Low Temperature District Heating for Future Energy Systems

Heiko Huther, Andrej Jentsch and Dietrich Schmidt

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Participating countries

Currently 12 countries interested!

Partly already secured funding!

DHC member countries:

- **Denmark** *(DTU/DTI/Uponor/Danfoss/Cowi)*
- **Finland** *(Aalto Uni/VTT)*
- **Germany** *(HTS/IBP/AGFW)*
- **South Korea** *(KIER)*
- **Sweden** *(Karlshamn Energi/SDHA)*
- **United Kingsdom** *(BRE)*

Non DHC member countries:

- **Austria** *(ATI)*
- **China** *(Tsinghua Uni)*
- **France** *(Veolia)*
- **The Netherlands** *(CHRI)*
- **Italy** *(Politecnico Milano)*
- **Switzerland** *(ETH)*
- **(Japan** *(TCU*)**)**

} Not present in CPH, but interested

Objectives of the Task shared initiative

The objective is to develop and improve the means (e.g. planning tools and technologies) to **increase the "sustainability" of communities by use of DHC**

=> **DHC is an enabling technology** to increase the integration of renewable and waste energy sources for heating and cooling (Solar thermal, Biomass CHP, HP to use excess wind power)

Objectives of the Task shared initiative

Key question:

How can DHC best contribute to the overall system efficiency / sustainability optimization of community energy systems?

Focus:

The possibilities of realizing the future fossil free energy system by use of low temperature district heating based on renewable energy.

The big benefit of district heating in this context:

Fairly easily and cost-effective way to realize the fossil free heating and cooling system in the long term compared to solutions based on renewable energy production on each building.

Objectives of the Annex

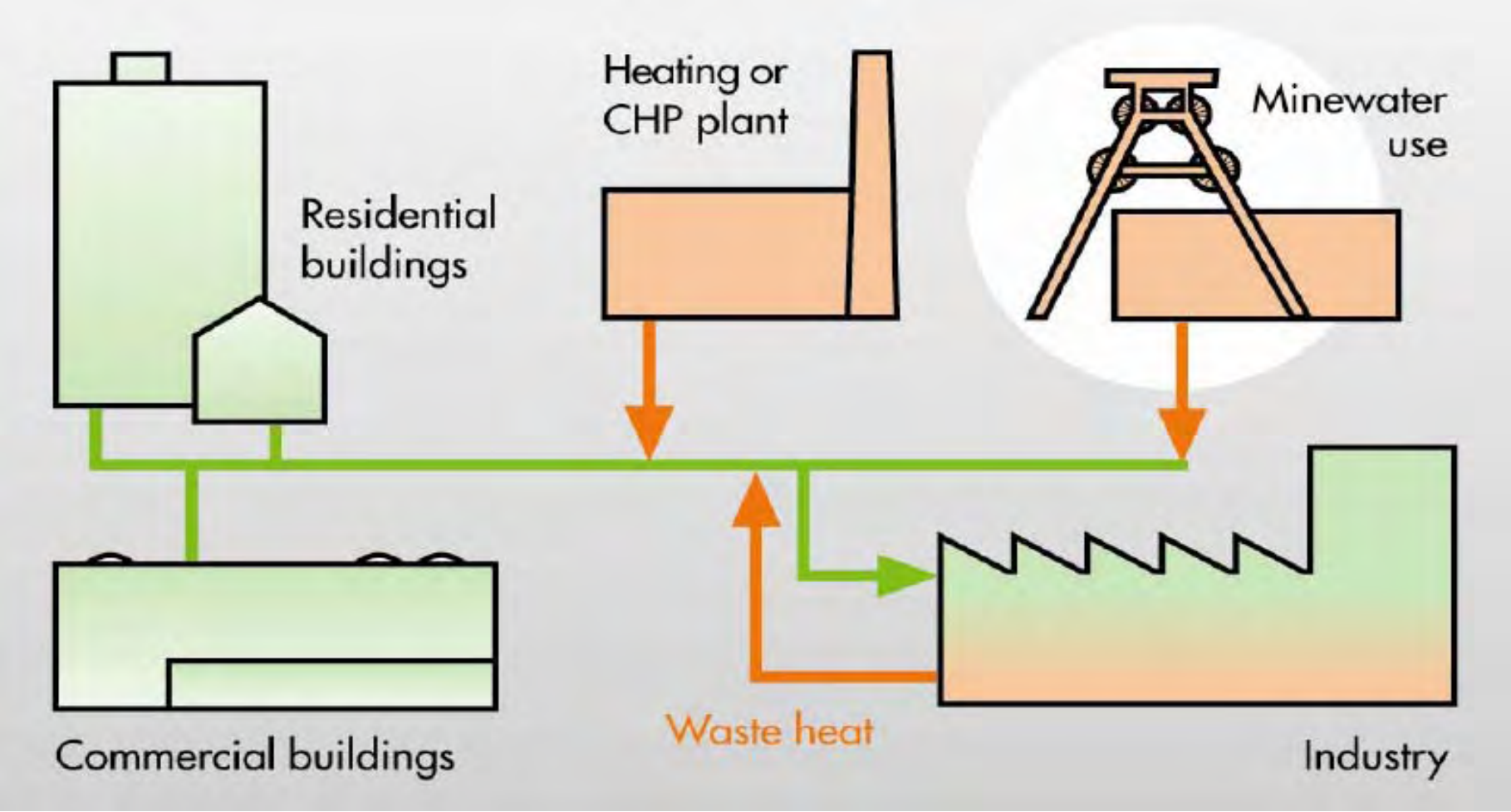
relevant sustainability aspects to be researched are:

