Subtask 8 – Toolbox for Behaviour Changers

IEA DSM Task 24 – Phase II: Behaviour Change in DSM

Behaviour Change from A-Z

Dr Sea Rotmann, Operating Agent
Wellington, New Zealand
July 2018

Background and how to read this "toolbox"

The **Subtask 8** deliverable was to create a testable toolbox for behaviour change interventions:

- A description and evaluation of the validity and effectiveness of the **Collective Impact Approach** in the energy arena, as a peer-reviewed paper (Rotmann, 2016 and 2017a, Cobben 2017).
- A Decision-making Tree that enables *Behaviour Changers* to better utilise the findings of **ST1 & 2**
- A peer-reviewed paper on the impact of **storytelling** in energy research (Rotmann, 2017b; Moezzi, Janda and Rotmann, 2017; Rotmann, 2018).
- A collection of sector stories from each *Behaviour Changer* (see **ST6** Final reports & Rotmann, 2017b)
- This includes a list of behavioural intervention tools each *Behaviour Changer* has at their disposal in each of their national and sectoral contexts (see Task 24 workshop minutes and **ST6** Final reports).
- Continued testing and development of evaluation tools created in **ST 3 & 9** (Rotmann and Chapman, 2018).
- Testable toolbox for national *Behaviour Changers* (when choosing to take part in **ST11**, see Cowan et al 2017 and 2018) and/or synthesis of internationally-valid tools to feed into the Overarching Story (**ST10**, to be published).

Content of the toolbox

In blue = general behaviour change intervention tools or processes and how they were applied here
In green = tools, definitions, publications or interventions specifically created for Task 24
In light blue = Task 24 case studies, topics & sectors

A: ABC Model
Action Research
Audience
B: Behaviour
Behaviour Change
Behaviour Changer
Behaviour Changer Framework
Beyond kWh
Building Retrofits
C: Case study analysis
Collaboration
Collective Impact Approach
Conference Proceedings
The Conscience
Context
Commercial office buildings
D: The Decisionmaker
Decision-making Tree
Double-loop learning
Demand-side Management
E: Economic Research
The End User
Evaluation
E: The Expert
F: The Facilitator
Fairy tale story spine
Feedback
Focus Groups
G: Gamification
Green Leasing
H: Hero & Horror Stories
Habits
Healthcare Sector
I: Interviews
International Energy Agency (IEA)
J: Journals, peer-review
K: Kick-off Workshop
L: Learning & Love Stories
M: Magic carpet
The Middle Actor
Models of Understanding
Moments of Change
Monitoring
The Monster
N: Ning Expert Platform
Non-Energy Benefits
O: Outputs vs outcomes
P: Persistence
The Provider
Policy Briefs
Practice Theory
Psychological Research
R: Regulation/Regulatory Barriers
Residential Sector
S: See Change Institute Process
Single-loop learning
Small to medium business
Smart meters
Storytelling
Surveys
T: Theories of Change
Transport Sector
U: Utilities and Energy Sector
University Sector
V: Values
W: Workshops
Wiki
Y: YouTube Channel

A — ABC Model

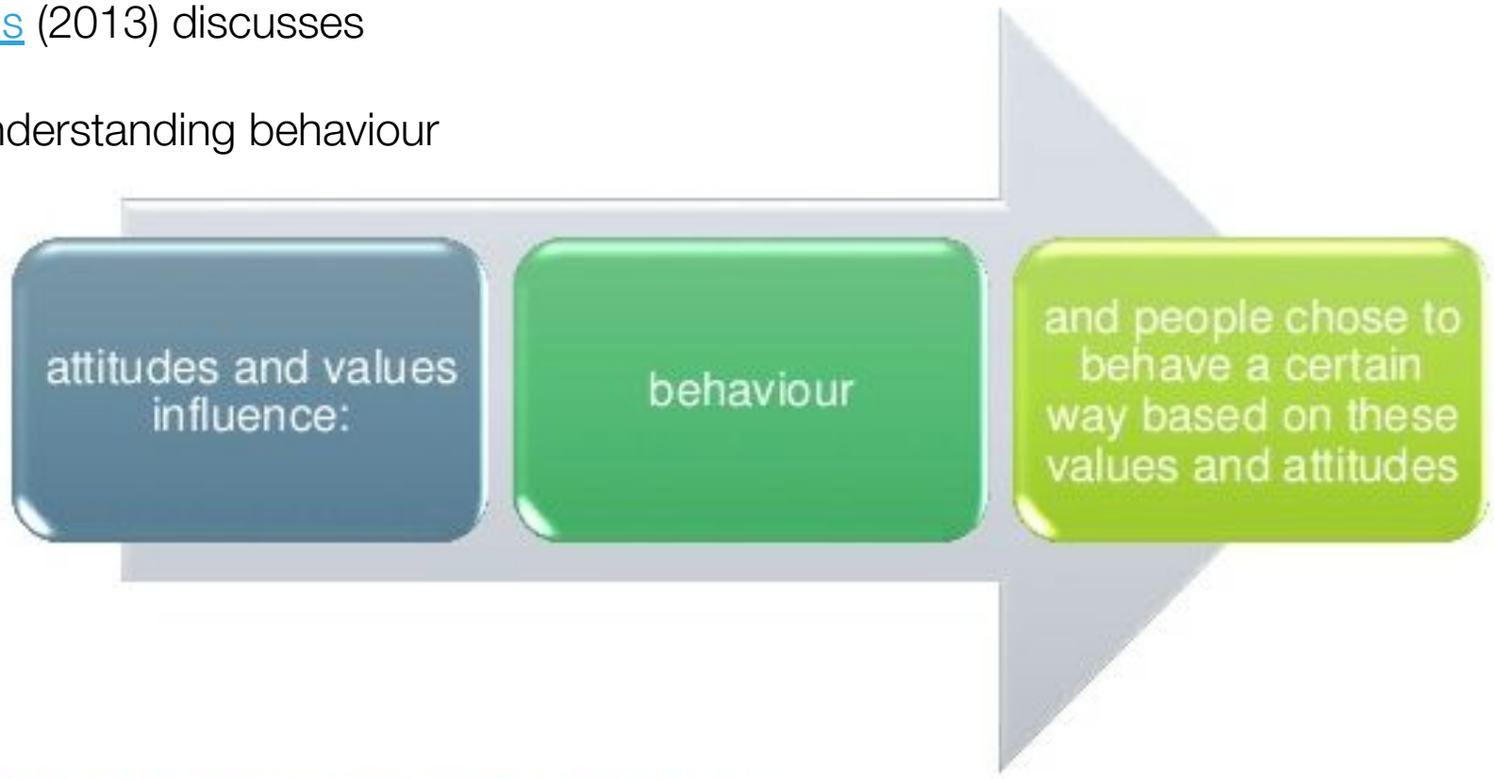
Background: ABC – *a language in which A stands for attitude, B for* behaviour *and C for individual choice.*

Insights: *Shove (2010)* Beyond the ABC: Climate Change Policy and Theories of Social Change makes strong case here for going beyond the dominant paradigm of 'ABC'—attitude, behaviour, and choice of individuals, to a more holistic, societal, practice-focused approach

See also: Models of Understanding, Theories of Change, the "Monster", Sociological Research

Read more:

- Task 24 Subtask 1 Monster case study analysis (2013) discusses
- Difference in individual vs societal models of understanding behaviour



A — Action Research

Description: Action research *is either research initiated to solve an immediate problem or a reflective process of progressive problem solving led by individuals working with others in teams or as part of a "community of practice" to improve the way they address issues and solve problems.*

See also: Participatory Action Research (PAR) *is an approach to* ***research*** *in communities that emphasises participation and* ***action****. It seeks to understand the world by trying to change it, collaboratively and following reflection.*

Insight: This was a very powerful approach that showed behavioural interventions can work in real-life

Read more:

- Cowan et al (2017). Subtask 11 Atrium Health study
- Cowan et al (2018). "It's not my job: Changing Behavior and Culture in a Healthcare Setting to Save Energy"

A - Audience

Background: *The first step of a behaviour change intervention is to identify your audience*.

Insight: It is incredibly important to know *Who* is your **audience**, *What* do they need/expect from you, *How* can you deliver it best to them

See also: **Behaviour Changers, SCI Process**

Read more:

- Rotmann, S. (2017) "Co-creating behaviour change insights with Behaviour Changers from around the world"

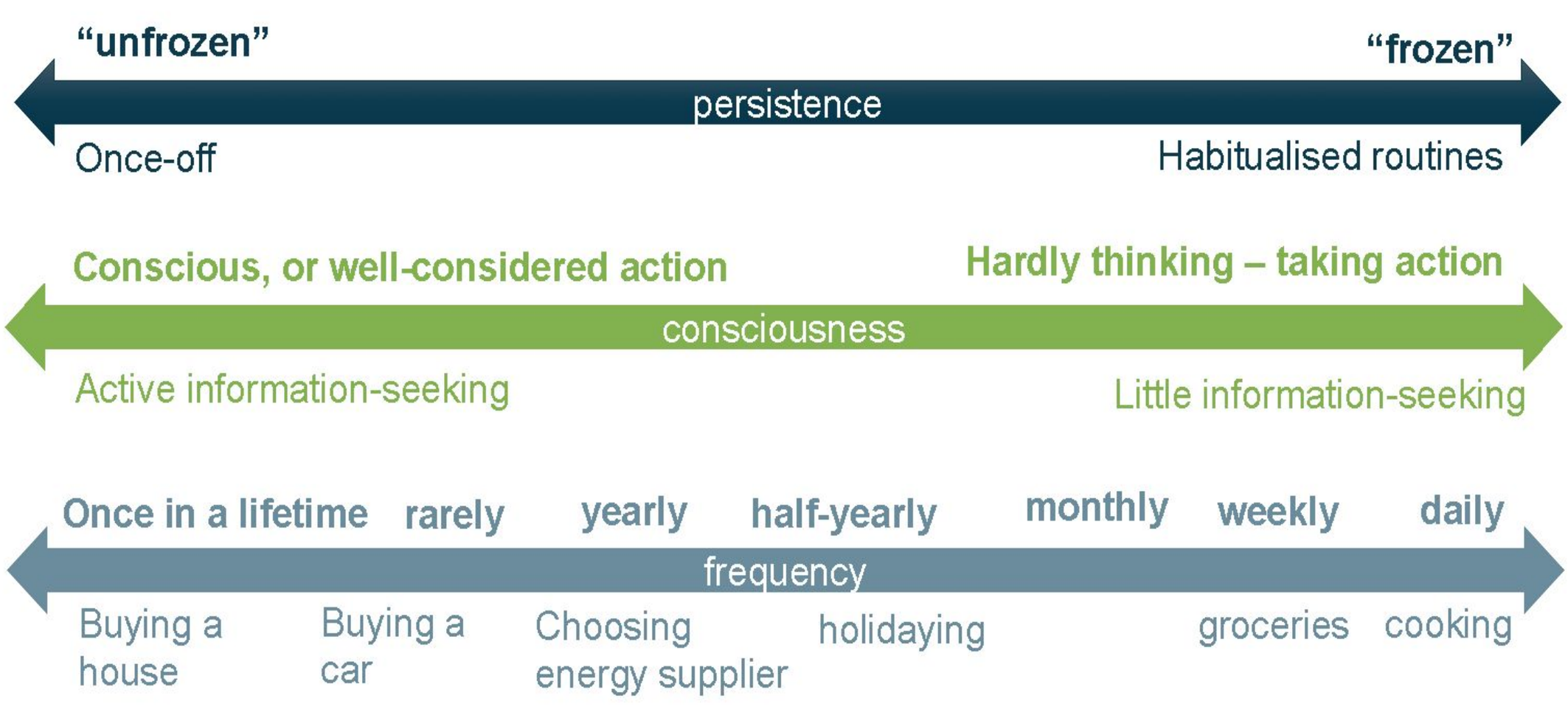
Behaviour Changers at Task 24 workshop Atrium Health, Charlotte, North Carolina (March 2018)

B — Behaviour, energy

Task 24 Definition: Energy behaviour *refers to all human actions that affect the way that fuels (electricity, gas, petroleum, coal, etc.) are used to achieve desired services, including the acquisition or disposal of energy-related technologies and materials, the ways in which these are used, and the mental processes that relate to these actions.*

See also: Behaviour Change, Behaviour Changer, DSM

Read more: Task 24 Subtask 3A report and definition slides



B — Behaviour Change

Task 24 Definition *refers to any changes in said human actions (see* ***energy behaviour****) which were directly or indirectly influenced by a variety of interventions (e.g. legislation, regulation, incentives, subsidies, information campaigns, word-of-mouth etc.) aimed at fulfilling specific* behaviour change *outcomes. These outcomes can include any changes in energy efficiency, total energy consumption, energy technology uptake or demand-side management but should be identified and specified by the* Behaviour Changer *designing the intervention for the purpose of outcome evaluation.*

See also: Behaviour, Behaviour Changer, DSM

Read more: Subtask 3A report and **definition** slides

ieadsm energy efficiency

B — Behaviour Changer

Definition Task 24 *A* **Behaviour Changer** *is a person or agency tasked with the goal of designing, implementing, evaluating and/or disseminating interventions geared at changing energy* **End User** *behaviours.*

Insight*:* In this Task, we differentiate between five Behaviour Changer sectors and it is important to get all of them "around the table". **The Decisionmaker** (usually government on all levels), **the Provider** (usually energy- and energy technology-providing industry on all levels), **the Expert** (researchers and consultants from a multitude of disciplines), "**the Conscience**" (the Third sector including NGOs, community organisations, consumer groups etc.) and the **Middle Actor** (usually service providers in direct contact with the **End User**)

Behaviour Changers

Decisionmaker

Provider

Middle Actor

Conscience

Expert

Task 24 ieadsm energy efficiency

B – Behaviour Changer Framework

Definition: *The Task 24* Behaviour Changer Framework *was created to provide a visual overview of the social ecosystem, focusing on all relevant stakeholders, i.e. the* Behaviour Changers *(ST 7) from the different sectors and their relationships with one another, and the* End User.

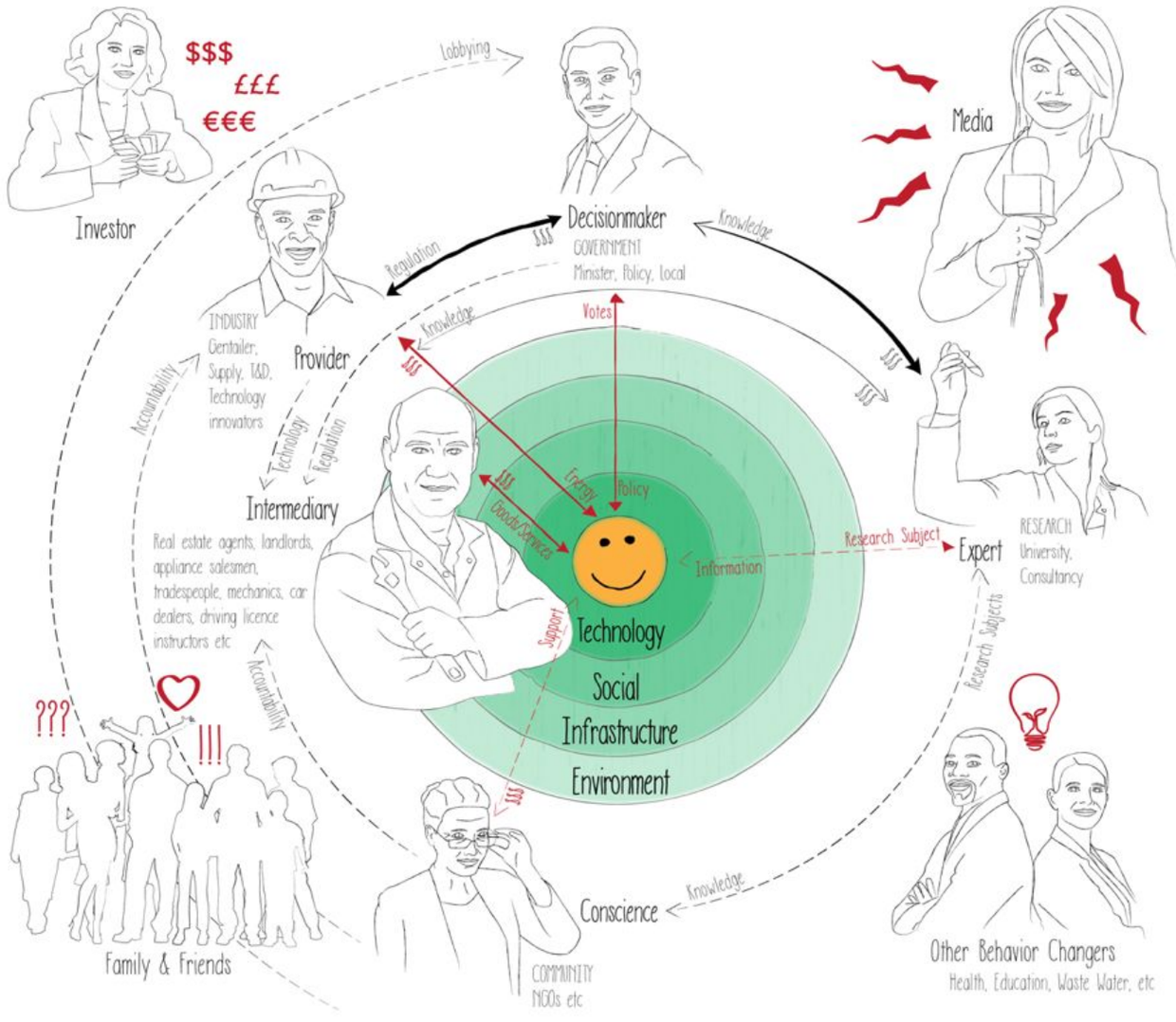
Insights: The "magic carpet" proved extremely successful in the field, leading to actual, measurable energy savings in real-life pilots. It also won an award for most promising or innovative project at ECEEE Summer Study 2017

See also: "Magic Carpet", Collaboration,

Collective Impact Approach

Read more: Rotmann, S (2016) *"How to create a 'magic carpet' of behaviour change"*

