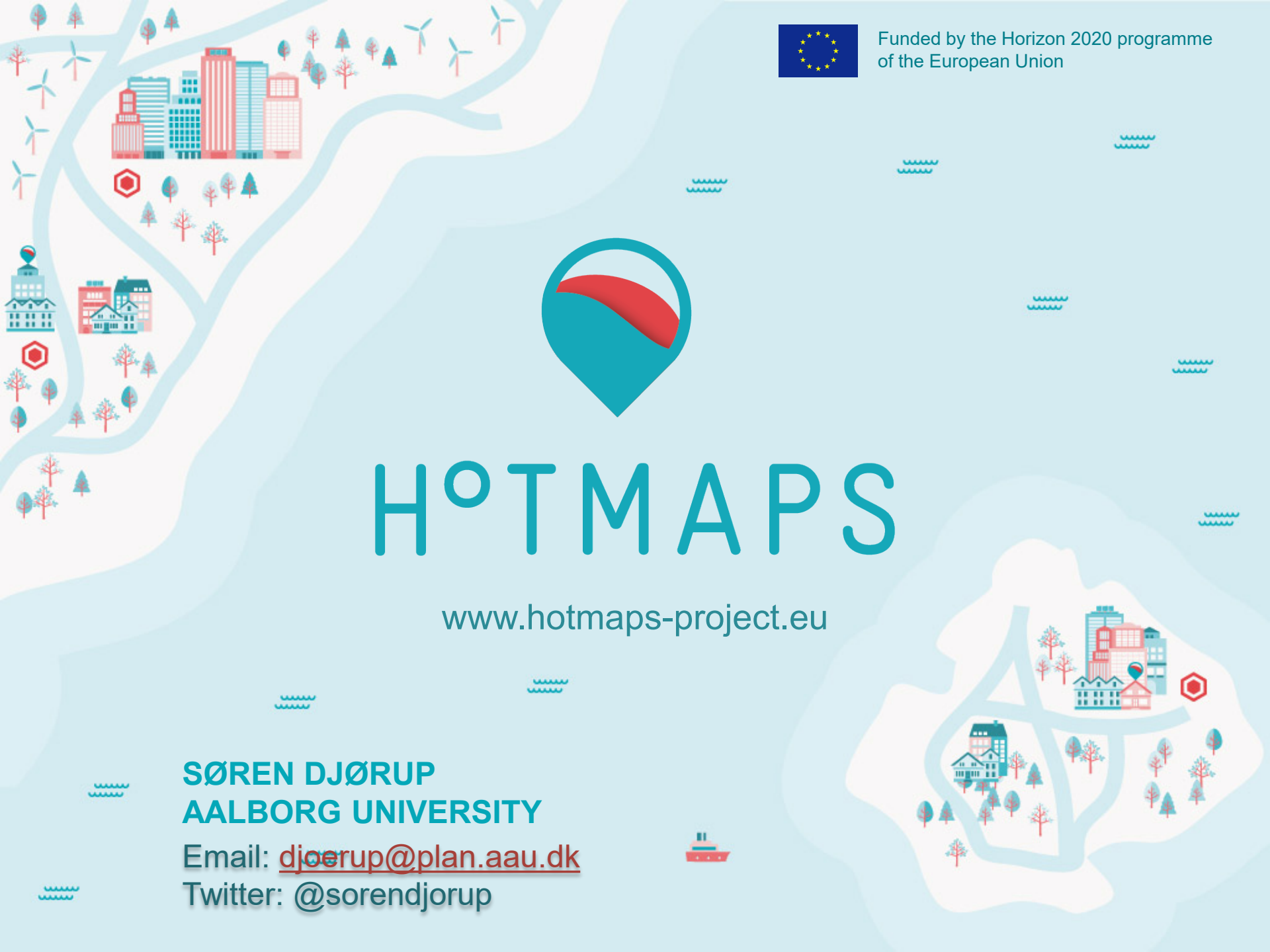
H^oTMAPS

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