



2050  
**Heat Roadmap Europe**

A low-carbon heating and cooling strategy

# 2015 Final Heating & Cooling Demand in Italy



Country presentation  
October 2017

Italian context



## General context

- **Population**<sup>[1]</sup>:  
60.8 million
  - 12% of EU28
- **GDP**<sup>[1]</sup>:  
1 612 billion EUR
  - 12.3% of EU28
- **Heating degree days**<sup>[2]</sup> :  
1 810 HDDs/year
  - 6<sup>th</sup> warmest of EU28
  - 2<sup>nd</sup> warmest among the 14 HRE countries



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

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

## General context – Energy intensity

- **Total final energy demand (FED)**<sup>[3]</sup>:  
1 354 TWh
  - 10.7% of EU28
  - 4<sup>th</sup> highest of EU28 and HRE14
- **FED per capita** :  
22.3 MWh/Capita
  - 16<sup>th</sup> highest of EU28
  - 10<sup>th</sup> highest of HRE14
- **Final energy from renewable sources**<sup>[4]</sup>:  
236.9 TWh
  - 17.5% of total FED
  - 13<sup>th</sup> highest share of EU28
  - 5<sup>th</sup> highest share of HRE14
- **Final energy from renewable sources for H&C**<sup>[4]</sup>:  
141 TWh
  - 19.2% of the total H&C
  - 18<sup>th</sup> highest share of EU28
  - 8<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 Italy
4. Eurostat's RES [Shares 2015 results](#)



## Climate and emissions

- Italy has committed to a GHG emission decrease of 13% <sup>[5]</sup>, within the EU Climate and Energy Package

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]
5,795	229	2,332
6 <sup>th</sup> lowest among the 14 HRE	4 <sup>th</sup> lowest among the 14 HRE	5 <sup>th</sup> highest among the 14 HRE
2014 data <sup>[1]</sup>		

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

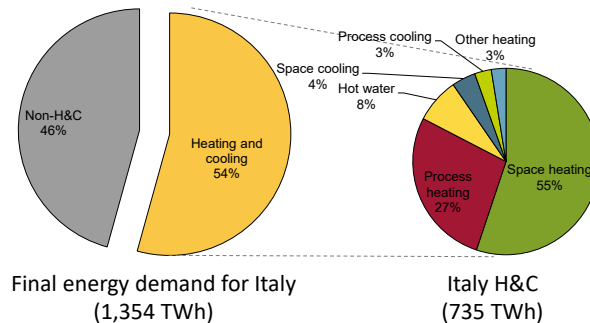
5 Official Journal of the European Union, [Decision No 406](#) (2009)

## Current national energy situation



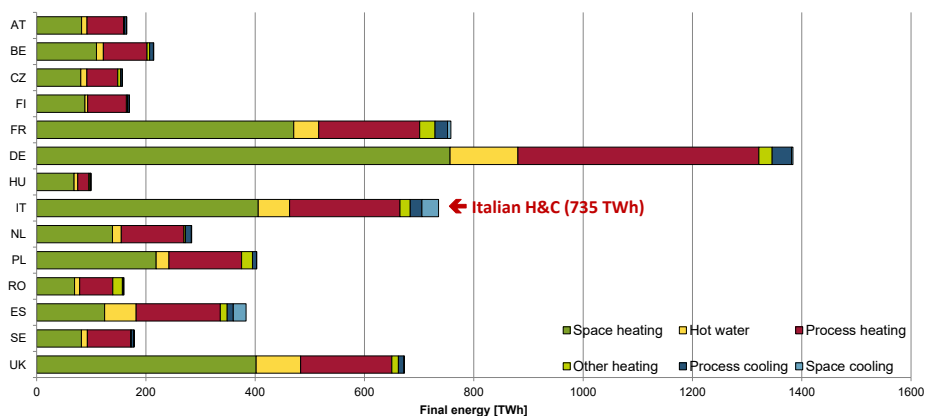
## Italy: H&C energy by purposes

- H&C comprises 54% of Italy's Final energy demand.
- Italy has low cooling process needs, but very high need for space and process heating