Watch: explanatory video



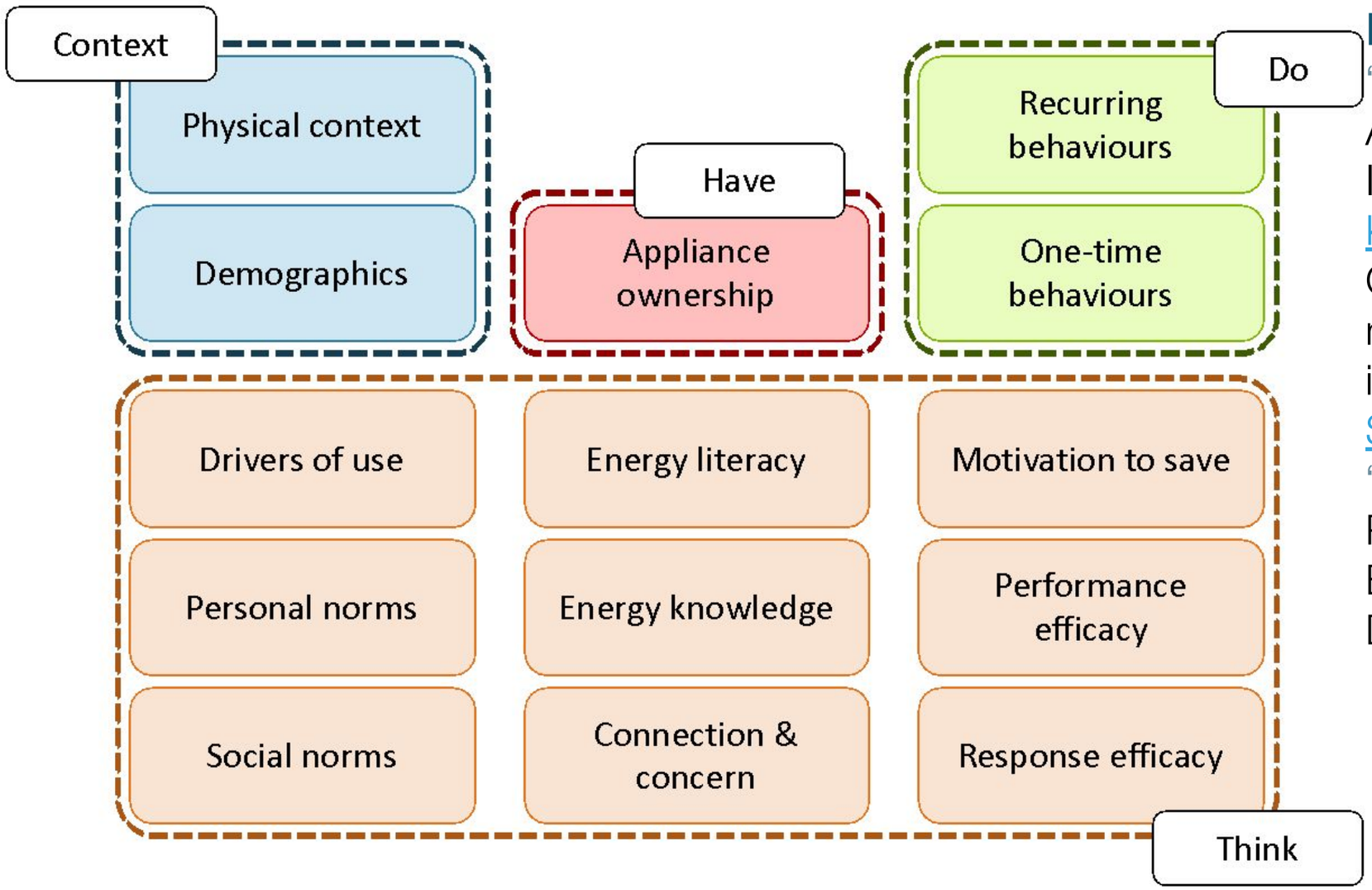
B — Beyond kWh toolkit

Background: Our Project Partners, the See Change Institute, undertook an empirical methodology review of how residential feedback interventions were evaluated:

Read: Subtask 3 Karlin et al (2015) "What do we know about what we know?"

From these insights, they developed a standardised tool, to be internationally validated (see Irish evaluation report) in Subtask 9: **"Beyond kWh toolkit"**

See also: **Evaluation, See Change Institute Process**



Read more: Karlin et al (2015) "Exploring Deep Savings: A Toolkit for Assessing Behavior-Based Energy Interventions"

Karlin et al (2016) "Evaluating Energy Culture: Identifying and validating measures for behaviour-based energy interventions"

Southern California Edison (2015) "Dimensions of Energy Behavior: Psychometric Testing of Scales for Evaluating Behavioral Interventions in Demand Side Management Programs"

B — Building Retrofits

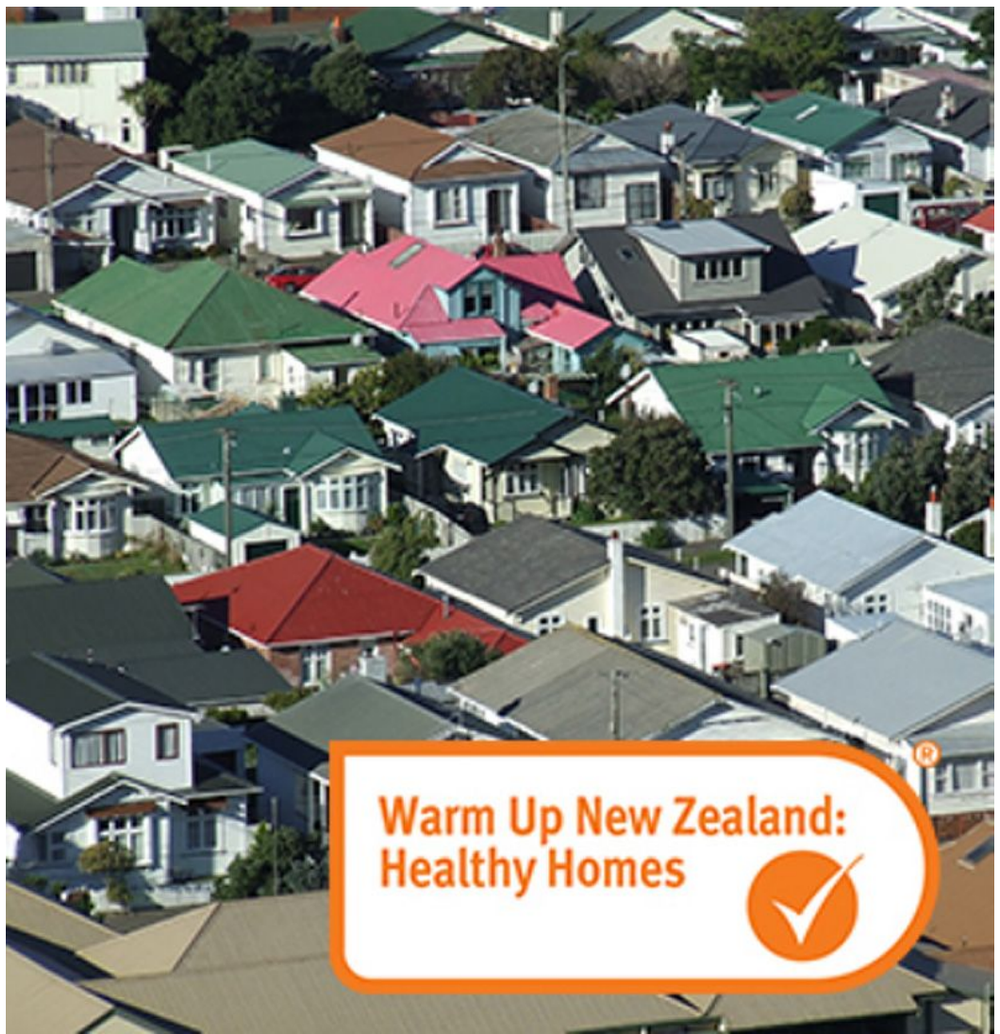
Description: One of the 4 themes studied in Phase I of Task 24

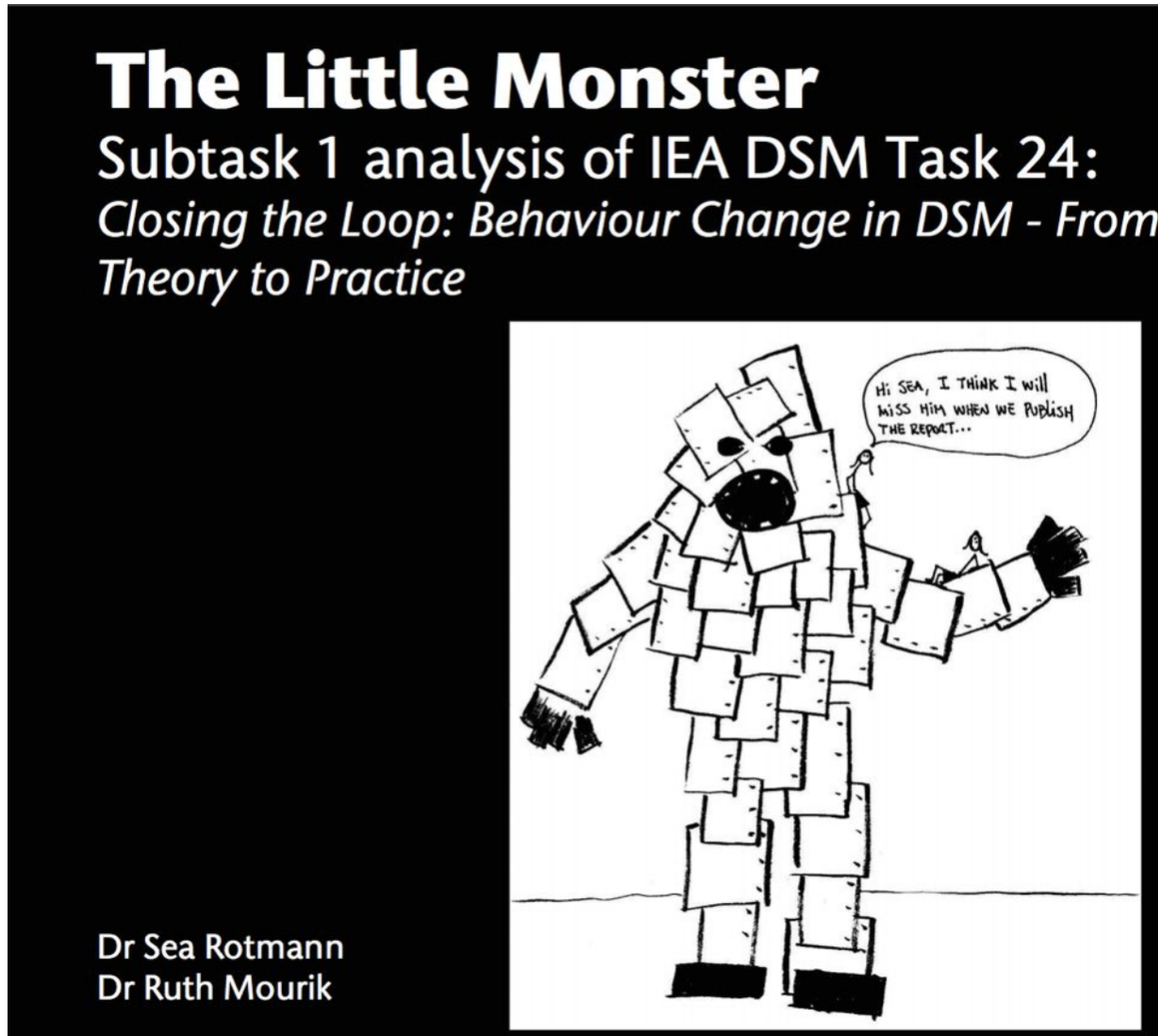
Insights: One of the most common sectors and behavioural interventions, especially in the residential sector

See also: **Transport, SMEs, Smart meter/Feedback**

Read: Rotmann & Mourik (2013) "Subtask 1 – The Little Monster storybook"

Watch example: "Warm Up New Zealand - an insulation love story"





C — Case study analyses

Description: *A* **case study analysis** *is not merely a descriptive but a critical exercise, typically an examination of a situation/institution with view towards making recommendations*

Tool: Subtask 8 case study templates – what we used to collect cases below

See also: **Focus Groups, Interviews, Psychological & sociological research**

Read more:

- ST 1 Mourik & Rotmann (2013) "The Monster case study analysis
- ST 2 Country case study analyses: Austria, Netherlands, New Zealand, Norway, Sweden, Switzerland
- ST 6&7 "Cross-country case study analysis for energy saving kit programmes"
- ST 6&7 Janda et al (2017) Advances in green leases and green leasing: Evidence from Sweden, Australia & UK

Example: Irish Energy Saving Kit

C - Collaboration

The main learning *from the theoretical overview in Phase I was that long-term* behaviour change *interventions that really work can only be created in collaboration between different* Behaviour Changers *and* End User reps

Insight: Task 24 thus created the *Behaviour Changer Framework* to facilitate such multi-stakeholder collaboration – and proved it works in almost 30 workshops in 10 countries, with >200 *Behaviour Changers*

See also: Collective Impact Approach, Behaviour Changer Framework

Read:

- Cowan et al (2018) "It's not my job: Changing Behavior and Culture in a Healthcare Setting to Save Energy."

Behaviour Changers from CEE and Atrium Health (both 2018 US workshops)

C – Collective Impact Approach

Developed by Kania & Kramer (2011). "Collective Impact"

Examples: Analysed and utilised for **ST 6&7** in ICT use in Higher Education (NL), Healthcare (US)

and Residential Energy Saving Kits (IE & NZ)

The Five Conditions of Collective Impact

Common Agenda	All participants have a **shared vision for change** including a common understanding of the problem and a joint approach to solving it through agreed upon actions.
Shared Measurement	**Collecting data and measuring results consistently** across all participants ensures efforts remain aligned and participants hold each other accountable.
Mutually Reinforcing Activities	Participant activities must be **differentiated while still being coordinated** through a mutually reinforcing plan of action.
Continuous Communication	**Consistent and open communication** is needed across the many players to build trust, assure mutual objectives, and appreciate common motivation.
Backbone Support	Creating and managing collective impact requires a dedicated staff and a specific set of skills to **serve as the backbone for the entire initiative and coordinate participating organizations and agencies.**

Reprinted with the permission of FSG and the Stanford Social Innovation Review

C – Conference proceedings

There are several top international conferences on energy and behaviour which the Task has been regularly represented & published at (see links to 18 papers) since 2012:

- 3rd *International Sustainability Conference* Basel, CH: Carabias-Hütter et al (2012)
- 3rd *International Exergy, Life Cycle Assessment, and Sustainability Workshop & Symposium* (ELCAS3) Greece: Carabias-Hütter et al (2013)
- *American Psychological Association* (APA) Washington DC 2013
- *IEEE International Smart Grid conference* Copenhagen, DE (behaviour session leader) 2013
- *Behavior, Energy & Climate Change* (BECC) USA 2013 (transport panel), 2016 (Task 24 workshop), 2017 (social & technical committee), 2018 (Task 24 session)
- *BEHAVE* 2012, 2014 (panel leader), 2016 and 2018 (steering committee)
- *American Council for Energy Efficient Economies* (ACEEE) summer study 2016, 2018
- *European Council for Energy Efficient Economies* (ECEEE) summer study 2009, 2011 (panel leader), 2013, 2015 (evaluation & storytelling), 2017 (Behaviour Changers & green leasing)
- *International Energy Program Evaluation Conference* (IEPEC) 2014 (session leader), 2015, 2016
- *Energy Cultures* conferences New Zealand 2015 and 2017
- *National Energy Research Institute* (NERI) conferences NZ 2013 and 2014
- *IEA Expert Group on Research & Development* (EGRD): 2011 (panel lead), 2013, 2017

C – The Conscience

Task 24 Definition: *Often non-profit organisations or actors mandated to reduce social and environmental impacts of the energy system. They use tools like the media, mass marketing & activist campaigns to change behaviour.*

Example: Sustainability Director Kady Cowan at Atrium Health took this role when developing a pilot to change Building Operator behaviours in the largest **health network** in North America.

Kady Cowan and Terrence, one of the Atrium Health building operators who won an award for *Energy Connect* (so did she)

Example: Air pollution from too many single-person vehicles driving in Graz, AT

CONSCIENCE: NGOs, CONSUMER GROUPS etc.

MANDATE:

- Make the world a better place
- Fight climate change and air pollution
- Social justice
- Engage, enrage, activise and lobby

STAKEHOLDERS:

- Citizens and wider public
- Other species & future generations
- Politicians/public service
- Media

RESTRICTIONS:

- Not being listened to/taken seriously enough, also: tend to operate in echo chamber
- Politicians and police actions against them
- Financial limitations
- No public face
- Not enough activists

- Critical Mass Graz
- NGOs
- Environment Ministry

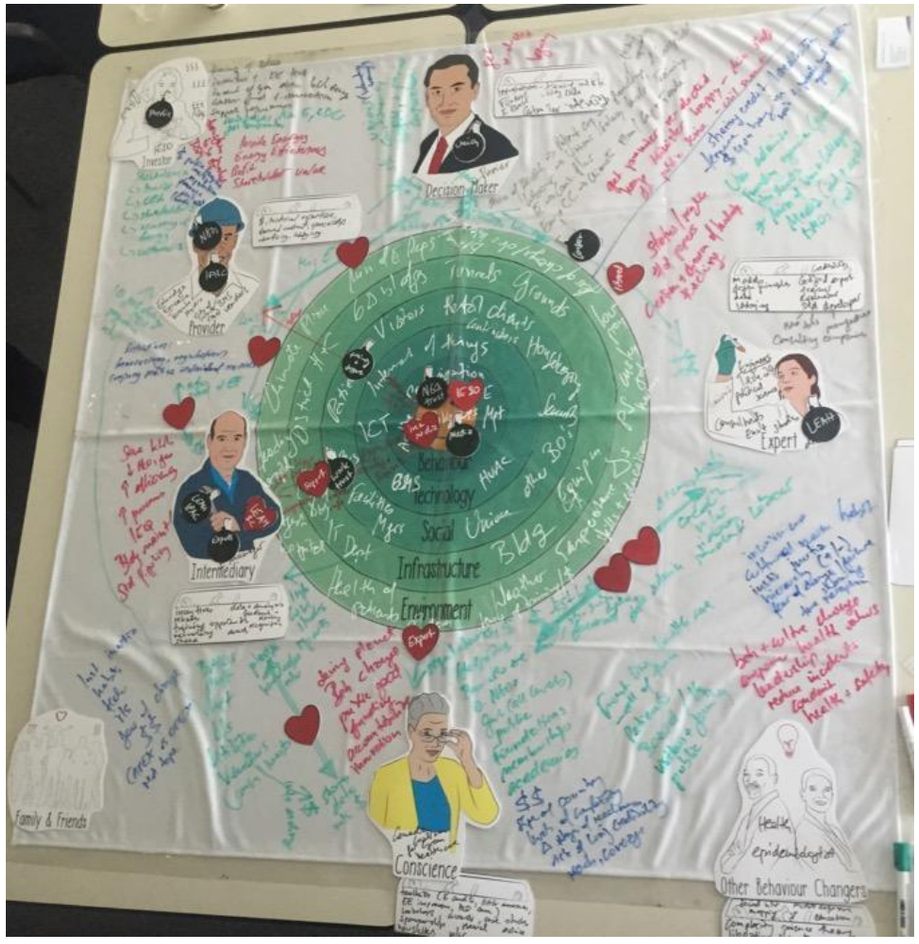
TOOLS:

- Campaigns, demonstrations
- Events
- Studies
- Media releases, social media
- Donations

C – Context

Task 24 Definition: *To achieve ongoing, effective DSM outcomes, individuals as well as their social, institutional, physical, technological, economic and cultural* **contexts** *of the* End User *need to be targeted*.

