

Questionnaire for the inhabitants

This survey is being carried out within the framework of the European Union project “Spread of Innovative solution for Sustainable Construction” (IS-SusCon), supported by the ERASMUS + program.

SUMMARY

In Hungary we collected around 200 replies, almost double the number as it was initially planned. Moreover, many replies include written feedback and valuable opinion and thus the survey can be considered successful.

Statistically, older generations are slightly and the educated are strongly overrepresented (with 14% of the responders having a PhD). 90% of the responders has experience with building/renovation, 50% of them in the last 5 years which means we successfully reached the target audience with the survey.

The results of the survey confirm the importance of our project. 80% of the responders considered themselves very environmental conscious. Around half of the respondents experienced difficulties when tried to know more about products' environmental performance and 55% would like to see detailed information about it while for 30% of the responders, a simplified (e.g. label-like) information would be enough.

90% thinks a webapp and manual would be useful, proving that there is demand for our concept.

On the other hand, a detailed correlation analysis shows that education correlates with the need for more detailed indicators. Since undereducated people are underrepresented in the survey, too detailed presentation of information should be avoided.



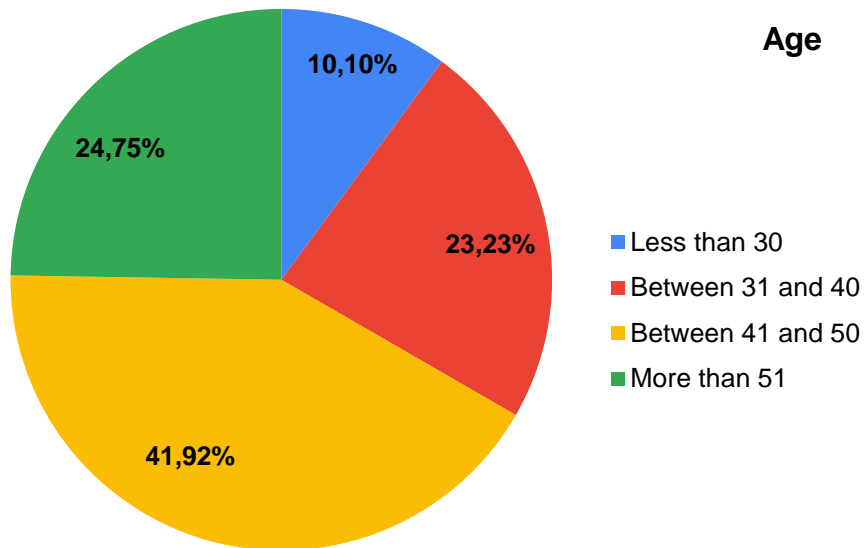
Answers (with the origin questions)

The Hungarian survey can be considered successful as the planned 100 fill-outs has been significantly exceeded. In total, 197 replies received, all but 4 from Hungary, of which 18% live in villages, and most of them in big cities. Education-wise, just 10% of respondents have only secondary education or less, while those with PhD degrees are clearly overrepresented with 14%. In terms of age distribution, 66% of respondents are over 40 years old. Perhaps these irregularities can be explained by the way the questionnaire is shared among a close circle of like-minded people and in professional networks. Based on the feedback about the survey, some of the questions seemed complicated or even incomprehensible to younger or less educated people.

BACKGROUND INFORMATION (mandatory to access the survey)

