



**TOP CLeveR**  
Training and Outreach  
Programmes for a Circular  
and Level(s) based Revolution

# D3.1 WORKSHOP 1 RESULTS

**Date:** March 2024

**Responsible Partner:**  
GBC Slovenia



**G R E E N  
B U I L D I N G  
C O U N C I L  
S L O V E N I A**

Slovensko združenje  
za trajnostno gradnjo



This project has received funding from the European Union's LIFE22-CET program under Grant Agreement No 101121073 – Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or CINEA. Neither the European Union nor the granting authority can be held responsible for them.

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## Version history

| Version | Date     | Revised by                                   | Changes description                           |
|---------|----------|--|---|
| V1      | 21.03.24 | Iztok Kamenski                               | First draft sent to the consortium for review |
| V1.1    | 22.03.24 | Paola Colombo                                | Revision of the structure and contents        |
| V1.2    | 23.03.24 | Iztok Kamenski                               | Review on Paragraph 4                         |
| V1.3    | 25.03.24 | Alicja Heller, Alicia Ruiz, Franciska Erdelj | Approval of contents of Paragraph 4.2 and 5   |
| V1.4    | 27.03.24 | Iztok Kamenski                               | Review of Paragraph 5                         |
| V1.5    | 28.03.24 | Paola Colombo                                | Final version                                 |



## Deliverable information

|                      |   |
|----------------------|---|
| Grant agreement      | 101121073   |
| Project title        | Training and Outreach Programmes for a Circular and Level(s) based Revolution                                       |
| Project acronym      | TOP CLeveR  |
| Project coordinator  | GBC Italia  |
| Project duration     | 01 October 2023 – 30 September 2026   |
| Related work package | WP3 - VET programs and training materials for white collars and blue collars on ZEB, whole life carbon, circularity |
| Related task(s)      | T.3.1 Workshop on analysis and planning of training programmes and material   |
| Lead organisation    | GBC Slovenia  |
| Due date             | 31.03.2024  |
| Submission date      | 28.03.2024  |
| Dissemination level  | Public  |

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# 1 Background

## 1.1 Objective

WP3 aims to develop VET programs and training materials for white and blue collars on the project's pillars (WCRLZ). In particular, the partners will collaborate on the development of training materials for white collars in English language and on the definition of common principles for blue collars, to support the development of nationally specific training activities.

Task 3.1 concerns a consortium workshop on the analysis and planning of training programs and materials. In particular, WP3 Workshop 1 aims to discuss the results of WP2 and agree on the preparation of the training programmes for white and blue collars.

## 1.2 Relation with other tasks

WP3 Workshop 1 is the preparatory step for the tasks T3.2 and T3.3 (respectively "Developing educational content for building professionals (white collars)" and "Developing educational content for construction professionals and workers (blue collars)"), since it aims to the definition of the principles and the agreement on the topics and allocation of responsibilities among partners. In addition, the results of this WP will be the basis for the development of the activities of WP4 "Testing of the training activity at national level".

The workshop leveraged the outcomes from activities of other ongoing work packages, i.e. the mapping of existing training programmes (in WP2, partially overlapping) and the target groups analysis (in T7.1).



## 2 Organisation and approach

The workshop was held during the months of February and March, with sessions on 5 February, 13 February, 27 February and 11 March, in addition to a dedicated slot during the General Meeting on 18 March. All the sessions were held online, via Zoom or Google Meet. ZOOM whiteboard and shared presentations and spreadsheets were used to collect the main points of discussion.

The sessions were organised by GBCSlo. GBC Italia supported GBCSlo in preparing and holding the workshop, in particular the session on 27 February and 11 March.

A preliminary agenda of each session was defined at the beginning, nevertheless adjustments were made from time to time based on the discussions outcomes and results achieved.

Before each session, the partners had to provide inputs and prepare some presentations/materials. Those inputs served to facilitate the discussion, comparing proposals and opinions to arrive to agreed solutions.



