From vision to reality – integrating energy goals in the development of a new urban district in Sweden

A case study of Brunnshög

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Background

- Sustainability-profiled district = an innovative urban development project with high ambitions for sustainability*.
- Since 2015 no stricter demands than the national legislation.
- Municipalities have to find other tools and instruments to implement more ambitious sustainability goals.
- Instruments used in Brunnshög:
  1. Collaboration contract with the local energy company
  2. Land allocation competitions
  3. Sustainability agreements with the developers

* van der Leer, J., Calvén, A., Glad, W., Femenías, P., & Sernhed, K. (2023). Energy systems in sustainability-profiled districts in Sweden: A literature review and a socio-technical ecology approach for future research. *Energy Research & Social Science*, *101*, 103118.

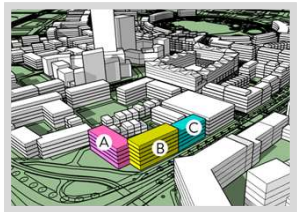
Aim of study

Visions and goals

3 instruments



Collaboration contract



Land allocation competitions



Sustainability agreements

Developers' commitments



Brunnshög



Lund municipality 2022



Lund municipality 2020

District heating in Brunnshög



Schematic view of LTDH in Brunnshög
(from COOL DH final summary report 2022)



Energy plant at MAX IV

Methods

Document analysis of planning documents

Interviews with the municipality and developers

Energy-related visions and goals



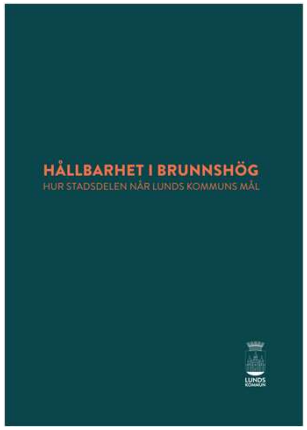
2012

Lund climate goal

Minimize the climate impact – **Balance** the good soil – **Maximize** city life and impressions

Brunnshög energy goals

~~"the city as a power plant"~~ **Positive Energy District**

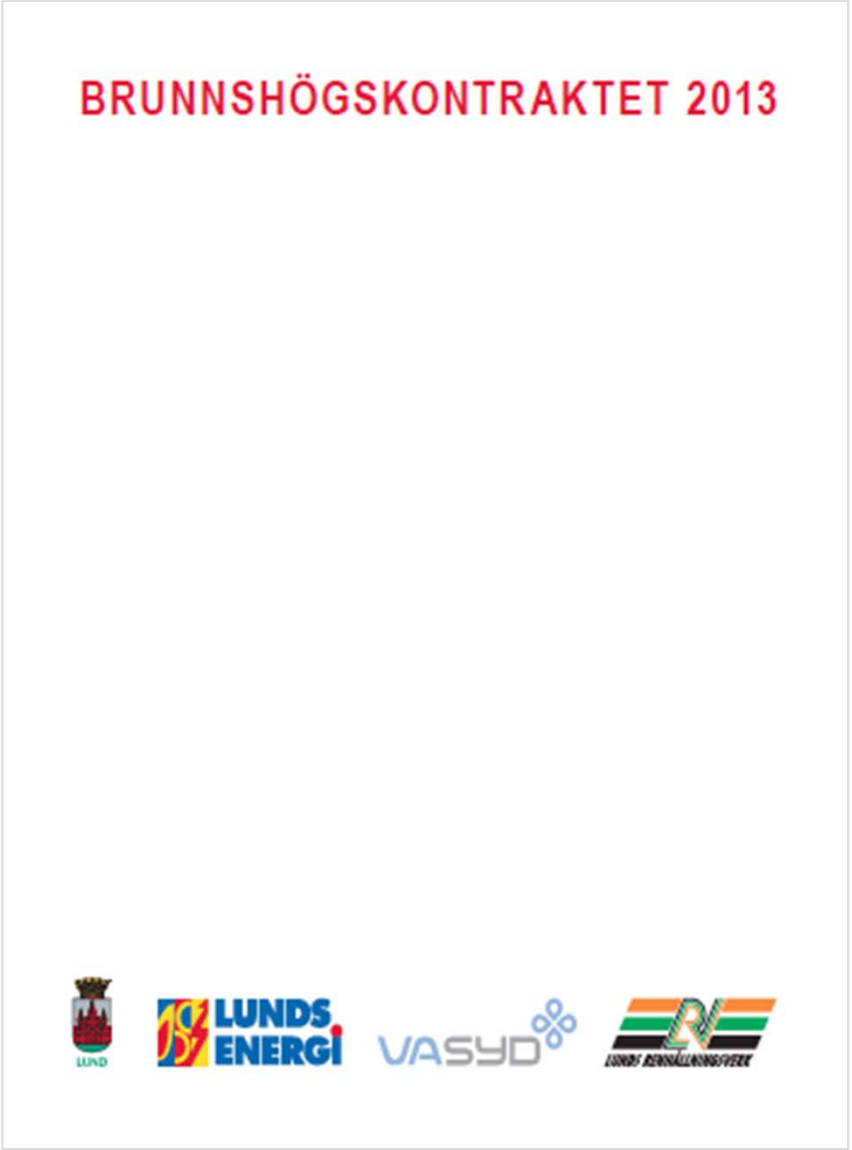


2022

- Connect all future buildings to the low-temperature district heating network
- Install solar panels on all buildings to cover the entire electricity demand of the buildings and the users.

