



2050  
**Heat Roadmap Europe**

A low-carbon heating and cooling strategy

# 2015 Final Heating & Cooling Demand in Poland



Country presentation  
October 2017

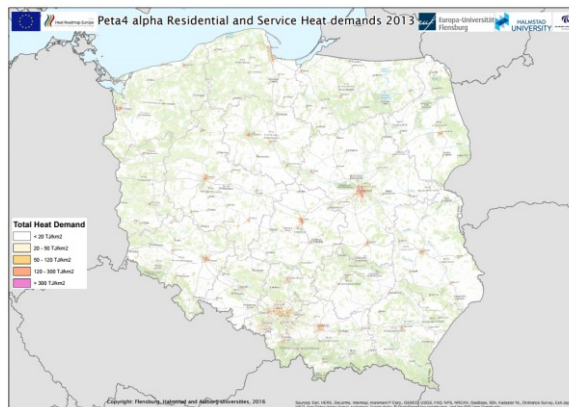
Context of Poland





## General context

- **Population** <sup>[1]</sup>:  
38 million
  - 7.5% of EU28
- **GDP** <sup>[1]</sup>:  
411 billion EUR
  - 3.15% of EU28
- **Heating degree days** <sup>[2]</sup>:  
3,113 HDDs/year
  - 8<sup>th</sup> coldest of EU28
  - 4<sup>th</sup> coldest among the 14 HRE countries

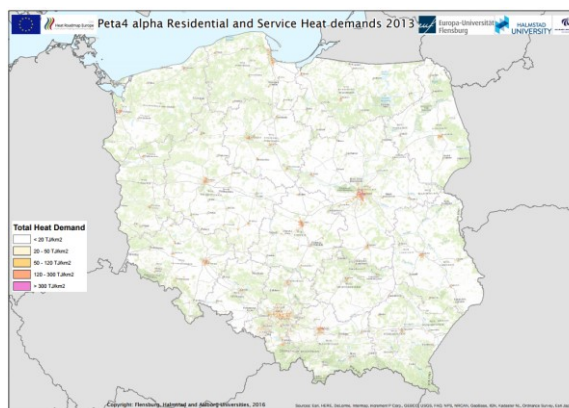


Heat Demand Atlas (major population centres are visible [HRE4, 2013])

1. DG Energy's 2014 data from the [Poland datasheet](#) (2016)
2. Eurostat's 2015 data on [HDDs](#) in Poland (2016)

## General context – Energy intensity

- **Total final energy demand (FED)** <sup>[3]</sup>:  
724 TWh
  - 5.7% of EU28
  - 6<sup>th</sup> highest of EU28 and HRE14
- **FED per capita** :  
19 MWh/Capita
  - 22<sup>nd</sup> of EU28
  - 13<sup>th</sup> highest of HRE14
- **Final energy from renewable sources** <sup>[4]</sup>:  
85.3 TWh
  - 11.8% of total FED
  - 21<sup>st</sup> highest share of EU28
  - 11<sup>th</sup> highest share of HRE14
- **Final energy from renewable sources for H&C** <sup>[4]</sup>:  
57.5 TWh
  - 14.3% of the total H&C
  - 20<sup>th</sup> highest share of EU28
  - 10<sup>th</sup> highest share of HRE14



Heat Demand Atlas (major population centres are visible [HRE4, 2013])

3. Eurostat's 2015 data on [annual energy quantities](#) in Poland
4. Eurostat's RES [Shares 2015 results](#)





## Climate and emissions

- Poland has committed to not increase its GHG emissions by more than 14%<sup>[5]</sup> by 2020, compared with 2005

Carbon per capita [kg CO <sub>2</sub> /person]	Carbon per GDP [ton CO <sub>2</sub> /billion EUR]	Carbon Emission per tone of energy carrier (carbon intensity) [kg CO <sub>2</sub> /toe]
8,221	774	3,314
6 <sup>th</sup> highest among the 14 HRE	The highest among the 14 HRE	The highest among the 14 HRE
2014 data <sup>[1]</sup>		