## 14 HRE: H&C energy by purposes

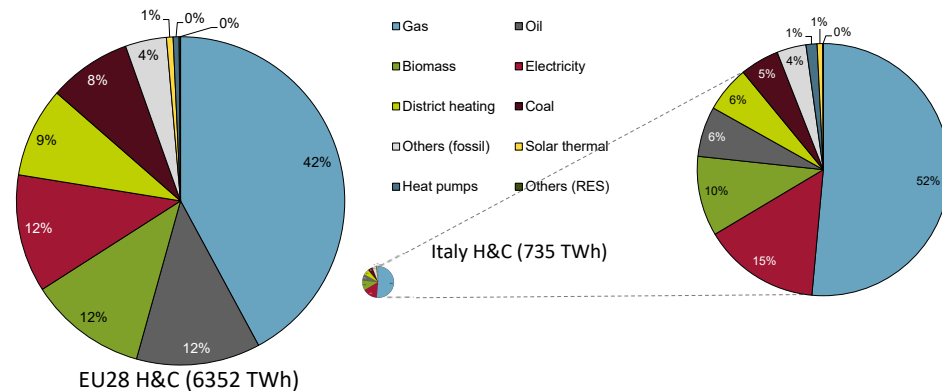
- Italy has the 3<sup>rd</sup> highest final energy demand for H&C among the 14 HRE countries.





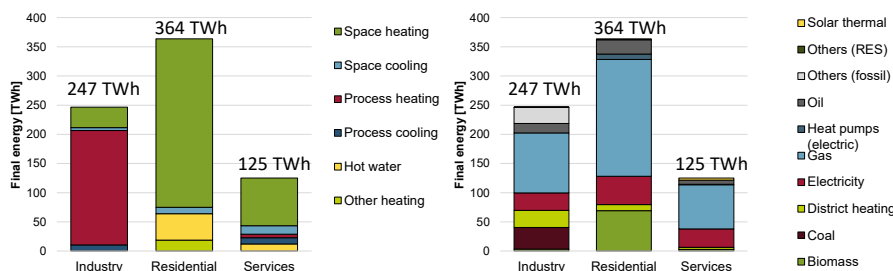
## H&C energy by energy carriers

- Italy accounts for 12% of the EU28's total delivered H&C demand.
- Compared to the EU28, it uses more gas and electricity, but less oil, coal and district heating.



## Sectors by purposes and energy carriers

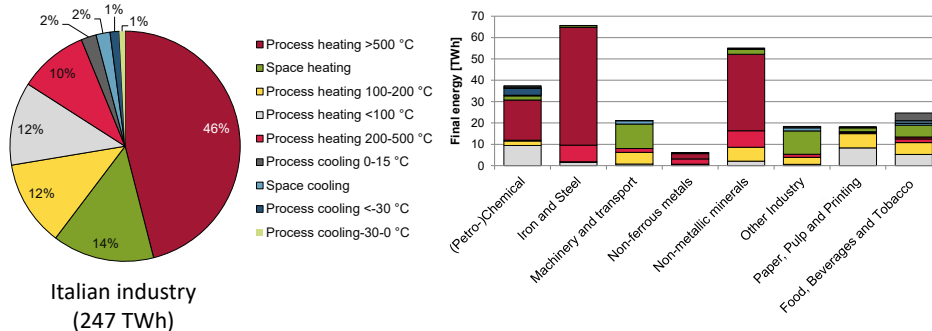
- Italian industries are overwhelmingly dominated by process heating, other sectors by space heating.
- Italian industry, residential and service sectors use a varied mix of fuels.
- Italian households use some biomass





