

Long-term behavioural change and user empowerment

Through a serious game connecting the smart meters of residential consumers

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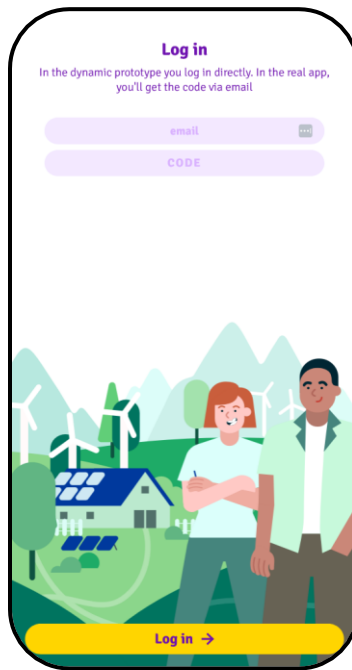
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Method

We take 2 surveys:

 - 1 before playing the game
 - 1 several months afterwards



Survey ————— Survey

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Conceptualisation

To answer our research questions, we combine empowerment theory and the value-belief-norm theory.

a) Value-belief-norm theory:
Values, beliefs and norms influence our **actual behaviour**. Values are relatively stable, but **beliefs** may change and consequently, our behaviour.

b) Empowerment theory:
People that **believe** they are empowered have intrinsic motivation and more confidence in embracing tasks. This **motivational empowerment** is considered to be positively related to **outcome empowerment**, or **actual behavioural** change.

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Purpose

We aim to measure

 - 1) How playing the game contributes to empowerment and long-term behavioural change in energy use.
 - 2) Whether EU energy legislation is successful in empowering households in the energy transition.

ABOUT THE PROJECT

- Development of a serious game about energy consumption for households.
 - **Track energy consumption of households.**
 - **Provide energy forecasts**
- Play 'missions' that need to be executed in real-life.
- Change energy consumption in the household
- And learn about energy consumption change through real-time feedback and educative missions



EU ENERGY LEGISLATION

EU empowerment measures

- Saving energy
- Dynamic pricing contract
- Self-generation, consumption and sale of energy
- Adjusting consumption in time

IF people do not feel empowered by measures, **THEN** changes in legislation?



References

- Lampropoulos, I., Werning, S., Nasrollahi, H., Veltkamp, R.C., Belinskiy, A. & Van Sark, W., 'A Serious Game Connecting the Smart Meters of Residential Users for Demand Side Management: Lessons Learned in the Preparation Stage', *The 10th IEEE International Smart Cities Conference*, 29 Oct. - 1 Nov. 2024, Pattaya, Thailand.
- Thomas, K.W., & Velthouse, B.A., 'Cognitive Elements of Empowerment: An "Interpretative" Model of Intrinsic Task Motivation', *The Academy of Management Review* 1990/15, vol. 4, 666-681.
- Hartmann, Apaolaza & D'Souza, 'The role of psychological empowerment in climate-protective consumer behaviour. An extension of the value-belief-norm framework', *European Journal of Marketing* 2018/52, vol. 1, 392-417.
- Van der Werff, E., & Steg, L., 'The psychology of participation and interest in smart energy systems: Comparing the value-belief-norm theory and the value-identity-personal norm model', *Energy Research & Social Science* 2016/22, 107-114.