Demand Side Management Tools

Interreg CENTRAL EUROPE
European Union
European Regional Development Fund
TOGETHER

Audit on the consumption practices and energy behaviour awareness of the buildings users

SOCIAL ENERGY AUDIT – IT TAKES ENERGY

CE51 TOGETHER

INTERREG CENTRAL EUROPE 2014-2020

TOGETHER

TOwards a Goal of Efficiency THrough Energy Reduction

Audit on the consumption practices and energy behaviour awareness of the buildings users

PP1 – Province of Treviso

PP3 – University of Maribor

Executive summary

This questionnaire represents the experimental work carried out under the Interreg CE51 CENTRAL EUROPE 2014-2020 TOGETHER project and it has been developed by the Province of Treviso in cooperation with the University of Maribor.

This set of questions aims to understand the building users' behavioural attitudes. The data will be processed in accordance with the current legislation and in any case no personal data is required unless the sex, class and school belong.

The results of the questionnaire will not be used for individual evaluation purposes by the School or the Province of Treviso, but they will be used for research purposes and for better understanding what may be the most effective measures that may motivate behavioural change.

There are 32 questions within this survey that can be easily adapted to other target group. All the project partners can adapt the questionnaire for their local purpose.

This questionnaire is part of the pilot actions implemented by the Province of Treviso but could be used as a "social audit" tool. Therefore, it has been decided to develop it as an integrated tool.

Contents

1. Introduction

The Project TOGETHER offers a transnational capacity building platform, where partners with different levels of knowledge can strengthen their competences together, thus reducing their disparities and promoting actions on both the supply and demand side, in the context of planning EE in public buildings. The main goal of the project is improving energy efficiency and energy saving in public buildings by changing behaviour of building users and promoting energy efficiency measures.

In Italy the final energy consumption can be broken down in roughly equal shares among the industrial (27,7%), transport (31,4%) and civil (30,3%) sectors. Thus, the choices in energy economics are not the sole responsibility of big industrial groups, but also of simple citizens. Therefore, it is important to understand how people relate to the buildings they live and how much importance they give to their behaviour.

2. Social Audit

2.1. The investigation

2.1.1. Objectives

Having the building users, specifically of their school, to understand that their behaviour is strictly linked to the energy consumption of the building itself. With the social audit we want to check the existing users' behaviour and to receive feedback whether users are willing to change their habits and act more energy efficient.

2.1.2. Target

Upper secondary school students of the province of Treviso.

2.1.3. Target universe

All the upper secondary school students of the province of Treviso involved in the project TOGETHER.

2.1.4. Sample

It is planned to carry out a probability sampling that can get a reliable response (with an error within 5%). For this reason it is necessary to collect at least 400 questionnaires for each level of analysis. If a single level of response is planned, i.e. the province of Treviso, 400 questionnaires are enough; if, on the contrary, the target is a reliable comparison between male and female students, it will be necessary to collect 800 questionnaires. For the sake of simplicity, a stratified sampling is planned, involving entire classes and not just single subjects. The questionnaire can be used by all the potential interested users.

2.1.5. Administration of the questionnaire

The questionnaire could be handed out (during an assembly, with the help of the class representatives or of the teachers involved in the project TOGETHER), and filled out by the involved subjects.
The Province of Treviso has decided to administrate the questionnaire via web (through an on-line link). It is possible to reach the link via a smartphone with the use of QR code.

2.2. The questionnaire

2.2.1. Section 1: awareness of the environment one lives in

Which of the following electric appliances are in your classroom?

Choose from all the correspondents

- LIM
- Video projector
- Lighting
- PC
- Network devices (switch, access point, router, …)
- Other _____

Indicate with a number between 1 (low) and 5 (high) the energy consumption of one whole year of the appliances in your classroom.

Choose the relevant for each one

- LIM
- Video projector
- Lighting
- PC
- Network devices (switch, access point, router, …)
- Other _____

Which of the following electric appliances are in your school?

Choose from all the correspondents

- Lighting
- Photocopier
- Coffee vending machine
- Drinks/snacks vending machine
- PC (IT classroom)
- Video projector
- Network devices (switch, access point, router, …)
- Chafing dish (in the canteen)
- Equipment in the _____Laboratory
- Equipment in the _____Laboratory
- Other _____

Indicate with a number between 1 (low) and 5 (high) the yearly energy consumption of the following appliances in your school.

