

Social Sustainability in the Implementation of District Heating



This webinar will merge two topics that are not usually discussed together. The hands-on construction phase of district heating and research on social sustainability. Learn about both worlds and discover how they are interconnected.

Join the webinar on Monday, 29 September 13.00-13.55 CET

the program

- ▶ Welcome
- ▶ Presentations and questions:
 - "Recommendations for a good Implementation of District Heating"** by Kirstine Pape Stensgaard
 - "How a focus on social sustainability can support the development of district heating"** by Johanna Ayrault
- ▶ Dialogue between Kirstine, Johanna, and participants in the webinar



the speakers



the moderator

Johanna Ayrault

Postdoctoral Researcher,
Research Institute for Urban
Management and Governance,
Vienna University of Economics
and Business (WU Wien).
Her research focuses on the
collaborative governance of
green district heating systems,
as a lever for more social
and societal sustainability.



Kirstine Pape Stensgaard

Head of Planning & Distribution,
District Energy department
of COWI.
She has practical experience from
the planning, tendering, and
implementation of many district
heating projects in Denmark.



Hanne Kortegaard Støchkel

Project Development
Manager, the Danish Board
of District Heating (DBDH).
Her mission is to share
knowledge, make district
heating even better, and find
new ways for district heating
to contribute to society.



MONDAY
SEPTEMBER 29
START 13.00 CET

join the webinar ➡

share your curiosity

Contact moderator Hanne Kortegaard Støchkel at DBDH [hks@dbdh.org], if you have questions or ideas that could contribute to the discussions in the webinar.

We will use your input to prepare the webinar.

The webinar is organised by DH Divas Scandinavia in collaboration with DH Divas in Brussels, the UK, and the Baltic Countries.

Social Sustainability in the Implementation of District Heating



This webinar will merge two topics that are not usually discussed together. The hands-on construction phase of district heating and research on social sustainability. Learn about both worlds and discover how they are interconnected.

Join the webinar on Monday, 29 September 13.00-13.55 CET



the speakers

Johanna Ayrault
Postdoctoral Researcher,

Kirstine Pape Stensgaard
Head of Planning & Distribution,

the moderator

Hanne Kortegaard Støchkel

the program

▶ Welcome

▶ Presentations and questions:

"Recommendations for a good Implementation of District Heating" by Kirstine Pape Stensgaard

"How a focus on social sustainability can support the development of district heating" by Johanna Ayrault

▶ Dialogue between Kirstine, Johanna, and participants in the webinar

- We welcome questions and discussion
- Presentations available later ([link](#))
- District Heating Divas coordinators
 - Scandinavia: Kamma Eilschou Holm
 - UK: Rachael Mills
 - Baltic States: Anna Volkova
 - Brussels: Aksana Krasatsenka

Recommendations for a good Implementation of District Heating

Social Sustainability in District Heating Projects

Kirstine Pape Stensgaard
Head of Planning and distribution
COWI, District Heating and Cooling

Agenda

- Basis for design
- Proces Overview
- Pre-projects and stakeholders
- Dialogue with authorities
- Design
- Tender documentation
- Construction management and supervision
- Wrap up and ESG



Basis for design

1

Danish Project Proposals

- The Danish municipalities must approve a project proposal before converting consumers
- The project proposal contains calculations for the financial forecast and show positive business- and society economics

2

Hydraulics calculations

- Sketching of networks and supply options in a hydraulic program such as Leanheat Networks
- Calculations estimate pipe sizes and plant requirements → support financial planning.

