



European Energy Network
A voluntary network of European energy agencies



BEHAVE
2020-2021 6th European Conference on
Behaviour and Energy Efficiency

Session 1b: Hard-to-reach energy users in residential and non-residential sectors and financing



**COPENHAGEN CENTRE
ON ENERGY EFFICIENCY**
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House-keeping rules

- **Audio**
 - For Moderators/speakers. Everyone should be muted unless it is their turn to speak;
 - Participants. All participants will be muted once they join the conference;
- **Camera**
 - It should be turned on only when it is the moderator/speaker turn to talk;
- **Share-screen function**
 - Moderators/speakers can individually share their screen, through the <share screen> bottom;
 - This function will be only used by the moderators/speakers when they want to give their presentations;
- **Q&A**
 - Participants will use the chat function to share Qs for the Q&A session;
 - It would be better if participants can target the questions (only) to moderators;
- **Break out rooms**
 - To join the different sessions, everyone can individually assign to the breakout room of their preference, through the <Breakout room> bottom, once the breakout rooms are activated;
 - Breakout rooms will be activated around 15-30 minutes before each session start;
- **Download the latest zoom version ([here](#))**
 - Zoom version 5.6.;
 - This version allows to have all functionalities needed for the conference;
- **Recording**
 - The Conference will be recorded and uploaded in the conference webpage.

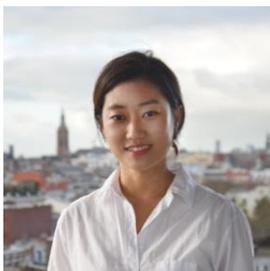




Session 1b: Hard-to-reach energy users in residential and non-residential sectors and financing



1. Sea Rotmann: An In-Depth Review Of The Literature On 'Hard-To-Reach' Energy Users



2. Minyoung Kwon: Stimulating homeowner energy-saving behaviour through local authorities' actions



3. Steven März: Are tenants willing to pay for energy efficiency? Evidence from a small-scale spatial analysis in Germany.



4. Kimberley O'Sullivan: To What Extent Has COVID-19 Impacted Hard-to-Reach Energy Audiences?



5. Paolo Bertoldi: Effective Policies Promoting Energy Conservation and Sufficiency in Line with the Paris Agreement Goals



6. Stratos Keranidis & Filippos Anagnostopoulos : NUDGE project



Hard-to-
Reach Energy
Users

Session 1b

Paper #418: A review of the literature on HTR energy users in residential & non-residential sectors

BEHAVE Conference, April 21, 2021

Dr. Sea Rotmann (NZ)

Task Leader HTR Task and CEO of
SEA – Sustainable Energy Advice Ltd





UsersTCP

UsersTCP and the International Energy Agency (IEA)

- The **International Energy Agency (IEA)** is an intergovernmental organisation that works to shape a secure and sustainable future for all, through a focus on all fuels and all technologies, and analysis and policy advice to governments and industry around the world.
- To facilitate global cooperation on energy technology, the IEA created the **Technology Collaboration Programme (TCP)**. Today, the **UsersTCP** is one of 38 TCPs each focused on a different topic. Together, they connect thousands of experts across government, academia and industry in 55 countries dedicated to advancing energy technology research and application.
- The UsersTCP is **functionally and legally autonomous** from the IEA. Views and findings of the UsersTCP do not necessarily reflect those of the IEA.



Hard-to-Reach Energy Users Task

This international research collaboration focuses on a very distinctive and important audience segment - the hard-to-reach (HTR) energy users in the residential and non-residential sectors. It will determine who, and how many they are, where they are, and how to better motivate and engage them in energy efficiency and demand-side interventions geared at changing their energy-using behaviours.





