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(De)construct for Circular Economy

(Des)construir para a Economia Circular

WP 7 – Information, awareness and training

Activity 7.3 – Project partners capacitation

Results from the event organized in Prague, with representatives of the project partners and the municipalities of the *Baixo Alentejo* region

September 21st and 22nd of 2022

Final report

October 2022

Operador do Programa: REPÚBLICA PORTUGUESA – AMBIENTE E AÇÃO CLIMÁTICA

Promotor: cimbal – COMUNIDADE INTERMUNICIPAL DO BAIXO ALENTEJO

Parceiros: LNEG, NOVA School of Science & Technology, Politécnico de Portalegre, Resialentejo E.I.M., Smart Waste Portugal, RDF Construções Sociedade Imobiliária, Lda., cercibeja, IDN, ENVIROS

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1. Introduction

Within the work package (WP) 7 – Information, Awareness and Training, from the project "(De)construct for Circular Economy, led by FCT NOVA (NOVA School of Science and Technology, NOVA University Lisbon), more precisely in the Activity 7.3 – Project Partners Capacitation, an event took place in Prague, on the 21st and 22nd of September of 2022, involving representatives of all project partners and the *Baixo Alentejo* municipalities as well as local stakeholders.

This event followed the vision presented in the methodological approach elaborated by FCT NOVA (2021), at the beginning of the project, considering the adjustments of the activities meanwhile approved. The event was initially planned for April 2022, but it has to be rescheduled because of covid-19 pandemic restrictions, but also because of the delay of some tasks of the project.

This event aimed to involve the participants mentioned, from Portugal, the Czech Republic, Norway, and Romania, for presenting the main results achieved within the project so far, in Portugal, but to exchange experiences, consider other realities. This vision was considered important to understand how the Portuguese results can be applied or adapted to other realities and/or scales and vice versa and how the experiences from the other countries might contribute to improving the Portuguese regional strategy in the *Baixo Alentejo* region, but also capacitating the project partners involved.

The event was also planned considering the opportunity of reuniting the executive representatives of the *Baixo Alentejo* region, together with all the project partners, at the same time, to raise awareness, at a political level, of decisions to be taken soon regarding construction and demolition waste (CDW) management and the application of circular economy principles to the construction sector, at a regional and/or local scales.

This event was organized in two days. The first day was dedicated to present different realities and best practices to be applied to the construction sector, in what regards the projects partners experiences, but also group collaborative dynamics, to enrich the (De)construct project results. The second day was dedicated to a technical visit to allow participants to contact with other professional contexts, expecting them to establish contacts for future collaboration, in other initiatives.

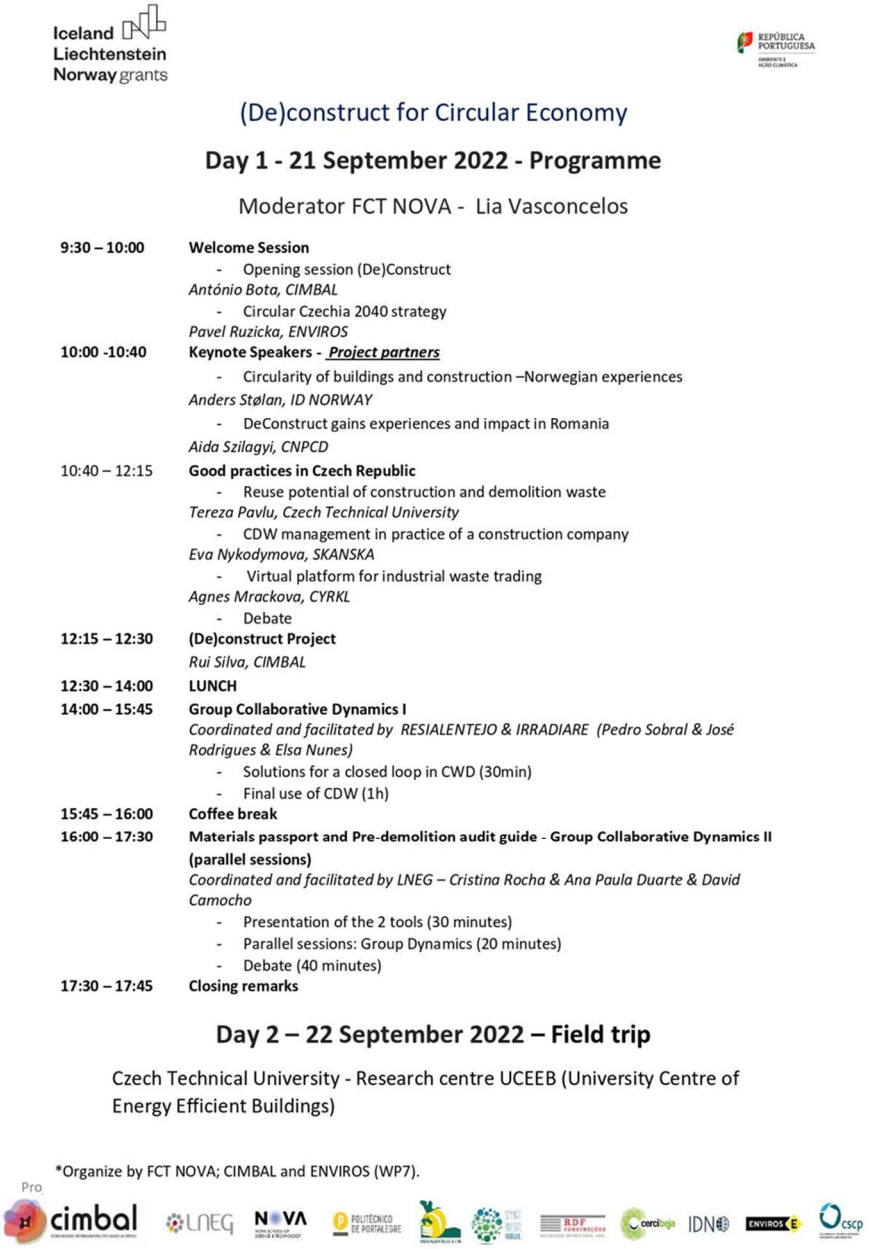
In specific, this report presents the results of the event carried out on September 21st and 22nd of 2022, and is structured in the following main chapters:

- Introduction (current chapter);
- Programme and participants (chapter 2);
- Results of group collaborative dynamics (chapter 3);
- Event evaluation (chapter 4);
- Final considerations (chapter 5).

2. Programme and participants

2.1. Programme

The event took place on September 21st and 22nd of 2022 (Programme in Figure 1). The first day began with presentations of keynote speakers and of good practices regarding CDW, followed by group collaborative dynamics in the second part of the day, integrated within some of the (De)construct project main results. On the second day, a technical visit occurred to the University Center of Energy Efficient Buildings (UCEEB) from the Czech Technical University.