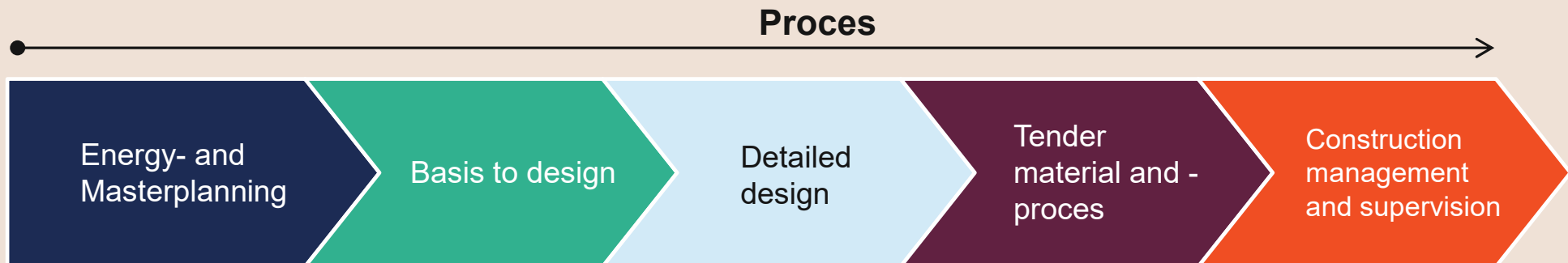
3

Pre-project

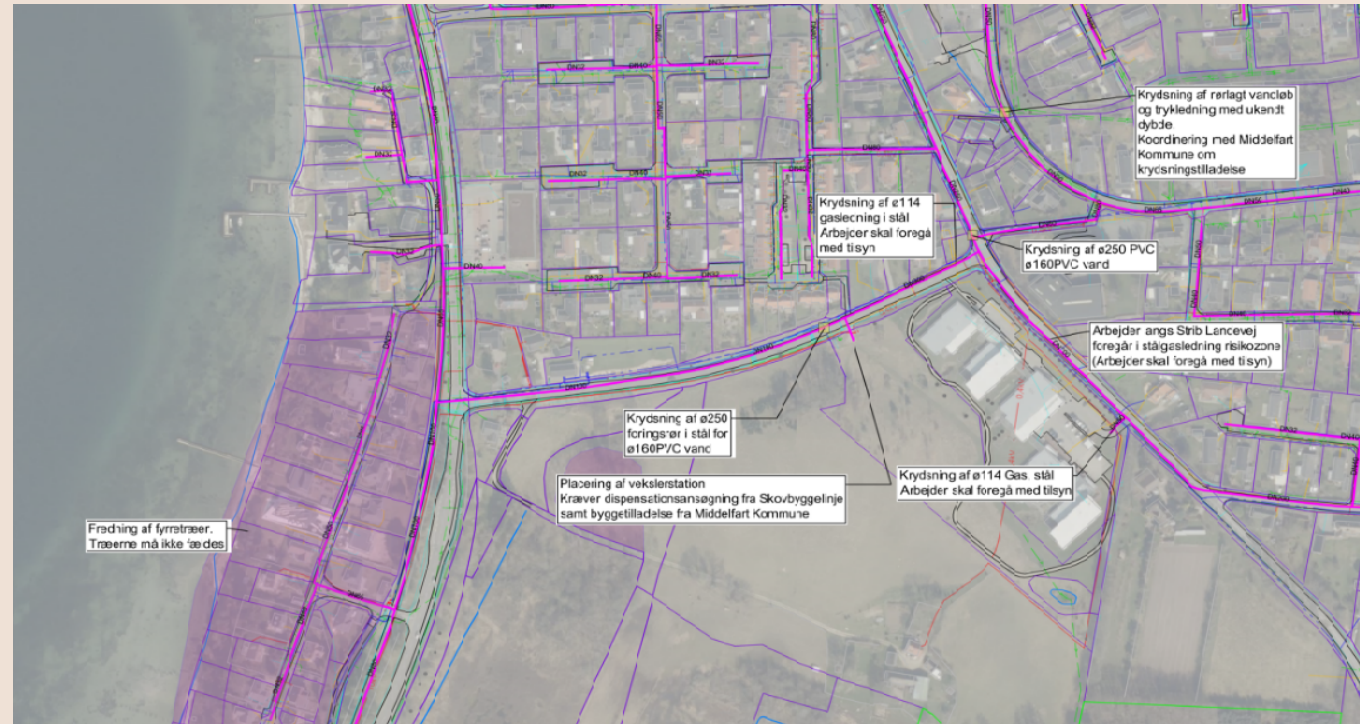
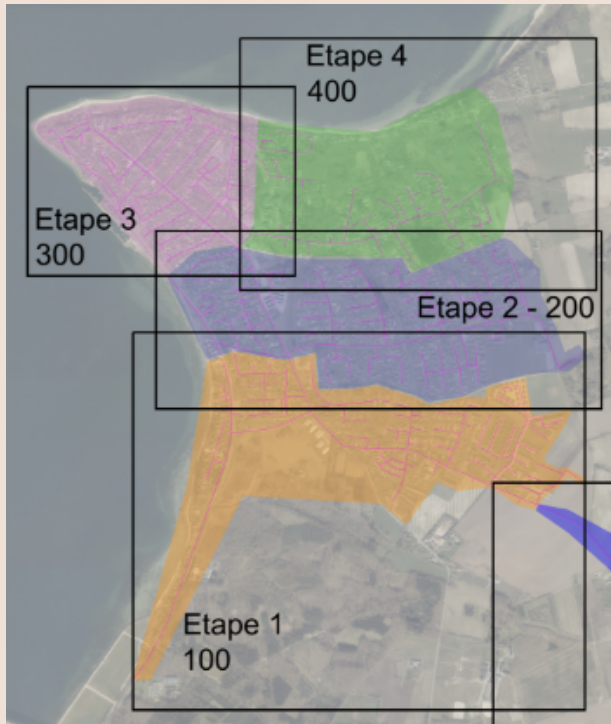
- Investigation of special challenges for construction, environmental approvals, external pipes, land ownership and recalculation of financial conditions.
- Outcome: Overview drawings with texts and report.