Read more: Subtask 1 – Positioning Paper



End User context in the centre of the "magic carpet" exercise

BEHAVIOUR	Of end users: Drive/ don't drive
TECHNOLOGY	• options: cars, bikes, public transport • New technology: e-cars, apps, car-pooling/sharing, multi-modal points like Tim
SOCIAL	• Behaviour of family, friends, employer, colleagues, other citizens, politicians, media, experts, modern culture
INFRASTRUCTURE	• Public transport, cycle lanes, park and ride • Roads, parking spots, congestion • Land-use restriction, pedestrian-only-areas
ENVIRONMENT	• Basin/valley in Graz • No wind, hot climate, "inversion weather" • EU directive/ standards/ Paris agreement • Health sector/insurance • Clair city

Example: Air pollution from too many single-person vehicles driving in Graz, AT

Task 24 ieadsm energy efficiency

C — Commercial office buildings

Description: The ST6 Issue in Sweden was **Green Leasing** in **commercial office buildings.**

Insight: We invited international experts and undertook a case study with the Swedish Energy Agency's office move.

Read more:

- BELOK (2016) "Pilot study: Incentive leases for energy efficiency"
- Janda et al (2017) "Advances in green leases and green leasing: Evidence from Sweden, Australia, and the UK"
- BELOK (2018) "Collaboration and Green Leasing: A case study of the Swedish Energy Agency's new office building in Eskilstuna"
- Rotmann & Bulut (2018) "Sweden Final Report"

D – The Decisionmaker

Definition: Behaviour Changers *with often the most 'powerful' impact,* Decisionmakers *have tools like policies, taxes and incentives and legislation to influence behaviour.*

Example*:* Josephine Maguire of SEAI was our Irish Government funder and Decisionmaker.

Read more: Rotmann (2016) How to create a 'magic carpet' of behaviour change

Josephine Maguire of Sustainable Energy Authority Ireland and their award-winning home energy saving kits

Example: Air pollution from too many single-person vehicles driving in Graz, AT.

DECISIONMAKERS: POLITICIANS & PUBLIC SERVANTS

MANDATE:

- Get votes
- Motivate Graz citizens to embrace sustainable mobility
- Improve living quality (e.g. reduce air pollution)
- Show leadership and create opportunities

STAKEHOLDERS:

- Citizens
- Party and Ministry staffers
- Transport providers, experts and planners
- Lobbyists
- Media

- Stadt Graz: Gemeinderäte, Umweltamt, Abteilung für Verkehrsplanung
- Land Steiermark – Amt der Steiermärkischen Landesregierung, Fachabteilung Energie und Wohnbau , etc.

TOOLS:

- Information
- Subsidies and incentives
- Regulation/Tax/Law change
- Policy interventions
- Marketing

RESTRICTIONS:

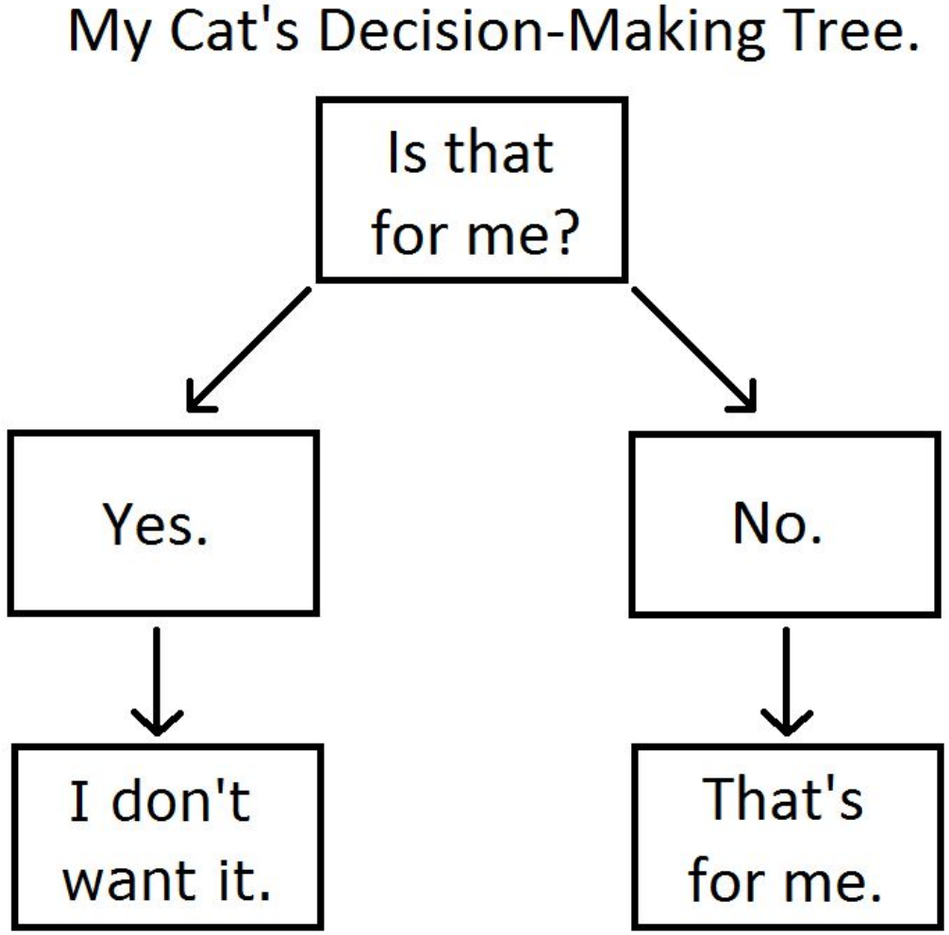
- Politics/re-election
- Tailoring to individual groups is hard, 1000 different interests pulling them in different directions, e.g. commuters
- Tasks and views of different parties are often incompatible and hard to unify, especially e.g. fossil fuel lobby
- Limited budget and many issues that need to be addressed in the city and regions

D – Decision-making Tree

Description: The **Subtask 1** “Monster case study analysis” was over 150 pages long and a rather dense read. Thus, our former partners *Duneworks* started on a Decision-making Tree to make it easier to find relevant case studies.

Learning: Unfortunately, it hasn’t been fully developed and also refers to now-outdated case studies.

See also: **Wiki, the “Monster”**



ieadsm energy efficiency

D — Double-Loop Learning

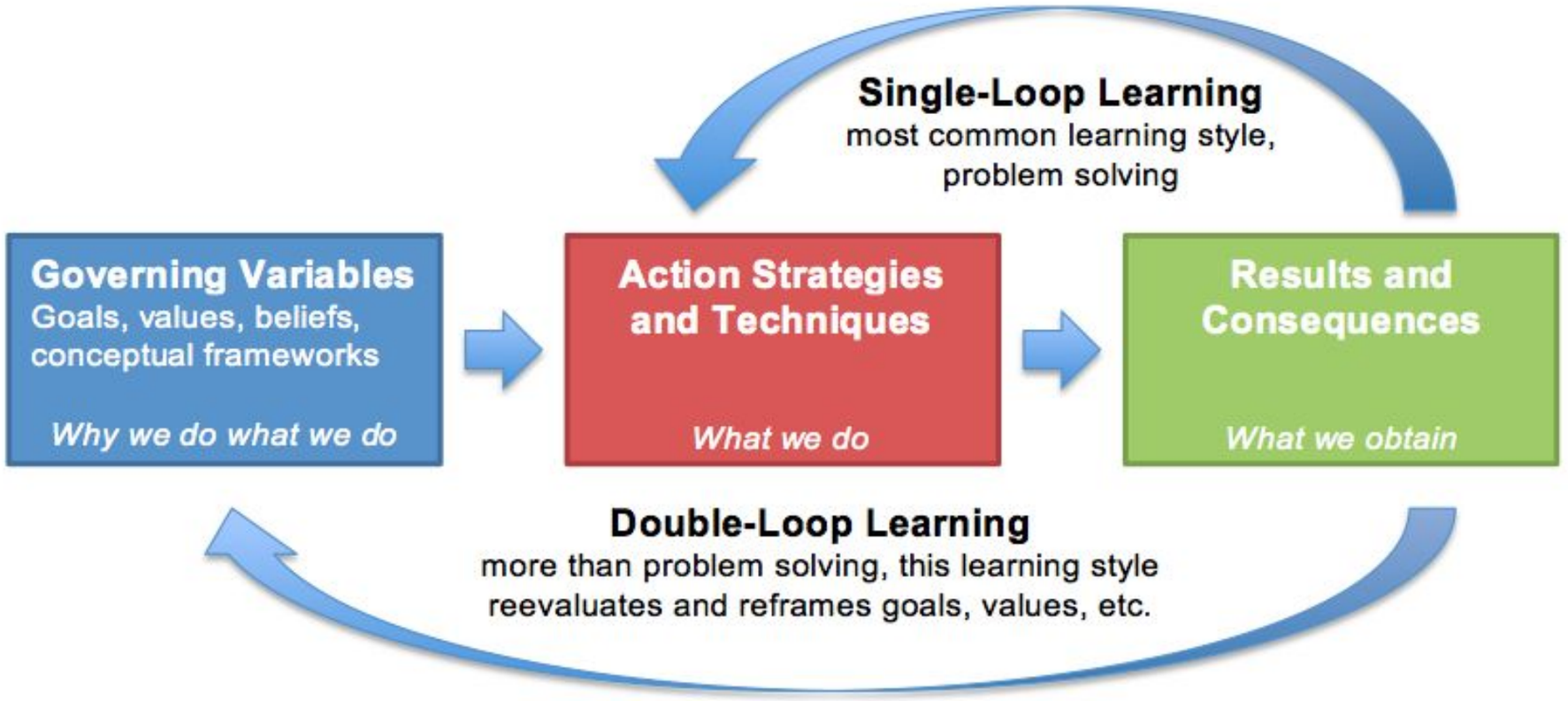
Definition: **Double-loop learning** *is an educational concept and process that involves teaching people to think more deeply about their own assumptions and beliefs.*

Learning: It's important to evaluate **outcomes**, not just **outputs**.

See also: **Single-loop learning, Evaluation, Outputs vs Outcomes, Monitoring**

Read more:

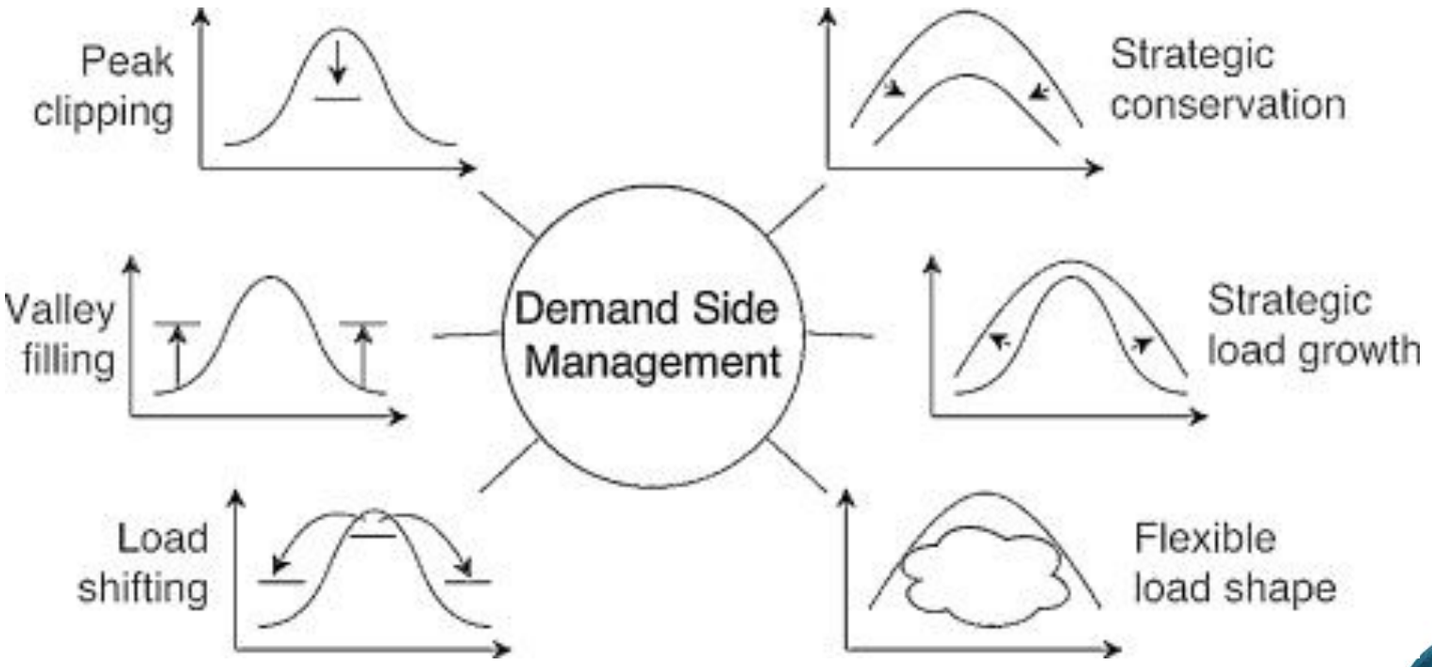
- Mourik et al (2015) "Did you behave as we designed you to?"
- Van Summeren et al (2015) "From 'I think I know' to 'I understand what you did and why you did it'"



D – Demand-side management

Task 24 Definition: DSM interventions *(top-down and bottom-up policies, programmes and actions) are developed and performed by* Behaviour Changers *(e.g. government agencies, utilities, DSM implementers) that seek to influence the ways in which end users consume energy at home, at their workplace or whilst travelling. The changes sought by* Behaviour Changers *may include the quantity of energy consumed for a given service, patterns of energy consumption or the supply management and type of energy consumed*.

See how we got to this definition here



E — Economic research

Definition: Chatterton (2011) summarises the view of economic theories on energy-related behaviour as follows: "*Energy is a commodity and consumers will adapt their usage in response to price signals*"

Learning: This is the most commonly-used approach, especially by **Decisionmakers** but its focus on a "rational, utility-maximising individual" often means that it works less well than intended.

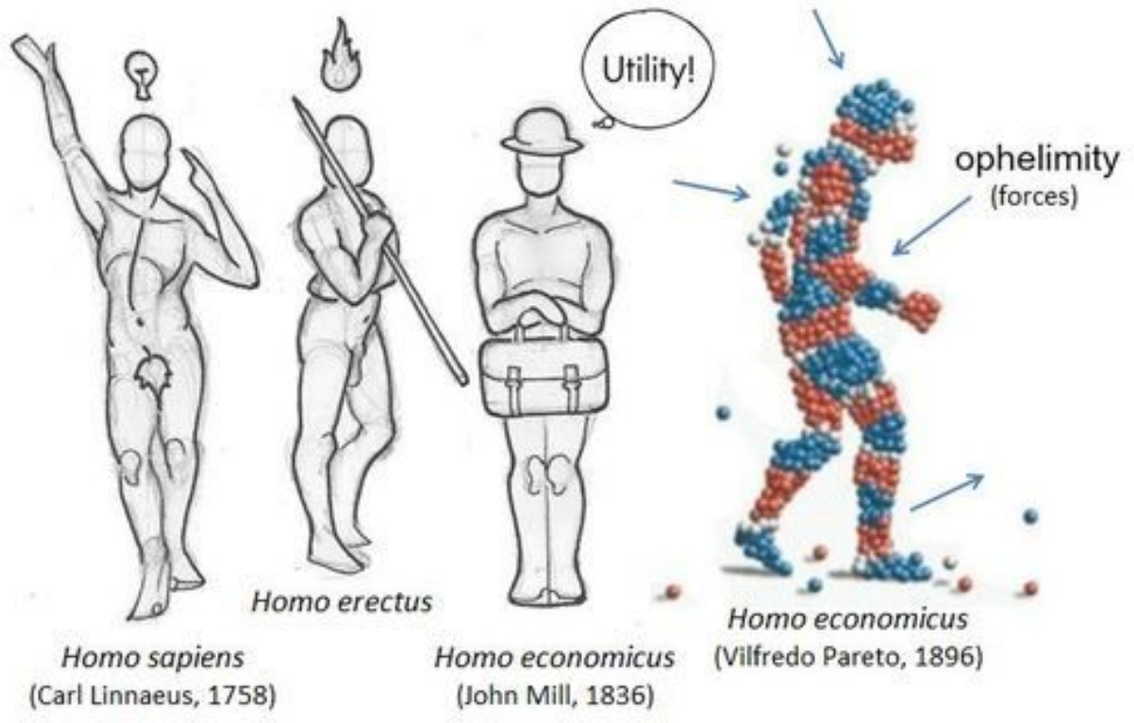
See also: **Psychological** and **Sociological research, Habits**

Read more:

Mourik & Rotmann (2013) "Monster case study analysis"
Mourik et al (2015) "Did you behave as we designed you to?"