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REPÚBLICA PORTUGUESA

(De)construct for Circular Economy

Day 1 - 21 September 2022 - Programme

Moderator FCT NOVA - Lia Vasconcelos

9:30 – 10:00	**Welcome Session** - Opening session (De)Construct *António Bota, CIMBAL* - Circular Czechia 2040 strategy *Pavel Ruzicka, ENVIROS*
10:00 -10:40	**Keynote Speakers - *Project partners*** - Circularity of buildings and construction –Norwegian experiences *Anders Stølan, ID NORWAY* - DeConstruct gains experiences and impact in Romania *Aida Szilagyi, CNPCD*
10:40 – 12:15	**Good practices in Czech Republic** - Reuse potential of construction and demolition waste *Tereza Pavlu, Czech Technical University* - CDW management in practice of a construction company *Eva Nykodymova, SKANSKA* - Virtual platform for industrial waste trading *Agnes Mrackova, CYRKL* - Debate
12:15 – 12:30	**(De)construct Project** *Rui Silva, CIMBAL*
12:30 – 14:00	**LUNCH**
14:00 – 15:45	**Group Collaborative Dynamics I** *Coordinated and facilitated by RESIALENTEJO & IRRADIARE (Pedro Sobral & José Rodrigues & Elsa Nunes)* - Solutions for a closed loop in CWD (30min) - Final use of CDW (1h)
15:45 – 16:00	**Coffee break**
16:00 – 17:30	**Materials passport and Pre-demolition audit guide - Group Collaborative Dynamics II (parallel sessions)** *Coordinated and facilitated by LNEG – Cristina Rocha & Ana Paula Duarte & David Camocho* - Presentation of the 2 tools (30 minutes) - Parallel sessions: Group Dynamics (20 minutes) - Debate (40 minutes)
17:30 – 17:45	**Closing remarks**

Day 2 – 22 September 2022 – Field trip

Czech Technical University - Research centre UCEEB (University Centre of Energy Efficient Buildings)

*Organize by FCT NOVA; CIMBAL and ENVIROS (WP7).

Figure 1. Programme of the event.

2.1.1. The event

The event began with a welcome session, moderated by FCT NOVA, and with the participation of CIMBAL, representing the promoter of the project, and ENVIROS, the host partner/country. Then, the event was divided into two main components. First, a presentation component, although allowing the debate with the participants and, second, group collaborative dynamics.

Presentation component

To accomplish the purpose of the presentation component, six entities were involved, exposing specific topics and contexts about construction and demolition waste (CDW) management and circularity principles in the construction sector in the respective countries, including the presentation of good practices.

The first part was dedicated to keynote speakers (project partners), from ID Norway, and CNPCD. A second part was committed to the presentation of good practices in the Czech Republic, with three entities presenting their contributions, with the facilitation of the project partner ENVIROS. In a third part, the project (De)construct for Circular Economy was presented, to allow the entire vision of the main activities developed, and progress, being also an introduction to the group collaborative dynamics developed in the afternoon. The main contents of the presentations are mentioned in Table 1.

Table 1. The main content of the presentations.

Content	Titles and responsible entity	Main contents list
Keynote speakers	**Presentation 1** Circularity of buildings and construction – Norwegian experiences **Responsible entity** ID Norway (Anders Stølan)	– Circular economy framework in Norway for the construction industry; – CDW regulations in Norway (public and private sectors); – Norwegian best practices for buildings and the construction industry.
	Presentation 2 DeConstruct gains experiences and impact in Romania **Responsible entity** CNPCD (Aida Szilagyi)	– The construction sector in Romania; – Romanian *status quo* and requirements for CDW management; – Tasks developed by CNPCD articulated with the (De)construct project.
Good practices in Czech Republic	**Presentation 3** Reuse potential of construction and demolition waste **Responsible entity** *Czech Technical University (Tereza Pavlu)*	– The deconstruction process; – Czech standards for recycled concrete; – Potential use of recycled materials; – Presentation of the web portal “Let's recycle buildings”[1].

[1] Web portal “Let's recycle buildings”: www.recyklujmestavby.cz

Content	Titles and responsible entity	Main contents list
	Presentation 4 CDW management in practice of a construction company **Responsible entity**: *SKANSKA (Eva Nykodymova)*	– The perspective of a construction company; – CDW management hierarchy; – Certification; – Examples of good practices.
	Presentation 5 Virtual platform for industrial waste trading **Responsible entity**: *CYRKL (Agnes Mrackova)*	– Presentation of Cyrkl platform, to promote the waste management market, as the biggest waste trading marketplace in Europe, established in 8 countries; – Best practices for the construction sector.
The project "(De)construct for Circular Economy"	**Presentation 6** (De)construct project **Responsible entity**: CIMBAL (Rui Silva)	– Presentation of the "(De)construct for Circular Economy" project; – WP description, objectives, and main results obtained, by activity.

Group collaborative dynamics

The afternoon of the first day was dedicated to group collaborative dynamics, to present part of the main results of the project (De)construct for Circular Economy, aiming to discuss the ideas and results considering other realities and visions, to enrich the project, but also to capacitate the project partners (see results in chapter 3). These group collaborative dynamics were the following (see the Programme in Figure 1, and images of the activities in Annex I):

- Group collaborative dynamics I: Solution for a closed loop and final use of CDW (results related to WP6, presented in the subchapter 3.1)
- Group collaborative dynamics II (2 parallel sessions):
  - Session II.A: Materials passport (results connected to WP3, stated in the subchapter 3.2.1);
  - Session II.B: Pre-demolition audit guide (results associated to WP4, described in the subchapter 3.2.2).

2.1.2. The technical visit

On September 22nd of 2022, a technical visit occurred to the Research Centre UCEEB (University Centre of Energy Efficient Buildings)[2], an independent institute of the Czech Technical University in Prague, involving four departments: civil engineering, mechanical engineering, electrical engineering, and biomedical engineering. The scope of the research center is to promote synergies between the mentioned departments concerning energy-efficient buildings.

[2] Research Centre UCEEB (University Centre of Energy Efficient Buildings): https://www.web-old.uceeb.cz/en

During this visit the participants were split into two groups, to allow visiting the facilities of the research center. It was possible to visit the facilities and laboratories of the following research teams and projects (see Annex I for images of the visit):

- Architecture and the environment;
- Energy systems in buildings;
- Indoor environmental quality;
- Materials and structures;
- Control and monitoring of intelligent buildings.

2.2. Participants

In this event, 42 participants were involved, including representatives of the project partners (31 participants), and executive representatives of the *Baixo Alentejo* municipalities (11 participants). A list of participants is present in Annex II.

Of the 31 representatives of the project partners, 7 were from ENVIROS (Czech Republic), the host partner/country and other local partners, 2 from CNPCD (Romania), and 1 from ID Norway (Norway). The other were representatives from Portuguese project partners, namely CIMBAL, LNEG, FCT NOVA, IP Portalegre, Resialentejo/Irradiare, Association Smart Waste Portugal, RDF Construções, and Cercibeja.

3. Results of group collaborative dynamics

The collaborative activities took place during the afternoon session of September 21st, and are reported in this chapter. These activities, carried out by different project partners, aimed to extract useful information for the project WPs in development.

3.1. Group collaborative dynamics I – Solutions for a closed loop and final use of CDW

During this workshop, and in what regards WP6, it was possible to bring together elected representatives of the Baixo Alentejo Municipalities in order to debate the political vision of the solutions to be implemented in the region.

The debate was focus on possibilities and scenarios at a institutional model level. The debate took into consideration the comparison of different CDW management scenarios, considering technical, economic and environmental indicators that support the comparative analysis between alternative scenarios, taking into account data and information that characterise the current situation.

Another feature of the collaborative sessions was the work performed by the groups. The first group dynamic performed at the afternoon session was coordinated and facilitated by RESIALENTEJO & IrRADIARE , with the purpose to discuss, with all the participants, the challenges and therefore, the possible solutions regarding CDW, in particular in what relates to collection, transport and storage. Moreover, the strategies and results of *Baixo Alentejo* region were discussed. The goal was to use this forum as a driver for other initiatives to be developed in the future or learning experience to solve upcoming challenges. To achieve this objective, the session was organized recurring to collaborative activities, structured into two moments:

1. Collection, transport and storage;
2. Recycling and reuse of materials.

For the topics of collection, transport and storage, the participants were divided into 3 groups. For 20 minutes, each group addressed one of the topics and, at the end, the main conclusions were registered, for the purpose of this report.

After the initial discussion, 2 groups were assembled and they addressed the topic of recycling and reusing materials by adressing four questions. At the end the main conclusions of each group were recorded again.