Process Overview

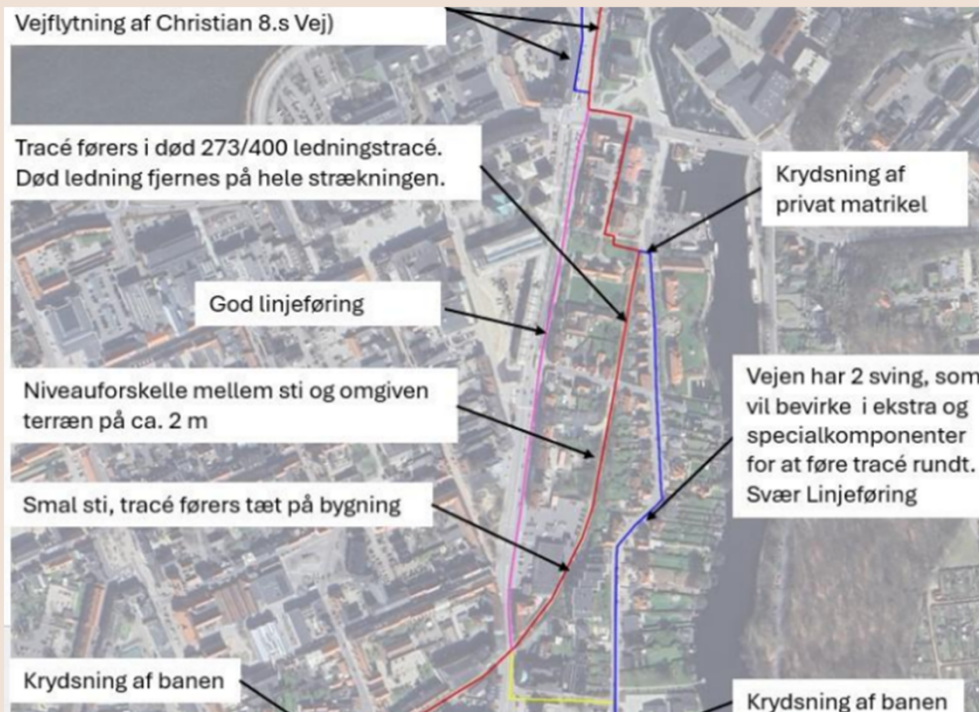
- Overall process from idea to execution.
- From overview of supply area to dimension of grid. Placement in ground and dialogues with stakeholders.
- Last bidder questions and contracting before start up of construction and supervision



Pre-project and stakeholders



Dialogue with authorities



boring, som det fremgår af Figur 3.



