

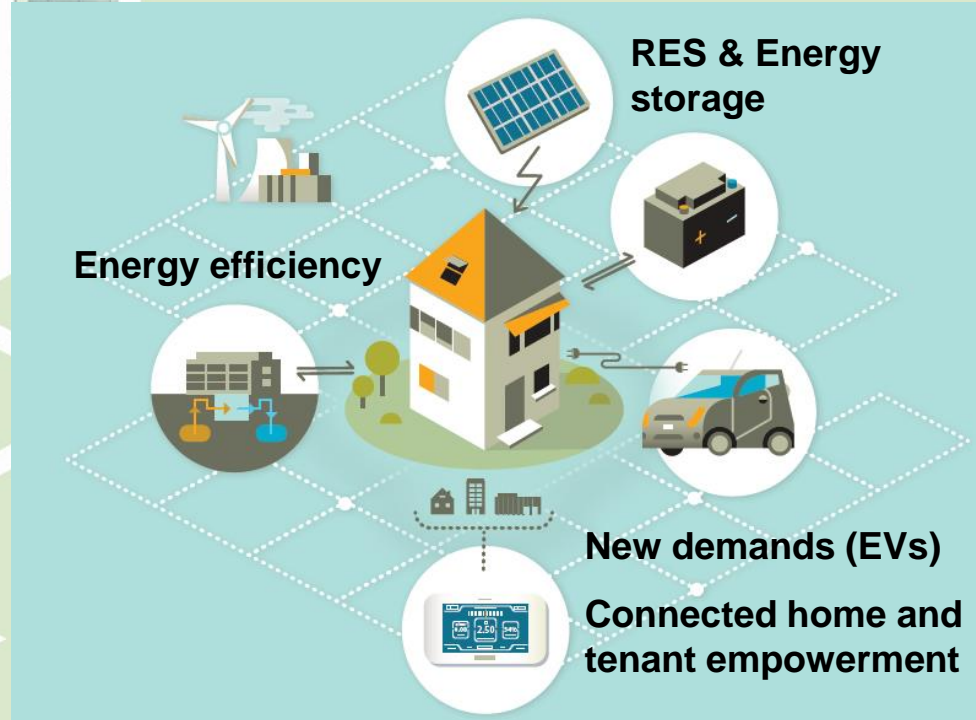
Silvia Sanjoaquin Vives
Naturgy

WASTE HEAT RECOVERY AS A TOOL TO ACHIEVE NZEB – REUSEHEAT PROJECT

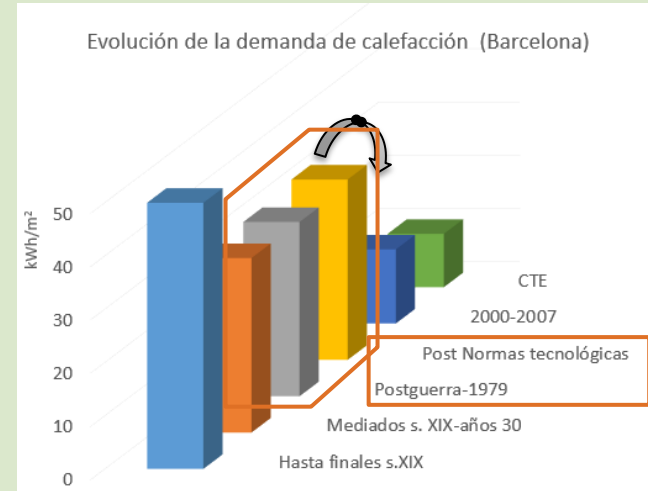
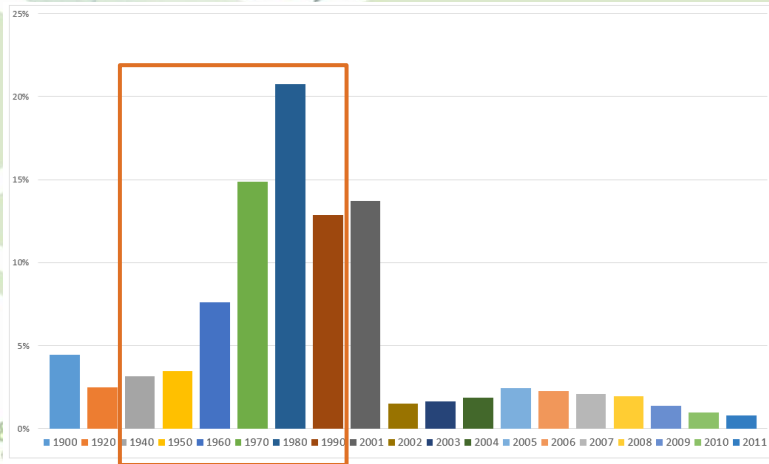
Heating and cooling is key to accomplish the EU's energy and climate objectives