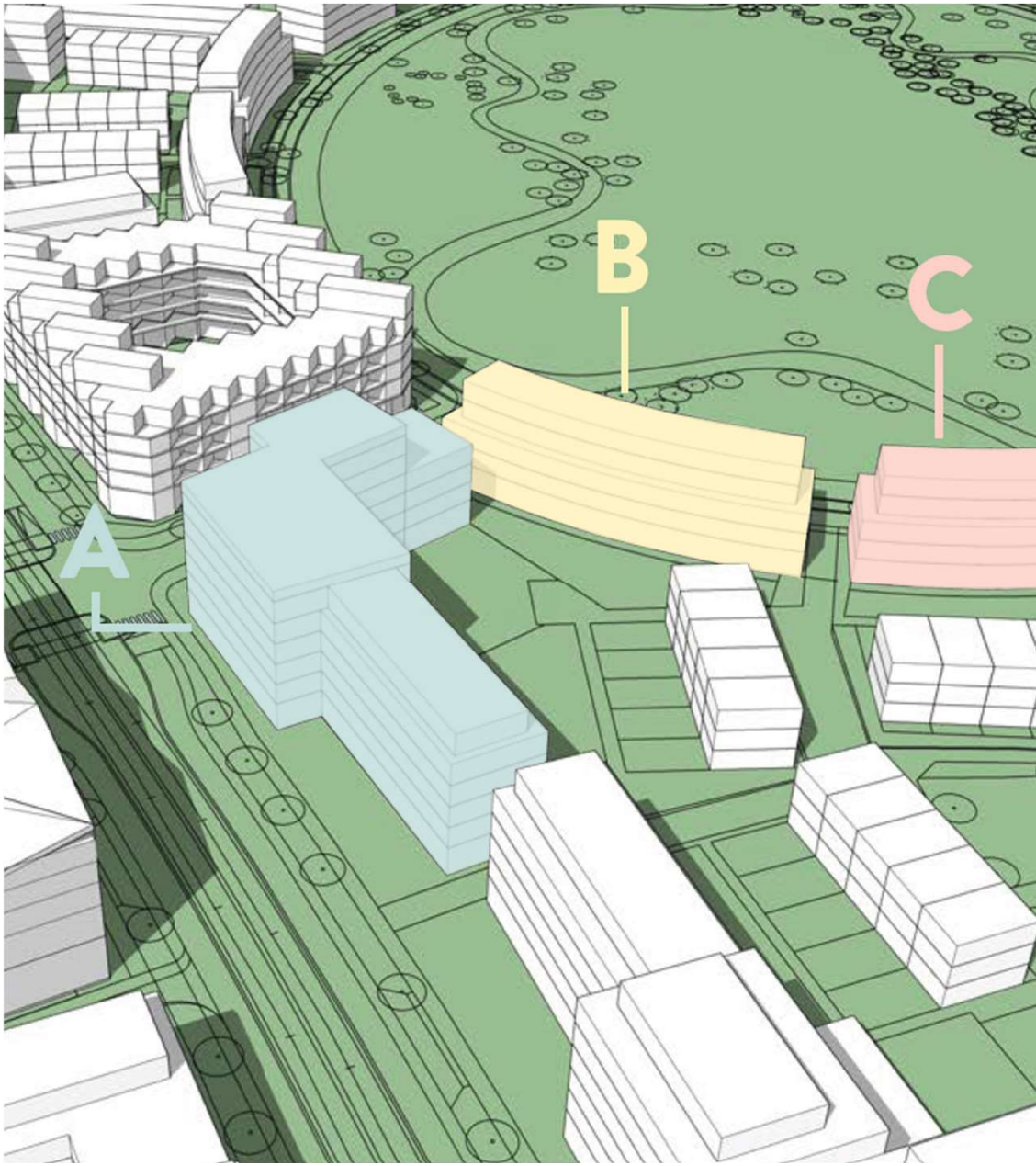
Instrument 1: Collaboration contract with the local energy company

- Collaboration platform
- Focus areas and concrete energy goals
- Updates and follow-up before each new construction phase



Instrument 2: Land allocation competitions

- 12 competitions
- 29 building projects
- Jury: representatives from the municipality + invited architects and experts



