

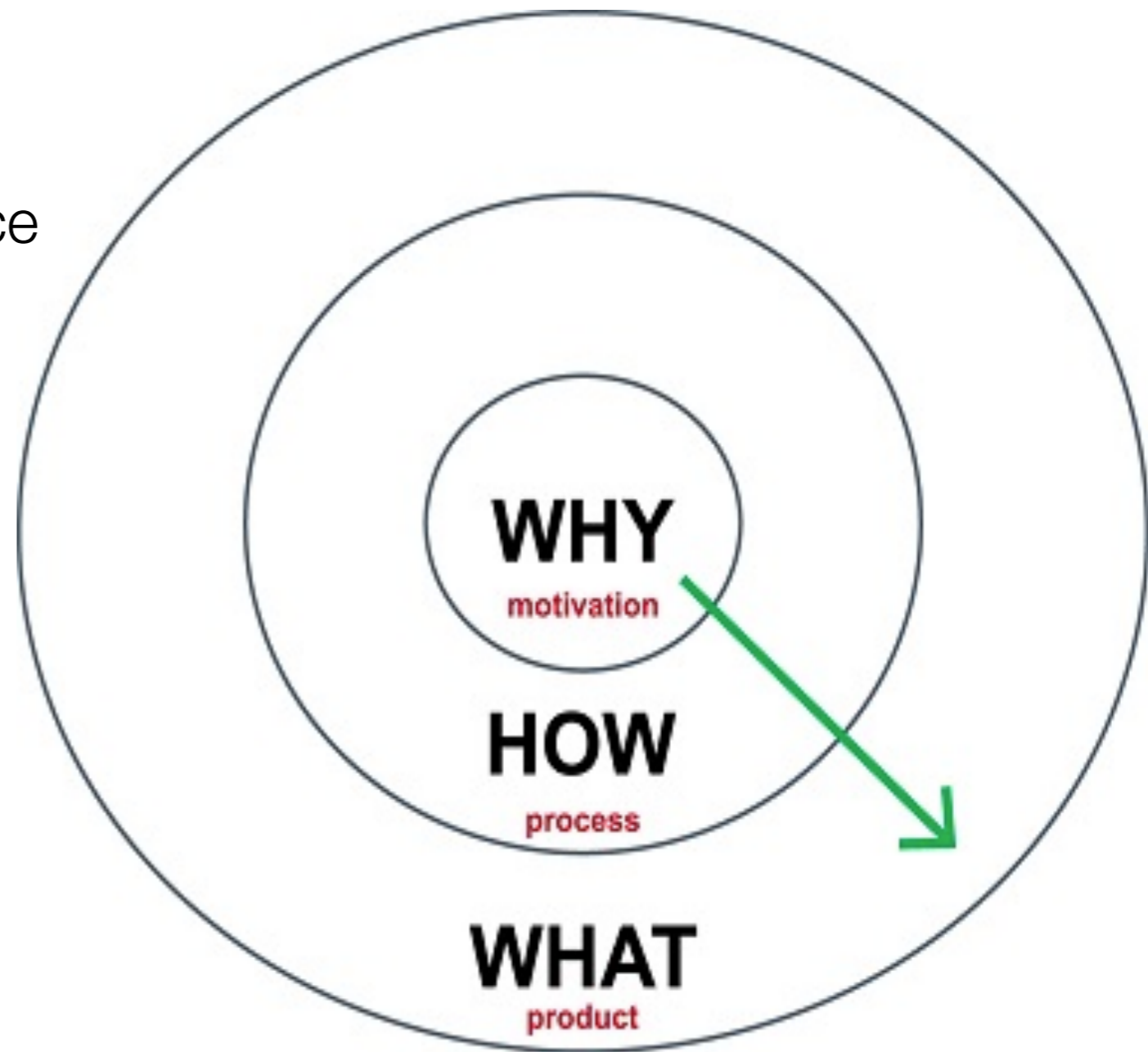
IEA DSM Task 24: Behaviour Change in DSM



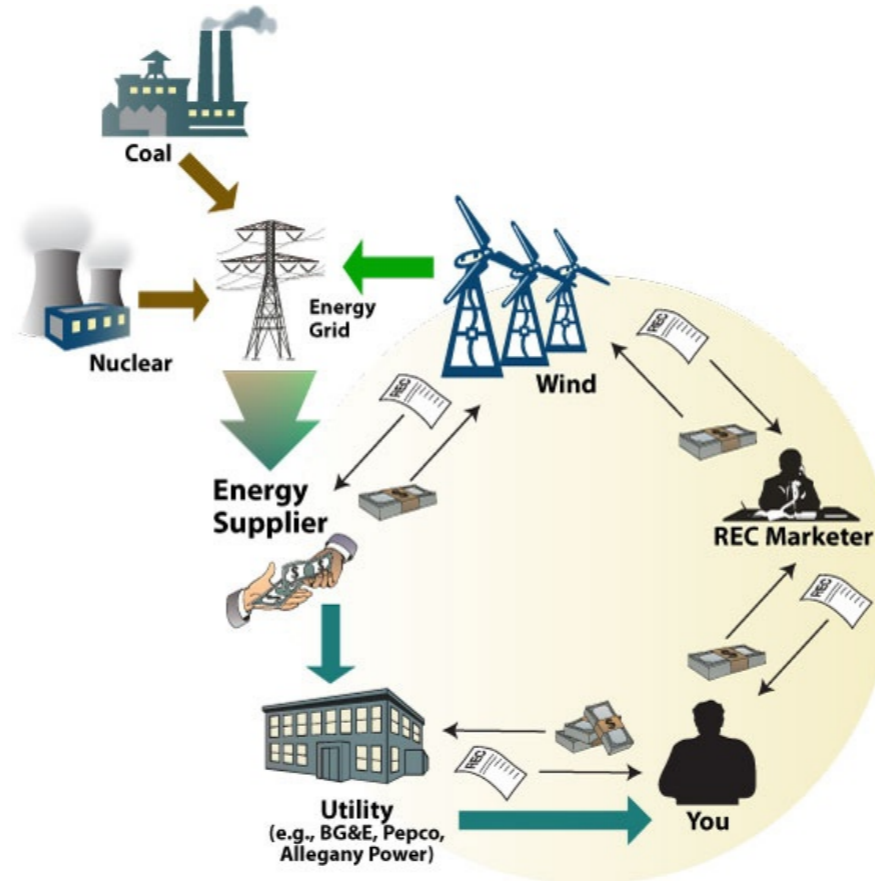
Phases I & II: *Theories and methods, main findings, policy applications and real-life case studies*

Agenda

- *Why*
 - Focus on people
 - Connect science and practice
 - Learn and share what works
 - Serve as a global model
- *How*
 - Objectives
 - Subtasks
 - Partners
- *What*
 - Tools
 - Deliverables
 - Case studies



What is special about Task 24?



The Story of Change

$$\boxed{\text{Lightbulb}} + \boxed{\text{WE}} + \boxed{\text{Surprise}} = \text{CHANGE}$$



For more information, visit www.ieadsm.org



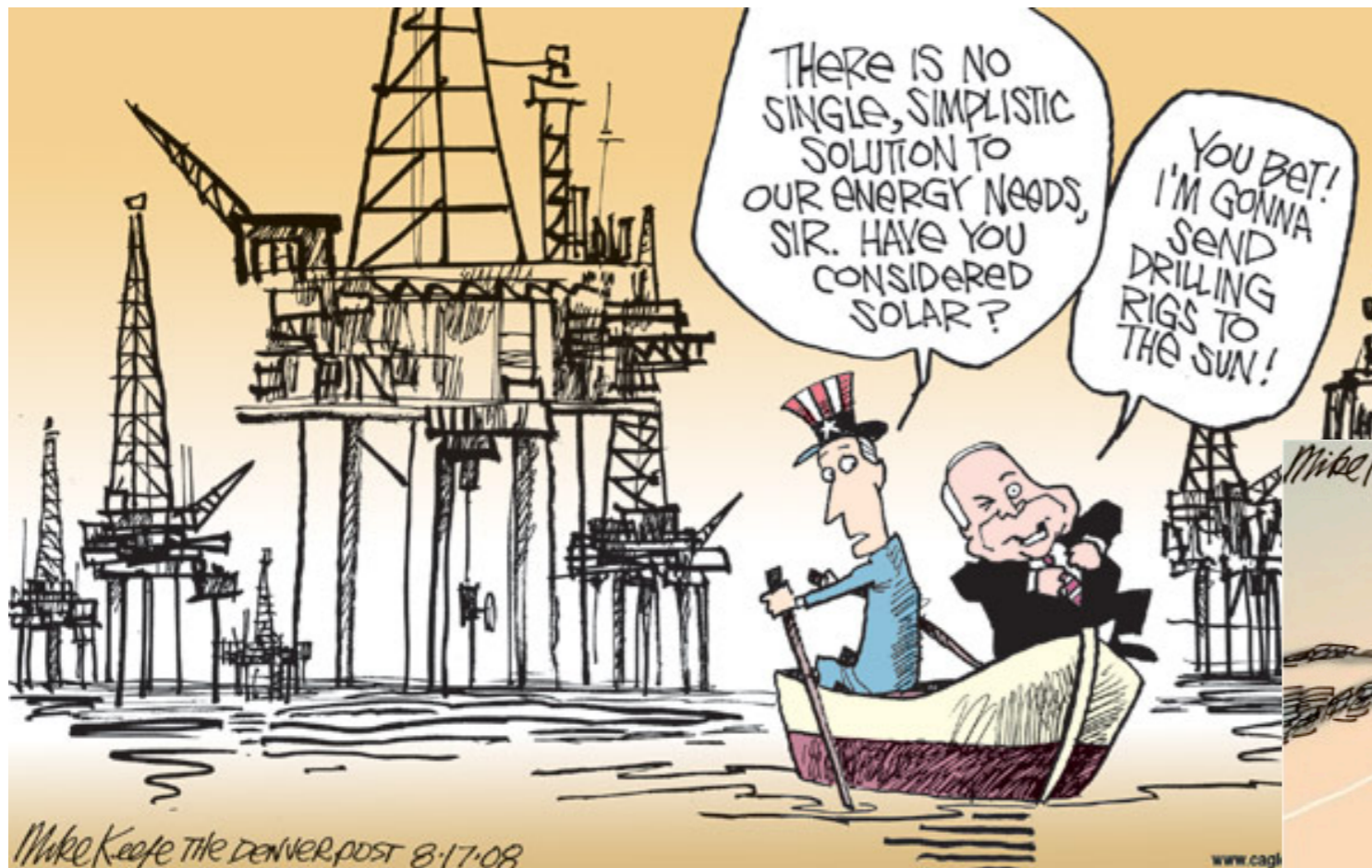
WHY are we doing Task 24?

1. Focus on people

2. Connect science and practice

3. Learn and share what works

4. Serve as a global research model



WHY are we doing Task 24?

1. Focus on people

2. Connect science and practice

3. Learn and share what works

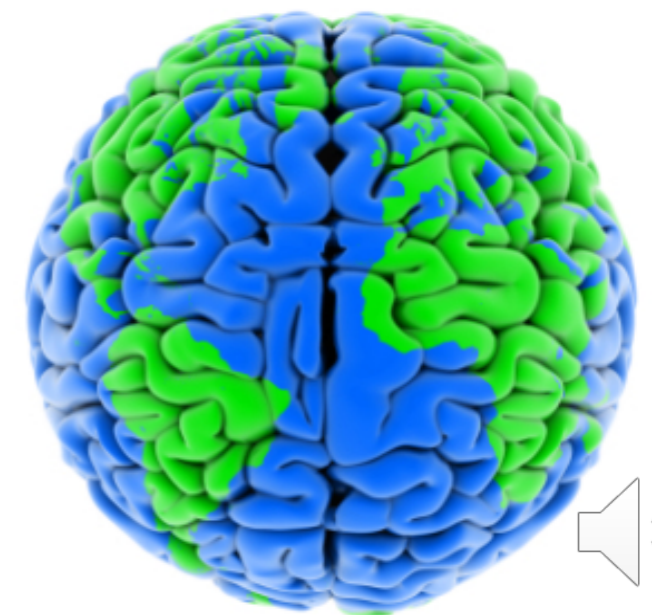
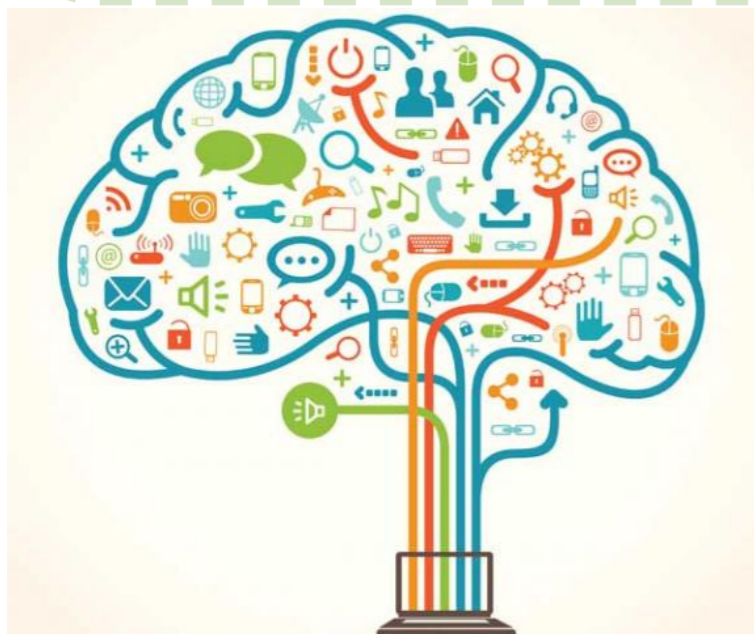
4. Serve as a global research model

IEA DSM Technology Collaboration Platform

Broad and systemic perspective

Focus on replicability and scalability

Geographically inclusive



For more information, visit www.ieadsm.org



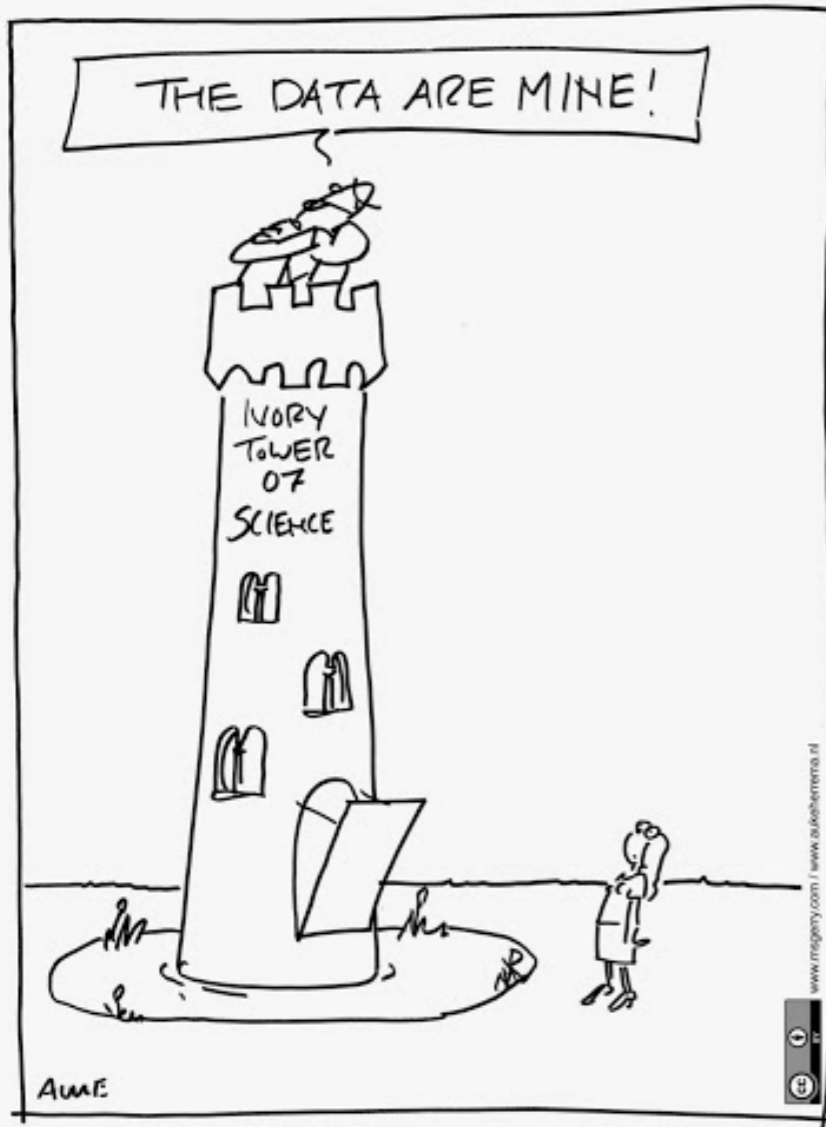
WHY are we doing Task 24?

1. Focus on people

2. Connect science and practice

3. Learn and share what works

4. Serve as a global research model



SCENE FROM THE PAST?

