

Contrasting Research- and Commercial-driven Approaches on Digitally-based Energy Behaviour Change

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Behave 2020/2021 Conference – 21 April 2021

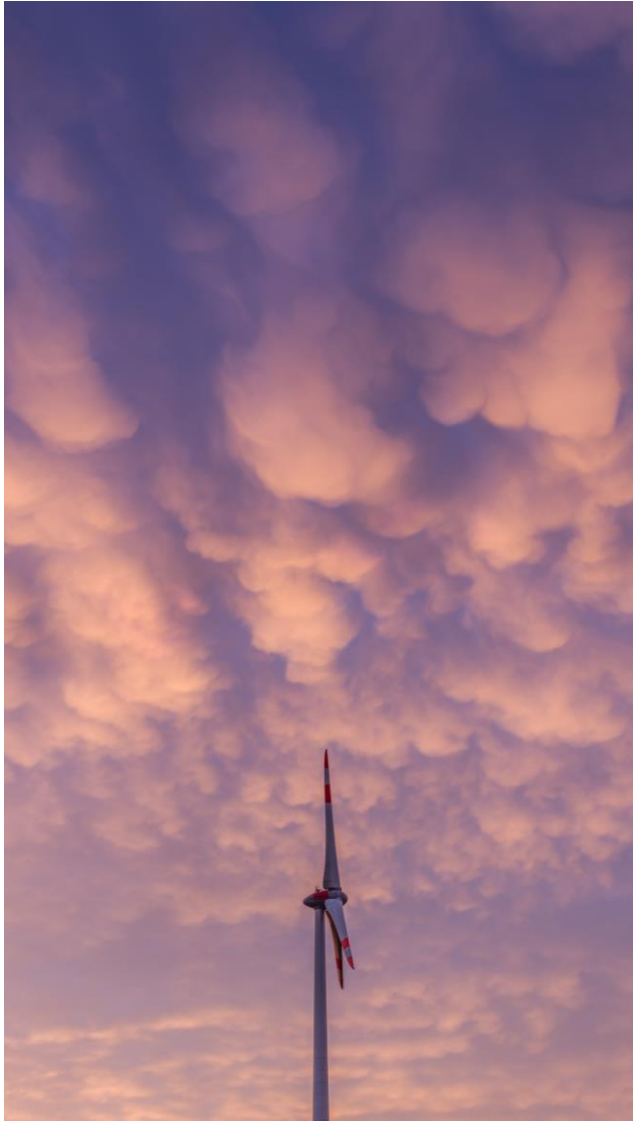


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Behave Conference – 21 April 2021



Project setting

Value of digital innovation for energy*

*Specifically looking at potential to address DSR behaviours: flexibility, peak shifting, sufficiency

- Making connection between behaviours (actions) and energy/CO₂-related impacts more tangible
- Potential to address existing challenges (Bird & Legault, 2018; Buchanan et al., 2015):
 - Engagement of new/ different audiences
 - Reducing cost of awareness raising
 - Maintaining long-term change (habit formation)

Resulted in thousands
of commercial- and
hundreds of research-
driven digital solution
projects



vs. Commercial

Research

- Audiences & Outcomes
- Approaches & Limitations
 - Lessons to learn?



Approach

Commercial behaviour change designers

- 6 interviews (2020)
- From UK, FR, CH
- Feedback and intervention projects using digital technologies

Documentation of EU research projects

- 19 EU-funded projects (completed between 2015 and 2020)
- Primarily app-based intervention projects aimed at individual energy behaviours

EU research projects

- Systematic search through funded projects on CORDIS¹ from 2008 to present
- Projects starting earlier than 2015 were found to be not digital enough/ technologies already outdated
- Projects selected for focus on individual energy behaviour change



¹ <https://cordis.europa.eu/> Community Research and Development Information Service (CORDIS) is the European Commission's primary source of results from the projects funded by the EU's framework programmes for research and innovation (FP1 to Horizon 2020).

