



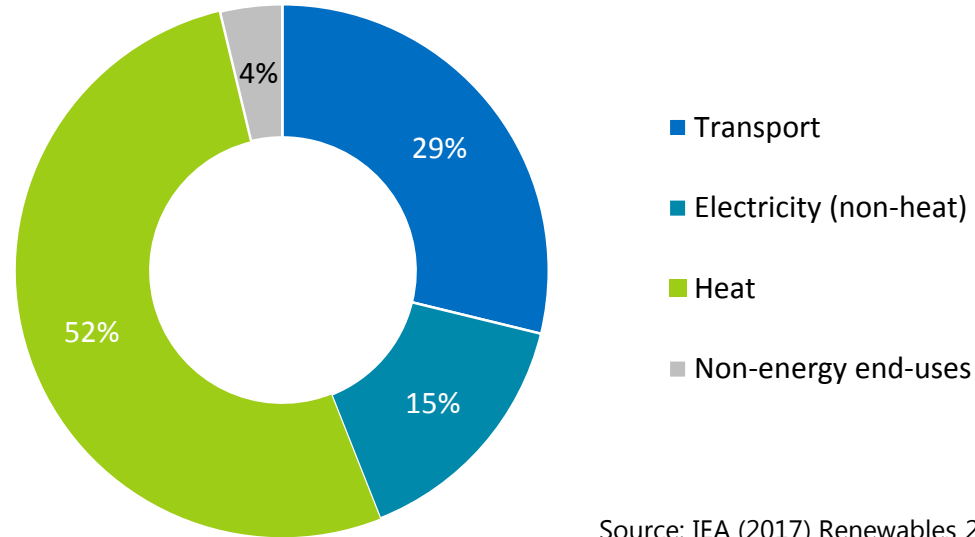
# Heating & cooling challenges

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Ute Collier, IEA Renewable Energy Division  
REN21 webinar, 22 June 2018

# Half of energy is consumed as heat

Total final consumption, 2015

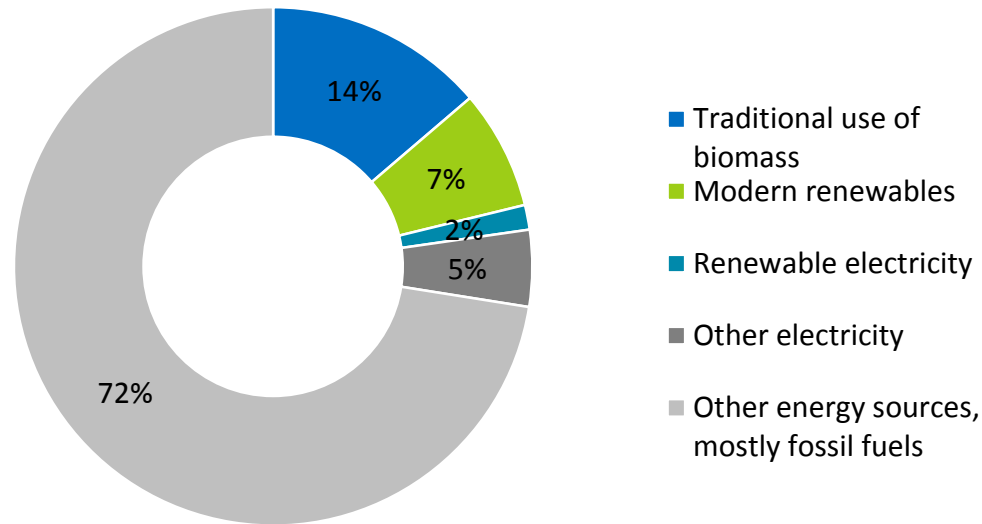


Source: IEA (2017) Renewables 2017

**Meanwhile, electricity is a small (albeit growing) end-use, yet most policy focuses on electricity. Cooling accounts for only 2% of energy consumption but is growing fast.**