Hard-to-
Reach Energy
Users



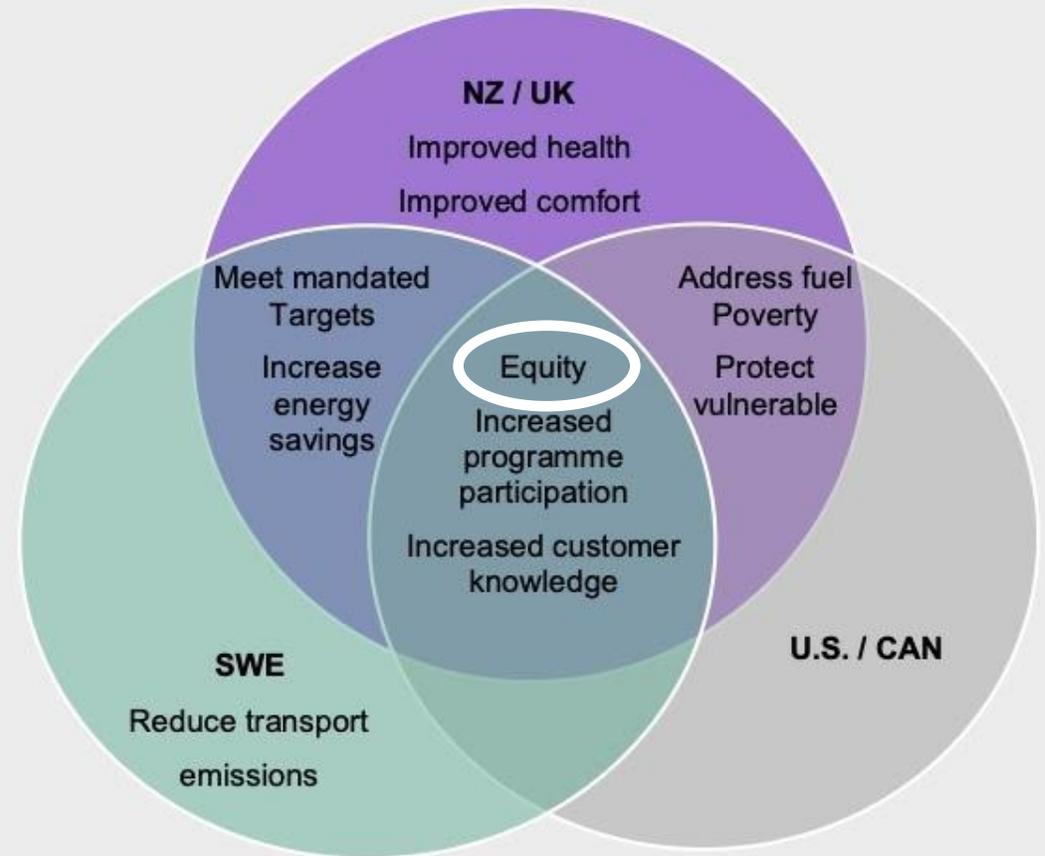
Our definition of HTR energy users

“In this Task, a hard-to-reach energy user is an energy user from the residential or commercial sectors who uses any type of energy or fuel, and who is typically either hard-to-reach physically, underserved, or hard to engage or motivate in behaviour change, energy efficiency and demand response interventions that are intended to serve our mutual needs.”