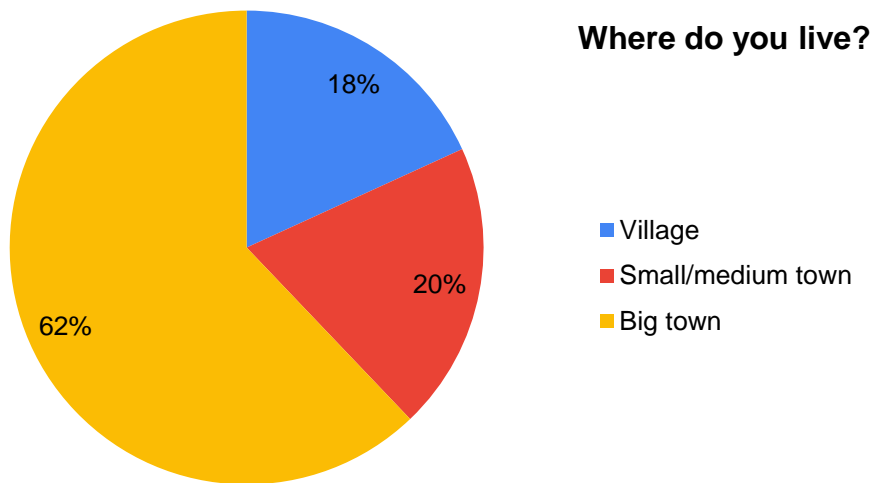
1. Age

- Less than 30
- Between 31 and 40
- Between 41 and 50
- More than 51



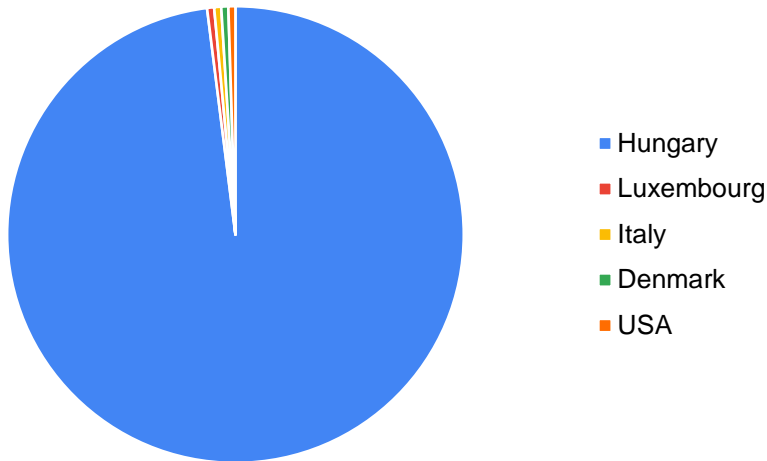
2. Where do you live?

- Village
- Small/medium town
- Big town



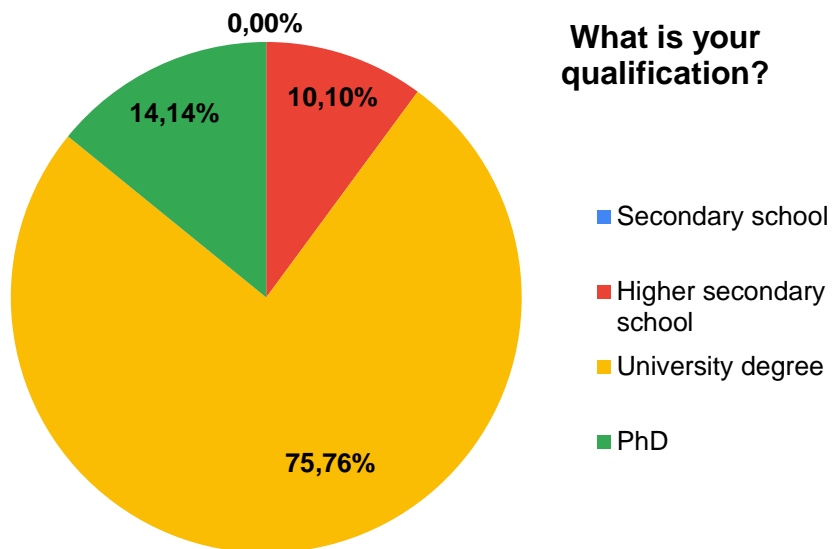
3. Please, specify your country: _____4

Please, specify your country



4. What is your qualification?

- Secondary school
- Higher secondary school
- University degree
- PhD



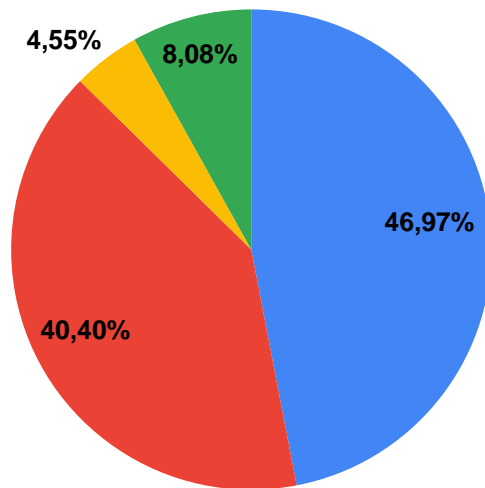
SURVEY

The questionnaire found its target group to some extent, as nearly 90% of the respondents completed home renovations at some point (46% within 5 years), making it easier for them to form an opinion. Of course, as with all environmental awareness questionnaires, respondents (80%) declared themselves to be conscious. Based on general information, realistically, the issue of energy consumption is considered to be the most important issue in relation to buildings, but water and air pollution are also considered important - perhaps there may be some uncertainty about the concepts of climate change and raw material consumption.