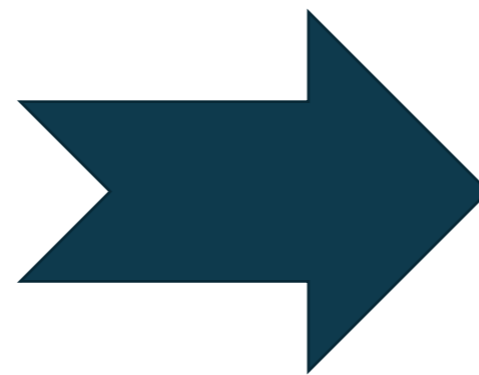


IMAGE CREDIT: SCIENTIFIC DATA/LUDIC GROUP

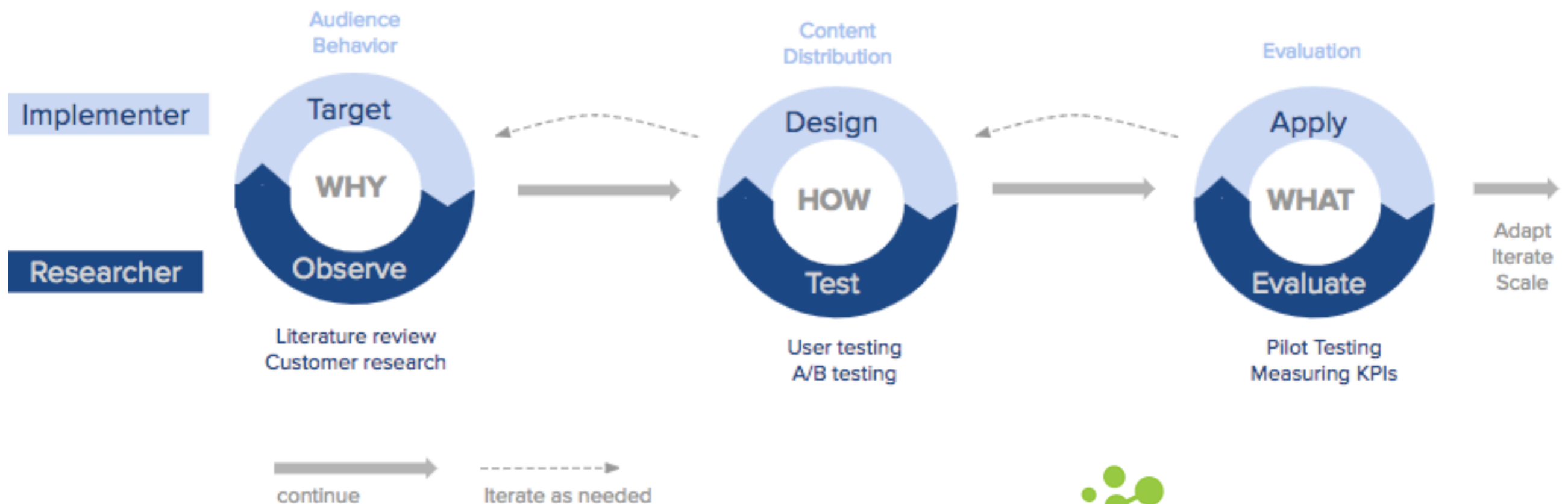
WHY are we doing Task 24?

1. Focus on people

2. Connect science and practice

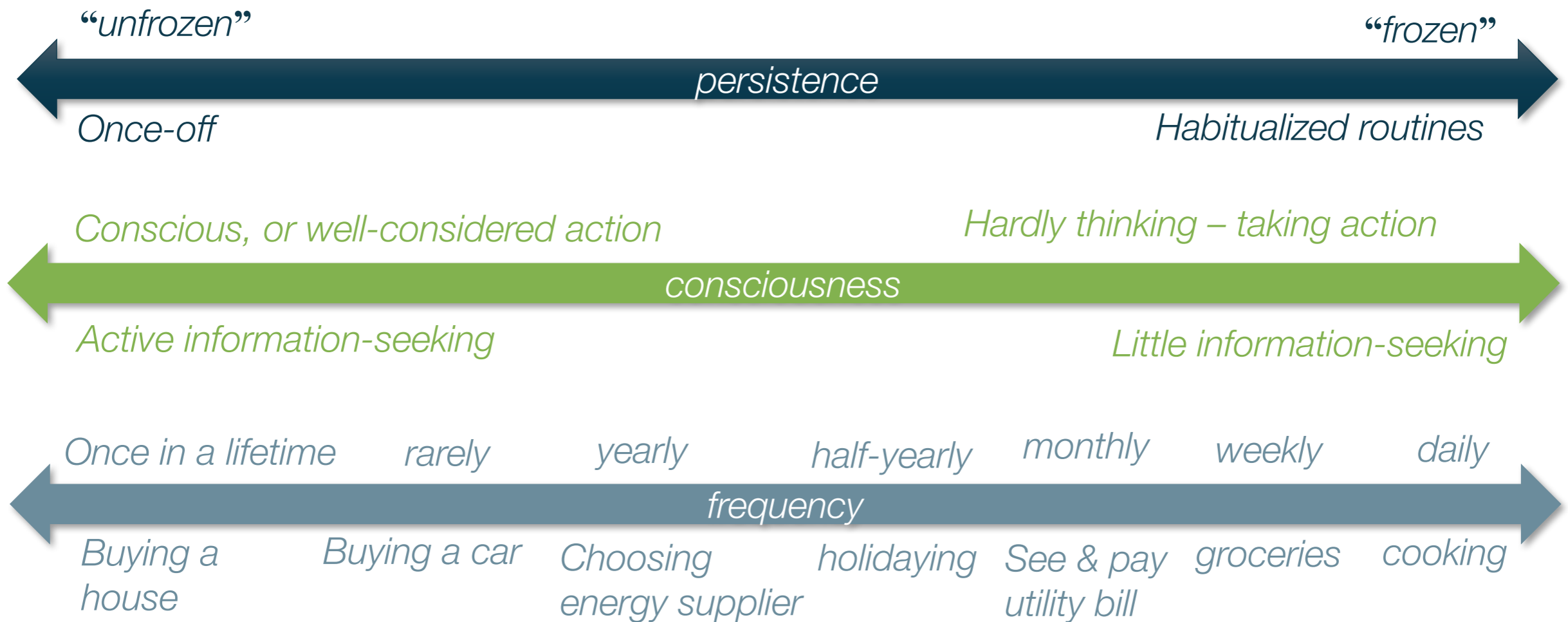
3. Learn and share what works

4. Serve as a global research model



For more information, visit www.ieadsm.org

WHY? Understanding energy behaviour



WHY? *What is behaviour in our context?*

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.

Behaviour Change in the context of this Task thus refers to any changes in said human actions which were directly or indirectly influenced by a variety of interventions (e.g. legislation, regulation, incentives, subsidies, information campaigns, peer pressure 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 management but should be identified and specified by the *Behaviour Changer* designing the intervention for the purpose of outcome evaluation.

WHO? *Our audience: Behaviour Changers*

Decision-makers



Providers



Experts



The Third Sector



Middle Actors



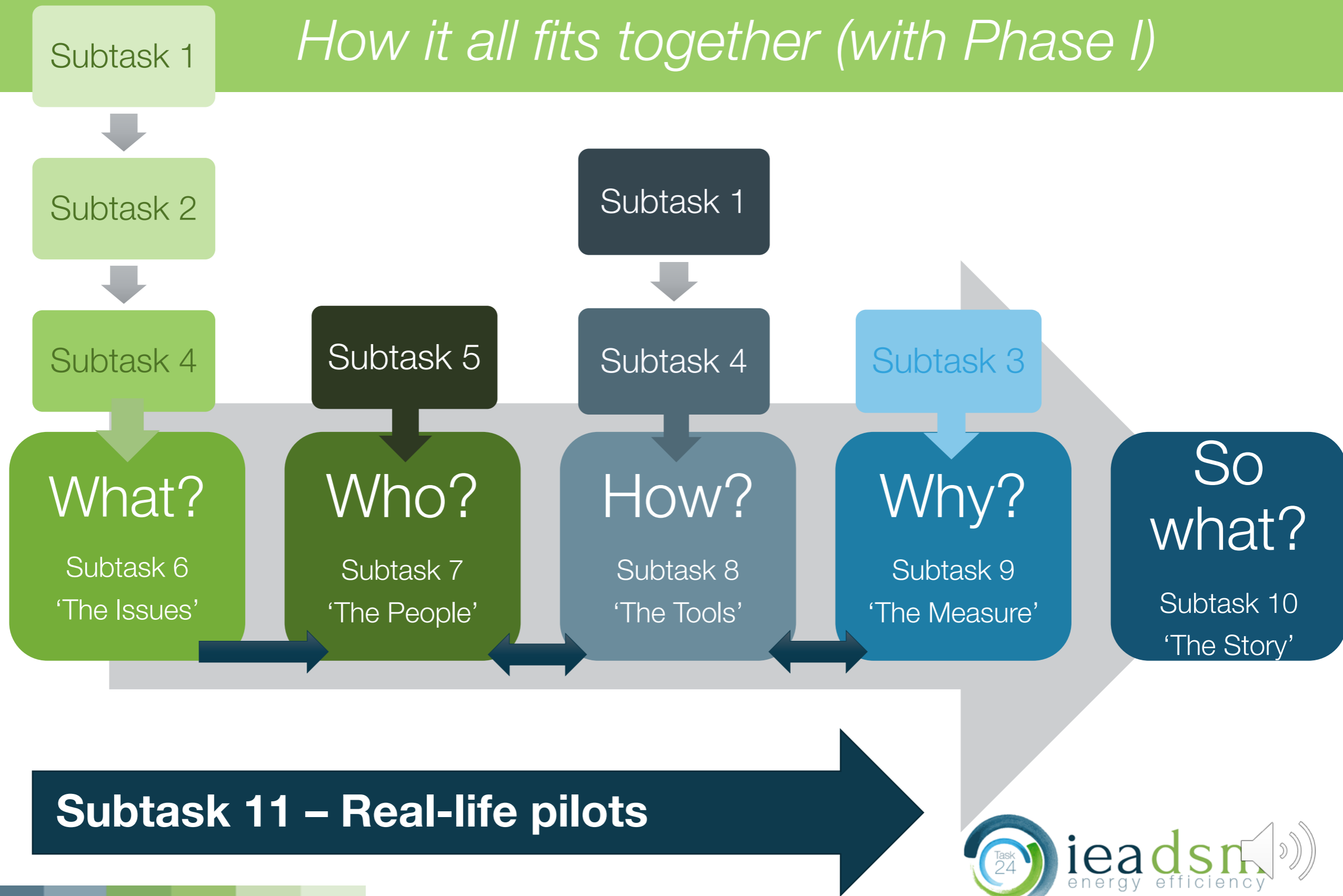
HOW: Task 24 – Objective in a tweet

The overarching impact of this Task is to provide a **helicopter overview of best practice** approaches to behaviour change interventions and **practical, tailored guidelines and tools** of how to best design, implement, evaluate and disseminate them in real life.



HOW? Task 24 – Phase II Subtasks

How it all fits together (with Phase I)



HOW? *The way we currently look at the Energy System*

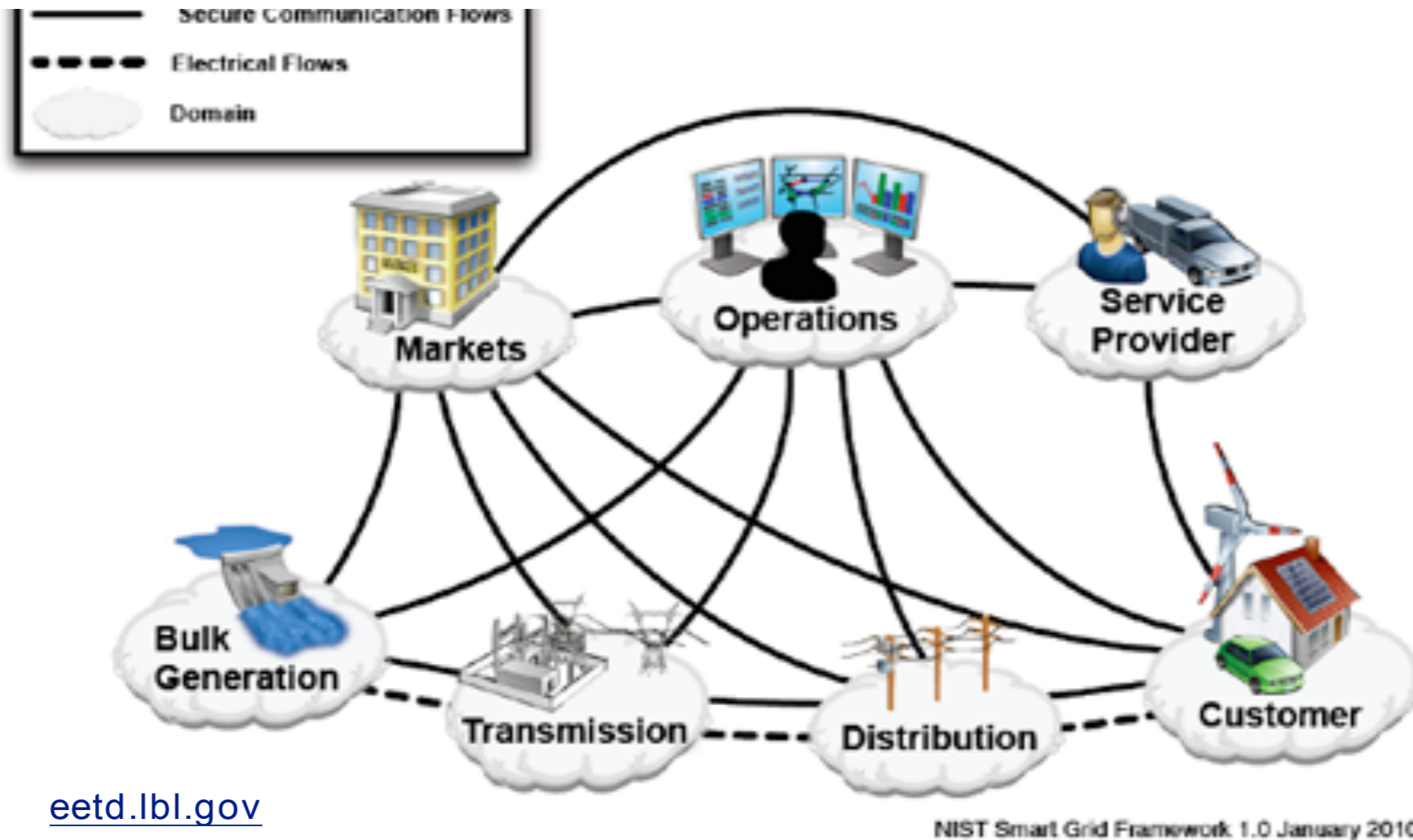
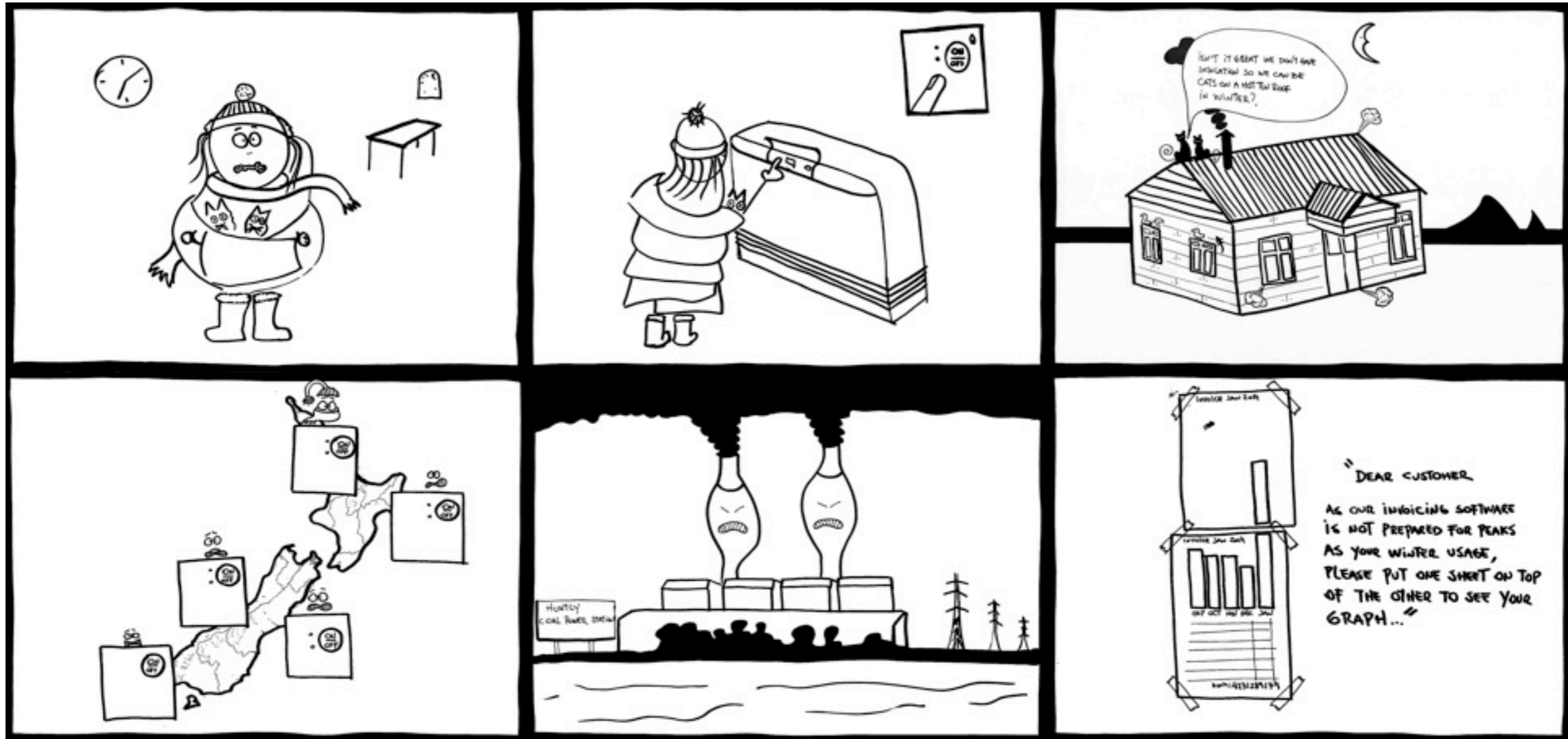