Choose the relevant for each one

- Lighting
- Photocopier
- Coffee vending machine
- Drinks/snacks vending machine
- PC (IT classroom)
- Video projector
- Network devices (switch, access point, router, …)ù
- Chafing dish (in the canteen)
- Equipment in the _____Laboratory
- Equipment in the _____Laboratory
- Other _____

In your opinion, do you think your school friends are interested in the topic and reduction in energy consumption?

Select **only one** option

- Yes, I've noticed interest, but only from few people around me.
- Yes, I've noticed attention about the topic of "Energy and saving" from most of my friends.
- No, I don't think so.

In the school you are attending, have there ever been initiatives to raise people's awareness towards energy consumption and possible energy savings.

Select **only one** option

- Yes
- No
- I don't know

If yes, can you briefly describe them?

2.2.2. Knowledge of the Energy "rules" and of one's behaviour

What is the unit for electric energy measurement?

Select **only one** option

- J (joule)
- kcal (Kilocalorie)
- kWh (kilowatt hour)
- BTU (British Thermal Unit)
- I have no idea

How much do I spend to recharge the mobile battery in a year?

Select **only one** option

- Less than 3 euro
- From 3 to 10 euro
- More than 10 euro

When my mobile battery is charged what do I do?

Select **only one** option

- I unplug the power supply
- I leave the power supply plugged
- I've never paid attention to it

Now let's talk about the consumption of electric appliances in standby mode… Indicate which statements are true or false:

- Electric appliances in standby are on average responsible for 11% of the electric consumption in our houses

  □ TRUE OR □ FALSE

- Consumption in standby is a consumption which is present even when electric appliances are off or are not performing their main function

  □ TRUE OR □ FALSE

- Standby consumption can be considered a "waste", because a part of energy is consumed even when electric appliances are not performing their main activity

  □ TRUE OR □ FALSE

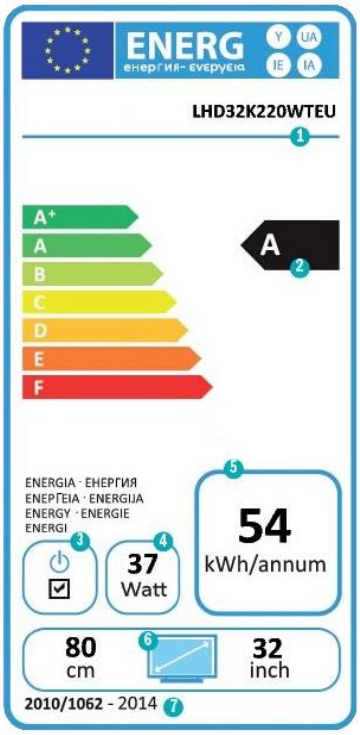
- HI-FI systems and coffee machines left in standby can generate an annual cost between 15-20 euro

  □ TRUE OR □ FALSE

- The cost for a multiple socket with a switch that eliminates the standby of a PC, monitor, printer and speakers, pays off in 10 years

  □ TRUE OR □ FALSE

Let's see how well are you familiar with the energy label required by law on all electric appliances.