- **Ecological aspects**
  - increased efficiency / decreased resource consumption & GHG emissions – new methodologies, concepts & technologies of DHC
- **Social aspects**
  - barriers & opportunities for implementation of DHC schemes
  - increasing acceptance and attractiveness of DHC
- **Economic aspects**
  - Business cases and business models for new and especially low temperature DH and high temperature DC systems
  - Technology development for reduced DHC network costs

Scope of the Annex

AGFW Fraunhofer IBP

The work covers the areas of retrofitted and future networks



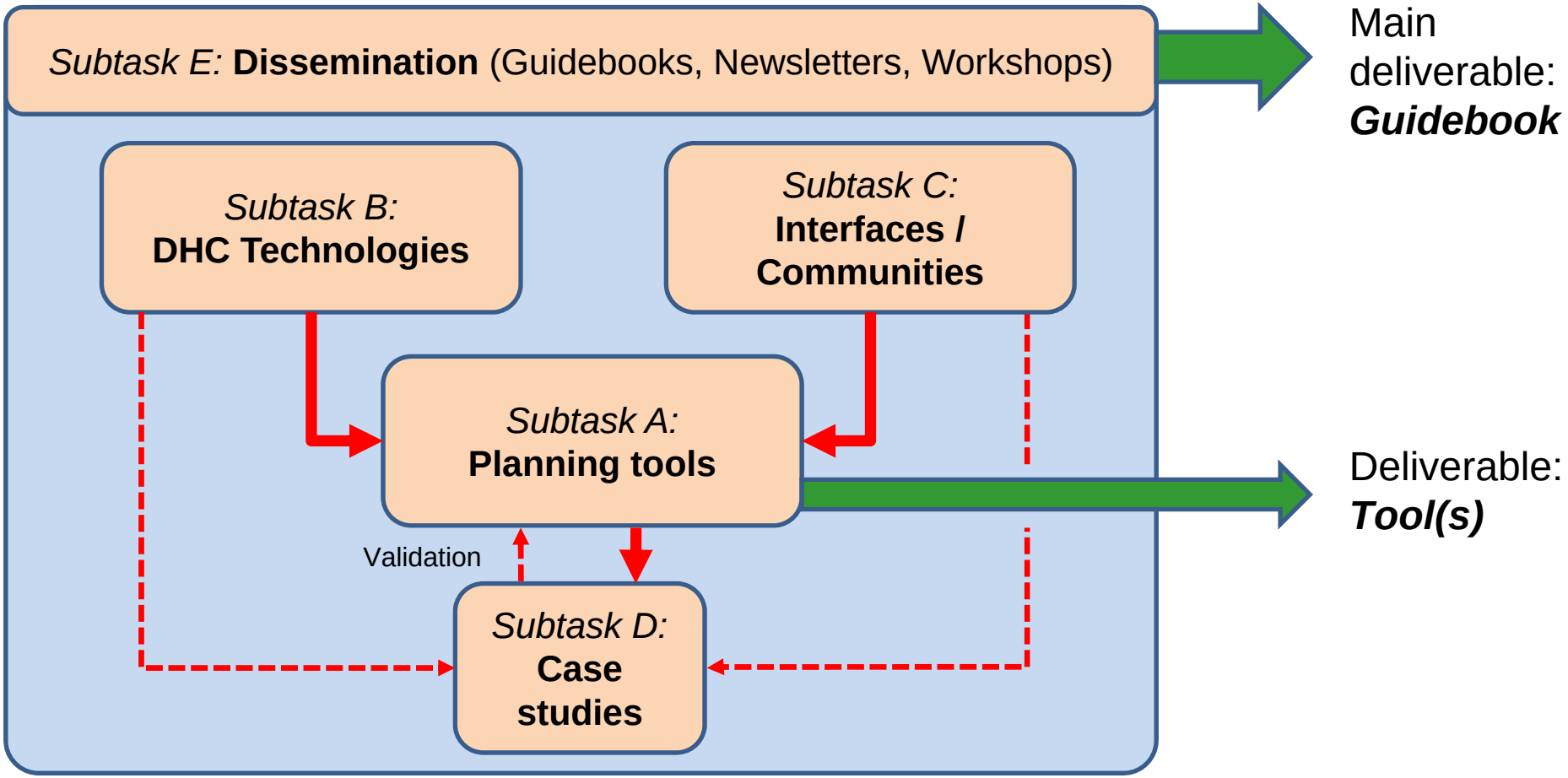
Subtask and Annex structure

Main outcomes of the Task Shared Initiative:

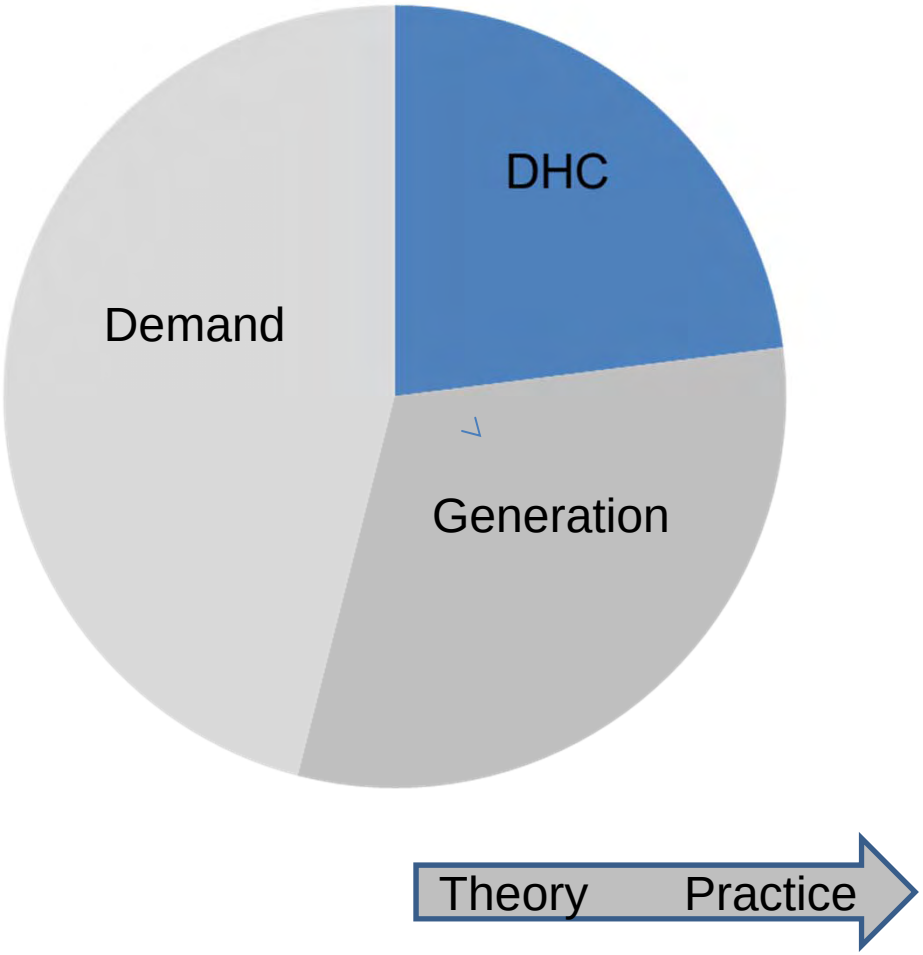
Know-How for developing new district heating concepts so that they may become the cheapest way of realizing the future fossil free energy system.

