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Heat Roadmap Europe 2050

A low-carbon heating and cooling strategy

2015 Final Heating & Cooling Demand in Belgium

Country presentation

October 2017

Belgian context

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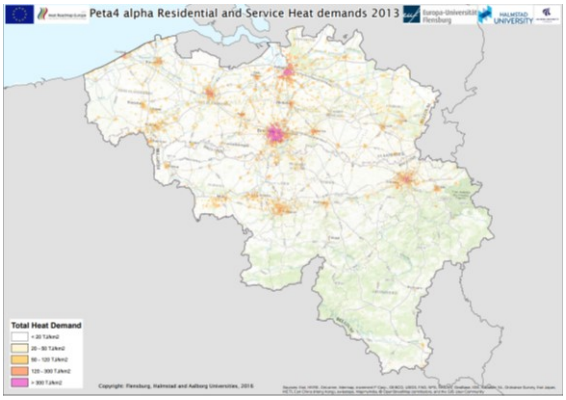
General context

- **Population** [1]:
  11.4 million
  - 2.2% of EU28
- **GDP** [1]:
  329 billion EUR
  - 2.5% of EU28
- **Heating degree days**[2] :
  2633 HDDs/year
  - 12th warmest of EU28
  - 6th warmest among the 14 HRE countries

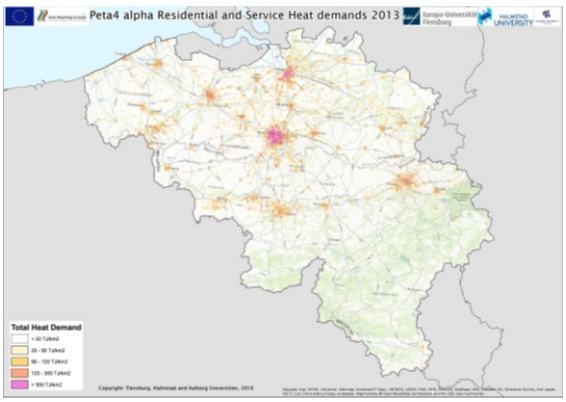


Heat Demand Atlas (major population centres are visible [HRE4, 2013]

1. DG Energy's 2014 data from the Belgian datasheet (2016)
2. Eurostat's 2015 data on HDDs in Belgium (2016)

General context – Energy intensity

- **Total final energy demand (FED)**[3]:
  416 TWh
  - 3.3% of EU28
  - 8th highest of EU28 and HRE14
- **FED per capita** :
  37.1 MWh/Capita
  - 5th highest of EU28
- **Final energy from renewable sources** [4]:
  32.8 TWh
  - 7.9% of total FED
  - 25th highest share of EU28
  - 13th highest share of HRE14
- **Final energy from renewable sources for H&C** [4]:
  16.4 TWh
  - 7.6% of the total H&C
  - 24th highest share of EU28
  - 12th highest share of HRE14



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

3. Eurostat's 2015 data on annual energy quantities in Belgium
4. Eurostat's RES Shares 2015 results

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Climate and emissions

- Belgium has committed to reduce GHG emissions by 15%[5] , within the EU Climate and Energy Package

Carbon per capita [kg CO_2/person]	Carbon per GDP [ton CO_2/billion EUR]	Carbon Emission per tone of energy carrier (carbon intensity) [kg CO2/toe]
8,959	*266*	*1,881*
5th highest among the 14 HRE	*6th highest among the 14 HRE*	*4th lowest among the 14 HRE*
2014 data [1]		

1. DG Energy's 2014 data from the Belgian datasheet (2016)
5. Official Journal of the European Union, Decision No 406 (2009)

