AN IN-DEPTH REVIEW OF THE LITERATURE ON 'HARD-TO-REACH' ENERGY USERS

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1.   Introduction

Despite decades of valid efforts, we still face what is called the "energy efficiency gap". This is partly because our main focus was on improving technologies or infrastructure - whilst ignoring the human actors and decisions needed for change. So-called "Behaviour Changers" (those in government, industry or research tasked with changing user behaviours [1]) call those audiences failing to participate in their efforts 'Hard-to-Reach' (HTR), or 'underserved[1]'. Deserved criticism has been levelled at these terms, as they seem to imply that the onus is on the non-participating individuals, not the Behaviour Changers designing those interventions. In order to ensure that everyone benefits equitably from energy efficiency policies and programmes, we need to change our ways how we target those users. This is even more the case in light of the COVID-19 pandemic and its impact on the most vulnerable (and newly vulnerable) members of our society.

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[1] See VEIC (2019) for definition of 'underserved' used here

Energy efficiency and HTR researchers, practitioners, and policy makers from six countries embarked on a 3-year research collaboration to address these global issues [2]. The purpose of this effort is to characterise the diverse user segments commonly referred to as HTR and to uncover the barriers and behavioural opportunities to more effectively engage these audiences. This paper aims to provide an overview of the findings to date, particularly, an in-depth review of the HTR literature.

2.   Methodology

Our primary method for this work was a full, integrative, narrative literature review. As a starting point, we conducted an external literature search for primary and secondary literature from the last 15 years, focusing on HTR audiences, using three methods:

1.   *Outreach to our professional networks*. HTR experts kindly provided us with key literature on specific audiences (e.g. SMEs, young adults, fuel poverty).
2.   *Keyword search*. Online search in SCOPUS, Academia and Google Scholar, using relevant keywords. Over 350 publications were marked as either highly relevant or relevant.
3.   *Backward and forward reference searches of key literature*.

We analysed and synthesised publications offering definitions of HTR as well as other energy user audience characteristics and specific energy-using behaviours that were targeted. We also provided an overview of estimates of audience size, where possible, as well as clear gaps and some preliminary recommendations.

This literature review focused specifically on:
- *Vulnerable households* (including low income and fuel poor); and
- *High income* energy users in the residential sector;
- *Renters and landlords* in both, the residential and commercial sectors; and
- *Small to medium enterprises* (*S*MEs).

These audience segments were selected based on surveys and interviews with HTR experts [3], as well as the most-commonly mentioned HTR audiences in the literature. We have not (yet) focused on specific case studies showing various engagement strategies and behavioural interventions, as this will form part of a Case Study Analysis in Year 2.

3.   Findings

3.1 HTR Definitions

Our in-depth review of the HTR literature identified many sectors aiming to reach those hardest-to-reach, particularly in the social service, education and health literature (see Table 1 in [4]). Many valid criticisms were raised regarding the HTR terminology and we uncovered a range of other terms used in describing this audience:

- Underserved
- Socially disadvantaged
- Hard-to-help

- Hidden populations / hard-to-hear
- Illegalised, criminalised and stigmatised
- Under-represented / invisible
- Unchangeable
- Hard-to-count
- Hard-to-engage / motivate
- Understudied / underexplored
- Hard-to-treat
- Hard-to-heat / cool

There are problems with all of these terms. They depend on who is doing the defining, or what their exact focus is. Some terms seem to put the onus on the audience on behalf of the Behaviour Changers trying to engage them (e.g. 'service resistant', 'hard-to-motivate'). Some seem to put more onus onto the Behaviour Changers doing more to identify, find and engage those energy users (e.g. 'underserved', 'overlooked', 'understudied'). And at least two terms, 'hard-to-treat' and 'hard-to-heat/cool', refer to the homes, rather than the residents.

3.2 HTR Audiences and gap analysis

The HTR audiences most mentioned in the literature included residential low income, otherwise vulnerable, renters with split incentives, and SMEs. There was a lot more literature focusing on the residential, than the commercial sector and complexities in that sector were largely ignored [4]. Multiple, or non-energy benefits (NEBs) and costs were mentioned, yet remain under-explored. There was more information on demographics (though limited around age, gender and, particularly, race) than psychographics of target audiences. Equity considerations, although mentioned as important motivators, are mostly understudied in the clean energy sector [5].

3.3 Barriers and Needs

The literature identified a group of key barriers common to a variety of HTR audiences:

- Competing life priorities,
- Financial considerations,
- (Mis)trust,
- Market failures such as split incentives, and
- Informational barriers.

A lot more focus in the literature was spent on describing barriers to engagement than the actual needs of HTR energy users. Very few papers actively undertook needs assessments with this HTR audience or its representatives.

3.3 Target behaviours

There was also a rather limited focus on defining specific ESBs for HTR audiences - especially not from a focus of greatest user need or potential to help overcome barriers. Most "behaviours" actually focused on the technologies (e.g. lighting, HVAC, appliances) rather than the underlying services or actual behaviours (investment, maintenance, curtailment etc., see [6]) that merited specific interventions to change them. This lack of clear definition of target behaviours is

concerning, as it dilutes focus and clarity when designing interventions.

3.4 Estimated HTR audience size

The potential size of the HTR energy users group is vast, estimated by some publications to be >50% ([7]; especially once you look beyond just the residential sector to include, e.g. commercial tenants [8]). This number is expected to rise due to COVID-19. It will be more important than ever for policy makers and programme managers to identify, define and engage this large user group, in order to help countries' recovery efforts.

4.　　Preliminary Conclusions

Defining who is 'hard-to-reach' is difficult, and there are many different terminologies and approaches (some more problematic than others). HTR audiences are diverse, respond to different (country) contexts and have different barriers and needs. Unlike specific market barriers or failures, behavioural factors seem to be less understood and utilised by Behaviour Changers. We argue that clear audience definitions and in-depth examination of their barriers and needs, as well as clearly defining target behaviours are essential steps to design better interventions for this audience.

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