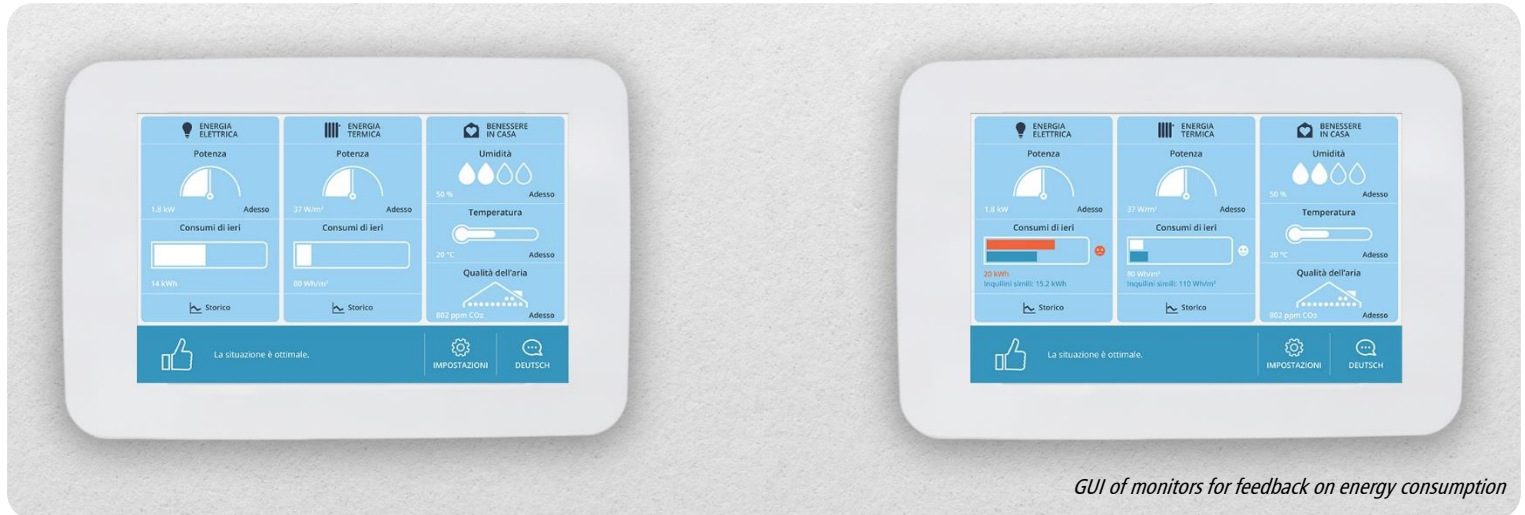# Real-time feedback on energy consumption in households

GUI of monitors for feedback on energy consumption

Tenants of 140 apartments in refurbished buildings in Bolzano receive real-time feedback about their energy consumption via a touchscreen monitor. A dedicated Graphical User Interface (GUI) has been designed and developed for this purpose. Based on the assumption that energy saving tips increase individuals` likelihood to change behavior, the GUI will also send saving tips when a particular energy consumption threshold is achieved.

Via the GUI of the monitors installed inside the apartments, tenants will furthermore receive information about the historical household consumption on a daily, weekly and monthly basis.

Moreover, some of the tenants are randomly assigned to a treatment group. These tenants receive a normative message, including descriptive and injunctive norms in addition to the abovementioned feedback. This approach is based on the evidence that social comparison feedback activates individuals' intrinsic motivation to change behaviour. The descriptive message informs about the mean household energy consumption from the most efficient similar residents during the past days, weeks and months.

The monitor is a tool to promote an effective use of the retrofitted apartments. The proper application of the monitors by the tenants is assisted by dedicated workshops and a user manual. Focus of the workshops also is the importance of individual and family behaviour for energy efficiency and they shall empower participants to achieve effective energy saving results, both for them and for the project.

vision	Real-time feedbacks can increase tenants' awareness about their energy consumption habits. Social comparison feedbacks can increase energy savings.
addressed stakeholder groups	tenants
outreach	The touchscreen monitors were installed in 140 apartments.

Résumé

Challenges

…regarding the design of the GUI

▶ A big number of tenants are elderly. Often they are not familiar with ICT technologies.

▶ People from many disciplines are working together in the project, with different expertise and speaking in specific technical languages.

…regarding the development

▶ Every monitoring system has different protocols and ways to manage data. Gathering, harmonisation and integration of data in the GUI is considerable difficult.

…regarding the installation

▶ Technical aspects: A smooth installation of the displays requires the coordination of the involved construction companies (preparation of all the necessary connections and proper lockable display case wall mount).

▶ Legal aspects: Personal data protection has to be in compliance with the EU General Data Protection Regulation GDPR.

…regarding the contact with the tenants

▶ Some tenants are skeptical with the monitoring activities. They feel controlled and cannot see the advantages that they could obtain from this tool.

Recommendations

▶ Foresee a testing phase of the interface before launching, using a sample from final users to assess it.

▶ Prepare detailed monitoring specifications with all the technical requirements in an early stage of the project.

▶ Consider Data protection from the beginning, collecting signed documentation in an early stage of the project.

▶ Check out the GUI demo *here* !
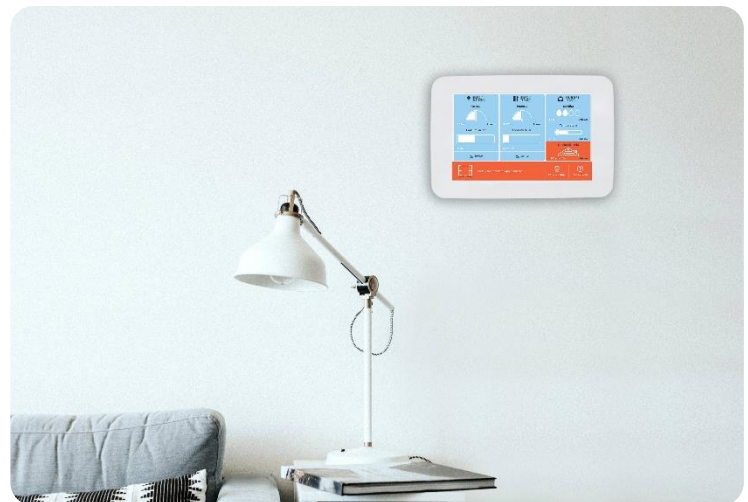
„We are looking forward to have this monitor installed to improve our wellness at home, cannot wait any longer!"

**Tenant,
Via Brescia-Cagliari building, Bolzano**