Current national energy situation

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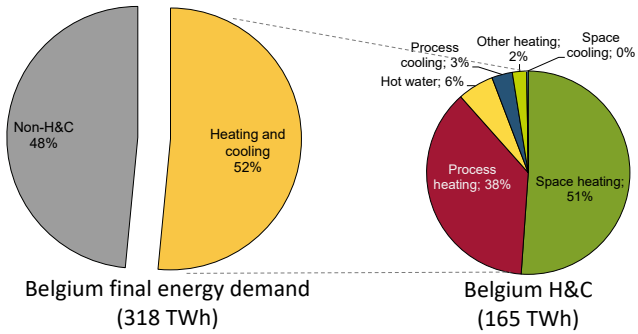
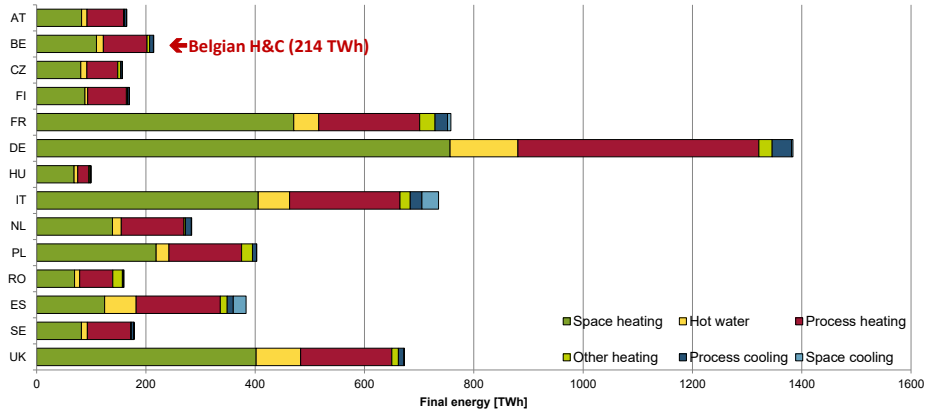
Belgium: H&C energy by purposes

- Belgian H&C comprises roughly half of its final energy demand.
- Very little cooling process needs, but very high need for space and process heating



14 HRE: H&C energy by purposes

- Belgium has the 7th lowest final energy demand for H&C among the 14 HRE countries.



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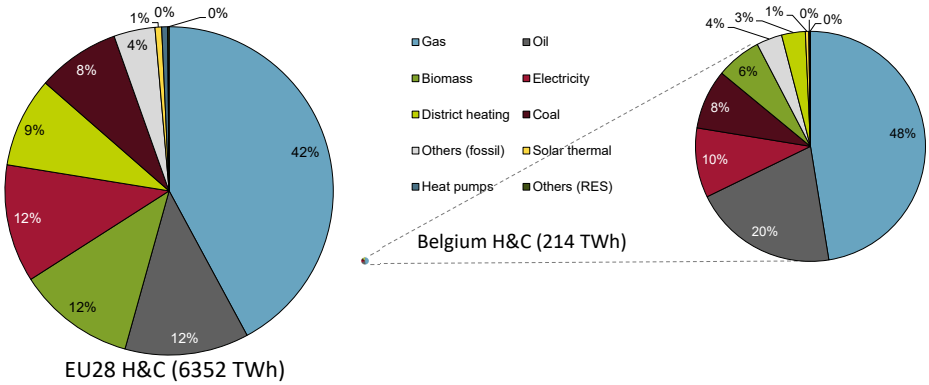
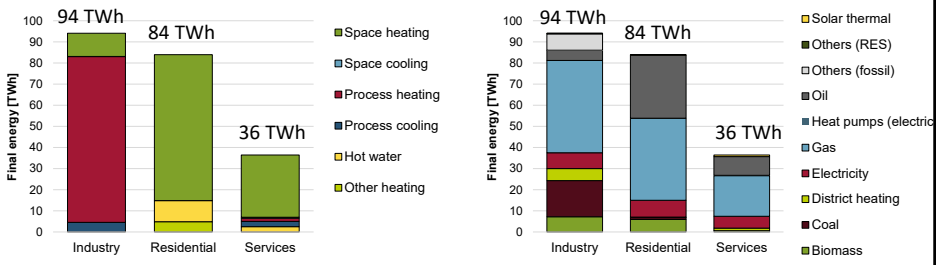
H&C energy by energy carriers

- Belgium accounts for only 3% of the EU28's total delivered H&C demand.
- Compared to the EU28, it uses more oil and less biomass.



Sectors by purposes and energy carriers

- Belgian industries are overwhelmingly dominated by process heating, other sectors by space heating.
- Its industry relies much more on fossil fuels, especially coal and gas, while some biomass and district heating are used as well.
- The industry and residential sector use approximately the same amount of gas.



