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DHC+ Technology Platform

BIOGASHEAT

Towards sustainable heat markets in Europe

Project No: IEE/11/025

The project

- Project supported by the European Commission's Intelligent Energy Europe Programme (IEE)
- Project duration: April 2012 – April 2015 (3y)
- Official name: BIOGASHEAT – Development of sustainable heat markets in Europe
- 10 partners from 10 different countries

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Starting Point

Intended or unintended heat production

Heat is wasted

How to avoid this wasting of heat?

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Significance

Political framework conditions

- 20-20-20 targets and Roadmap 2050

Macroeconomic impact

- Resource dependency, energy security

Microeconomic needs

- Additional source of income

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Setting the course

Analyzing and comparing the situation in the partner countries

Collecting and demonstrating good practice examples

Improving and enforcing national and EU biogas heat use policies

Implementing feasibility studies and field tests

Supporting real project implementation

Offer coaching measures to various stakeholders also outside the target countries

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The potential is out there

Country	Primary energy production of biogas (ktoe)	Heat from biogas plants sold to the district heating network or to the industrial units (ktoe)
Germany	5067.6	58
Italy	1095.7	29.7
Czech Republic	249.6	7.2
Austria	159.5	10.4
Denmark	98.1	28.9
Poland	135.4	14.9
Latvia	22	4
Croatia	3.07	0.8 (estimation)
Romania	3	-

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Heat utilization possibilities

Heating	Drying	Cooling	Electricity production
• District heating • Heating of stables • Heating of greenhouses • Heating for aquaculture • Heat transport in containers • Other heating options	• Drying wood, woodchips, and pellets • Drying agricultural products • Drying digestate and sewage sludge	• District cooling • Cooling of buildings • Cooling of stables • Acclimatization of food storage buildings • Process cooling	• Additional electricity production with CRC, ORC or Kalina technologies

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Problems

Austria	DH potential exhausted, **more funds in R&I necessary**, training funds needed, **feed-in tariff focusses on electricity**, efficiency not an issue in CHP-bonus regulation
Croatia	**Lack of awareness, lack of knowledge**, lack of incentives, lack of transparency of legislation
Czech Republic	**Missing specifications of reasonable heat utilization options**, lack of incentives
Denmark	On-site utilization creates wasted heat surpluses in summer, local resistance against centralized plants, **industrial utilization unattractive because of Danish legislation**
Germany	**Distance/placement**, uncertainty for producers in case of demand changes, lack of continuity and financing in DH support programmes, only new plants considered
Italy	**Lacking recognition of heat as primary energy source**, heat utilization not obligatory
Latvia	**RES feed-in tariff competes with heat utilization feed-in tariff**, positive list excludes self-consumption, lack of control, DH operators do not benefit from biogas use
Romania	Lack of clarity in green certificate legislation, **biogas not part of national energy policy**, lack of measures on the thermal sector, lack of incentives for biogas production in general