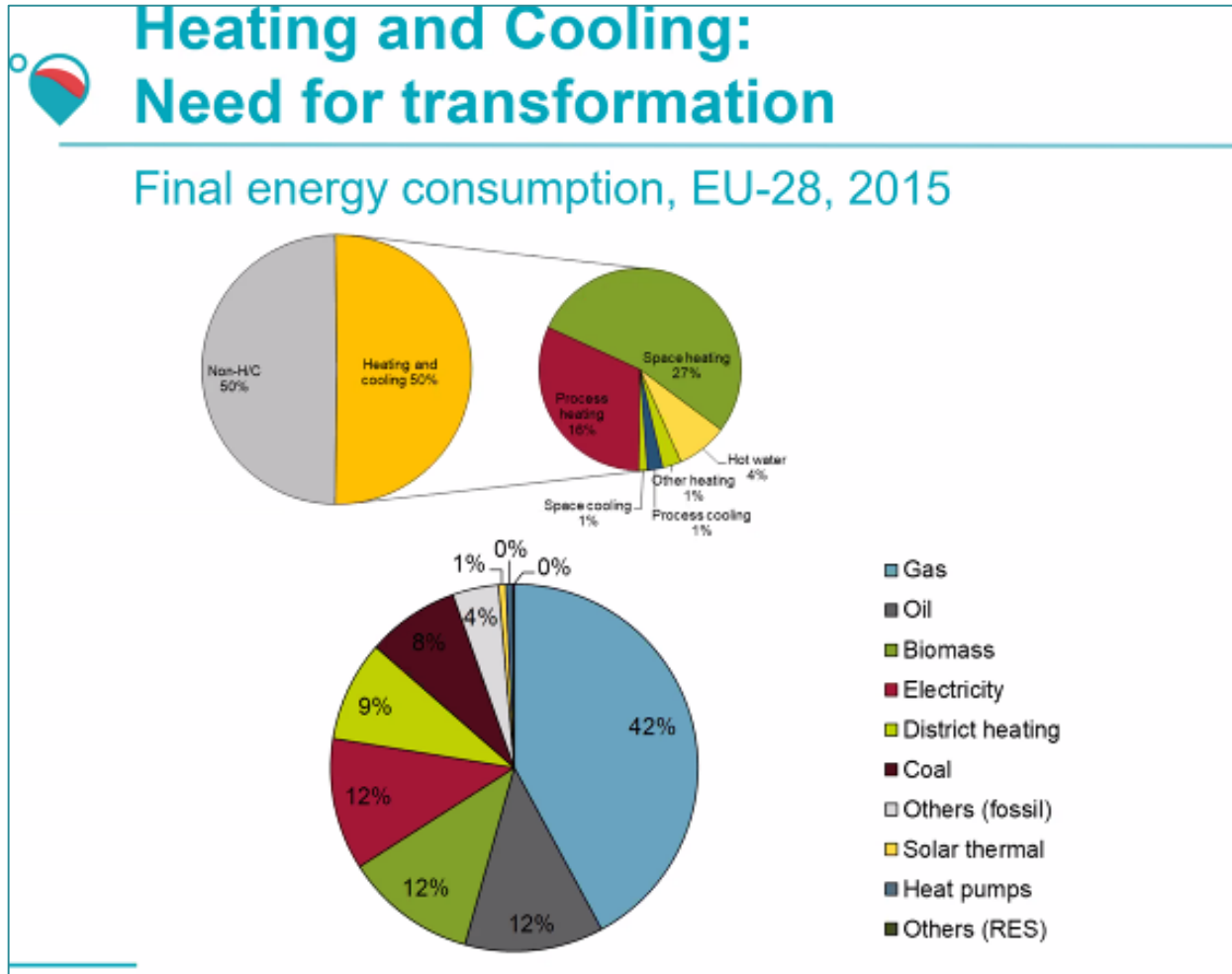
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Why Strategic Heat Planning?



