



Hard-to-
Reach Energy
Users

Hearing the voices of those living in “hidden” energy hardship

OERC, Nov 28, 2022

Energy Wellbeing Session 3: Diverse
voices

Dr. Sea Rotmann

Task Leader HTR Task (Aotearoa NZ)

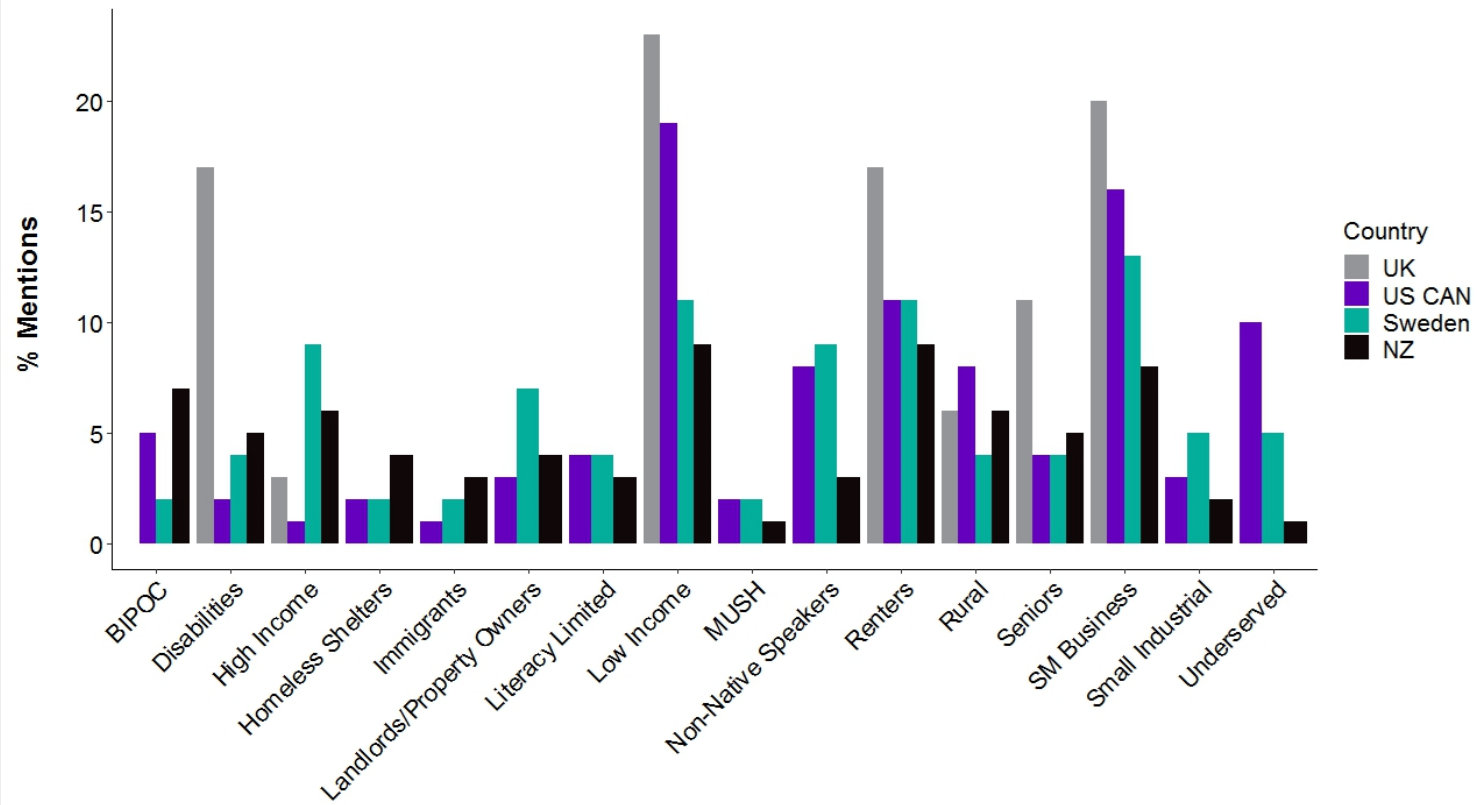
CEO of SEA - Sustainable Energy Advice Ltd