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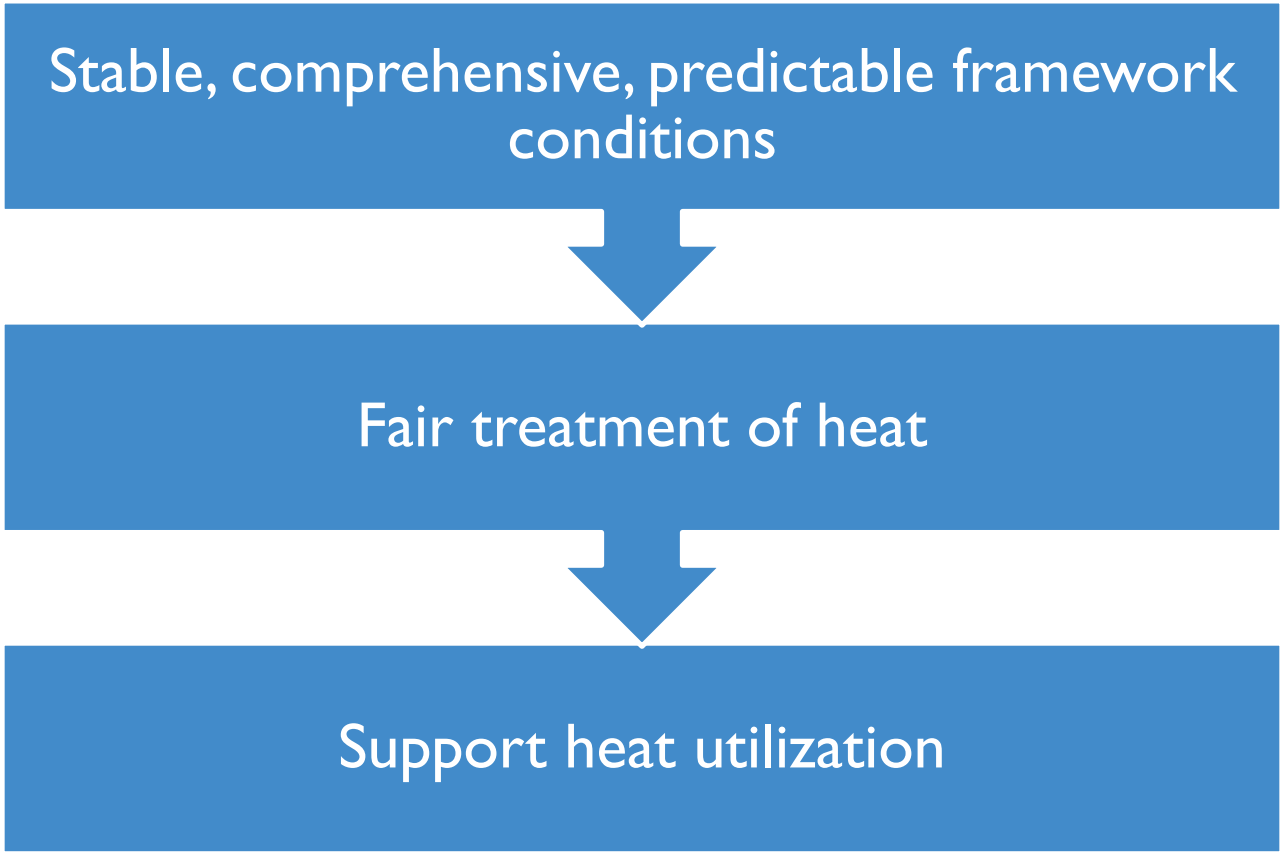
Political needs



Lemvig, Denmark: District Heating

- Built 1992, biggest biogas facility in Denmark, owned by 69 local farmers, supplied by farms within a distance of 11km
- Resources: manure from pig and cattle farming, fish waste, organic domestic waste, slaughterhouse waste, contaminated food
- Heat utilization:
  - 80% of biogas sold to DH Lemvig: heat supply for 1400 households
  - 20% burned in on-site CHP: heat used for drying, digestion etc.

Lemvig, Denmark: District Heating

- Benefits:
  - Manure is processed: farmers save money (EU legislation)
  - Industrial waste is processed
  - Heat consumers save 45% compared to natural gas

Webcam Richtung Jauchelager
Quelle: http://www.lemvigbiogas.com/

Apply the lessons learnt

Feasibility study in Germany

- Situation: biogas facility with two CHP units (340kW$_{el}$/500kW$_{th}$)
- Currently 40% of heat utilized (farm and stables, woodchip drying)
- Operators receive: EEG support, NaWaRo bonus, CHP bonus
- Potential additional utilization: additional farms or nearby DHN with woodchip incinerator in village 2.5km away
- Implementation possibilities: heat delivery or gas pipeline with satellite CHP

Apply the lessons learnt

Feasibility study in Germany

Option 1: heat delivery to farm and DHN

- Pipe length 2.660m, Altitude difference 19m, 32% loss
- 500.000 EUR investment costs, 380.000 EUR funding

Option II: gas pipeline and satellite CHP

- Gas pipeline 2.600m, thermal pipe 160m, 2% loss
- 259.000 EUR investment costs, 100.000 EUR funding

CHP bonus: similar around 21.000EUR/a

Possible heat sales: 1.600.000kWh/a for 16.000-144.000EUR/a

Share knowledge and results

Implementation and coaching

- One project per country will be realised
- Policy-makers and planners/operators will receive coaching
- One partner per country will receive on-site coaching
- Big coaching event on 12 May 2014 in Brussels
- Final dissemination Autumn 2014 in Brussels

- Thank you for your attention!
- More information under www.biogasheat.org

www.dhcplus.eu
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