Figure 1. Current, linear way of looking at the energy system (starting with supply)



HOW? Another way we could look at the Energy System

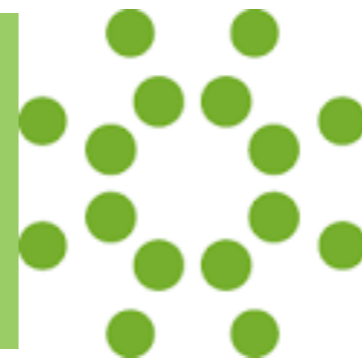


To see Sea's personal energy story in the New Zealand system context explained: <https://youtu.be/VAXbT3lqP6E>

HOW? *Task 24 view of the Energy System*

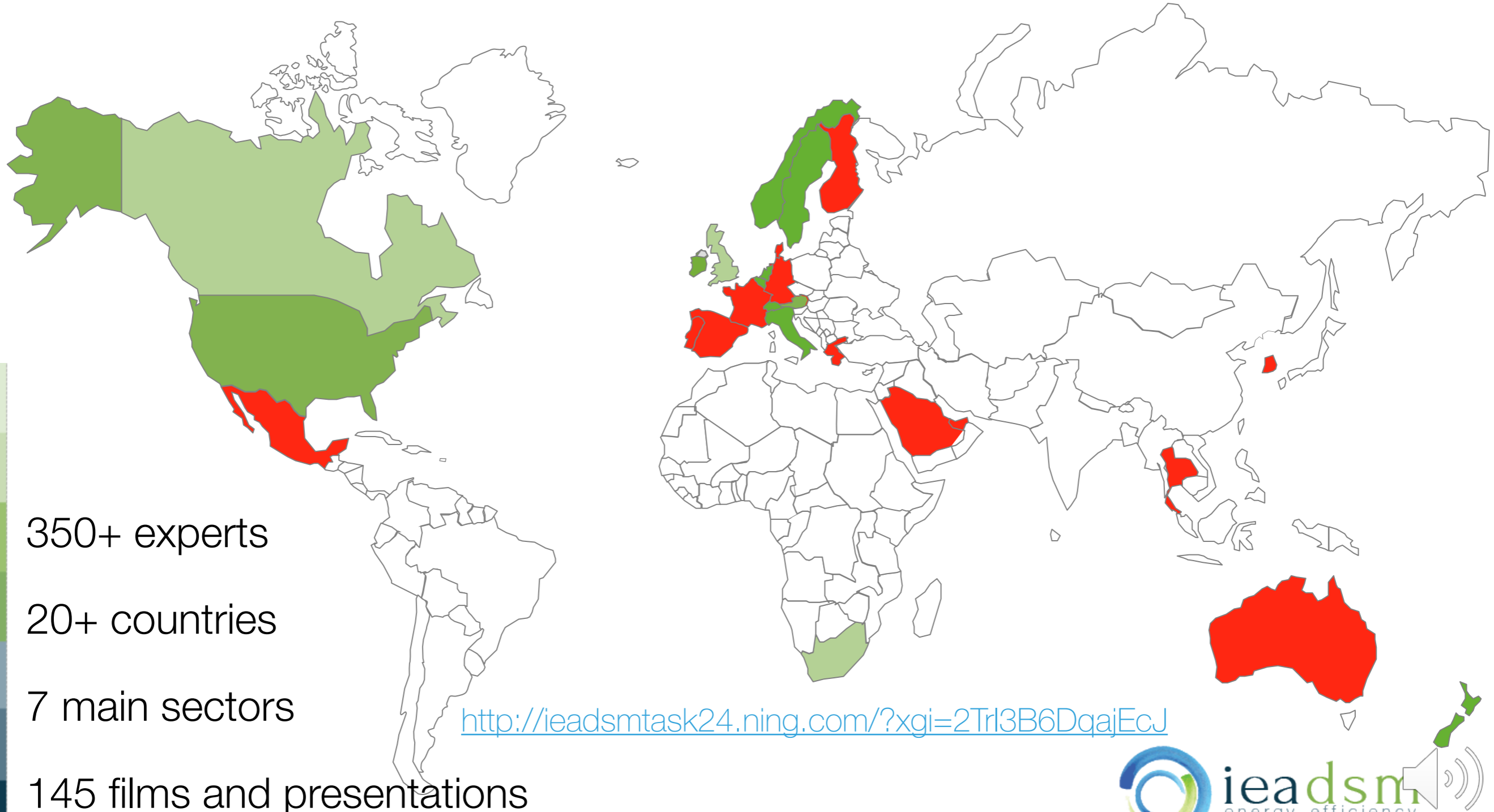
We pose that the *Energy System begins and ends with the human need for the services* derived from energy (warmth, comfort, entertainment, mobility, hygiene, safety etc) and that behavioural interventions using technology, market and business models and changes to supply and delivery of energy are the *all-important means to that end.*

HOW: Invite-Only Expert Platform (Subtask 5)



NING

Participating countries, **contributing experts**



350+ experts

20+ countries

7 main sectors

145 films and presentations

<http://ieadsmtask24.ning.com/?xgi=2TrI3B6DqajEcJ>



HOW: Task 24 Research Experts

OBERLIN
COLLEGE & CONSERVATORY

SUSTAINABILITY



A RECOGNIZED INDEPENDENT CENTRE OF THE UNIVERSITY OF OXFORD

Sheffield
Hallam
UniversityCarnegie
Mellon
UniversityUNIVERSITY
of
OTAGO
Te Whare Wānanga o Otāgo
NEW ZEALANDEnvironmental
Change Institute

WHAT? Criteria for developing Task 24 tools



- **Relevance to Decision-makers:** policymakers on the international, national, and local level or Decision-makers within organisations
- **Relevance to a global audience:** largely OECD , >20 countries from northern and southern hemispheres, five continents;
- **Country-context:** informed how tools were tailored and recommendations were provided, incl. cross-country case study comparisons;
- **Multiple sectors:** including health care (US and Canada); DSOs (NL and NZ); residential sector (SE, NL, NZ, IT, US, AT, IE); transport (SE and AT); commercial buildings (SE); SMEs (CH, BE); higher education (NL) etc.;
- **Behavioural models and theories:** from all research disciplines but grouped into three main disciplinary approaches: *psychology, economics and sociology*;
- **Highly collaborative:** neutral, trusted, independent facilitator of multi-stakeholder collaboration;
- **Creative and engaging:** social media, films, cartoons, Pecha Kuchas and storytelling was the overarching ‘language’ that was used.

WHAT? *Toolbox of interventions for Behaviour Changers*



- Policy briefs and tailored recommendations [for all participating countries](#) (ST 4, 6)
- Decision-making tree and wiki for behavioural models and case studies in [ST 1](#), 2 & 6)
- Cross-country comparisons ([ST6](#) & 10)
- Multi-stakeholder [facilitation and collaboration](#) approaches (ST8)
- Collective Impact Approach [in energy research](#) (ST8)
- Behaviour Changer Framework ([‘magic carpet’](#)) (ST8)
- Expert platform [invite](#) – films, presentations, bios of 250 experts (ST5 & 7)
- Storytelling [in energy](#) and [behaviour research](#) (ST8)
- Evaluation methods in [different disciplinary approaches](#) (ST3)
- Double-loop learning [fact sheets](#) in residential retrofit area (ST3)
- ‘Beyond kWh’ [evaluation standard](#) and [methodology review](#) (ST9)
- ‘Beyond Energy’ – [collecting multiple benefit metrics](#) (ST8)
- Still to come: A to Z of behaviour change (ST 8)
- Overall Task 24 story (ST 10)

IEA DSM Task 24 Phase I



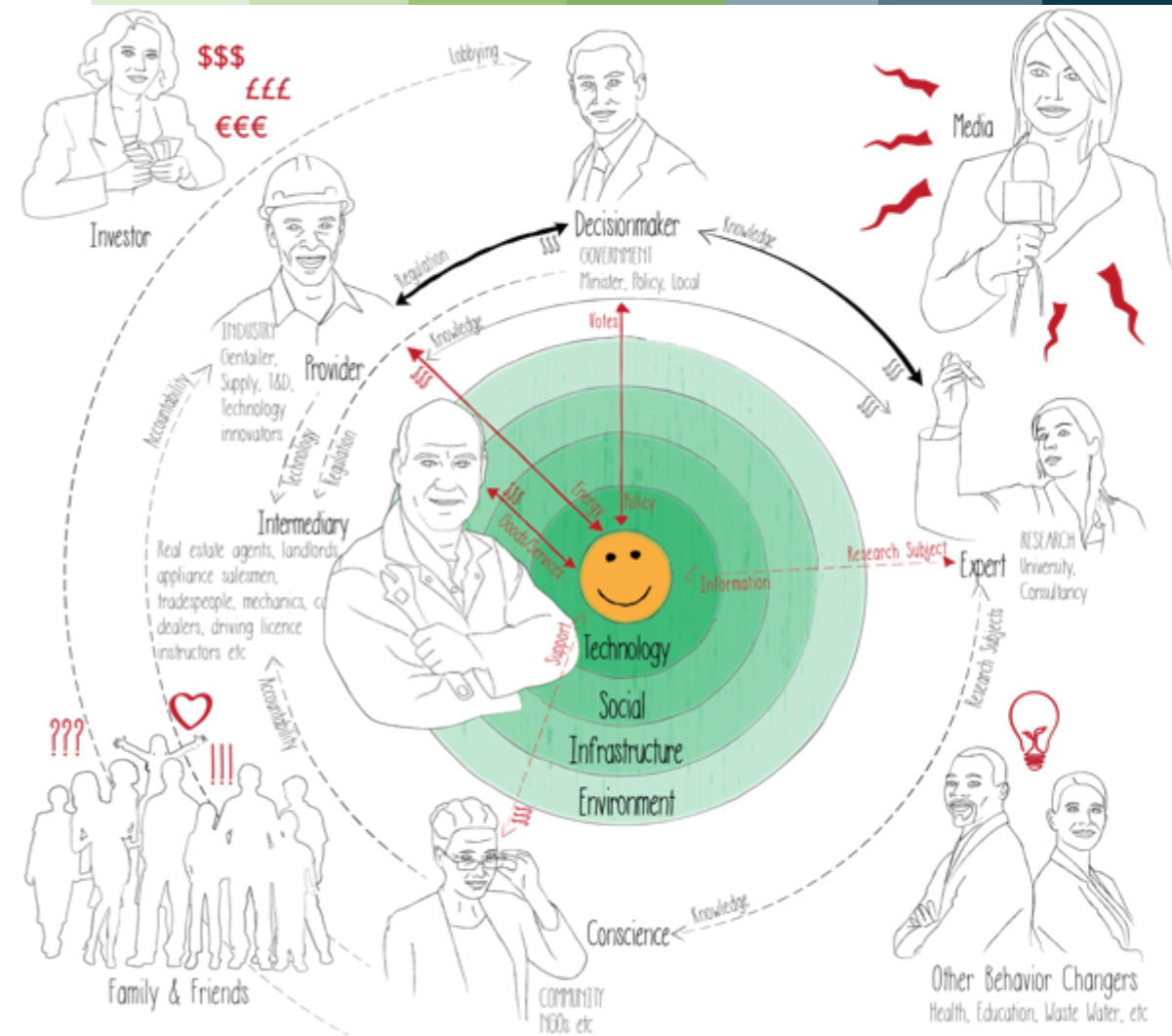
*Closing the Loop – Behaviour Change in DSM:
From Theory to Practice*



Some numbers of Task 24 – Phase I

- July 2012 – April 2015
- 8 participating countries
- 9 in-kind countries
- >230 behaviour change and DSM experts from 21 countries
- 20 successful expert workshops
- >145 videos and presentations
- Over 40 publications – reports, papers, articles...
- Almost 60 case studies from 16 countries in a Wiki
- www.ieadsm.org/task/task-24-phase-1/

IEA DSM Task 24 Phase II



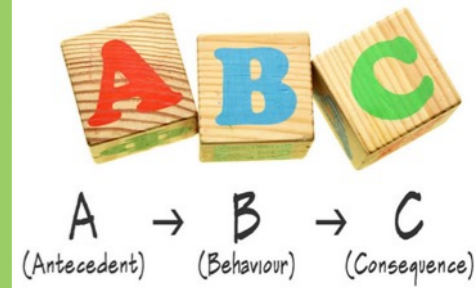
Helping the Behaviour Changers

Participatory Action (Field) Research
Real-life pilots

Some numbers of Task 24 – Phase II

- April 2015 – Dec 2018
- 7 participating countries (AT, NL, NZ, SE, IE, US/CA)
- Access to >300 behaviour change and DSM experts from 20+ countries
- 25+ successful expert workshops in 10 countries with >300 participants
- Over 30 publications – reports, papers, articles...
- Toolbox of interventions
- www.ieadsm.org/task/task-24-phase-2/

HOW? Subtasks of Task 24



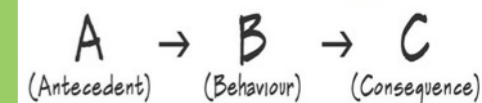
Subtask 1 –

Helicopter Overview of different models of understanding, frameworks, contexts, case studies and evaluation metrics

Subtask 4 –

Country-tailored recommendations

HOW? Subtask 1 – Overview of different models of understanding behaviour



[Darnton \(2008\). GSR Behaviour Change Knowledge Review
http://www.peecworks.org/PEEC/PEEC_Gen/01796129-001D0211.1/Darnton%202008%20Policy%20Briefing.pdf](http://www.peecworks.org/PEEC/PEEC_Gen/01796129-001D0211.1/Darnton%202008%20Policy%20Briefing.pdf)



An insight into different models of behaviour change in energy

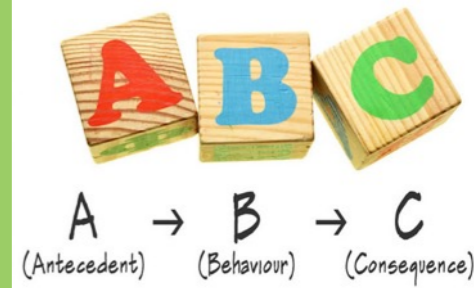
Sea Bee · 27 videos
Channel settings

30 views

0 likes 0 dislikes



WHAT? Subtask 1 – More definitions



Models of behaviour help us to understand specific behaviours, by identifying the underlying factors which influence them. There are individualistic models and social models.

By contrast, 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.