## 3 Participants

| Name                      | Partner      | 05/02/24 | 13/02/24 | 27/02/24 | 11/03/24 | 18/03/24 |
|---------------------------|--------------|----------|----------|----------|----------|----------|
| <b>Paola Colombo</b>      | GBC Italia   | X        | X        | X        | X        | X        |
| <b>Valentina Marino</b>   | GBC Italia   |          |          | X        | X        |          |
| <b>Alicia Ruiz</b>        | GBC España   | X        | X        | X        | X        | X        |
| <b>Lucía Masi</b>         | GBC España   | X        | X        | X        | X        | X        |
| <b>Ana Guerrero</b>       | GBC España   |          |          |          | X        | X        |
| <b>Iztok Kamenski</b>     | GBC Slovenia | X        | X        | X        | X        | X        |
| <b>Luka Peteh</b>         | GBC Slovenia | X        | X        | X        |          |          |
| <b>Alicja Heller</b>      | Polish GBC   | X        | X        | X        | X        | X        |
| <b>Anna Jurczak</b>       | Polish GBC   |          |          | X        | X        | X        |
| <b>Dorota Bartosz</b>     | Polish GBC   | X        |          |          |          |          |
| <b>Malgorzata Iwaszek</b> | Polish GBC   |          |          | X        |          |          |
| <b>Aleksandar Jelovac</b> | Croatia GBC  | X        |          |          | X        | X        |
| <b>Franciska Erdelj</b>   | Croatia GBC  | X        | X        | X        | X        |          |
| <b>Éva Beleznay</b>       | Hungary GBC  | X        |          |          |          |          |
| <b>Éva Fülöpné</b>        | Hungary GBC  |          | X        |          | X        | X        |
| <b>Gabriella Goda</b>     | Hungary GBC  |          | X        |          |          | X        |



# 4 Sessions' minutes

## 4.1 Introductory meeting

**Date:** 5.2.2024

**Duration:** 13:30 – 14:30

**Session objective:** instructions of workflow and tools for the workshop

### Agenda

|             |  |
|-------------|--|
| 13:30-13:35 | Start and workflow of the meeting - Survey |
| 13:35-13:45 | Work plan for WP3 T3.1                     |
| 13:45-13:50 | Questions and answers                      |
| 13:50-14:05 | Work plan for Kick off meeting WP3 T3.1    |
| 14:05-14:10 | Discussion                                 |

### Minutes

This short meeting aimed to introduce the partners to the methodology for the workshop, providing instructions on the tools used and the materials and presentations to prepare in view of Session 1.





## 4.2 Session 1

**Date:** 13.2.2024

**Duration:** 10:30 – 14:55

**Session objective:** understanding of the framework of white and blue collars training

### Agenda

|                                    |   |
|------------------------------------|---|
| 10:30-10:35                        | Start and workflow of the meeting   |
| 10:35-10:50                        | Presentation of work in WP2 by GBCe   |
| 10:50-12:20                        | Examples of white- and blue-collar existing course(s) in each country (6x15min)   |
| 12:20-12:55<br>(2 break-out rooms) | Discussion on: <ul style="list-style-type: none"> <li>- Common gaps on WCRLZ pillars</li> <li>- Upgrading existing programs for white collars</li> <li>- Common training principles for blue collars</li> </ul> |
| 12:55-13:05                        | Break (aggregation of data from separate rooms)   |
| 13:05 –13:30                       | Report from each room and summary   |
| 13:30-14:20<br>(2 break-out rooms) | Discussion on <ul style="list-style-type: none"> <li>- needed skills for white and blue collar (upskilling, reskilling)</li> <li>- learning objectives and format</li> </ul>                                    |
| 14:20-14:30                        | Break (aggregation of data from separate rooms)   |
| 14:30-14:55                        | Report from each room and summary   |

### Minutes

GBCe presented an overview of work in WP2, whose goal is understanding the qualifications and training landscape in each project country. The activities on WP2 were still in progress, nevertheless some outcomes from the mapping of existing training courses could be extracted:

- most courses on WCRLZ are theoretical only and addressed to white collars;
- there is more training available for white collars than for blue collars;
- formal education courses are mainly physical or hybrid courses, while most of the non-formal education is online;
- the number of students is greater in formal public education;
- among the existing courses on TOP CLeverR's topics, the topic for which more courses are available is whole life carbon (for white and blue collars), followed by ZEB and circular construction (for white collars). Level(s) is a less common topic.



To support the following activities of the workshop, each GBC presented some examples of white- and blue-collar existing courses collected at national level. The main points are reported below.

