



D3.2 Design of Programme for Training of Trainers

And its applications for multifunctional green roofs, façades and interior elements

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Design of Programme for Training of Trainers

And its application for Multi-functional Green Roofs, Façades and Interior elements

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0.2	09-02-2023	Daniella Mazzini	First review
1	23-2-2023	Jan Cromwijk	Final review and publication
1.1	12-9-2023	Martin Breen	Added direct links to the materials

List of acronyms and abbreviations

BIM: Building Information Model / Management

BUS: Build Up Skills

CRM: Critical Raw Materials

CPD: Continuous Professional Development

EAB: External Advisory Board

EoSL: End of Service Life

GPP: Green Public Procurement

KE: Key Elements

MGRFIE: Multi-functional Green Roofs, Façades and Interior Elements

ULO's: Units of Learning Outcomes

RES: Renewable Energy Source

WP: Work Package

Definitions

Circular economy: The circular economy offers the next progressive step in our economic model, taking over from the current linear ‘take-make-waste’ economy by seeking to extract the maximum value from resources in use and keep materials in circulation for as long as possible through processes like reuse, repair, remanufacture and recycling. The ultimate goal of a circular economy is to establish an ecologically safe and socially just operating space for humankind.

Focus group: A small subset of experts within the construction industry which have been brought in to assist in verification of the work we have completed.

Key elements framework: The Key Elements (KE) framework is a conceptual framework of eight elements of circularity that can be applied at different intervention levels (for example, national, regional, sector, business, product, process, or material) towards a circular economy. The KE framework consists of three core elements and five enabling elements. Core elements deal with physical flows directly, whilst enabling elements deal with creating the conditions or removing barriers, for a circular transition.

Skills Mapping: Mapping of skills levels from 0 to 5 (PROF/TRAC system). This allows us to gauge the skills gap existing within any given profession.

- **Current Skills:** The skills level at which professionals and experts see their current level of skill.
- **Future Skills:** The skills level at which professionals and experts see their future level of skill.
- **Skills Gap:** The gap which exists between the current and future skills levels.

The three core key elements are:

1. **Prioritise regenerative resources:** Ensuring that renewable, reusable, non-toxic resources are used in the manufacturing of built environment. Ensuring that all resources are used in an efficient way.

2. **Preserve and extend what is already made / Stretch the lifetime:** While resources are in-use, maintain, repair and upgrade them to maximise their lifetime and give them a second life through take back strategies when applicable.

3. **Use waste as a resource:** Utilise waste streams as a source of secondary resources and recover waste for reuse and recycling.

The five enabling key elements are:

1. Design for the future: Account for the systems perspective during the design process, to use the right materials, to design for appropriate lifetime and to design for extended future use.
2. Collaborate to create joint value: Work together throughout the supply chain, internally within organisations and with the public sector to increase transparency and create joint value.
3. Rethink the business model: Consider opportunities to create greater value and align incentives that build on the interaction between products and services.
4. Incorporate digital technology: Track and optimise resource use and strengthen connections between supply chain actors through digital, online platforms and technologies that provide insights.
5. Strengthen and advance knowledge: Develop research, structure knowledge, encourage innovation networks and disseminate findings with integrity.

Multi-functional Green Roofs, façades and Interior Elements: combine multiple functions in order to maximise the return of a roof or façade (the front part or exterior of a building). Interior elements are considered insofar as they support the functions of buildings' roof and façade. Each function can be denoted its own colour:

- Green roofs or façades incorporate vegetation (such as moss, grass, shrubs, trees, etc.) and offer space for nature and horticulture. This can contribute to cooling and insulating properties, improve local air quality and biodiversity.
- Blue roofs or façades provide water retention and harvesting functions, for example, to delay stormwater runoff, reduce flooding and offer opportunities to reuse rainwater to water interior plants.
- Yellow roofs or façades generate sustainable energy, for example to power or heat the building with solar panels, thermal collectors, or wind turbines.
- Red roofs or façades make use of buildings' exterior space for social functions, such as roof-top playgrounds, bars or cinemas.

Grey roofs or façades provide technical functions such as inlet-outlet heat recovery ventilation, chimneys and natural light.

Executive summary

The overall aim of BUS-GoCircular is to address and overcome the challenges of the stimulation of demand for green energy skilled workforce, along with hands-on capacity building to increase the number of skilled workforces across the value chain. Based on the different circular strategies and interventions that are being applied in practice we have mapped which occupations are involved within the implementation of these interventions. Based on this work, different skills required for these different interventions were mapped (T2.2), and the tasks to carry out circular construction activities were mapped onto corresponding learning outcomes for the affected professions and trades workers into a circular skills qualification framework (T2.3).