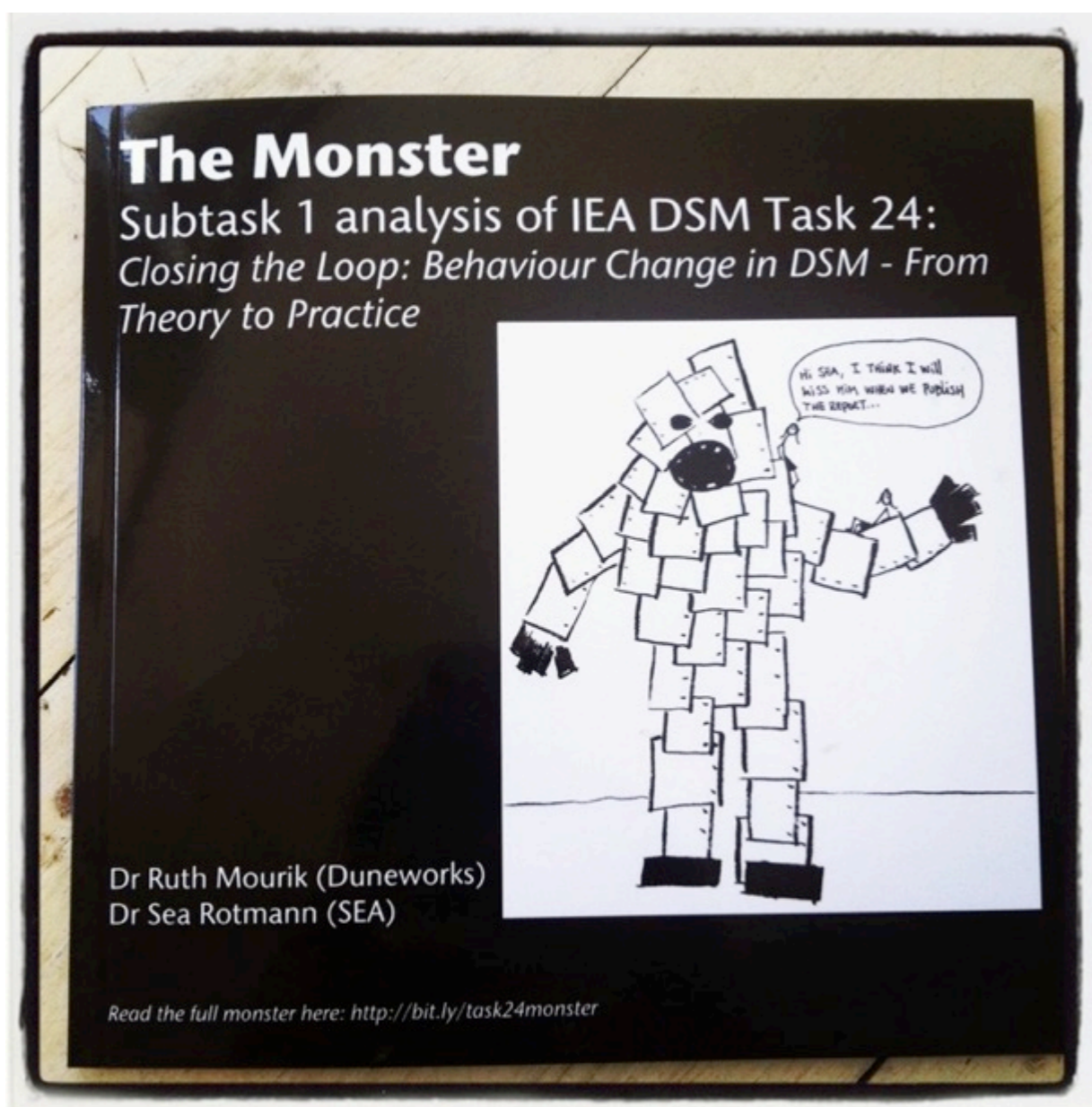
Both are important to understand when designing interventions!

WHAT? Subtask 1 – The ‘Monster’ and its Wiki



A → B → C
(Antecedent) (Behaviour) (Consequence)

[Mourik and Rotmann \(2013\). Subtask 1 Analysis.
http://www.ieadsm.org/wp/files/Tasks/Task%2024%20-%20Closing%20the%20Loop%20-%20Behaviour%20Change%20in%20DSM,%20From%20Theory%20to%20Policies%20and%20Practice/Publications/Task%2024%20Subtask%20I%20Final%20Report.pdf](http://www.ieadsm.org/wp/files/Tasks/Task%2024%20-%20Closing%20the%20Loop%20-%20Behaviour%20Change%20in%20DSM,%20From%20Theory%20to%20Policies%20and%20Practice/Publications/Task%2024%20Subtask%20I%20Final%20Report.pdf)

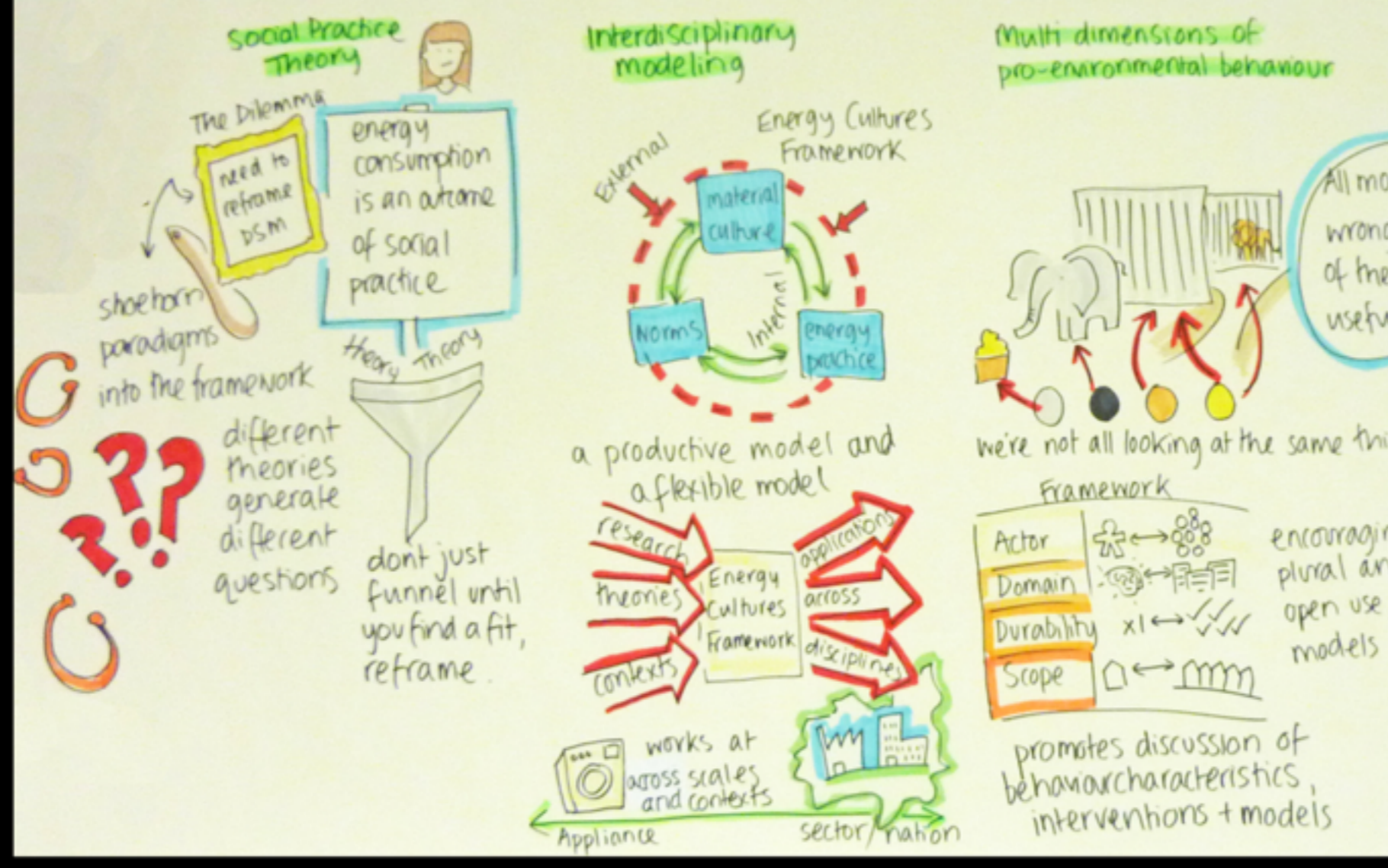


WHAT? Subtask 1 – Looking at different models of understanding behaviour



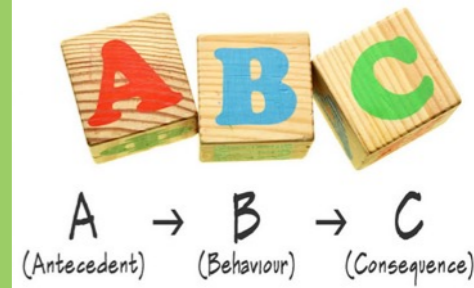
A → B → C
 (Antecedent) (Behaviour) (Consequence)

Models of understanding



“All models are wrong, but some of them are useful”
 George E.P. Box
 (1979)

WHAT? Subtask 1 – Some main models of understanding behaviour



INDIVIDUALISTIC (A-B-C Models)

Rational choice models based on cost-benefit calculations (**neoclassical economics**)

Information deficit models are based on linear assumptions: information generates knowledge, which shapes attitudes, which lead to behaviour (**neoclassical economics**)

Bounded rationality models include psychological principles such as cognitive biases and environmental constraints (**behavioural economics**)

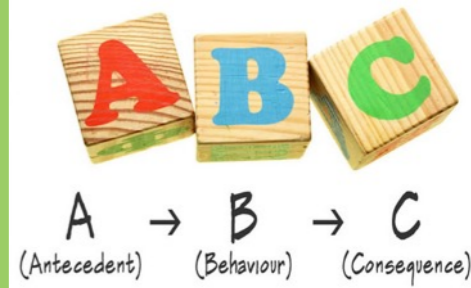
Social Norms and Influence based on Cialdini's work that shows how various social norms can be applied to influence behaviours (e.g. HERs)

Value Action Gap shows the difference of what people say and what they do (both **social psychology**)

[Overview presentation of helicopter overview](https://youtu.be/DOTkdA97Woo)

<https://youtu.be/DOTkdA97Woo>

WHAT? Subtask 1 – Main models of understanding behaviour



INDIVIDUALISTIC (A-B-C Models)

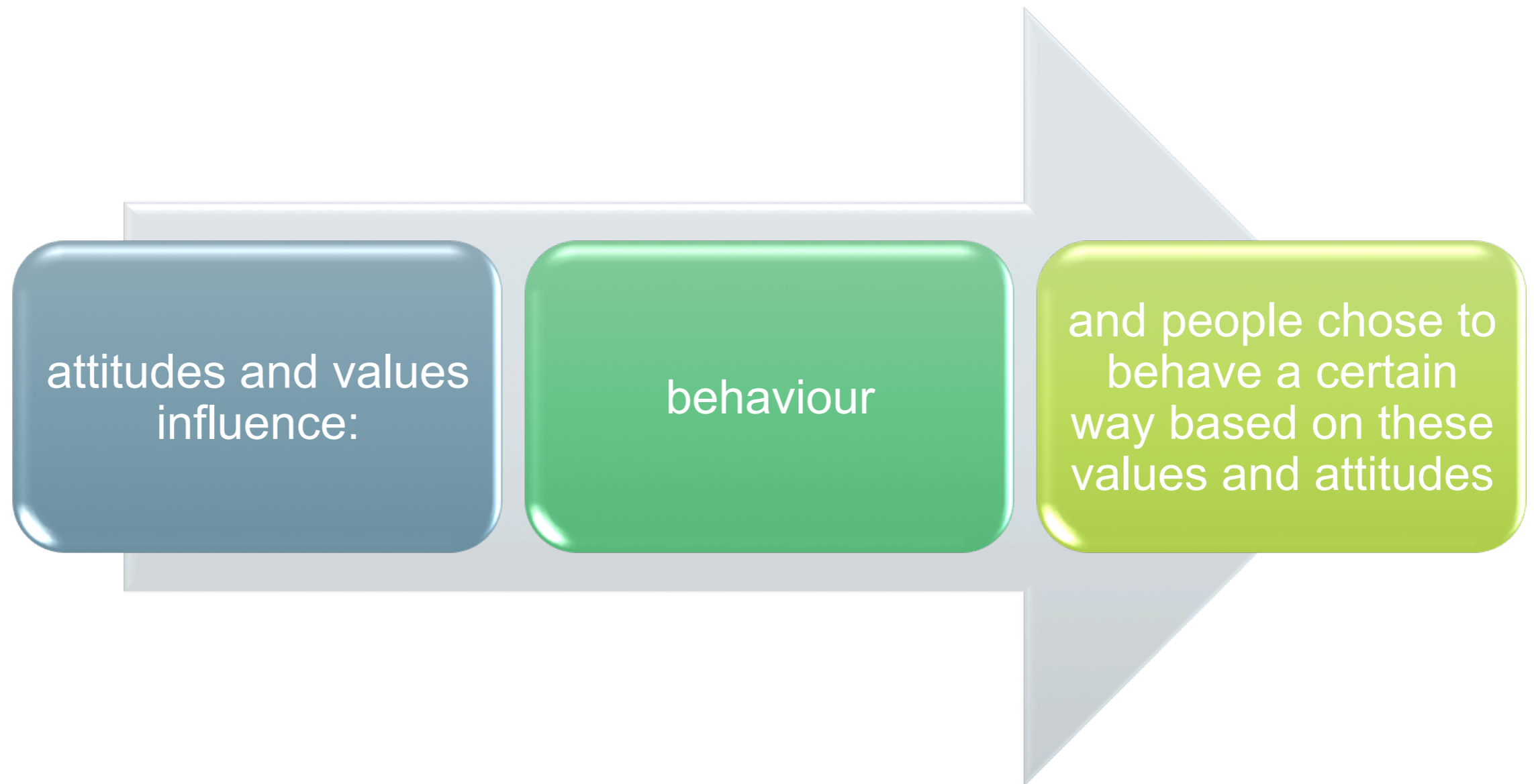
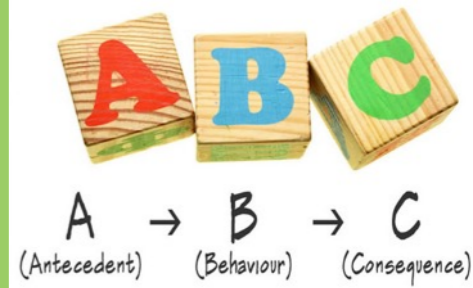


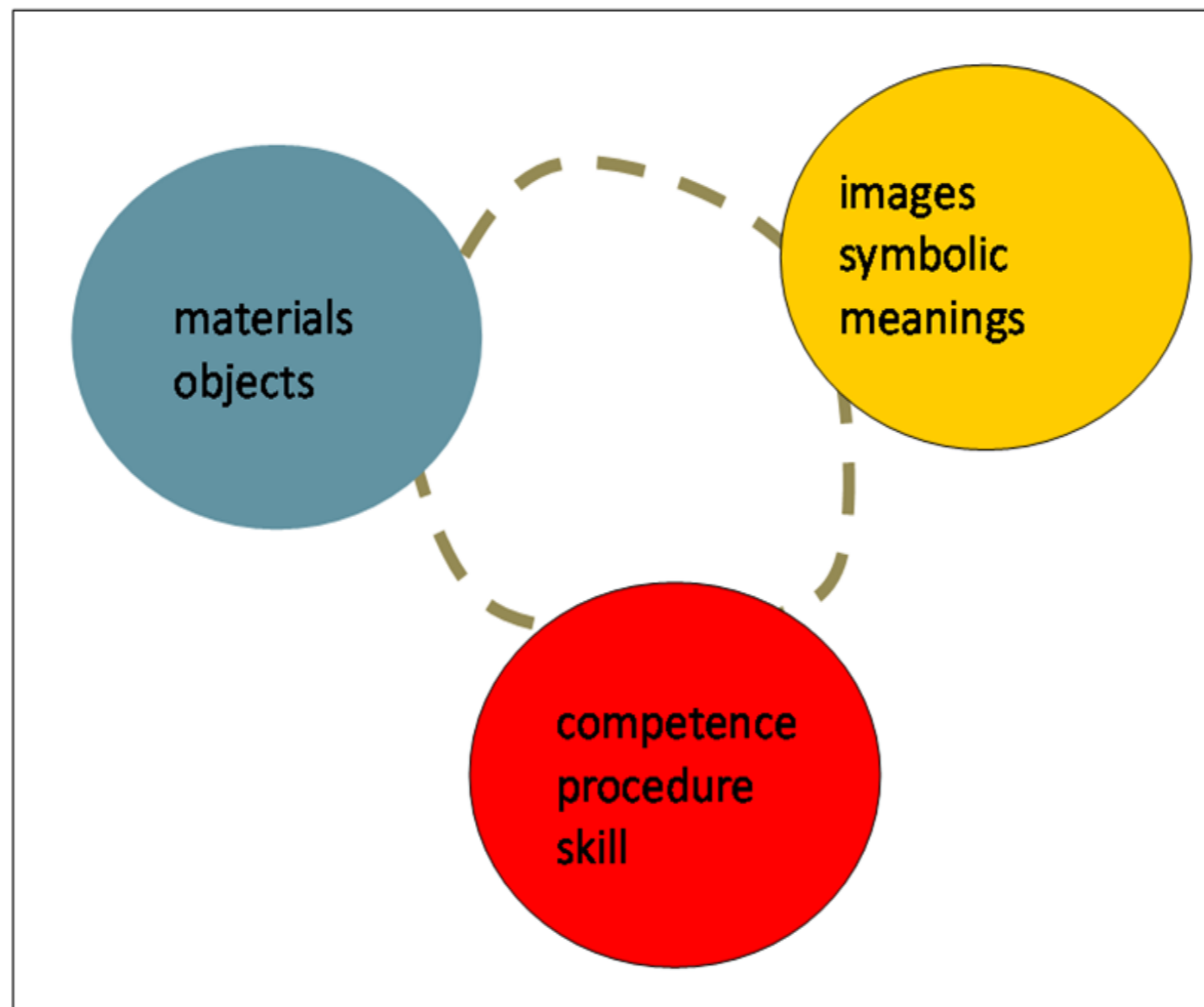
Figure 3: The ABC model based on Shove 2010