Dialogue with environmental authorities

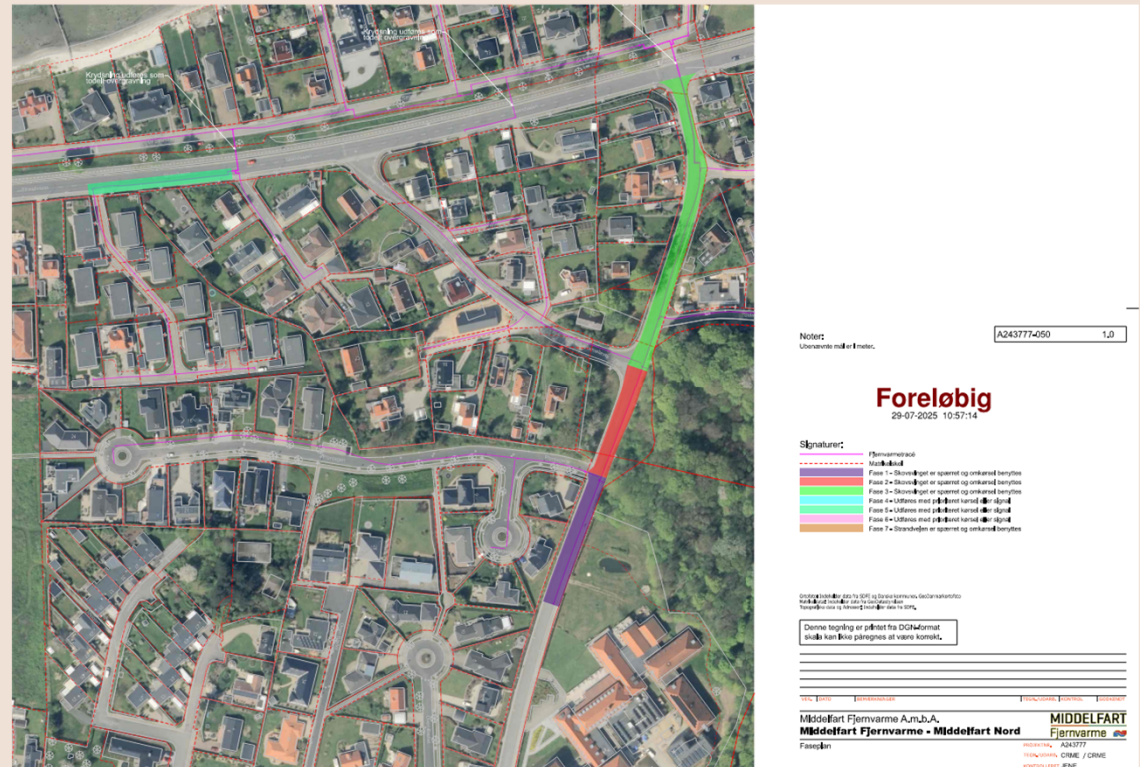
COWI/MILT, JENE

Myndighedsansøgninger fjernvarme
ledninger i Silkeborg Syd

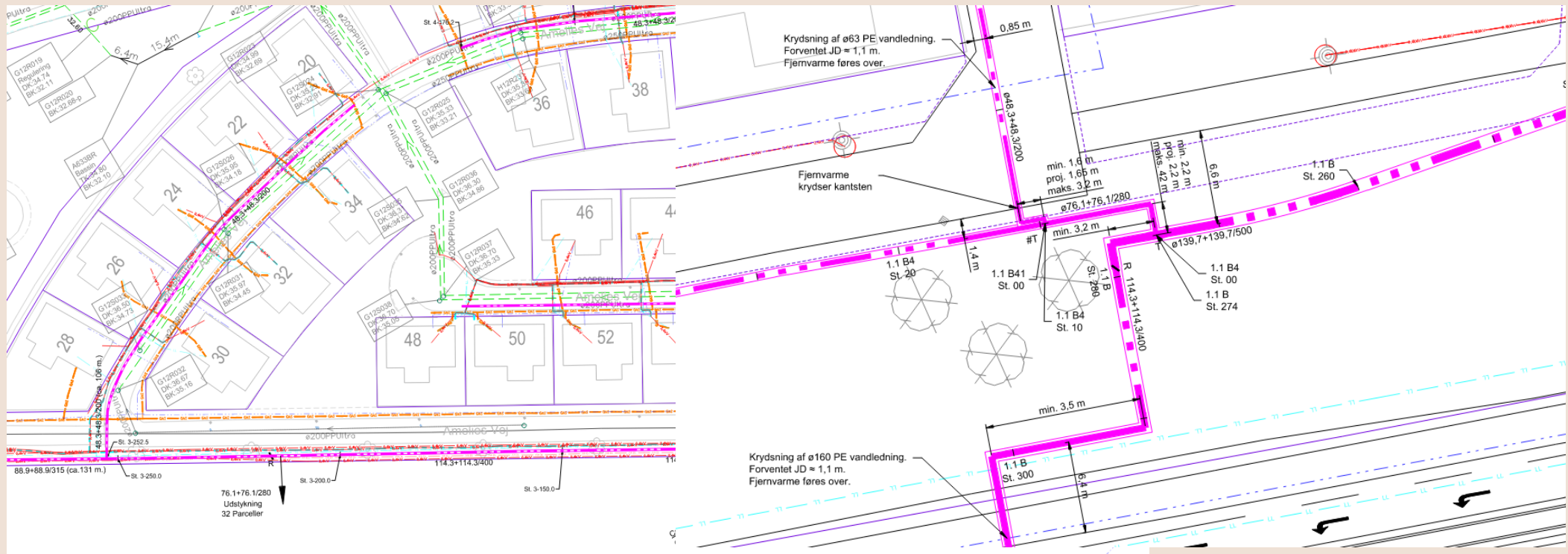
Lovgivning:	Lovgivningens bestemmelse	Strækning/noter	Handling	Resultat	Myndighed	Sagsbehandlingstid myndighed [uger]	Høring 1 [uger]:	Høring 2 [uger]:	Klagefrist [uger]:	Samlet [uger]:	Ansv
Naturbeskyttelsesloven	§ 3	Krydsning af §3 beskyttet natur ved åben grav og/eller underboring	Afklare vilkår med myndighed. Ansøge om dispensation	Dispensation, ændring af tilstand af arealer beskyttet efter § 3 i NBL + evt. underboring af §3 vandløb	Silkeborg Kommune	20			4	24	
	§ 16	Hvis der placeres anlæg eller ændres terræn indenfor søbeskyttelseslinjen.	Ansøgning om dispensation	Dispensation fra søbeskyttelseslinjen.	Silkeborg Kommune	8			4	12	
	§ 18	Der er overlap med fortidsmindebeskyttelseslinjen ved Borgehøj, Borgegård og Østerskov.	Ansøgning om dispensation	Dispensation fra fortidsmindebeskyttelseslinjen.	Silkeborg Kommune	8			4	12	
	§ 17	Pumpestationer placeres indenfor skovbyggelinjen.	Ansøge om dispensation	Dispensation fra skovbyggelinjen.	Silkeborg Kommune	15			4	19	
	§ 50	Projektet berører/grænser op til flere fredninger. (Hummelsøfredning, Them Kirke, Brasse, Christiansmindel/Borre Sø og Ludvigsløst).	Ansøge om dispensation	Dispensation fra fredninger.	Fredningsnævnet	15			4	19	
Jordforureningsloven	§ 8	Der er enkelte mindre kortlagte områder i Virklund, Them, Knudlund og Silkeborg.	Ansøge om tilladelse	Tilladelse til at anvende et V2 kortlagt areal til ledning	Silkeborg Kommune	2			4	2	
	§ 50, stk. 2	Der skal laves anmeldelser af jordtætning. Entreprenøren vil typisk foretage anmeldelsen	Anmeldelse	Der kan flyttes jord fra områder omfattet af områdeklassificering	Silkeborg Kommune				-		
