

# Strategic planning in a municipal & legal perspective

### Work package 3.1

**What is the issue?**

**Key issues:**

- Energy planning
- Energy efficiency
- Energy storage
- Energy distribution
- Energy production

### Collaboration with other PhD projects

- Important that planning reflects best practice
- Technology acts as a natural constraint upon planning - "architecture"

Happy to help others as well

- Identify key issues
- Perhaps also find solutions to these problems

**Fig. 3.1** Energy Storage for Denmark  
**Fig. 3.2** The role of storage in the Danish energy system  
**Fig. 3.3** Policy regulation, self-regulation and its impact on the market of energy storage  
**Fig. 3.4** Geographical considerations of heat demand, efficiency and supply  
**Fig. 3.5** Geographical considerations of renewable energy systems

Finally...

Any questions?

### Current legislation

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### Project plan

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- Energy planning is a complex task
- Energy planning is a multi-disciplinary task
- Energy planning is a long-term task
- Energy planning is a dynamic task
- Energy planning is a collaborative task

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**Fig. 3.1 Energy Services for Denmark**  
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Michael Herborn  
University of  
Southern Denmark

Supervisor - Prof.  
Bent Ole Gram  
Mortensen

Hypothesizing that heat planning is challenged by outdated and obsolete plans, emerging low-energy buildings, increased waste incineration and surplus wind energy, this part focuses on the legal aspects of future strategic energy planning. The commitment to heat plans jointly made by municipalities, supply companies and other parties has weakened since 1990, when written plans became optional. Planning is challenged by renewable energy and energy efficiency. Energy price change, technology development and land use change affect the zoning of heat supply, further confronted by the complaint system and legislation. The legal obligations of district councils are considered and a comparison is made of the obligations and the actual behaviour of councils.

## Key elements of hypothesis

- Plans
  - Outdated & obsolete plans
  - Weakened cooperative planning by municipalities
  - Price fluctuation
  - Zoning & land use
- Energy efficiency
  - Low energy buildings
  - Technological advances
- Resources/Fuels
  - Waste incineration
  - Renewables
  - Waste industrial heat
  - Surplus wind energy
- Complaints system

Do current planning rules meet the challenges society faces with regard to the economy, the environment as well as supporting the potential technological solutions that might exist?

Is the law efficient?

## What is the issue?

Based upon the hypothesis...

- The law does not reflect the "state of the art" in heat supply
- Planning lacks full coordination between planning authorities and stakeholders

Test accuracy of this assertion through interviews with industry experts, examination of case law, political statements and reports by civil service/consultancies/academics