1. DG Energy's 2014 data from the [Poland datasheet](#) (2016)

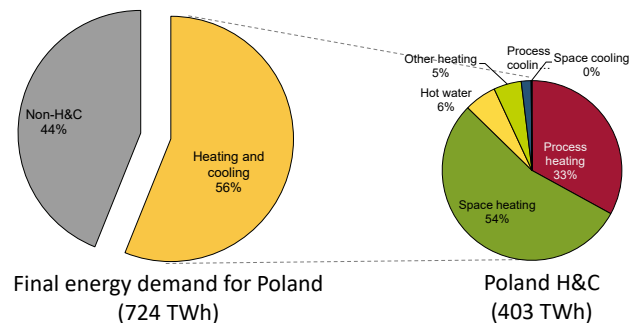
5. Official Journal of the European Union, [Decision No. 406](#) (2009)

## Current national energy situation



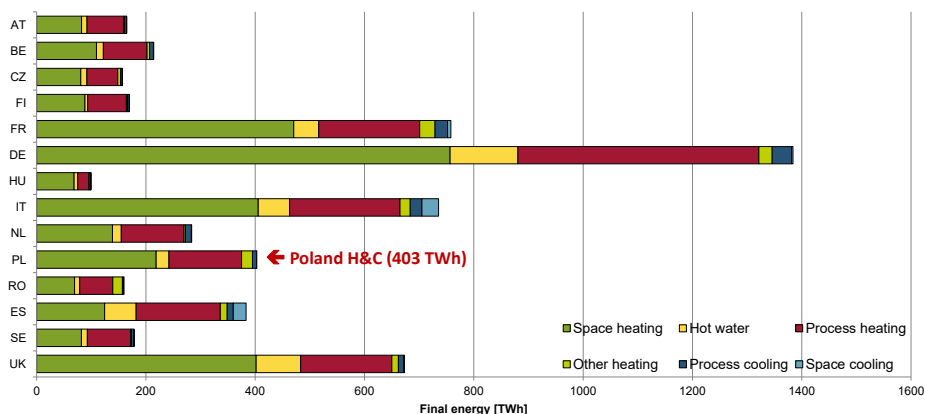
## Poland: H&C energy by purposes

- H&C comprises 56% of Poland's final energy demand.
- Very little cooling process needs, but very high need for space and process heating



## 14 HRE: H&C energy by purposes

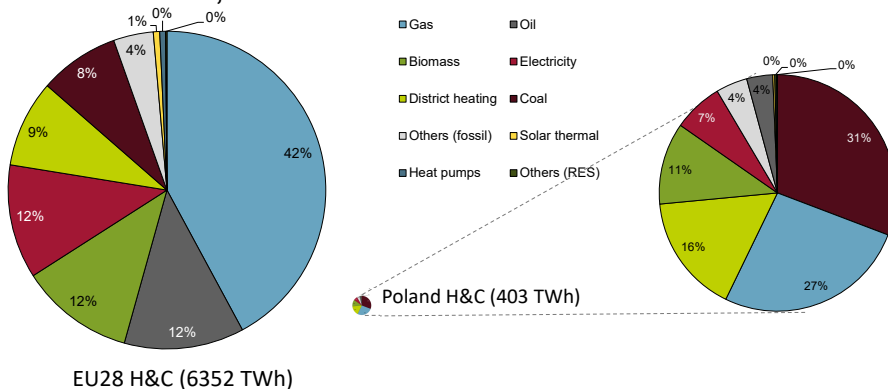
- Poland has the 5<sup>th</sup> highest final energy demand for H&C among the 14 HRE countries.





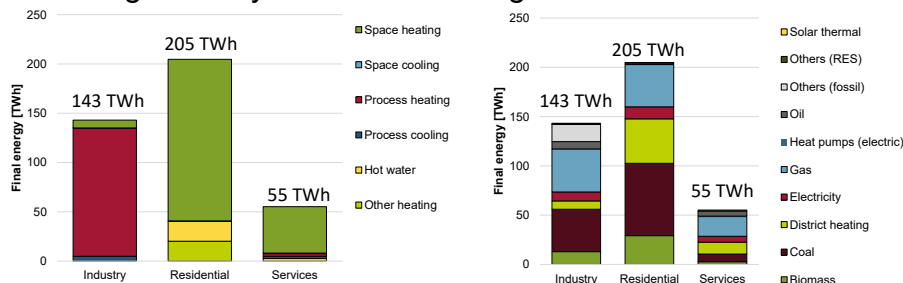
## H&C energy by energy carriers

- Poland accounts for 6% of the EU28's total delivered H&C demand.
- Compared to the EU28, it uses less gas and oil, but much more coal.