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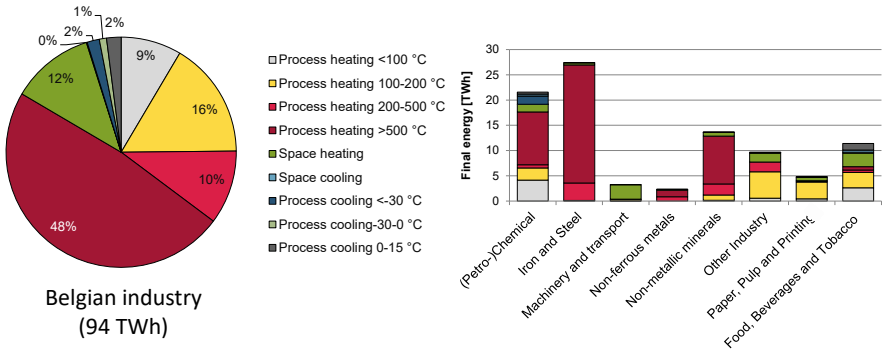
Industry sub-sectors by H&C purposes

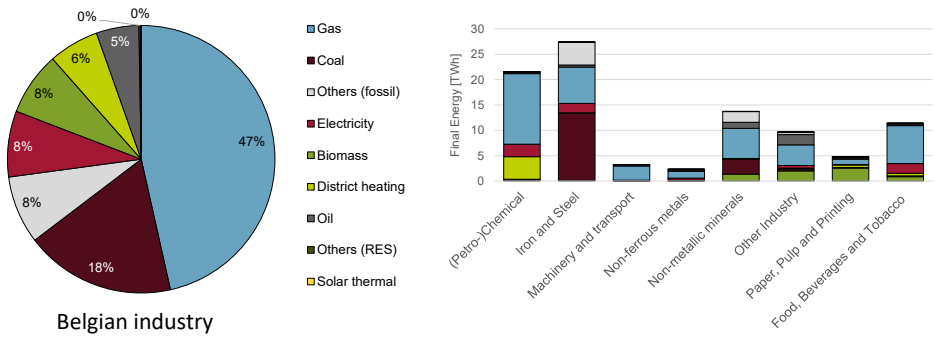
- Belgium's industry is overwhelmingly dominated by higher temperature heating processes.
- Most of this is used for the metals industry, (petro-) chemicals and non-metallic minerals.



Belgian industry
(94 TWh)

Industry sub-sectors by energy carriers

- To attain such high temperatures, Belgian industry relies on fossil fuels.
- The paper, "other" and non-metallic industries make use of RES (i.e. biomass).



Belgian industry
(84 TWh)

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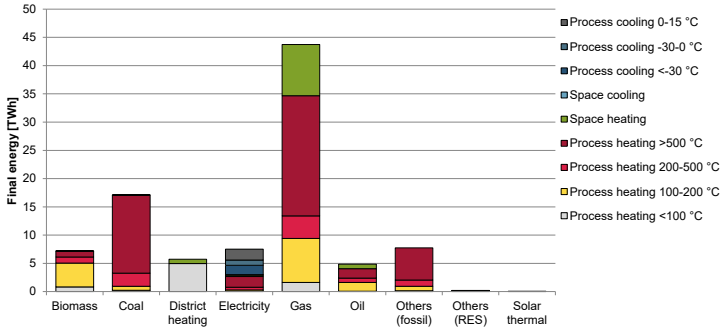
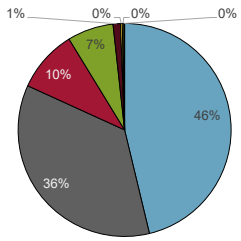
Industry Space Heating

- Belgium's industry uses mainly gas for space heating, although it also uses some district heating and oil.

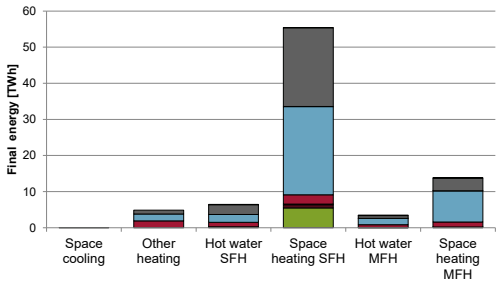


Residential sub-sectors by energy carriers

- Belgian households mainly use gas and oil for H&C.
- Single-family homes lead the way in biomass.
- The residential sector uses no district heating, no solar thermal and no heat pumps.