5. Have you ever built or renovated a house in your life?

building / renovation

- Yes, within the last 5 years
- Yes, more than 5 year ago
- No, but I plan to do it
- No

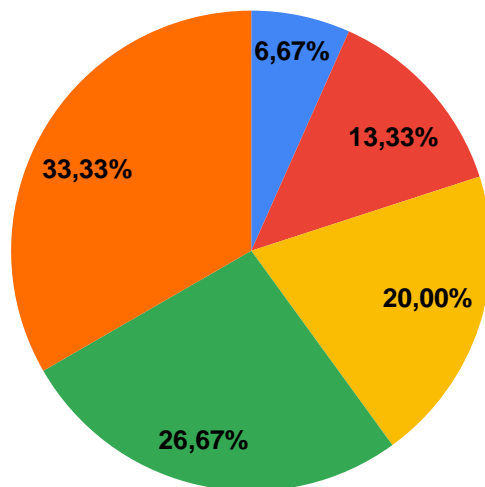


Have you ever built or renovated a house in your life?

- yes, within the last 5 years
- Yes, more than 5 year ago
- No, but I plan to do it
- No

6. How environmental conscious are you in your opinion? (1 is low, 5 is high)

- 1
- 2
- 3
- 4
- 5



How environmental conscious are you in your opinion? (1 is low, 5 is high)

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7. Which environmental issues do you find important in connection to buildings (construction/renovation/operating of the house)? (Please, put the challenges below in order of

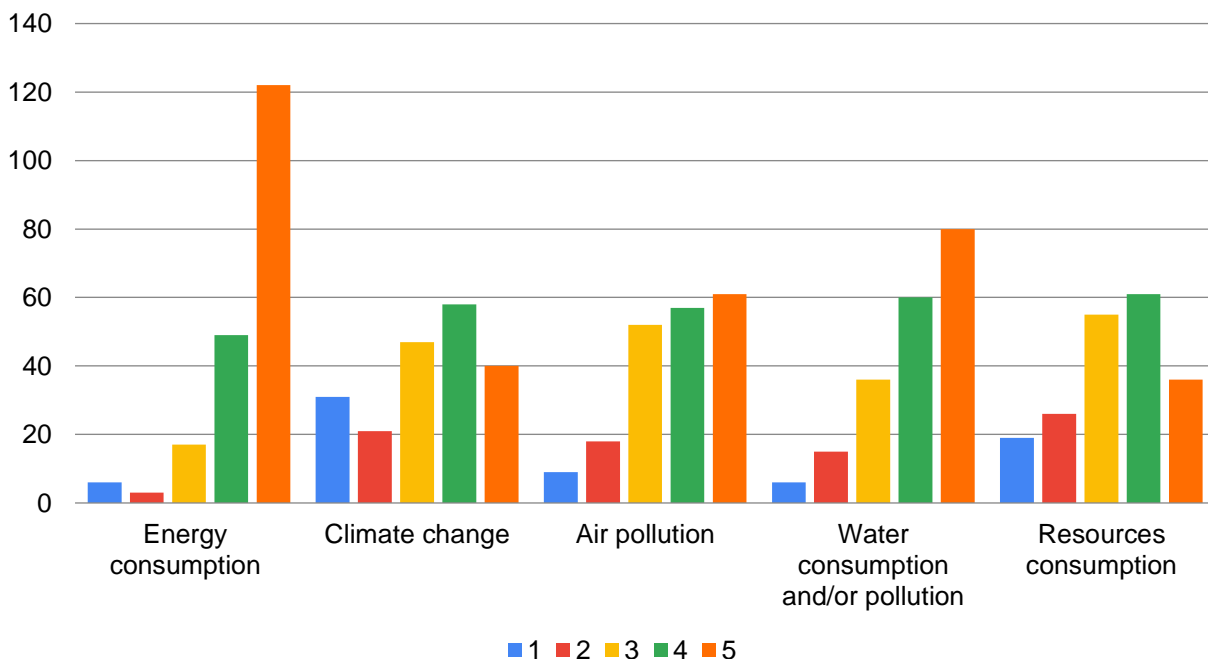
relevance by checking the numbers (1 is the most relevant, 5 is the less relevant). Please, report eventual explanation and/or detail in the box.

