Summative assessment framework
WebQuests

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WebQuest CU3

WebQuest title

Be a leader in stopping energy poverty!

Introduction

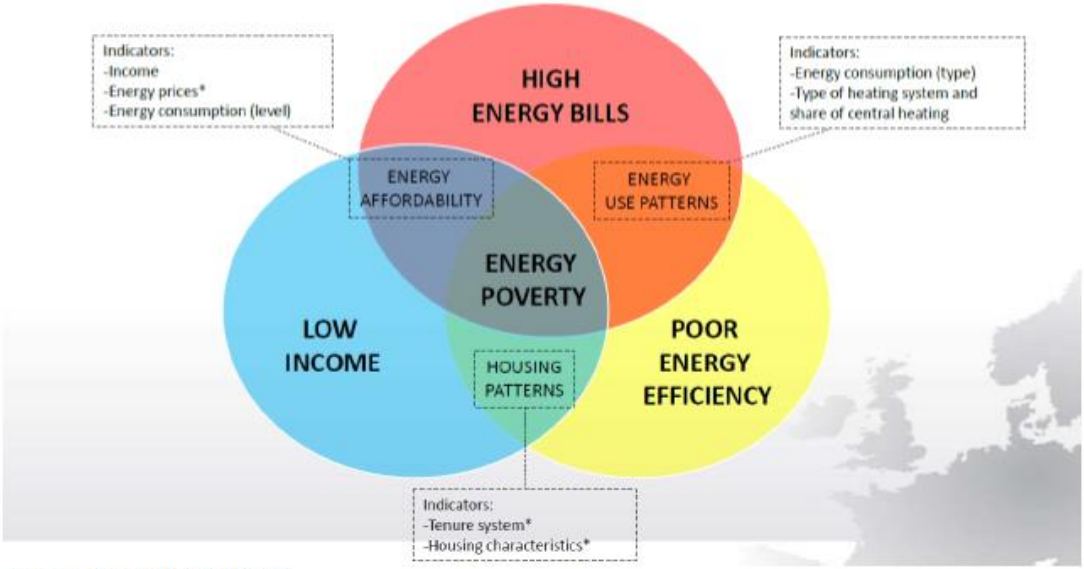
The worsening economic conditions of European households as a result of the financial crises has turned the spotlight on the difficulties they face in meeting their energy needs, known as energy poverty (EP). Many households across the EU are facing either cold winters or excessively hot summers due to their inability to pay for their utility bills, hence the EP across EU is a substantial challenge.

Currently, about 35% of the EU's buildings are over 50 years old and almost 75% of the building stock is energy inefficient with a very low renovation rate which actually aggravates the overall context of EP. If all buildings were efficient and therefore consume less energy, then EU citizens facing EP would be able to increase their living comfort and pay less bills!

EP can be mitigated by helping people to save on energy consumption (via the identification of energy efficiency improvements as a result of an energy audit).

In this context, your role is to help the EU (and people) reduce EP by leveraging the importance of energy audits of residential buildings and identification of cost-effective interventions (technological innovations for energy systems, renovations, governmental subsidies and behavioural change).

You can make a true difference for European people and boost the wellbeing of your community just by sharing your knowledge and expertise !



Source: EnR Position Paper

Photo Source

Task

Select a residential building (or a virtual one based on average consumption data from https://www.energypoverty.eu) with known cases of EP and propose solutions to mitigate EP ! Prior to the proposal of solutions for energy savings and helping thus reduce EP, a prototype of residential building's energy efficiency status needs to be performed. This will be achieved by utilising secondary data with regards to energy consumption (electricity, natural gas and other fuels/resources) in order to perform an energy efficiency audit.

A level III energy audit should be performed consisting of: monitoring, for a representative period of time, the relevant electrical charges, performing energy analysis to thermal production systems in order to detect the respective yields and eventual malfunction, collecting of data from partial electricity, gas or hot water meters, confirm the technical data obtained in the previous phases, measuring consumption of the most powerful equipment (UTAs, HVAC, pumps, fans, other equipment), measuring of the illuminance levels of the places, checking flow rates and temperatures of the main hydraulic circuits (thermal energy consumption) and assessing the thermal comfort.

Produce a short summary (text & video) of the outcomes of the energy audit. Afterwards, (based on cost-benefit analysis) propose solutions to help the residential buildings from the involved cities/regions reduce energy consumption by building upon three main directions: technological innovations for energy systems, renovations, governmental subsidies and consumer behavioural change ! Finally, identify an energy monitoring system (free of charge, mobile compatible) that can help households monitor energy consumption (considering a hypothetic implementation of the proposed measures) and therefore reduce EP.

Photo Source

Process

1- Form groups of three to work in a collaborative manner in this task. One person deals with the data collection; another person deals with the calculations/analysis and the third one deals with the recommendations. Together, you will act as EP consultants.
2- Perform a level III energy audit on a residential building with EP by taking average data from www.energypoverty.eu (or from any other source that provides data related to energy poverty & consumption).
3- Produce a short summary (text) of the outcomes of the energy audit.
4- Propose solutions to help the residential buildings from the involved cities/regions reduce energy consumption by building upon three main directions: technological innovations for energy systems, renovations, governmental subsidies and consumer behavioural change. For solutions you could check sources such as UNECE or BUILD UP Initiative (or others).
5- Finally, identify an energy monitoring system (free of charge, mobile compatible) that can help households monitor energy consumption (considering a hypothetic implementation of the proposed measures) and therefore reduce EP.
6- Develop a 3 minute video (in any tool you prefer) in which you will present the outcomes of the above-exercise (concisely and focused mostly for the benefit of the consumer !). During the video, also present/discuss (based on your roles) what challenges will there be from your perspective.
7- Deliver your video to the class/audience and answer questions.

Resources

Energy Poverty Observatory

EUMayors – Energy Poverty

UNECE

EU & Energy efficient buildings

LIFE Project

BUILD UP Initiative

Energy audit methodology

Making short videos

Energy monitoring apps

Integrating energy monitoring data

Evaluation and LOs

After completing this WebQuest, the learner will be able to:

- Understand the importance of energy audit in buildings and how this links with energy poverty
- Develop an understanding in the different energy audit procedures.
- Identify and engage the required stakeholders in an energy audit.
- Contribute in energy audit report preparation – including interpreting the outcomes of the energy audit report and developing recommendations for the outcomes of the energy audit reports.
- Prepare recommendations for reducing the energy consumption
- Research, gather and organize information found online
- Communicate an idea through a pitch in a public presentation
- Develop an understanding on the EU social policy of boosting citizen wellbeing (i.e. mitigating energy poverty)

Trainees will be evaluated in pairs based on:

- The relevance of the mix-of proposed solutions to mitigate energy poverty (including a cost-benefit analysis and governmental subsidy support to enable the purchase/installation of such solutions).
- Ability to convey clear facts based on the findings/analysis
- Ability to answer questions

Conclusion

The whole point of this WebQuest is to try your skills with regards to proposing solutions that can actually be implemented by the people in need. Therefore, it is not sufficient to just propose the most state of the art innovations (i.e. expensive) but rather to find a compromise (financially viable) that consumers with energy poverty can afford (i.e. with third party support also if needed via governmental subsidies). You will need to be flexible, spot-on and to know how to navigate in an area where much of the information might be unavailable ! Game on.

Photo from the REACT Project