Watch:

Rotmann 2014 presentation on different models of behaviour



E – The End User

Definition: *The* Behaviour Changer Framework *focuses on a chosen issue from the perspective of the* End Users *and their* behaviour*, as well as their* context *in terms of technology, social aspects, infrastructure and the wider environment (incl. political and regulatory). It also focuses on each of the* Behaviour Changers *in the system, what their main mandates, stakeholders, restrictions and tools are and how they interact with one another and with the* End User

Read: Rotmann (2016) "How to create a magic carpet for behaviour change"

Examples of End Users in Task 24:

- Building operators in hospitals (Canada & US)
- Commercial office tenants (Sweden)
- Car drivers/commuters (Austria & Sweden)
- Smart Home owners (Netherlands & NZ)
- Smart meter households (Italy)
- Energy efficiency evaluators (Austria)
- Sustainable Energy Communities (Ireland)
- Library users (Ireland & New Zealand)
- ICT use in Universities (Netherlands & UK)
- SMEs/industry (Norway & Belgium)
- Whole population (Switzerland)

END USER: Potential users of innovative mobility-sharing initiatives

MANDATE:

- Get to work/school/home
- Take shopping home
- Drive for entertainment

STAKEHOLDERS:

- Family
- Friends
- Employer
- Politicians

RESTRICTIONS:

- Convenience
- Lack of information/knowledge e.g. range anxiety
- Too expensive
- Not enough tailored solutions yet
- Sharing solutions still not regarded en par with private vehicle

- Smart-Phone users
- Work in Graz City
- Have a car, open to reducing its use
- Open to innovative mobility-sharing solutions

TOOLS:

- Votes
- Purchase Power
- Manpower (e.g. demonstrations)

E — Evaluation

Definition: ***Evaluation*** *is a structured process of assessing the success of an intervention in meeting its goals and to reflect on the lessons learned during the intervention.*

See also: ***Monitoring***

Insight: We studied evaluation of behavioural interventions in **Subtasks 3, 9** and **6** in the chosen issues by AT and US, as well as IE, NZ and US in **ST11**

Read more:

- Karlin et al (2015) "What do we know about what we know?"
- Mourik et al (2015) "Did you behave as we designed you to?"
- Van Summeren et al (2015) "From 'I think I know' to 'I understand what you did and why you did it'"
- Karlin et al (2015) "Exploring Deep Savings: A Toolkit for Assessing Behavior-Based Energy Interventions"
- Karlin et al (2016) "Evaluating Energy Culture: Identifying and validating measures for behaviour-based energy interventions"
- Southern California Edison (2015) "Dimensions of Energy Behavior: Psychometric Testing of Scales for Evaluating Behavioral Interventions in Demand Side Management Programs"
- Kallsperger & Rotmann (2017) "Final Report Austria"
- Grazer Energie Agentur (2017) "Task 24 Ergebnisbericht" [in German]
- Ashby & Rotmann (to be published) "Final Report USA"
- Rotmann & Chapman (2018) "Using Bayesian models to evaluate the Irish energy saving kit pilot"
- Cowen et al (2017) "Subtask 11 - CHS case study" and "It's not my job" (2018)
- Rotmann (2018) "Evaluating New Zealand's HEAT kit programme"

E — The Expert

Task 24 Definition *the* **Experts** *can develop, validate and criticise technologies and their impact on consumers. Their tools range from scientific papers, to (big) data collection and analysis, undertaking* ***interviews, surveys and focus groups*** *in real life or experimental settings.*

Example: Oxford/UCL behaviour change expert Dr Katy Janda took on this role when developing a cross-country case study analysis on **Green Leasing** in Sweden. She also played an instrumental role in co-editing the ERSS special issue on **storytelling**.

Example: Air pollution from too many single-person vehicles driving in Graz, AT

Dr Katy Janda with the other Swedish Behaviour Changers

EXPERTS: TRANSPORT, MOBILITY SOLUTIONS, PLANNERS, ENERGY EFFICIENCY

MANDATE:

- Behaviour change
- Consulting
- Validate data, models and simulations
- Intermediary between different actors
- Publications and dissemination of know-how

STAKEHOLDERS:

- Politicians, research funders
- Citizens
- Mobility providers
- Universities

RESTRICTIONS:

- Financial and resource restrictions
- Lack of knowledge or misinformation in public
- Resistence from end users („don‘t touch my car!“)
- Unify trans- and multi-disciplinary research approaches
- Not enough courage from political and industry leaders to move away from fossil fuel infrastructure
- Difficult to recreate international best practice examples in Graz

- *Consultancies*
- *Mobility research centers, Verkehrsplus*
- *Energy agencies etc.*

TOOLS:

- Reports
- Data and practical knowledge
- Information platforms
- Research and Development
- Materials
- Leadership role
- Best-Practice Examples
- Case studies and testing
- Innovation

F – The Facilitator

Task 24 examined the role of **Facilitators** in two ways:

1. ESCo Project Facilitators: *As demand for ESCo services appears to be hampered by a lack of awareness, knowledge and trust in the ESCos, Project Facilitators (e.g. energy agencies, knowledge centres, and audit consultancies) can intermediate between ESCos and (potential) clients to lower these barriers.*

Read more:

- Mourik et al (2014) "The life of ESCo Project Facilitators" 5 pager
- Mourik & Rotmann (2014) "The life of ESCo Project Facilitators" full report

2. As backbone support: *Complex problems that include technical, organisational, social and behavioural dimensions ask for collectively addressing the challenges, using a* **Collective Impact Approach**. *In order to do so successfully and to enable shared learning, a trusted Facilitator and 'translator' is crucial.*

Insight: In Phase II, Task 24 took on these important roles.

Read more:

- Task 24 combined **workshop** minutes
- Cowan et al (2017) "Subtask 11 - CHS case study"

Facilitating Behaviour Changers

F — Fairytale story spine

Definition: *Any story spine illustrates how events unfold in sequence with some events causing other consequences. The essential components of a story include: a character; a plot with beginning, middle and end; a challenge; a choice and a resolution. We used the* ***fairytale story spine*** *to collect stories that follow the above format. This ensures that all elements of a 'good' story (or case study) are at least theoretically present.*

Learning*:* This is particularly important when collecting stories from an audience not used to telling stories in their professional lives (such as the participants of Task 24 workshops).

See also: Storytelling

Read more:

- We first used the story spine to describe case studies in the "Monster"
- We described the use of storytelling in Task 24 in a conference paper
- We also used it to present double-loop learning as evaluation strategies
- We outlined the A-Z of using a fairy tale story spine in a report
- And finally, we wrote a whole peer-reviewed paper for our Special Issue

Once upon a time…
Every day…
But, one day…
Because of that…
But then!

Because of that…
Until, finally…
And, ever since then…
The End.

ieadsm energy efficiency

F — Feedback

Definition: **Feedback** *is to provide people with information about their actions in real time (or something close to it), then give them an opportunity to change those actions, pushing them toward better behaviours. They are powerful tools that can help people change bad behaviour patterns, even those that seem intractable. They can also be used to encourage good habits, turning progress itself into a reward.*

Insight: **Feedback** loops change human behaviour, often with the use of (smart) technology, e.g. Home Energy Management Systems (HEMS).

See also: **smart meter/technology**

Read:

- Subtask 2 "PowerMatching City" (NL smart home lab)
- Subtask 2 "Powering tomorrow's homes" (NZ smart home pilot)
- Subtask 2 "Energy Hunt vs €CO2" (AT comparison of 2 feedback pilots)

Read example: Sweden's design by intent "Energy AWARE Clock", Monster analysis

F — Focus Groups

Description **Focus groups** *are group* **interviews** *and a form of qualitative analysis. A moderator guides the interview while a small group discusses the topics that the interviewer raises. What the participants in the group say during their discussions are the essential data in focus groups.*

Tool: We created a Focus Group template for Task 24 experts

Read more:

- Rotmann (2018). NZ HEAT kit evaluation.
- Rotmann and Chapman (2018). Subtask 9 - Using Bayesian Modelling and the "Beyond kWh" tool to evaluate Irish home energy saving kits
- SEAI (2018). Subtasks 6&7 - Final Report Ireland

See also:

Surveys, interviews

G - Gamification

Description ***Gamification*** *is the application of game-design elements and game principles in non-game contexts, i.e. the application of typical elements of game playing (e.g. point scoring, competition with others, rules of play) to other areas of activity. Game mechanics are used to motivate participation, engagement, loyalty – and* **behaviour change***.*

Insight: Our “magic carpet for Behaviour Changers” and the “twister” game we play to show relationships are arguably a gamified way to foster multi-stakeholder collaboration.

Read example: Subtask 2 – Austrian case study: The “Energy Hunt”

Behaviour Changers in Toronto in front of their completed “magic carpet”

NZ Behaviour Changers playing “twister” on the “magic carpet”

G — Green Leasing

Task 24 definitions:

- Green Lease *is an addition to the standard legal contract between landlord and tenant. It places these parties under mutual obligation to improve the environmental performance of a building, with a primary focus on energy management, through cooperation. Green leases do not only benefit the environment, but may also create mutual financial benefits for both the tenant and the landlord.*
- Green Leasing *has been conceptualized as a form of 'middle-out' inter-organisational environmental governance that operates between organisations, alongside other drivers. Where the term "green leases" usually reflects a change to the wording of a formal lease document; "green leasing" reflects a change to the relationship between the landlord and the tenant, which may be through the mechanism of the lease or through other channels.*

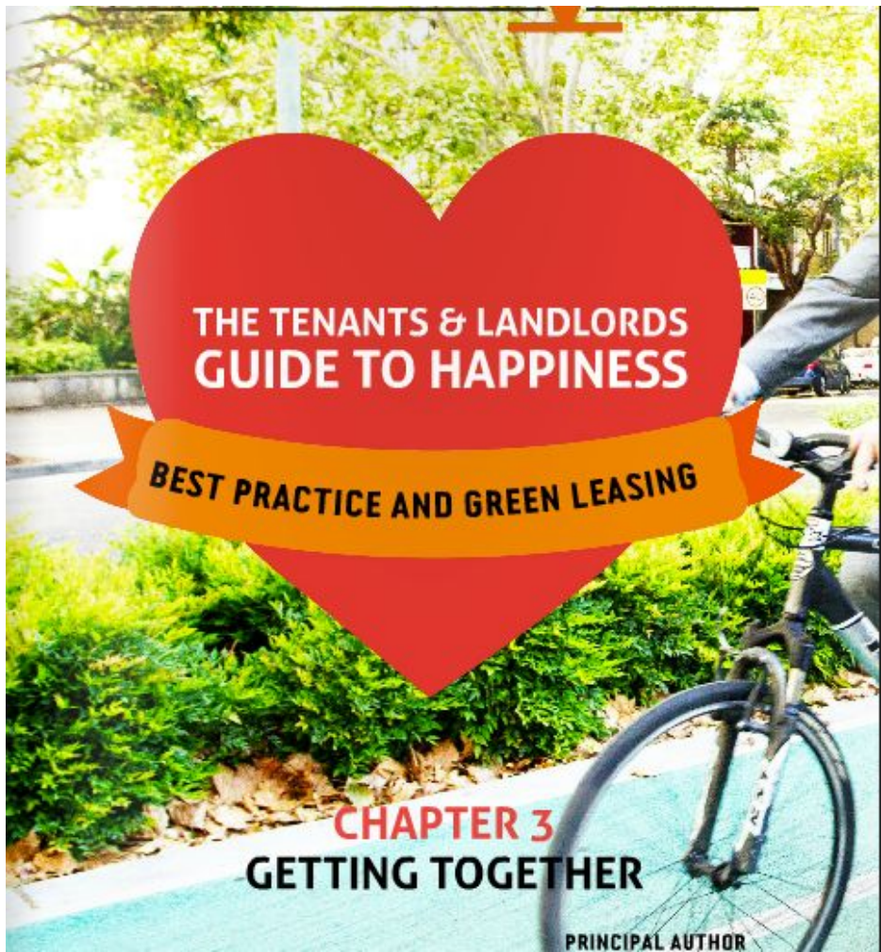
Insights: The process of Green Leasing is preferable to the product

See also: Commercial Office Buildings

Read more:

- *Janda et al 2017*
- Janda et al 2016. "The evolution of green leases: towards inter-organizational environmental governance."
- Granell et al 2017. "Quantifying the impact of green leasing on energy use in a retail portfolio: limits to big data analytics."

Rotmann & Bulut (2018). Swedish Final Report.



H — Hero & Horror stories

Definition from Janda and Tapouzi (2015):

- Hero story *"Whether it is a silver bullet (one technology) or a silver buckshot (a combination of things), energy-efficient technologies and strategies often promise to be the magic elixir that will save us from climate change."*
- Horror story *"It is a story of failure, of technologies that did not perform as promised. […] There are fears of a fallen hero, fears of project requirements unsatisfied."*

See also: Storytelling, Learning and Love Stories

Read more:

- Rotmann et al (2015). "Once upon a time…" telling an energy efficiency story that sticks.

Example in the Monster: New Zealand vs Australian insulation subsidies

H - Habits

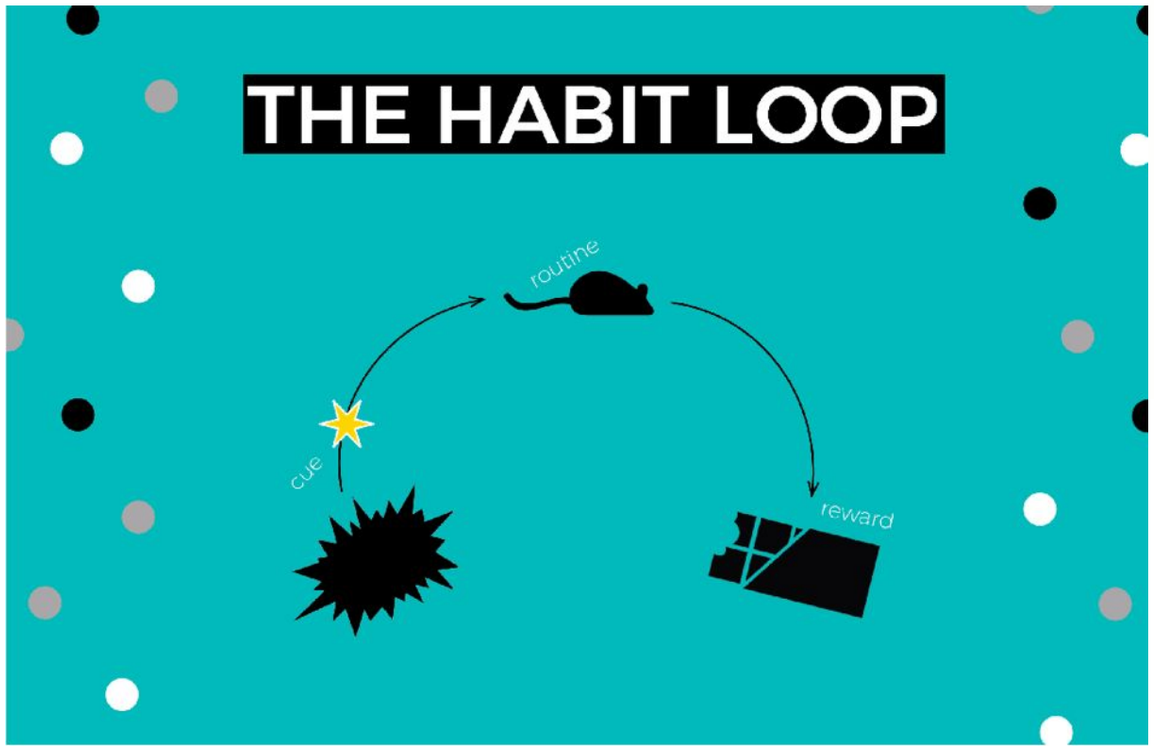
Description *Almost 95% of energy-using behaviours are thought to be habitual, or routine.*

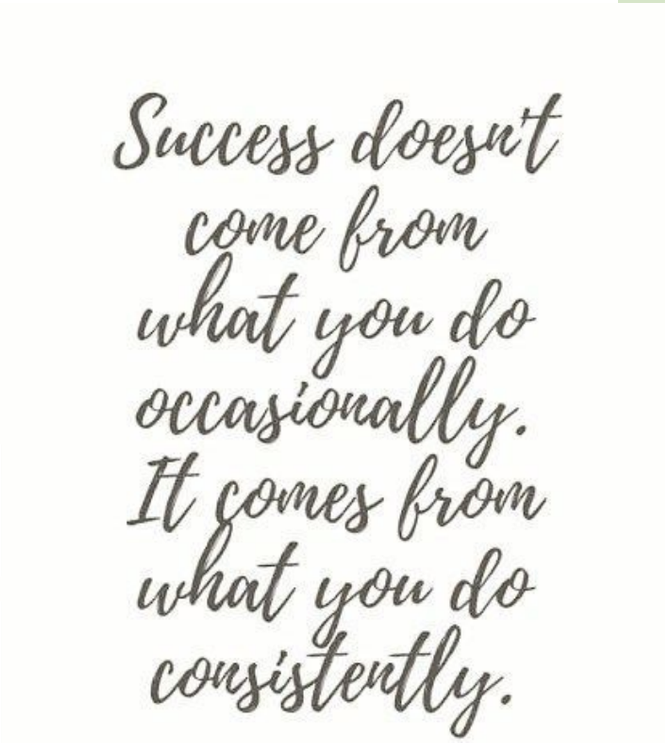
Insight: The **habitual** aspect of a behaviour is in competition with the **rational** aspect, thus, it follows that interventions which run along rational lines (e.g. relying on information or incentives) may not be able to influence these behaviours effectively. If most or even all of behaviour is habitual, practitioners will need to understand habit if they are to influence behaviour toward sustainable lifestyles.

See also: **Moments of Change**

Read more:

- DEFRA (2011). Habits, routines and sustainable lifestyles.
- Mourik and Rotmann (2013). "Monster case study analysis"





Task 24 ieadsm energy efficiency

H — Healthcare sector

Description: **Task 24** undertook in-depth examination of building operator behaviours in the largest health care sector in the US (**Atrium Health**) and Canada (**UHS** Toronto).

Insight: We became part of an international team of experts who advised Atrium's Sustainability Director. This worked extremely well.