#### GBC Poland

- white collars: In selecting the training courses, the PLGBC was guided by the idea of which training courses would fit into the project's five thematic pillars, but also broaden the awareness of construction professionals as much as possible. At the beginning, the PLGBC presented the biggest problems that the Polish market is facing. This was followed by a presentation of selected examples of training courses that cover as many of the thematic pillars as possible. The two training courses presented are organised by the PLGBC and cover whole life carbon, decarbonisation, LCA, EPD declaration, circularity and resource efficiency. These are high-level training courses, delivered online, using case study-based learning to a large extent. Another training course that was presented was a highly specialised training course on, accredited with a certificate that is recognised throughout Europe. This training is on passive construction and lasts 55 hours.
- blue collars: Selected training for construction industry employees is a basic training course organised by PLGBC, introducing the topic of sustainability in construction. This training is aimed at non-specialists in the construction industry. An online training course focusing on demonstrating the environmental impact of construction, multi-criteria certification, the benefits of decarbonising construction. Another training course presented a very narrowly themed programme based on construction waste management. This is a comprehensive online training provided by a company specialising in construction waste.

#### GBC Italia

- white collars: Formal programs in universities are introducing WCRLZ topics among the contents of courses, in addition to Master/Specialization schools specifically addressing sustainability in buildings, including WCRLZ themes. Entities (e.g. associations, research centres) and stakeholders from the private sector (e.g. software providers/manufacturers) offer non-formal training on emerging topics related to their field of interest/products.
- blue collars: Formal technical and professional programs are nationally established in general principles, but managed at regional/local level, therefore there is no uniformity in accessibility/distribution, level of analysis and in-depth themes. Non-formal courses on WCRLZ topics are limited in numbers and geographical scopes, and are sporadic initiatives related to public funds or promoted by manufacturers.



### GBC España

- white collar: some training were selected as best examples of training programmes on Level(s) and Circularity content, provided by different private stakeholders in Spain.
- blue collar: one VET programme was selected as best example of training on circular economy implementation in building construction by a public centre.

### GBC Croatia

- university trainings were selected as best examples on WCRLZ topics, such as green building and energy renovation of building envelopes and white collar seminars by professional organisations covering ESG, LCA and EPDs.
- in person trainings in schools for blue collar VET - skills for energy renovation and green building.

### GBC Slovenia

- workshops, seminars, conferences for white collar theoretical only.
- blue collar trainings with members. Course was mixing theory and installation of materials as practise.

The second part of the session was dedicated to initial discussions and brainstorming on training principles, skills and learning objectives, leading to the following remarks:

- Resource efficiency can be related to several kind of resources, such as raw materials, energy, water;
- Level(s) could be addressed both as a specific content for a course, but also as a transversal instrument to assess the “performances” in the other pillars;
- the regulatory framework (including EPBD recast, taxonomy, GPP) is very important for all the WCRLZ pillars;
- need of matching theoretical contents with practical exercises/case studies;
- need of interactive methods to involve the learners, especially blue collars.



## 4.3 Session 2

**Date:** 27.2.2024

**Duration:** 10:30 – 15:00

**Session objective:** definition of the learning objectives for white and blue collar

### Agenda

|             |   |
|-------------|---|
| 10:30-10:40 | Start and workflow of the meeting                   |
| 10:40-12:40 | Definition of learning objectives for white collars |
| 12:40-13:00 | Break   |
| 13:00-14:40 | Definition of learning objectives for blue collars  |
| 14:40-15:00 | Next steps  |

### Minutes

As preliminary activity to the Session 2, each GBC listed the learning objectives (LO)<sup>1</sup> for the white and blue collars for each pillar, to define what are the specific goals of the training courses in terms of expected knowledge and ability of a student after the training. The Bloom Taxonomy structure was taken as a reference to define the LOs (Figure 1).

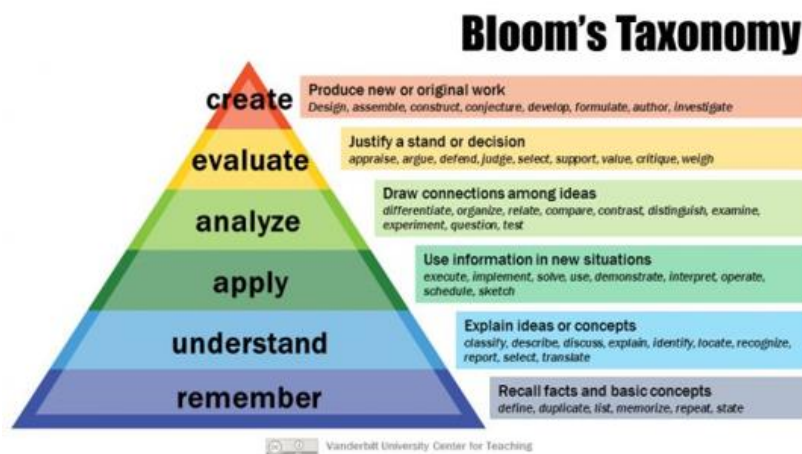


Figure 1 – Bloom's Taxonomy

<sup>1</sup> Form EU Council Recommendation - 2017/C 189/03: 'learning outcomes' (or 'learning objectives') means statements regarding what a learner knows, understands and is able to do on completion of a learning process, which are defined in terms of:

- 'knowledge' means the outcome of the assimilation of information through learning. Knowledge is the body of facts, principles, theories and practices that is related to a field of work or study;
- 'skills' means the ability to apply knowledge and use know-how to complete tasks and solve problems;
- 'responsibility and autonomy' means the ability of the learner to apply knowledge and skills autonomously and with responsibility.



The inputs were aggregated by GBC Italia in a single list of 61 and 53 LO for white and blue collars, respectively. During Session 2, Paola Colombo and Valentina Marino (GBC Italia) guided the discussion: each learning objective was addressed (approving, adding, removing, or combining items) to arrive to the agreement of the final lists of objectives. For white-collars the learning objectives are grouped in 11 modules, while for blue-collars 7 learning objectives are identified (see paragraphs 5.1.1 and 5.2.1).

At the end of the session the next steps were defined, and consequently the agenda of Session 3 was reviewed.



## 4.4 Session 3

**Date:** 11.3.2024

**Duration:** 10:30 – 14:30

**Session objective:** agreement of the training modules allocation and definition practical aspects for development of tasks 3.2 and 3.3

### Agenda

|             |  |
|-------------|--|
| 10:30-10:40 | Start and workflow of the meeting                            |
| 10:40-11:00 | Allocation of white collars training modules                 |
| 11:00-12:40 | White collars training format                                |
| 12:40-13:00 | Break  |
| 13:00-14:20 | Strategies to address blue collars, young talents, and women |
| 14:20-14:30 | Next steps   |

### Minutes

Before the session, each GBC expressed their interest and availability in taking charge of the development of the modules identified during the previous session. In addition, the collection of background resources and materials (e.g. documents, reports, guidelines, outputs from previous projects developed by GBCs, WGBC but also from external sources, which can be taken as reference for the development of the contents) has been initiated.

Session 3 was organised in two parts, under the guidance of Paola Colombo (GBC Italia). In the first part, the focus was on the white collars training, starting with the allocation of modules based on the preferences previously expressed, moving then to the agreement about format (i.e. course's structure, training method, type of material/handout, templates, final knowledge test). Subsequently the second part was dedicated to the discussion on the strategies to address blue collars (that can be critical to reach from most GBCs due to lack of previous experience), young talents, and women (whose participation should be encouraged to reach the project's target KPIs).



## 4.5 Workshop conclusion

**Date:** 18.3.2024

**Duration:** 14:00 – 16:00

**Session objective:** summarising workshop results and coordinating for the starting of tasks 3.2 and 3.3.

### Agenda

|             |   |
|-------------|---|
| 14:00-14:30 | Workshop outcomes (Deliverable D3.1), plans and deadlines for T3.2 and T3.3 (GBCSlo)  |
| 14:30-16:00 | Presentations by <i>each GBC</i> on: <ul style="list-style-type: none"> <li>- Syllabus and contributions for white collars training courses</li> <li>- Blue collars national training activities plans</li> </ul> |

### Minutes

The main results of the workshop were presented by Iztok Kamenski (GBCSlo), summarising the outcomes of the previous sessions in terms of:

- Learning objectives for white collars
- Allocation of white collars training modules among partners
- Format of white collars training (i.e. method and materials)
- Process for contents development (i.e. deadlines, periodic internal progress, and quality check)
- Learning objectives for blue collars
- Strategies to encourage the participation of the target groups (including women and young talents)

GBC Italia, GBCe, CCGR and PLGBC introduced the plans for the development of the tasks 3.2 and 3.3, in terms of draft syllabus for the white collars training courses and design of the blue collars national training activities. Some overlapping among the contents for the white collars training are detected; consequently, coordination is needed to agree on the individual responsibilities before the start of content writing.

GBCSlo presented the strategy for the provision of courses for white and blue collars (related to WP4). The contents of the allocated modules in WP2 were shared via email afterwards.

HuGBC could not present their plans for WP2. As soon as the new project manager will take on the role, the technical contents will be shared with the partners.