WHAT? Subtask 1 – Main models of understanding behaviour



SOCIALLY-ORIENTED MODELS

Theories of Consumption as Social Practices (Practice Theory)

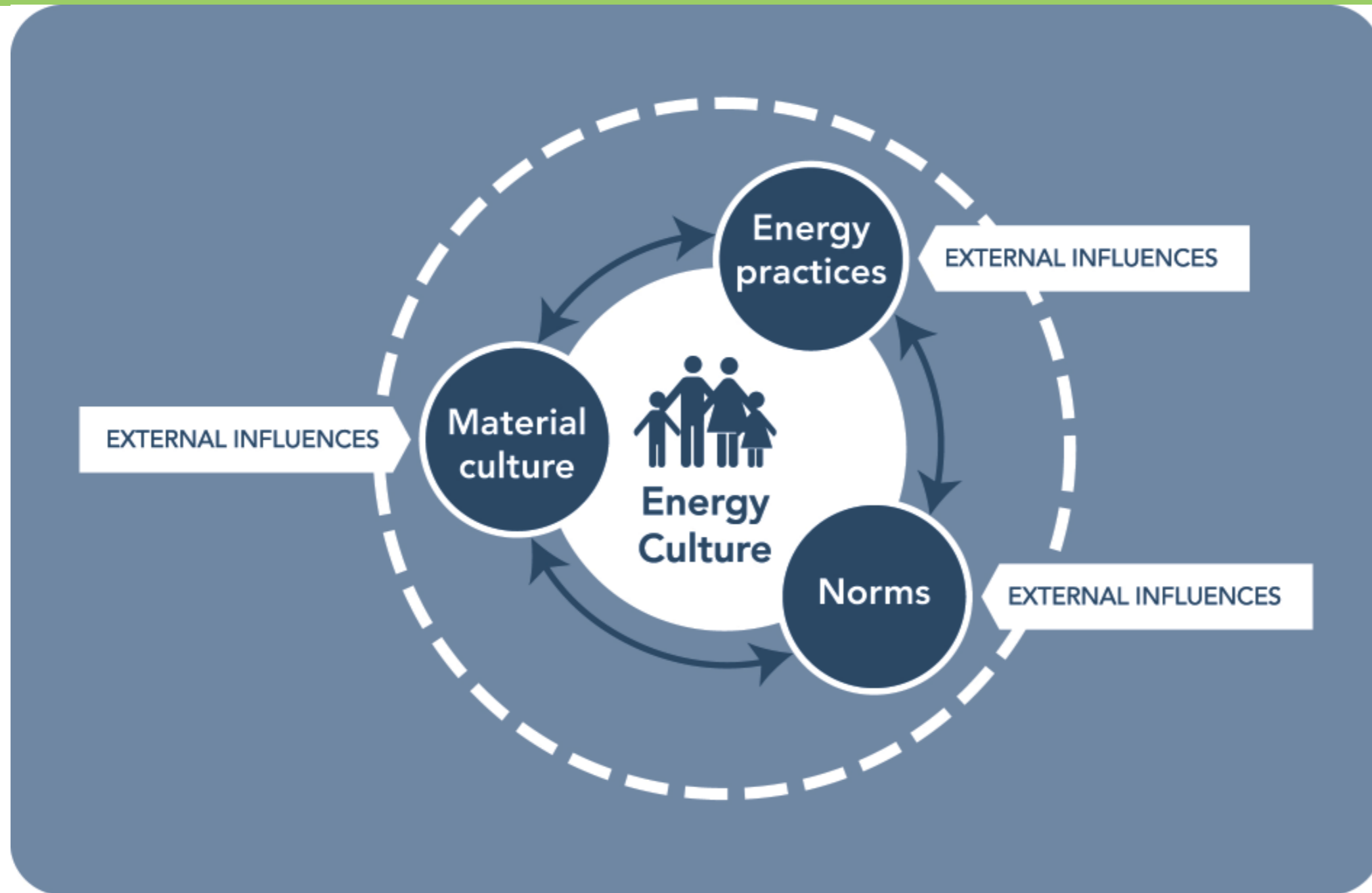


Shove et al (2012). The Dynamics of Social Practice – Everyday life and how it changes.

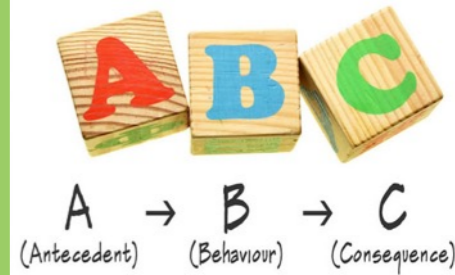
WHAT? Subtask 1 – Energy Cultures Framework



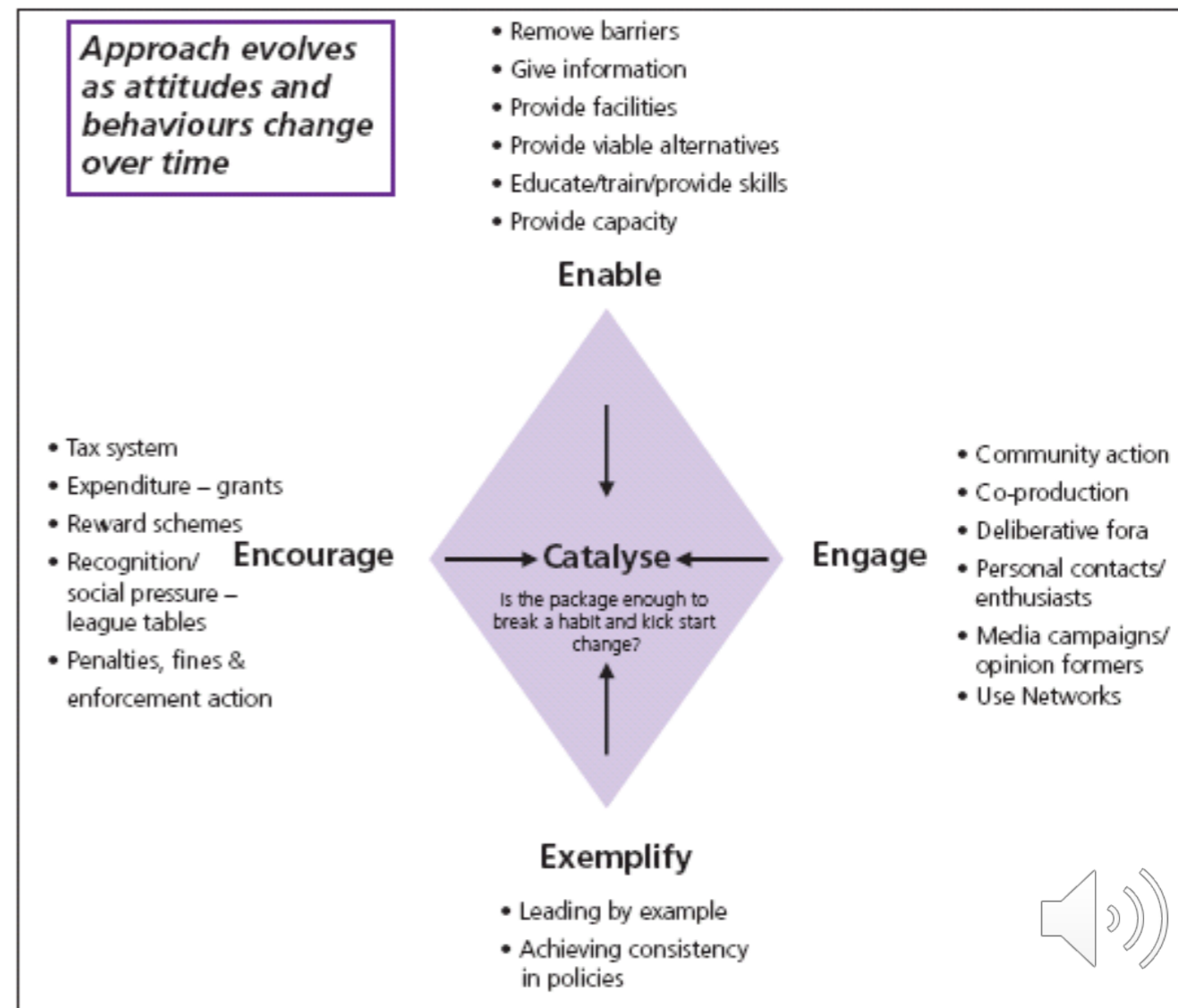
A → B → C
(Antecedent) (Behaviour) (Consequence)



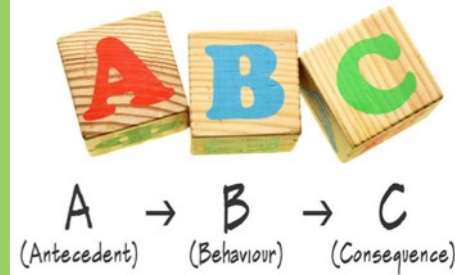
WHAT? Subtask 1 – Theories of Change



- ✓ Central to many concepts of change is the merging of theory and practice
- ✓ Applied approaches: Social Marketing, Intervention Mapping, [Defra's 4E Model](#)
- ✓ Doug McKenzie-Mohr [Community-Based Social Marketing](#)
- ✓ Cialdini's [7 Principles of Persuasion](#)
- ✓ Kurt Lewin's [3-stage model of change](#)
- ✓ [MOMENTS OF CHANGE!](#)



WHAT? Subtask 1 – Comparison between individual and social approaches

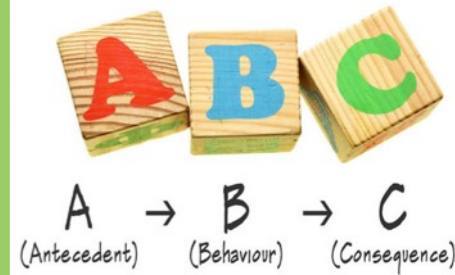


Behaviour	Practice
Individual as Origin	Individual as Carrier
Caused by Drivers	Co-evolving
Consequentialist	Recursive
Individual Choice	Shared, Social
As if for the First Time	Within a Continuous Flow of Activity
Contextual Cues	Emergent Rules and Resources
Values/Beliefs as Underlying Foundations	Needs/Desires as Outcomes

[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. AD Research & Analysis for Defra, London.*](#)

For more information, visit www.ieadsm.org

WHAT? Subtask 1 – Comparison between individual and social approaches – Pros and Cons



Individual Models		Social Models	
Pros	Cons	Pros	Cons
Some have understanding of dual process of cognition	Scale-ability	Takes systemic approach thus easily scaled up	Too complex to understand
Easy to follow A+B+C=behaviour change	Inclusivity	If you change a practice, it can be a global change	Dependent on many elements to work together
Can look at various (mostly influencing) contexts affecting individuals	Breadth of Scope	Looped, re-enforcing	Frustrating if right collaboration can't be fostered
Known and tested	Causal relationship hard to determine	Influencing and contextual factors	Hard to put into practice
Very powerful with segmentation and bottom-up tailoring	Not shown to be that effective, especially if based on intentions	Fosters collaboration among all sectors	May only speed up change
	More complex models hard to use	More realistic?	

WHAT? Subtask 1 – Report outcomes

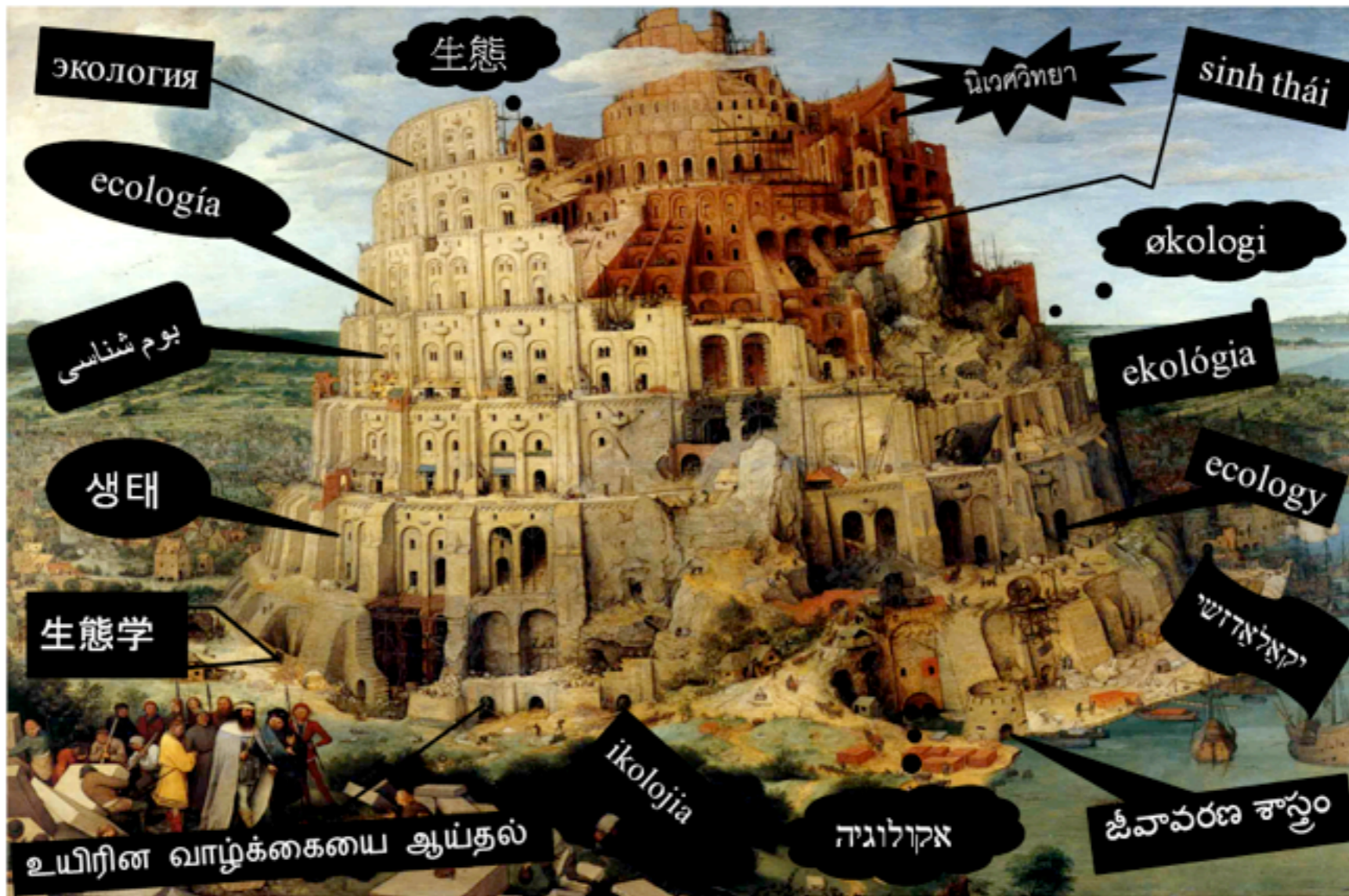


- ✓ Analyzed models of understanding behaviour, theories of change and behavioural disciplines from economics, psychology and sociology using real-life case studies on building retrofits, transport, SMEs and smart technology/feedback
- ✓ Analyzed different cultural and country contexts by comparing and contrasting how similar models were applied
- ✓ Gave clear recommendations as to which approaches were of most use, when and why, in each of the four end use domains.
- ✓ Provided a clear contrast of standard evaluation metrics (e.g. kWh, \$ savings etc.) versus more unusual co-benefits that went beyond kWh and sometimes even beyond energy
- ✓ “Once upon a time...” story spine was used to improve legibility
- ✓ Use of storytelling when describing how a model or framework was mirrored by the End User
- ✓ Provided analytical and empirical foundation that Task 24 was then built on

Language can be a problem!