Analysis

Coding of interview transcripts and project documents for:

- Audience: individual users and building characteristics
- Desired outcomes: direct and indirect impact on energy
- Identification of challenges and solutions

Analysis – open for discussion

Coding of interview transcripts and project documents for:

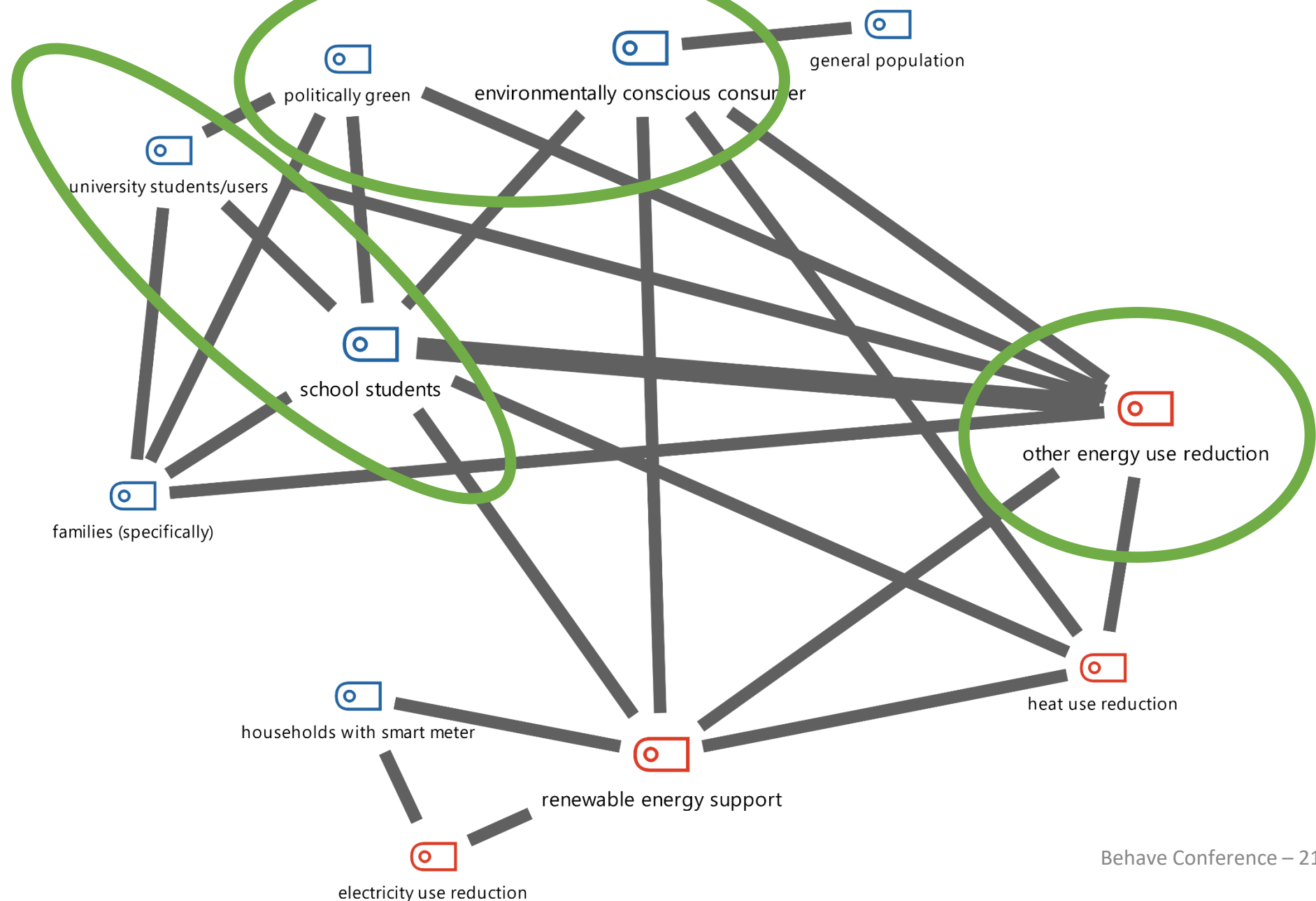
- Behaviour change theories*: mentions of theory of change or an explicit theory (*ex. "People need to know their impact so their contribution can be meaningful"*)
- Digitally-based behaviour change techniques*: what is practically used to change behaviour (*ex. Weekly report on energy savings using a proxy like kms driven*)

* Original lists derived from work from the Behaviour Change Project at UCL, UK (Michie et al., 2013). Need for understanding theories and techniques in environmental psychology exists (Beck et al. 2019)