- The EU energy needs are mainly met by fossil fuels (>70%). **The heating and cooling sector accounts for 50% of the total energy consumption of the EU**
- The urban dimension of heating and cooling is crucial since **75%** of the **European citizens** will live in urban areas in 2020 (increase to 84% by 2050)
- **Renewables and unconventional waste heat sources are strategic** → still unexploited opportunities lie in the recovery and reuse of low T waste heat from urban sources
- A number of **technical** and **non-technical barriers** need to be overcome to achieve massive deployment of waste heat recovery systems in cities

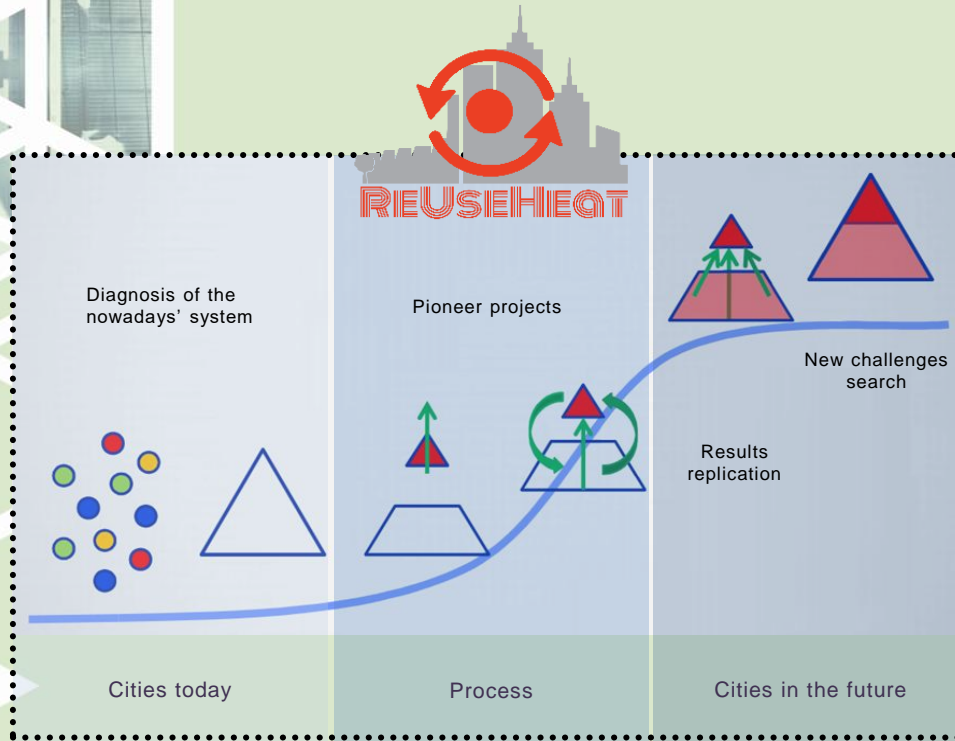
The main instrument to reduce the heating & cooling dependence on fossil fuels is the conversion of buildings to nZEB



Most of the building stock in Spain was constructed before 2007, so deep refurbishment is essential for the nZEB strategy



ReUseHeat will demonstrate systems based on recovery and reuse of waste heat available at the urban level



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H2020
INNOVATION
ACTIONS

4 YEARS

5 M€ and 16
PARTNERS

BUCHAREST:
METRO

MADRID: HOSPITAL

BRUNSWICK: DATA
CENTRE

NICE: SEWAGE

ReUseHeat will provide answers to open issues regarding **waste heat recovery investments demonstrating the techno-economic viability of four large scale systems enabling recovery and reuse of different sources**



Expected impact

Primary energy saving : 5.5 GWh/yr
CO2 emission savings : 1,135 tons/yr

Naturgy will demonstrate a solution based on heat recovery in tertiary buildings



- The chosen hospital is the **Hospital Universitario La Paz**, the largest hospital in Madrid.