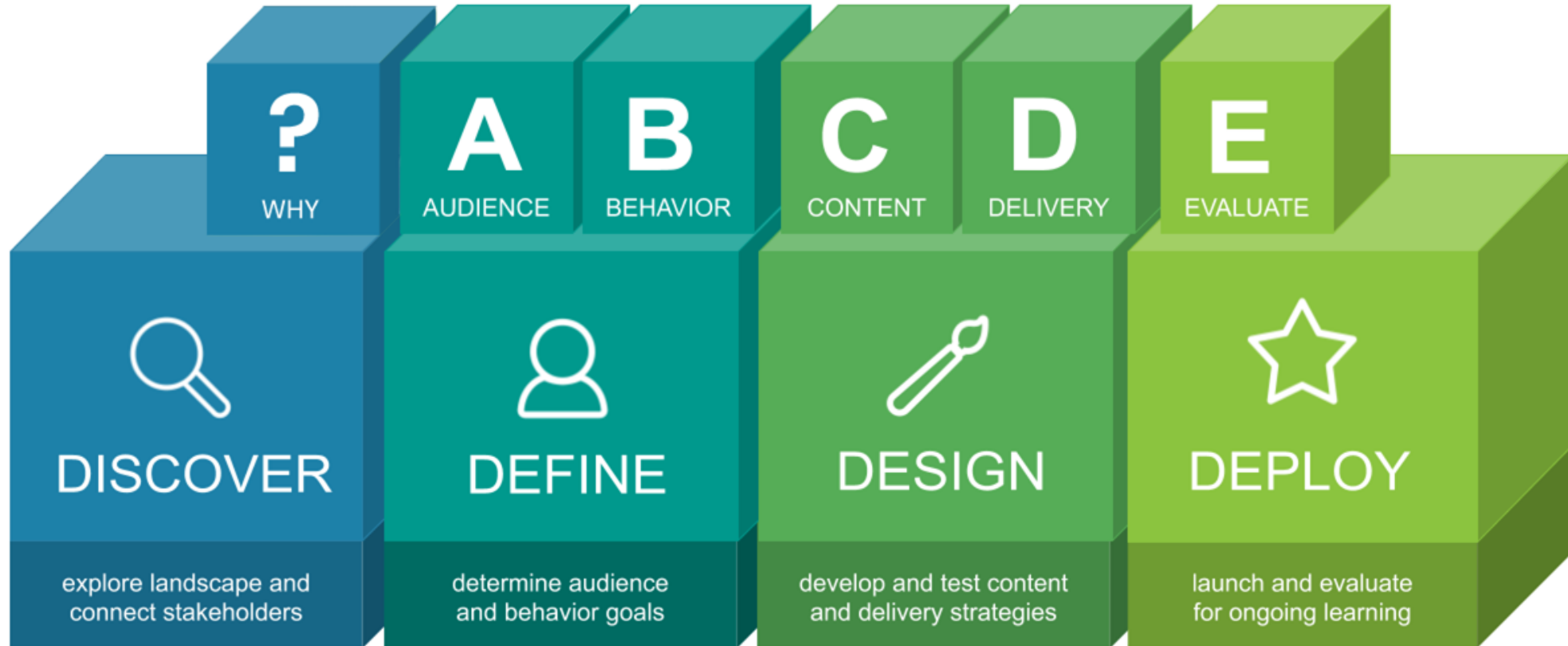
Our definition of HTR energy users

Percent Mentions of HTR Audience Characteristics by Country*



“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.”

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

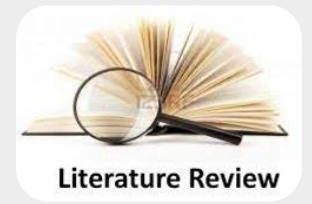


Year 1 - Stakeholder Analysis, HTR Characterisation, Definitions, Lit Review



- [Webinar](#) on HTR Task for Users Academy (April 2020)
- [First US national expert](#) workshop
- [Survey](#) of 130 HTR experts around the world
- [Interviews](#) of 50 HTR experts in participating countries
- [HTR Characterisation](#) (Ashby et al, 2020a)
- [ACEEE Summer Study](#) paper on interview and survey results (Ashby et al, 2020b)
- [Literature Review](#) (Rotmann et al, 2020)
- [“Cliff Notes”](#) of Lit Review (Ashby et al, 2021)

“The Beast”



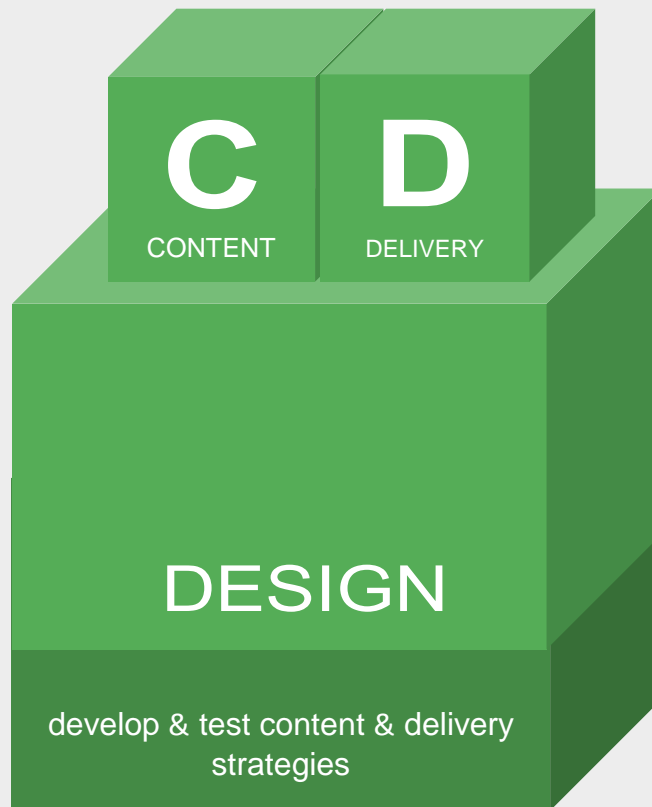
Rotmann, S., Mundaca, L., Castaño-Rosa, R., O’Sullivan, K., Ambrose, A., Marchand, R., Chester, M., Karlin, B., Butler, D. and K. Ashby (2020). [Hard-to-Reach Energy Users: A critical review of audience characteristics and target behaviours.](#) SEA - Sustainable Energy Advice Ltd: 255pp.

