Decarbonising a house and 5 years of heat policy research: a personal perspective

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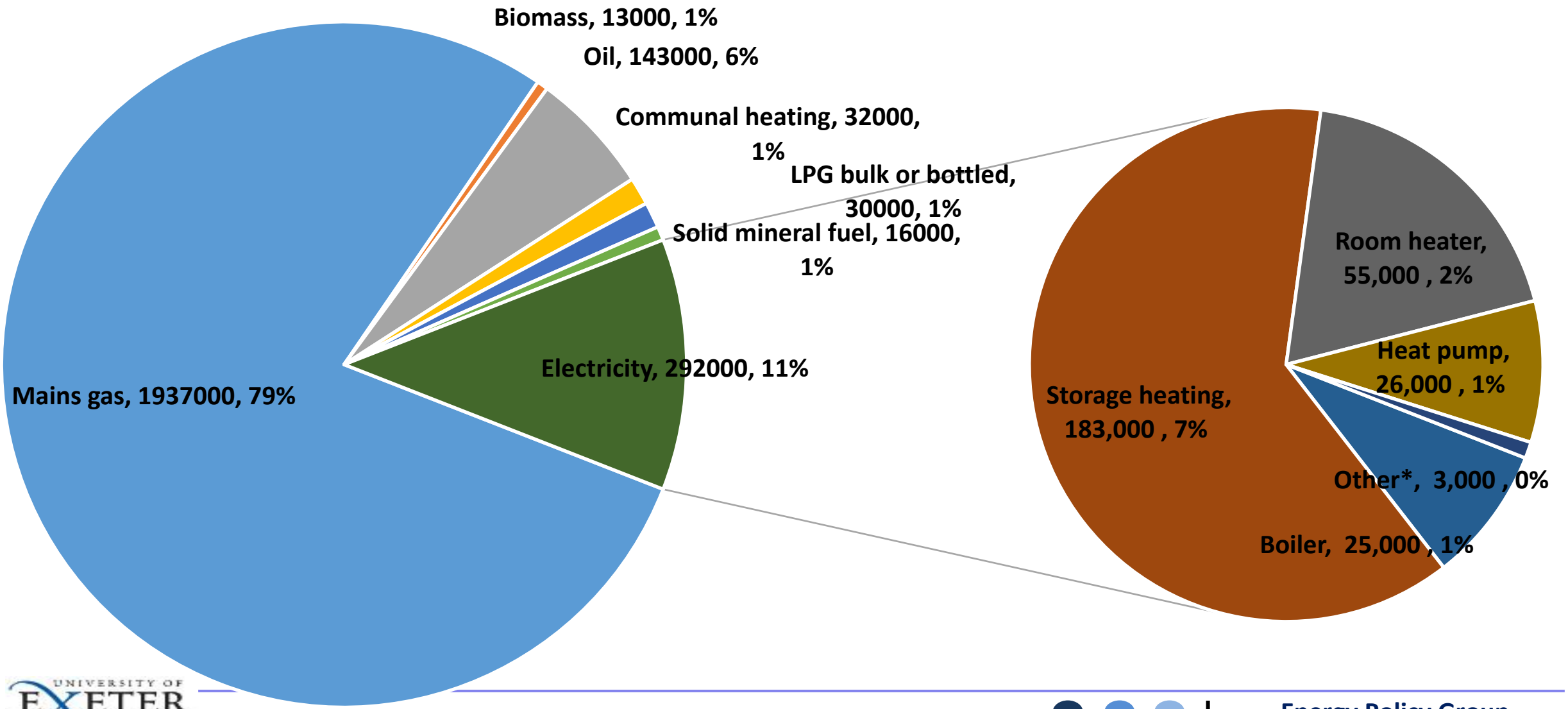
Research focus:

- PhD investigating ‘power’ associated with the development of GB and NL policy
- UKERC projects:
  - Heat, incumbency and transformations
  - Policy maker’s perceptions of heat decarbonisation (UK gov)
- Futuregas in Denmark

- Today, I give three person oriented perspectives for Scotland focusing on off-gas:
  - The incumbent;
  - The resident;
  - The policy maker.