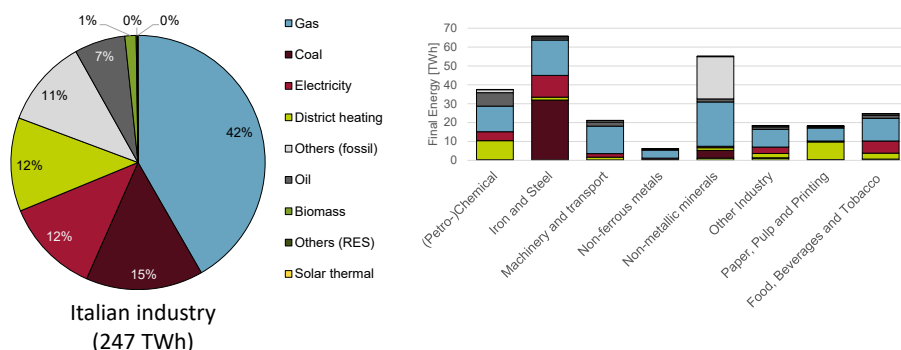
## Industry sub-sectors by H&C purposes

- Italy's industry is dominated by higher temperature heating processes.
- Most of this is used for the metals industry, (petro-)chemicals and non-metallic minerals.
- Space heating and lower temperature process heating are also substantial and used in most sectors.



## Industry sub-sectors by energy carriers

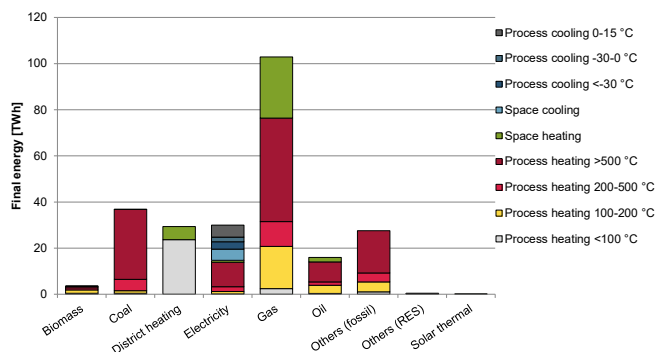
- To attain the high temperatures, Italy's industry relies mostly on fossil fuels, mainly gas and coal.
- Some electricity and district heating is used as well





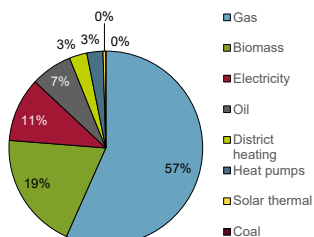
## Industry Space Heating

- Italian Industry uses mostly gas for space heating, although it uses some district heating and oil too

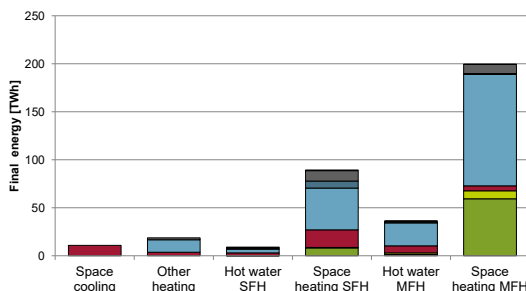


## Residential sub-sectors by energy carriers

- Italian households use a varied mix of H&C sources, however the primary fuel is gas.
- Multi-family homes seem to be a primary market for biomass heating.



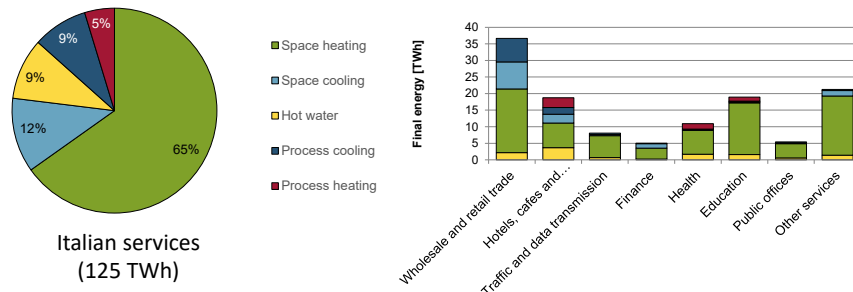
Italian households  
(364 TWh)