Skovloven	§ 11	Ved placering af pumpestation, ledninger og underboringer i fredskov	Ansøge efter skovloven	Dispensation til at rydde bevoksning til pumpestation og ledning i fredskov	Naturstyrelsen	7			4	11	
Museumsloven	§ 25	Krydsning/gennemgravning af arkæologiske interesser.	Indhentning af arkivalsk kontrol	Arkivalsk kontrol udføres	Museum Silkeborg				-		
	§ 29a	Der krydses flere beskyttede sten og jorddiger	Ansøge om dispensation til gennemgravning	Dispensation til gennemgravning.	Silkeborg Kommune	8			4	12	
Vandforsyningsloven	§ 26	Hvis der skal indvindes mere end 100.000 m ³ pr. år i mere end to år eller hvis der indenfor 300 meter fra grundvandssænkningen findes en boring til et alment vandværk	Ansøge om tilladelse	Tilladelse til sænkning af grundvandet ved etablering af ledning	Silkeborg Kommune	8			4	12	
Miljøvurderingsloven	§ 21	Hele projektområdet screeneres, da opført på bilag 2 punkt 3b. Screening er jf. projektmaterialet foretaget	VVM-skema	Afgerelse om projektet er VVM-pligtig	Silkeborg Kommune	13			4	17	
Miljøbeskyttelsesloven	§ 19	Ansøges hvis relevant for projektet.	Ansøge om tilladelse	Tilladelse til at oplægge jord eller anvende jord der er forurenet.	Silkeborg Kommune	2			4	6	
	§ 28	Ansøges hvis relevant for projektet.	Ansøge om tilladelse	Tilladelse til udledning eller tilslutning af overfladevand.	Silkeborg Kommune				4		
Planloven	§ 19	Ansøges hvis relevant for projektet.	Ansøg om dispensation	Dispensation fra lokalplan til placering af pumpestationer.	Silkeborg Kommune	8	2		4	14	
	§ 35	Tillælde af arbejdsplads arealer placeres i landzone	Ansøge om tilladelse	Tilladelse til etablering af ledning indenfor landzone	Silkeborg Kommune	15			4	19	