Snapshot from Lukas Kranzl's introduction

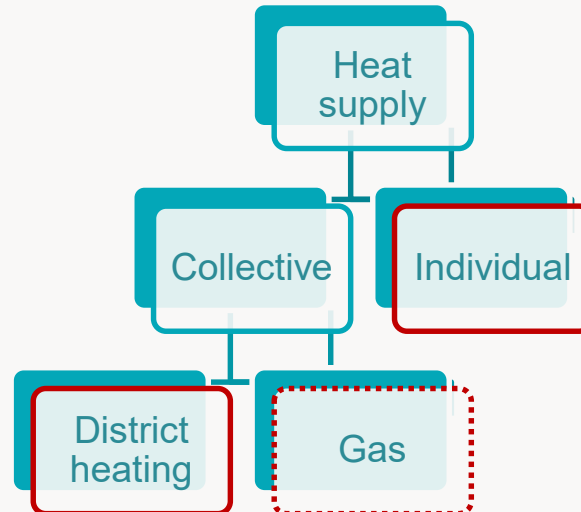
° What is strategic heat planning?





Strategic energy planning

- The purpose of Strategic Energy Planning is to **address strategic problems** with current energy supply and to **formulate strategies** and plans for transitions.
- Strategic heat and cooling planning may differ from other energy carriers due to the **local nature of heating and cooling** supply.
- **Interdisciplinary**: available resources, technical potentials, current legislation, the organisation, political drivers and barriers should be considered





Strategic heat planning is not business as usual - a definition

- Strategic heat planning is defined ***as action plans for realising long term visions of radical change in key parameters of the heat supply.***
- Historically, these key parameters could include fuel demand, environmental factors and security of supply.
- The definition emphasises that
 - the plans are oriented towards action,
 - this action is based on a long-term perspective and analysis, and that it strives for radical change.
 - This definition is shaped for the current situation in Europe, where radical change away from a fossil fuel-based energy supply is required. Radical changes necessitate a strategic analysis of, and long-term perspectives on, single initiatives.



Pre-Phase

Identify
drivers

- An analysis of strategic challenges

Identify
parameters

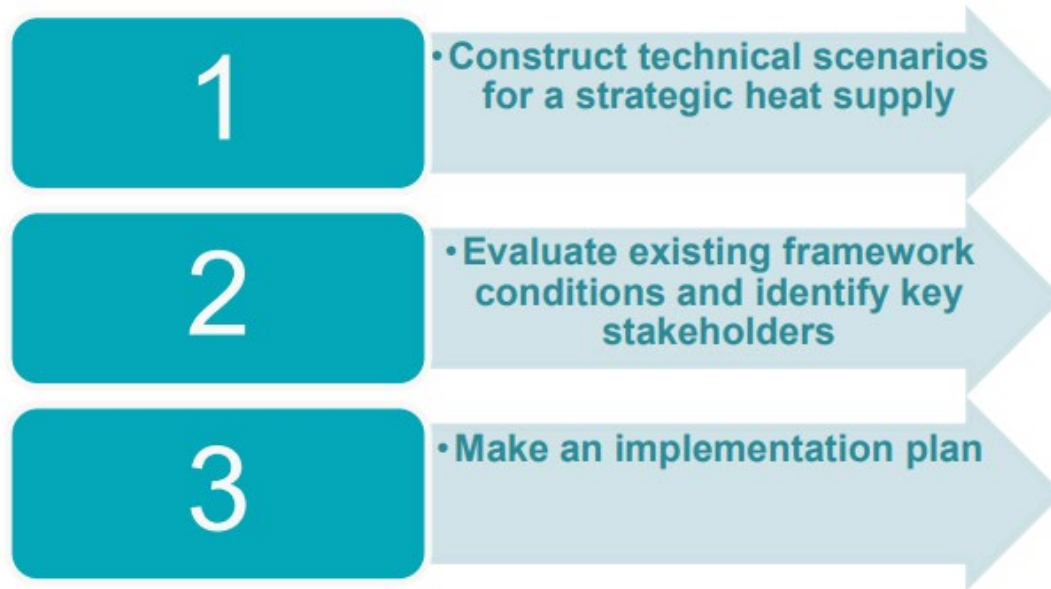
- Formulate strategic objectives and identify key parameters

Identify
solutions

- Identify the efficient solution
- Efficiency must defined in light of strategic objectives

