This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°857801

6th International Conference on Smart Energy Systems
6-7 October 2020
#SESAAU2020

WEDISTRICT:

Real-scale integrated renewable energy systems

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About me

Frederik Palshøj Bigum

Education

- Aalborg University in Copenhagen, M.Sc. Sustainable Cities 2020

Professional carrier

- Student assistant at HOFOR District Cooling 2016-2018
- Energy consultant / Project manager at Rambøll District Energy Planning and Infrastructure 2019-Today

Typical projects

- National and international district heating and cooling
- Conversion of fossil-based systems to renewable solutions

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About the project

Smart and local rene**W**able **E**nergy **DISTICT** heating and cooling solutions, in short "WEDISTRICT".

WEDISTRICT is an EU-funded project that brings together 21 partners from across Europe. The project is still in its early stages. The aim is to demonstrate innovative 100% fossil free heating and cooling solutions for new and existing district heating and cooling systems. These solutions will integrate

- Multiple sources of renewable energy and excess heat from data centers
- Advanced thermal storage to redistribute heat to buildings as needed
- Smart technologies to increase the operational efficiency of the systems

These technologies will be implemented in four real-scale projects in Spain, Romania, Poland and Sweden. The demonstration cases will present the best practices that can be replicated across different climate zones and building types, transforming the heating and cooling sector.

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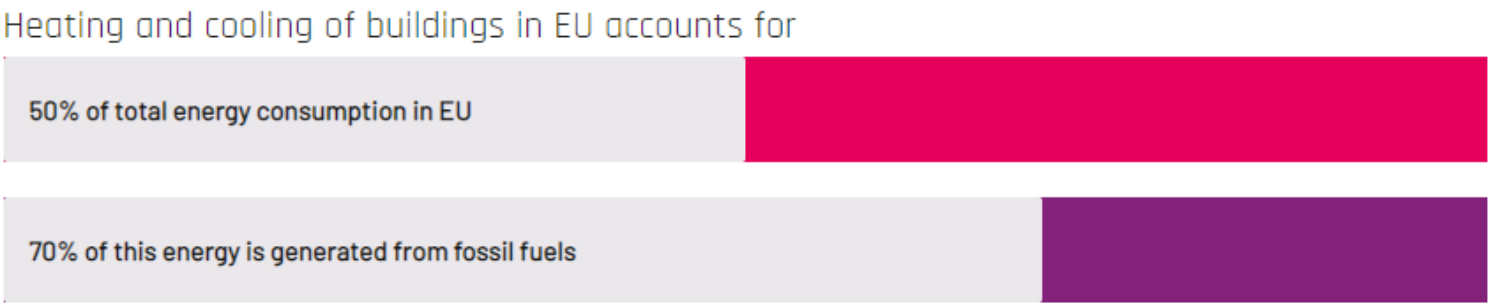
Project Context

Heating and cooling of buildings represents a great potential for energy savings in Europe.

District energy (both heating and cooling) will play an important part in the transition towards renewable energy.