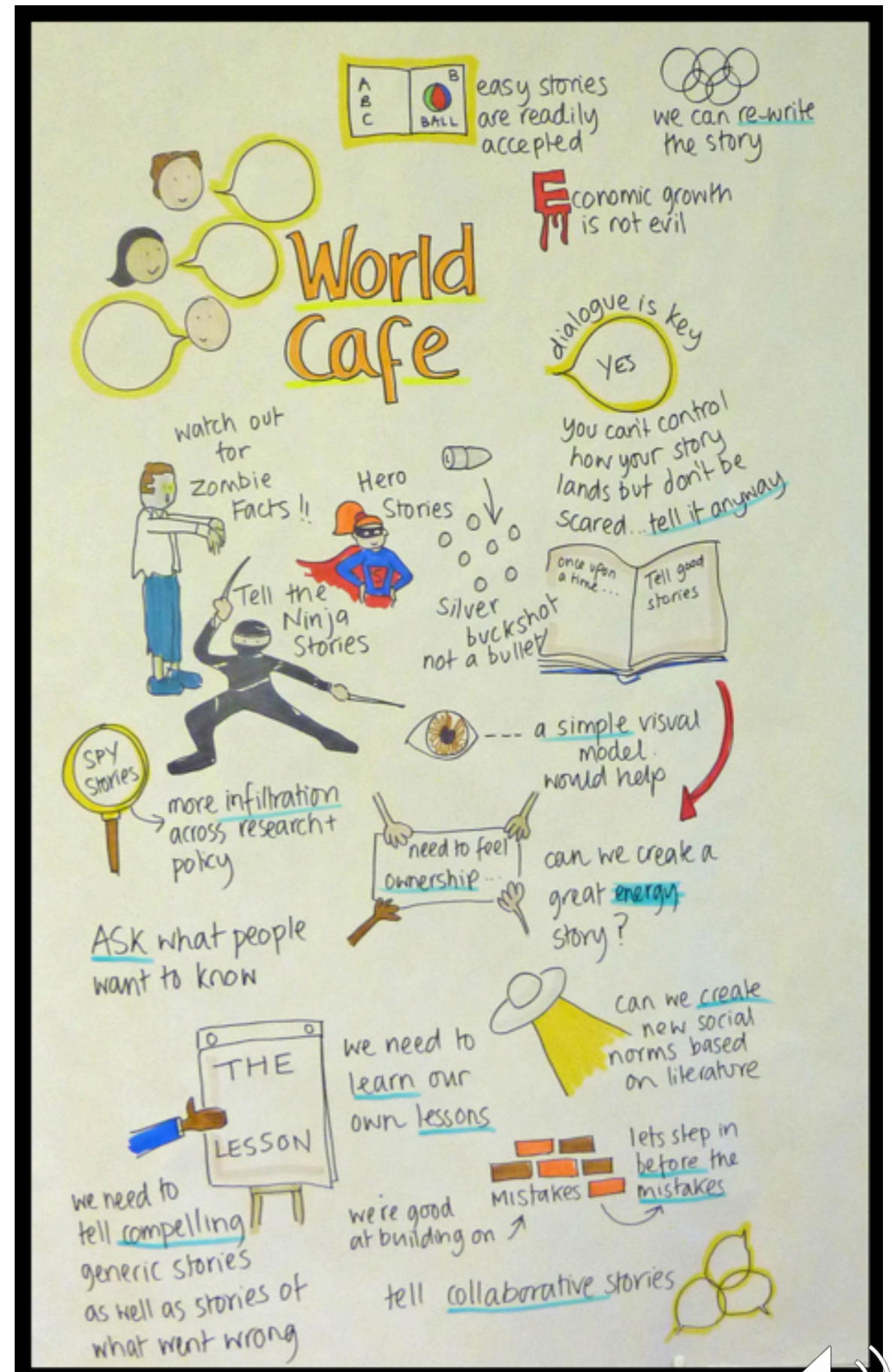


THE ECOLOGICAL TOWER OF BABEL



For more information, visit www.ieadsm.org

That was our Eureka! moment



What is storytelling?



‘Storytelling’ is the construction of a desirable future based on a narrative of past events, with a plot that expresses some causal relationship

To read more: ERSS Special Issue on *Storytelling & Narratives*

<http://www.sciencedirect.com/science/journal/22146296/31?sdc=1>

*WHAT: Case studies and cross-country comparisons
(Subtasks 2, 6 & 11)*



Subtask 2 – In-depth analysis
(building retrofits, transport, SMEs,
smart technology/feedback)
Subtask 6 – Top DSM Issues
Subtask 11 – Real-Life pilots

For more information, visit www.ieadsm.org/task/task-24-phsae-1/

Subtask 2 – Norwegian Finnfjord Case Study

Becoming world's first carbon neutral ferrosilicon plant



Subtask 2 – Austria's Smart metering Pilots €CO₂ Management



Vorteile des Energiesparens:

- Ihre Energiekosten werden gesenkt.
- Ihre Energieimporte durch den Energieversorger werden reduziert.
- Ihr Anteil am Einsatz von Primärenergie in Kraftwerken wird reduziert.
- Ihre Umwelt wird durch geringere CO₂-Belastung geschont.

Stand-by-Geräte im Vergleich

Gerätebezeichnung	Stk.	Leistung Stand-by (Watt)	Stand-by-Betrieb (Std./Tag)	Stand-by-Stromverbrauch (kWh/Jahr)	Stand-by-Stromkosten (€ im Jahr)	Meine Geräte	
						Stk.	€/Jahr
Rechenbeispiel:	2 (Stk.)	× 3 (Watt)	× 20 (Std./Tag)	× 365 (Tage) / 1000	× 0,18 € = 8 €/Jahr		
TV-Gerät neu	1	1	20	7	1		
TV-Gerät alt	1	10	20	73	13		
DVB-T-Box	1	6	23	50	9		



Beispiel		Meine Kosten	
100 W × 400 h = 40.000 W		Leistung	Betriebsstunden
40.000 W = 40 kWh			×
		Verbrauch:	=
Die Berechnung der jährlichen Stromkosten erfolgt mittels Multiplikation des Stromverbrauchs mit dem Strompreis (z. B. 18 Cent/kWh).		Strompreis:	×
		Kosten:	=
40 kWh × 18 Cent/kWh = 720 Cent	Dies entspricht:	7,20 €	

mit W-Lan	1	1	20	7	1		
Kaffeemaschine	1	1	23	8	2		
Mikrowelle	1	3,5	23	29	5		
Elektr. Zahnbürste	2	2	24	35	6		
Rundfunkwecker	2	2	20	29	5		
Gesamt					140		

Tabelle: jährliche Kosten des Stand-by-Betriebs in einem durchschnittlichen Haushalt

Lang (2014). Subtask 2 – Austrian case study.

Another Austrian case study: The Energy-Sharing Family: <https://youtu.be/8BCJibs99Ks>



Subtask 2 – Austria's Smart metering Pilots Die Energiejagd (the Energy Hunt)



STEIERMARK

SAMSTAG, 27. APRIL 2013, SEITE 15

STEIRER DES TAGES



Die Bewohner der Hartberger Wohngemeinschaft Parking sparten 26 Prozent ihres Energieverbrauchs ein

Meister im Energiesparen

Gemeinsam richtig handeln



zu Ihnen
0 %
h!


lungsempfehlungen für ein
en und Sanieren Ihres
rmieren!

[Austrian expert telling Energy Hunt story:
https://youtu.be/luyTmwgmz7s](https://youtu.be/luyTmwgmz7s)

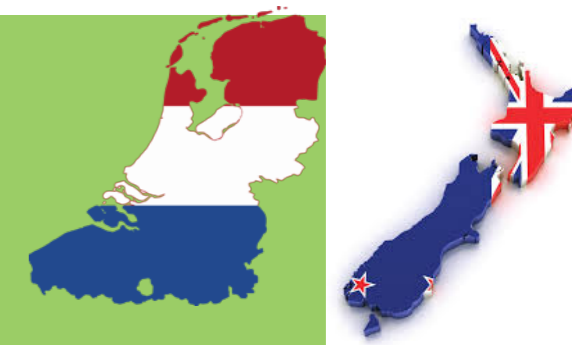


Subtask 2 – Austria's Smart metering Pilots



	
<p>social approach</p>	<p>individualistic approach</p>
<p>social norm (MoU) social learning (ToC) Freezing/unfreezing (ToC)</p>	<p>classical economics (MoU)</p>
<p>Gamification, competition, feedback, tailored advice, champions</p>	<p>Feedback, Advice & Incentive (iPod!)</p>
<p>Goal: CO₂ savings</p>	
<p>Huge success</p>	<p>Unexpected failure</p>

Subtask 2 – NZ and NL Smart home living labs



Where?	The Netherlands	New Zealand
Name	PowerMatching City Hoogkerk	Powering Tomorrow's Smart Homes
What?	Living lab testing an integral smart grid with innovative technology and appliances in real life circumstances	Living lab testing smart home solutions for tomorrow – to be later turned into smart neighborhood solutions
Who?	Energy retailer, a Distribution System Operator (DSO), a technology company, an ICT company and knowledge organizations and institutes	Lines Company (DSO) PowerCo and energy research and technology consultants
When?	2007-11 (Phase 1) 2012-2014 (Phase 2)	2014-15 (Smart Homes) 2015-16 (Smart Neighborhoods, then stopped)
Why?	To maintain or preferably increase comfort levels of the home for end users. To test the DSO related issues of integrating large amounts of renewables in a local grid, matching demand and supply on a local level, measuring smart grid technology acceptance.	Three houses have been designed to capture future potential household scenarios based on the dynamic market and technological landscape. These houses are fully interactive with PowerCo's information networks, and test three market hypotheses about how consumers will behave going forward.

Mourik (2015). http://www.ieadsm.org/wp/files/Subtask-2-Netherlands_Power-to-the-People1.pdf

Rotmann (2015). <http://www.ieadsm.org/wp/files/Subtask-2-New-Zealand-PowerCo.pdf>






Video presentation comparing the two case studies: <https://youtu.be/e1Ce3cxuSSw>

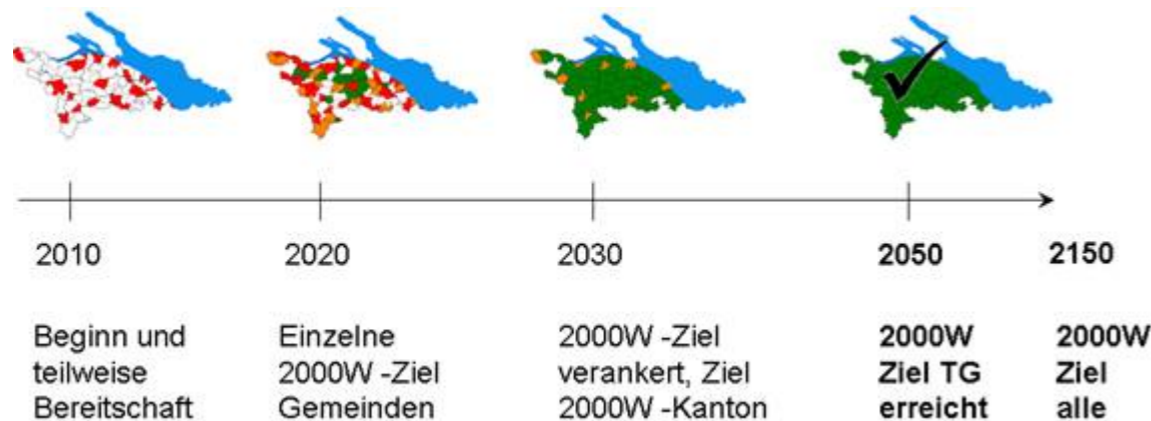
Subtask 2 – Switzerland's shift to a 2000Watt Society



Goals: From 6,500W pp to 2,000W by 2100
reduce annual GHG emissions pp from 8.3t to 1.0t by 2100



				
Wohnen	Mobilität	Ernährung	Konsum	Infrastruktur
2000-Watt-Pfad: von 1800 Watt auf 500 Watt (Soll)	2000-Watt-Pfad: von 1700 Watt auf 450 Watt (Soll)	2000-Watt-Pfad: von 750 Watt auf 250 Watt (Soll)	2000-Watt-Pfad: von 750 Watt auf 250 Watt (Soll)	2000-Watt-Pfad: von 1500 Watt auf 550 Watt (Soll)
Ist-Zustand: Drei Viertel des Gebäudebestands (Wohnhäuser und Bürobauten) sind mehr als 30 Jahre alt und hinsichtlich Energieeffizienz in einem ungenügenden Zustand (20-Liter-Häuser). Die Wohnfläche pro Kopf nimmt bei Neubauten zu (aktuell: ca. 50 m ²).	Ist-Zustand: Lange Pendlerdistanzen, reger Einkaufs- und Freizeitverkehr sowie weit entfernte Feriendestinationen prägen den aktuellen Mobilitätsstandard. Flugreisen verbrauchen etwa doppelt so viel Energie pro Kilometer wie Autofahrten und fünf Mal mehr als Bahnfahrten.	Ist-Zustand: In Lebensmitteln steckt viel Energie; die landwirtschaftliche Produktion und die Verarbeitung beanspruchen zudem Nährstoffe und Wasser. Sehr energieintensiv ist die Fleischproduktion: Die Herstellung von 1 kg Rindfleisch verbraucht über 10 Mal mehr Energie als von 1 kg Nudeln.	Ist-Zustand: kurzlebige Produkte (Kleider, Möbel etc.), Dienstleistungen und Veranstaltungen (Konzerte, Hotelübernachtungen etc.) werden rege konsumiert, ohne auf die graue Energie zu achten. Zu beachten ist: ein grosser Teil der aufwändig erstellten Freizeit- und Konsuminfrastruktur wird nur temporär genutzt.	Ist-Zustand: Zur öffentlichen Infrastruktur gehören unter anderem Flughäfen, Bahnhöfe, Strassen, die Wasserversorgung, die Energieversorgung, Gesundheitseinrichtungen, Sicherheitsanlagen und Bildungsbauten.
Handlungsoptionen: gut gedämmte Niedrig- oder Nullenergiehäuser (Minergie-P, Minergie-P-Eco) reduzieren den Heizbedarf auf 2-Liter-Niveau; wichtig sind angemessene Wohnflächen und energieeffiziente Haushaltsgeräte.	Handlungsoptionen: Fahrrad oder öffentlichen Verkehr für kurze und mittlere Distanzen vorziehen; wenig fliegen und mit sparsamem Auto weniger als 9000 Kilometer im Jahr fahren.	Handlungsoptionen: Wahl von Frischprodukten aus biologischem Anbau; ebenso relevant für die persönliche Energiebilanz sind regionale und saisonale Produkte und ausserdem wenig Fleisch.	Handlungsoptionen: Auch hier ist ein suffizientes und effizientes Konsumverhalten erwünscht: Bekleidung, Accessoires, Gesundheit, Kultur und Hotellerie.	Handlungsoptionen: Die Energieeffizienz bei der Nutzung von Versorgungsanlagen ist beschränkt individuell beeinflussbar; die öffentliche Hand muss bei der Bereitstellung der 2000-Watt-tauglichen Infrastruktur die Vorreiterrolle einnehmen.



Subtask 6 – ICT in Dutch Universities

Cross-country comparison



university of
 groningen

Goal: Green Offices
in all Dutch Universities



Utrecht University



UNIVERSITY OF
CAMBRIDGE

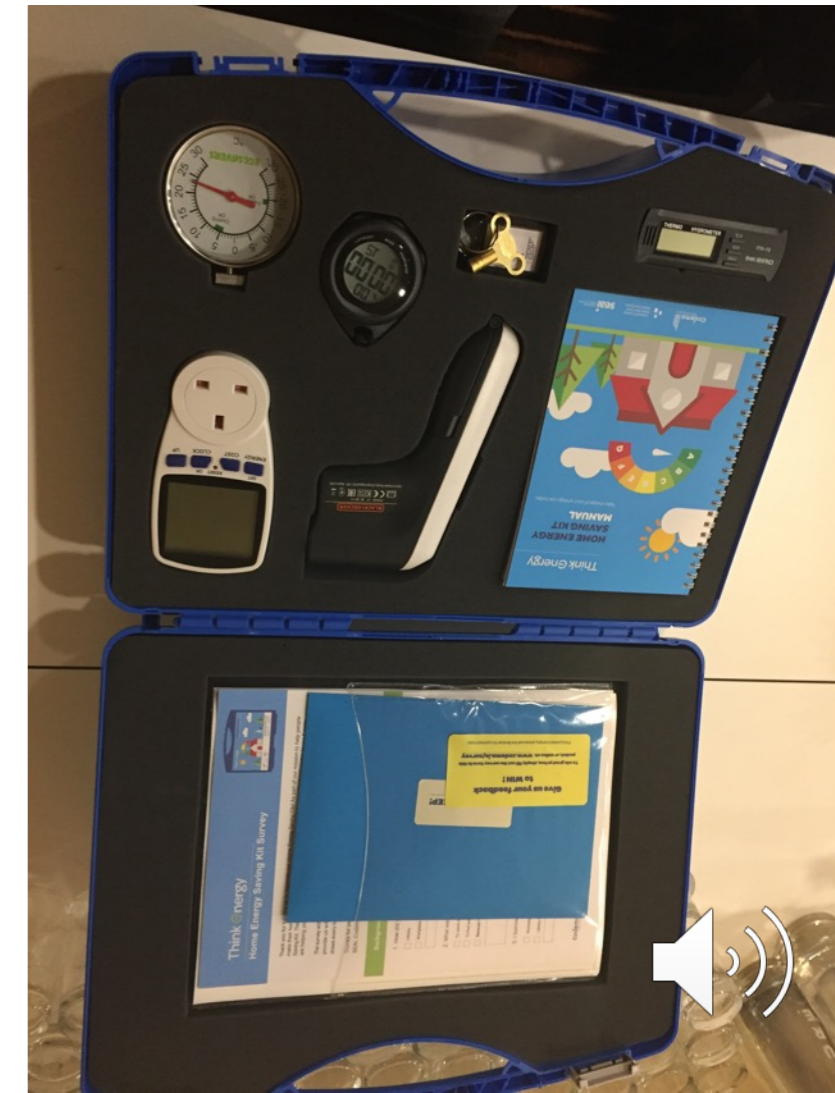
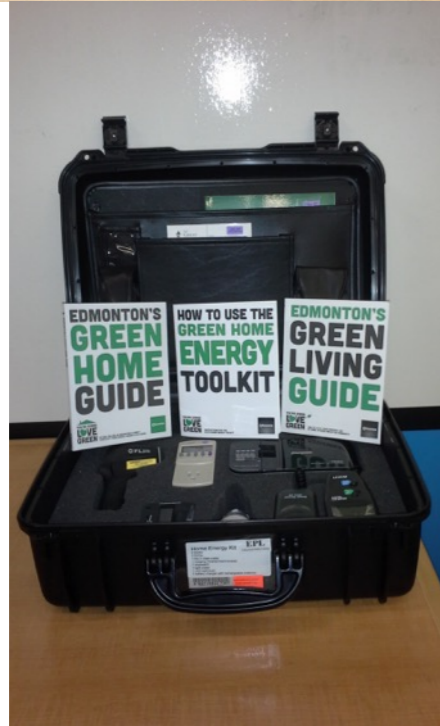


Cobben (2017). <http://www.ieadsm.org/wp/files/ST67-NL-ICT-case-study.pdf>

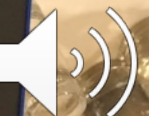
Subtask 6 – Energy Saving Kit Programs Cross-country comparison (IE, AUS, NZ, CA, US)



Goal: Educate and empower households to understand their home's energy and health performance and know what to do to improve it



Rotmann and Chapman (2018). BEHAVE conference, Sept 2018.