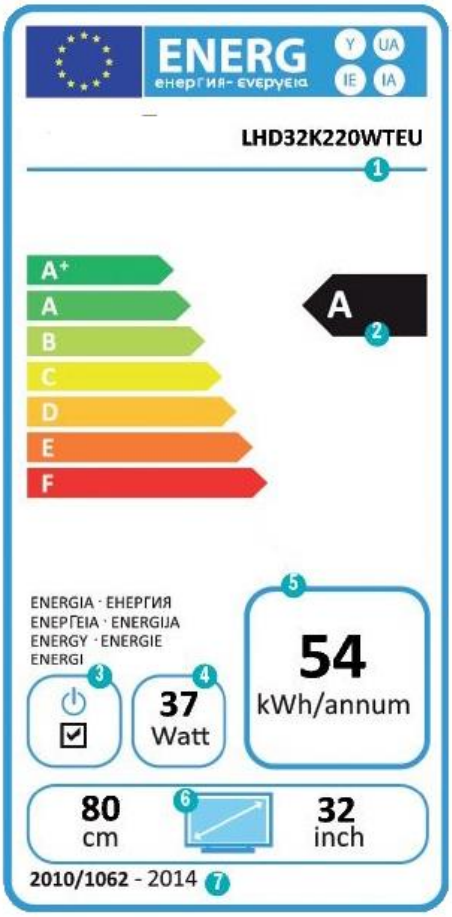


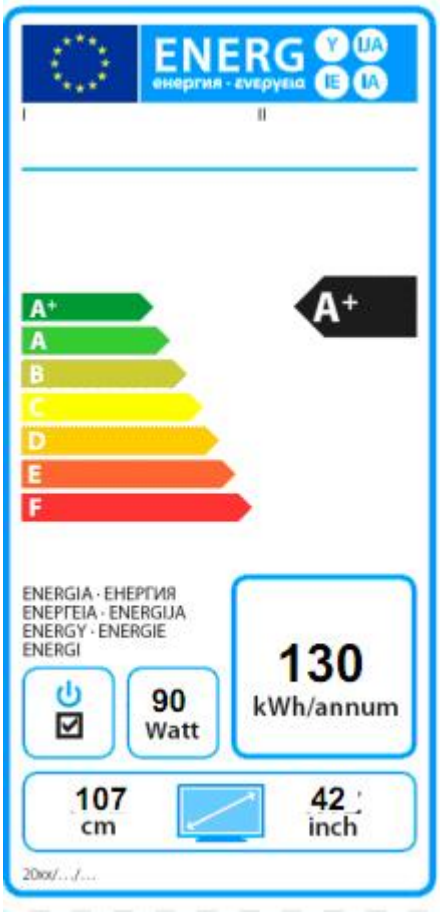
The label on your left is a TV label. It's elements are numbered from 1 to 7 in a little circle. Below, instead, there are the related captions. Can you match the right numbers with the captions?

Please write here the reply/replies:

- Power consumption: absolute consumption in Watt
- Screen dimension (diagonal) in centimetres and inches
- EU regulation and year of production of the appliance
- Producer and model of the appliance
- Energy efficiency class
- Ignition switch to bring the consumption to zero
- Annual consumption in kilowatt hour for a daily use of 4 hours. One kilowatt hour is about 30 cents

Let's say we have to choose between a 42" television (i.e. big) in A+ class with the features indicated in the following label and a smaller one, with the features indicated in the previous label.





Which one will make us spend less for energy consumption?

Select **only one** of the following option:

- The first, The 42" TV
- The second, The 32" TV

Which one has the best energy performance?

Select **only one** of the following option:

- The first, The 42" TV
- The second, The 32" TV

2.2.3. water and heating

If you notice in the school toilet a tap that's dripping, what do you do?

Select **only one** option

- I don't know, I don't pay attention
- I turn it off, but if I can't, I leave it dripping

- I turn it off and, if I can't, I report that to the school staff

How much water do we consume when we take the water flush?

Select **only one** option

- Less than 3 liters
- 5-6 liters
- More than 10 liters
- I have no idea

How much water does an open faucet open for a minute?

Select **only one** option

- 1-2 liters
- 6-8 liters
- 10-15 liters

Do you know what a thermostatic valve is?

Select **only one** option

- Yes
- No

What is the ideal winter indoor temperature for a classroom?

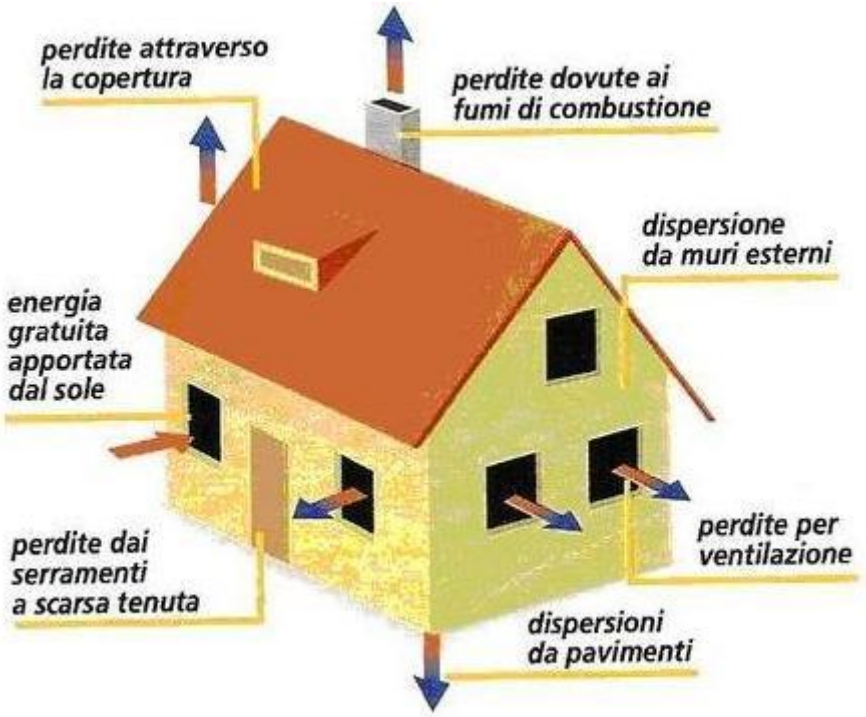
Select **only one** option

- 20 °C
- 21 °C
- 23 °C

How much heat energy can I save by lowering the average temperature by 1 ° in all classes?