## 5 Workshop results

### 5.1 White collars training activities

#### 5.1.1 Learning objectives

The definition of the learning objectives for white collars started from drawing up a long list of possible learning objectives for WCLRZ pillars proposed by each GBC (61 items). During Session 2 the list was discussed, arriving to a final list of 11 learning topics (Table 1), corresponding to the learning modules that will be developed in T3.2.

The detailed descriptions of the learning objectives associated with each topic is provided in Table 2.

The main point of remarks that emerged and led to the final list are:

- The target groups for white collars (as defined in T7.1) are professionals related to buildings design and construction phases.
- Resource efficiency implies efficiency for uses of materials, water, and energy.
- All the aspects related to energy (ZEB and energy efficiency) are considered under the pillar ZEB, for simplicity.
- Level(s) is transversal since it provides the indicators to assess the performance of buildings. Therefore, it is addressed as a training topic, but also as part of the other topics as "Applying Level(s) to assess WCRZ concepts during design and construction phases"

*Table 1 – Learning topics for white-collars training*

|           |   |
|-----------|---|
| <b>W1</b> | Basic concepts of WLC                           |
| <b>W2</b> | Methodology of LCA approach                     |
| <b>W3</b> | LCA case studies                                |
| <b>C1</b> | Circular design                                 |
| <b>C2</b> | Circularity in use-phase                        |
| <b>C3</b> | Management of construction and demolition waste |
| <b>R1</b> | Efficiency in material use                      |
| <b>R2</b> | Efficiency in water use                         |
| <b>L1</b> | Introduction to Level(s)                        |
| <b>Z1</b> | Energy efficiency                               |
| <b>Z2</b> | Zero-emission Buildings                         |





Table 2 - Learning Objectives for white collars activities

|                              |   |   |
|------------------------------|---|---|
| <b>Whole life carbon</b>     | <b>W1</b>   | <b>Basic concepts of WLC</b>  |
|                              | W1.1  | Understanding the concepts of WLC, difference between operational and embodied carbon   |
|                              | W1.2  | Understanding the indicator GWP   |
|                              | W1.3  | Understanding the principles, standards of LCA approach - life cycle stages and modules   |
|                              | W1.4  | Understanding how LCA supports the design and construction phases and its significance for sustainable construction practices   |
|                              | W1.5  | Understanding the environmental performance of construction products (EPD) recognizing their value as a source of transparent and standardized environmental performance data |
|                              | W1.6  | Applying Level(s) to assess WCRZ concepts during design and construction phases   |
|                              | <b>W2</b>   | <b>Methodology of LCA approach</b>  |
|                              | W2.1  | Knowing and comparing the available databases (specially the open sources databases tools) and understanding how to use them for LCA  |
|                              | W2.2  | Knowing the available tools for LCA and understanding how to choose them  |
|                              | W2.3  | Knowing the input data for LCA and understanding how to collect them  |
|                              | W2.4  | Knowing how to compare results and how it is calculated (e.g. product/generic data)   |
|                              | <b>W3</b>   | <b>LCA case studies</b>   |
|                              | W3.1  | Analysing/Interpreting and comparing the analytical results of an LCA   |
|                              | W3.2  | Getting an idea of the magnitude of embedded and operational carbon with examples   |
|                              | W3.3  | Mention benchmarks of other countries / policies on WLC   |
| W3.4                         | Knowing success stories of buildings in Europe and their technical details (disaggregated data per stage of the WLC). Cover at least the project countries. |   |
| <b>Circular construction</b> | <b>C1</b>   | <b>Circular design</b>  |
|                              | C1.1  | Understanding circular design guidelines  |
|                              | C1.2  | Understanding of current and future European and national regulations/barriers related to circular construction (also in procurement, taxonomy)                               |
|                              | (C1.3)  | Knowing circular procurement practices in construction projects, including the use of recycled and locally sourced materials.   |
|                              | C1.4  | Understanding benefits and principles of design solutions that consider the supply chain and include recycled and reused materials (sustainable material choices)             |
|                              | C1.5  | Understanding the concept of building material passport   |



