# Progress towards 4DHC in different national and regional contexts

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EUROPEAN UNION
HeatNet NWE
European Regional Development Fund

Amsterdam University of Applied Sciences


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*Amsterdam University of Applied Science*


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Session 16: Smart Energy Systems analyses, tools and methodologies

# Team AUAS team present at SES conference

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## Content:

- HeatNet project
- Transnational learning
- Regional and national context
- Key success factors
- Lessons

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# HeatNet NWE: Transition strategies for delivering low carbon district heat

Pilots: Aberdeen, Boulogne sur Mer, Heerlen, Kortrijk, Plymouth, South Dublin


## Objectives:

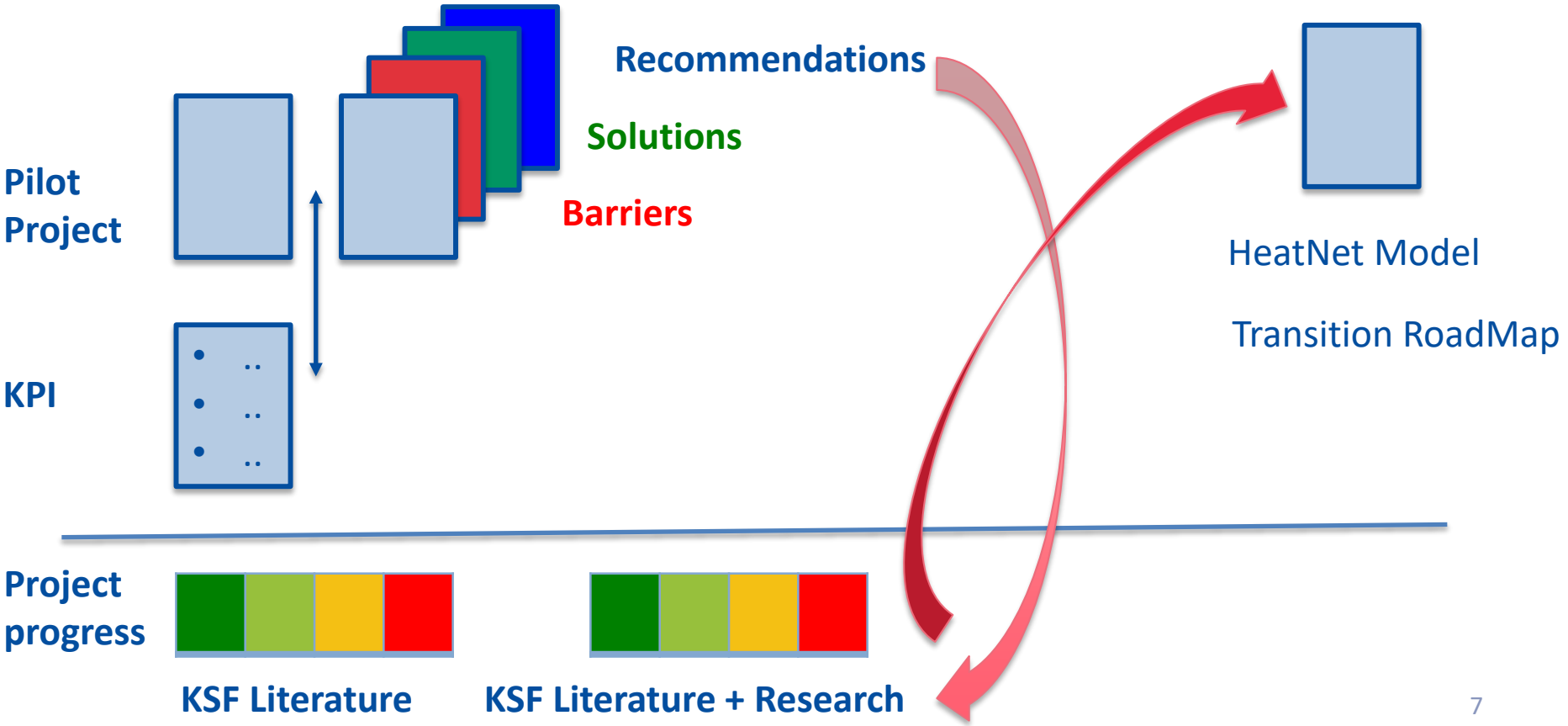
- to introduce and demonstrate 4DHC
- the development of new institutional and organizational frameworks
- 15,000 t $CO_2$ saved per annum at its end and future rollout in NWE