- Energy consumption – 1 2 3 4 5
- Climate change – 1 2 3 4 5
- Air pollution – 1 2 3 4 5
- Water consumption and/or pollution – 1 2 3 4 5
- Resources consumption – 1 2 3 4 5

Several respondents used the first open-ended question detail what was most critical for them throughout the life cycle of a building. Many emphasized that they mainly consider the factors that they themselves can affect, such as energy consumption, water consumption, air pollution. In the case of energy, it has been mentioned that although the utilization rate and our habits are problematic, the real problem is the production of primary energy (ie. the emissions from fossil fuel power plants), so the use of renewable energy may be the solution in the future.

Questions about climate change received the most extreme answers: some have been unable to link climate change with buildings or even denied that humanity has an impact on climate at all, while many considered it the most important issue.

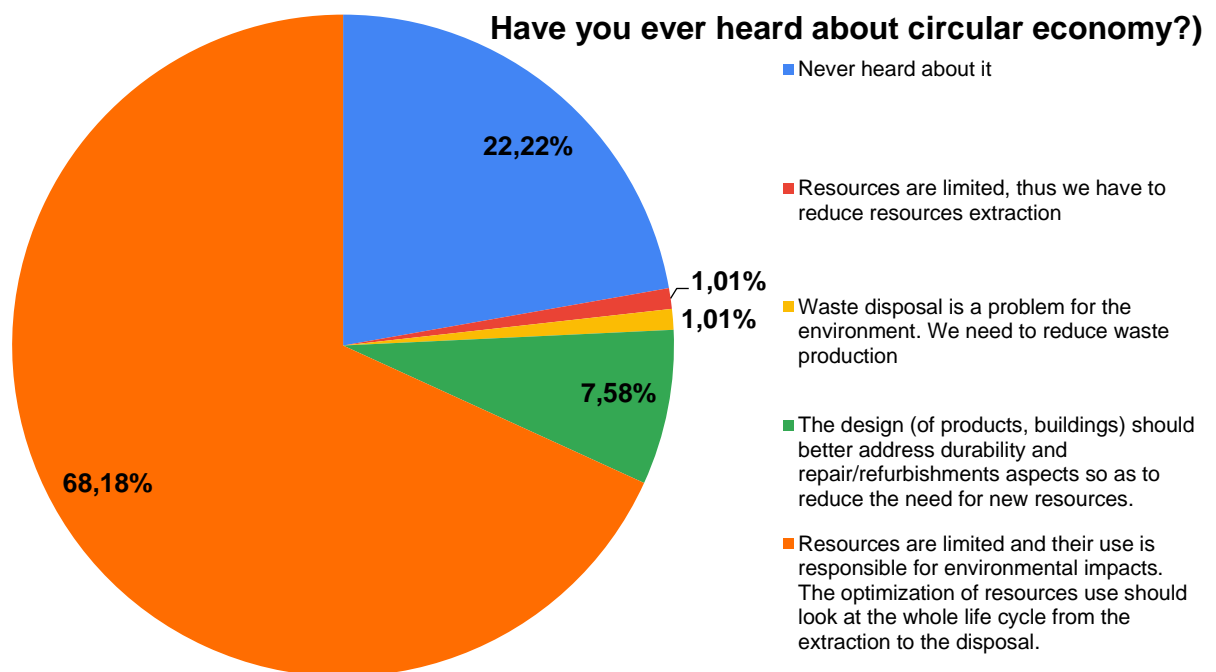
Which environmental issues do you find important in connection to buildings (construction/renovation/operating of the house)? (1 is the most relevant, 5 is the less relevant)



8. **Have you ever heard about circular economy? If yes, what are according to you main concepts at its core?**

- Never heard about it
- Resources are limited, thus we have to reduce resources extraction
- Waste disposal is a problem for the environment. We need to reduce waste production
- The design (of products, buildings) should better address durability and repair/refurbishments aspects so as to reduce the need for new resources.
- Resources are limited and their use is responsible for environmental impacts. The optimization of resources use should look at the whole life cycle from the extraction to the disposal.