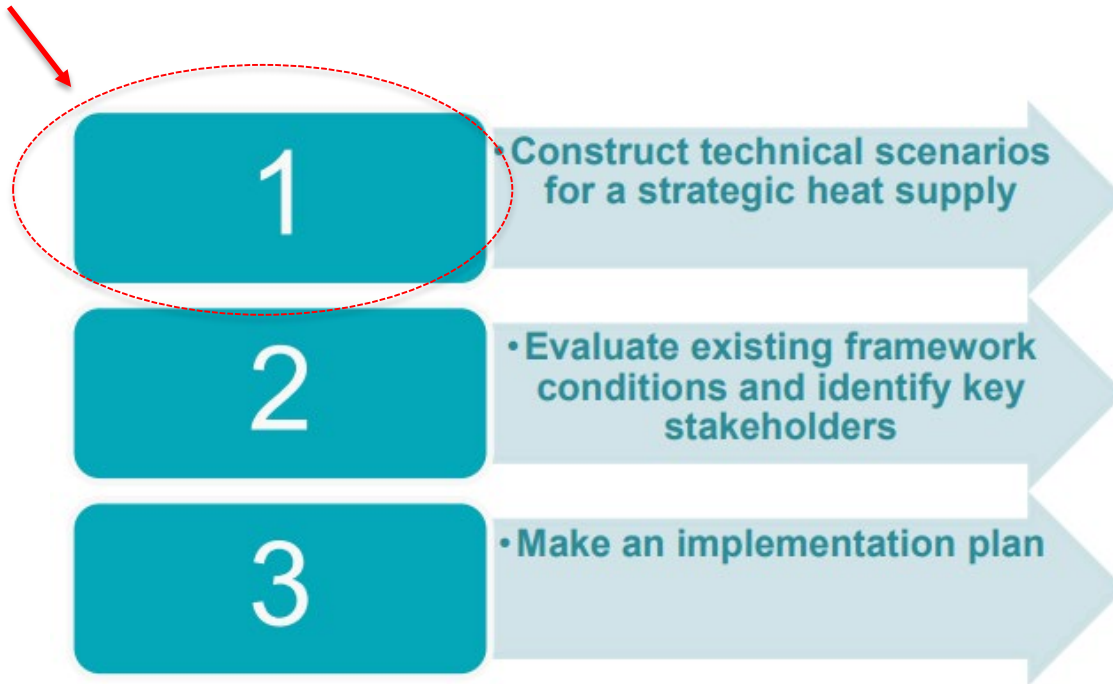


3 phases of strategic heat planning



3 phases of strategic heat planning

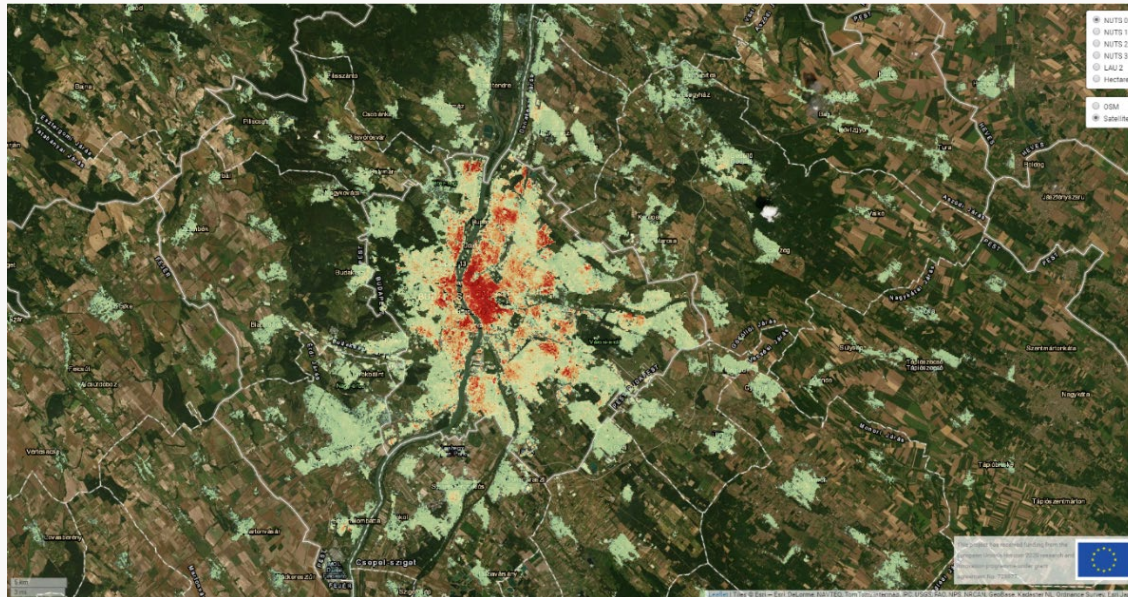
Here we can use tools!