The research results should provide the basis to establish DHC as a significant factor for sustainable development.

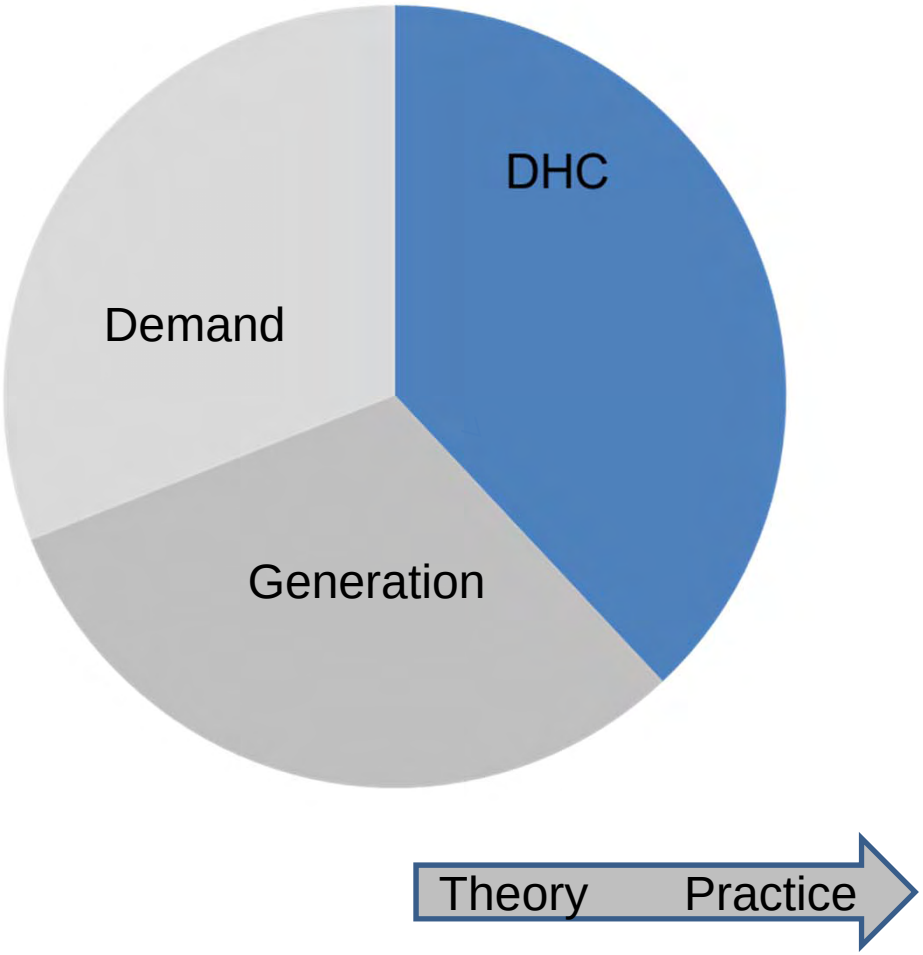
Subtask and Annex structure



Working Area of the Task Shared I.: Community Systems



Working Area of the TSI: Community Systems



Subtask and Annex structure

a. **Methods & Planning tools for DHC networks**

- Metaanalysis (What research areas are promising)
- simple DHC Specific (Excel tools, concept advisor)
- advanced (dynamic)
- exergy
- RES integration
- storage

b. **DHC technologies** (How?)

- Substations
- Pipes / Transport
- Generation & CHP
- (deep) geothermal heat
- Interfaces
- System integration and operation

Subtask and Annex structure

c. **Communities / Interfaces**

- Holistic systematic approach (Why?)
- relation of DHC to Demand
- relation of DHC to Generation
- Business cases / Business models

d. **Cases studies and use cases** (demonstration)

- Technology demonstration
- Realized advanced DHC Communities
- Model validation (relation to subtask A)

e. **Dissemination**

- Guidebooks
- Workshops
- Newsletters

Annex schedule

Subtask progress	Prep. Phase	Working phase			
	2012	2013	2014	2015	2016
A: Methods & tools					
B: DHC technologies					
C: Communities:					
D: Case studies:					
E: Dissemination					
Annex Meetings	● ●	● ●	● ●	● ●	
Workshops					

Source Zimmermann

Activities

1st preparation phase workshop:

April 24, 2012 at DTU Lyngby-Copenhagen Denmark