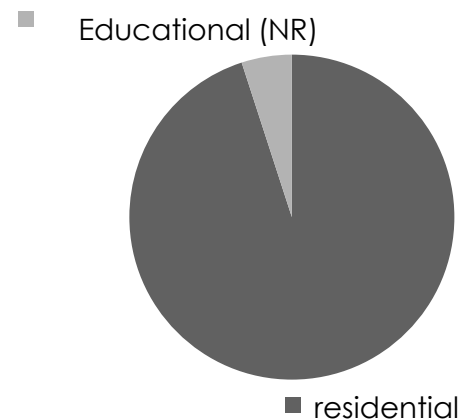


Success Story - Rainha Dona Leonor, Porto

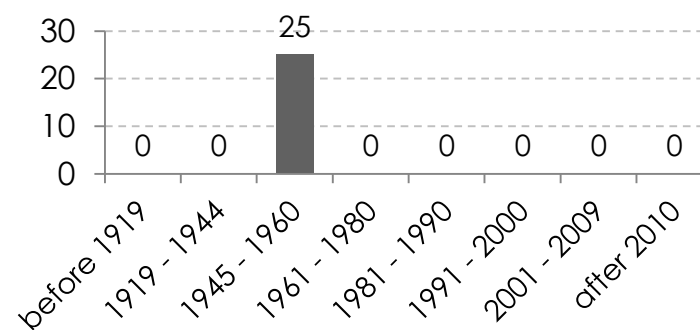


- no. of buildings: 25 (renovated)
- total heated floor area: 5.000 m²

- building typology:



- years of construction:



- renovation measures already carried out: **yes**
- implementation period: **2009 - 2014**

Overall aim and objective

Initially, energy efficiency was not central to the renovation intervention, which aimed to improve the liveability of the dwellings and to restore consistency and homogeneity to the buildings and exterior spaces. However, in line with broader efforts to support resource efficiency, environmental sustainability, and energy poverty problems, measures such as exterior wall and roof insulation, as well as double glazing windows were taken as a way to address poor thermal comfort and thermal bridges issues aggravating associated condensation problems.

Involved stakeholders

Domus Social - Municipal company whose purpose is the management of the municipal public housing park(including social housing), maintenance and conservation of all real estate, equipment and municipal infrastructures.

– What kind of renovation measures were/are being carried out?

- renovation of the thermal envelope
 - renovation of the existing heating systems (decentralized in buildings)
 - new central district heating
 - modification of the existing district heating

– heating demand before renovation: **598,5 MWh/a**
(calculated)

– heating demand after renovation: **342,75 MWh/a**
(calculated)

– cooling demand existing: **yes**
(11,46% of demand after renovation)

– energy supply system(s) before the renovation:

- heat pump
- natural gas
- oil
- biomass
- district heating
 - renewables
 - fossil
 - mix

others: electric heater

– renewable energy generation before the renovation:

- none
- PV
- solar thermal

– energy supply system(s) after the renovation:

- heat pump
- natural gas
- oil
- biomass
- district heating
 - renewables
 - fossil
 - mix

others: electric heater and multi-split

– renewable energy generation after the renovation:

- none
- PV
- solar thermal

Why is this intervention worth studying? / Why should it be part of the Success Stories?

The renovation of the Rainha Dona Leonor neighbourhood is clearly a success case. The assessment made after retrofitting shows very satisfactory numbers. The heating needs, for example, were reduced by 43%, which also evidences the efficiency of the solar thermal system used. About the cooling, the system installed improved the indoor living conditions during hot weather. The measures adopted in renovation led to an increase in rent but this increase was offset by potential energy savings for heating, cooling and DHW, which were reduced by almost 70%, enabling users to heat indoor spaces and keep the interior environment within healthy and comfortable temperatures.

further information:

<https://www.covenantofmayors.eu/IMG/pdf/Porto.pdf>

<http://iea-annex56.org/Groups/GroupItemID6/13.PT.pdf>

http://www.ilobo.pt/ines_lobo_arquitectos_Ida/01023_Rainha_D._Leonor_Social_Housing_Quarter.html