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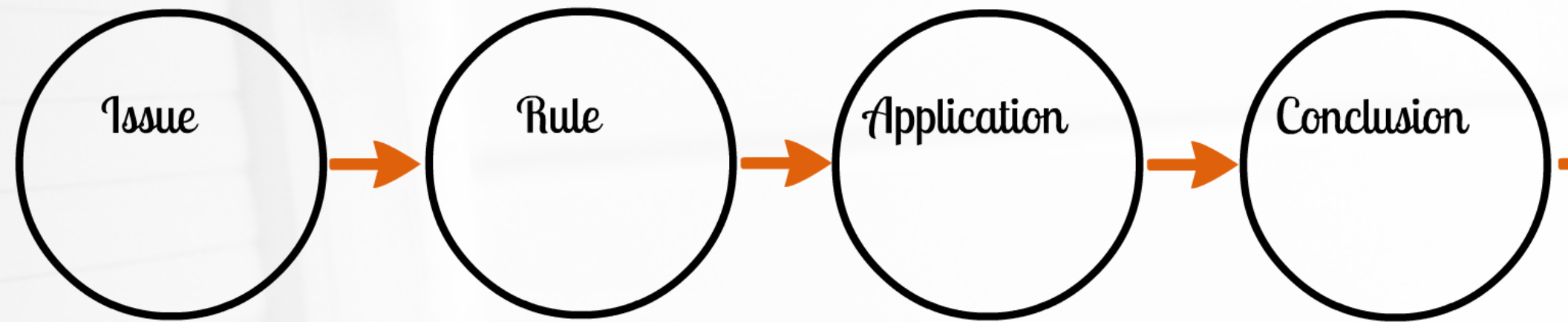
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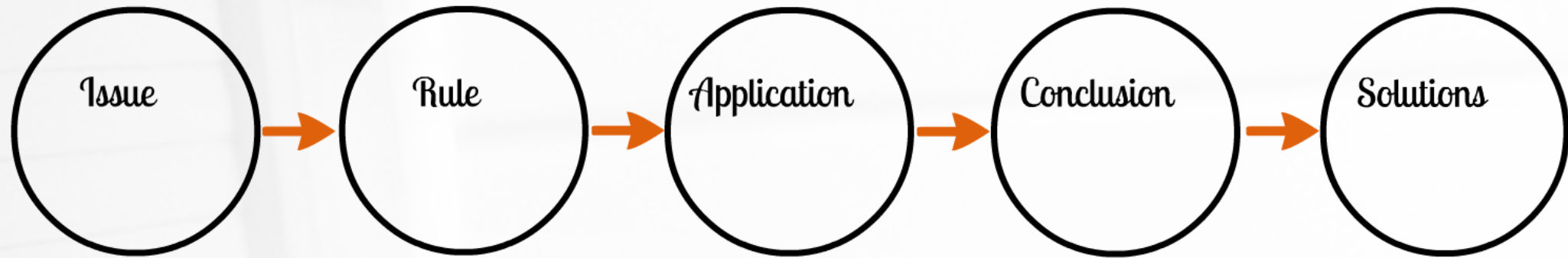
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# Current legislation

- Key laws are:
  - the Heat Supply Act (varmeforsyningsloven)
  - the Planning Act (planloven)
- Municipal freedom to plan energy matters within certain guidelines set by ministries with regard to cost and the environment

## Samfundsøkonomisk - Cost benefit analysis

Both the Planning Act (§1(2)(1)) and the Heat Supply Act (§1(1)) refer to a cost benefit analysis

### Purpose

**Planning Act (§1(1))**

- Ensure land use reflects danish societal interests
- Protect natural environment
- Sustainable development
- Planning reflects a total evaluation of the socio-economic costs and benefits with regard to development on a national, regional and municipal basis (§1(2)(1)).

