Health-related social costs due to residential heating and cooking

31 March 2022, Marisa Korteland

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Introduction

- Cooking and heating cause air pollution = damage to human health
- No ‘financial value’ attached means not considered by policy makers
- Value the adverse health impact to society: social cost approach
- Loss in economic welfare:
  - direct (health care) expenditures:
    hospital admissions, loss of working days
  - indirect health impacts and accompanied welfare loss:
    discomfort of diseases, increased mortality risk/reduced life expectancy.
- Social costs differ per country (income level, population density etc.)

Methodology

- Health-related costs to society:
  - 7 pollutants: $PM_{2.5}$, NO_X, NH_3, SO_2, CO, CH_4 and NMVOCs
  - Direct pollution at home, indirect pollution at electricity and heat generation production plants
  - EU27+UK, Spain, Italy, UK and Poland
  - Total cost estimates (€/year): total annual emissions * social cost estimates per emission

Methodology

- Costs per fuel-technique combination:
  - contribution to total cost figures (% of total)
  - euro/GJ delivered: emissions factors * social cost estimates per emission. To add context: translated into annual costs per (average) household
- Expected impact of switching to alternative fuel-technique options

Main results: total costs to society

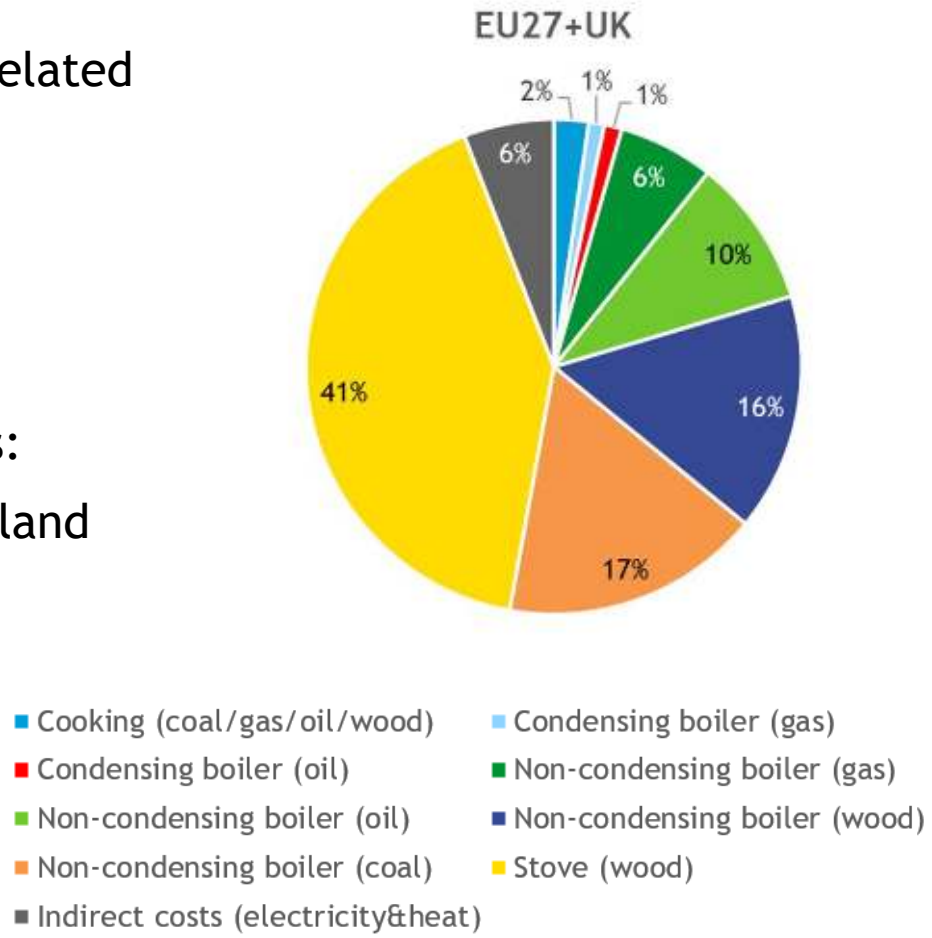
- Total health-related social costs of residential heating and cooking in EU27+UK: € 29 billion or 0.2% of GDP (2018)
  - € 27 billion: direct pollution due to combustion at home
  - € 2 billion: indirect pollution at electricity/heat production sites

Country/region	Total health-related costs to society (billion €)
EU27+UK	29
Poland	3.3
Italy	4.7
Spain	1.2
UK	2.7

Main results: differentiation

- Contributors to total health-related social costs in the EU27+UK:
  - wood stoves (41%)
  - coal boilers (17%)