|                               |   |   |
|-------------------------------|---|---|
|                               | C1.6  | Understanding the concept of building as material bank (BAMB)   |
|                               | C1.7  | Understand design solutions considering the end-of-life stage and scenarios (e.g. design disassembly, modular construction, selective deconstruction, works for adaptation) |
|                               | (C1.8)  | Mentioning digital tools (e.g. BIM) to manage construction and demolition waste according to circularity principles   |
|                               | C1.9  | Applying Level(s) to assess WCRZ concepts during design and construction phases   |
|                               | <b>C2</b>   | <b>Circularity in use-phase</b>   |
|                               | C2.1  | Circular approaches in use-phase  |
|                               | C2.2  | Applying Level(s) to assess WCRZ concepts during design and construction phases   |
|                               | <b>C3</b>   | <b>Management of construction and demolition waste (construction + end of life)</b>   |
|                               | C3.1  | Integrating circular practices into construction processes, such as site management, waste management, and logistics  |
|                               | C3.2  | Waste materials sorting/fractions   |
| C3.3                          | Applying Level(s) to assess WCRZ concepts during design and construction phases |   |
| <b>Resource efficiency</b>    | <b>R1</b>   | <b>Efficiency in material use</b>   |
|                               | R1.1  | Understanding the impact of using nature-based materials  |
|                               | R1.2  | Comparing and selecting construction products and systems based on LCA analysis (ref. W1.4)   |
|                               | R1.3  | Knowing methodologies to manage the construction processes efficiently, in the design phase and its later implementation on site.   |
|                               | R1.4  | Applying Level(s) to assess WCRZ concepts during design and construction phases   |
|                               | <b>R2</b>   | <b>Efficiency in water use</b>  |
|                               | R2.1  | Understanding the impact and saving potential of indoor and outdoor water efficiency and circularity strategies   |
|                               | R2.2  | Applying solution for indoor and outdoor water efficiency and circularity (efficient devices, rainwater harvesting, greywater reuse)  |
| R2.3                          | Applying Level(s) to assess WCRZ concepts during design and construction phases |   |
| <b>Level(s)</b>               | <b>L1</b>   | <b>Introduction to Level(s)</b>   |
|                               | L1.1  | Knowing Level(s) scopes and structure   |
|                               | L1.2  | Understanding how Level(s) supports the design and construction phases  |
|                               | L1.3  | Knowing about Level(s) case study (ref. More Life 2 Level(s))   |
|                               |   | Applying Level(s) to assess WCRZ concepts during design and construction phases (developed as part of other LO)   |
| <b>Zero Emission building</b> | <b>Z1</b>   | <b>Energy efficiency</b>  |
|                               | Z1.1  | Understanding the importance of effective ventilation and air quality   |
|                               | Z1.2  | Understanding the importance of building diagnostics (leakage tests, thermal imaging)   |



|  |           |   |
|--|-----------|---|
|  | Z1.3      | Understanding of the importance of plant automation and control   |
|  | Z1.4      | Understanding the BMS concept   |
|  | Z1.5      | Understanding the role of renewable energy systems (RES)  |
|  | Z1.6      | Applying Level(s) to assess WCRZ concepts during design and construction phases                                     |
|  | <b>Z2</b> | <b>Zero-emission Buildings</b>  |
|  | Z2.1      | Knowing the definition of ZEB   |
|  | Z2.2      | Knowing the European standards, regulations and directives on energy efficiency in buildings (EPBD, RED, EED, etc.) |
|  | Z2.3      | Knowing the design choices, solutions and technologies to achieve ZEB (active and passive solutions)                |
|  | Z2.4      | Knowing tools to verify ZEB (energy audit, modelling,)  |

### 5.1.2 Allocation of training modules

Based on the background and interest expressed by each GBC, the training modules were allocated as reported in Table 3.

*Table 3 - Allocation of training modules among partners*

|           |   |            |
|-----------|---|------------|
| <b>W1</b> | Basic concepts of WLC                           | GBCSlo     |
| <b>W2</b> | Methodology of LCA approach                     | PLGBC      |
| <b>W3</b> | LCA case studies                                | PLGBC      |
| <b>C1</b> | Circular design                                 | GBCe       |
| <b>C2</b> | Circularity in use-phase                        | CGBC       |
| <b>C3</b> | Management of construction and demolition waste | HuGBC      |
| <b>R1</b> | Efficiency in material use                      | HuGBC      |
| <b>R2</b> | Efficiency in water use                         | GBC Italia |
| <b>L1</b> | Introduction to Level(s)                        | GBCe       |
| <b>Z1</b> | Energy efficiency                               | CGBC       |
| <b>Z2</b> | Zero-emission Buildings                         | GBC Italia |



### 5.1.3 Format

During Session 3 the following practical aspects regarding the white-collar training format were agreed.

#### Courses' structure

- The lessons will be grouped based on pillars. At the same time, there will be the possibility to enrol in the full course.
- The number of lessons and the duration of each lesson will be defined later during courses development.
- The possibility of a final knowledge test (e.g. multiple choice/exercises) could be evaluated (related to the accreditation and recognition process – ref. WP5). Questions can be drafted during the preparation of training materials.