# Most heat is produced from fossil fuel sources

Total global energy consumption for heat by source, 2015

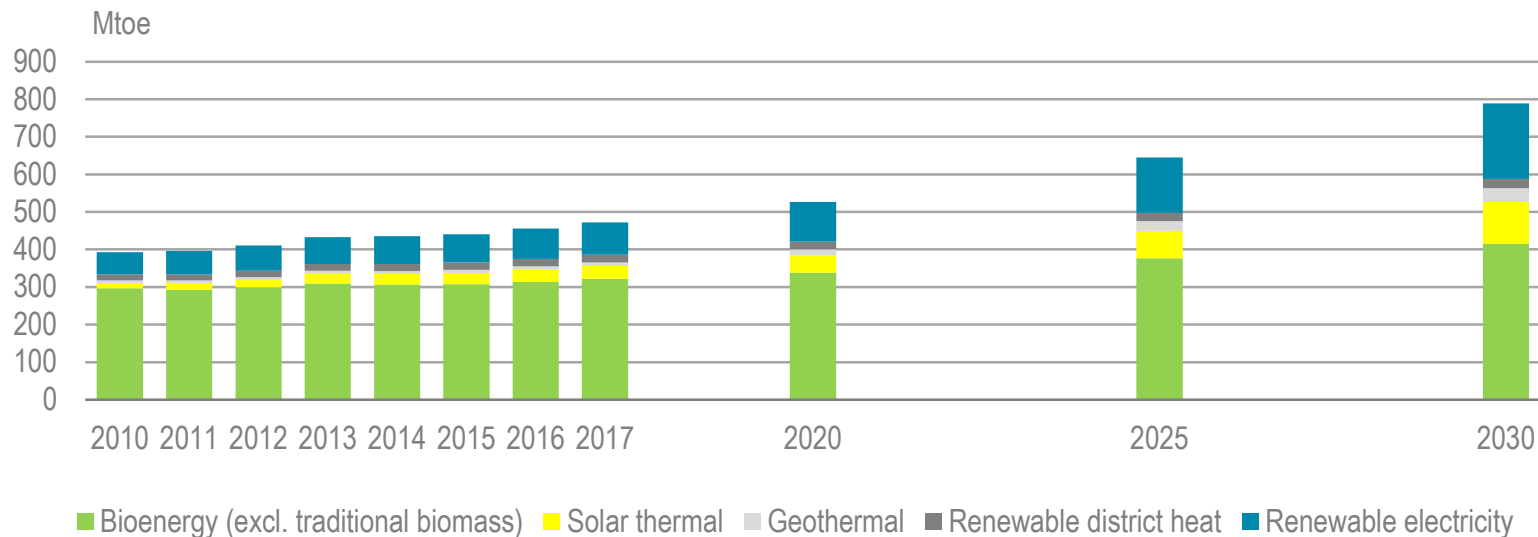


Source: IEA (2017) Renewables 2017

**Heat accounts for 38% of energy-related CO<sub>2</sub> emissions – heat decarbonisation is essential for achieving climate targets, plus has benefits for air pollution, energy security etc**

# Renewable heat is not on track to meet SD targets

## Renewable heat consumption by source



Source: IEA (2018) Tracking clean energy

**Renewable heat consumption will need to grow much more rapidly to meet sustainable development and climate targets, especially for solar thermal and renewable electricity.**

## Key barriers include:

- Higher capital costs
- Low fossil fuel prices
- Suitability issues (buildings/industry)
- Lack of awareness
- Lack of supply chain
- Consumer inertia



# How to overcome heat barriers

**Different heat needs, country contexts and barriers require different policy approaches:**

Policy Cluster 1: District heating

Policy Cluster 2: Competing with natural gas heating

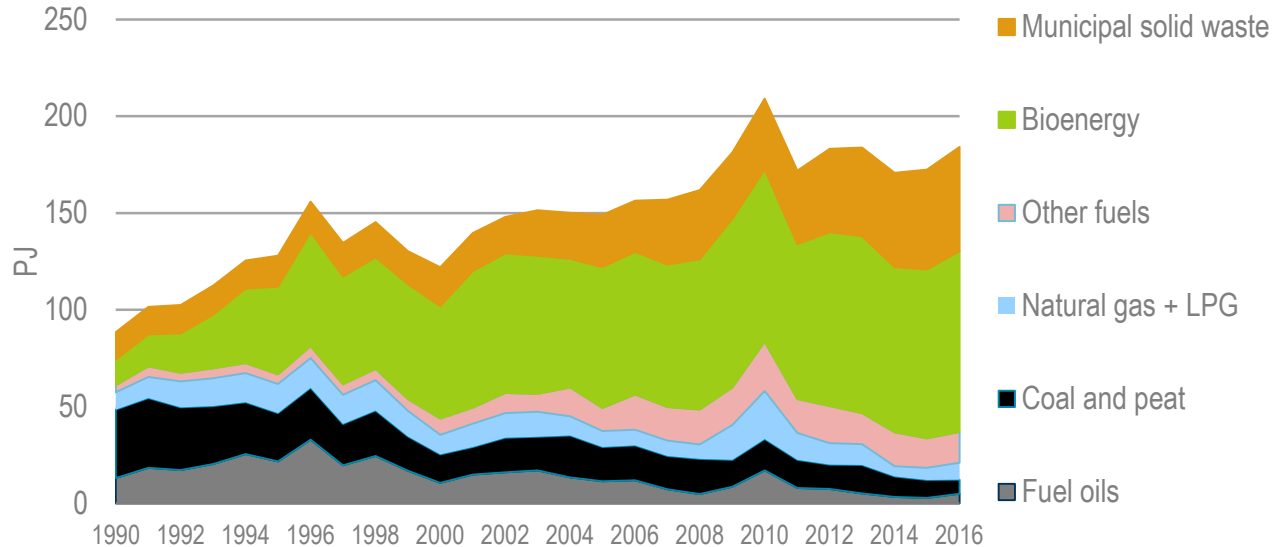
Policy Cluster 3: Industrial heat and hot water (emerging economies)

Policy Cluster 4: Clean cooking



# Lessons from Sweden (68.6% renewable heat)

Fuel input in Swedish district heating (1990-2016)



## Key success factors:

- Long-term strategy
- Ambitious targets
- Public investment in district heating
- High energy efficiency standards
- Good biomass resource
- High carbon taxes

Source: Statistics Sweden

- Successful solar water heating policies in many country
  - Mandates, supplier obligations, financial incentives
  - But global market is declining
- Great potential for renewable heat in industry, especially low and medium temperature heat (e.g. Brazil already uses 50%)
  - Some options very cost-effective
  - Policy support through tax incentives, performance-based instruments, carbon pricing
  - However, most countries have no policies for RE heat in industry





- Heat remains a bit of a 'cinderella' in energy policy
- Complex and fragmented markets, local solutions
- Countries should set targets and develop strategies for heat decarbonisation
- Close link with energy efficiency policy
- Need to look at sector coupling: renewable power generation + thermal storage + heatpumps