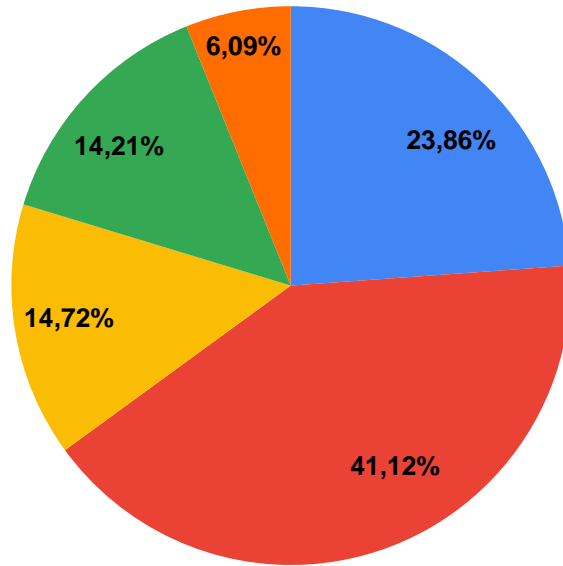
Almost 70% of respondents answered the question about the concept of circular economy correctly, around 10% likely to guessed it and 22% openly admitted that they have never heard of it.



9. How much would you pay more for an environmental friendly option for house construction/renovation?

- 0% to 5%
- 10%
- 20%
- 30%
- more than 30%

70% of people would pay no more than 20% of the current cost for a greener solution if they were to build a home, and among them 41% would pay a 10 to 20% plus.

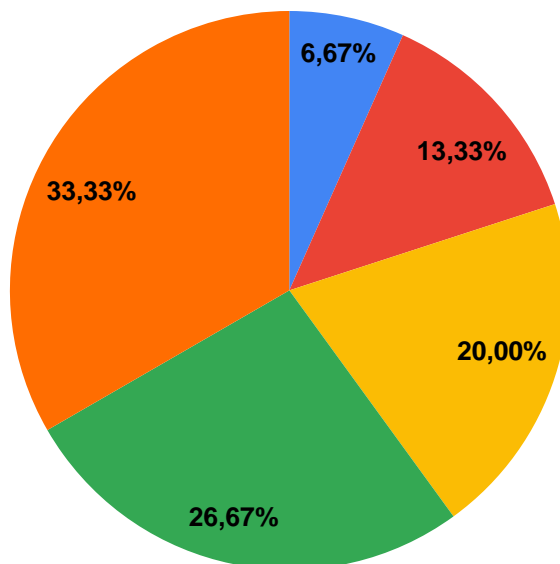


How much would you pay more for an environmental friendly option for house construction/renovation?

- 0% to 5%
- 10%
- 20%
- 30%
- more than 30%

10. In your experience of house construction/renovation (if any), how difficult was for you to find information about the environmental performance of building products? (1 is low, 5 is high)
Please, report eventual explanation and/or detail in the box

- 1
- 2
- 3
- 4
- 5



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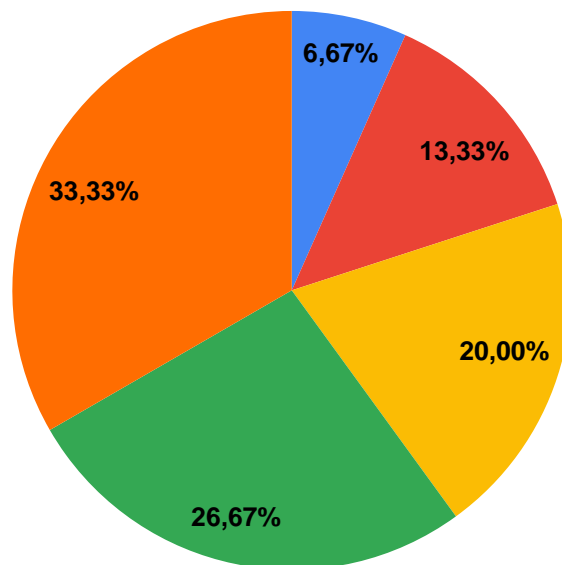
47% of respondents think that it is difficult to obtain information on the environmental performance of construction products, while another 30% was unclear about it. A similar tendency is shown at the following question, with many not having such experience (43%) or received no response (48%) when inquiring about the environmental performance of the products.