Our shared goal

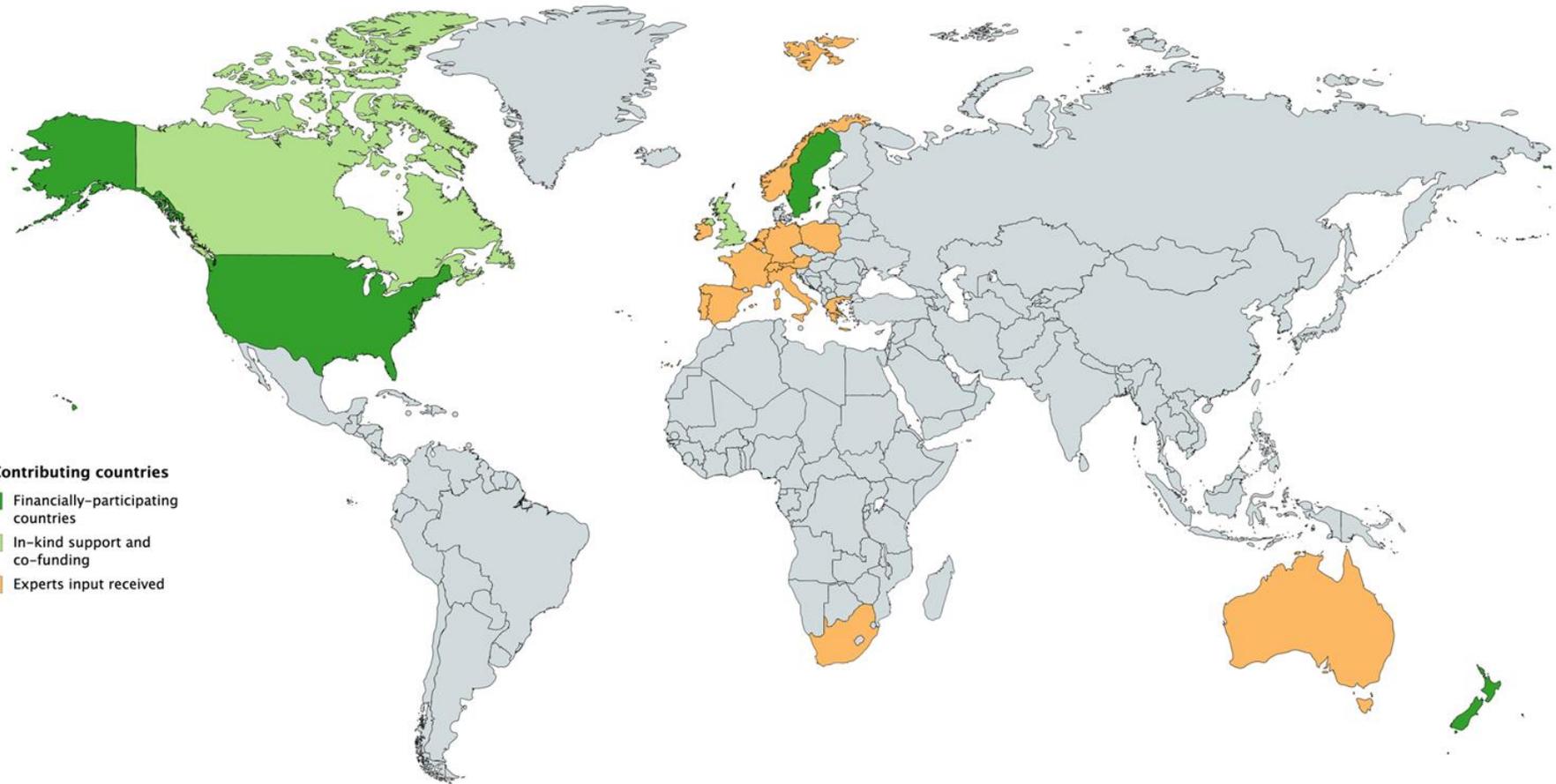
“Our shared goal is to identify, define, and prioritise HTR audiences; and design, measure and share effective strategies to engage those audiences to achieve energy, demand response and climate targets while meeting access, equity, and energy service needs.”