Main findings:

- *Criticism:* HTR terminology & definitions
- *Focus of literature:* low-income households & renters
- *Biggest gaps:* SMEs, high-income, commercial
- *Audience size:* at least $\frac{2}{3}$ of energy users!
- *Missing:* Psychographics and needs analysis



Year 2 - Case Study Analyses & Research Process



- Case study analyses:
 - [Ashby, K. \(2021\). Case Study Analysis – U.S. and Canada.](#)
 - [Butler, D. \(2021\). Case Study Analysis – United Kingdom.](#)
 - [Feenstra, M. \(2021\). Case Study Analysis - The Netherlands](#)
 - [Mundaca, L. \(2021\). Case Study Analysis – Sweden.](#)
 - [Realini, A. & S. Maggiore \(2021\). Case Study Analysis - Italy](#)
 - [Rotmann et al \(2021\). Subtask 2: Case Study Analysis Methodology Template](#)
 - [Rotmann, S. \(2021\). Case Study Analysis - Aotearoa New Zealand](#)
 - [Sequeira, M.M., Gouveia, J.P. and P. Palma \(2021\). Case Study Analysis – Portugal.](#)
- [Building Blocks of Behavior Change](#) white paper on ST3 research methodology (Karlin et al, 2021)
- [Process Matters: Assessing the use of behavioural science methods in applied behavioural programmes.](#) (Karlin et al, 2022)
- Hard-to-Reach Energy Users: Lessons from the assessment of 19 programmes across 8 countries (Mundaca et al, *in prep*)

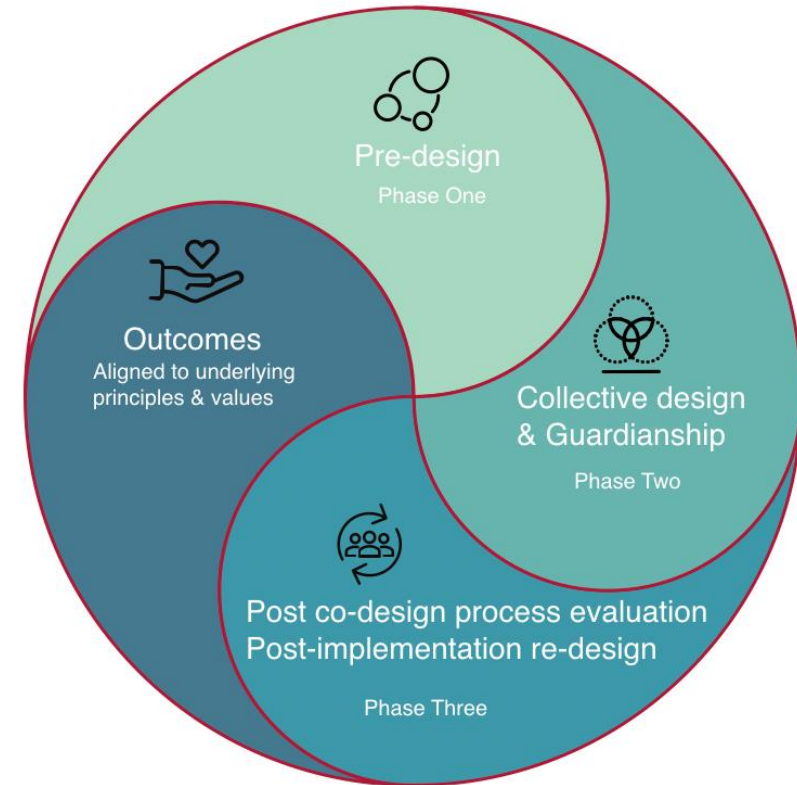
- Use **trusted Middle Actors**
- **CO-DESIGN** interventions & pilots
- **Train MAs** to give energy advice
- **Face-to-face** & tailored **in-home** advice
- **Energy efficiency** isn't the main message

⇒ **Examples:** EnergyMate, Healthy Homes Initiative, SEEC-funded projects

For NZ Case Study Analyses see [Rotmann, 2021](#)

Co-design Process

Lived experience informed and designed



Year 3&4: Field research & pilots

Field Research:



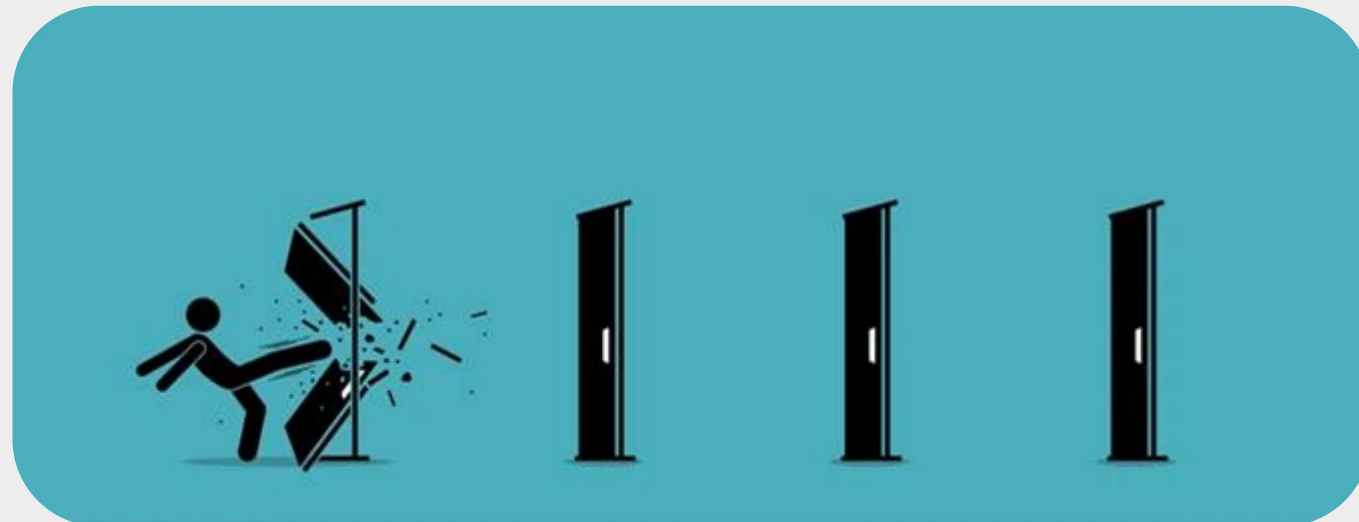
- **Canada / U.S.** (Qualitative customer research):
 - [MUSH](#)
 - [SMBs](#)
 - Dis/engaged [residential customers](#)
 - [Behaviour, Energy & Sustainability Training \(BEST\) Course](#) for commercial energy managers & building operators

- **Aotearoa New Zealand:**
 - *Home Energy Assessment Toolkit* ([Whānau HEAT kits](#)) package of interventions (SEEC funded)
 - *Energy Hardship* research for industry (Mercury & Genesis Energy)



Main barriers when engaging HTR

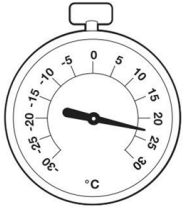
- **Identifying & recruiting** whānau
- Community MAs were also often **hard-to-reach**
- **TRUST** is one of the biggest barriers
- Current approaches (including library HEAT kits) **don't work for the HTR**



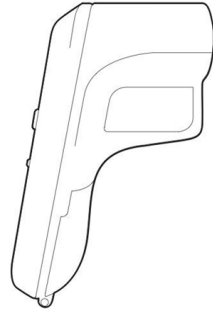


SEEC field pilot on HEAT kits

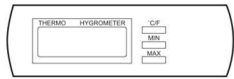
Fridge/Freezer Thermometer



Thermal Leak Detector



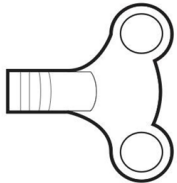
Temperature & Humidity Meter



Plug-In Energy Monitor



Radiator Key



Stopwatch



Irish HEAT kit analysis:
[Rotmann, 2018a](#); [Rotmann & Chapman, 2018](#); [SEAI, 2018](#)

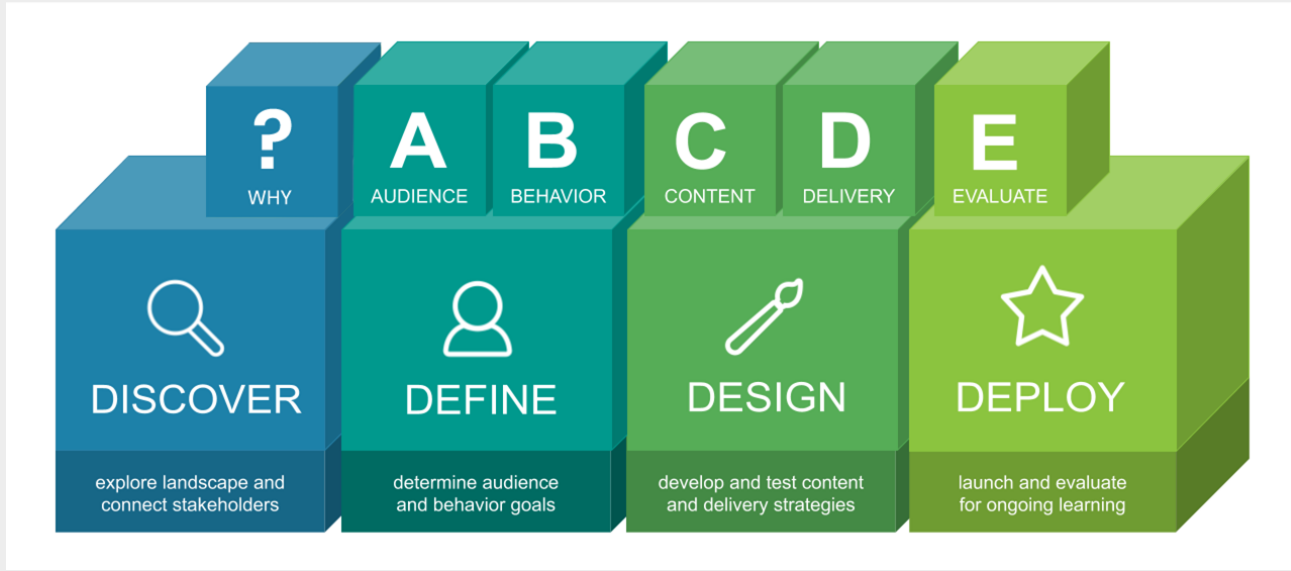
Aotearoa HEAT kit analysis:
[Rotmann, 2018b](#)