- How should policy respond?

But first, the context



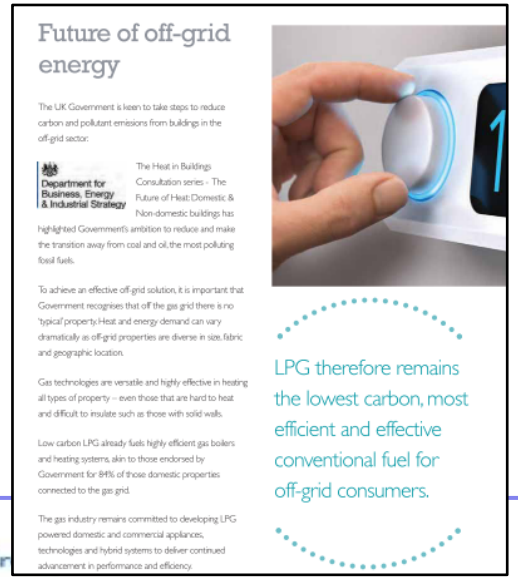
The incumbent perspective - electric

Lowes et al., (2018)

- 292k homes
- Less of an issue for those already on electric heating.
- The move from electric to better electric doesn't necessarily challenge any big incumbent interests?
  - Perhaps some challenge from SSE and Scottish power to keep the dynamic teleswitching customers (income).
- Are there some things I haven't thought of?
  - Battle of the appliance manufacturers heat pumps versus storage heaters?

A challenge can be expected from the oil and LPG sector

Oftec, 2019



UK LPG, 2017

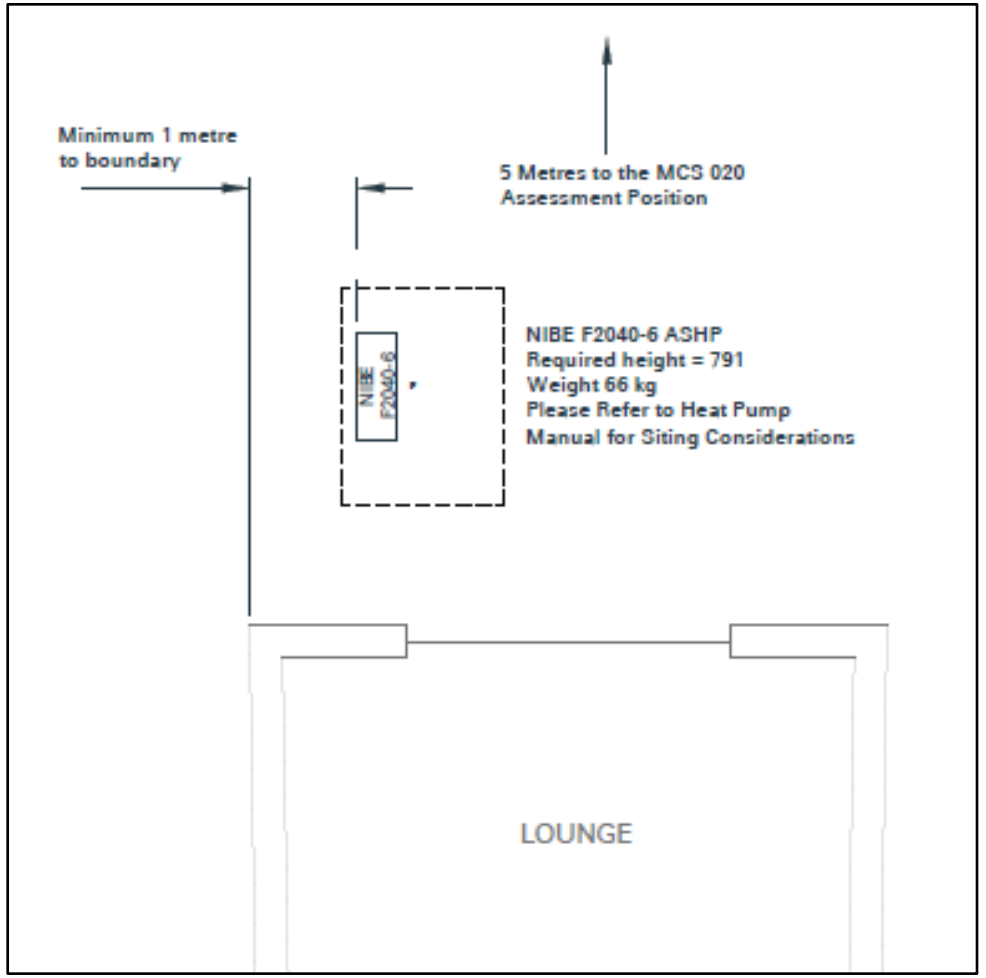
- Bear in mind, these sectors face an existential threat.
- Bio-energy to the rescue:
  - LPG interests incredibly active and vociferously pushing bio-LPG (and you thought LPG was expensive!); 30k homes
  - Oil interests pushing bio-diesel 143,000
- Data provided by the industries is very economical with numbers on cost and carbon saving potential.
- Usual warnings around (crop-based) bio-energy apply.