3.1.1. Main results about collection, transport and storage

Collection

One of the identified problems is related to the mixture of CDW, as this waste from small producers and individuals are mixed with other types of waste in the bins available on the public space. This occurs mainly because there are no facilities for CDW. However, it is known that some materials can be recycled and sold, as it happens with the metals collected from sites.

It was suggested the possibility to order a big container to collect the produced CDW, however this arises the following issues: what is the number of containers necessary and where will they be located. For this problem,

two options were discussed: the landfill, the destiny everyone wants to avoid or, on the other hand, having specific processing facilities.

When talking about collection, one of the problems is the low awareness of the inhabitants, which generates situations of misinformation or even lack of information that reflects in the phase of deposition. This situation can also happen with construction companies, namely small companies.

One of the solutions could include the availability of funding to perform awareness campaigns in order to educate the population about this topic. It was also suggested the inclusion of the social sector in this type of activities and the creation of a dedicated network. As for the centres, it should be considered the implementation of specific measures regarding recycling centres and regulations on waste recycling, making the landfill a less favourable alternative to this type of waste.

Transport

In this topic the problems and solutions were discussed for the CDW transportation. As for the problems, the distance and the cost can be the main challenges. However, the lack of planning and the conditions for transport can represent an additional issue. There is an additional question to be considered: is there a sustainable alternative to transport CDW?

Regarding the solutions, the development of a digital exchange platform should be considered, as well as a construction site mapping. This last option will facilitate the exchange between constructors and construction sites resulting in an optimization through transport sharing. Another alternative is to avoid transportation by reusing the materials directly on site.

Storage

One of the problems with storage is the lack of places to store specific products, namely, materials such as cement bags, glue cement, insulation materials, building glass, and sandwich tiles. The same problem happens with green waste (trees, bushes). However, it is recognized that in the case of a temporary construction site, it is not required the obligation of storage or a container for mixing inert CDW. Nevertheless, bureaucracy can represent an additional challenge for the storage of materials and respective CDW management, namely the necessary registration with SILIAMB (National Waste Authority platform for official registration).

It was also discussed that the collection centres should have extended schedules that allow the reception of CDW. Regarding *Baixo Alentejo* municipalities, a possible solution is to place Eco centres in the territory taking into consideration the existing ones. In addition, it would be important to develop a digital platform that provides a catalogue of products available for reuse, facilitating the access to these materials.

In the context of public procurement, these may represent an obstacle since the storage of waste with potential for reuse requires the use of manpower for the separation and control of collected materials, longer operational time and also the existence of physical spaces with identification "components". This last feature could represent an added value since it would not be necessary to recondition the materials.

3.1.2. Main results about recycling and reuse of materials

What would be three key issues that urgently need to be addressed to increase reuse and recycling rates of demolition and construction waste?

In this topic it was identified the need to create a new legislation for secondary raw materials, complementary to a communication work for the perception of secondary raw materials quality, since there is a lack of design knowledge in what regards the reuse and recycling at the beginning of the process. It is also necessary to intervene at an economic level, since the prices of secondary raw materials are generally higher.

It was also discussed the need to create physical spaces for the storage of materials, as well as the definition, in a project stage, of the possibility to recycle and reuse the materials (evaluating case by case according to the materials produced). Taking into consideration that the production of new materials is still less expensive than their reuse, it was mentioned the option of promoting incentives for the reuse of materials, including tax benefits, and issuing certificates of materials with potential for reuse, facilitating the process.

What are the best incentives that lead to increase reuse and recycling of construction and demolition waste?

In order to continue the use of recycled materials, it is necessary to increase tax rates associated with the use of primary raw materials or, alternatively, to promote tax benefits by not charging for materials that can be sorted and recycled. The need to increase landfill disposal costs or even ban the disposal of recycled materials was also mentioned, highlighting and working on the positive aspects of reusing the materials or showing the less appealing consequences in opposition.

In addition, municipalities can promote the reuse and recycling of materials in the buildings, becoming a practical and realistic example. The possibility of opening funding grants for projects that included the reuse of materials was also mentioned.

How recycled materials are identified and accounted taking into consideration the total material collected?

Facing this issue, solutions were presented such as the pre-demolition audits, the material passport, and the BIM system. It was also mentioned the option of separating the CDW directly at the construction site. However, one of the questions that arose concerns was the accounting of materials, specifically, how are recycled materials accounted for in the total of materials collected.

What are the plans for reusing the materials?

In order to proceed with the recovery of the materials resulting from the works, it was mentioned the possibility of raising awareness throughout the value chain, not only of producers, establishing a link between demand and supply, suppliers and users. It was also mentioned that one of the options could be the establishment of reception centres for the materials. Sorting is an important action for the materials reuse, for its subsequent associated component of recycling and reuse. It can also include a component of reconditioning the materials, also using partnerships within the social scope – such as CERCIBEJA.

Moreover, depending on the type and amount of material to be reused, several alternatives can be considered, such as producing new materials from recycled materials, using recycled materials for filling,

flooring, or reusing doors and windows. In this context it was mentioned the use of restoration techniques, as well as the creation of a market directed towards the use of second-hand products.

It is important to recognize that the system to be adopted should take into consideration, first, its experimental component and second, the importance of saving water in the production of materials, even if recycled or for reuse. The environmental management of the collection centres must therefore consider environmental assumptions such as the use of renewable energy and water reuse.

3.2. Group collaborative dynamics II – Materials passport and Pre-demolition audit guide

The second collaborative activity of the session, a Group Collaborative Dynamics II so-called Materials passport and Pre-demolition audit guide (Figure 2), was carried out in two parallel sessions with a total duration of 1 hour and 30 minutes. This activity was moderated by LNEG and it was divided into a presentation of the tools (30 minutes), an exercise in working groups (20 minutes) and a debate in plenary (40 minutes) with the aim to contribute to the strategic regional action.

Figure 2. Photo of the plenary session in Collaborative Dynamics II: Session Materials Passport and Pre-demolition audit guide.

3.2.1. Parallel session II.A: Materials passport

After the presentation of the tool, the practical exercise was based on testing the passport using data previously collected by the Czech partner ENVIROS from a residential house built in 1990. A summary with a few examples to support the filling in of information regarding a small set of products was distributed by the participants (exercise sheet in Annex III). The idea was to fill in the passport with examples for the **Building** and **P_Space** spreadsheets.

The exercise with the Materials Passport was performed in two subgroups (Figure 3).

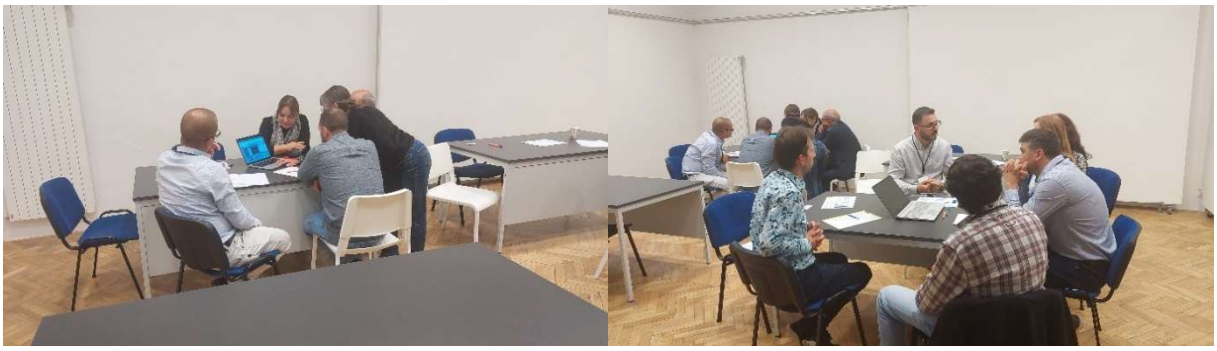


Figure 3. Photo of the working groups in Collaborative Dynamics II: Materials Passport.