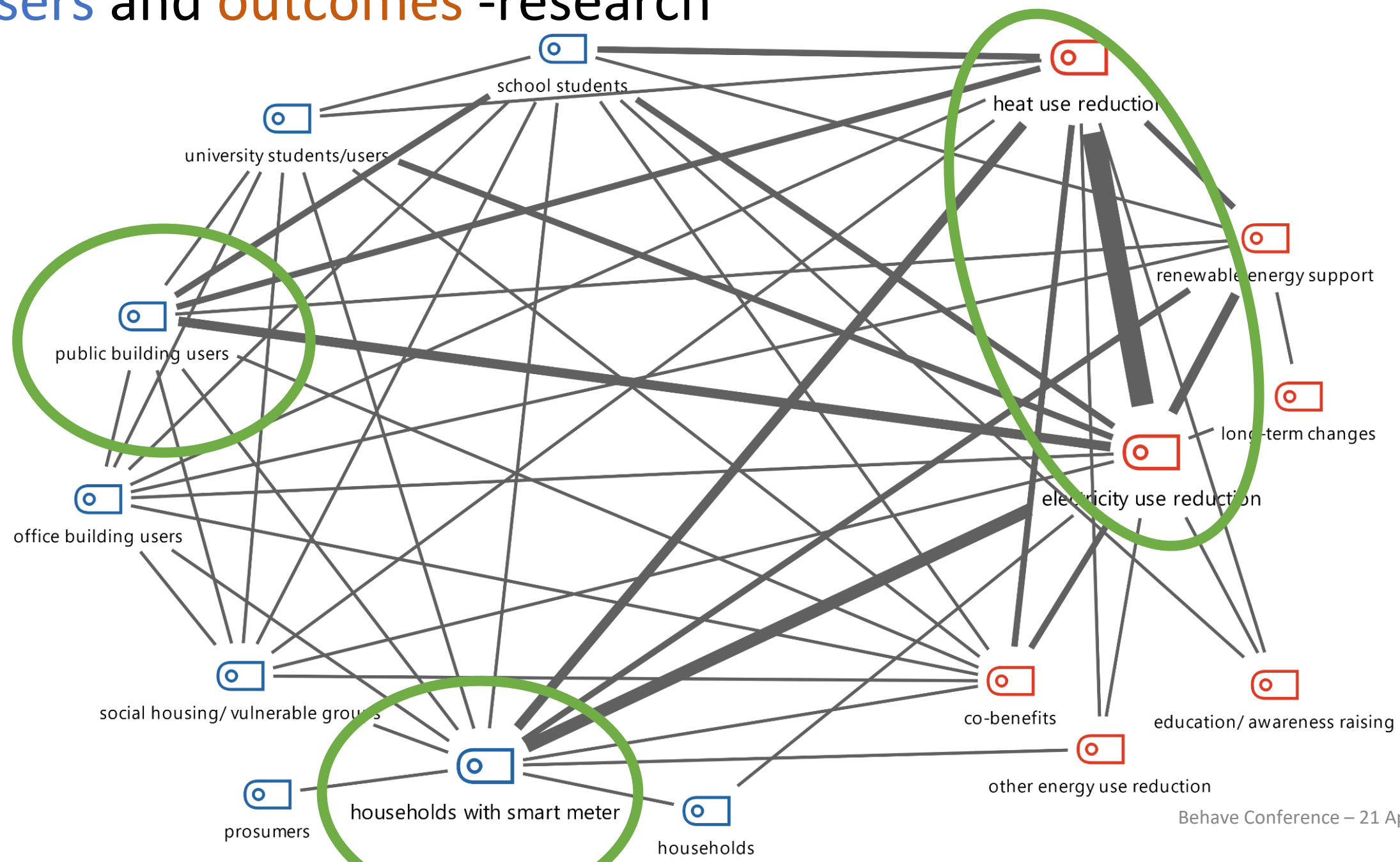


Results for discussion

Users and outcomes -commercial



Users and outcomes -research



Users and outcomes -summary

Commercial projects define social constellations and attitudes of users

Research projects focus on infrastructure context and data accessibility

- Differing access to people and data

Commercial projects aim for broad CO₂-related impacts

Research projects are primarily energy use focused

- Differing incentive structures

Theories and techniques -commercial

	Feedback on Outcomes of Behaviour	Information about Antecedents	Information about Consequences	Prompts/ Cues	Graded Tasks	Credible Source	Multi-benefit incentive	Message medium	Message novelty	Aesthetics & design
Social Influences										
Beliefs about Capabilities										
Attitude										
Context & Resources										
Intention										
Knowledge										
Decision Processes										
Motivation										