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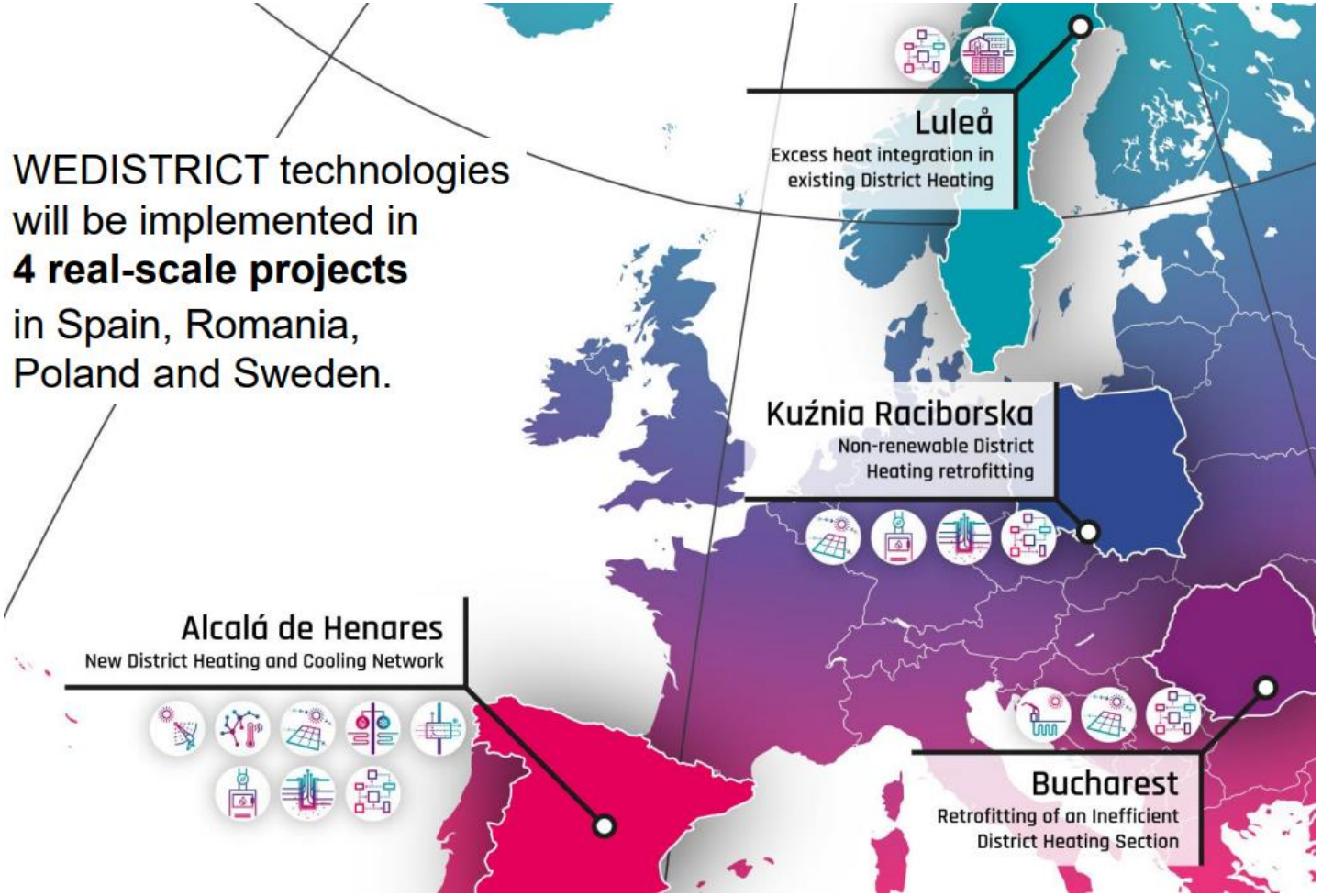

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WEDISTRICT solutions will integrate

Solar Thermal Technologies

- Parabolic Trough Collector
- Fresnel
- Low concentration flat collector

Cooling from Renewable Energy Sources

- Renewable air cooling unit (RACU)
- Advanced absorption chiller

Biomass Technologies

- Low emission biomass boiler
- With additional Bag Filter DeNOx Technology

Data Center Waste Heat Recovery

- Recovery of waste heat with fuel cells

PV-Geothermal System

- Hybrid solar geothermal district heating system

Molten Salt Thermal Energy Storage

Advanced Digitalisation

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Schedule of the project

- The project is running over a 4 year period, with the first year coming to an end in October 2020.
- Feasibility studies and Due diligence schemes have been developed in the design phase of the four demo sites.
- Next phase will include construction of the four real-scale demo sites.
- Eventually giving real-time data for operational DHC systems across Europe (Northern, Central and Southern).

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Preliminary results

- Very different levels of DHC in European countries
- Typically Northern Europe has high levels of DHC, Southern Europe has low levels of DHC and Central-Eastern Europe has DHC systems but of poor condition.
- This means systems in various parts of Europe faces different challenges in the future, some are technical, some are more organisational or regulatory.
- Technologies are available, integration and knowledge is the tricky part.

Expected results

- A portfolio of replicable solutions in different climates and buildings and business scenarios
- Higher public acceptance of DHC systems
- Open-source decision-making tool (WEDISTRICTool)

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Thank you for listening

If any questions please contact me at FPB@RAMBOLL.COM

If you are interested in the WEDISTRICT project please follow us here:

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