In Work Package 3 we are aiming to design Train the Trainer (TtT) and mentoring programmes to develop the mindset and skillset needed to enable the transition to circular procurement and circular construction in the Netherlands, Bulgaria, Czech Republic, Spain, Croatia, Hungary and Ireland, as well as materials that have been disseminated by internationally renowned organisations within the EU.

Based on the findings from Task 3.1 - Structural assessment of available training materials and methodologies, Task 3.2 created a Train the Trainer programme which will be utilised in Prague in a face to face two day training workshop in January 2023. This Train the Trainer programme includes the following topics:

- Introduction to Circular Economy
- Overview of findings from Work Package 2 and how these relate to the trainer's current situation
- Teaching Methods and Training Material
- Creation of training programme designed by the trainers.

The goal of this meeting and further meetings over the coming year is to create a training programme which can be used and built upon by other trainers in order to upskill the construction industry in Circular Economy and MGRFIE.

Training material has also been created which will shortly be available on the BUS-GoCircular and PROF/TRAC websites. This material covers 11 topics relating to the Circular Economy and MGRFIE. These Topics are:

- Introduction to the Circular Economy
- Design and Implementation of Circular Practices

- Retrofits, Upgrades, Repair and Maintenance
- Bio Based Material Use
- Water in Design and Construction
- Energy in Design and Construction
- Digitalization
- Material Impact Measurement and Reduction
- Waste in Design and Construction
- Deconstruction
- Circular Economy Principles Across the Value Chain

These modules are intended as a bank of free training material that can be used and edited by trainers in order to tailor the material to the professions present.

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1. Introduction

1.1. Purpose

The accelerated and greater adoption of circular economy strategies across the construction value chain is needed to reduce the sector's embodied carbon emissions, waste and pollution, and environmental footprint. Within BUS-GoCircular these strategies have previously been identified and mapped onto the professions and trades workers responsible or involved in implementing these strategies at different stages of the construction life cycle (task 2.1)[1]¹. The skills needed were then analysed (task 2.2)², and a set of tasks and corresponding learning outcomes were subsequently mapped to identify the competences and training needed to create a circular built environment (task 2.3)³. Based on these findings available training material was identified and assessed (task 3.1)⁴.

The purpose of task 3.2 is to transform this information into training material that can be utilised by trainers. Trainers will create their own training programs across Europe in the coming months and years. Within this task a program for the first Train the Trainer event was designed, which will take place in Prague in January 2023. Subject to evaluation, this programme will then be used as a blueprint going forward for further training programmes carried out online or in person on national or European levels with further trainers involved. Each country has its own key performance indicators for trainers and trainees.

The purpose of this Train the Trainer programme is to train the trainers in Circular Economy principles and MGRFIE and create a training program based on the training material provided and initial findings from BUS-GoCircular to this point which they can now utilise as a basis for new training programmes aimed at the areas of most need within their own countries, as identified.

¹ BUS-GoCircular D2.1 (2021). Framework for circular interventions in the construction value chain. <https://busgocircular.eu/framework-for-circular-interventions-in-the-construction-value-chain/>

² BUS-Go Circular D2.2 (2022). Mapping of required skills and skills gaps. <https://busgocircular.eu/mapping-of-required-skills-ad-skill-gaps/>

³ BUS-GoCircular D2.3 (2022). Circular construction skills qualification framework, available at: <https://busgocircular.eu/circular-construction-skills-qualification-framework/>

⁴ BUS-GoCircular D3.1 (2022). Structural assessment of available training materials and methodologies. https://busgocircular.eu/wp-content/uploads/D3_1_Report_assessing_available_training_materials.pdf

2. Approach

2.1. Train the Trainer Programme Creation

Over the summer of 2022 bi-weekly meetings were held and attended by members of the BUS-GoCircular consortium. The purpose of these meetings was to create a programme for the Train the Trainer two day workshop, which is set to take place in Prague in January, 2023. The meeting is to include an introduction to circular economy basics, background and findings of the project so far, introduction to the training material, planning for upcoming events and the creation and design of training programmes, which the trainers will then deliver and/or incorporate into their existing training programmes. The overall aim of this workshop is to upskill existing trainers across vocational and further education, higher education and continued professional education and to facilitate the utilisation of the materials provided by the BUS-GoCircular consortium to create training programmes, which can be implemented by these trainers on a national or European level.

The train the trainer event will include:

- Introduction to Circular Economy
- Overview of findings from Work Package 2 (Skills need-analysis and Qualification Development) and how these relate to the trainers
- Teaching Methods and Training Material
- Creation of training programmes by the trainers

2.2. Train the Trainer Material Creation

Using the material collected in WP2 and analysed in Task 3.1, training material is being created to be shared with the trainers. The training material will cover topics ranging from an introduction to the Circular Economy, Legislation and Policy, Water and Energy in Construction and Deconstruction. This training material will be shared with all trainers with links to further training material and recommendations for on site or in person training. The training must be easily adaptable to each profession and should be used as a base for each trainer to tailor to his or her own trainees.