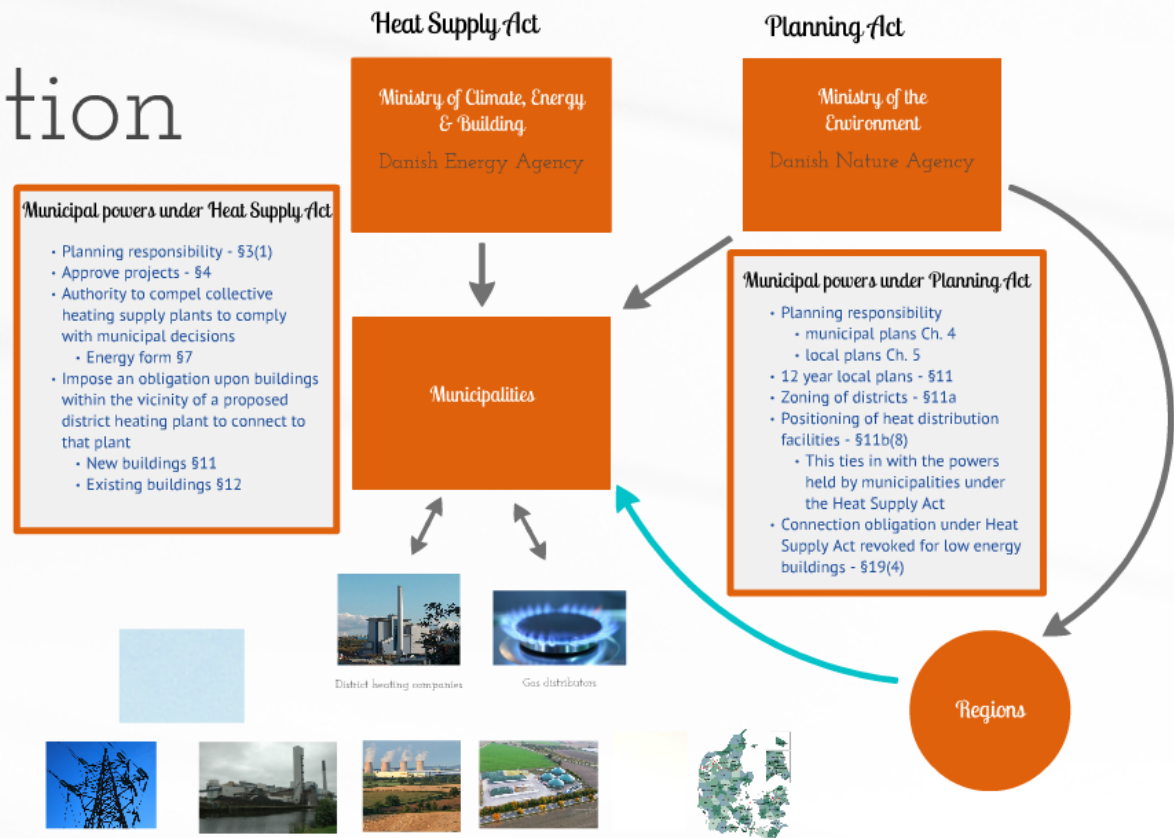
**Heat Supply Act (§1(1))**

- Base policy upon a socio-economic analysis of costs and benefits
- Environmental concerns come under this analysis
- Reduce dependency upon fossil fuels for energy suppliers
- Promote cogeneration of heat and power as much as possible (§1(2))

Read in other pieces of legislation such as the Promotion of Renewable Energies Act - biomass, biogas, wind, solar, geothermal etc.

"Promotion of renewable energies in accordance with environmental and socio-economic concerns with regard to reducing dependency on fossil fuels, energy security and reducing emissions of greenhouse gases."

- Not explicitly defined under the law, but guidelines have been drawn up by the Danish Energy Agency
- Considerations include not only the costs of investment, but also revenue forgone as a result.
- Intangible costs, though maybe hard to quantify economically also taken into account
- Current law doesn't promote best solution for environment/consumers, but best result for society
- Brørup - recent example



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## Heat Supply Act

## Planning Act

### Municipal powers under Heat Supply Act

- Planning responsibility - §3(1)
- Approve projects - §4
- Authority to compel collective heating supply plants to comply with municipal decisions
  - Energy form §7
- Impose an obligation upon buildings within the vicinity of a proposed district heating plant to connect to that plant
  - New buildings §11
  - Existing buildings §12

Ministry of Climate, Energy & Building  
Danish Energy Agency

Ministry of the Environment  
Danish Nature Agency

Municipalities

### Municipal powers under Planning Act

- Planning responsibility
  - municipal plans Ch. 4
  - local plans Ch. 5
- 12 year local plans - §11
- Zoning of districts - §11a
- Positioning of heat distribution facilities - §11b(8)
  - This ties in with the powers held by municipalities under the Heat Supply Act
- Connection obligation under Heat Supply Act revoked for low energy buildings - §19(4)



District heating companies



Gas distributors



Regions

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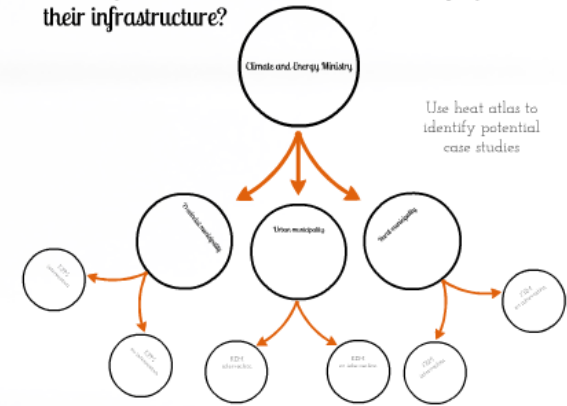
# Project plan