Instrument 2: Land allocation competitions

Competition/ year	Procedure	Selection criteria
2010	Quality criteria + price	• Innovation in terms of sustainability
2015	Quality criteria + price	
2016	Price	• Contribution to Brunnshög's sustainability goals
2017a	Quality criteria	
2017b	Quality criteria	
2017c	Quality criteria	
2018	Quality criteria	• Building certification of *Miljöbyggnad* level silver or higher • Photovoltaics on the building • Innovation
2020	Quality criteria + price	
2021	Quality criteria + price	
2022a	Quality criteria	• Building certification of *Miljöbyggnad* level silver or higher • Photovoltaics on the building • Climate neutrality
2022b	Quality criteria	
2023	Quality criteria	

Instrument 2: Land allocation competitions

From a more open approach to three crucial criteria:

- climate neutrality
- at least two innovations per project
- architectural quality

Example:

Part I:

1. Building certification of Miljöbyggnad level silver or higher (50 p)
2. Photovoltaics on the building (50 p)
3. Kitchen design to facilitate recycling (50 p)
4. Bike parking diversity (50 p)

Part II:

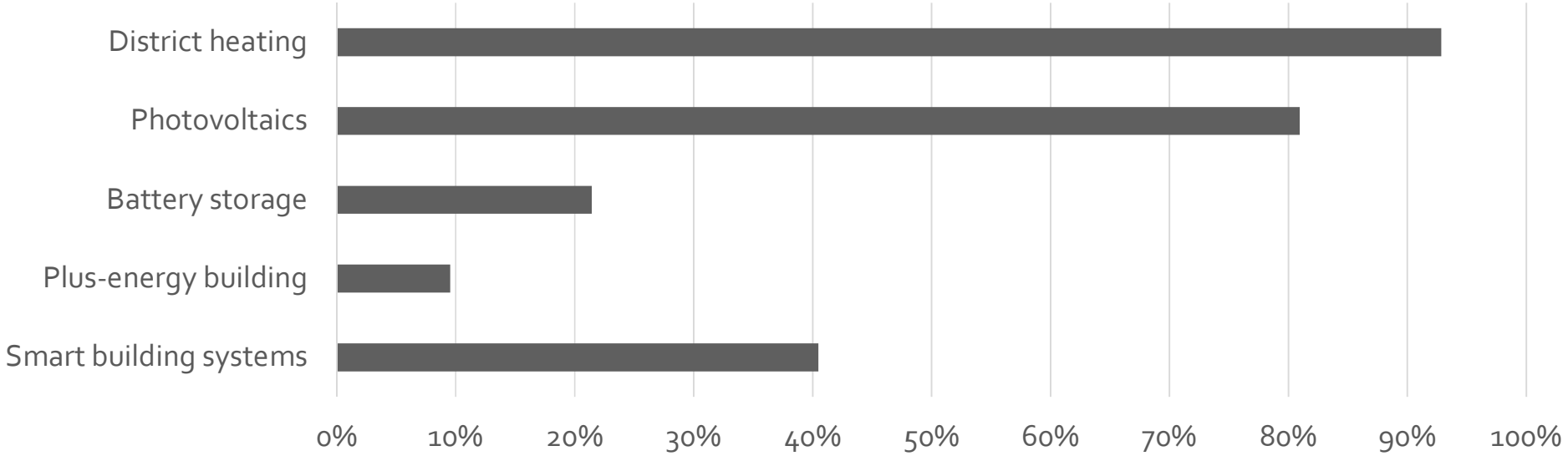
1. Architecture (25, 50, 75 p)
2. The future student housing (25, 50, 75 p)
3. Climate neutrality (25, 50, 75 p)
4. Three innovations for sustainability (20, 40, 60 p)

Instrument 3: Sustainability agreements with the developers

MINIMIZE CLIMATE IMPACT

Sustainability goals	What Lund and collaboration partners do	SUGGESTION: Developer actions	PLANNING: Developer commitments	RESULT: Developer achievements
Residual heat from the research facilities is utilized in the buildings				
The buildings have their own solar power generation				
The primary energy use in the buildings is minimal				

Instrument 3: Sustainability agreements with the developers



Developer perspectives

Land allocation competitions

The current market condition makes it difficult to invest in costly innovations or sustainability measures. Dependent on the customers willingness to pay for premium sustainable housing.

Sustainability agreements

Clear and concise agreement of what needs to be delivered.

Difficulty to determine during the planning phase.

No immediate consequences of not meeting the obligations.

Developer perspectives

Land allocation competitions

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Conclusions

- Recognize the importance of resilience of the overarching visions and goals.
- There is a need for the development of additional tools.
- The effectiveness of sustainability agreements between municipality and developers depends on a balance between flexibility and clarity.



Thank you!

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