Select **only one** option

- Less than 1%
- 1-2%
- 3-4%
- over the 4%



In a building, there are different heat losses depending on a surface structure. Indicate the percentage value that you think is most appropriate for each item. Remember that the sum has to be 100! Write your own answer/here:

- Heat losses through the cover/roof _____
- Heat leakage due to combustion fumes _____
- External wall heat losses _____
- Ventilation heat losses _____
- Heat losses through the floor _____
- Heat losses from poorly-sealed doors _____

A thermostatic valve is a self-regulating valve normally fitted to the radiator, to control the temperature of a room by changing the flow of hot water through the radiator. Are there any thermostatic valves present in your classrooms?

Select **only one** option

- Yes
- No
- Not in all classrooms
- I do not know

2.2.4. Actions to be undertaken and attitude for changes

In order to reduce energy waste, which actions do you think it would be important to implement in your school? Indicate the importance of the following actions with a number between 1 (low) and 5 (high).

Choose the appropriate answer for each item

- Not using any artificial lighting, if natural light is enough.
- Switching off Lim and computer when they are not necessary for the lesson.
- Switching off lights, Lim and computer before leaving the classroom at the end of the school day.
- Keeping windows closed when the heating system is on and reducing as much as possible their opening (opening windows only to change air).
- Reporting wrong behaviour, in order to reduce waste, and suggesting a different attitude.
- Establishing an "Energy manager" in charge of leading the class towards the best behaviour to adopt in order to reduce consumption.
- Dressing appropriately during the winter season.
- Closing shutters at night to avoid heat losses.

What would you think if a classmate of yours were appointed as "Energy manager" with the task of checking and monitoring the energy intensive behaviour of their classmates?

Select **only one** option

- I think it can be very important and could deeply change the situation
- I think it could contribute to reduce the energy consumption
- I believe that energy consumption will not change
- I think it will be not useful, after a few days everyone will have forgotten it

In case the figure of the "Energy manager" was present, do you think that his role should be limited just to his classmates or that it could be extended also to ATA (i.e. janitors staff) staff and teachers?

Select **only one** option

- No, the Energy manager activities must be limited to classmates only.
- Yes, the Energy manager activities must be extended also to teachers and ATA staff, but he could feel uncomfortable in making observations.
- Yes, the Energy manager activities must be extended to all school users.

Here follow some activities that could be done also in your school on the topic of energy saving. Which of these would you like to be done also in your school? Indicate them with a number between 1 (not interesting at all) and 5 (very interesting) the importance of the activity.

Choose the appropriate answer for each item

Activity	1	2	3	4	5
Informal meeting/ training Informal training aimed at teaching students through the use of alternative tools such as theatre or presentations devised by students themselves, involving their peers					
Formal meeting Meeting with an expert that can give relevant information about the energy topic					
Energy helpdesk Setting up of a helpdesk n a building where there are "figures" (such as ATA staff or school teachers) that can support or give recommendations aimed at the reduction of energy consumption and improvement of individual behaviour.					
Serious Game Game that goes beyond entertainment; it pursues an aim, a result and a specific message. In any case, real data will be used. The "Serious Game" is useful as it can give a feedback on energy consumption consequent to certain behaviour; it can be based on a competition, between different bodies, where there is a prize awarded to the ones who get the best results					
Social networking Use of social networks to share information and interact with other people to promote energy efficiency					
Leaflet (information) Newsletter Creation of a leaflet or a newsletter containing useful information about the topic of energy					
Poster/signage Creation of posters or signage to be hung in the school corridors or classrooms					
Storytelling Use of stories or examples on the topic of "Energy" with a view to raise students' awareness towards this sector					
Social prizes Prizes given to an individual or a group that stands out for their awareness in the energy field					
Other tools...					

2.2.5. Personal data

Select only one option:

- Male
- Famale

Class, selection only one option (it refers to the school class/degree) :

- 1 – first class
- 2 – second class
- 3 – third class
- 4 – fourth class
- 5 – fifth class

Class, selection only one option (it refers to the interested school attended by the student)

- Giorgione
- Marconi
- Mazzotti
- Palladio
- Sartor
- Altro