CROWDFUNDING AS A NOVEL FINANCIAL TOOL FOR DISTRICT HEATING PROJECTS

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What is crowdfunding?

- **Alternative finance** – raising funding through dedicated web platforms

- Allows to **projects developers**:
  - publicize the project to be financed
  - raise funding from the wide public
  - engage and communicate with the community of potential donors/investors

- Allows **people** to:
  - get to know the project in details
  - choose where to put their money with no intermediation and in full transparency

- Crowdfunding models:

  ![Crowdfunding models diagram](chart.png)
Crowdfunding in the energy sector

- New and innovative alternative finance instrument in the energy sector
- First platforms and projects in 2012
- Mainly financial models (equity and lending crowdfunding)
- Growing funding volume and projects
- By 2017: 836 projects, over €320ml total funding volume

![Graph showing crowdfunding growth]

Source: Candelise, Grasso, Colelli, 2017
Energy transition: from large and fossil fuel generation....
Energy transition: from large and fossil fuel generation....
....to smaller, distributed renewables..
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The role of citizens (crowd) and other actors

Transformation of energy sector (liberalization energy markets, transition toward cleaner energy systems, decentralized generation):

➢ **smaller**, modular energy projects
➢ Generation closer to point of consumption
➢ energy consumer can become producer (**prosumer**)  
➢ open entry to **new players**, e.g. small firms, local authorities, citizens
➢ **Citizens, local authorities**, can become energy producers
➢ **Energy communities**  -&gt; Citizens engage, invest and harvest benefits of clean energy investments, contributing to CO2 emission reduction
The role of citizens (crowd) and other actors (2)

- Energy communities/cooperatives develop and manage district heating systems and are owned by their own customers.
- Out of the over 430 Danish district heating systems, 340 are operated as cooperatives, in addition to the municipally-owned ones (2018)
Projects funded with crowdfunding

— Strong focus on renewables
— PV and wind account for about 70% of total funding volume
Progressive differentiation of technology

—in Germany, Netherlands and United Kingdom funding volume in 2016-2017 also from technologies other than wind and solar PV, such as tidal, geothermal, bioenergy as well as energy efficiency measures.

Source: Candelise, Grasso, Colelli, 2017
Why? benefits for developers

— Access to capital:
  - Survey among project developed using crowdfunding reported as main advantage the **easiness and the timing to access finance**
  - Also reported to be **cheaper**, despite the fact that cost vary from case to case according to the size and type of the project, and the relative investment risk and expected returns (H2020 CrowdfundRES project, 2018)

— Engagement:
  - access to a **wider audience** of potential investors, thus increasing possibility of funding;
  - **increased visibility of the project** to final end users (e.g. heat consumer in district heating)
  - **increase local consent** (particularly relevant for projects proposed by **local public authorities**)
  - Reduce potential **nymbyism** (particularly relevant for private project developers interested in large projects with high perceived impact on the territory, e.g. large wind plant);
  - **redistribution of revenues/royalties** in the territories affected by the projects (particularly of interest to local public authorities, interested in wider socio-economic benefits for their territories);
  - **Reduction in planning risk**, as a result of increased local involvement and support (mainly of interest of private developers, utilities).
Why? Motivation to invest

Survey exploring perceptions of EU citizens regarding the use of crowdfunding for renewables rank transparency, expected returns and sustainability impact as the mostly cited factors affecting the decision to invest (Bergmann, Betz et al. 2016).

Source: Bergmann, Betz et al. 2016
Crowdfunding and district heating? (1)

<table>
<thead>
<tr>
<th>Challenges for District Heating</th>
<th>Could crowdfunding help?</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>ACCESS TO FINANCE</td>
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<tr>
<td>1. Access to finance, in particular for small to medium projects</td>
<td>1. Crowdfunding provides access to finance:</td>
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<td>a) Equity model:</td>
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<tr>
<td></td>
<td>• allows to raise equity, possibly making easier access to bank loans</td>
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<td></td>
<td>• supports cooperative expansion</td>
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<td>a) Lending model:</td>
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<td>• Provides additional sources of debt</td>
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<td>2. Projects with low/medium IRR: difficult to raise private capital, but wide social/environmental benefits and/or relevance for the territory</td>
<td>2. Crowd investors could be prepared to invest patient capital (no expectation of immediate/high returns), if combined with communication of the ethical/social/environmental/territorial benefits</td>
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</table>

Candelise C, 2018, "Crowdfunding as a novel financial tool for district heating projects" study under H2020 project TEMPO (Temperature Optimisation for Low Temperature District Heating across Europe), Brussels
# Crowdfunding and district heating? (2)

<table>
<thead>
<tr>
<th>Challenges</th>
<th>Could crowdfunding help?</th>
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<tbody>
<tr>
<td><strong>PUBLIC ENGAGEMENT</strong></td>
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<td>3. Lack of awareness and potential negative perceptions</td>
<td>3. Crowdfunding can increase local awareness and reduce negative perceptions by increasing the opportunities of communicating economic, social and environmental benefits of DH projects</td>
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<td>4. Minimize impact of time lag and energy demand risk on profitability:</td>
<td>4. Engagement of citizens through crowdfunding campaign during project development could help in guaranteeing a minimum number of connections</td>
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<td>need a minimum number of guaranteed customers connected to the DH network</td>
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<td>5. Economies of scale: increasing connections reduce the overall cost</td>
<td>5. Crowdfunding campaigns can help in increasing the public awareness, acceptance and customers connections</td>
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<td>6. Reduce potential nimbyism (Not in my backyard syndrome)</td>
<td>6. Crowdfunding can reduce nimbyism by:</td>
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<td>- allowing redistribution of economic returns in the territory and among citizens interested by the project</td>
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<td>- helping in creating a local community around the project</td>
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<td>7. Planning risk: relationships of private developers with local</td>
<td>7. Crowdfunding, besides raising capital, is a tool for local engagement</td>
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<td>authorities and planners</td>
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THANK YOU

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Motivation to invest? (2)

Projects on crowdfunding platforms provide average investment returns in the 4% to 9% range (apart from three outlier campaigns on funds published by Trillion Fund offering about 13% return)

Source: Candelise, Grasso, Colelli, 2017
CROWDFUNDING IN THE ENERGY SECTOR

Number and average size projects by technology

— PV large number of projects smaller size

Source: Candelise, Grasso, Colelli, 2017
Funding volume across countries

— Best performing countries: UK, Germany, France and Netherlands
— Trillion Fund (UK), alone has raised about 100€ml, 50% of which only in funds. Now closed

Source: Candelise, Grasso, Colelli, 2017