Challenges & solutions -commercial

Engagement

*“The first experience is really simple and what we want to do is to provide a **quick experience**. So just after signing up, you have your report and clear answer.”*

Awareness

*“If you want to do something with people, you have to go where people are and people actually are on the phone and this hasn't changed in the last 10 years and **probably will not change in the next 10 years**.”*

Longevity

*“We've been trying to reimagine how the app will work so that we can make **a case of how we're going to make money**. Which is unfortunate because it's not really the primary motivator. It's not really what I want to be involved in.”*

*“If you face the markets, and expect to make your money out of the market, you actually are **risking a lot** because there are hundreds of applications competing for the same users, the very same money.”*

Open questions

- How closely related are theories and techniques for energy behaviour change?
- Can there be better collaboration between researchers and commercial designers?
- How can we keep the research-driven innovations available for the market?

Thank You

FOR WATCHING AND LISTENING

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References

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Buchanan, K., Russo, R., & Anderson, B. (2015). The question of energy reduction : The problem (s) with feedback. *Energy Policy*, 77, 89–96. <https://doi.org/10.1016/j.enpol.2014.12.008>

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EU reference projects

Project acronym	Project name	Time frame
BENEFFICE	Energy Behaviour Change driven by plug-and-play-and-forget ICT and Business Models focusing on complementary currency for Energy Efficiency for the Wider Population	Nov 2017 - May 2021
ChArGED	CleAnweb Gamified Energy Disaggregation	Mar 2016 - Mar 2019
Eco-Bot	Personalised ICT-tools for the Active Engagement of Consumers Towards Sustainable Energy	Oct 2017 - May 2021
enCOMPASS	Collaborative Recommendations and Adaptive Control for Personalised Energy Saving	Nov 2016 - Nov 2019
EnerGAware	Energy Game for Awareness of energy efficiency in social housing communities	Feb 2015 - May 2018
ENTROPY	Design of an innovative energy-aware it ecosystem for motivating behavioural changes towards the adoption of energy efficient lifestyles	Sept 2015 - Dec 2018
eSESH	Saving Energy in Social Housing with ICT	Mar 2010- Mar 2013
FEEdBACK	Fostering Energy Efficiency and BehAvioural Change through ICT	Nov 2017 - May 2021
GAIA	Green Awareness in Action	Mar 2016 - June 2019
GreenPlay	Game to promote energy efficiency actions	Mar 2015 - Sept 2018
GreenSoul	Eco-aware Persuasive Networked Data Devices for User Engagement in Energy Efficiency	Apr 2016 - Nov 2019
InBetween	ICT enabled BEhavioral change ToWards Energy EfficieNt lifestyles	Nov 2017 - Nov 2020
MOBISTYLE	MOtivating end-users Behavioral change by combined ICT based tools and modular Information services on energy use, indoor environment, health and lifestyle	Oct 2016 - July 2020
OrbEEt	ORganizational Behaviour improvement for Energy Efficient administrative public offices	Mar 2015 - Mar 2018
PEAKapp	Personal Energy Administration Kiosk application: an ICT-ecosystem for Energy Savings through Behavioural Change, Flexible Tariffs and Fun	Mar 2016 - July 2019
Sim4Blocks	Simulation Supported Real Time Energy Management in Building Blocks	Apr 2016 - Oct 2020
SOCIALENERGY	Gaming and Social Network Platform for Evolving Energy Markets' Operation and Educating Virtual Energy Communities	Jan 2017- June 2019
TRIBE	TRaIning Behaviours towards Energy efficiency: Play it!	Mar 2016 - Mar 2018
UtilitEE	Utility Business Model Transformation through human-centric behavioural interventions and ICT tools for Energy Efficiency	Nov 2017 - May 2021

Digital innovations in energy sector

High temporal and spatial resolution of energy (and beyond) consumption

- In data acquisition: ICT-enabled sensors, smart meters or user-provided data
- In feedback delivery: Smart phone apps for wherever and whenever, gamification, big(ger) data analysis

Commercial behaviour change designers

- Contacts through professional network
- Involved in behaviour change approaches for last three years
- Digital solutions either in development (start-ups) or already on the market