See also: **Collective Impact Approach, Collaboration, Behaviour Changers**

Read more:

- Cowen et al (2017). Subtask 11 - CHS case study.
- Cowen et al (2018). "It's not my job"

Watch: DSM University Webinar December 2017

Atrium Health

The BEST Team, Charlotte 2018

I – International Energy Agency (IEA)

The International Energy Agency (IEA) *works to ensure reliable, affordable and clean energy for its 30 member countries and beyond. Its mission is guided by four main areas of focus: energy security, economic development, environmental awareness and engagement worldwide. The* IEA DSM *Programme is a research collaboration focusing on the demand-side of energy use. It has 17 countries and sponsors and has been going since 1993.* Task 24 *is its second-to-last Task and the first global research on* behaviour change *in* DSM.

International Energy Agency
Secure
Sustainable
Together

ieadsm
energy efficiency

I - Interviews

Description: **Interviews**, like focus groups and surveys are social science methodologies to qualitatively analyse & evaluate behaviour change interventions

Insights: We have used them on several occasions (and provided links to interview questions in the Appendices of these reports) – with policymakers and programme managers and end users.

- See also: **Focus groups, surveys, case studies**

- Read more:
  - Rotmann (2014). Subtask 2 - PowerCo smart house pilot
  - Mourik (2014). Subtask 2 – PowerMatching City
  - Rotmann (2018). Subtask 6 – New Zealand HEAT kits
  - Rotmann and Chapman (2018). Subtask 9 – Irish energy saving kit evaluation
  - SEAI (2018). Subtasks 6&7 - Ireland Final Report.
  - Rotmann (2018). Subtask 8 – Case study & interview templates for Task 24
  - Rotmann and Ashby (to be published). Subtask 6&7 - US Final Report

Interview

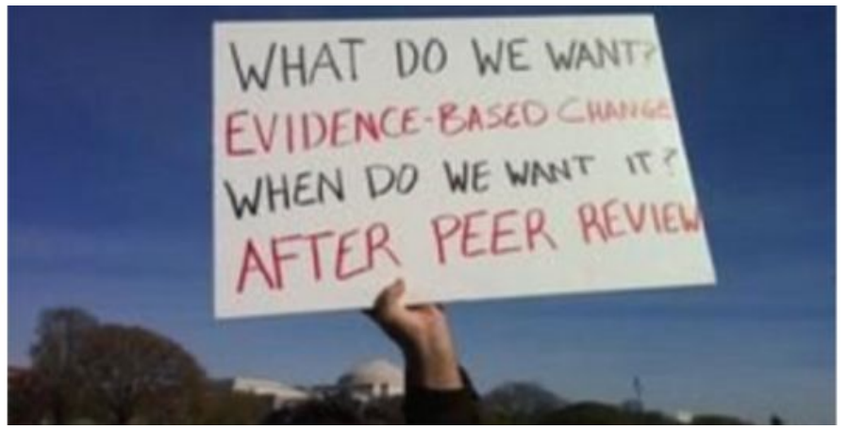
Task 24 ieadsm energy efficiency

J – Journals, peer-review

This is how academic research gets validated – by peer review and publishing in a reputable journal (aka "primary literature"). We have co-edited our own Special Issue and published in this, and another major energy research journal.

Insight: TCPs aim more at policymakers than academics, which is why most Task work is technical reports, guidelines and toolkits

See also: Conference proceedings



Read more:

- Special Issue on "Narratives and Storytelling in Energy and Climate Change Research", Energy Research and Social Science Volume 31 (September 2017)
- Rotmann, 2017. *"Once upon a time…" Eliciting energy and behaviour change stories using a fairy tale story spine*, Energy Research and Social Science, Special Issue 31
- M. Moezzi, K. Janda and S. Rotmann (2017), *Using stories, narratives, and storytelling in energy and climate change research*, Energy Research and Social Science, Special Issue on *Storytelling in Energy and Climate Change Research.*
- Batey, M. and R. Mourik (2016). From calculated to real energy savings performance evaluation: an ICT-based methodology to enable meaningful do-it-yourself data collection. Energy Efficiency 9(4): 939-950.

K – Kick-off workshop Oxford

The *UKERC Meeting Place* (now unfortunately defunct) gave us the huge honour to fund their only international workshop with Task 24, in October 2012.

Learning: It was our largest, and most impactful workshop, and what we later called “our trial by fire”. We incorporated many of the lessons learned here into the Task.

See also: **Workshops**

Watch: Oxford Task 24 workshop – the movie

Read more:

- Mourik and Rotmann (2012). Oxford positioning paper
- Churchouse et al (2012). Oxford workshop minutes

L – Learning and love stories

Definitions from Janda & Tapouzi (2013 & 2015):

- Learning story *"The learning story in energy policy lies in between the technical potential and what is achieved in practice. […] The learning story can be difficult and contentious. It is less soothing than the hero story, as it asks for participation, reflection, and does not provide a single truth."*
- Love story *"In the absence of a policy regime that formally recognises the socio-technical nature, the concept of a 'caring story' could help create the social potential to move in this direction. […] If these opportunities are to be grasped, then the use of hero stories will need to change, develop and alter into a myriad of learning stories, perhaps augmented by caring stories to establish new social norms of ethical conduct."*

See also: Hero and horror stories

Read more:

- Rotmann et al (2015). "Once upon a time…" telling an energy efficiency story that sticks. ECEEE summer study.
- Rotmann (2018). Subtask 8 – "The A to Z of Storytelling in Task 24"

Watch: Insulation love story from NZ

From Wellington's IEA DSM workshop on storytelling (2014). EECA policy manager Jenny Lackey telling the Warm Up NZ insulation love story

M — the "Magic Carpet"

Task 24 Definition: *The centre piece of the Task revolves around a new framework of how to view the energy system from the 'human', rather than a technocratic perspective, using a* **Collective Impact Approach**. *At the 2015 BECC conference, this framework was christened a* **'magic carpet'** *for behaviour change, by a Senior Manager from PG&E.*

Insight*:* It draws on various **sociological and psychological research** models but adds its own unique flavour which have been successfully explored in field research settings on specific issues in each participating country.

Read also: Rotmann (2016). How to create a "magic carpet" for behaviour change

Watch example: The **Swedish** magic carpet as an animated walk-through

Toronto UHN *Behaviour Changers* sitting around the magic carpet

M — the Middle Actor

Task 24 Definition *the* **Middle Actors** *are often from a service sector in direct contact with the* **End User**. *They have behaviour change tools like direct access to consumers, trusted advice, technological information & labels.*

Example: In Ireland, library staff loaned out home energy saving kits to householders while a member from a Sustainable Energy Community acted as a Middle Actor, managing the loan of the kit to their community members

Read also: Janda & Parag (2012). "A middle-out approach for improving energy performance in buildings."

Example: Improve uptake of mobility-sharing apps in Graz, AT

MIDDLE ACTORS: ENERGY AGENCIES, MOBILITY PLATFORMS

MANDATE:

- Secure jobs and staff employment
- Provide mobility solutions and information to the population
- Attract as many end users as possible
- Research and data management
- Modelling, simulations, conduct small-scale pilots
- Improve technical knowledge and public consciousness
- Partake in international research collaborations

STAKEHOLDERS:

- City Graz
- Municipalities and regions
- End users
- Energy suppliers, economy, politicians
- EU, H2020, IEA DSM etc.

RESTRICTIONS:

- Financial restrictions
- Lack of knowledge/mis-information of end users
- Lack of cooperation and flexibility of mobility and infrastructure providers
- Fears of Innovation
- System change is very difficult to achieve

- Grazer Energieagentur
- Verkehrplus, FGM

TOOLS:

- Information
- Networks
- Concept of proof (theory to praxis)
- Models for citizen engagement
- Data, evaluation, metrics & measurements
- Systems (e.g. platforms, apps)

M – Moments of Change

Description: *There are key* **moments** *in the life course which represent transitions from one life stage to another, and these key events can be sufficient to disrupt people's habits.*

Insight: In energy behavioural research, the life event is presented as a „window of opportunity" during which individuals' sensitivity to an intervention is heightened, rather than sufficient to change **habits** on its own.

See also: **Habits**

Read more:

- Mourik & Rotmann (2013). "Monster case study analysis"
- Darnton, A, Verplanken, B, White, P and Whitmarsh, L (2011). "Habits, Routines and Sustainable Lifestyles: A summary report to the Department for Environment, Food and Rural Affairs."

MOMENTS OF CHANGE

M – Models of Understanding

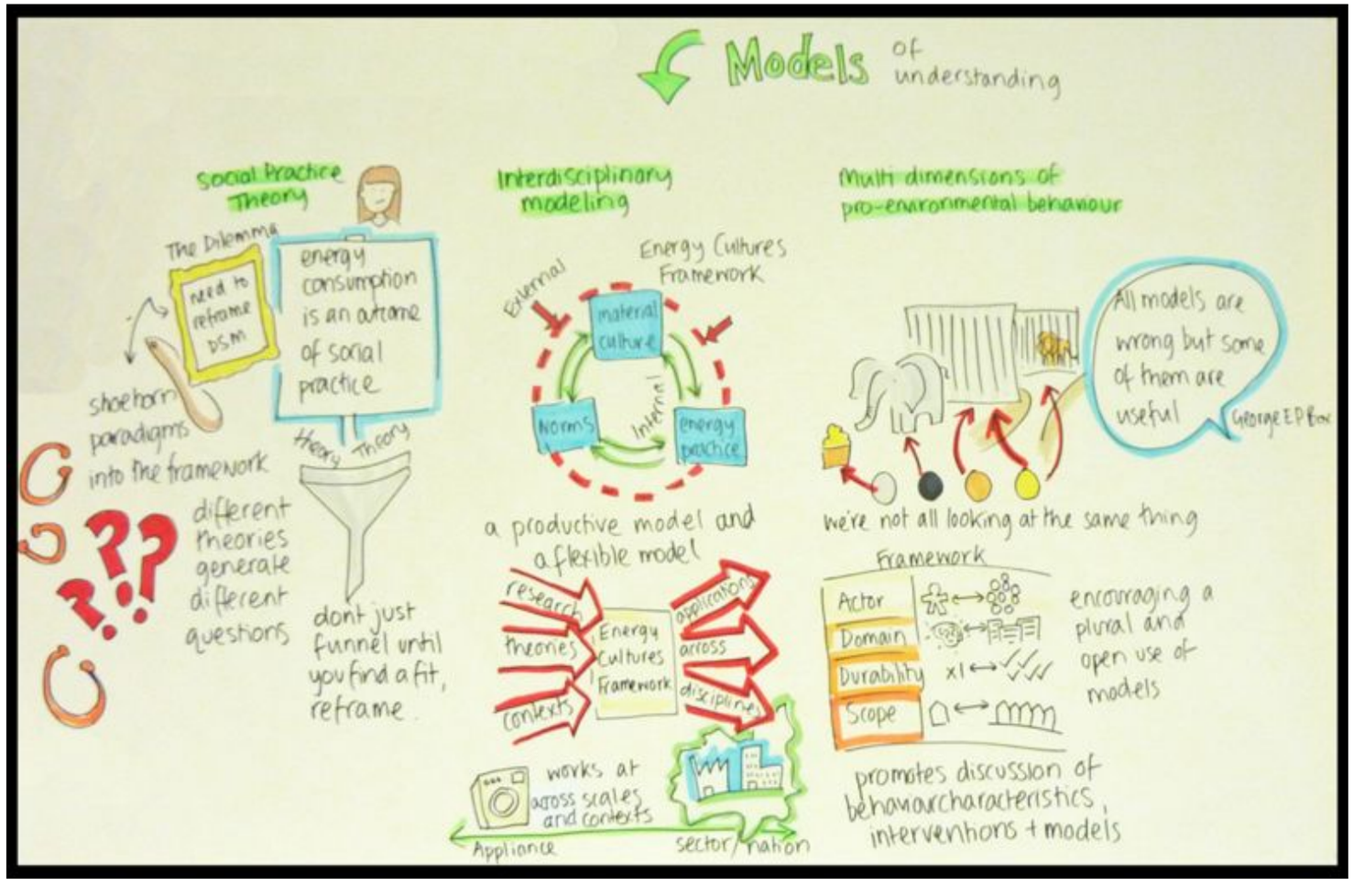
Definition: ***Models of understanding behaviour*** *help us to understand specific behaviours, by identifying the underlying factors which influence them. Behavioural theory is diagnostic, and change theory is more pragmatic.*

Insights: There are individualistic models and social models. There is no silver bullet model fit for any given situation.

See also: Theories of change, ABC model

Read also:

- Darnton, Andrew (2008). GSR Behaviour Change Knowledge Review.
- Mourik & Rotmann (2013). [“Monster case study review”]



M – Monitoring

Definition: ***Monitoring*** *refers to measuring progress and achievement, and whether the planned outputs and outcomes are produced.*

Insight: Simply monitoring **outputs** will not prove that **behaviours** have changed

See also: **Evaluation, Outputs vs Outcomes**

Read more: Mourik et al (2015) "Did you behave as we designed you to?"

Monitoring	Evaluation
Systematic, ongoing	• Systematic, periodic
During programme implementation	• During and after programme implementation
Tracking of activities and progress	• Judgement of merit, value or worth of a programme/project
According to AWP	• Compared to evaluation criteria (relevance, effectiveness, impact)
For short term corrective action	• For decision-making about future programmes
Accountability for implementation	• Accountability for results
Contributes to evaluation	• For office & organizational learning
Conducted by insiders	• Conducted by impartial outsiders
Are we doing things right?	• ***Did we do the right things?***

M – The Monster

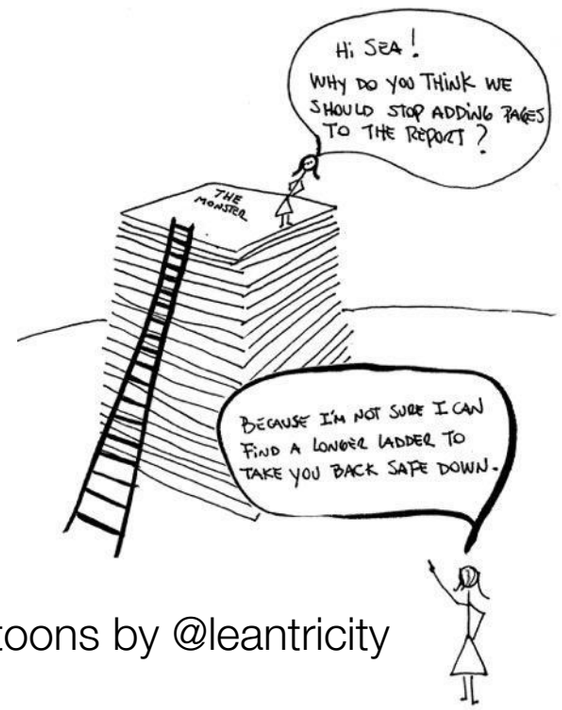
Task 24 Description: *Our Subtask 1 report on "Helicopter overview of different models, frameworks and theories of behaviour change" ended up turning into a "Monster" that kept on growing.* ***"The Monster"*** *thus became the short-hand for our case study analysis. A shorter e-publication was called "the little Monster"*

Learning: The **case study** template proved too complex to get good information

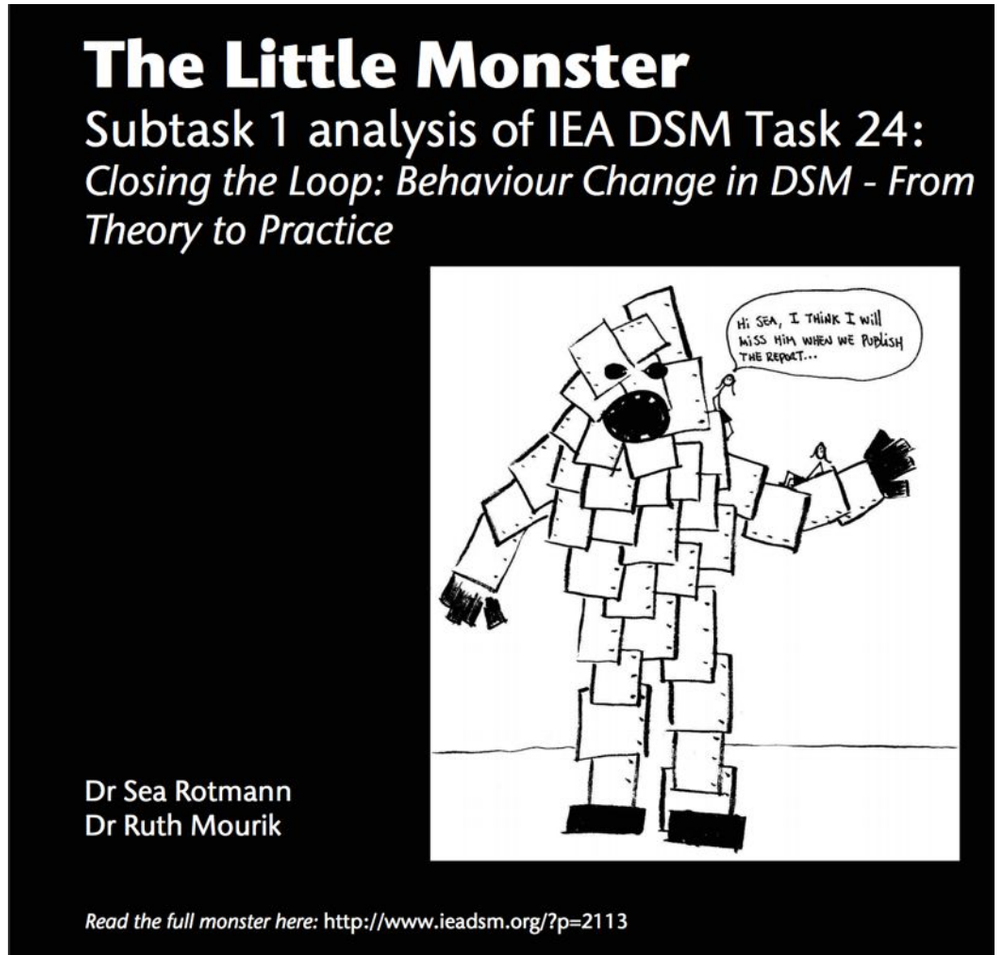
See also: **Case study analysis**

Read more:

- Mourik & Rotmann (2013) "The Monster case study analysis"
- Rotmann & Mourik (2013) "The little Monster storybook"