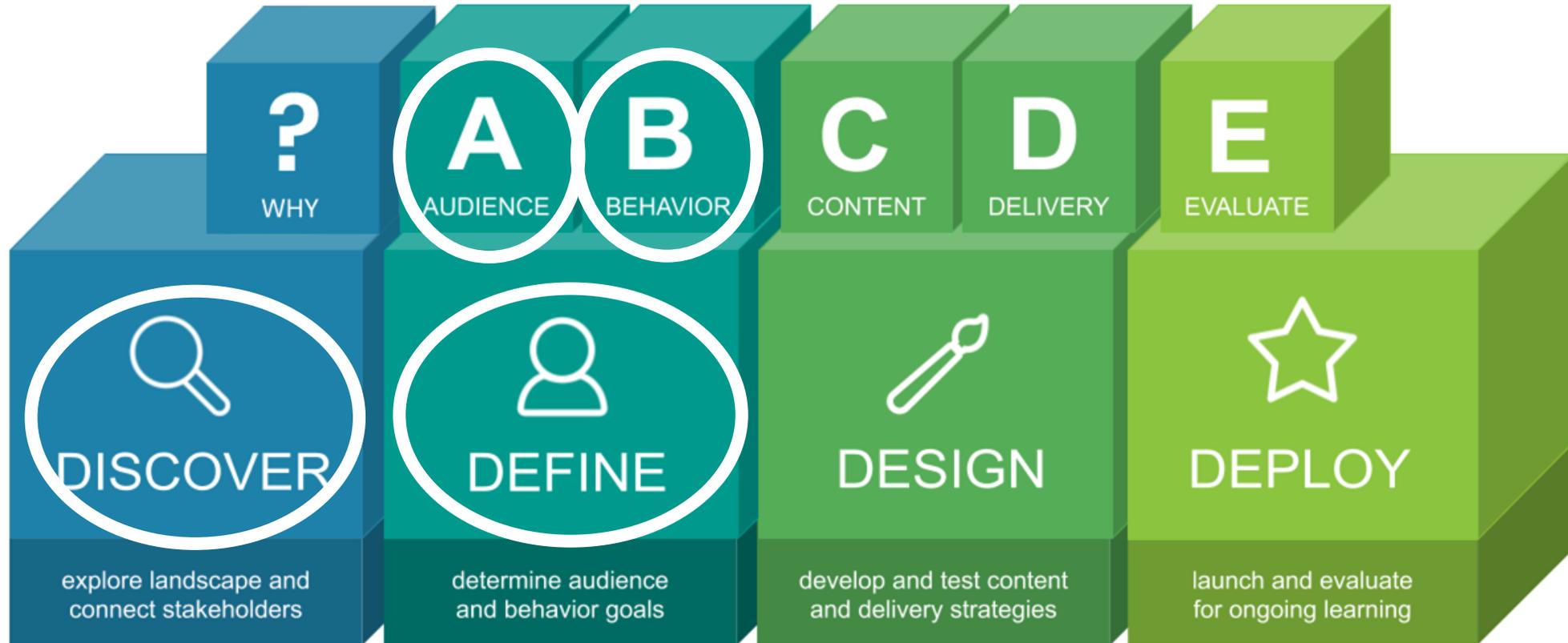


Hard-to-Reach Energy Users

Our Participants and Collaborators



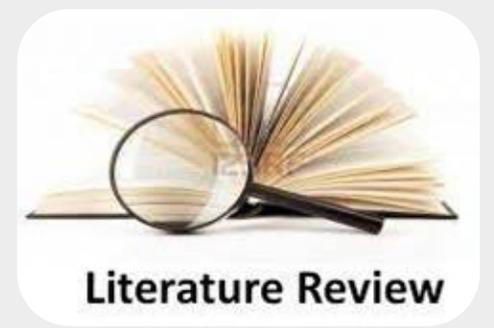
HTR Annex Research Process “ABCDE Building Blocks of Behaviour Change”





Hard-to-
Reach Energy
Users

“The Beast”



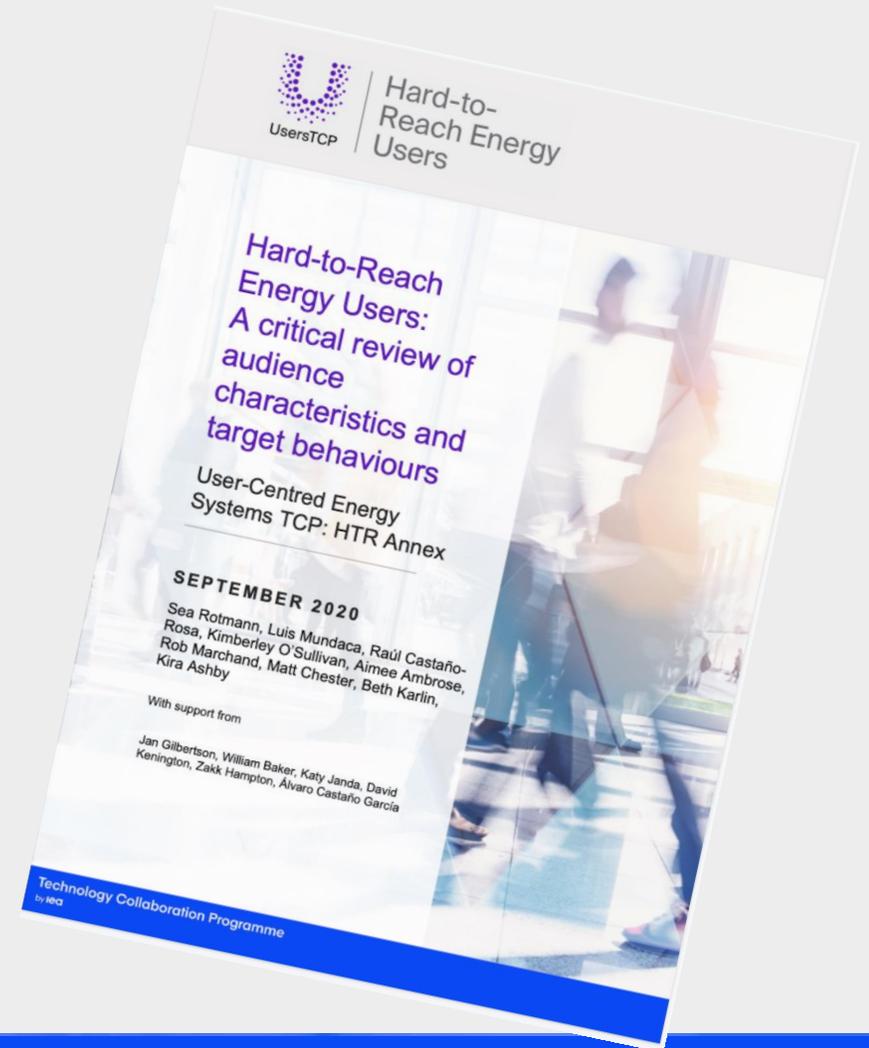
Rotmann, S., Mundaca, L., Castaño-Rosa, R., O’Sullivan, K., Ambrose, A., Marchand, R., Chester, M., Karlin, B., Butler, D. and K. Ashby (2021). *Hard-to-Reach Energy Users: A critical review of audience characteristics and target behaviours*. User-Centred Energy Systems TCP - HTR Annex: Wellington. 255pp.