First section examines the current law and the Danish approach to strategic energy planning at a municipal level

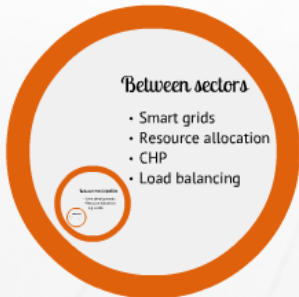
- Issue
- Rule
- Application
- Conclusion
- Solutions



'Maybe municipalities need different regulatory structures based upon either their location, their demographics or their infrastructure?'



## Coordination problems



## 4 focus areas

### Smart grids

- Compatibility with liberalised electricity sector
- Planning responsibilities across sectors
- International dimension

### District cooling

- Integration of systems
- Different market structure to district heating?
- Scope of the market

### Transport

- Transport as energy "store"
- Biogas - transport, district heating or both?
- Supply-side vs. demand-side investment

### Planning tools

- Zoning
- Compulsory connection
- Heat atlas & data sharing

## Law and economics

- Several schools of thought - leading examples include Austrian School (Hayek), New Haven (Calabresi), and "Old" Chicago (Coase, Richard Posner, Friedman)
- "New Chicago School" (Lessig, McAdams, Eric Posner) takes Old Chicago as a starting point
  - Rationality, individual choice, acceptance of market analysis
  - Law ought to offer the efficient solution
- Goes further in that instead of just accepting the market as a means of regulation, also includes normative regulation and "architecture"
- Crucially, New Chicago argues that while law is not the only means of regulation, law also the power to influence the other regulatory modes.

Law & Economics - brings tools for economic analysis and modeling to a legal context

For instance game theory... ("the science of strategic thinking")

'What makes 'New Chicago' relevant?'

New Chicago school is grounded in empirical observations - need to know what the law is in reality, not just what it is on paper

This makes it crucial to gather evidence from within the sector - interviews with key players, questionnaires, analysis of cases

## Other regulatory solutions?



- Sweden
- Liberalised regulatory structure
  - Similar challenges with regard to climate and heating choices



- United Kingdom
- Heavy investment in "climate" energy sources
  - Georing interest in district heating

# Project plan

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## Between sectors

- Smart grids
- Resource allocation
- CHP
- Load balancing

### Between municipalities

- Joint developments
- Resource allocation  
- e.g. waste



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# Between sectors

- Smart grids
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## Between municipalities

- Joint developments
- Resource allocation  
- e.g. waste

### National strategy

Joint development of cross-sector  
initiatives and programmes  
- e.g. waste



## *Between municipalities*

- Joint developments
- Resource allocation
  - e.g. waste

### *National strategy*

- Joint development of technologies
- Agreements on fuel types
- Economies of scale through joint investments

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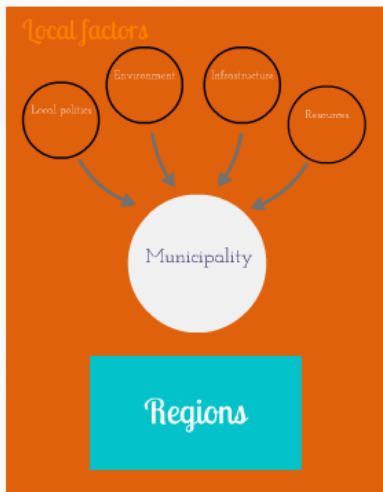
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*No one-size-fits-all  
municipality*