Method: pilots, research, transnational learning

# HeatNet team in Boulogne sur Mer

# Action research

| Before Heerlen | Heerlen | Boulogne sur Mer | Kortrijk | Aberdeen | Plymouth | S-Dublin |
|---|---|---|---|---|---|---|
| 2016-2017 | 02-2017 | 09-2017 | 03-2018 | 09-2018 | 03-2019 | 09-2019 |



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# Pilots : developed heat networks

| | Buildings | Grid | Energy source | Status | DHC maturity |
|---|---|---|---|---|---|
| **Aberdeen** | Existing housing | New HT | Gas -> waste | Building | + |
| **BsM** | Existing housing / utility | Extension MT | Biomass + HP | Running | ++ |
| **Dublin** | **Existing/New housing / utility** | **New MT** | **Datacentre waste heat + HP** | **Contracting** | **0** |
| **Heerlen** | New utility | Extension LT | Mine water + HP | Running | ++ |
| **Kortrijk** | New/existing utility | New HT | Gas CHP | phase one running | 0 |
| **Plymouth** | Existing utility | New LT | ATES + HP | Contracting | 0 |

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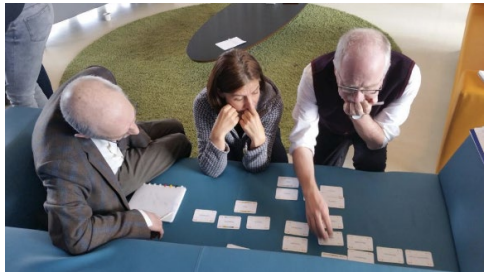
# Transnational learning

- Learning from more mature regions
- Towards 4DHC: Lower supply temperature
- Guidelines:
  - Roadmap
  - Govenance
  - Finance
- Technology available, local expertise needs to be built up



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# Regional and national context – economy & energy policy - Influences on HeatNet

Had to be managed:

- Aberdeen faces the downturn of the oil & gas industry
- Brexit discussion dominates UK
- Belgium: political standstill in election time
- No heat policy experience in Ireland

Positive:

- Scottish obligation to use heat from power plant
- France: mandatory cost benefit analyses of waste heat use for industry
- Dutch climate-agreement on heat

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## Key Succes Factors (based on Galindo e.a. 2016)

| | Examples of barriers seen in HeatNet |
|---|---|
| Adequate national policy and regulation | Obligation to connect buildings to gas grid |
| Direct / indirect financial support | Investment in grid is high |
| Focused local policy and urban planning | A lot of different authorities involved in planning of network; |
| Alignment of interests | Building owners not local |
| Availability of relevant local resources | No renewable heat sources available |
| Continuous and comprehensive project development | Roll out dependent on financing |
| Price competitiveness against alternative energy solutions | Gas is too cheap |
| Flexible heat and cold production | Waste heat not always available / needed |
| Technical and non-technical innovation | Innovation in one country not allowed in other |

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# Key Succes Factors
## (Galindo 2016)

Adequate national policy and regulation

Direct / indirect financial support

Focused local policy and urban planning

Alignment of interests

Availability of relevant local resources

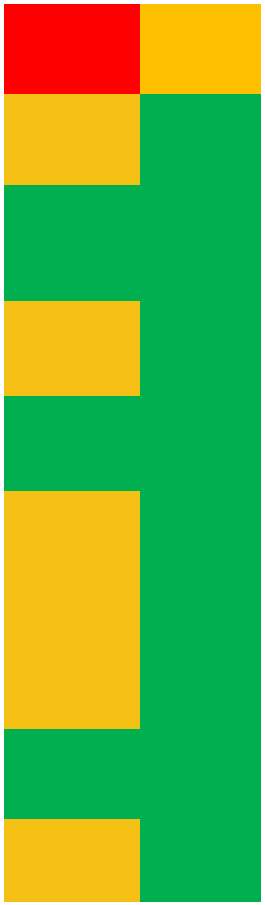
Continuous and comprehensive project development