Dialogue with traffic authorities

- According to the dialogue with the municipality is prepared a plan with traffic phases
- Attached as an appendix to the tender material



Pipe design



Tender documents and -proces

- Investigative excavations reduce unknowns before tender.
- Tender form depends on contract size and legislation.
- Tender documents include specs, construction schedule, appendices.
- Dispatch to contractor and contract signing

Sønderborg Varme A/S

Distributionsnet Nybøl og Vester Sottrup			Proj. nr.	A258949		Udarb.	LE
			Dok. nr.	A258949-009-001		Kontr.	JU
Dokument- og tegningsfortegnelse			Dato	19.07.2024		Godk.	LE
				Version (*: v)			
Nr.		Navn	Mål	1.0	2.0	3.0	4
A258949-009	- 001	Dokument- og tegningsfortegnelse	-	19.07.2024	06.09.2024	12.09.2024	
Udbudsdokumenter							
A258949-009	- 010	Udbudsvilkår	-	19.07.2024	12.09.2024		
A258949-009	- 011A	Kontrakt - Nybøl	-	19.07.2024			
A258949-009	- 011B	Kontrakt - Vester Sottrup	-	19.07.2024			
A258949-009	- 012	AB18	-	19.07.2024			
A258949-009	- 013	Hovedtidsplan	-	19.07.2024			
A258949-009	- 014	FB - Fællesbetingelser	-	19.07.2024			
A258949-009	- 015	SAB - Anlægsarbejder	-	19.07.2024	06.09.2024		
A258949-009	- 016	SAB - Rørarbejder	-	19.07.2024	06.09.2024		
A258949-009	- 018	Tilbudsliste - Nybøl	-	19.07.2024	06.09.2024		
A258949-009	- 019	Tilbudsliste - Vester Sottrup	-	19.07.2024	06.09.2024		
A258949-009	- 020	Plan for Sikkerhed og Sundhed (PSS) - oplæg	-	19.07.2024			
A258949-009	- 021	Tillægsbeskrivelse 1	-	06.09.2024			
A258949-009	- 022	Tillægsbeskrivelse 2	-	12.09.2024			
Bilag							
A258949-009	- 010A	Støtteerklæring	-	19.07.2024			

Construction management and supervision

- Kickoff meeting to transfer knowledge and define roles.
 - Transfer of knowledge from consultant to contractor
 - Dialogue with municipalities
 - Detailed timeline of construction
- Weekly or bi-weekly construction progress and safety meetings.
- Dialogue with municipalities for excavation permits and road closures.
- Continuous supervision to ensure compliance and safety.