## Linear path



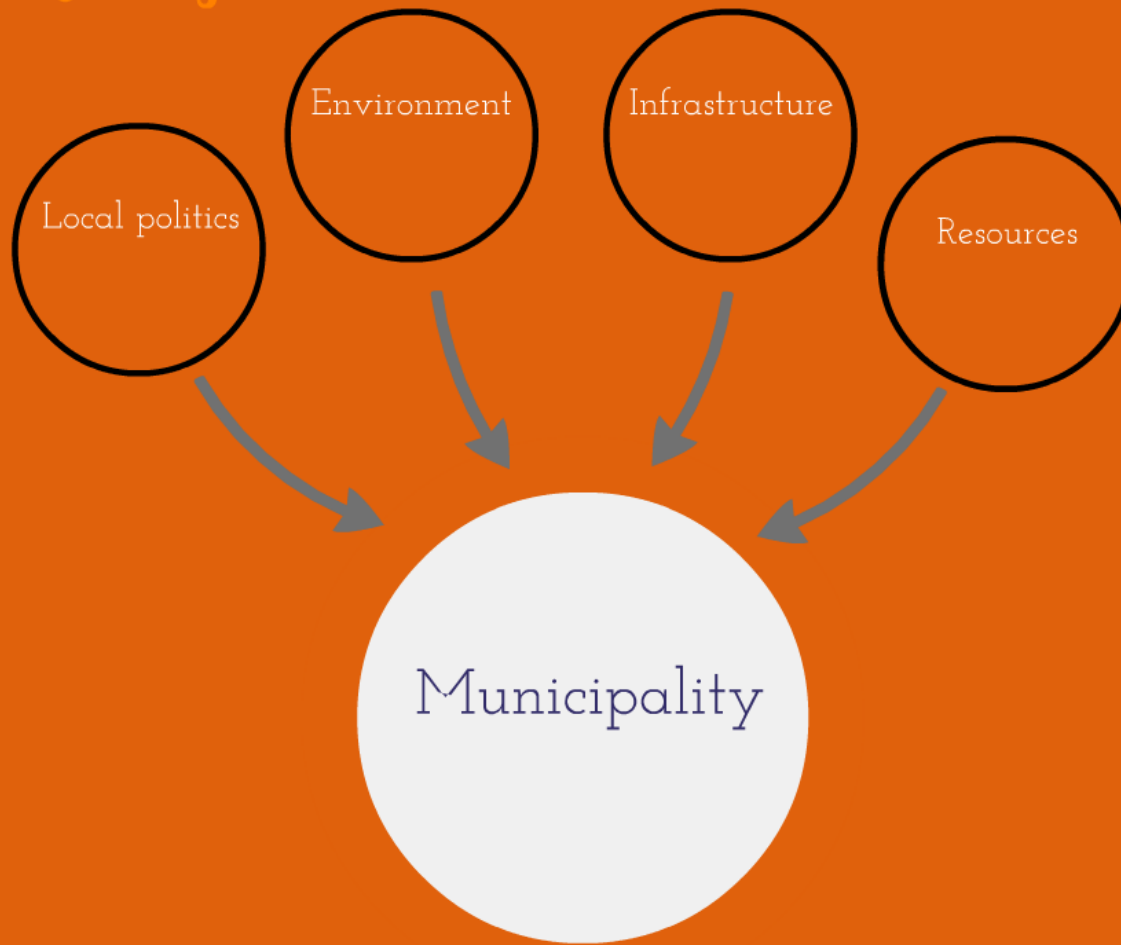
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But, at the point the ministries gets involved for a second time, the damage is already done:

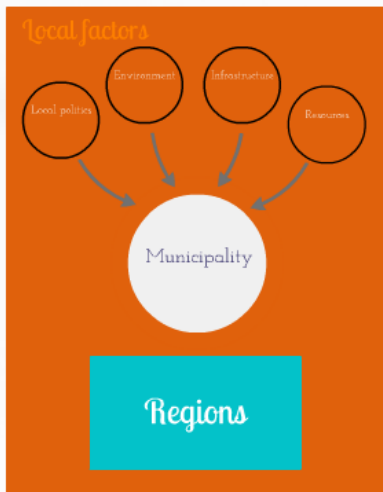
- Investments made
- Reactive legislation rather than proactive

What do we lose through being uncoordinated?