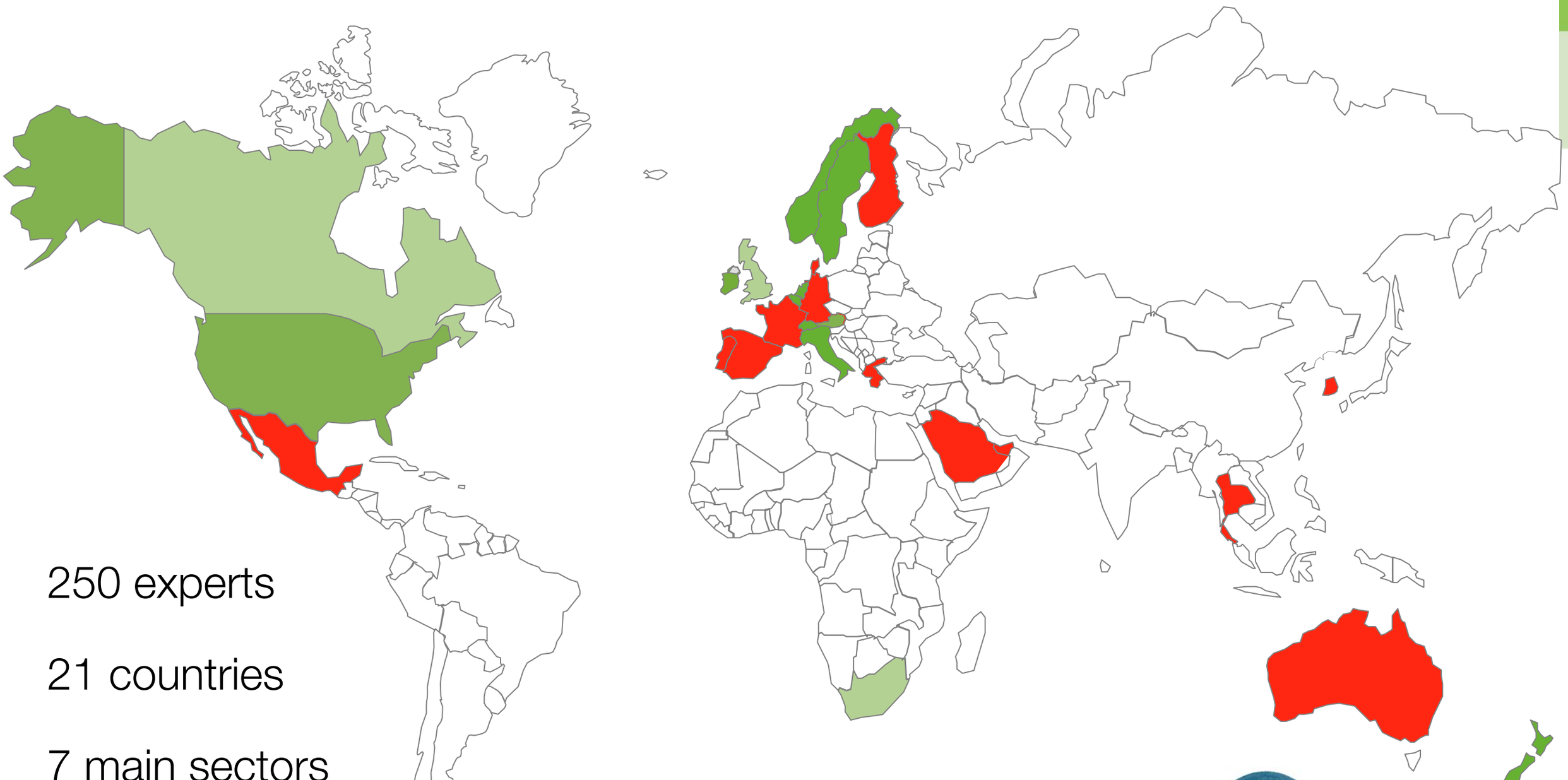
Monster cartoons by @leantricity



N – Ning Expert Platform

Description: Great to start collecting bios and getting experts on one platform. Also great for mass mail-outs www.ieadsmtask24.ning.com

Learning: Not fully utilised by experts for its social media capability. Now outdated.



250 experts

21 countries

7 main sectors

Participating countries, contributing experts

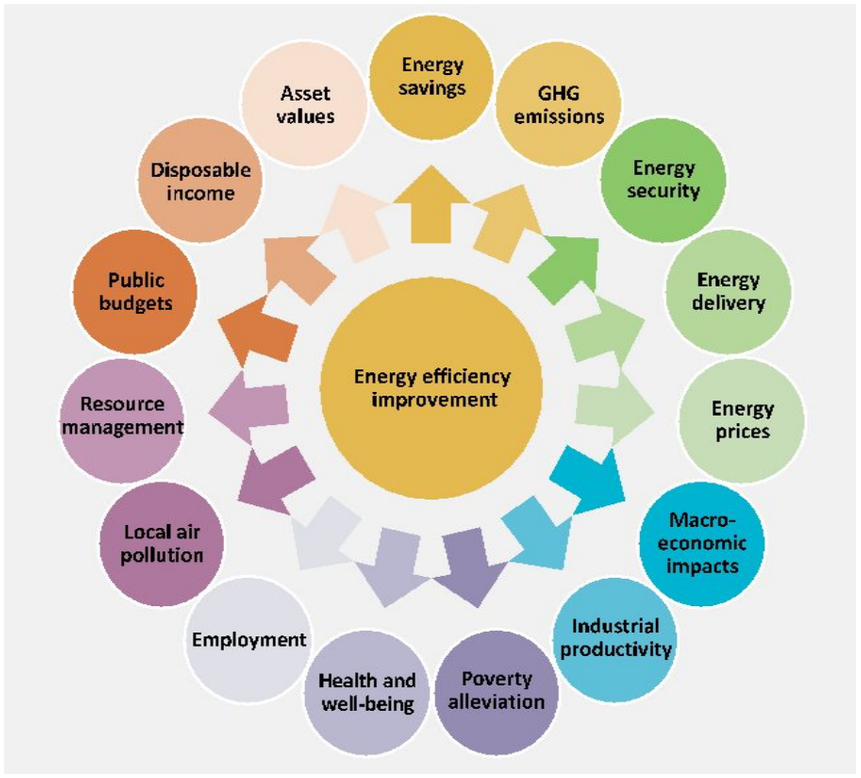
Task 24 ieadsm energy efficiency

N — Non-Energy Benefits

Definition: ***Non-energy*** *or* ***multiple benefits of energy efficiency*** *are those costs and benefits that are not part of the costs, or the avoided cost, of the energy from the provider. They can include end user or macro-economic and societal benefits, e.g. from improved health, job creation, productivity, safety, energy security, reduction in poverty etc.*

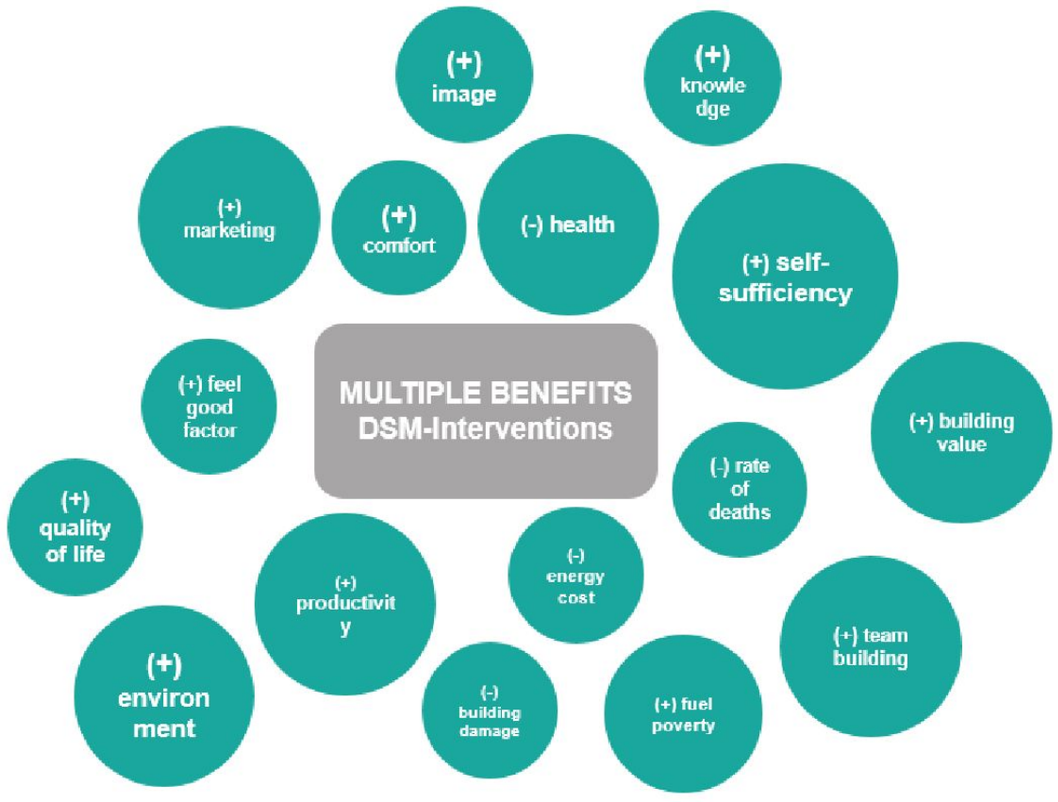
Insight: Including NBEs would improve the cost-benefit of EE remarkably.

Read more: IEA (2014). Capturing the multiple benefits of energy efficiency.



From IEA (2014)

Example: Multiple benefits from DSM interventions (Austria)



O — Outputs vs Outcomes

Definition: ***Outputs*** *are direct and measurable products of an intervention.*

Outcomes *refer to the results and impact and or improvements in the short, medium and long-term.*

Quote: "*Not how many worms the bird feeds its young, but how well the fledgling flies*" – United Way of America, 1999.

See also: Monitoring and evaluation, single vs double-loop learning

Read more:

Mourik et al (2015) "Did you behave as we designed you to?"

P — Persistence

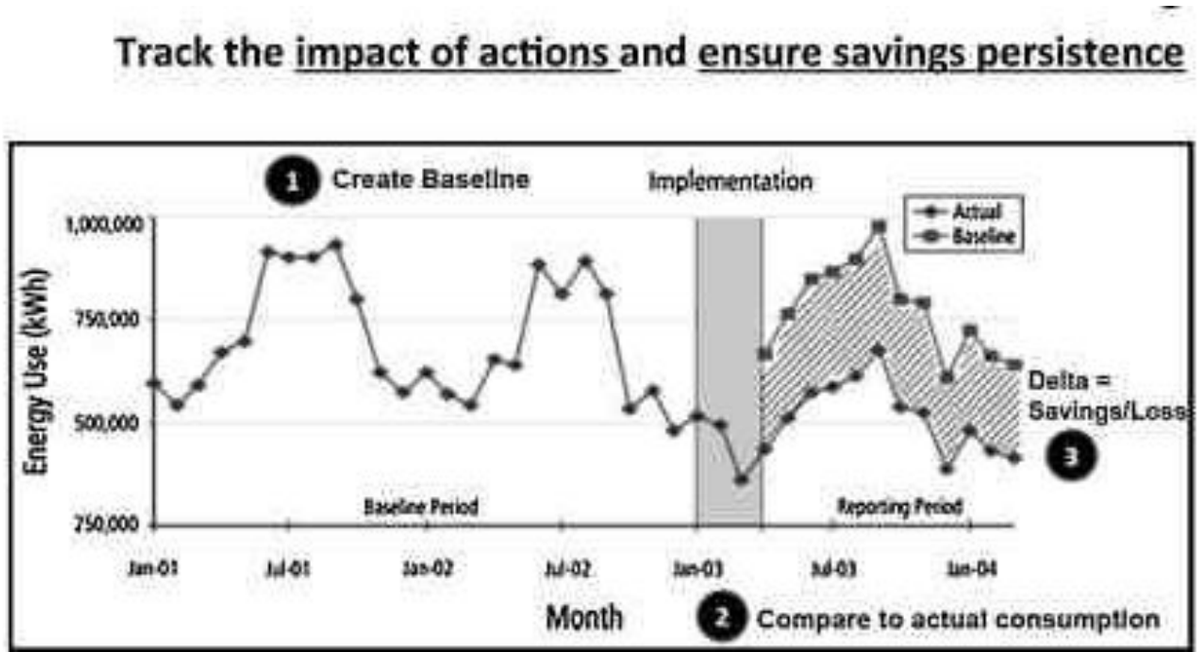
Definition: *"A key barrier to implementing behavioural energy efficiency programs has been uncertainty about how long any energy savings achieved may last, known as* **persistence***. This uncertainty has led many jurisdictions to continue to hold behavioural programs to a one-year measure life, even though savings may last longer."*

Insight: Improving our understanding of the duration of persistence is crucial for both programme and portfolio design, particularly due to the potential implications for cost-effectiveness, program credibility, and more accurate resource planning.

See also: Evaluation

Read more:

- Ashby et al (2017). "Keep the Change: Behavioral Persistence in Energy Efficiency Programs"
- Rotmann & Ashby (to be published). **Subtasks 6&7** – Final US Report.



P — the Provider

Task 24 Definition *The* **Provider** *is usually focused on providing energy or energy-using technologies. They have different tools, e.g. marketing campaigns or changes to billing systems, with which they can influence* End Users*.*

Example: In New Zealand, we had the 2nd largest lines company, *PowerCo* co-fund our Phase II work. They were our **Providers**.

See also: **Behaviour Changers, Behaviour Changer Framework**

Read more: Rotmann (2016) *How to create a 'magic carpet' of behaviour change*

Watch: explanatory video

Jamie Silk, our Task 24 co-funder and *Provider*

Example: Improve uptake of mobility-sharing apps in Graz, AT.

PROVIDER: INNOVATIVE MOBILITY SOLUTIONS

MANDATE:

- Create and provide tailored mobility solutions (EVs, das Lastenrad, ÖV offers from Holding Graz)
- Offers are safe, environmentally friendly and cost-efficient
- Easy access (*Lastenrad* e.g. free of charge, flexible opening hours etc.)
- *Holding Graz*: infrastructure, keep politicians happy
- Nissan: R&D, provide new technology e.g. E-Lorries

STAKEHOLDERS:

- Citizens, visitors and tourists and customers
- Politicians
- Shareholders, R&D managers, planners
- Infrastructure providers

RESTRICTIONS:

- Financial and time restrictions
- Lack of knowledge and mis-information (e.g. range anxiety)
- Lack of political leadership and role modelling
- Lack of incentives, regulations and laws to stimulate innovation and system change
- Fossil fuel lobby and lack of right infrastructure

- *Das Lastenrad*
- *Family of Power*
- *Tim*
- *EV manufacturers e.g.: Nissan Österreich*
- *Holding Graz*

TOOLS:

- Public transport
- Tailored mobility offers
- Provision of charging and EV infrastructure
- Innovation + Technology
- Apps, Platforms
- Marketing, Information
- R&D funding

P – Policy Briefs

Description: *The Chair of the **IEA** End-Use Working Party, the committee that oversees the IEA DSM Programme, provided all Technology Collaboration Platforms (TCPs) with a template of how to create 2-page **policy briefs** for our main audience, the* Decisionmakers.

Insight: We have taken this useful template and used it to create policy briefs for all country issues in Phase II, which are combined into the Subtask 10 – Overarching Story of Task 24.

Read more:

- Task 24 Policy Brief
- Subtask 10 – Austria Policy Brief
- Subtask 10 – Netherlands Policy Brief
- Subtask 10 – New Zealand Policy Brief
- Subtask 10 – Sweden Policy Brief
- Subtask 10 – Ireland Policy Brief
- Subtask 10 – USA Policy Brief
- Subtask 10 – Overarching Story of Task 24

ieadsm energy efficiency

IEA DSM Technology Collaboration Platform

TASK 24 POLICY BRIEF www.ieadsm.org

BEHAVIOUR CHANGE IN DSM: OR HOW MONSTERS, FAIRY TALES AND MAGIC CARPETS CAN HELP CHANGE BEHAVIOURS

- There is no behaviour change silver bullet, just as there is no silver bullet technology or business model that can change everything
- But we have learned that some approaches work better than others
- Viewing the energy system through the 'human lens', starting by understanding end user needs, and taking a whole-system, collaborative approach to designing behavioural interventions is key
- We have trialled and tested the tools to facilitate a collective impact approach to behaviour change with many different sectors, countries and stakeholders
- To help policy and decision makers design better policies, programmes and pilots, we have developed a toolbox for behaviour change interventions from A to Z.

WHAT'S THE ISSUE?

As environmental and societal pressures continue to rise, OECD governments are doing more and more to meet rising energy needs with greater sustainability policies. Low carbon policies and targets, as well as the Paris Accord are shaping the future of our energy system. We have taken massive inroads into increasing the proportion of renewable energy technologies, with rapid cost reductions and are tracking towards low carbon electricity production.

However, it is clear that current efforts and technologies will not be enough to achieve a 1.5C climate change target. The transport sector is still locked into a largely fossil fuel-dependent near-term future and the shift to 100% renewable energy will take several more generations.

WHY IS THIS IMPORTANT?

One area of great potential of up to 30% energy consumption reduction has been largely overlooked: human behaviour and changes in energy consumption habits and investment decisions. Even though many studies and projects have attempted to change behaviours, and several large-scale efforts have been undertaken via utilities (e.g. with Opower), only very few have managed to sustain long-term 30% reductions in energy use. Without achieving societal change in (energy) consumption habits and routines, it will be close to impossible to achieve the carbon targets that can stall runaway climate change.

WHAT CAN POLICY MAKERS DO?

Why is achieving long-term change in energy habits so elusive? One of the issues is that we continue to address humans under the lens of the current neoliberal socio-economic system – as largely utility-maximising, rational actors. However, studies have shown that over 90% of energy use is entirely habitual and routine. That means that most neoclassical economic approaches based on the 'deficit model' (i.e. that a deficit in information and financial ability is the reason for inefficient energy behaviours) will only work in a small number of instances. For example, during so-called "**Moments of Change**" when people move home, or buy a new car or large appliance, when they renovate or retrofit or maybe have a baby. During those times, they can become more aware of their energy use, and, with the right "**Middle Actors**" (e.g. tradespeople, appliance or vehicle salespeople, realtors etc.) in place to give them the most energy-efficient advice, they can be prompted to make (rational) decisions – usually on large investments. These will have long-term, ongoing positive effects as new energy behaviours and habits get locked in.