#### Training method

The lectures will not be a-synchronous (video lectures). Choice between traditional (in presence), online synchronous or blended lectures will be evaluated during the testing phase (WP4).

#### Training materials

The outcomes of T3.2 will be in the form of handbooks (D3.3 Sensitive), in addition to a summary of contents for publication (D3.2 Public).

Presentations for lessons will be developed in the testing phase by trainers, based on the handbook contents.

To have a common structure and format, guidelines and templates for contents writing/presentation will be prepared, including rules for citation of sources, image credits, acknowledge contribution by members/external partners, templates for products/case studies.

#### Planning and periodic internal quality check

The plan for Task 3.2 should consider the project's activities planning:

- April 2024-April 2025: Development of training materials
- March-May 2025: Workshop 2
- June-September 2025: WP4 Translation and customization
- July 2025-March 2026: WP6 Launch of WGBC platform and population with contents.



To keep track of the ongoing activities and check the progress, there will be:

- Periodic internal progress checks during consortium meetings
- Quality checks in October 2024 and February 2025

The quality check will be organised as peer reviews and a list of aspects to evaluate will be defined.

### 5.1.4 Background resources

The collection of background resources and materials has been initiated. The list below includes documents and links of material developed by consortium partners, but also from external sources. The list will be expanded during the WP3 development.

#### WLC

- [Whole Life Carbon Roadmap - Spain](#)
- [INDICATE project](#)
- Italian Roadmap + Embodied Carbon Methodology: [link](#)
- ESTIMATING THE CARBON FOOTPRINT OF BUILDINGS - WHOLE LIFE CARBON ROADMAP FOR POLAND 2050 ([link](#))
- HOW TO DECARBONISE THE BUILT ENVIRONMENT BY 2050 - WHOLE LIFE CARBON ROADMAP FOR POLAND ([link](#))
- [ANZ programme](#)
- GBC Australia: [A practical guide to upfront carbon reductions](#)
- [Level\(s\), Putting whole life carbon into practice](#)
- ARUP [Embodied Carbon Reduction Roadmap](#)
- Ramboll [link](#)
- Net-zero buildings: Halving construction emissions today ([link](#))

#### CIRCULAR CONSTRUCTION

- [Circular Economy report - GBCE working group](#)
- [Linee guida per la progettazione circolare di edifici](#)
- [A GUIDE TO CIRCULARITY IN CONSTRUCTION](#)
- [The Circular Built Environment Playbook](#)
- [Whitepaper IGBC Construction Materials Exchange](#)
- [Level\(s\), Putting circularity into practice](#)
- [Study on measuring the application of circular approaches in the construction industry ecosystem](#)
- [Circularity Gap Report](#)
- [Towards a Circular Economy in the Built Environment](#)
- Ellen MacArthur Foundation Publications ([link](#))
- What the R?! ([link](#))



- Environmental Protection Agency - Best practice guidelines for the preparation of resource & waste management plans for construction & demolition projects ([link](#))
- EC Construction and demolition waste ([link](#))
- Assessment of initiatives to prevent waste from building and construction sectors ([link](#))
- [Circular Economy in the Built Environment . Arup](#)

### **RESOURCE EFFICIENCY**

- GBC Italia Position Paper [Gestione efficiente dell'acqua: dall'edificio alla città](#)
- World GBC [Building a Water-Resilient Future](#)

### **LEVEL(S)**

- [More Life 2 Level\(s\) project](#)
- LIFE LEVEL(s) courses
- [Level\(s\) academy](#)

### **ZEB**

- [Soluzioni tecnologiche](#) per la decarbonizzazione delle emissioni operative degli edifici
- [EP 100](#) Energy efficiency
- [Defining zero-emission buildings JRC](#)
- Arup [Net-zero buildings: halving construction emissions today](#)
- Arup [Net-zero operational carbon buildings: state of the art](#)



## 5.2 Blue collars national training activities

### 5.2.1 Common training principles

Principles for blue collars activities:

- development of country specific training contents in the national language;
- practical approach supported by provision of background theory;
- skills and knowledge provided should allow to improve and integrate the “business-as-usual” methods;
- seek of interactive methods to involve the learners;
- activities should facilitate the participation of young talents and/or women.