Following the exercise there was a debate with the aim to contribute to the strategic regional action on "What are the necessary conditions for the tools to be successfully implemented in the *Baixo Alentejo* region"? in which the answers were organized by theme: Regulatory measures, Training and information, Demonstration projects/activities, Financial incentives, and Others (Figure 4).

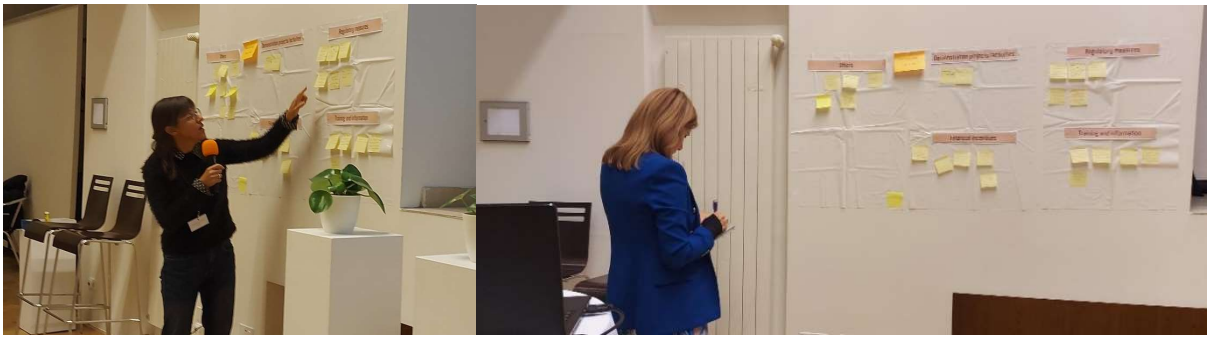


Figure 4. Photo of the results in the debate in Collaborative Dynamics II: Materials Passport.

Main results

After introducing the tool, participants in each group discussed the topic and filled in data in the "Building" and "P_Space" spread sheets. In the end, participants indicated that the tool was simple, understandable and well structured. Some data could be difficult to collect and a close collaboration with the producers of the products and materials must be held. In Table 2**Table *2.*** Results of the debate. the results of the debate are presented.

Table 2. Results of the debate.

Themes	Proposals
Regulatory measures	Include the assessment as part of the licencing
	Make it mandatory to be part of the licencing process
	Mandatory for building from a certain size (m^2) to be defined
	Obligation of producers to provide data of their products

Themes	Proposals
	Mandatory for public construction. For private – fiscal incentive
	Introduce the tool in the regulatory framework
Training and information	Held sessions with architects and demonstrate the long-term importance and efficiency of the tool
	Sensitize engineering and architecture students in o this topic (masterclasses, online courses, workshops, field trips)
	Training sessions to project developers and municipal services in charge of licensing
	In the future, improve the information regarding the materials
	Include the topic in higher education curricula
Demonstration projects/activities	Create a case study to support demonstration
	Create a good practice brochure with the benefits
Financial incentives	Fiscal incentive
	Financial incentives – Example get the water connection for free
	Mandatory part of (re)construction projects applying for funding
	One year free from taxes
	Fiscal incentive – e.g. VAT or Municipal taxes reduction for building that reuse or recycle materials
Others	Linking MP with BIM
	Creation of an APP to facilitate the interaction and filling in process
	Investor, marketing promotion
	Simplify the filling in process
	Less bureaucracy, simplify it.
	See with material producers the need to reflect all information of the products in the product data sheets
	Facilitate the process /BREEM classification

Several suggestions were identified, and the debate carried in the final part of the session demonstrate the importance and relevance of the tool in promoting circular economy in the building and construction sector.

In terms of regulation, the conclusion is that making the tool mandatory is the best way to promote their use. One important remark was the engagement of producers in the topic. Producers could have the obligation of supplying data about their products and materials to support the creation of material passports.

Training and demonstration are important for the success of the tool. Develop training and demo initiatives to architects, engineers, designers, higher education students and municipal professionals should be implemented to complement the results of this project.

The construction sector, in its structure, is a very complex process that has to respect a set of procedures. The addition of one more element related to filling in of the materials passport is achieved with an extra effort. In order to promote its adoption, it is necessary to add value to the process. The integration of some financial

incentives, for example, can be a way to overcome this barrier and promote the dissemination and use of it. There are several options and ideas for this, but the main concept is to make clear that the passport will bring benefits and this effort muts be rewarded.

Other ideas were discussed in the way of facilitating the filling in process and the adoption of material passports in the construction process. The link to existent tools and procedures, and the transition from excel to other platforms should be explored in the future.

Based on the experience in the workshop, the CNPCD partner offered to conduct an extra test of the by filling in the passport with data from a building which they have under construction.

3.2.2. Parallel session II.B: Pre-demolition audit guide

The pre-demolition audit guide was also presented and examined. For the Pre-demolition audit guide exercise, two groups were formed (Figure 5).

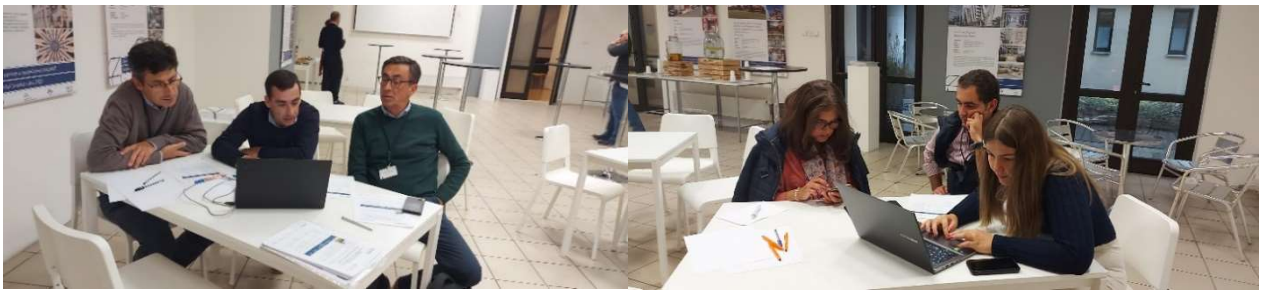


Figure 5. Photo of the two groups in Collaborative Dynamics II: Session Pre-demolition audit guide.

At Pre-demolition audit guide session, the exercise was based on data entered previously in the guide for a house studied in the Czech Republic by the partner ENVIROS (exercise sheet in Annex IV). The idea was to fill in the guide, regarding the “General Description” and “Inventory sheets”. In the case of the inventory, it was asked to choose 2 or 3 materials/products, and at the end define which destination they would recommend if they were the auditors.

Following the exercise there was a debate in plenary with the aim to contribute to the strategic regional action on "What are the necessary conditions for the tools to be successfully implemented in the *Baixo Alentejo* region"? in which the answers were divided by theme: Regulatory measures, Training and information, Demonstration projects/activities, Financial incentives, and Others (Figure 6).

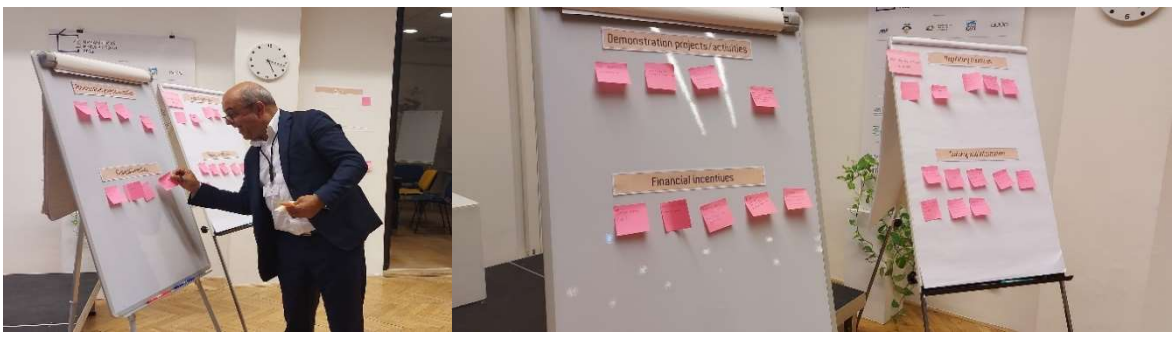


Figure 6. Photo of the results in the debate in Collaborative Dynamics II: Pre-demolition audit guide.