Where District Heating?

- National or local procedure for identifying **socioeconomic viable district heating areas**.
 - Supported by available tools and reports (Eg. **Hotmaps**, Heat Roadmap Europe / Peta4, Thermos, and others).
- On this basis, establish designated areas for district heating systems through zoning policies.



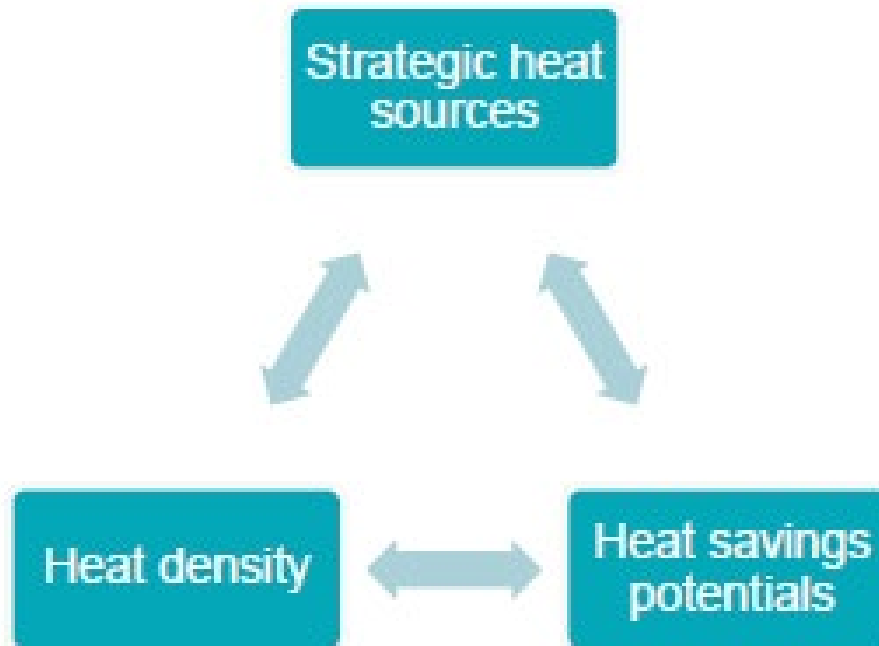


7-step model for technical analysis (Phase 1)

Construct technical scenarios for a strategic heat supply

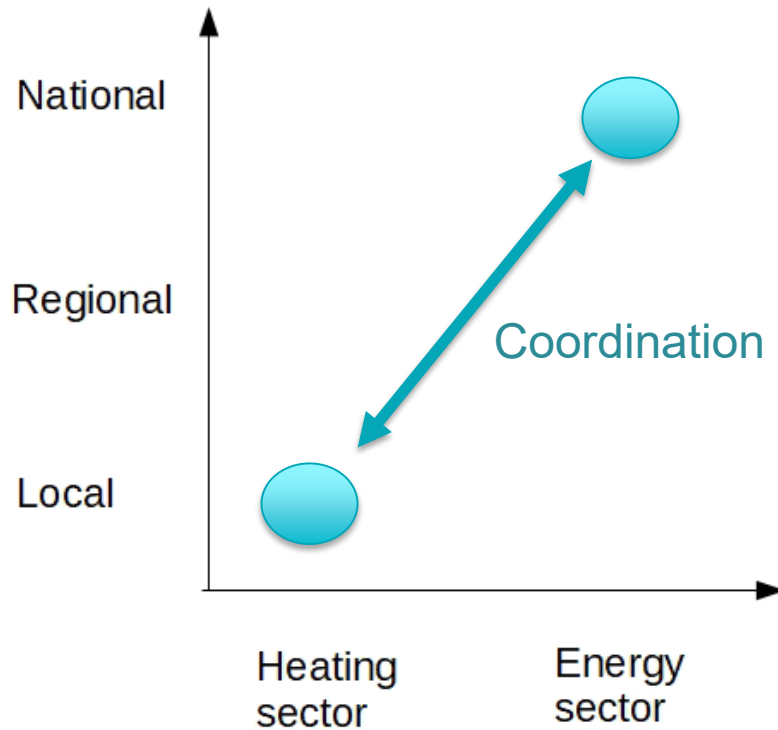
- 1) Quantify heat demand
- 2) Assess and quantify the availability of heat resources in the area
- 3) Assess and quantify the potentials of heat savings in buildings
- 4) Identify a balance between investments in heat supply and investment in heat savings.
- 5) Align with national/regional/local energy plans
- 6) Develop technical scenarios for a strategic heat supply plan
- 7) Iterate between step 4-5-6 in search for the best solution