## Sectors by purposes and energy carriers

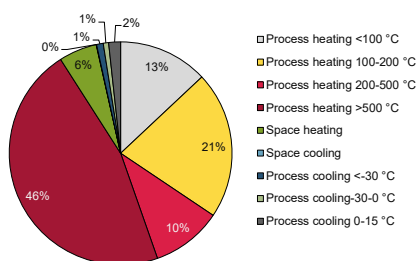
- Polish industries are overwhelmingly dominated by process heating, other sectors by space heating.
- All sectors rely much on fossil fuels, especially coal and gas, while the residential sector also relies significantly on district heating and biomass.



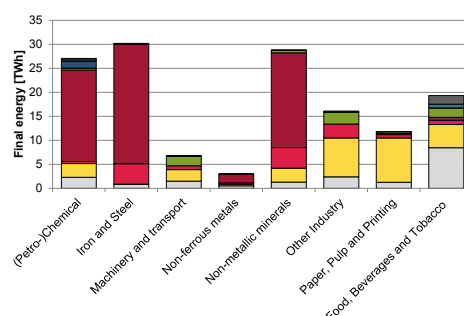


## Industry sub-sectors by H&C purposes

- Polish industry is dominated by higher temperature heating processes.
- Most of this is used for the metals industry, (petro-)chemicals and non-metallic minerals.

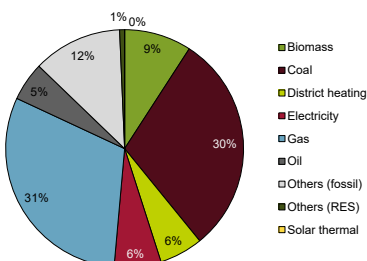


Polish industry  
(143 TWh)

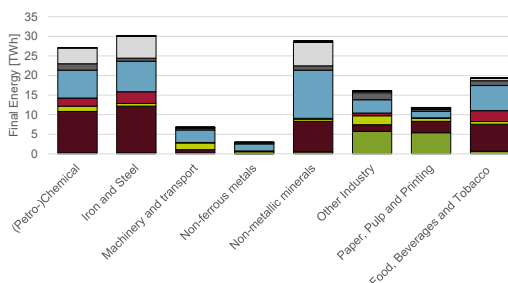


## Industry sub-sectors by energy carriers

- To attain such high temperatures, Polish industry relies mostly on fossil fuels.
- The Iron and Steel, (Petro-)Chemical, non-metallic minerals and food, beverages and tobacco industries are the ones that more relies on coal and gas



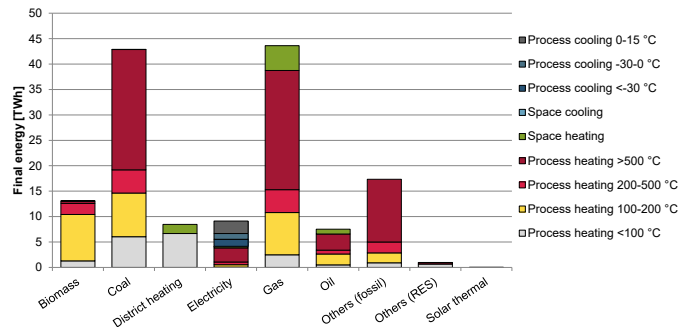
Polish industry  
(205 TWh)





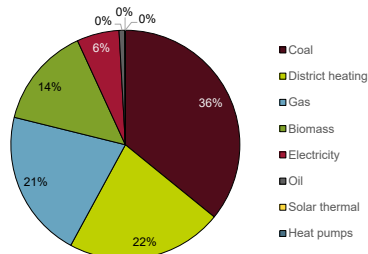
## Industry Space Heating

- Polish Industry uses mostly gas for space heating, although they use some district heating and oil too

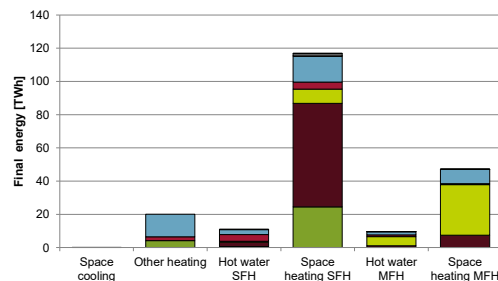


## Residential sub-sectors by energy carriers

- Polish households use mostly fossil fuels (coal and gas) for H&C, but there is also a significant use of district heating and biomass.
- Single-family homes lead the way in coal, biomass and gas (for space heating).
- Multi-family homes are the primary market for district heating.