Cross-Country Comparison of HEAT kits:
Rotmann, 2018 a & [2018 c](#)



Hard-to-Reach Energy Users

HEAT kits: DISCOVER



DEFINE: Audiences & Behaviours



1. **Healthy housing** for those HTR whānau in energy hardship was main objective

2. **Behaviours targeted:**

- Fixing leaks & draughts
- Energy billing / switching advice
- Low or no-cost energy saving advice
- Non-energy related advice (e.g. mould, overcrowding)
- Education & Habit formation ⇒ **3 Energy “Buckets”**





Whānau HEAT Kits
Home Energy Assessment Tools



Infrared Thermometer

Description
This measures the temperatures of different surfaces in your house. It will help you identify:

- Cold spots in your house - areas of poor insulation or air leaks (floor, walls, ceilings, windows, doors, etc)
- Cold / hot spots around fridge and freezer - air leaks from a broken seal, and if there is enough ventilation at the back of your fridge & freezer
- Any hot spots around your hot water cylinder - is it well insulated?

Self-Assess your Home

Cold spots - walls
Take several measurements of your internal wall temperature. The results should be about the same, or within a couple of degrees. If a measurement is very different, it means that the insulation is not there, not enough, or it is damaged.

In the same room, take a measurement on the inside of an external wall (green star in the image below), and another measurement of an internal wall (red star). This will help you to understand how well your walls are insulated (the closer the two measurements are, the better).



Page - 8



How to use it

To measure surface temperature with the infrared thermometer follow these steps:

1. Press the trigger to turn on the infrared thermometer.
2. Aim at the surface you want to check. You should not be more than 700 millimeters away from the surface.
3. Press & hold the trigger until temperature stays the same.
4. Read the temperature.
5. Record the reading in the relevant activity sheet:
- **Day 3** - Hot water cylinder
- **Day 6** - Fridge/freezer seals & appliance
- **Day 7** - Walls, floors and ceilings
6. The thermometer turns off by itself.

Note:

- Do not adjust the settings.
- To read the temperature, only press the trigger.
- Make sure to do the measurements when there is a big temperature difference between the outside & inside, like on a cold day.

Warning:

- The thermometer cannot be used to measure a person's temperature.
- Do not point the thermometer at a person as serious eye damage may occur!

Tools - Infrared thermometer



Get in touch

Email drsearotmann@gmail.com or call 0212 469 438



Get trained

Select some staff to do the HPA training



Identify whānau in need

Identify 5-15 whānau to participate in the pilot



Visit their whare

Visit them (with Sea) and drop off the HEAT kit



Play with the kits for 2 weeks

Whānau do daily 5-min activities, games & quizzes



Return the kit & get koha & prizes

Sea will pick up the HEAT kit & ask a few questions

Instruction Manual

How to use your HEAT kit

Day 4

Bonus activities



Answer this quiz question:

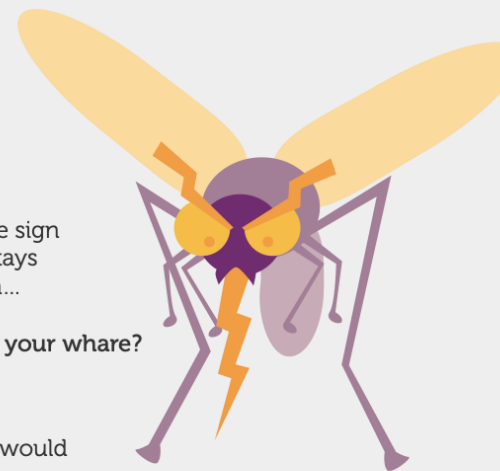
If I use timers or turn off some appliances at the wall, I can save money to heat my house.

- True
- False

Play this game:

Hunt the Energy Namu!

Some energy namu (like sandflies) give off a telltale sign that they are power suckers, like a little light that stays blinking or on, or they may feel warm to the touch...