Main results

After introducing the tool, participants in each group filled in data in the "General Description" and "Inventory" sheets from the Pre-demolition audit guide without any problems. In the end, participants indicated that the tool was simple and understandable. They also indicated that in the case of old buildings, it would be difficult to have enough data to complete all sheets. The results and conclusions of the debate period are presented in the Table 3.

Table 3. Results of the debate.

Themes	Answers
Regulatory measures	Mandatory in public works
	Optional in licensed private works
	Mandatory tool before licensing process to demolition
	Necessary input for selective demolition
	Local Council Decision (be included in local policies)
Training and Information	Guides
	Development of a Good Practice brochure with benefits
	Carrying out training actions for contractors and municipalities
	Info days for construction companies
	Introduction into university *curricula*
	Showing examples how audits helped to “save” valuable materials
	Training of technics to do the audits
	List of Facilities for Recycling
	Market for reuse (online platform)
Demonstration projects/activities	Tool in the job market
	Connection with order of architects to implement the tool
	Case study to support demonstration
	More examples experiences
Financial Incentives	To be mandatory in the reconstruction projects applying for funding
	To be mandatory to get more funding or higher evaluation (project)
	Incentives for those who do a good sorting of products
	Reduction of municipal fees
	Reduction of fees (VAT)
Others	Force the designers to include materials from the demolitions

In conclusion the greatest number of suggestions was found in the Training and Information theme, verifying that great importance was given to the existence of good practice guides and a lot of training not only

professional but also university. The existence of incentives (reduction of fees) and demonstration activities (more examples) was also indicated to be very important.

In terms of regulatory measures, it appears that it should be a mandatory tool, at least for public buildings, and that it is necessary for a correct selective demolition and that should be part of the policy of the municipalities.

A very important point was the indication that designers should be “obliged” to use demolition materials in the projects. In fact, it is a problem, because if it is not indicated in the project, they cannot be used and all existing tools to increase reuse and recycle rates will fail to achieve the desired goals.

It is a very important fact and therefore there should be training, and information actions aimed at designers, contractors, and municipalities.

4. Event evaluation

At the end of the two day event, participants were asked to perform a synoptic evaluation, giving suggestions and noting what they liked most and less. An analysis was made of the main issues identified by the participants in the different components of the evaluation, having the data been treated to identify the key points mentioned most frequently by the participants, that are highlighted below:

What did you like the most?

In general, the participants evaluated the event positively, highlighting its organization and time management, the sharing of information and the presentation of good practices. It was also mentioned as one of the points that participants liked the most the promotion of a cooperative atmosphere and the fostering of collaborative work and the possibility of debate. The format of the event itself and the visit to the research centre were also among the most positive points for the participants. It was also point out by one of the participants that what he liked the most was the possibility to meet face-to-face the project partners he has been working with, as can be validated in the following quotes:

- "Organization and management of the session";
- "Location "Excursion, Czech external experts presentations";
- "The whole experience was very interesting, the event was very well organised, what I found most interesting and productive for the project was the sharing of examples from the Czech Republic and Norway " ;
- " The careful organization, presentations with best practices in the countries of foreign partners; the exercises with collaborative dynamics; the visit to research center. ";
- "Visit in 2nd day" ;
- "Discussions and interaction ";
- "The sharing of information, the learning, the experience on site".

What did you like the least?

Regarding the points that participants liked least, part of the participants indicated that they had nothing to point out. The other points listed by them are related to the small interaction between participants, as well as few networking opportunities and few participants from non-Portuguese partners. Another of the most mentioned points was the short time for practical activities and that they would like to have more collaborative activities, like the ones that took place in the afternoon of the first day instead of the expositive ones that took place in the morning session of the same day. Aditionally, the other issues raised were regarding the collaborative activities: i) in the first collaborative activity it was pointed out that there were confusing issues and the absence of political decision makers in it, due to the existence of bilateral meetings with municipalities; ii) in the second collaborative activity highlighted the need for different levels of knowledge required. As illustrated in the following quotes:

- "Short amount of time on the practical activities ";
- "I would like more activities like the afternoon ones, rather then morning sessions";
- "1st Collaborative dynamics in the afternoon: Confusing questions, absence of policy markers ";

- "Bilateral meeting with municipalities was not good";
- "Early wake up";
- "No networking opportunities".

Sugestions

As far as suggestions for future events are concerned, most of the participants indicated that they had no additional suggestions and that, in general, it was a good experience. The only suggestions were to look for greater networking opportunities in future international events and, at the level of new applications, to pay attention to the time allocated to this type of event and its target audience, visible in the quotes presented:

- "Explore networking possibilities from international meetings.";
- "No suggestions";
- "Overall, was pretty good experience";
- "Tips to see "hands on"";
- "Everything was prefect ".

5. Final considerantions

The two days event proved to be positive, fulfilling the proposed transfer of knowledge and experiences between the various partner countries, through good practices presented on the basis of presentations that can be inspirational for other partners and ways of transposing the experiences to other contexts and realities. The event promoted the collection of useful information for the successful development of the project.

It was favourably seen by the participants, that considered it an overall positive experience, well structured and efficiently time managed, valuing the sharing of information and of good practices. The promotion of a cooperative atmosphere and the fostering of collaborative work and the possibility of debate, were specifically identified. Though networking was mentioned as positive, few participants from non-Portuguese partners was pointed out as a limitation to overcome to open up to new opportunities of partnerships.

For future sessions, in what refers to the 1st collaborative activity, it is relevant to reformulate the confusing issues identified and the group structuring separating political and technical arenas, in two bilateral meetings, issues to be addressed and readjusted. In the second collaborative activity a need for different levels of knowledge requirement was referred and needs further attention.

Even with this caveat, this two day event was overall seen as useful and positively assessed by the participants, leading the organizer team, after overcoming the identified limitations, to consider the planning of similar sessions.

The visit to the Research centre UCEEB (University Centre of Energy Efficient Buildings) was also highly valued and identified as an added value for future collaboration, considering the dynamics inspired by the research centre.

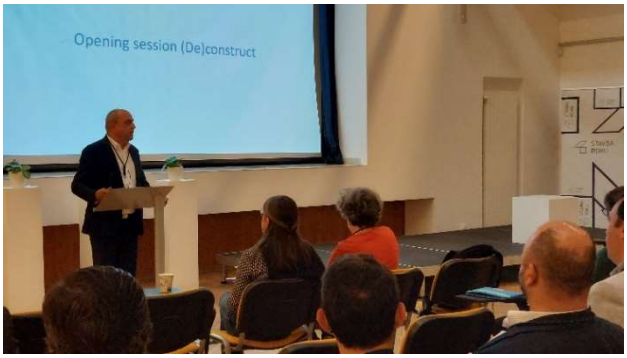
References

FCT NOVA (2021). *Stakeholders' consultation methodology report*. WP 7 – Information, Awareness and Training. (De)construct for Circular Economy. EEA Grants Portugal. Promoted by CIMBAL - Comunidade Intermunicipal do Baixo Alentejo. Partners: LNEG – Laboratório Nacional de Engenharia e Geologia (Portugal); FCT NOVA – Nova School of Science and Technology (Portugal); IPP – Instituto Politécnico de Portalegre (Portugal); Associação Smart Waste Portugal (Portugal); RDF Construções (Portugal); Cercibeja (Portugal); International Development Norway AS (Norway); CNPCD – National Centre for Sustainable Production and Consumption (Romania); and ENVIROS s.r.o. (Czech Republic).