The home-owners perspective – switching to a heat pump

- N.B., for me, the energy efficiency conversion is factored in to extension/renovation costs.
- This is not just a heat pump...
- A properly performing heat pump shouldn't cost much more to run than a gas boiler.
  - Mine should be significantly cheaper than gas and provide cooling
- Fully optimised and connected:
  - Good energy efficiency is a must but enhanced energy efficiency can offer excellent heat electrification rewards:
    - Reduced thermal demand (less units) and the ability to shift demand and use ToU tariffs, e.g. Octopus
  - Big floor slab with two heat zones too
    - Charge up downstairs off-peak, have peak heat for upstairs if needed
- Eventually the heat pump will talk to the online ToU tariff and will run when solar PV is generating.

Reflections as a (relatively well-off) customer

- 1. You need access to capital, very few people have cash lying around. My HP is on plastic.
  - Perhaps a grant could help with this, the Renewable Heat Incentive is nice, but I don't tend to plan my finances over 7 years;
  - Low cost loans have value for some
  - State funded energy efficiency?
- 2. Regulation/markets are not on the side of the individual!
  - Heat pump planning law was a pain;
  - Limited market is not customer friendly;
  - Gas disconnection issues and electric metering issues too
  - Concern over SAP/EPC heat pump treatment;
- **4. No-one is pulling this all together**




Google

The end is in sight!

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The policy makers perspective

- ‘Decarbonising heat is our most difficult policy and technology challenge to meet our carbon targets’(HM Government, 2017).
- Based on a small project investigating how policy elites (experts) working on heat decarbonisation considered current options for heat decarbonisation.
- Caveat: mostly based on gas-grid issues.
- But, worth remembering: oil heating is cheap

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Findings

- Heat decarbonisation is fundamentally seen as disruptive and uncertain by policy makers:
  - Few (any) wins and little perceived upside to heat decarbonisation;
  - Disruption is expected to be so large, particularly to homes, that the 'trilemma' approach to appraise energy policy is not necessarily seen as appropriate or useful.
- Despite being perceived to potentially reduce disruption, hydrogen as means of heat decarbonisation has a number of significant fundamental uncertainties:
  - Technological e.g. reliance on CCS, geographical conversion, changes to pipework, carbon savings;
  - Cost.
- Electrification of heat may have fewer uncertainties but is still likely to be hugely disruptive:
  - New appliances, increasing electricity generation and network capacity

Initial findings in here (Ketsopoulou et al., 2019) but detailed findings currently under review in Energy Policy

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Policy recommendations

1. Currently, as a consumer, you need to want to do this. Make it as easy as possible for consumers:
   - Finance, information, support to pull it together
2. Manage incumbents and support new entrants.
3. More evidence could help policy makers in order to support better decision making on heat decarbonisation. However, this strategy could backfire as more evidence could actually increase uncertainty.
   - Further research and development into the technological pathways for decarbonising 'on-gas' areas should carried out.
   - However, policy makers should try to **accept some uncertainty** as the timescale for heat decarbonisation is short and there will always be uncertainty.
4. Plan for disruption – communicate the transition.
   - But is the disruption too much to be politically deliverable (at the moment)?

References

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