Price competitiveness against alternative energy solutions

Flexible heat and cold production

Technical and non-technical innovation

## 2017 2019 Examples in HeatNet



f.e. climate agreement NL

Additional subsidy

Project approval from local government

More insight in stakeholders

New sources secured

Capacity building in local authority

Discount of 10%

Waste heat of datacenter

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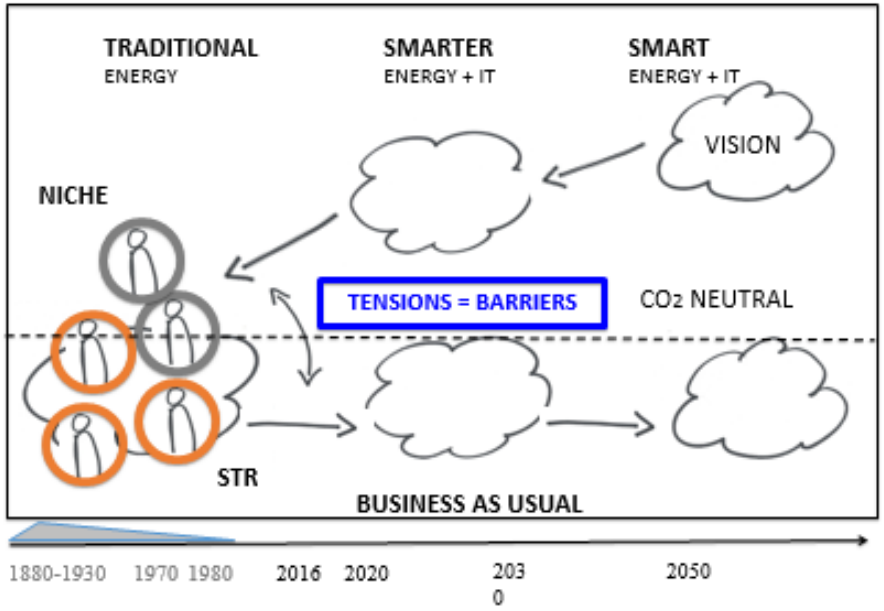
## 3 PERSPECTIVES ON 4DHC PROJECTS

### 1. PILOT

**BARRIERS**
1. COLLABORATION
2. FUNDING
3. COMPETENTIES
4. TARIFF GAPS
5. LEGISLATION
6. COMMUNICATION
7. TASK ALLOCATION
8. ECONOMIC
9. ADOPTION
10. EMERGING TECH

### 2. STAKEHOLDERS




### 3. SYSTEM INNOVATOR

**RECOMMENDATIONS**
1. SYSTEM THINKING
2. TRANSITION=CHANGE
3. EDUCATION
4. SHARED VALUE
5. IMPACT MANAGEMENT
6. TBL ACCOUNTING
7. POLITICAL INNOVATION
8. STAKEHOLDER ANALYSIS
9. AWARENESS
10. BEST PRACTICES

## 3 PERSPECTIVES ON BARRIERS

**1. Large engineering project**
'Common' barriers
e.g. crossing a river or railway.

**2. '$CO_2$ Reduction' project**
'Expected' barriers
e.g. ROI to low, mismatch or a lack of consistency.

**3. Sustainability Transition project**
'Transition' barriers
e.g. different values or other standards.

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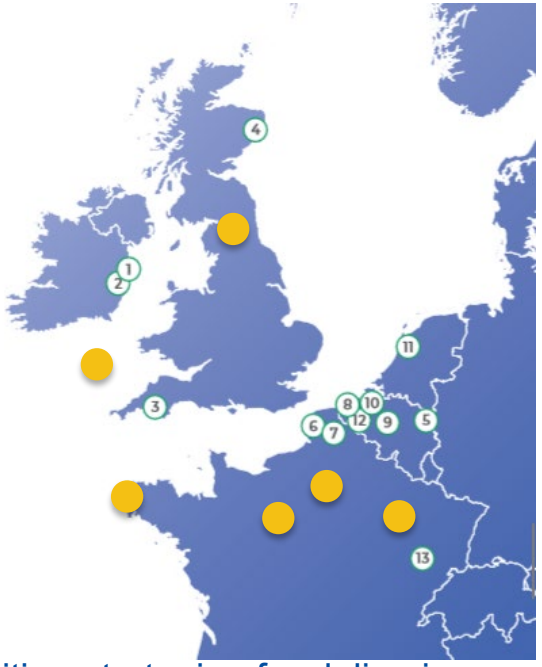
# Conclusions on objectives:

- 6 running pilots delivered
- development of new institutional and organizational frameworks
  + guidelines for governance
  + set up of local organisation
  + HeatHet ambassadors
- > 15,000 t $CO_2$ saved per annum at its end
- transnational learning:
  + pilot visits & coaching
  + conferences & workshops




https://www.nweurope.eu/projects/project-search/heatnet-transition-strategies-for-delivering-low-carbon-district-heat/

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# Conclusions

- Pilots improved on Key Success Factors
- National policy got more supportive
- As long as long term visions are not supported by system change and legislative / financial structures 4DHC will stay a niche
- Barriers are general, solutions need both national and local support

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# Thank you!