# Local factors



Regions



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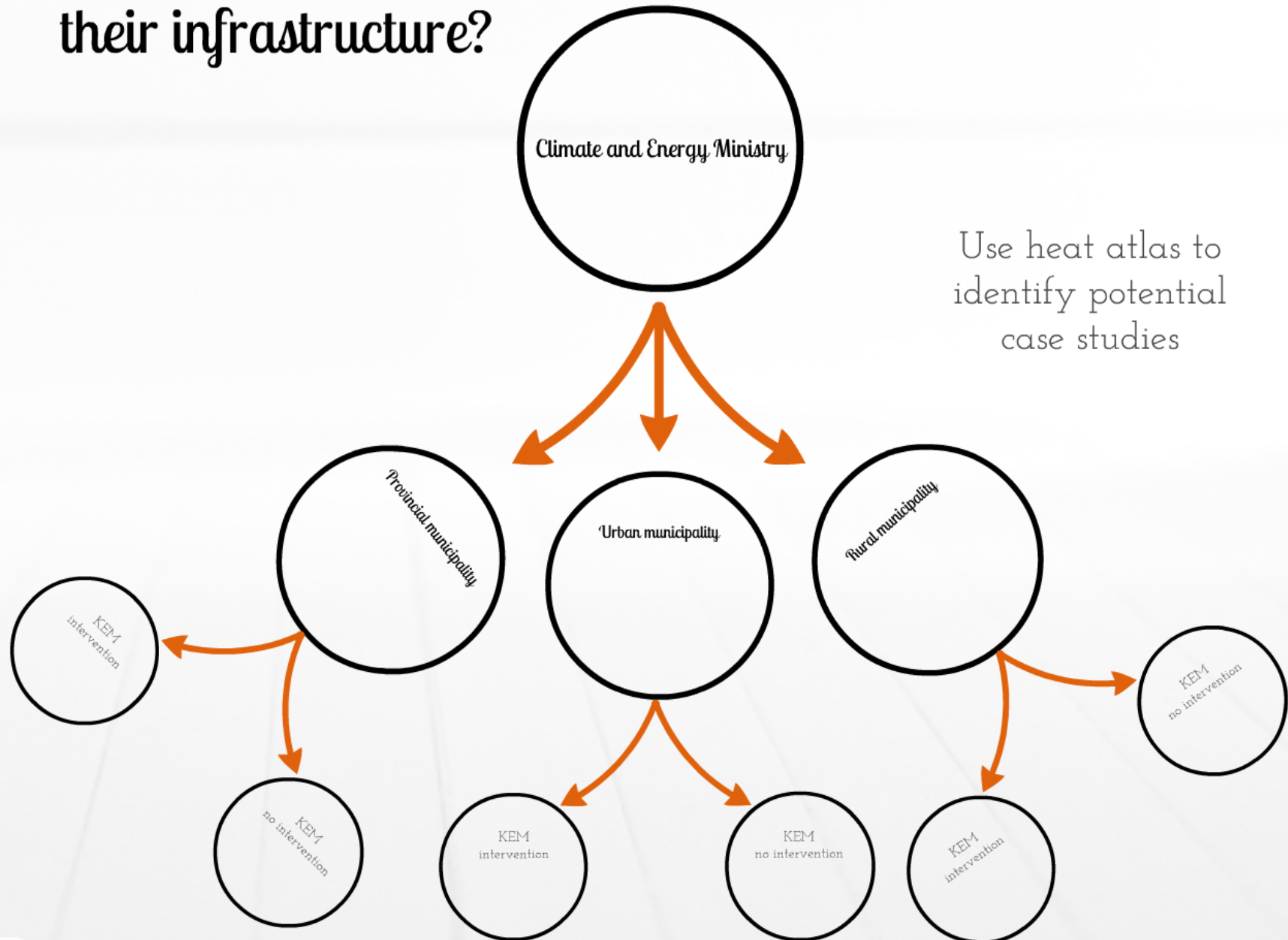
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municipality

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## But is coordination always a good thing?