How can you know if you've got Energy Namu in your whare?

- Wait until it's dark outside
- Grab a flashlight & turn off all the lights
- Turn off everything in the house the way you would normally at night

How to catch an Energy Namu?

- Sneak through each room and investigate each item plugged into a power board or wall outlet
- Look for lights, listen for humming, and touch possible power-sucking appliances to see if they are warm
- **Write down each Namu found on your Namu hunter's notes sheet and make a mark for each Namu you see** (for example, make two marks if you have two lighted alarm clocks in your house)

How to swat Energy Namu?

- Turn appliances **all the way off** when you're done with them. Sometimes, that means unplugging them (especially smaller appliances like toasters & mobile phone chargers)
- You can also use a power strip for all your computer equipment, for example, and plug all other appliances like your printer or game box into it. When you are done using the computer, turn off the power strip to turn everything all the way off
- You can also use the **appliance timer** to set some big Energy Namu like the heater or dehumidifier to turn off & on at certain times



HEAT kits: DEPLOY (n = 45 whānau)



- 1. Recruit whānau** (different ways via community middle actors)
 - 2. Drop off HEAT kit, do interview**
 - Energy behaviours
 - Energy knowledge
 - Motivations
 - Attitudes
 - Appliances
 - 3. Whānau do daily activities for 2 weeks**
 - 4. Pick up HEAT kit, exit interview**
 - 5. Prizes, koha**
 - 6. Call after 5 months**
- ⇒ 100% success rate!

Day 1

Today's activity
(less than 5 min)

1 Record the temperature & moisture from your thermometers / hygrometers.

Room	Temperature (°C)	Moisture (%)
Living Room	°C	%
Bedroom 1	°C	%
Bedroom 2	°C	%

Tools

Thermometer / hygrometer

Water & food thermometer

Check page 7 of the manual to find out how to use the thermometer / hygrometer.

2 Use the digital water thermometer to measure how hot the water is coming out of your taps.

Room	Temperature (°C)
Kitchen tap	°C
Bathroom tap	°C
Shower / bathtub tap	°C
Laundry / other tap	°C

Check page 12 of the manual to find out how to use the water thermometer.

3 Record how many showers your household had yesterday.

Who?	Me	Mum	Sis	Bro	To
How Many?	✓	✓	✓	0	

Your record (we don't need names!)

Sione's Story

Here's Sione's family record as an example. He's ticked the number of showers / baths each person had and added them up:

Who?	Me	Mum	Sis	Bro	To
How Many?	✓	✓	✓	0	

Sione's family has 4 showers each day. His sister likes to wash her hair in the morning (she takes ages in there) & go to bed clean. Everyone else has one shower (except the little brother!).

Shorter and fewer showers or sharing a bath would save electricity used to heat the hot water and save the family money.