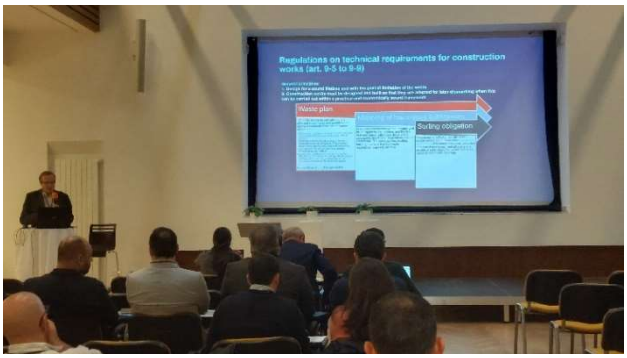
Annex I – Images from the event

September 21st of 2022 – event and collaborative activities

Welcome session – FCT NOVA (a)



Welcome session - CIMBAL (b)

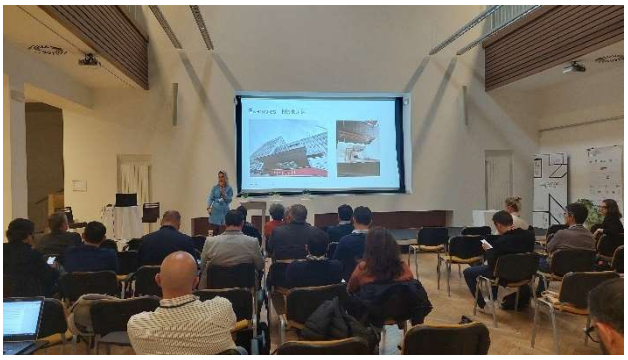


Keynote speaker (ID Norway)

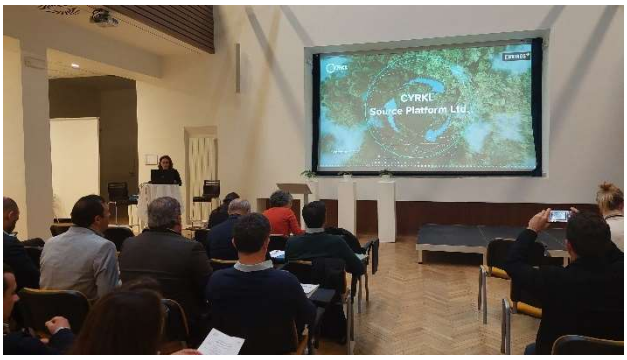
Keynote speaker (CNPCD)

Good practices in Czech Republic (facilitated by Enviros)

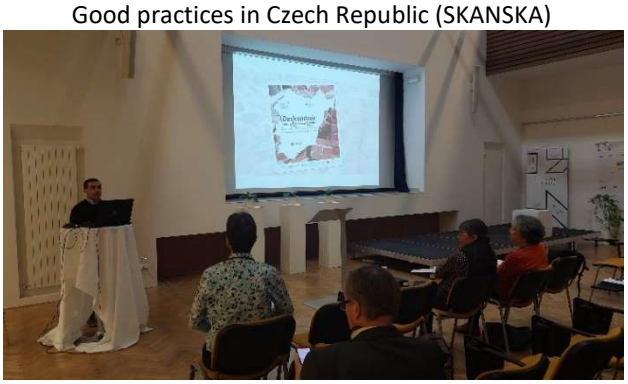
Good practices in Czech Republic (Technical University)



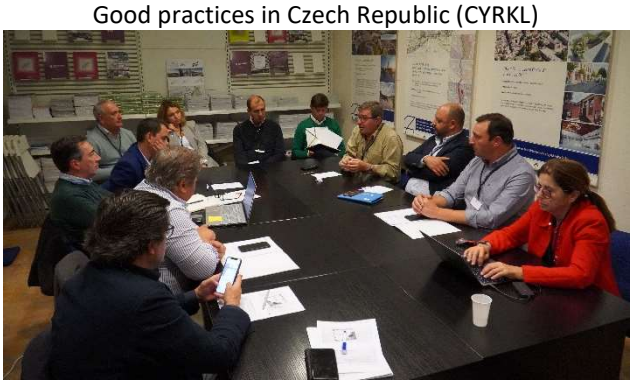
Good practices in Czech Republic (SKANSKA)



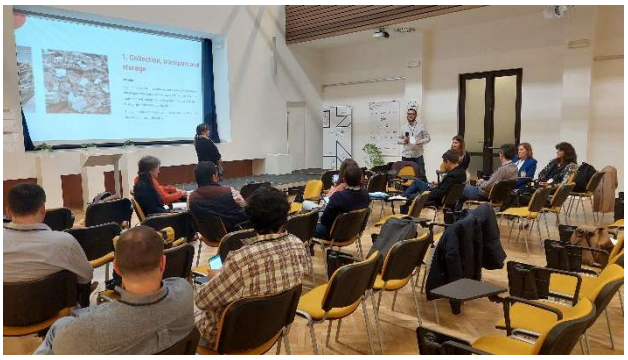
Good practices in Czech Republic (CYRKL)



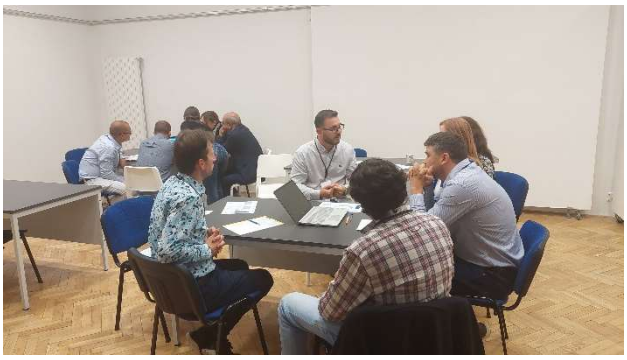
Presentation of the (De)construct project – CIMBAL



Group collaborative dynamics I (WP6, a)

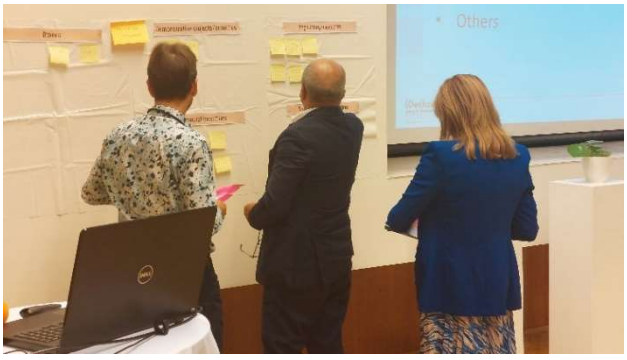


Group collaborative dynamics I (WP6, b)

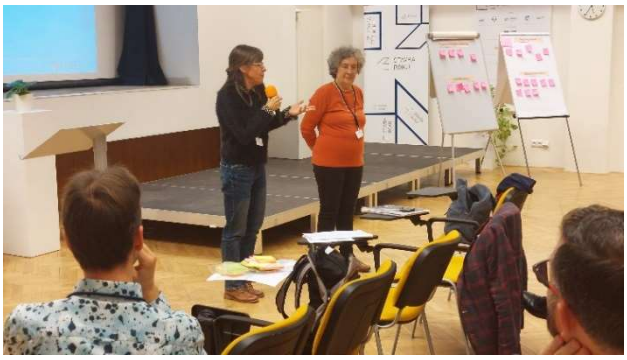


Group collaborative dynamics II (WP3)

Group collaborative dynamics II (WP4)