- Local democracies - serve constituents' interests
- National field laboratory with innovative approaches attempted
- Extra bureaucratic burdens through cooperation?

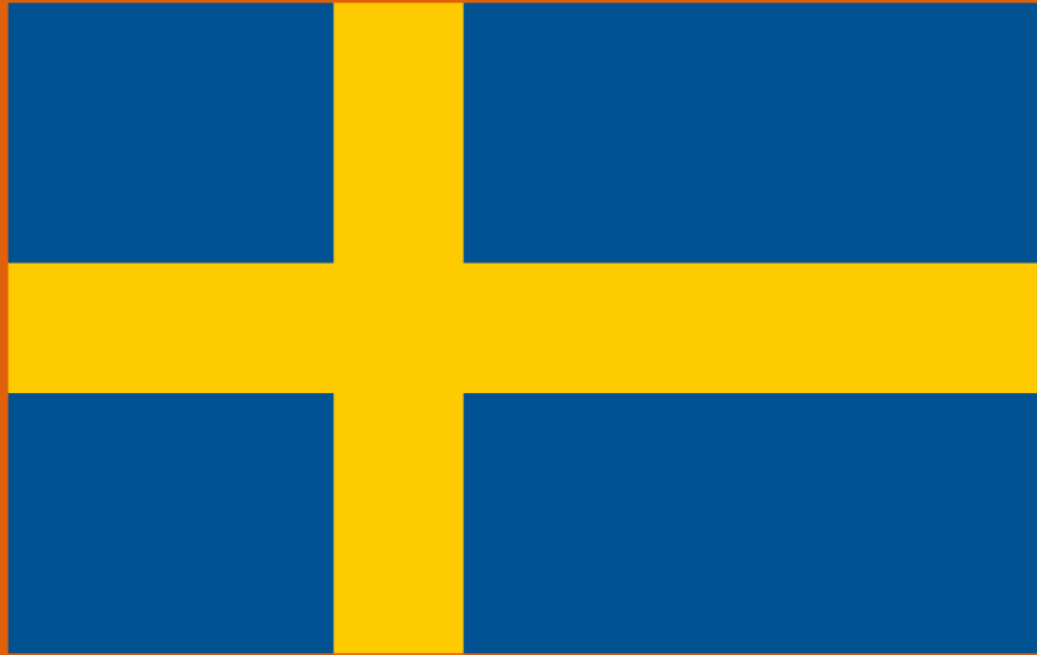


Regulatory solutions ought to respect municipal autonomy while maintaining coordinated national standards and approaches