Key Takeaways

1

Early stakeholder dialogue minimizes delays

- Performing a stakeholder analysis through pre-projects and overview mapping.
- Holistic collaboration with local authorities regarding traffic, environment, roadblocks etc.

2

Detailed and executable tender material allow accurate pricing

- Good early dialogue, sketching of networks and dimensioning provides a good basis for detailed tender documents.
- Incorporate information for the contractor, so they can price the challenges or conditions

3

Communication aligns expectations and fosters trust

- Alignment of expectations between authorities, suppliers and contractors.
- Construction supervision ensures quality and safety → Compliant with the requirements set by the consultant in the tender material.

ESG Framework in District Heating

- **Governance:** Leadership, compliance, economy and transparency
- **Environmental:** Minimizing ecological impacts
- **Social:** Stakeholder engagement, worker conditions, and community benefits



Thank you!

Kirstine Pape Stensgaard
Tlf. +45 5640 8109
KSRN@COWI.com

How a focus on social sustainability can support the development of DH



Research Institute of Urban Management and Governance

Johanna Ayrault



Why social sustainability?

- **Facilitate the development:** integration into the existing ecosystem
- **Competitiveness:** side advantages
- **In-line with policy goals** – New European Bauhaus: fair transition, just transition, democratic transition, inclusiveness, aesthetics, etc.

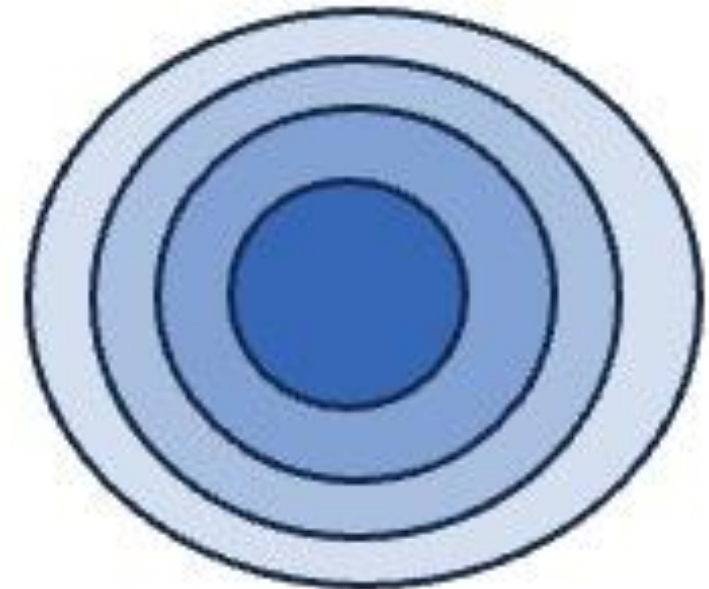
BUT for now less integrated / visible than other types of sustainability

What is social sustainability?

STILL UNDER DEFINITION!

Social sustainability is about identifying and managing business impacts – both positive and negative – on people.

- DH company
- Customers
- Engineering companies
- Architects and developers
- Policy makers



What link to DH?

Can be integrated to all parts of the value chain

	Value chain activities/ Factors	Inbound logistics			
		I/E	E	G	S
1	Capital intensive infrastructure	I	x	x	
2	Natural monopoly	I	x		
3	Price of heat supply	E	x	x	x
4	Locally available heat sources are used	I/E	x	x	x
5	EU Taxonomy	E	x	x	x
6	Heat law	E			

	Value chain activities/ Factors	Operations			
		I/E	E	G	S
1	Stable price	I	x		x
2	Digitalization	I	x	x	x
3	Staff preferences	I	x	x	
4	Local solutions to customers distant to the grid	I	x	x	x
5	Buildings as storage	I/E	x	x	x
6	Building codes	E	x	x	
7	Safety	E	x	x	x

What link to DH?