Belgian households (84 TWh)



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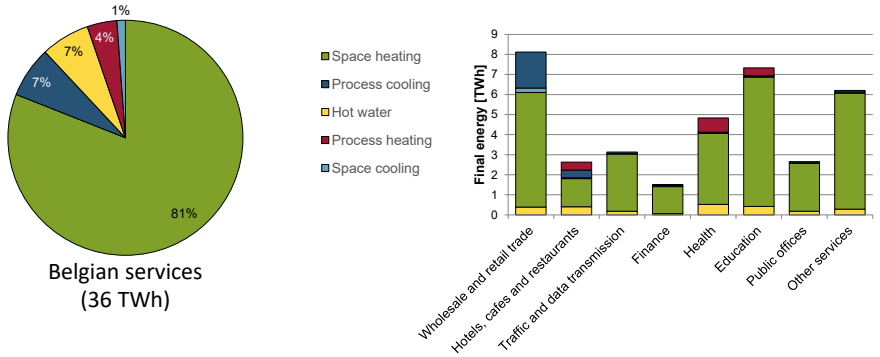
Service sub-sectors by H&C purposes

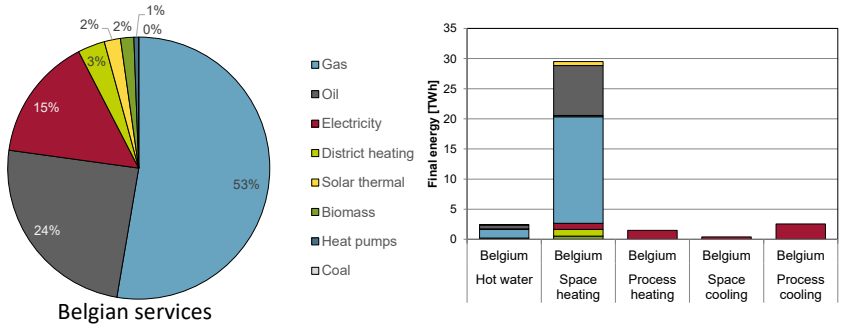
- Space heating is definitely the main concern for Belgium's service sector.
- Their only significant cooling needs are from wholesale/retail trade, and some from hospitality facilities.



Belgian services (36 TWh)

Service sectors by energy carriers

- Belgium's service sector relies greatly on gas and oil, most of which goes to space heating.
- All cooling, and process heating, are powered by electricity only.



Belgian services (36 TWh)

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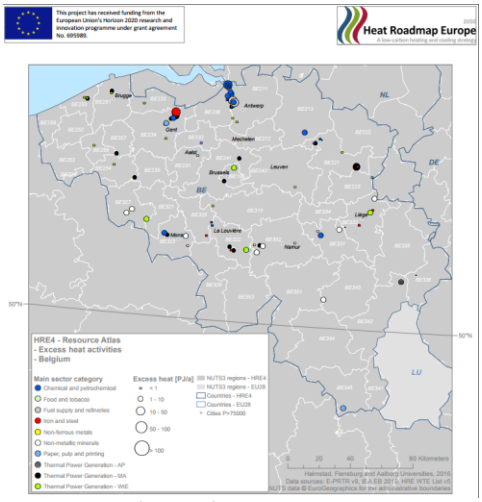
Excess heat sources

- **Excess Heat**:
  At least 68 Twh*
  - Would cover 73% of the final energy demand for Space heating and Hot water

- The biggest excess heat sources are concentrated in the North regions of the country.



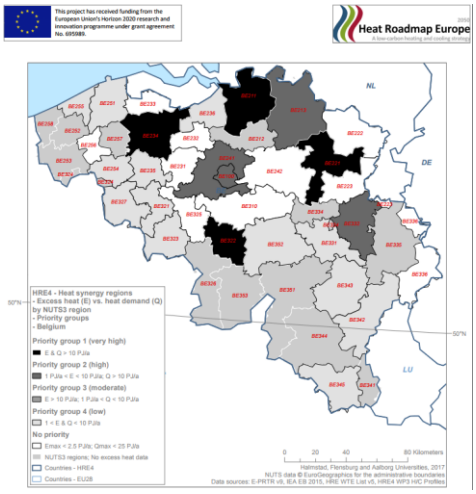
Excess Heat Atlas [HRE4, 2013]

* Calculated from the 87 biggest facilities in Belgium, using Peta 4.2

Heat Synergy Regions

- There are 4 regions with very high potential for district heating

- 4 other regions present a high potential for district heating



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