Subtask 6 – Green Leasing in Commercial Office Buildings

Cross-country comparison (SE, NO, IE, UK, AUS)



WORLD
GREEN
BUILDING
COUNCIL

Goal: Provide evidence that green leasing (the process) rather than Green Leases (the contract) works in commercial office buildings. Advance with World Green Building Council.



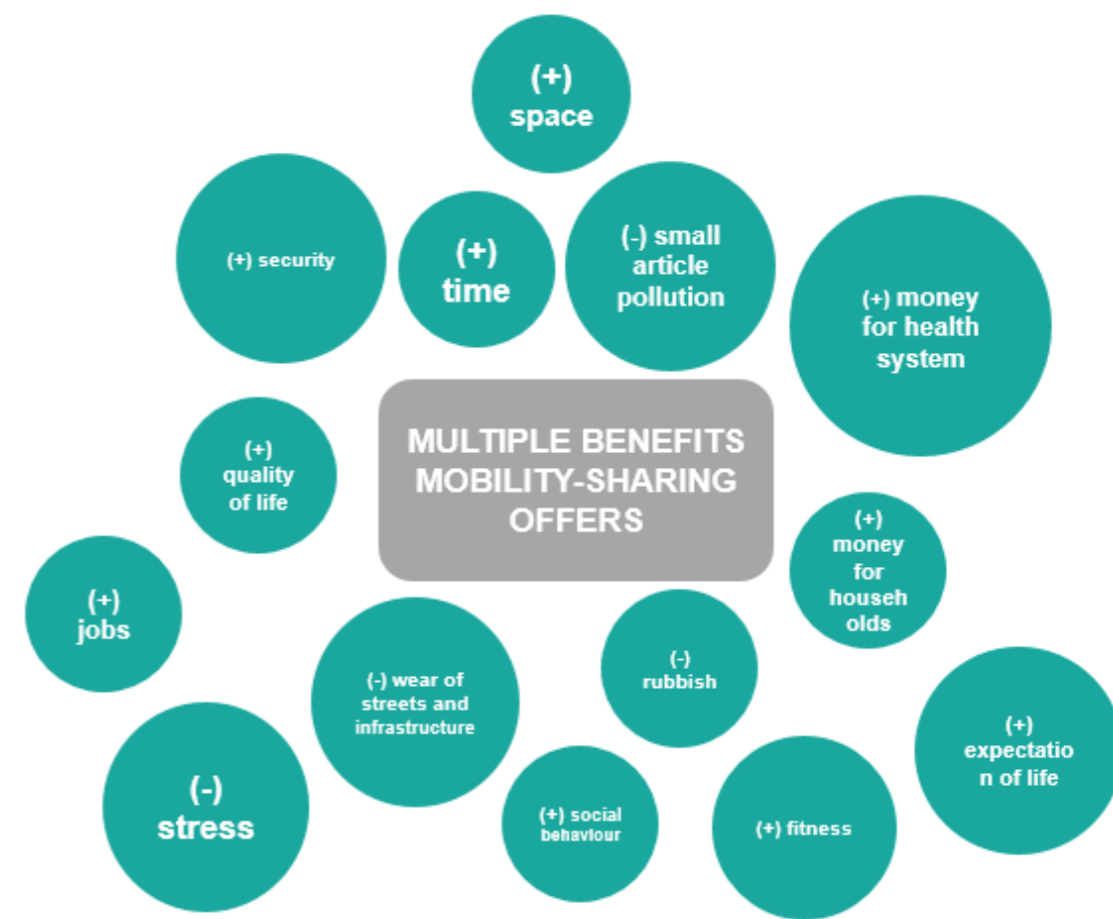
Janda et al (2017).

http://www.ieadsm.org/wp/files/2-113-17_Janda.pdf

Subtask 6 – Improve uptake of innovative mobility-sharing platforms and more effective evaluation methods for behavioural interventions into Austrian Energy Efficiency Law



Goals: Get Austrian Monitoring Authority to include broader evaluation methods and metrics into Austrian EE Law. Plus, improve uptake of innovative mobility-sharing platforms such as *tim*.



Kallsperger and Rotmann (2017). http://www.ieadsm.org/wp/files/Task-24_Final-Status-Report_Austria.pdf

Pollicy Brief for Austria: http://www.ieadsm.org/wp/files/Policy-Brief_Austria.pdf



Subtask 11 – Designing a successful Behaviour Change Programme for Hospital Building Operators



Goals: Show how to implement a successful, collaborative behavioral intervention aimed at Building Operators in the largest healthcare network in North America.

Success: Tracking towards US\$4m p.a. in avoided energy costs, up to 30% savings in some hospital pilots buildings



Cowan et al (2017). http://www.ieadsm.org/wp/files/IEA-DSM-Task-24-Subtask-11_CHS-case-study_FONTS.pdf
Webinar Dec 21: <https://www.youtube.com/watch?v=htyO699blcl&index=38&list=PLUFRNkTrB5O823sA-GZfO3x3BcaQd3jis&t=0s>

WHAT: Evaluation Subtasks 3 and 9



Subtask 3 –
Evaluation tools for Behaviour
Changers
Subtask 9 –
“Beyond kWh” tool

WHY? Subtask 3 – Deliverable 3 ‘What do we know about what we know?’



- Methodological review of behaviour-based energy intervention studies in the customer feedback and residential building retrofit areas, which were conducted over the past 10 years to determine what data has been collected and how it has been collected (out of 315 papers, 85 were coded in detail for analysis).
- No standard way of measuring behaviour change, which means no ability to compare across studies and incorporate questions about context, attitudes, knowledge and user experience.
- In future we should make better use of mixed methods for data collection, e.g. surveys, focus groups, interviews, scales to allow for triangulation.
- Also need better transparency into the methods used to evaluate (only 4 out of 85 published their actual evaluation instrument).
- Need to create and share validated data collection instruments which facilitate a consistency of measurement

→ This is being done in Subtask 9

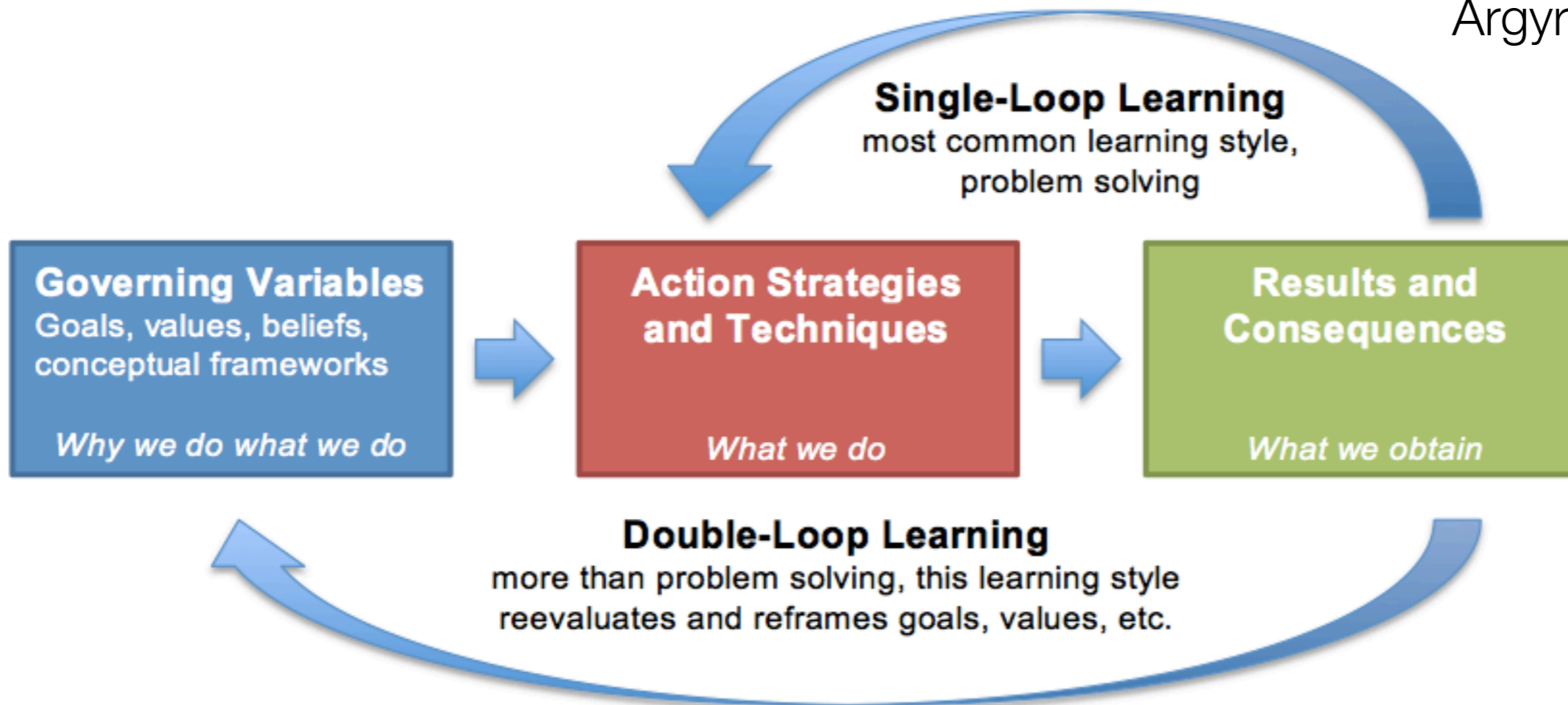
Karlin et al (2015). <http://www.ieadsm.org/wp/files/Subtask-3-Deliverable-3-Methodology-Review1.pdf>



HOW? Our new path: the double loop, an endless spiral of reflexive governance



Argyris and Schön (1978)

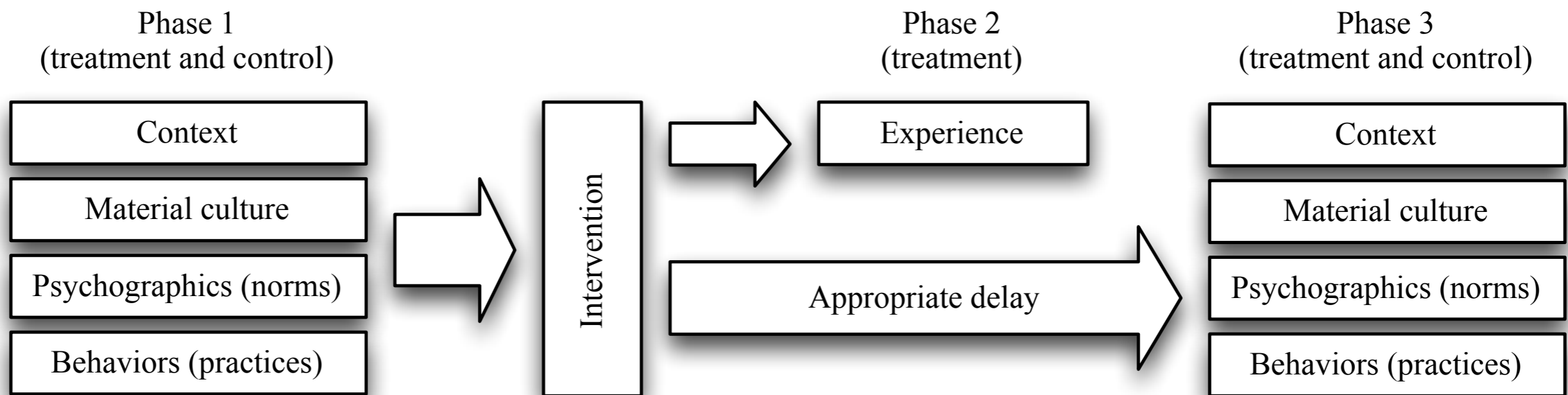


- allowing for different definitions of success
- creating a more participatory approach focused on both process and outcome
- making use of a combination of qualitative and quantitative metrics
- evaluate a multitude of parameters for success
- collective and collaborative learning process involving all stakeholders

HOW: Task 24 "Beyond kWh" validated, standard tool (Subtask 9)



FIGURE 5: EVALUATION PROCESS



Karlin et al (2016): <http://www.ieadsm.org/wp/files/SCE-Toolkit-Report-Final-.pdf>



SOUTHERN CALIFORNIA
EDISON



WHAT? Subtask 3 & 9 – Evaluation Tools, outputs



- ME&V metrics for each domain can be found in the [Subtask 1 Monster/Wiki](#)
- An overview of how different disciplines evaluate behaviour, main challenges and recommendations on monitoring and evaluation can be found in [Subtask 3 Deliverable 3A](#) report [‘Did you behave as we designed you to?’](#)
- Specific guidelines and fact sheets for 3 main intervention tools in the building retrofit area (Energy Performance Certificates, Mass Marketing and Subsidies and Loans) can be found in [Subtask 3 Deliverable 3B](#) [From “I think I know” to “I understand what you did and why you did it”](#)
- [Subtask 3 Deliverable 3](#) - Methodological review of the scientific literature (smart meter/feedback and building retrofits only) called [‘What do we know about what we know?’](#) which feeds into [Subtask 9](#)
- [ST9 “Beyond kWh”](#) psychometric analysis and tool development ([SCE, 2015](#))
- [ST9](#) Real-life testing, validation and triangulation of “beyond kWh”

WHO & WHY? The People of Task 24 or how to foster successful multi-stakeholder collaboration



Subtask 7 –
The Task 24 Behaviour Changers
Subtask 8 –
Collective Impact Approach
Behaviour Changer Framework

Task 24 Phase II

The Collective Impact Approach

Methodology of the
Behaviour Changer
Framework

HOW? *A model for collaboration*

Collective impact = the commitment of a group of important actors from different sectors to a common agenda for solving a specific social problem.