Identifying these *Moments of Change* and the relevant, associated *Middle Actors* who can be trained to 'lock them in', should be part of a policy maker's toolbox. But they cannot do this alone. Most policy makers do not have direct access to *End User* lives and associated changes in lifestyles and (energy) consumption. In addition, this still does not address the 90% of routine energy use. One way these much more intransigent and complex societal behaviours can be addressed is via a so-called "**Collective Impact Approach**" (CIA). This was designed by social entrepreneurs who are dealing with complex problems and many different (and often) difficult stakeholders. This approach, aimed at long-term social change, proposes a collective, rather than an individual approach for solving social problems.

The *Collective Impact Approach* encompasses a framework to facilitate multi-stakeholder collaboration. Its main features are: A common agenda; mutually-reinforcing activities; continuous communication; shared measurements; and a backbone support organisation. To create a more hands-on tool to identify and work on the five conditions of the CIA, IEA DSM Task 24 developed the so-called "**Behaviour Changer Framework**". This was later dubbed "**the magic carpet of behaviour change**" by the largest utility in California.
This framework was created to have an overview of the social system focusing on all relevant stakeholders, not just policy or decision makers. We call them "**Behaviour Changers**" and they fall into five main sectors (government, industry, research, the third, and service sectors). This "magic carpet" framework focuses on a chosen

P — Practice Theory

Definition: ***Practice theory*** *is a theory of how social beings, with their diverse motives and their diverse intentions, make and transform the world which they live in. It is a dialectic between social structure and human agency working back and forth in a dynamic relationship.*

Insight: Ironically, practice theory is great in theory but difficult to implement in practice.

See also: Sociological research, Theory of Change

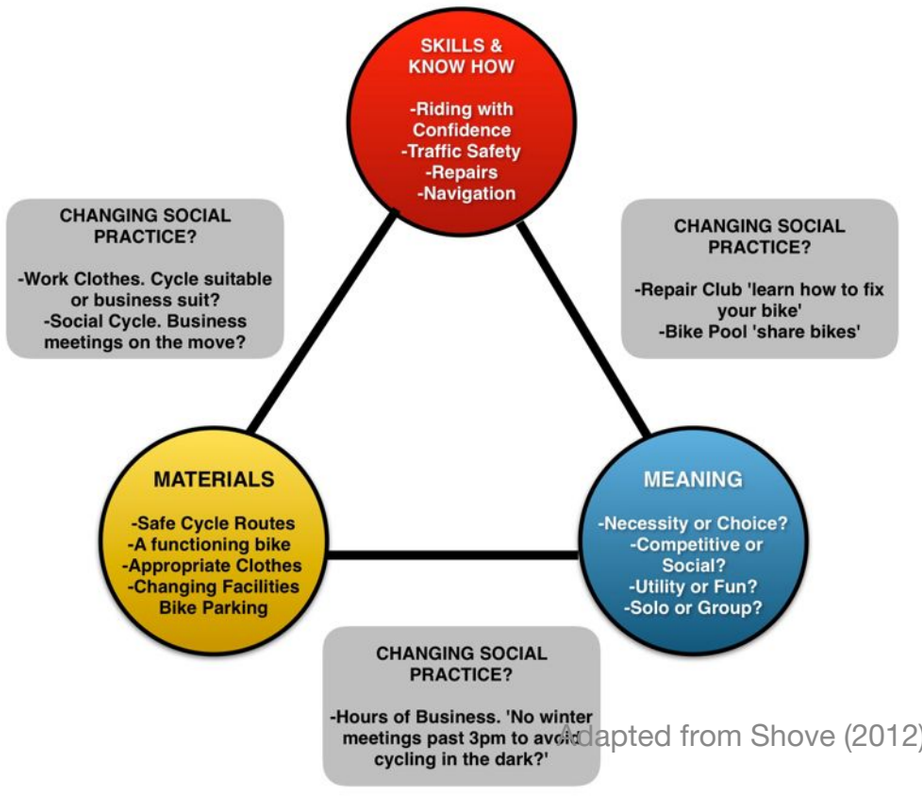
Read more:

- Shove et al (2012). "The Dynamics of Social Practice"
- Mourik & Rotmann (2013). "Subtask 1 - Monster case study analysis"

Practice theories

- Philosophical: Theodore Schatzki (Doings and sayings)
- Cultural theoretical: Andreas Reckwitz (The social is in practice)
- Sociological: Ann Swidler (Anchoring of practice: Gay parades)
- Consumption: Allan Warde, Elisabeth Shove (Old cars and Nordic walking)

Iben Jensen



Adapted from Shove (2012)

P – Psychological research

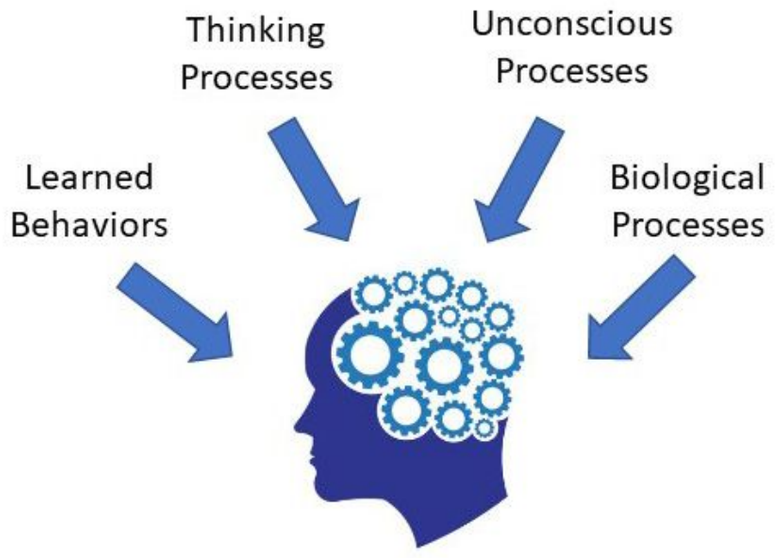
Definition: Chatterton (2011) described many psychological approaches to view energy-related behaviour as follows: "*Energy use can be affected by stimulus – response mechanisms and by engaging attention*".

Insight: Just as in **economic** theories, the **individual** takes a central role here. It is, however, increasingly acknowledged that this individual also operates as part of a collective e.g. by imitating the behaviour of important others, or through the influence of social norms, social comparison, social learning.

See also: **Sociological** and **Economic Research**

Read more:

- Mourik & Rotmann (2013). Subtask 1 case study analysis
- Mourik et al (2015). Subtask 3A Evaluation positioning paper



ieadsm energy efficiency Task 24

R – Regulation/Regulatory barriers

Definition: **Regulation** *is an abstract concept of management of complex systems according to a set of rules and trends.*

Insight: **Regulatory Barriers** can cause high costs of entry, stifle innovation and can cause difficulties when claiming savings for e.g. energy efficiency programmes.

Read more:

- Subtask 6 – Austrian case study on embedding behavioural evaluation into the Energy Efficiency Law
- Subtask 6 – Ergebnisbericht Austria [in German]
- Subtask 6 – USA/CEE Final Report includes regulatory barriers to evaluating and claiming energy utility behaviour change programmes

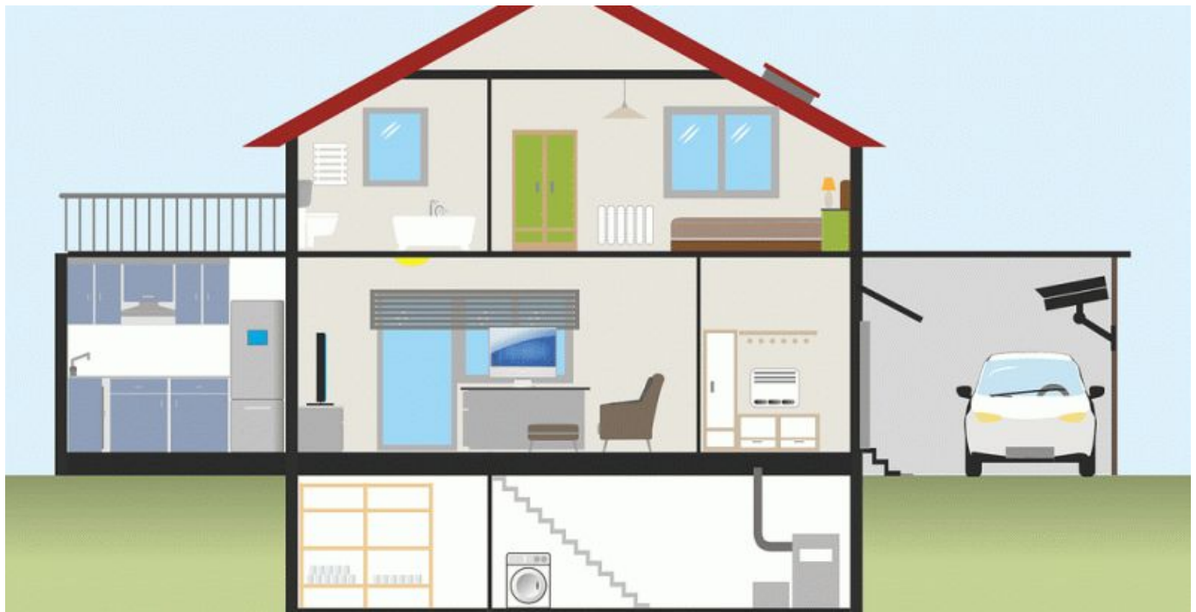
R — Residential sector

Description: *Occupied or unoccupied, owned or rented, single-family or multifamily, housing units and mobile homes, excluding institutional housing.*

Insight: Most Task 24 **case studies**, and also generally, **behaviour change** interventions are based in the **Residential Sector.**

Read some Task 24 examples:

- Mourik & Rotmann (2013). **Subtask 1** case study analysis
- Mourik (2014). **Subtask 2** "PowerMatching City" (NL)
- Rotmann (2014). **Subtask 2** "Powering Tomorrow's Homes" (NZ)
- Eberwein et al (2014). **Subtask 2** "2000 Watt Society" (CH)
- Lang (2015). **Subtask 2** "Energy Hunt vs €CO_2 Management" (AT)
- Rotmann (2018). **Subtask 6** "Irish Energy Saving Kits cross-country comparison"
- Rotmann & Chapman (2018). **Subtask 9** "Evaluating the Irish Energy Saving Kit programme"
- Rotmann (2018). **Subtask 6** "New Zealand's HEAT kit programme"



ieadsm energy efficiency

S – See Change Institute Process

Description: *our Task 24 Project Partner, the US-based See Change Institute (SCI) has developed a process that contains all the "building blocks of behaviour".*

Insight: Combining good **social science research** and **design thinking**, this process helps guiding **Behaviour Changers** through the ABCDE "Playbook of behaviour change".

S – Single-loop learning

Definition: Single-loop learning *is about the effectiveness and/or efficiency of a technology, measure, instrument, arrangement, or intervention to achieve pre-defined goals.*

Insight: We would argue in favour for an approach that addresses the **outcomes** rather than the **outputs**. However, in practice we rarely witness evaluation focused on outcomes.

See also: Double-loop learning, Evaluation, Outcome vs Output

Read more:

- Mourik et al (2015) "Did you behave as we designed you to?"
- Van Summeren et al (2015) "From 'I think I know' to 'I understand what you did and why you did it'"

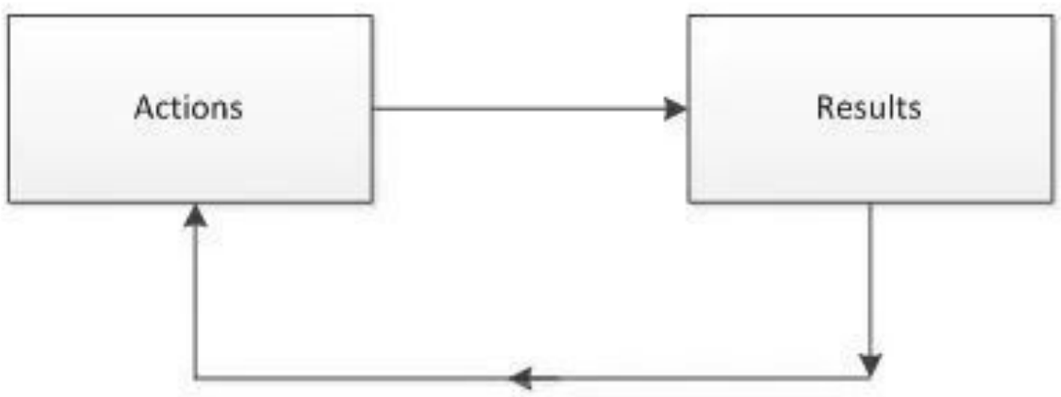


Figure 1. Single-loop learning (Thorsten's wiki)

Task 24 ieadsm energy efficiency

S – Small to Medium Business

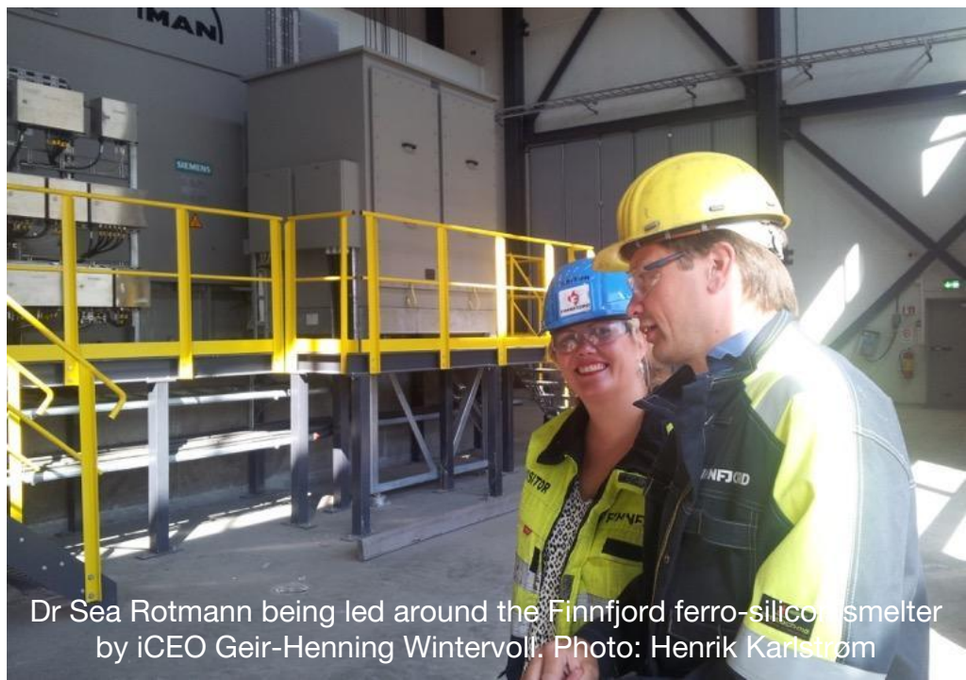
Definition: **Small** and **medium**-sized **businesses** (SMBs) or **enterprises** (SMEs) *are businesses whose personnel numbers fall below certain limits. Small enterprises outnumber large companies by a wide margin and also employ many more people. SMBs are also said to be responsible for driving innovation and competition in many economic sectors.*

Learning: This was the most difficult sector to find good **Task 24** case studies for.

Read examples from Task 24:

- Mourik & Rotmann (2013). **Subtask 1** case study analysis
- Eberwein et al (2014). **Subtask 2** "2000 Watt Society" (CH)
- Karlstrøm (2014). **Subtask 2** "Finnfjord case study" (NO)
- Rotmann (2014). "When world's collide" (Finnfjord case study in EEIP magazine)

The beautiful setting of Finnfjord, the world's most energy efficient ferrosilicon plant



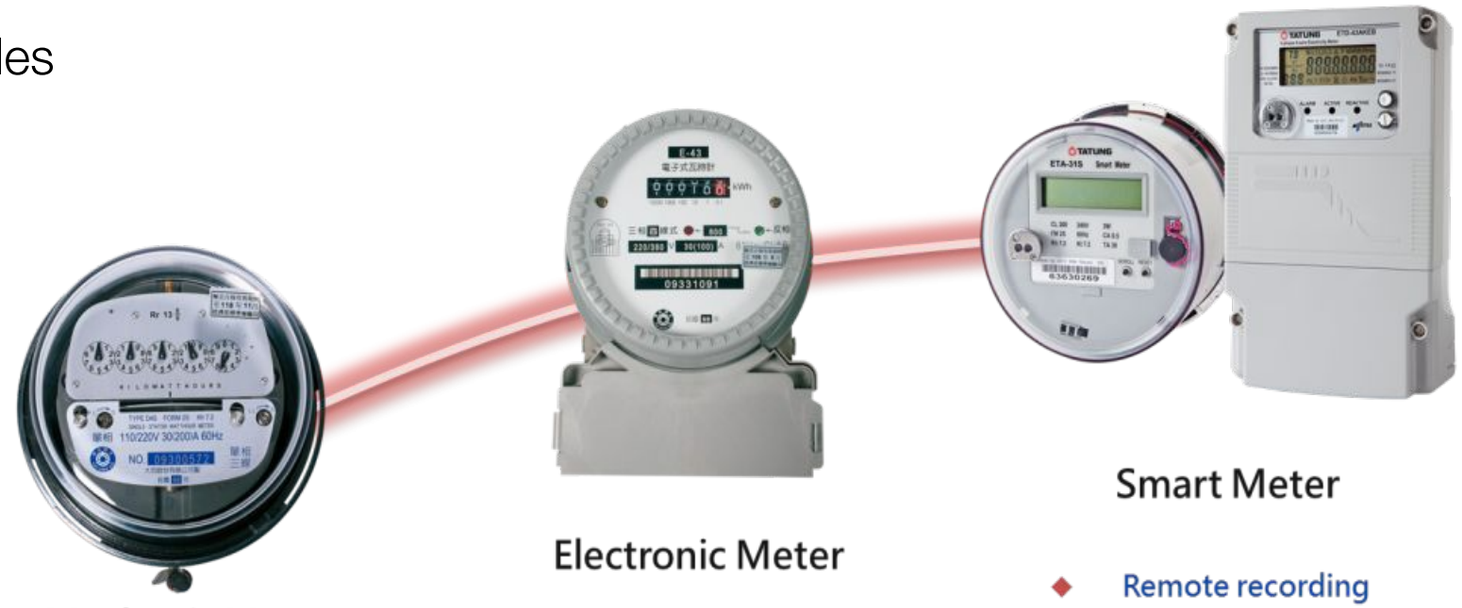
Dr Sea Rotmann being led around the Finnfjord ferro-silicon smelter by iCEO Geir-Henning Wintervoll. Photo: Henrik Karlstrøm

S — Smart meters/technology

Description *A* **smart meter** *is an electronic device that records consumption of electric energy and communicates the information to the electricity supplier for monitoring and billing. Smart meters typically record energy hourly or more frequently, and report at least daily. Smart meters enable two-way communication between the meter and the central system. They provide customers with much more information on how they use energy and enable those customers to reduce their usage.*

Insight: It was easiest to find SM case studies for the "**Monster**" analysis.