Hard-to-Reach Lit Review Purpose

1. Identify priority HTR audiences (following **HTR Characterisation**)
2. Characterise and **describe** these HTR audiences
3. Understand the **wider contexts** and dimensions
4. Identify specific **energy-saving behaviours**
5. Estimate the **size** of these audiences
6. Undertake a **gap analysis** of the research



“The Beast” in numbers



months



chapters



131000 in **Words**
is
One hundred thirty-one thousand



Development of The Beast

HTR Characterisation

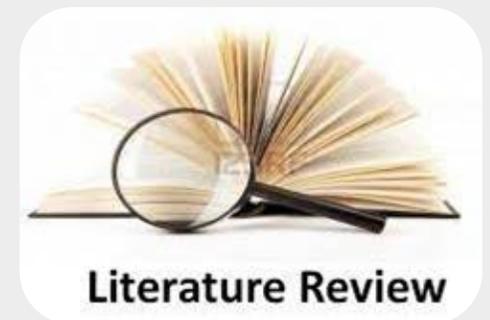
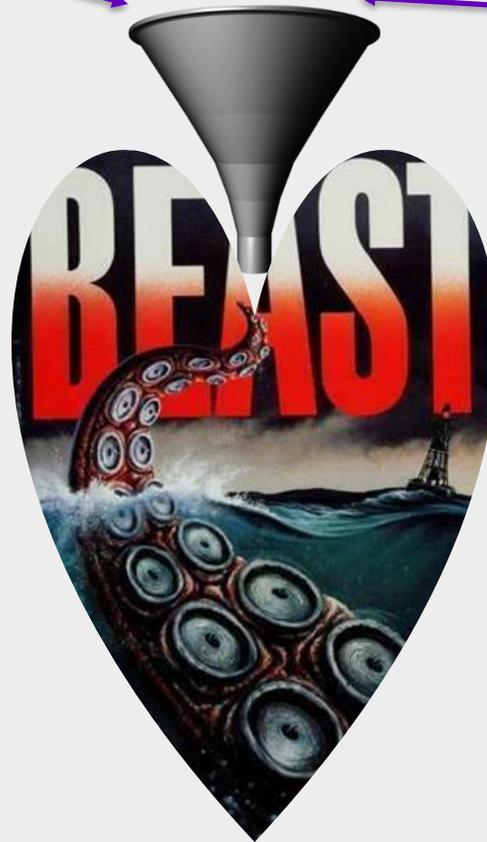
Survey Data

Outreach to networks

Stakeholder Interviews
(N=50)

(N=130)