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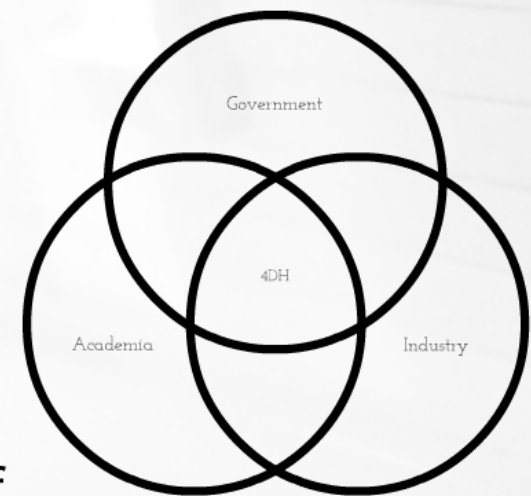
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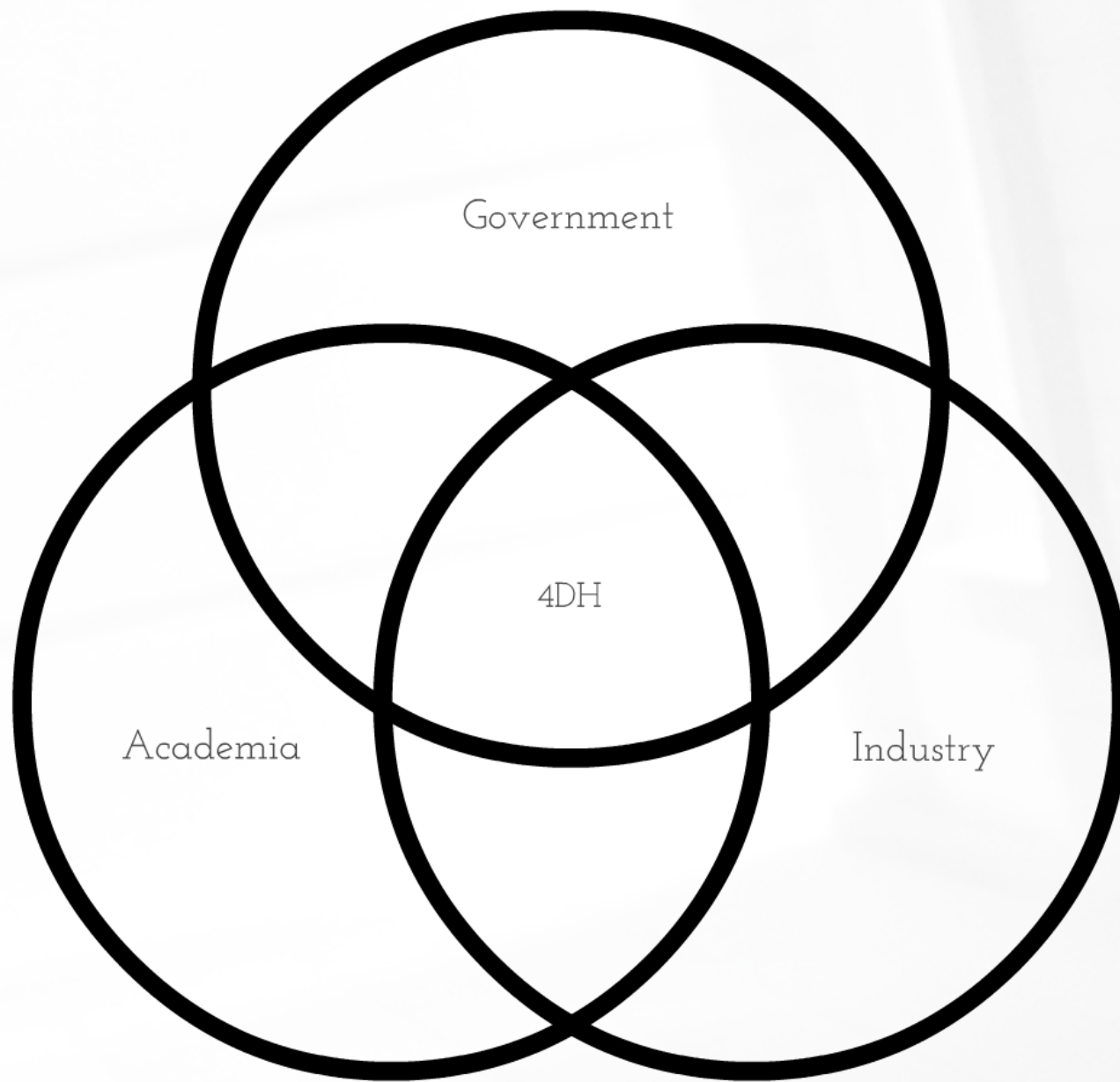
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PhD 2.5 The role of district heating in the Chinese energy system

PhD 3.2 Price regulation, tariff models and ownership as elements of strategic energy planning

PhD 3.3 Geographical representations of heat demand, efficiency and supply

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Plan → Act → Monitor → Evaluate → Adapt

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Legislation	Year
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Energy Supply Act	2008
Energy Efficiency Act	2008
Energy Storage Act	2008
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Full on time according to the Danish approach for energy planning

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- Act
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- Adapt



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