- The hospital has 7 buildings (180,000 m²), offering the following services:

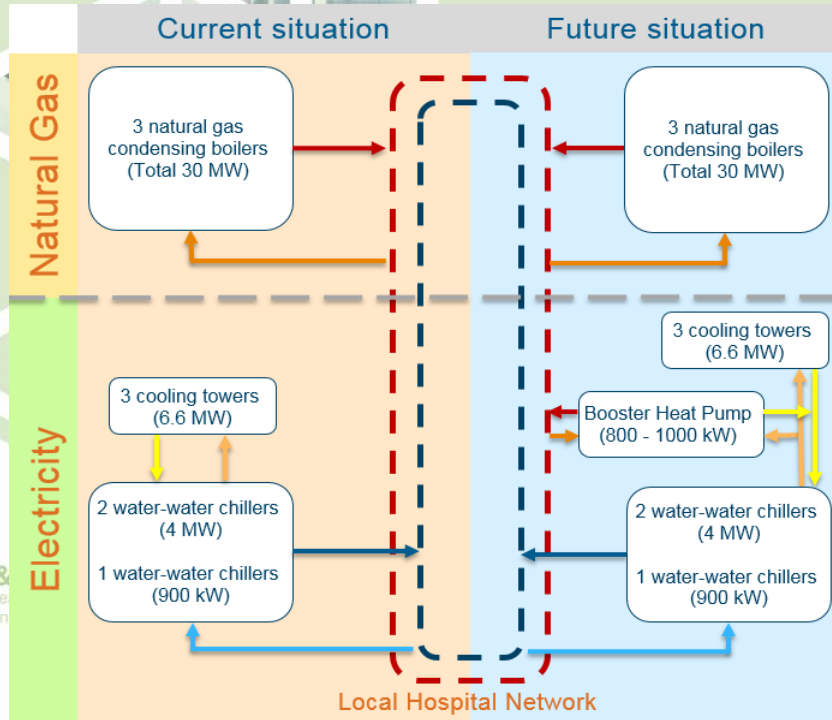
≈ 1,300 beds

≈ 1,000,000 consults/year

≈ 41,000 surgical operations/year



The demonstrator will recover low temperature heat from the cooling circuit of the water-water electric chillers and will inject it in the local DHN



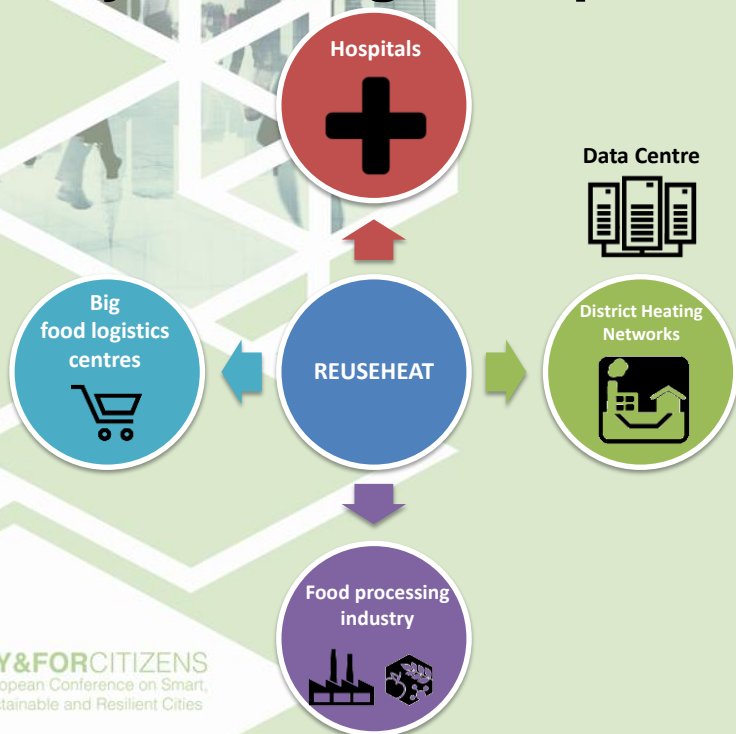
Impact

Economic savings → ≈ 41 k€/year

Primary energy savings → ≈ 1.700MWh/year

CO₂ savings → ≈ 0,54 kt/year

The demonstrator solution can be replicated in other urban tertiary buildings in Spain, such as food logistic centres



Preliminary expected replicability by 2030

655 projects



Primary Energy, Water & CO₂ savings by 2030

PE savings (by 2030) → 6.024 GWh PE

CO₂ savings (by 2030) → 2,85 Mt CO₂

Water savings (by 2030) → 17,68 Mm³

The main non-technical barrier is the financing of this kind of projects

PPP

NEW BUSINESS &
FINANCIAL MODELS

FISCAL INCENTIVES
AND BENEFITS



At the same time, social and legal aspects are a key successful factor for these projects

Political & Legal

Non promotion of Energy Efficiency policies

Unstable political frame

Lack of NzEB and District Heating Networks (DH) regulations

The investments in energy efficiency projects (ex: NzEB & DH) are low

Social

Mistrust towards the solution

A lack of information about a new technology produce fear and mistrust

Reduction of the expected impact



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THANK YOU FOR YOUR ATTENTION!



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European Conference on Smart,
Sustainable and Resilient Cities