In the open-ended part where comments were free to give, opinions were once again wide-ranging. Many people thought that the information currently available (internet sources like youtube, even when the information was not present on the products) was sufficient. These apply to the following products for example: windows, insulations, paints, electrical, electronic products. At the same time, several people mentioned that the information available was not uniform, unreliable or just marketing stunts. The "counter camp" thought the opposite, that there was hardly any available information on the environmental performance of construction products.

According to some comments, the customer is still mostly interested in the function of the product, its quality and price while extra parameters can make it even more difficult to make decisions.

11. **How was your experience with constructors, producers and/or traders when you asked about environmental performance? (1 is bad, 5 is very good)** *Please, report eventual explanation and/or detail in the box*

- 1
- 2
- 3
- 4
- 5



How was your experience with constructors, producers and/or traders when you asked about environmental performance? (1 is bad, 5 is very good)

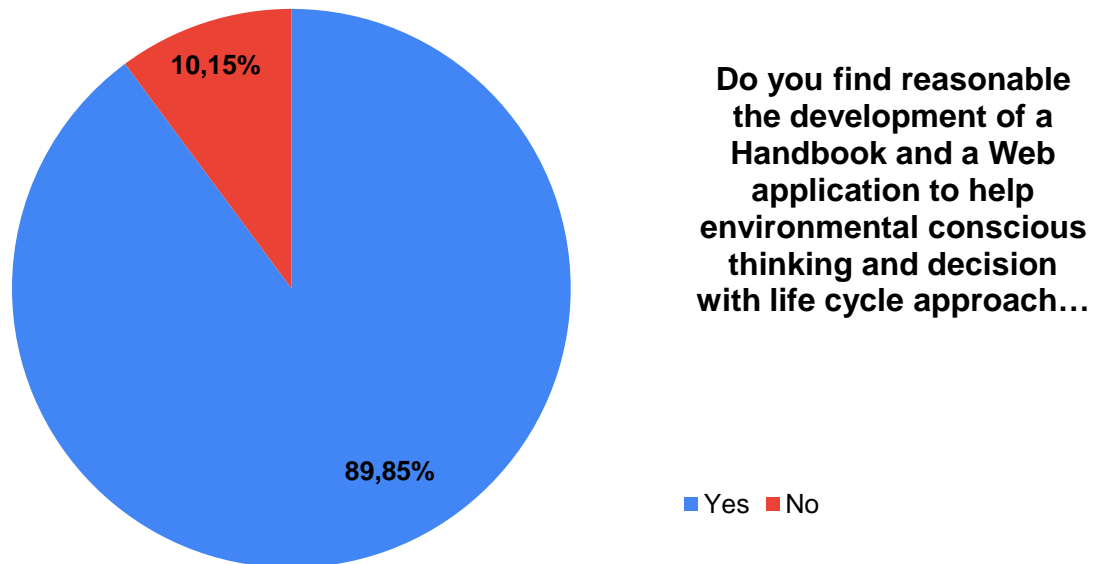
■ 1 ■ 2 ■ 3 ■ 4 ■ 5

When asking a dealer or contractor about the environmental aspects during the renovation or construction, they were almost uniformly rejected, meaning they could not provide any useful information. Even if so, there was a strong sense of commercial interest. A couple of comments have been made that in many cases such information is already available on manufacturers' pages.

12. **Do you find reasonable the development of a Handbook and a Web application to help environmental conscious thinking and decision with life cycle approach in house renovation/building?**

- Yes
- No

90% would support the development of a manual and a web application to promote environmentally conscious thinking and decision making in construction / renovation.



13. What kind of information and data would you suggest to include in such Handbook and Web Application?

The most interesting answers came to this question. If the new application contained all of the suggestions listed below, it would be equivalent to at least a university handbook.