“Hidden” Energy Hardship

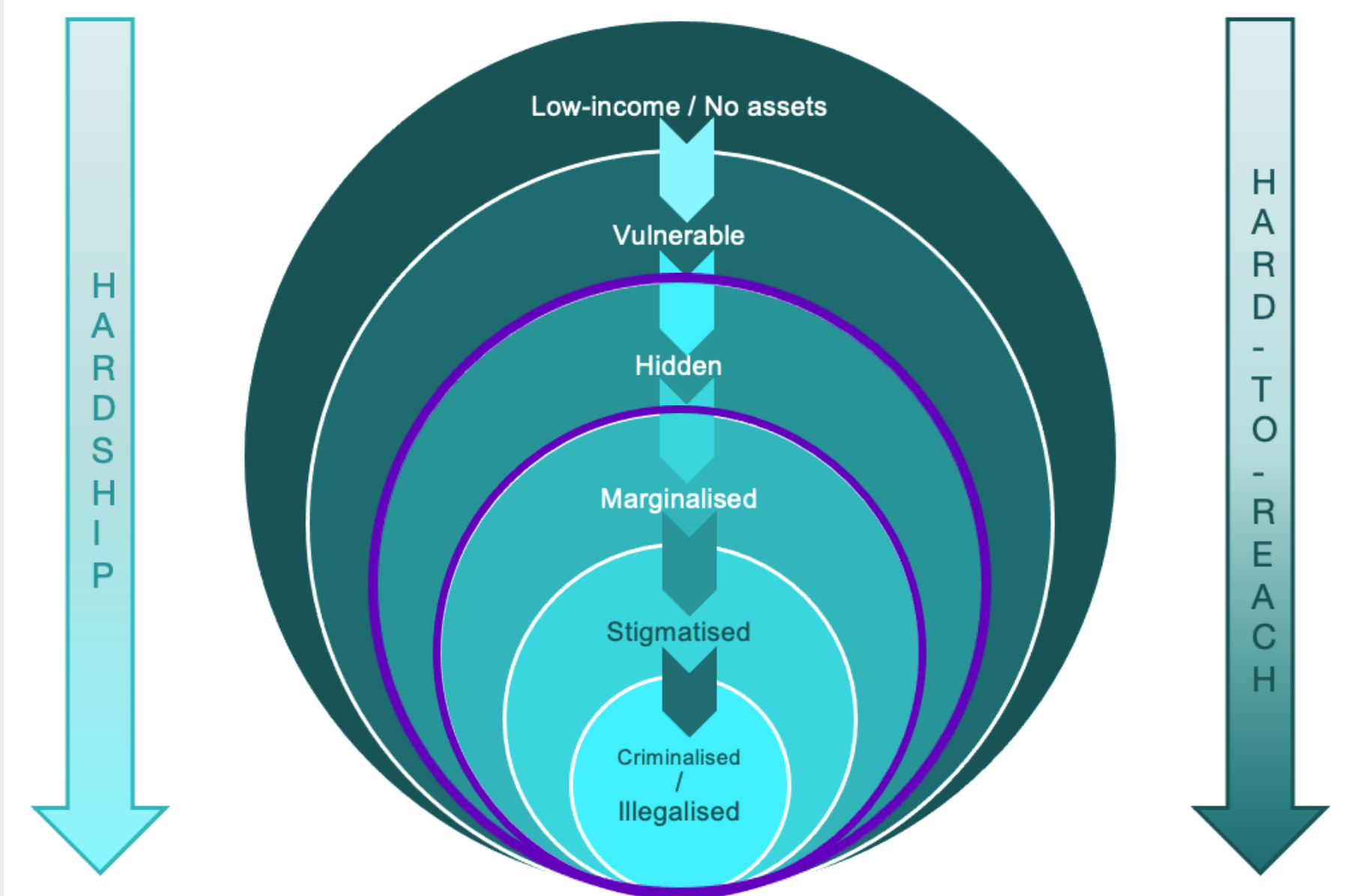


- Industry acknowledged that it needed to do more to help customers in hardship
- Contracted SEA, followed our research process





Even harder: those in “hidden” hardship





UsersTCP

Even harder: the “hidden” users

‘Forgotten’ or overlooked (marginalised) groups:

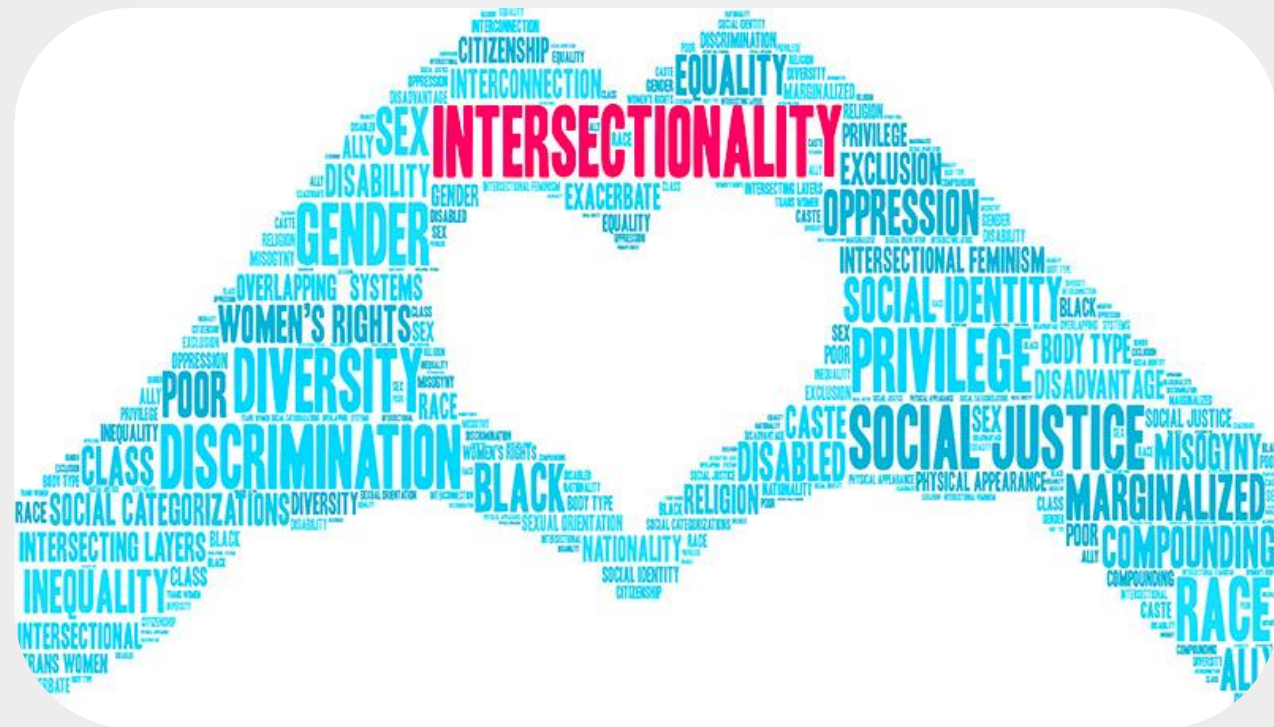
- Those affected by mental illness & other disabilities
- Isolated elderly
- Isolated (Indigenous) rural communities
- Victims of crime & domestic violence

