Homeowner Preferences Regarding the Adoption of Low-Carbon Heating Technologies

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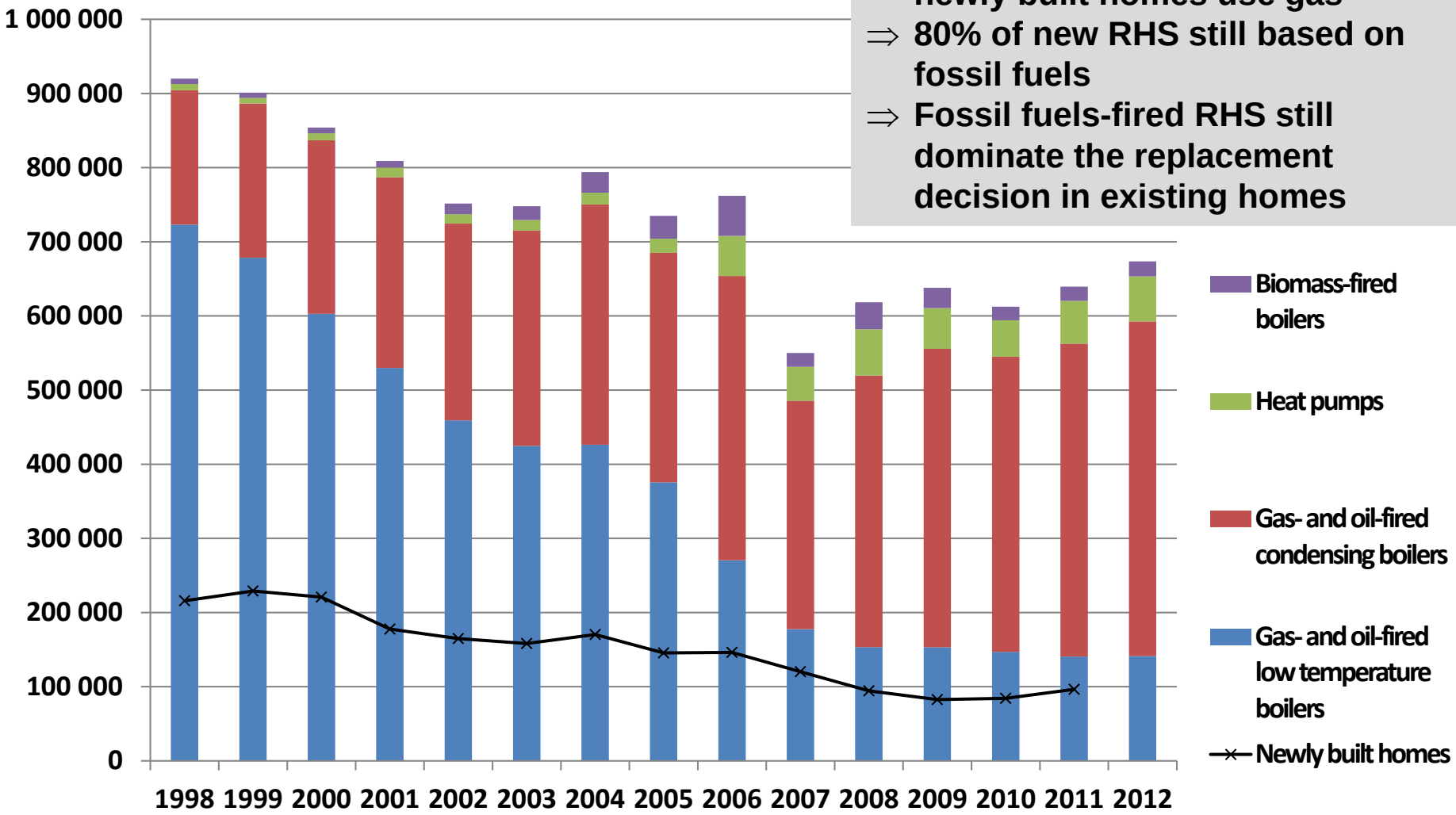
Annual no. of newly installed RHS and built homes in Germany, 1998–2012

⇒ 2008: 48.5% gas, 30% oil; 60% of newly built homes use gas
⇒ 80% of new RHS still based on fossil fuels
⇒ Fossil fuels-fired RHS still dominate the replacement decision in existing homes



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Homeowners‘ preferences – Discrete choice study on Germany

Aim and Scope, Methodology:

- Interest in the influence of preferences regarding RHS-specific attributes on the homeowner’s decision to adopt a specific technology
- We control for socio-demographic, home, and spatial characteristics
- Representative survey among German private households (*N*=2440)
- Focus on homeowners (1- and 2-family homes) that received a grant (~83%)
- Discrete choice analysis (multinomial logit)

Key findings:

1. Adopters of gas- and oil-fired condensing boiler heating systems with solar thermal support have a strong preference for energy savings
2. Adopters of a heat pump or wood pellet heating systems want to be more independent from fossil fuels
3. Owners of existing homes have less scope for preferences in the adoption of a RHS (decisions driven more by socio-demographic, home, and spatial charact.)
4. Government grant is less important for adopters of gas-fired RHS or heat pumps
5. 3 clusters: convenience-oriented; consequences-aware; multilaterally-motivated

Summary of Results:

- **Main drivers** of the homeowners' decisions to switch from a fossil fuel-fired to a renewables-based RHS
  - **Control variables** (socio-demographic, attributes of the home): only a small impact on the switching probability
  - **Spatial variables** (rural area, East and South of Germany) are relevant
  - Motivation to deal with **external threats** as main driver
  - RHS-related **knowledge** important
- **Main barriers** to the adoption of renewables-based RHS
  - Differences in the perceived economic and non-economic barriers with respect to the RHS
  - More perceived barriers related to the **wood pellet-fired** boiler compared to the heat pump

Conclusions:

- Homeowners often **fear major changes to their current status quo** and, thus, tend to **opt for minor and thus quick adjustments to their RHS** (e.g. replacing only the boiler).
- A higher replacement rate of fossil fuel by renewable RHS requires the homeowners' **willingness to relinquish old habits** and **perceptions of how an RHS works and operates**.

Thank you for your kind attention. Questions?

References:

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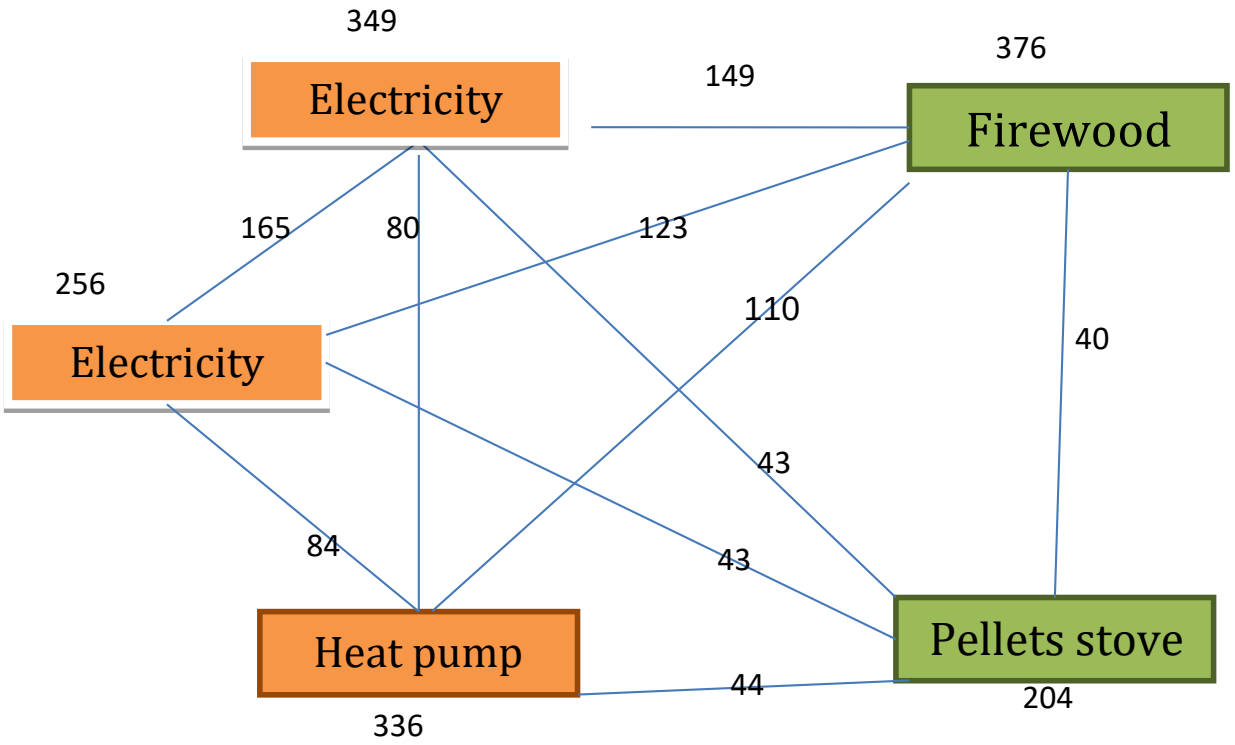
Similar study for Norway (MNL)

Figure 1 Norwegian multiple heating equipment investment in the last 10 years



Sources: own 2010 heating survey, combined sample, N=1860

Source: Lillemo et al. (*Biom&Bioen*, 2013)

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