Components of a strategic heat plan





Important to avoid local heating sector sub-optimisation





A national basis for strategic heat planning

A national regulatory frame for the heating sector.

- Plays an important role for creating the basis for a district heating economy.
- As an overall national frame, the role of the heat supply act is to outline the societal purpose of district heating systems.

Example - the Danish Heat Supply Act:

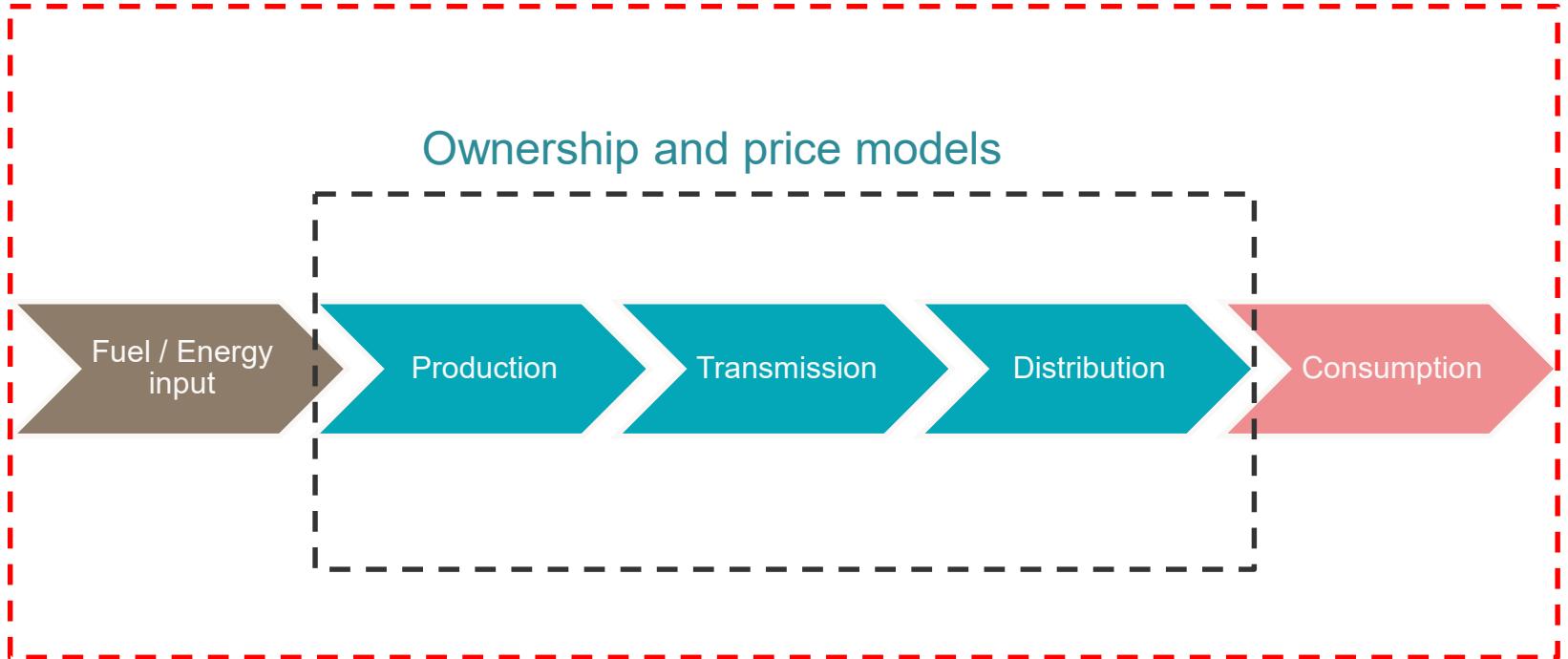
§ 1. The aim of the law is to promote the most socioeconomic, comprising environment friendly, use of energy for the heating of buildings and supply of hot water and within this framework to decrease the energy supply's dependence on fossil fuels.⁴

