THE CURRENT SITUATION OF THE DEPLOYMENT OF SHALLOW GEOTHERMAL ENERGY AND THE ROLE OF HEAT PUMP TECHNOLOGIES IN THE ENERGY PROSPECTIVE OF CATALONIA 2050

June 14th, 2022
SUMMARY

1) The current situation of the deployment of shallow geothermal energy in Catalonia

2) Energy Prospective of Catalonia 2050 (PROENCAT 2050)
BDIGSCat – Shallow Geothermal Installations
Database of Catalonia

• Project developed by the ICGC (Cartographic and Geological Institute of Catalonia) with the collaboration of GTC-CEEC (Geothermal Working Group of the Energy Efficiency Cluster of Catalonia), ACA (Catalan Water Agency) and ICAEN (Catalan Institute for Energy).

• Currently, there is no official register of shallow geothermal facilities in Catalonia.

• The BDIGSCat ia a collection of information on geo-exchanger systems for heating and cooling production using ground source heat pumps.
SITUATION OF SHALLOW GEOTHERMAL ENERGY IN CATALONIA

739 installations

Rangs de potència (kW)
A - < 30
B - 30 a 70
C - 70 a 100
D - 100 a 500
E - 500 a 1000
F - 1000 a 4000
G - s/d

Generalitat de Catalunya
Institut Català d'Energia
Catalunya 2030

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SITUATION OF SHALLOW GEOTHERMAL ENERGY IN CATALONIA
Strong decrease in final energy consumption:
-1.09% annual and -30.3% in the period 2017-2050

The evolution of energy intensity shows how economic growth is decoupling from the evolution of final energy consumption.
PROENCAT 2050 - MAIN RESULTS

ELECTRICITY DEMAND

Evolution of electricity consumption (TWh)

Variation period 2017-2050: +126.6%
(consumption is multiplied by 2.3)

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The degree of electrification increases significantly. In 2030, electricity will account for 34.2% of final energy consumption and in 2050 it will be 76.4%.
## PROENCAT 2050 - MAIN RESULTS

**High electrification of energy demand** in all sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Degree of electrification of energy demand (%)</th>
<th>Electricity consumption (TWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2017</td>
<td>2050</td>
</tr>
<tr>
<td>TOTAL</td>
<td>24,0%</td>
<td>77,8%</td>
</tr>
<tr>
<td>Final consumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary</td>
<td>24,8%</td>
<td>76,6%</td>
</tr>
<tr>
<td>Industry</td>
<td>15,7%</td>
<td>53,4%</td>
</tr>
<tr>
<td>Transport(^1)</td>
<td>1,5%</td>
<td>62,6%</td>
</tr>
<tr>
<td>Services</td>
<td>30,3%</td>
<td>78,0%</td>
</tr>
<tr>
<td>Domestic</td>
<td>67,9%</td>
<td>97,5%</td>
</tr>
<tr>
<td>Energy sector</td>
<td>42,0%</td>
<td>84,0%</td>
</tr>
</tbody>
</table>

\(^1\) Including land, air and shipping transport
By 2050, almost 60% of homes will be new or undergoing major refurbishment, and the entire building stock will be zero-emission.
Evolution of the use of technologies based on electricity for heating in the main homes

Electricity-based heating technologies (het pumps) will be present in more than 80% of main homes by 2050.
The energy consumption per home will be reduced by almost half in the period 2017-2050.