Digitalization as a Lever for Sustainability

WG6: Reduce Energy Consumption

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Where can we make a contribution from an HCI perspective?
- How can we make people become activists?
- How can we make it seem cool (again)?
- We can visualize things

What are the current problems?
- Lack of information:
    - What is a good decision? What steps are necessary to change the system?
    - How much does an elevator ride "cost"? - does this have a big impact or not?
    - No general overview of energy consumption available, e.g. of communal buildings such as schools
- Lack of empowerment to make decisions
    - e.g. Heating has a lot of impact but landlords have no incentive to install more effective heating
    - renters have no influence on heating systems that owners install;
    - there is little information on electricity use available
- Lack of incentives
    - engineers/builders have to guarantee that a system works
    - Distribution of roles
        - almost no PV installed in cities
        - global projects impossible
    - Energy as an abstract problem. Immediate impact cannot be felt
    - No incentives for energy providers (including communal providers) to change regulation
- Lack of legislation (that changed things for electric charging stations, for example)
    - E.g., legislation is only introduced for new buildings/…, not for existing ones
- Saving energy is not always the best option, for example when it's sunny
- Generation/lifetime problem
- Too much effort

Approaches:
- Grid-ready devices that adapt to current energy prices have been tested and did not work
- Targeted heating: heat only where I am located

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- Tracking down old technology that makes too much of an impact -> penalize stupidity
- Putting the right price tag on CO2
- determining microclimate, e.g. air flow
- PV kits for the balcony, modular solutions
- making your energy balance visible
- drone evaluation: state of buildings, heat production
- insulation + heat pumps

HCI Approaches
- Design friction: increase the effort to do things at unsuitable moments, e.g.
  - you need to press more buttons to make the dishwasher run at a time when energy is more expensive
  - in winter, the eco mode of your car only runs at 60 km/h
- Regulation / System design: the lowest energy setting needs to be set as the default one
  - "Öko by design"
  - We use people's laziness (software defaults: Mackay, W. E. (1991). Triggers and barriers to customizing software. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems Reaching through Technology - CHI '91*, 153–160. https://doi.org/10.1145/108844.108867)
- Visualization
  - energy consumption of household devices
  - global visualization
  - publicly available eco balance of companies, communal infrastructure - certification
- Add an employer eco rating in kununu