Group collaborative dynamics II (discussion, a)

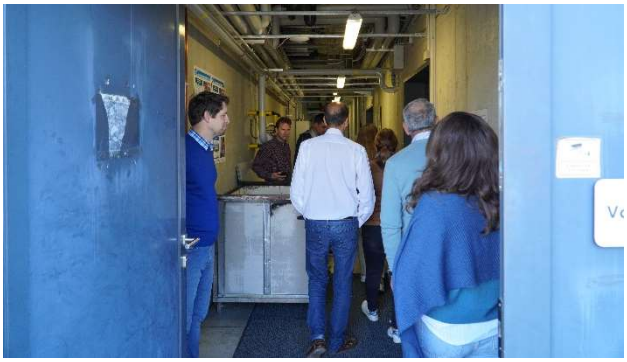


Group collaborative dynamics II (discussion, b)

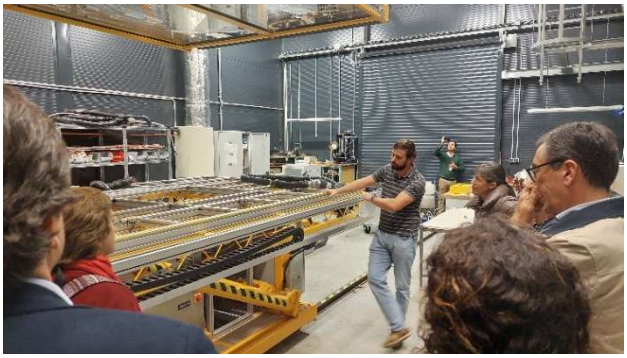
Closing remarks – FCT NOVA e ENVIROS

September 22nd of 2022 – Technical visit to Research Center UCEEB

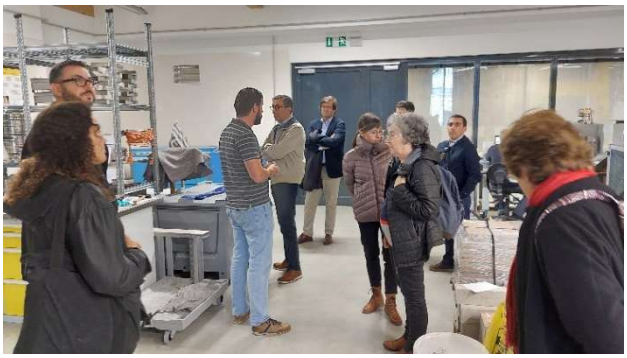
Research Centre UCEEB (a)



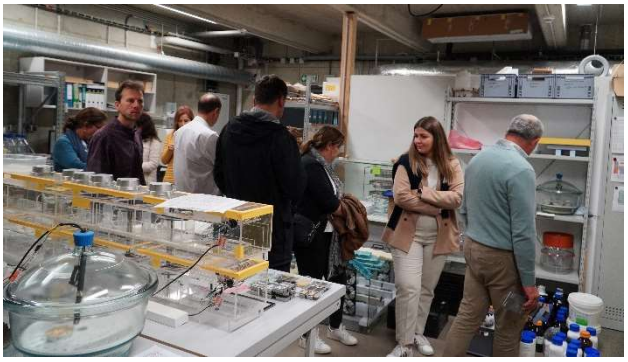
Research Centre UCEEB (b)



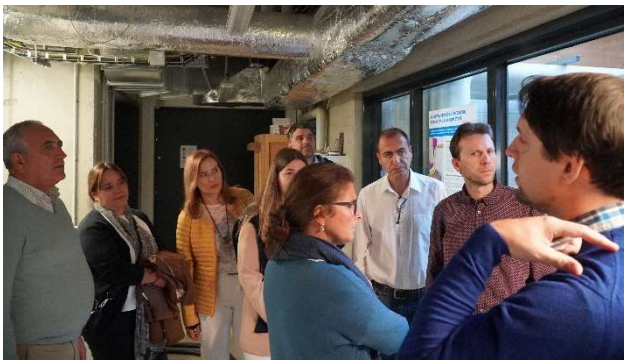
Research Centre UCEEB (c)



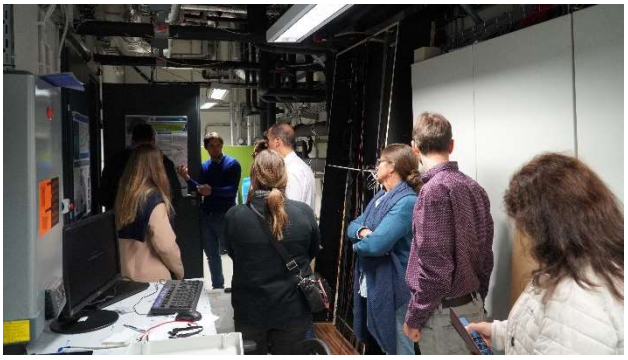
Research Centre UCEEB (d)



Research Centre UCEEB (e)



Research Centre UCEEB (f)



Research Centre UCEEB (g)

Research Centre UCEEB (h)

Annex II – Lists of participants

September 21st of 2022 – event and collaborative activities

Iceland Liechtenstein Norway grants

(De)construct for the Circular Economy

Date: 21 September 2022

Venue: Foundation for Architecture and Civil Engineering, Vaclavske namesti 833/31, Chéquia - the map: https://bit.ly/3S1FL3k

List of participants

Name	Organisation	Signature	Authorisation for image capture [1]
Agnes Mrackova	CYRKL		✓
Aida Szilagyi	CNPCD		X
Ana Catarina Silva Ribeiro Lopes	CIMBAL		X
Ana Paula Tavares Campos O. Duarte	LNEG		X
Anders Stølan	IDN		X
António José Rosa de Brito	Municipality of Castro Verde		X
António Manuel Ascensão Mestre Bota	Municipality of Almodôvar		X
Camelia Oltea Bobei	CNPCD		✓
Carlos Miguel Castanho Espada Teles	Municipality of Aljustrel		✓
David João Geraldes Camocho	LNEG		✓
David Nogueira	CIMBAL		✓
Elsa Nunes	Irradiare		✓
Eva Nykodymova	SKANSKA		✓

[1] Please tick "X" to authorise the collection of images and videos for public disclosure. According to the General Data Protection Regulation (EU) 2016/679 of the European Parliament and of the Council of 14 April 2016 on the protection of individuals with regard to the processing of personal data and on the free movement of such data and repealing Directive 95/46/EC (General Data Protection Regulation).

Iceland Liechtenstein Norway grants

Name	Organisation	Signature	Authorisation for image capture [1]
Fernando Jorge Castanho Silva Romba	CIMBAL		X
Filipa Maria Gomes Ferreira	FCT NOVA		X
Francisco José Machado Godinho	Municipality of Serpa		X
Hugo Santos	RDF		
Inês Daniela Guimarães Gomes	Smartwaste		X
Jiri Jerabek	ENVIROS		
José Carlos Marques Vairinhos	Municipality of Ourique		
José Francisco Calado Banha	Municipality of Moura		X
José João dos Anjos Pinto Rodrigues	Resialentejo		X
José Manuel Carvalho Penedo Martins Efigénio	Municipality of Alvito		
José Valente Rocha Guerra	Municipality of Ferreira do Alentejo		
Katarzyna Anna Kazimierczuk	IDN		
Katarzyna Anna Kazimierczuk	ID NORWAY		
Leonel Caçador Rodrigues	Municipality of Barrancos		X
Lia Maldonado Teles de Vasconcelos	FCT NOVA		X
Luís Carlos Loures	IPP		X
Manuel Cano	Cercibeja		X
Manuel Santos	Cercibeja		X
Maria Cristina Tomas Ferreira de Sousa Rocha	LNEG		X
Mário António Pacheco Ramos	FCT NOVA		X