Translation from: Djørup, S. The institutionalisation of zero transaction cost theory: a case study in Danish district heating regulation. *Evolutionary and Institutional Economics Review* (2020). <https://doi.org/10.1007/s40844-020-00164-3>



Heat planning beyond tools

Procedures for the best solutions





Organisation: Ownership & price regulation matrix

	Consumer ownership	Municipal ownership	Private commercial ownership
True Costs	Good experiences in DK		
Price cap			
No price regulation			

Objectives of an organizational model:

- Consumer acceptance
- Financing
- Ability to do strategic heat planning





The vertical integration of regulation

Critical Heat Planning Powers and Responsibilities in Denmark

European Union	<ul style="list-style-type: none">• Develops binding and non-binding energy goals• Requires national heat plans
Danish National Government	<ul style="list-style-type: none">• Establishes national legislative framework• Frames socio-economic cost-benefit tests• Determines which costs can be recovered in DH prices
Municipal Governments	<ul style="list-style-type: none">• Responsible for planning local heat projects that promote local interest• Power to approve or reject proposed changes to heat infrastructure
District Heating Companies	<ul style="list-style-type: none">• May recover costs and assign costs to specific users• Must share benefits among all applicable customers and respond to requests made by municipalities
Individual Consumers	<ul style="list-style-type: none">• Directly or indirectly influence investment decisions of local DH companies• May contest requirement to connect

Fig. 2. Powers and responsibilities held by different levels of government and heat system users in Danish heat planning.

Source: Chittum A, Østergaard PA. How Danish communal heat planning empowers municipalities and benefits individual consumers. Energy Policy 2014;74:465–74. doi:10.1016/j.enpol.2014.08.001.



Summing up

- Strategic heat planning starts with strategic considerations – what is a good heating system?
- Tools can be used for quantifying and exploring technical solutions – creating *choice awareness*.
- The technical solutions to the strategic challenges are likely to involve changes in regulation and organisation



References

Contact

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Hotmaps Handbooks:

♥ Handbook I: Definition & experiences of strategic heat planning:

<https://vbn.aau.dk/da/publications/definition-amp-experiences-of-strategic-heat-planning>

♥ Handbook II: Guidance for the comprehensive assessment of efficient heating and cooling

<https://vbn.aau.dk/da/publications/guidance-for-the-comprehensive-assessment-of-efficient-heating-an>

♥ Handbook III: Appendix report to the Hotmaps handbook for strategic heat planning: Case descriptions

<https://vbn.aau.dk/da/publications/appendix-report-to-the-hotmaps-handbook-for-strategic-heat-planni>

♥ Handbook IV: An evaluation of the Hotmaps toolbox for strategic heat planning
(Summer 2020)

Other references:

- Thellufsen et al. (2020) "Smart energy cities in a 100% renewable energy context". Renewable and Sustainable Energy Reviews. DOI: <https://doi.org/10.1016/j.rser.2020.109922>
- Chittum A, Østergaard PA. How Danish communal heat planning empowers municipalities and benefits individual consumers. Energy Policy 2014;74:465–74. doi:10.1016/j.enpol.2014.08.001.
- Ole Odgaard & Søren Djørup (2020) "Review of price regulation regimes for district heating", International Journal of Sustainable Energy Planning and Management (In review)