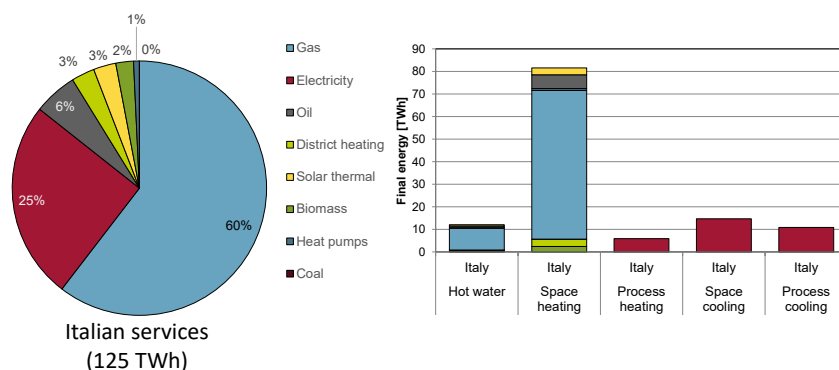
## Service sub-sectors by H&C purposes

- Space heating is definitely the main concern for Italy's service sector.
- Italy's service sector has significant cooling needs, especially from wholesale and retail trade and some from hospitality facilities.



## Service sectors by energy carriers

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

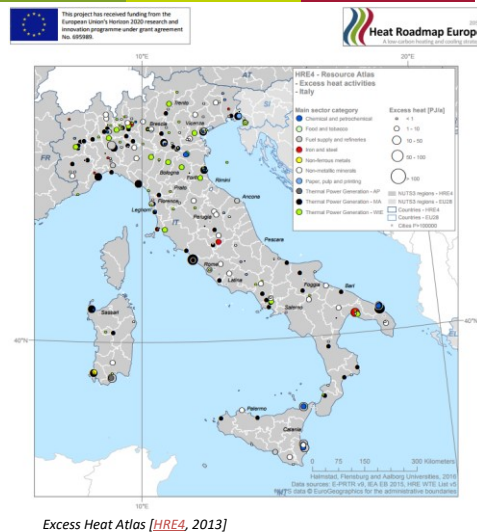






## Excess heat sources

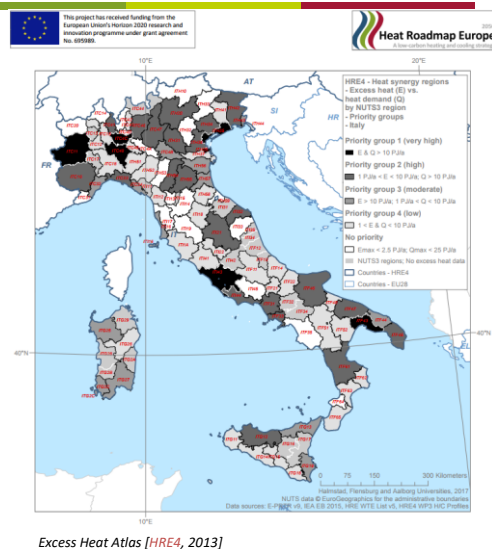
- **Excess Heat:**
  - At least 259 Twh\*
  - Would cover 56% of the final energy demand for Space heating and Hot water in Italy
- The biggest concentration of excess heat sources are located in North regions of Italy.



\* Calculated from the 271 biggest facilities in Italy, using [Peta 4.2](#)

## Heat Synergy Regions

- 6 regions present a very high potential for district heating
- At least 20 regions present a high potential for district heating





## Main references cited

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1. DG Energy's 2014 data from the [Italian 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)