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.**

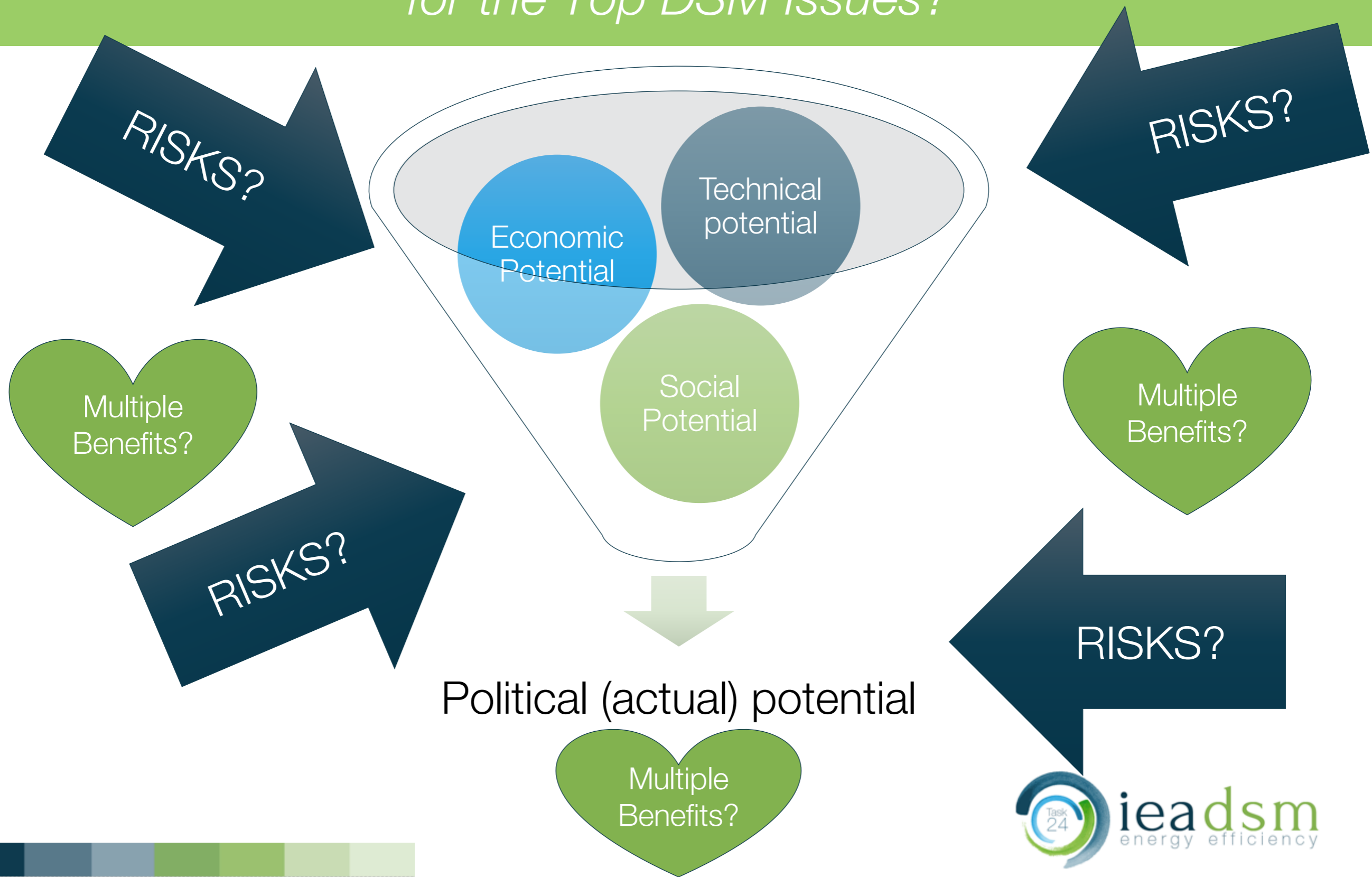
Reprinted with the permission of FSG and the Stanford Social Innovation Review

HOW? *What are the Top DSM Issues here?*

Top DSM Issues:

- Is there a national **list** of DSM issues?
- What are the biggest behavioral **potentials**?
- What DSM policies and programs are **already tackling** these issues and **how**?
- What are their **approximate contribution** to the country's load management (economic, technical, political and societal potentials)?
- What are the **risks and multiple benefits** of each?

HOW? *What are the potentials, risks and (multiple) benefits for the Top DSM Issues?*



HOW? *Who is the End User whose behaviour we are trying to change?*

Tenants? In single homes or apartment buildings?

Home owners? (single or apartment)

Office workers in a large commercial building?

Retail workers in smaller retail buildings?

Landlords? Private or large-scale? Social housing? Commercial?

Building Management Operators? Office or eg hospitals?

Smart meter/feedback/EE technology installers or developers?

Drivers? Truck or private vehicle? Behaviour or Mode Switching?

Freight companies? Behaviour or technology switching?

SMEs? Which sector? CEOs or energy managers/CFOs?

Universities? ICT staff? Students? Administrators? Researchers?

Middle Actors in communities?

Who else could it be?



HOW? What behaviour are we actually trying to change?



Home owners: Share PV with your neighbourhood (NZ)

Commercial building tenants and landlords: Co-develop green leases that work (SE)

Building Management Operators in Hospitals: Changing set points in BAS (US & CA)

Car users: Increasing uptake of mobility sharing apps (AT)

Staff and students in Universities: What are the low-hanging fruit? How can we deliver big savings using ICT easily? (NL)

Householders: Using public libraries as Middle Actors loaning out energy saving kits (IE, NZ)

→ It can be any behaviour, on any DSM issue in any sector.

HOW? Subtask 6 – The Issues (in addition)

- Split incentive issues for residential landlords in France (ECEEE summer study 2015),
- Reducing energy use by 20% in restaurants in Fort Collins (BECC conference 2015),
- Our three case studies from Sweden, NL and NZ (BEHAVE conference 2016),
- Reducing energy use by staff in Wellington Zoo (Energy Cultures conference 2016),
- Air pollution in the city of Graz (ECEEE summer study 2017).

→ It's about the process and the people, not the issue or tools

Task 24 Phase II

Subtask 7 - The Behaviour Changer

Framework “The People”

A new way of
visualising the energy
system

HOW? Who are the RIGHT Behaviour Changers to collaborate on our issue/behaviour?

Government – which level, agency, person/s?

Industry – which sector, organization, person/s?

Researchers – which discipline, organization, person/s?

The Third Sector – which sector, association, person/s?

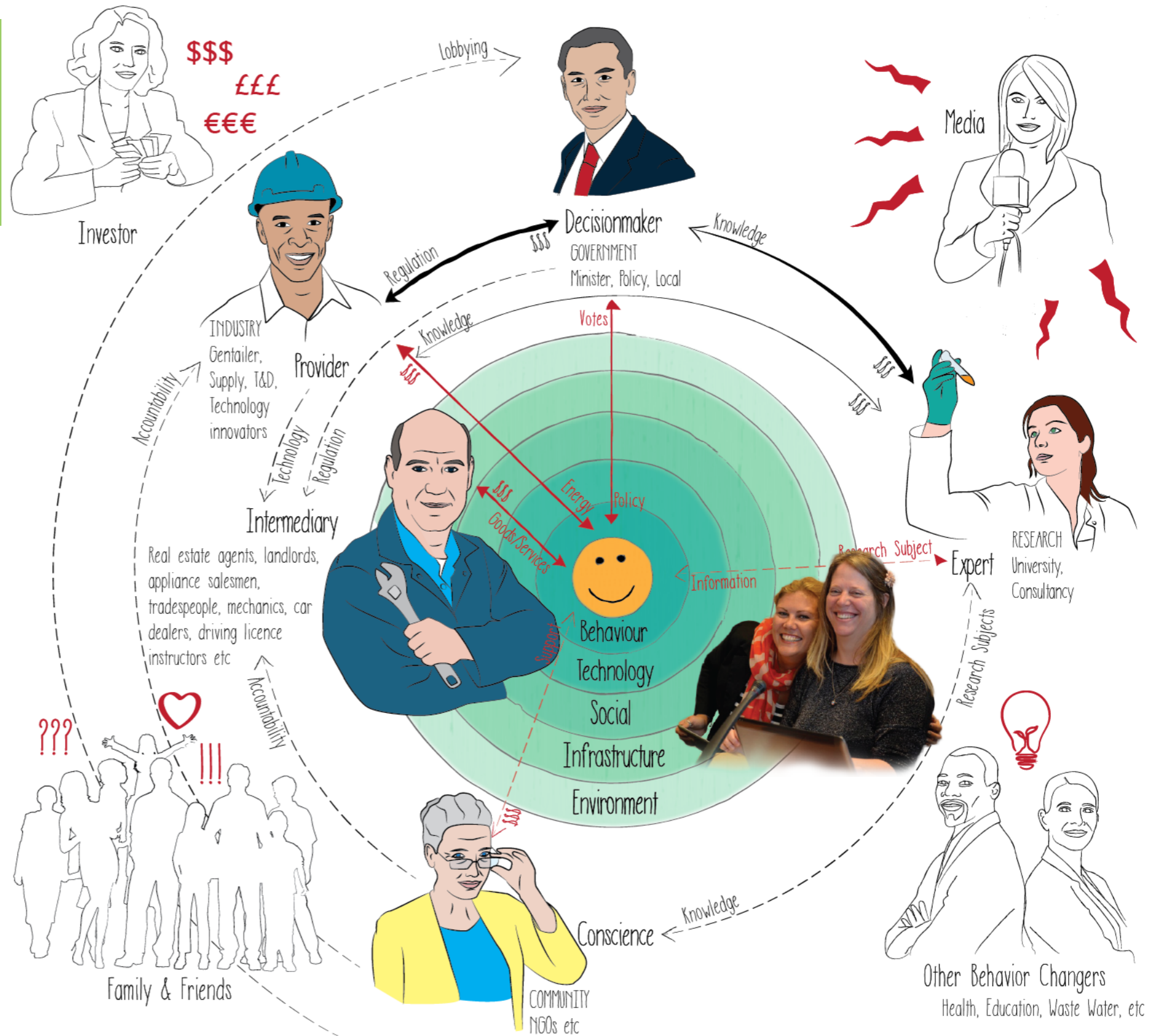
Middle Actors – which sector, company, person/s?



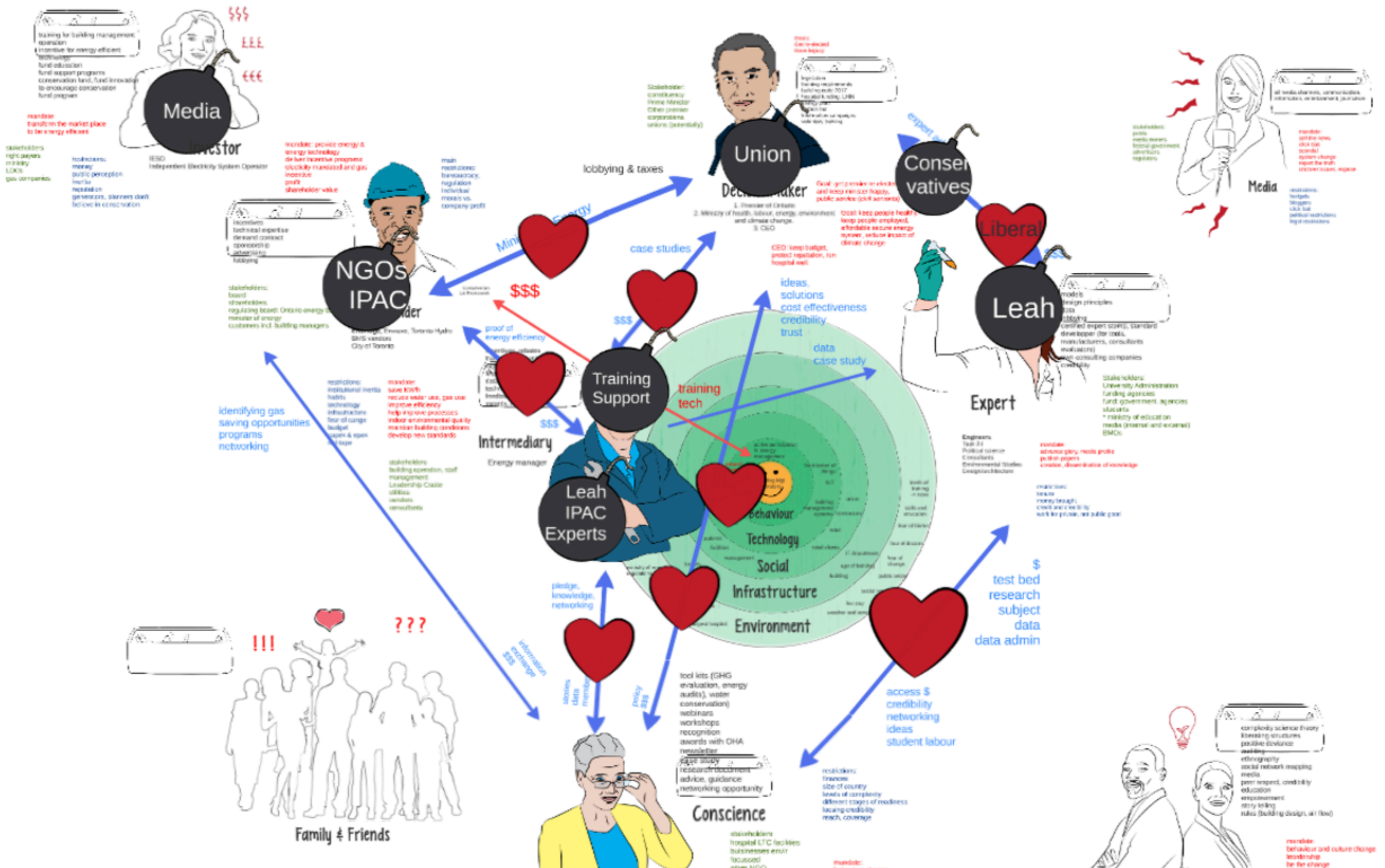
For more information, visit www.ieadsm.org

WHAT: The magic carpet of Task 24

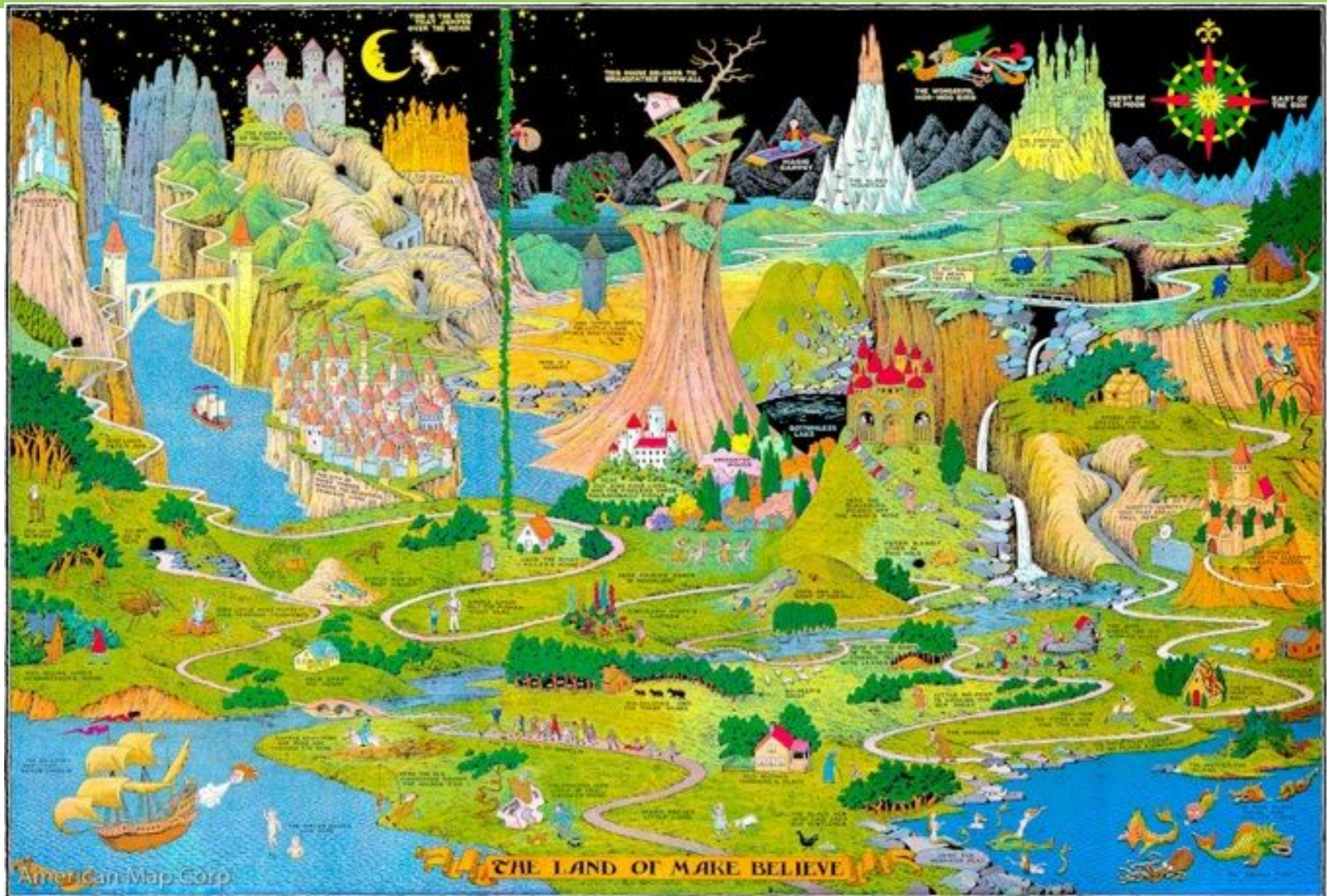
Rotmann (2016). How to create a “magic carpet” for behaviour change. BEHAVE conference:
<http://www.ieadsm.org/wp/files/Rotmann-BEHAVE-2016.pdf>



WHAT? View explanation: <https://youtu.be/E3A92eFyvNw>



WHAT? *The Overarching Story of Task 24 (ST 10)*



For more information, visit www.leadsm.org

SO WHAT? *What's the moral of the story of Task 24?*

- There is **no behavioral silver bullet**
- **All models are wrong** but some of them are useful!
- **Homo economicus** doesn't exist
- Most energy use is **habitual and routine**
- **Habits** are the most difficult thing to break, though...
- It's easiest during **moments of change**
- Although there is no such thing as **individual energy use...**
- **Individualistic, technocratic and rational approaches** to behaviour change fit well into our current socio-economic and political system
- We need to look at **whole-system, societal** change
- This can't be done in isolation by one sector - **collaboration** is key
- We need to facilitate **shared learning** and collaboration in multiple stakeholders, which is difficult
- We need a **common language** based on narratives

If there is ONE THING to take home from all this:

IT'S ALL ABOUT THE PEOPLE!



Thank you very much for your attention!

Any comments or questions?

drsea@orcon.net.nz