Iceland Liechtenstein Norway grants

Name	Organisation	Signature	Authorisation for image capture [1]
Mário José Santos Tomé	Municipality of Mértola		
Pavel RŮŽIČKA	ENVIROS		X
Pedro Manuel Gonçalves Silva Romano	IPP		X
Pedro Miguel Rodrigues Sobral	Resialentejo		X
Ricardo Abraços Santos	RDF		
Rui Inácio Marreiros	Municipality of Beja		X
Rui Manuel Serrano Rapos	Municipality of Vidigueira		
Rui Silva	CIMBAL		X
Sandra Manuela Figueira Heleno Serrano	Municipality of Cuba		X
Sofia Martins	Irradiare		X
Tereza Pavlu	Czech Technical University		X
Viktor Havlice	Ministry of Industry		
Vlasta Svejnohova	ENVIROS		X
KARIN ARTLING	SKANSKA		√

September 22nd of 2022 – Technical visit to Research Center UCEEB

Iceland Liechtenstein Norway grants

(De)construct for the Circular Economy

Date: 22 September 2022

Field trip: Czech Technical University - Research centre UCEEB (University Centre of Energy Efficient Buildings)

List of participants

Name	Organisation	Signature	Authorisation for image capture [1]
Agnes Mrackova	CYRKL		
Aida Szilagyi	CNPCD		✓
Ana Catarina Silva Ribeiro Lopes	CIMBAL		–
Ana Paula Tavares Campos O. Duarte	LNEG		X
Anders Stølan	IDN		
António José Rosa de Brito	Municipality of Castro Verde		✓
António Manuel Ascensão Mestre Bota	Municipality of Almodôvar		✓
Camelia Oltea Bobei	CNPCD		+
Carlos Miguel Castanho Espada Teles	Municipality of Aljustrel		X
David João Geraldes Camocho	LNEG		X
David Nogueira	CIMBAL		X
Elsa Nunes	Irradiare		
Eva Nykodymova	SKANSKA		
Fernando Jorge Castanho Silva Romba	CIMBAL		X
Filipa Maria Gomes Ferreira	FCT NOVA		X

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Name	Organisation	Signature	Authorisation for image capture [1]
Francisco José Machado Godinho	Municipality of Serpa		
Hugo Santos	RDF		
Inês Daniela Guimarães Gomes	Smartwaste	Inês Gomes	
Jiri Jerabek	ENVIROS		
José Carlos Marques Vairinhos	Municipality of Ourique		
José Francisco Calado Banha	Municipality of Moura		
José João dos Anjos Pinto Rodrigues	Resialentejo		
José Manuel Carvalho Penedo Martins Efigénio	Municipality of Alvito		
José Valente Rocha Guerra	Municipality of Ferreira do Alentejo		
Katarzyna Anna Kazimierczuk	IDN		
Leonel Caçador Rodrigues	Municipality of Barrancos		
Lia Maldonado Teles de Vasconcelos	FCT NOVA		
Luís Carlos Loures	IPP		
Manuel Cano	Cercibeja		
Manuel Santos	Cercibeja		
Maria Cristina Tomas Ferreira de Sousa Rocha	LNEG		
Mário António Pacheco Ramos	FCT NOVA	Mário Ramos	
Mário José Santos Tomé	Municipality of Mértola		
Pavel RŮŽIČKA	ENVIROS		
Pedro Manuel Gonçalves Silva Romano	IPP		
Pedro Miguel Rodrigues Sobral	Resialentejo		

Iceland Liechtenstein Norway grants

Name	Organisation	Signature	Authorisation for image capture [1]
Ricardo Abraços Santos	RDF		
Rui Inácio Marreiros	Municipality of Beja		✓
Rui Manuel Serrano Raposo	Municipality of Vidigueira		
Rui Silva	CIMBAL		X
Sandra Manuela Figueira Heleno Serrano	Municipality of Cuba		✓
Sofia Martins	Irradiare		✓
Tereza Pavlu	Czech Technical University		
Viktor Havlice	Ministry of Industry		
Vlasta Svejnohova	ENVIROS		

Annex III – Materials passport: Data for the exercise

Work in subgroups

(De)Construct for Circular Economy
Project Meeting in Prague – 21st of September 2022

Activity with the tool "Material passport"

Objective: Test and explore the material passport tool with examples of products and materials from a private house in Czechia.

Remark. The information on this sheet should be considered only for testing purposes

Please consider the following information to fill in the excel spreadsheet **Building** and **P_Space** of the MP.

General Information				The Building A is a residential building used mainly at weekends located in Borovnice, Czechia. It is a private building for a single family since the construction in 1990. With an approx. area of 170m2, the building is in very good conditions and no major renovations were performed. The house does not have any certification and labels regarding materials, products and energy.								
Product	**Deck**			**Paving**			**Ceilings insulation**			**WC Basin**		
Function	Wooden decking for floor covering			Internal paving – ceramic floor tiles			Temperature and noise insulation			WC Basin + Metal Tap		
Origin	Germany			Poland			Germany			Spain		
Material	Natural wood with varnish	350kg	Renewable virgin	Ceramic	600kg	Non-renewable virgin	Glass wool	200kg	Non-renewable virgin	Basin -Ceramics	30kg	Non-renewable virgin
	Metal screws	1kg	Non-renewable virgin							Brass Tap	3kg	Non-renewable virgin
Certifications	None			None			None			None		
Installation	1990			1990			1990			2010		
Total nº of items	1			1			1			2		

Annex IV – Pre-demolition Guide: Work sheet

Table nº _____
Name of participants: _____

For this work we will focus on two sheets: the General Description sheet and Inventory sheet. Please fill both excel sheets according to description below.

Presentation of building:

The building is a private weekend house, in the Czech Republic, with 2 floors, surrounded by other houses and with unpaved roads (150 m). Because of that access to the heavy machinery will be more difficult and should happen in dry days.
It is a complete initial demolition, and the demolition area is 85 m2.
Slag bricks might contain hazardous materials and the roof cover contain asbestos. Laboratory tests were carried out.
No material has certification or environmental analysis.

During the visit to the building, the following material was found:

Material	Specify product/Material	Estimated quantity by weight (kg)	Conservation status	Hazardous level	Waste code
Wood	Painted wood of the fence	210	Poor conditions – high wear	Not hazardous – recyclable	17.02.01
Concrete	Foundations and floor	40000	Medium conditions-medium wear	Not hazardous – recyclable	17.01.01
Other insulation materials containing or consisting of hazardous substances	Slag bricks. might be hazardous	71200	Medium conditions-medium wear	Hazardous (radioactivity)	17.06.03*
Tiles, roof tiles and ceramics	Eternit - fiber cement tiles	360	Poor conditions – high wear	Hazardous	17.06.05*
Washbasins, toilets, sinks, bathtubs	1 toilet, 1 sink	30	Medium conditions-medium wear	Not hazardous – reusable	Not applicable
Windows with wood frame	11 windows different sizes, double glazing	165	Medium conditions-medium wear	Not hazardous – reusable	Not applicable
Wood	Wood plans on ceilings and floor, not painting	2000	Medium conditions-medium wear	Non-hazardous waste - neither reusable nor recyclable	17.02.01
Iron/steel	Iron rods of the fence	150	Poor conditions – high wear	Not hazardous – recyclable	17.04.05
Insulation materials not covered in 17 06 01 and 17 06 03	Ceilings insulation - glass wool	1000	Poor conditions – high wear	Non-hazardous waste - neither reusable nor recyclable	17.06.04

Material	Specify product/Material	Estimated quantity by weight (kg)	Conservation status	Hazardous level	Waste code
Not in use electrical and electronic equipment, not covered by 20 01 21 or 20 01 23, containing hazardous components	Hot water boiler	35	Poor conditions – high wear	Hazardous	20.01.35*