Evaluation of regulation for flexibility – a methodology

COPENHAGEN, 12–13 SEPTEMBER 2017

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Last year’s presentation → 2 papers

• Last year’s 4GDH: ”Framework conditions for flexibility options in the district heating–electricity interface”

“Regulatory incentives for flexible district heating plants in the Baltic countries”
  • Accepted for Utility Policy (revisions)

“Incentives for flexible district heating in the Nordics”
  • Final touches before submission
Objectives for today’s presentation

1. First steps in methodology for evaluation of DH regulation
2. Next steps: Using it

Get your feedback and criticism—similar studies, contacts, literature
RQ

How can regulation for flexibility be evaluated in a comprehensive system- and societal impact analysis?
Why score regulation?

Flexibility for flexibility’s sake

=  

One-eyed & irrelevant

Flexibility for society’s + energy system’s sake

=  

Comprehensive & relevant
3 areas of flexibility-regulation

- Increased **Operation** of flexible DH
- Increased **Investment** in flexible DH
- **Non-economic regulation** affecting flexible DH

As described and defined in


3 areas – examples of regulation

**Non-economic regulation**
Environmental regulation, technology restrictions, ownership

**Operation**
Taxes, subsidies, grid tariffs

**Investment**
Subsidy, rate of return requirements, financing requirements

- Heat production cost vs. Heat production cost
- Electricity price vs. Electricity price

`flex4res logo`
Parameters for scoring

**Flexibility**
- Ability to integrate VRE (CEEP)
  - Lund, 2014, Lund et al., 2014
- Total share of RE
  - IEA, 2014; Lund and Mathiesen, 2015

**Socio-economy**
- Fiscal impacts – increase or maintain state revenue
  - Danish Energy Agency, 2007
- Externalities

**Business economy**
- Increase or maintain company revenue (suppliers as well as grid companies).
  - Assumption

**Political goals**
- Decrease GHG or other environmental targets
  - Current policies
- Welfare
  - Webb, 2015
Values purely based on numbers: TWh, TCO2, EUR, etc.

THIS IS AN EXAMPLE
Next steps

1. Expert review of scoring method

2. Testing the scoring method

3. Applying method on flexibility-related regulation (following studies; not this one).

4. Recommendations for regulation
FYI: Study on modern DH in US coming up!

Framework conditions for DH in US starting January 2018

Inputs and ideas very welcome

- Collaboration
- Contacts
- Previous studies
- Financing for the research
Objectives

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2. Get your feedback and criticism – similar studies, contacts, literature


• Norges vassdrags- og energidirektorat (NVE), 2003. Samfunnsøkonomisk analyse av energiprosjekter.


Relevant testing of scoring method: Electricity tax

Based on the following newsletters since April 2014:
- Danish District Heating Association
- Danish Energy Association
- EnergiWatch
- Danish Ministry of Energy, Utilities and Climate