See also: **Feedback** for Task 24 examples



Fo

S — Storytelling

Definition *We needed to find an overarching 'language' in order to bridge the many different disciplines, sectors and Behaviour Changers we were dealing with: this language was* storytelling*.*

Insights*:* The Task embarked on an exciting journey of using various storytelling tools to simplify learnings, bridge silos and 'translate' between different *Behaviour Changers*. This worked exceedingly well and broke some real ground.

See also: Hero & Horror stories, Learning & Love stories, Story spine

Read more:

- **Special Issue** on "Narratives and Storytelling in Energy and Climate Change Research"
- Rotmann (2017). *"Once upon a time…" Eliciting energy and behaviour change stories using a fairy tale story spine*, Energy Research and Social Science, Special Issue 31
- M. Moezzi, K. Janda and S. Rotmann (2017). *Using stories, narratives, and storytelling in energy and climate change research*
- Rotmann et al (2015). "Once upon a time… telling a good energy efficiency story that sticks"
- Rotmann (2018). "ST 8 - Storytelling from A to Z"

Task 24 ieadsm energy efficiency

S — Surveys

Description *The* survey *is a method for collecting information or data as reported by individuals. Surveys are questionnaires (or a series of questions) that are administered to research participants who answer the questions themselves.*

Learning*:* We successfully used surveys in several Task 24 case studies (see below). Pre- and post-surveys are the means for our standardised evaluation method (**Beyond kWh**)

See also: **Focus Groups, Interviews, Beyond kWh, Evaluation**

Read more:

- Southern California Edison (2015) "Dimensions of Energy Behavior: Psychometric Testing of Scales for Evaluating Behavioral Interventions in Demand Side Management Programs"
- Rotmann (2018). Subtask 6 - NZ HEAT kit evaluation
- Rotmann & Chapman (2018). Subtask 9 - Using Bayesian Modelling and the "Beyond kWh" tool to evaluate Irish home energy saving kits
- SEAI (2018). Subtasks 6&7 - Final Report Ireland

T – Theories of Change

Description: Theories of change *show how behaviours change over time, and how they can be changed*. *Behavioural theory is diagnostic, and change theory is more pragmatic.*

Insight: For a behaviour change intervention that works, you need both.

See also: Models of understanding behaviour, Practice Theory

Read more:

- Darnton, Andrew (2008). “GSR Behaviour Change Knowledge Review”
- Mourik & Rotmann (2013). “Monster case study review”

ieadsm energy efficiency Task 24

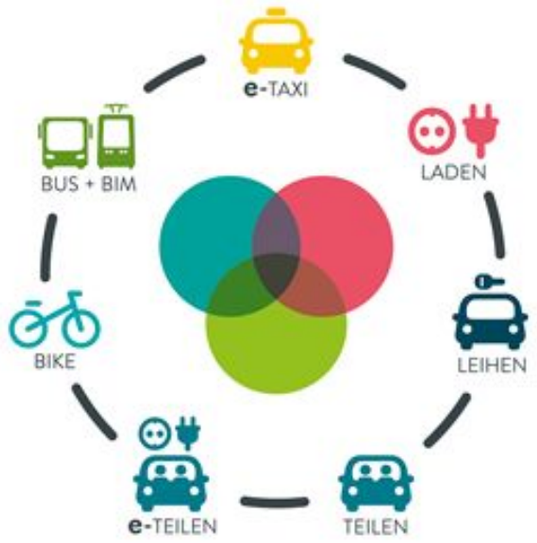
T – Transport sector

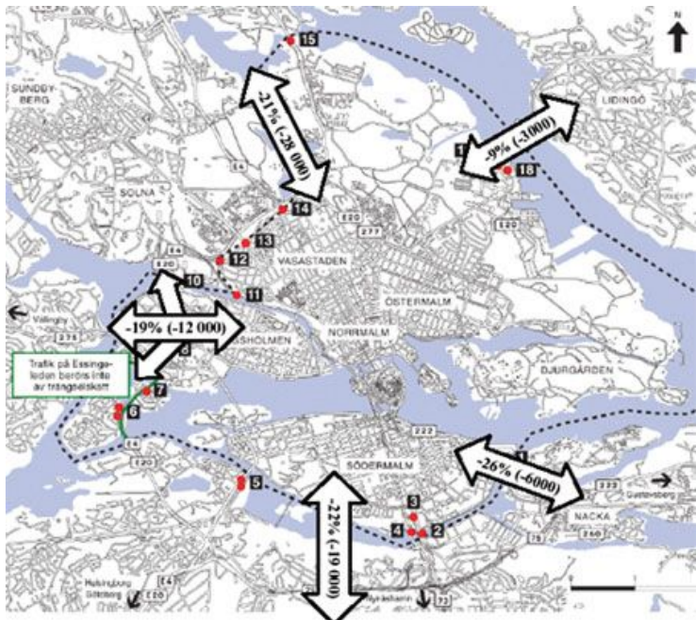
Description: *The research theme on* Transport *behaviour provides research-based explanations for human behaviour in traffic. It combines knowledge of the effects of individual characteristics such as attitudes, cognition, habits and skills with a mapping of the travel behaviour of individuals and groups.*

Learning: It was the 2nd-hardest sector to find good case studies for. We had case studies focusing on driver behaviour, fuel and mode switching.

Read some Task 24 examples:

- Mourik & Rotmann (2013). "Subtask 1 - Monster case study analysis"
- Nyström (2014). "Subtask 2 – Stockholm's congestion trial"
- Rotmann & Kallsperger (2017). "ECEEE Summer Study Task 24 workshop minutes."
- Kallsperger & Rotmann (2017). "Subtask 6&7 - Austria Final Report including mobility-sharing platforms"





U – Utilities and energy sector

Description: *The* **utilities sector** *is a category of stocks for utilities such as gas and electricity. The sector contains companies such as electric, gas and water firms, and integrated providers. The* **energy sector** *includes companies involved in the exploration and development of oil or gas reserves, oil and gas drilling and refining, or integrated power utility companies - including renewable energy and coal.*

Insight*:* Originally, **DSM** was focused on the utilities sector but we have expanded on this definition for **Task 24**. New Zealand and the US both had the utilities sector co-sponsoring the Task. In NZ, it was the 2nd largest lines company, PowerCo and in the US it was via the Consortium for Energy Efficiency, with 10 utility sponsors.

See also: **Demand-side Management**

Read more from Task 24:

- Mourik and Rotmann (2013). "Subtask 1 Monster case study analysis"
- Rotmann (2014). "**Subtask 2** – PowerCo smart home case study"
- Mourik (2014). "**Subtask 2** – PowerMatching City"
- Rotmann (2018). "**Subtask 6&7** – NZ Final Report"
- Rotmann & Ashby (to be published). "**Subtask 6&7** – US Final Report"

CEE SM Consortium for Energy Efficiency

POWERCO

Task 24 ieadsm energy efficiency

U – University sector

Description: *Higher Education mainly and generally means* University *level education. In Task 24, we concentrated on ICT use in the* Higher Education Sector *in the Netherlands, with a cross-country comparison to the UK.*

Learning: It was very difficult to engage the **Decisionmakers** in Universities and this leadership is essential for **behaviour change** interventions to work

Read more:

- Cobben (2017). "Subtask 6 – Case study comparison on ICT in Higher Education"
- Mourik & Smits (2018). "Subtask 6&7 – Final Report The Netherlands: Executive Summary plus Annexes"
- Subtask 10 – Policy Brief the Netherlands

university of groningen

UNIVERSITY OF CAMBRIDGE

Utrecht University

Task 24 ieadsm energy efficiency

V – Values

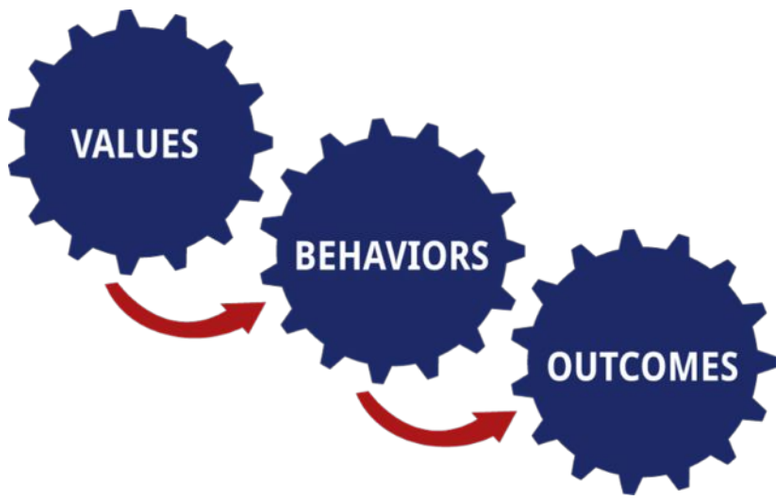
Description: *To understand behaviour and attitudes, and their relationship, you really need a deeper understanding of* **values.** *i.e. whatever the relationship between behaviours and attitudes, perhaps both are driven by or somehow underpinned by deeply help but somewhat unconscious values.*

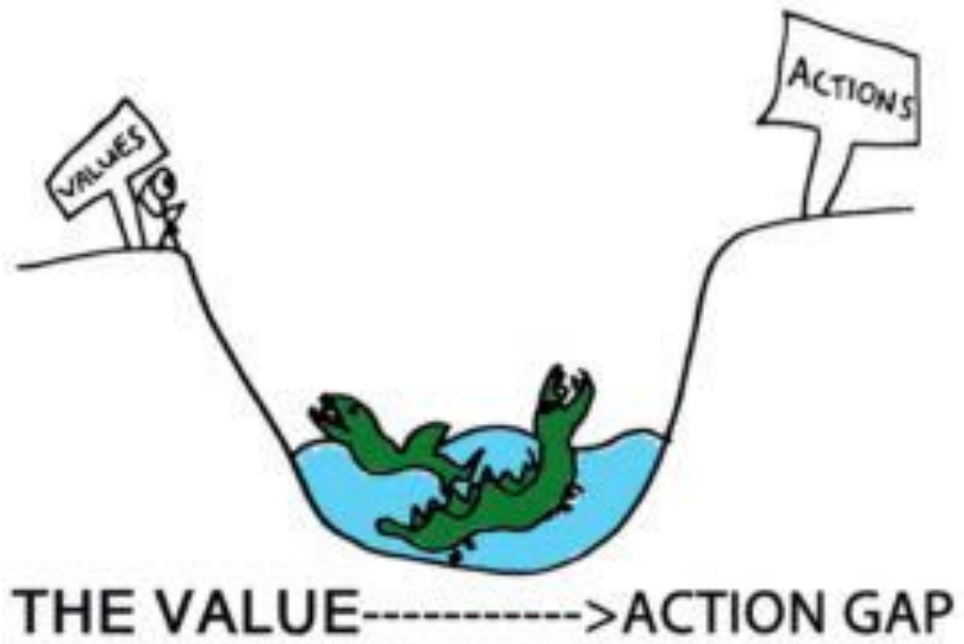
Insight*:* True value change has shown to lead to substantial **behaviour change** but values are extremely resistant to change. One **model of understanding behaviour** addresses the “Value Action Gap” (VAG).

See also: ABC Models, Models of Understanding, Psychological Research

Read more:

- Mourik & Rotmann (2013). “Subtask 1 Monster case study analysis”





Task 24 ieadsm energy efficiency

W – Workshops

Description: *An important aspect of IEA Technology Collaboration Programmes (TCPs) are* **workshops** *with various national experts of participating countries, and other stakeholders.*

Insight: **Task 24** has undertaken more workshops than most – 60 in 16 countries, with over 500 experts and stakeholders participating. They are key to the "Connect" phase at the start of all behaviour change design

See also: **Behaviour Changer Framework, Collaboration, Collective Impact Approach, SCI Process**

Read:

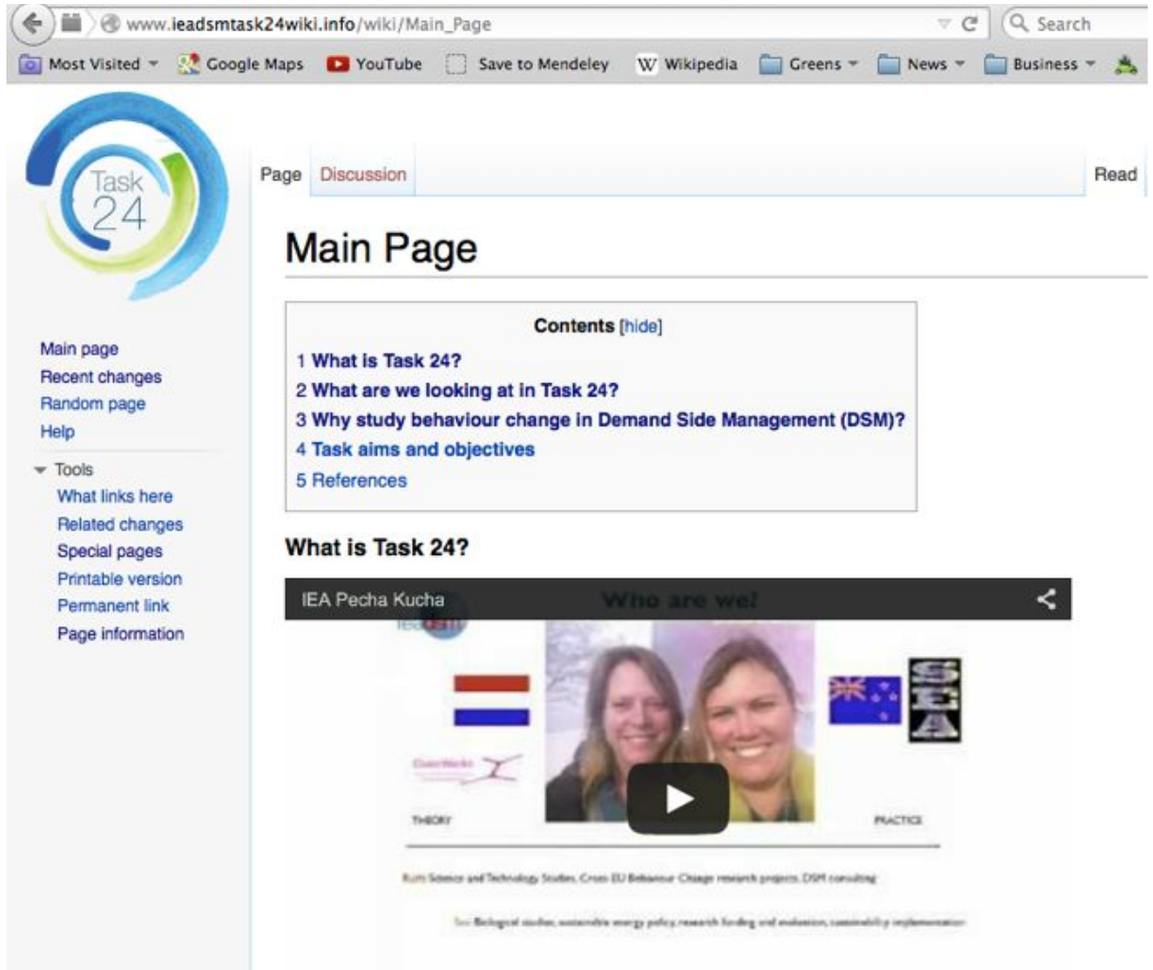
- Breukers & Rotmann (2012). Brussels Workshop Minutes
- Churchouse, Mahoney & Rotmann (2012). Oxford Workshop Minutes
- Hull (2012). Task 24 Oxford Workshop minutes by Task 23
- Rotmann & Kallsperger (2017). ECEEE Summer Study workshop minutes 2015 & 2017
- Rotmann (2015). BECC conference Task 24 workshop minutes
- Rotmann (2016). BEHAVE conference Task 24 workshop minutes
- Rotmann (2018). Combined workshop minutes (only available to funders)

W – Wiki

Description: *As the "Monster" case study analysis grew really unwieldy and hard-to-read, we decided to also create a* Task 24 Wiki *with all the case studies.*

Learning: Unfortunately, the link is now broken and it would have taken too much time and effort to restore the information. Wikis can be useful but are not the most easy-to-wield instruments and the effort (Sea had to learn coding!) was probably disproportionate to the value…

See also: Decision-making Tree, Case Studies, the "Monster"



ieadsm energy efficiency

Y – YouTube channel Task 24

Description: *Social Media can be a very useful tool, so is the medium of film for* **Storytelling**. *Especially in Phase I, we filmed all workshops and presentations and put them on our own* Task 24 YouTube Playlist.

Learning: However, like with the **Ning Platform** and **Wiki**, the time and effort that goes into filming and editing is probably not worth the amount of engagement that you'll receive (the 39 films have been viewed 3125 times, an average of 80 views per film).

Watch some choice selections of Task 24 in film:

- Oxford Task 24 workshop – the movie (2012)
- Insulation love story from NZ (2014)
- Task 24 experts telling their energy stories (2015)
- Explanatory video how the "magic carpet of behaviour change" works (2016)
- "Dr Sea's Energy System" – through the human lens (2016)
- DSM University webinar on how to change behaviour in the healthcare sector (2017)
- The most watched film was when the ExCo went Great White Shark diving in Cape Town (2014) – watched over 1100 times!

GREAT WHITE SHARKS! Up real close...

1,151 views 5 0 SHARE