Can be integrated to all parts of the value chain

	Value chain activities/ Factors	Outbound logistics			
		I/E	E	G	S
1	Substation management	I/E	x	x	x
2	Reduce return temperatures	I/E	x	x	x
3	Maintenance of pipes	I	x	x	x

	Value chain activities/ Factors	Marketing, sales and post sales			
		I/E	E	G	S
1	Interact with society	I/E			x
2	Incentivize customer behavior	I/E	x	x	x
3	Offer a carefree heating alternative	I			x
4	Local heat supply is in demand	E/I	x	x	x
5	Resilient heat supply in demand	E	x		x
6	Cooling in demand	E	x		x

What link to DH?

Identification of several factors that impact social sustainability on DH projects

1	Supports the local community
	Inclusive buildings
	Educational efforts towards young/ society
	Creation of local, long-term jobs (use of local fuels & workforce)
2	Community engagement
	Transparent communication (across value chain)
	Impact on local community (resettlement issues, construction disturbances, traffic around the plants)
	Partnerships (win-win solutions, co-creation of value, co-investments etc.)
3	Aesthetics
	Pipes not seen
	Signature buildings: beautiful: enhancing the city scape & sustainability message
4	Affordable/ stable price
	Lower price than alternatives
	Lever to fight energy poverty
	Stable and predictable price (not volatile)
5	Quality of life
	Carefree & saves space
	Indoor comfort
	Both heating and cooling
6	Sector coupling
	Take load off electricity sector
	Resort to CHP technology for producing both heat and electricity

What next?

Strengthen the integration of social sustainability into DH processes (from early planning to operation) through **social KPIs**

To be continued...

Thank you for listening!

Always open to collaborations...



VIENNA UNIVERSITY OF
ECONOMICS AND BUSINESS

Institute of Urban Management and
Governance

Johanna.ayrault@wu.ac.at

	SKPI	Stakeholders to whom the SKPI generates value
1	Carbon footprint of the heat supply is important to consider (what is desirable short versus long term?)	Energy company, customer, wider community
2	Air pollution issues	Energy company, customer, wider community
3	Fairness: who can get district energy? (the just and fair energy transition)	Energy company, customers, wider society
4	Make use of locally available heat supply (limits transportation, recovers assets otherwise lost)	Energy company, owner of local heat source, wider community
5	Local collaboration on heat supply	Energy company, owner of local heat source
6	Inclusive buildings (where people can see what happens on the inside, visit the premises for recreational purposes like in a park or for educational purposes)	Energy company, construction companies, architects, wider community
7	Aesthetic buildings (not disturbing the city scape)	Energy company, construction companies, architects, wider community

8	Indoor space use	Energy company, construction company, architects, customers
9	Sector coupling (across gas-electricity-district energy) for flexibility gains	Energy company, wider community
10	Philanthropic activity (undertaken by the energy companies)	Energy company, wider community
11	Education of the young (site visits, traineeships and other)	Energy company, wider community
12	Research & Development projects	Energy company, wider community
13	Sustainable investment thresholds (low interest rates for sustainable projects)	Energy company, wider community
14	Resettlement issues	Energy company, wider community
15	Disruptive road works (limited amounts of time)	Energy company, wider community
16	Creation of long term, local jobs	Energy company, wider community
23	Stable price	Customer
24	Affordable price	Customer

17	Indoor comfort (legislation exists soon also for providing demand for heating and cooling)	Energy company and customer
18	Customer empowerment (to manage customer behavior, encourage co-creation, prosumerism)	Energy company and customer
19	Transparency across the value chain (including end customer dialogue)	Energy company, customer
20	Safe energy use (explosions, shocks, floodings)	Energy company, customer
21	Reliable heat supply	Energy company, customer
22	Carefree energy use (energy as a service is developing across energy vectors)	Energy company, customers