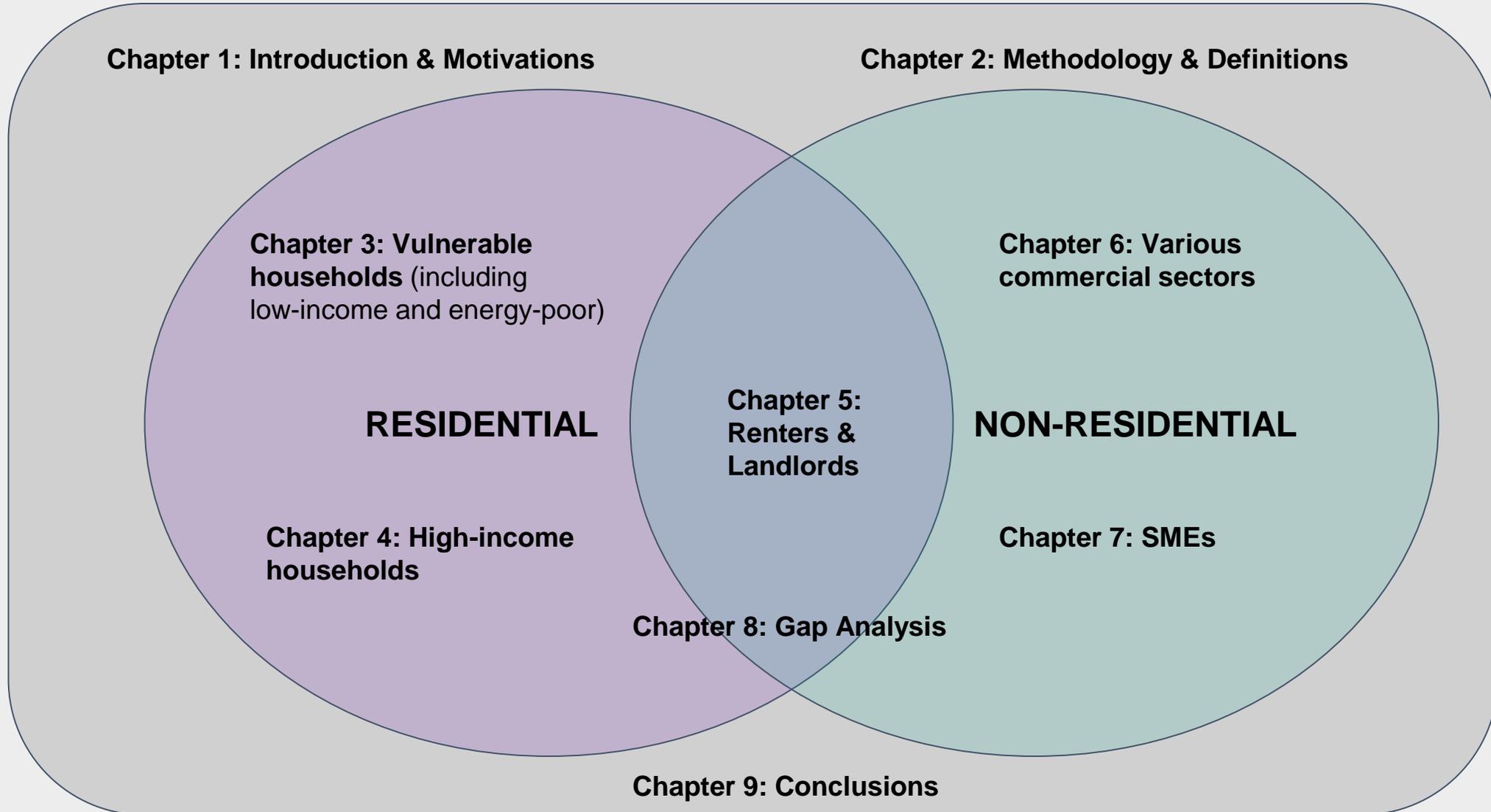
Keyword, backwards & forwards searches
(1000+ publications)