- National results illustrate this:
  - coal boilers dominant in Poland
  - wood-based techniques in Italy, Spain and UK



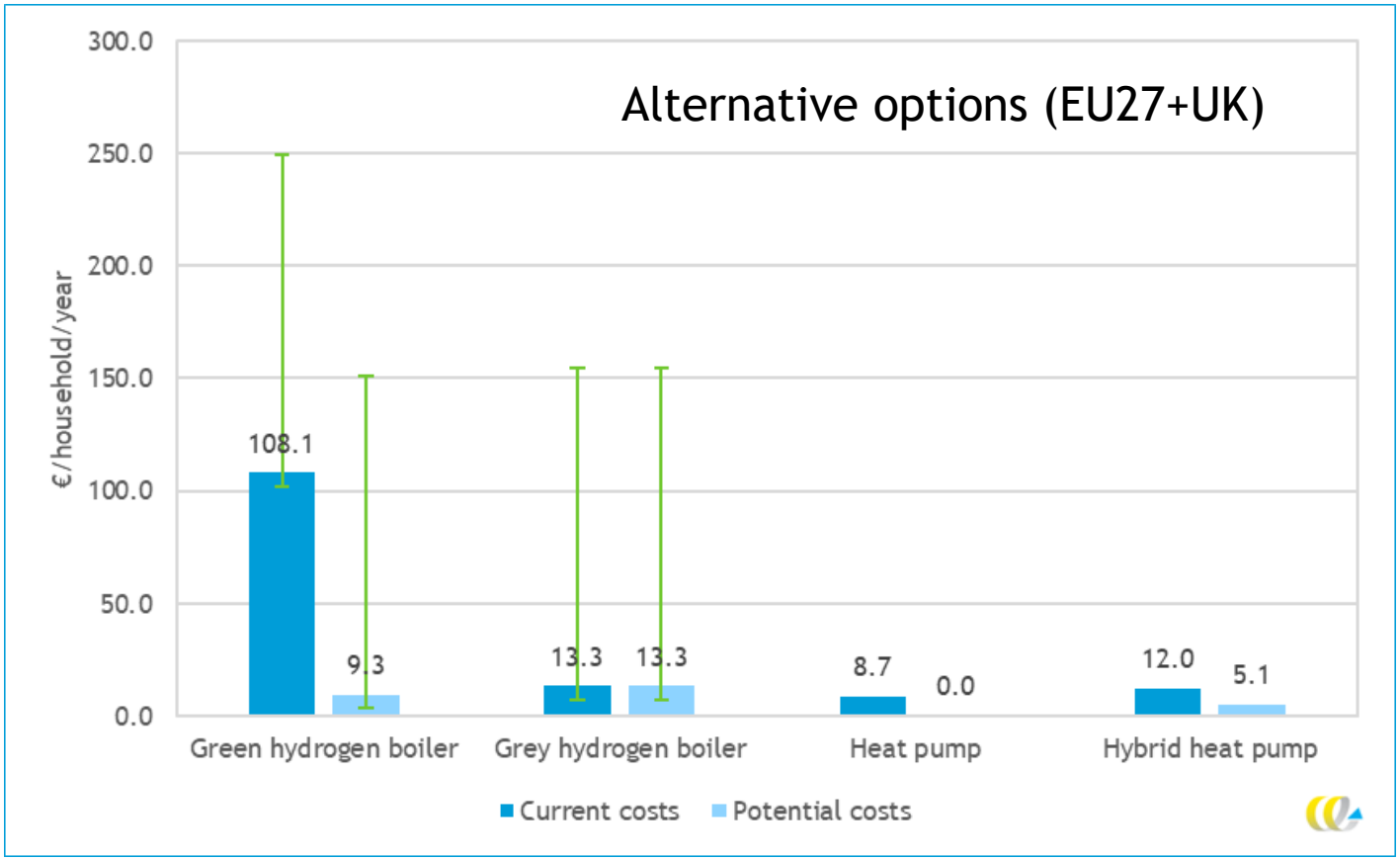
Main results: per fuel-technique combination

- Costs to society per fuel-technique (annual €/hh):
  - coal boiler: € 1,200
  - wood stove: € 750
  - gas boilers: € 30
  - heat pumps: € 10

- Costs can be reduced by:
  - alternative fuel-technique combinations
  - greener electricity and heat production

- To compare: rough and indicative estimate of annual social costs diesel car: € 210

Main results: alternative heating options



Further research

- Underestimation of health-related social costs:
  based on outdoor pollution only
- Indoor pollution:
  - impact depends on many factors (ventilation, space, time spend indoor)
  - method and data needed for quantifying *additional* impact

→ further research needed

Questions?

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