Recommended parameters:

- energy class,
- price,
- Place of origin,
- energy efficiency
- use of renewable energy sources,
- ecological footprint size,
- the amount of waste generated during construction and its hazardous part. What percentage of waste is recoverable and how
- Proportion of recycled materials, possibilities for recyclability
- material properties and production characteristics,
- location of the raw material used,
- a brief summary of the environmental impact of production and disposal,
- construction and engineering solutions and their efficiency,
- service life and heat insulation,
- comparisons and calculations of return
- place of purchase,
- definitions, relationships and their formulas, calculation examples,
- samples,
- cost information,
- legal requirements, standards and (technical) recommendations,

- contact details of nearby professionals,
- contact details of professional organizations,
- detailed comparison of heating systems,
- insulation technologies and wall structures,
- energy sources,
- ventilation technology,
- natural building materials,
- long-term planning criteria,
- environmentally conscious practices,
- additional options for materials used,
- LCA values,
- A to I (energy) labels,
- the advantages / disadvantages of a structure (wall / ceiling / roof / base plate / etc.)
- labor / price / load / thickness ratios
- return on materials,
- degree of energy utilization in the case of thermo-physical machines and devices,
- The amount of energy savings available over a 10-20 year period.

Other aspects to consider:

- substitutes,
- promoting a minimalist approach and style,
- not only the benefits but also the disadvantages are important,
- an explanation of the certificates,
- what aspects to consider when purchasing certain assets,
- information on different home building procedures,
- available state subsidies,
- detailed presentation of exemplary projects, including cost implications
- Suggestions for building a new, future-friendly house or upgrading a 20-30 year old house.

Technical suggestions for the site:

- Wording that can be understood by laymen,
 - short videos, not long descriptions,
 - provide relevant information quickly,
 - A manual or database is by no means easy to keep up to date. A collection of links would be better.
 - weighting by scoring, first the best, then the less good,
 - Various economic interests can greatly influence the direction of the manual,
 - Companies could sponsor the development by navigating the application to their environmentally superior product, thus facilitating decision-making and selection,
 - up to 2 pages in length,
 - two directions for using information: one for designers and one for the general public,
 - DIY, Not just industrial solutions,
 - use of a clear and simple signalling system,
 - QR code information,
 - wiki-based website,
 - exchange platform,
 - Presentation of scientific results in the public interest, in simple terms
- Proper promotion of the site, "information day" after the launch of the web

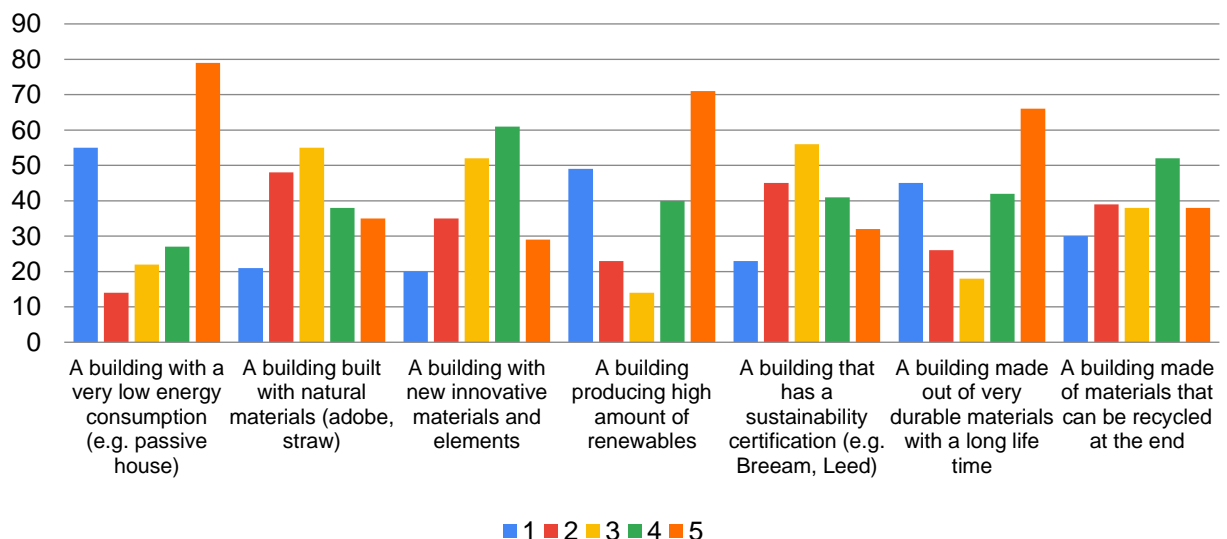
14. In your opinion, what is the most important feature of an environmentally friendly building? (rank from least important to most important):

- A building with a very low energy consumption (e.g. passive house)
- A building built with natural materials (adobe, straw)
- A building with new innovative materials and elements
- A building producing high amount of renewables
- A building that has a sustainability certification (e.g. Breeam, Leed)
- A building made out of very durable materials with a long life time
- A building made of materials that can be recycled at the end

The most important feature of an eco-friendly product, according to the answers, is very low energy consumption, use of renewable energy sources and long product life. It is less important to use natural materials and obtain a certificate of sustainability. (It should be noted on this question that an error slipped into the questionnaire, because the respondents had to reverse the order here compared to the previous questions. Our evaluation tried to correct and take this into account.)