Literature Review



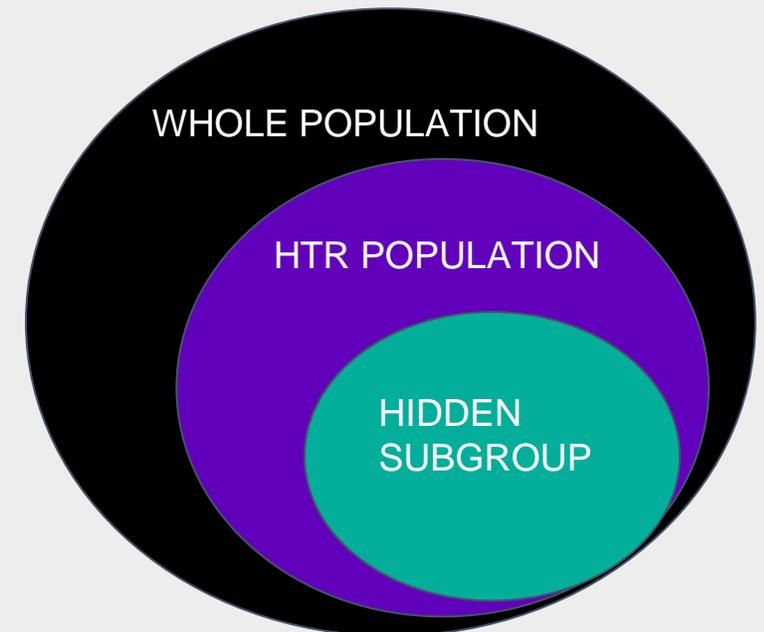
Scope of The Beast



Some major findings - Definitions

- HTR is commonly-used (in and out of energy sector) but rarely clearly defined and it has many critiques
- Many alternative, often overlapping definitions:
 - Underserved
 - Disadvantaged communities
 - Socially-disadvantaged
 - Socially-excluded
 - Hard-to-help
 - Hidden population / hard-to-hear
 - Seldom-heard
 - Illegalised, criminalised & stigmatised
 - Under-represented, invisible, service-resistant
 - Unchangeable
 - Hard-to-engage / motivate
 - Hard-to-count
 - Undercounted / under-explored

- Hard-to-treat
- Hard-to-heat / cool



⇒ Need to consider wider context and factors make these groups HTR



Vulnerable households

- Vulnerability:
 - Location-based
 - Financial
 - Health & Capacity-related
- Energy burden / hardship / insecurity
- Energy vs Fuel poverty
- Low-income

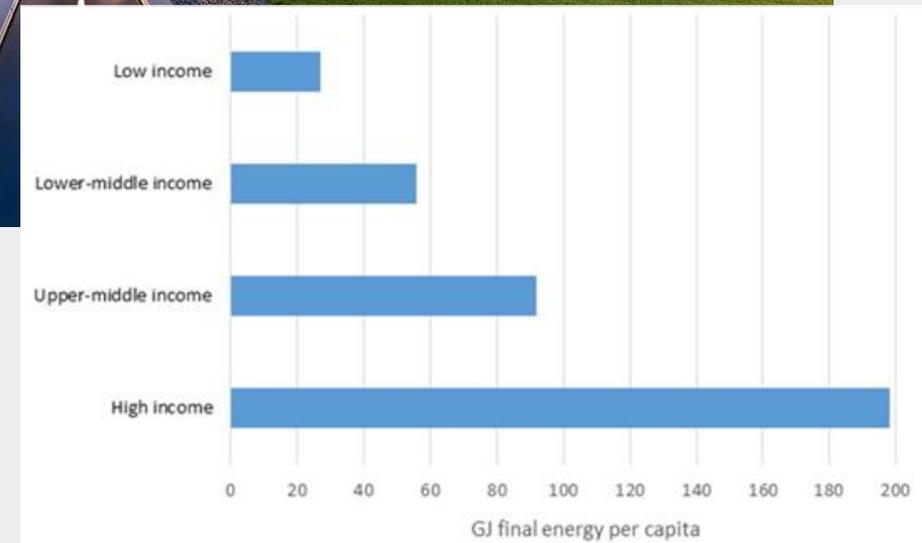
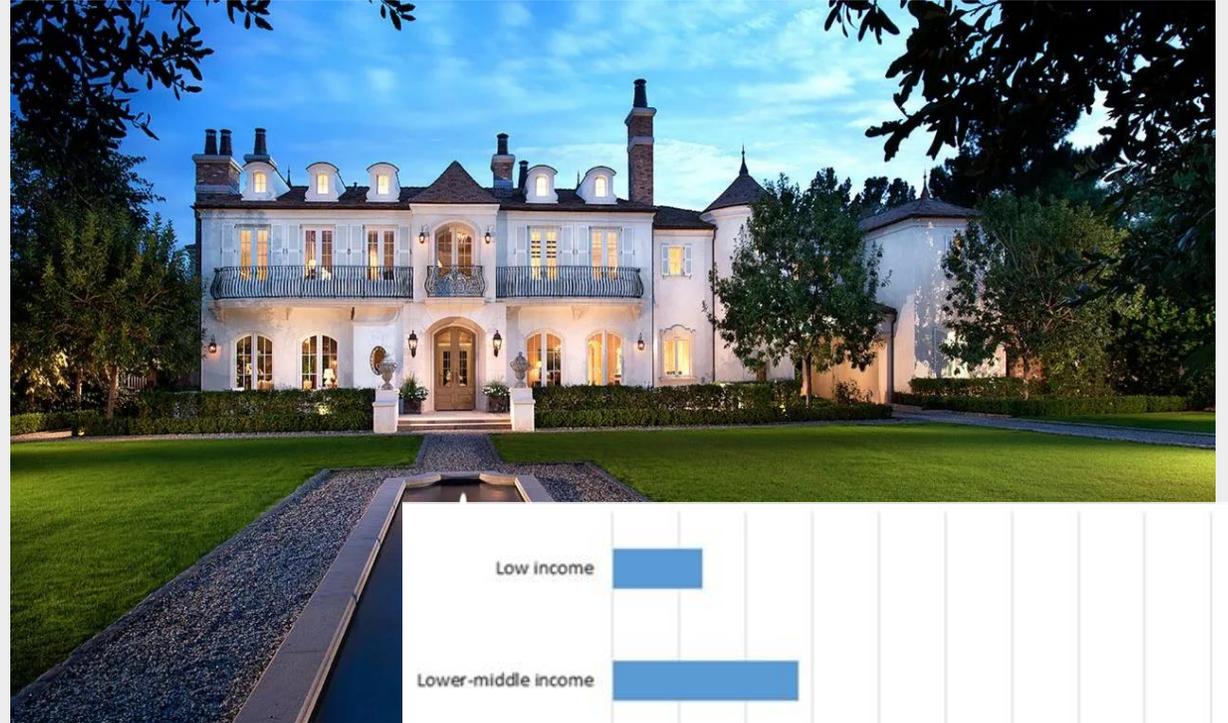