Socially-stigmatised and often discriminated-against groups:

- Beneficiaries & the unemployed
- Refugees & immigrants from developing countries
- LGBTQ+ community
- Single mothers
- Gambling & alcohol addicts

Illegalised or criminalised groups:

- Previously or recently-incarcerated
- Illegal overstayers
- Drug users & drug dealers
- Sex workers & their clients
- The homeless (including those who are couch surfing or staying in shelters)
- Perpetrators of (domestic) violence
- Those who disagree with laws set by the government (this includes conspiracy theorists, ‘sovereign citizens’ & anti-vaxxers)
- Gang members or gang affiliates



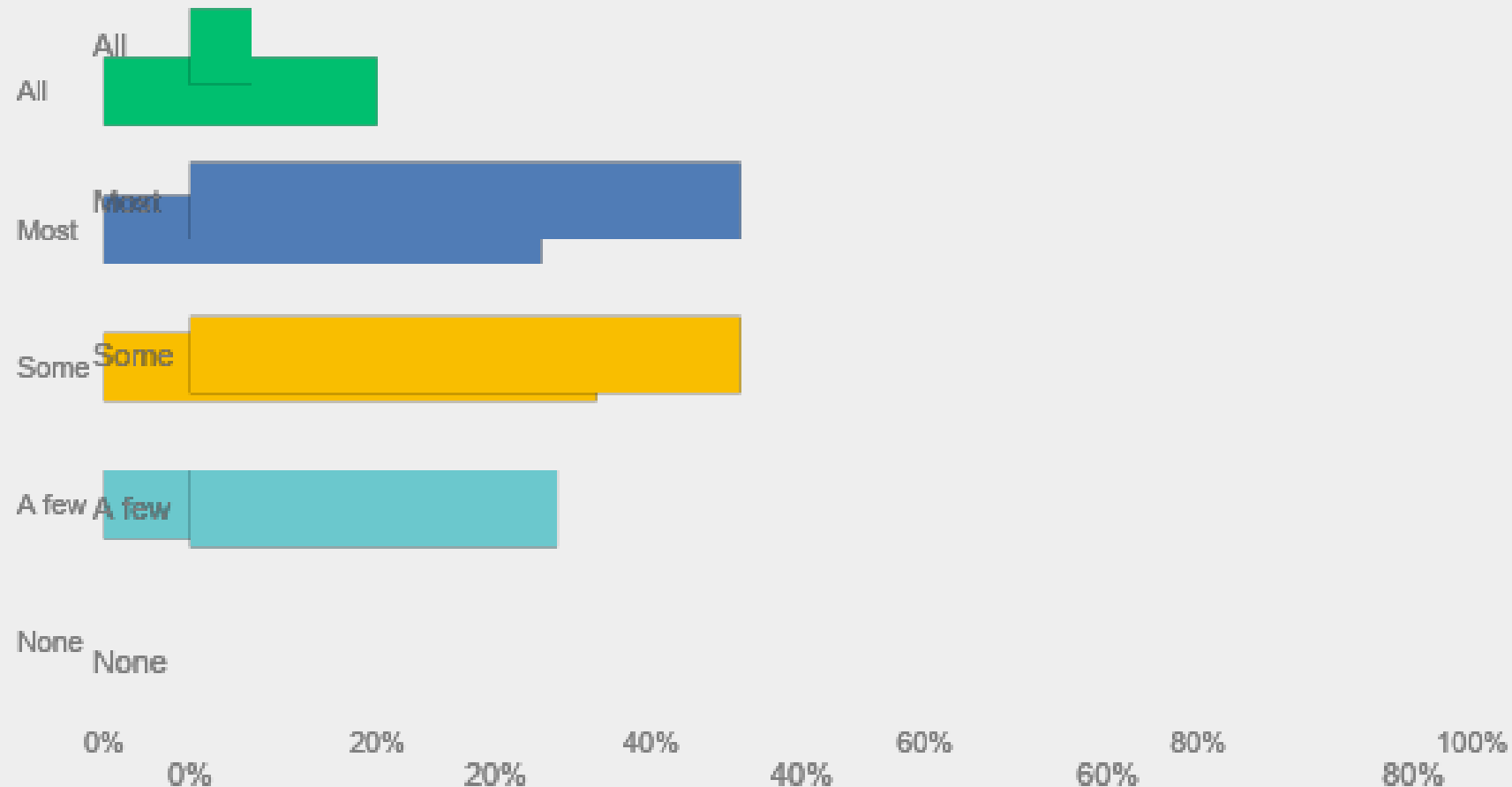
Who are those living in hidden (energy) hardship?

Terminology & Definitions

“Hidden” hardship

Those living in “*hidden hardship*” are those clients who live in hardship but may not show up on authorities’ (including government agencies, landlords, and utility providers) radar or who aren’t flagged (yet) as being in debt or arrears.

8724%





Hard-to-
Reach Energy
Users

Thank you very much for your attention!

Please ask any questions or
email me:

drsearotmann@gmail.com

Check out our project: <https://userstcp.org/task/hard-to-reach-energy-users/>