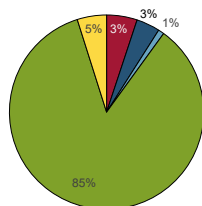
Polish households  
(205 TWh)



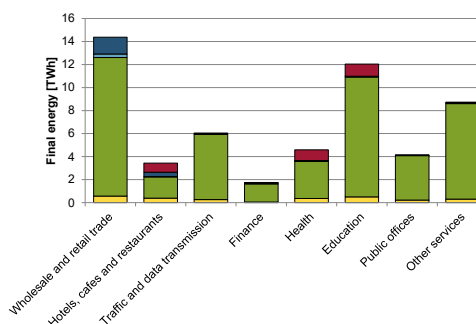


## Service sub-sectors by H&C purposes

- Space heating is definitely the main concern for Poland's service sector.
- Their only significant cooling needs are from wholesale and retail trade, and some from hospitality facilities.

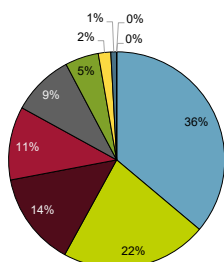


Polish services  
(55 TWh)

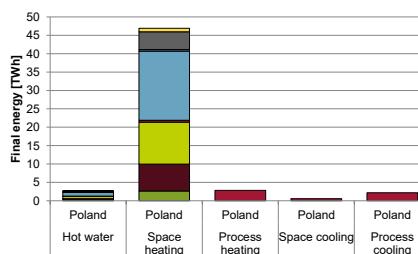


## Service sectors by energy carriers

- Poland's service sector relies mostly on gas and district heating, with significant use of coal and electricity too.
- Almost all heating demand is for space heating.
- All cooling, and process heating, are powered by electricity only.



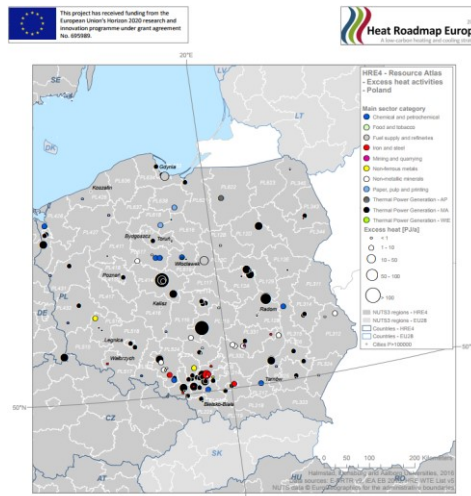
Polish services  
(55 TWh)





## Excess heat sources

- **Excess Heat:**  
At least 289 Twh\*
  - Would completely cover the final energy demand for Space heating and Hot water in Poland (242 TWh)
- The biggest concentration of excess heat sources are located in the central and south regions of Poland.

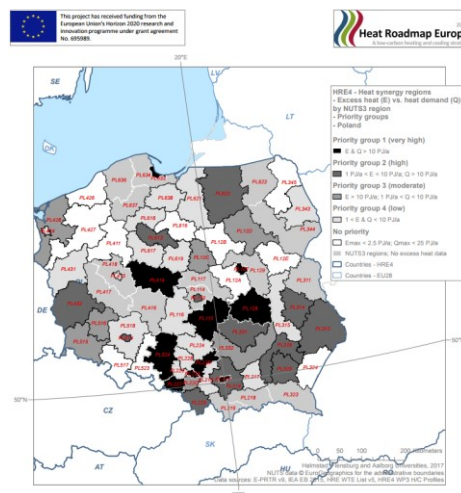


Excess Heat Atlas [HRE4, 2013]

\* Calculated from the 136 biggest facilities in Poland, using [Peta 4.2](#)

## Heat Synergy Regions

- 10 regions present a very high potential for district heating
- Other 10 regions present a high potential for district heating



Excess Heat Atlas [HRE4, 2013]



## Main references cited

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1. DG Energy's 2014 data from the [Polish datasheet](#) (2016)
2. Eurostat's 2015 data on [HDDs](#) (2016)
3. Eurostat's 2015 data on [annual energy quantities](#)
4. Eurostat's RES [Shares 2015 results](#)
5. Official Journal of the European Union, [Decision No. 406](#) (2009)