⇒ Join us in Session 4c tomorrow at 10.30am where I'll be discussing issues with defining vulnerable households in much more detail



High-income households

- Top 10% of earners have been found to use 4x more energy than bottom 10%
- No clear definitions:
 - GNI per capita
 - Twice the median income
- Not much research but we know income disparities drive massive inequalities within and between countries





Landlords and tenants (res & non-res)

- Renters generally consume less energy than owner-occupiers (especially in MFAs)
- But: they still account for >25% of energy use in residential sector and 40% of commercial sector
- 60% of residential and >50% of commercial buildings are occupied by renters
- Split-incentive issue one of the hardest to solve
- Both landlords and renters are very HTR but have very different barriers.



Commercial sector & SMEs

- Massive research gaps in commercial sector literature
 - Over-generalisation of building types and uses
 - Most research on office buildings
 - Most research on technologies not behaviour

See Chester et al (2021). A Gap Analysis Of The Literature On Energy-saving Behaviours In The Commercial Sector. BEHAVE Session 2b at 1pm Wednesday

- SMEs make up >97% of all businesses in the world, are regarded as hardest-to-reach
- Huge impacts from COVID-19





Key Findings Year 1



- **Most commonly-mentioned HTR audiences in the literature:** Low-income households, renters
- **HTR audiences with great energy-saving potential:** High-income, landlords, building operators
- **Least researched:** SMEs, commercial other than office sector
- **Audience size estimates:** >2/3 of energy users (e.g. >60% renters, 99% of all businesses)
- **COVID-19 impact:** Huge, particularly on most vulnerable households, renters and SMEs
- **Biggest research gaps:** Multiple benefits, certain demographics (age, gender, race), psychographics and audience needs assessments

⇒ *These audiences are not only hard-to-reach, they are also underserved and under-researched by Behaviour Changers in industry, government and academia. Energy justice, inequity, stigma are key themes that need to be addressed more urgently & on these target audiences.*



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Questions?



<https://userstcp.org/annex/hard-to-reach-energy-users/>



Hard-to-
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