In defining the characteristics of environmentally friendly buildings, the following considerations were made: a building should be primarily energy efficient, have a long service life, be equipped with modern heating systems, be comfortable, use natural materials / materials. Several answers show that the existence of building material certificates is not as important, as superior design and good construction practices.

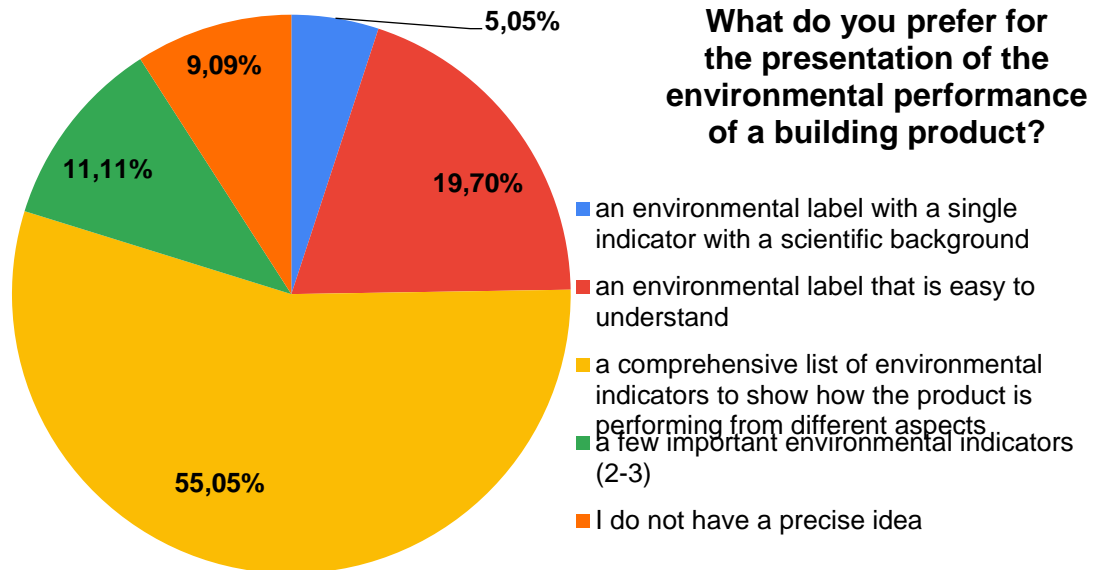
In your opinion, what is the most important feature of an environmentally friendly building? (rank from least important to most important)



15. What do you prefer for the presentation of the environmental performance of a building product?

- an environmental label with a single indicator with a scientific background
- an environmental label that is easy to understand
- a comprehensive list of environmental indicators to show how the product is performing from different aspects

- a few important environmental indicators (2-3)
- I do not have a precise idea



55% of respondents would welcome more environmental indicators on construction products, while 11% would reduce the number of them to 2-3, while 20% would be pleased with a simpler eco-label.

Correlation analysis

Correlation analysis shows that in terms of demography, there are no strong divisions exist, only less pronounced trends. Eco consciousness correlates with age but to only a small extent, and there is no big difference between age groups. On the other hand the inhabitants of smaller town seems to have more experience with building and renovations in general and more concern about energy depletion. More education leads to increased interest in detailed information on product environmental performance.

In terms of eco-consciousness there is no difference between people of different educational background or town size. However, the more eco conscious responders are more concerned by energy depletion and climate change and Would pay more for the reduction of impacts. This group is also more interested in innovative materials and more detailed information on product performance.

A strong link exists between different issues ie. if someone is concerned by one environmental issue, it is likely to be concerned by all the other issues as well.

For those who had difficulties to get information on products, certification is less important.