Reaching the blue collars can be challenging for some GBCs that don't have an “history” in training courses for blue collars. In this view it is important to know the national educational context/training providers for blue collars (from WP2), to leverage the existing framework of professional schools, in particular those for adults and for continuous vocational training, the existing seminars and training activities of companies and manufacturers, but also other ongoing projects (e.g. 'Construction Blueprint').

### 5.2.2 Learning objectives

Seven learning objectives were agreed for blue collar during Session 2:

- LO1 Concepts of WLC
- LO2 Solutions for reducing emissions
- LO3 Construction practices
- LO4 Impact of on-site activities
- LO5 Construction waste management
- LO6 Concepts of circular economy
- LO7 Zero Emission Buildings

The detailed descriptions of the knowledge and skills associated to each LO is provided in Table 4; some LOs are related to more than one WCRLZ pillar. Level(s) is not included among the learning objectives for the blue collars, since it is considered outside their scope.

Each GBC can select one or more of the LOs to deal with in the national training activities.



Table 4 – Learning Objectives for blue collars activities

|            |  | Related pillars |   |   |   |   |
|------------|--|-----------------|---|---|---|---|
|            |  | W               | C | R | L | Z |
| <b>LO1</b> | Understanding the definition and <b>concepts of WLC</b> , difference between operational and embodied carbon, life cycle stages (in part manufacturing and construction phases)  | W               |   |   |   |   |
| <b>LO2</b> | Understanding and selecting <b>solutions</b> for reducing carbon emissions throughout the construction lifecycle, including low-carbon material selection (also based on EPD), energy-efficient design, and construction practices | W               |   | R |   | Z |
|            | Explain products with a smaller carbon footprint to customers  |                 |   |   |   |   |
| <b>LO3</b> | Knowing of <b>construction practices</b> (proper insulation, avoiding thermal bridge, dampness, and moulds etc.) to guarantee the quality and performance. With practical examples on the results (thermography)                   | W               |   | R |   | Z |
|            | Understanding building diagnostics (thermographic surveys - benefits, requirements, application, case studies - thermograms)   |                 |   |   |   |   |
|            | Know-how and practical examples of the installation of passive solutions (envelopes and others) to reduce energy demand  |                 |   |   |   |   |
|            | Understanding maintenance to guarantee durability and extend lifetime  |                 |   |   |   |   |
| <b>LO4</b> | Understanding the environmental impact of <b>on-site activities</b> and identify opportunities for carbon and resource (energy, water, etc.) reduction   | W               |   | R |   |   |
|            | Understanding the resources' impact of building construction (materials, energy, water, productivity etc.)   |                 |   |   |   |   |
|            | Understanding of the importance of resource efficiency and the role in minimizing waste.   |                 |   |   |   |   |
|            | Understanding of water and energy saving methods during construction works   |                 |   |   |   |   |
|            | Optimize the installation of materials and products to minimize scarp, resources depletion and waste generation during construction phase  |                 |   |   |   |   |
|            | Introduction of automation of works on the construction site   |                 |   |   |   |   |
| <b>LO5</b> | Performing/implementing proper <b>construction waste management</b> on site (separation of waste and demolition materials, principles of selective waste management, separation and selection of materials for recycling/reuse)    |                 | C |   |   |   |
| <b>LO6</b> | Understanding the <b>concepts of circular economy</b> applied to the construction sector (selective waste management, waste separation, recycling, and reuse practices)  |                 | C |   |   |   |
| <b>LO7</b> | Knowing the definition of <b>ZEB</b> and the contributing design choices and characteristics   |                 |   |   |   | Z |
|            | Understanding of the energy performance goals  |                 |   |   |   |   |
|            | Understanding of the materials and technologies used in zero-emission construction   |                 |   |   |   |   |
|            | Understanding the role of renewable energy systems   |                 |   |   |   |   |





## 5.3 Strategies for addressing young talents and women

### 5.3.1 Addressing young talents

The project includes the creation of partnerships companies and Academia to offer internship opportunities to young talents from last years of universities path (WP5). The internships will be matched the white collars training courses.

In addition, the possibility to establish a similar approach also for blue collars could be explored, in particular creating connections between professional high school students and companies/building firms.

### 5.3.2 Addressing women

To address the women in the construction sector, dedicated communication activities are planned in WP7 (T7.2.4 Podcast development).

At the same time, during the testing phase (WP4) a target of women trained is established at project level (30% and 10% for white and blue collars respectively). Therefore, strategies to encourage women's participation have to be put in place, especially for blue collars, such as seek for collaboration with women associations (e.g. RebelArchitette, Real Estate Women) or other projects (e.g. Women can build).