The training modules were decided based on the ULO's, as created in Work Package 2. All ULO's were grouped and assigned to a specific heading from which our 11 modules were

decided. The full list of these modules can be found in Results Table 1. These modules are intended to cover a wide range of topics and aspects of the construction industry, this should allow them to select the relevant topics to their profession based on the skills mapping provided in Task 2.2.

3. Results

3.1. Training Programme

The Train the Trainer programme can be seen below in Table 1. The programme is scheduled to be delivered in Prague in January 2023 and will serve as a basis for all following Train the Trainer programmes going forward, subject to evaluation. The initial Train the Trainer event will consist of two trainers from each partner country and must be held in person. Please see the full Train the Trainer programme below (Table 1). This training program will then be repeated at national and European levels where the program shown below will be tailored for these events.

[Redacted]									
[Redacted]									
[Redacted]									
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
BEFORE						Pre-reading and survey	Send agenda, discussion note, update and any access details (e.g. platform links, directions), survey completion to assist in meeting tailoring, reading materials		
DAY 1									
MORNING 1A	8:30	1:00	9:30	CVUT(Karel), ISSO (Jan)	TUS	Welcome and Introductions	Coffee on arrival followed by introductions - To include goals and experience from each participant. Introduction/Overview of the next 2 days and BGC.	Participant presentation and discussion.	
	9:30	1:30	11:00	CE (Samy) + Ben	FEVEC + EMI + INCIEN	Introduction to Circular Economy	Introduction to key elements framework - Introduction to Circular Economy basics as applied to construction skills. Lessons from the past - Case Studies - What experiences have been learned from previous projects? What are some real-world applications of	Interactive session (Small groups to discuss and share knowledge or a panel like question and answer round after a short presentation) (Including national levels) after 45 minutes split to 2 groups	Note of the most relevant topics for each participant

							the Circular Economy? What is expected of Trainer - Creation of groups based on similar roles. [<i>Moderator:</i> <i>INCIEN or CVUT or TUS to</i> <i>lead this part?</i>] (Ben?)		
	11:00	0:30	11:30	COFFEE BREAK					
MORNING 1B	11:30	0:30	12:00			Skills Mapping	Skills level analysis overview and emerging skills/professions (include Q&A session). How to incorporate this research into their training programs.	Presentation	Note of the most relevant topics for each participant
	12:00	0:45	12:45			ULO's	Unit of Learning Outcomes introduction and description (include Q&A session). How to incorporate this research into their training programs.	Presentation	Note of the most relevant topics for each participant
	12:45	1:00	13:45	LUNCH					
	13:45	0:45	14:30			Teaching Methods	Teaching Methods - Teaching methods and processes that have worked in the past, how best to approach these topics.	Active session (Including national levels)	Note of the most relevant topics for each participant
AFTERNOON 1C	14:30	1:00	15:30	CE (Samy) + Martin + Bojan	TUS + IVE + INCIEN + UZ-FCE	Introduction to Training Material and Useful Tools	Short intro to training materials , training course program + self-directed session on applicability/usability for the national programmes.	Short introduction. Active facilitated groups.	Note of the most relevant topics for each participant (can you pinpoint a 'use case' in your country /profession that can be used as an example for training?)

	15:30	0:30	16:00	COFFEE BREAK					
	16:00	0:30	16:30	TUS(Martin)	CVUT	Planning for the upcoming sessions	Solidifying what is expected from Trainers. Template for trainers.	Presentation	
	16:30	0:30	17:00	CVUT(Karel)		Technologies for resilient, energy efficient and healthy buildings	Integrated building design approach, green roofs, facades, Indoor Environmental Quality (IEQ), energy performance of buildings	<i>Presentation</i>	
	17:00	Site Trip - CVUT							
	Evening	DINNER							
DAY 2									
MORNING 2A	9:00	0:30	9:30	FEVEC (Laura) + IVE (Joan)	TUS	Welcome and introduction to mentoring	Reflection on the previous day as well as a reiteration of the goals for the day (short summary). Fundamental Training Packets for SMEs: where you can find some extra material to implement in your SME's - FEVEC Small tips of the benefits of mentoring programs to continue learning - IVE	<i>Presentation</i>	

	9:30	0:30	10:00	CVUT (Pavla)		MGRFIE in BUS GO context	TBC - title		Presentation
	10:00	0:30	10:30	COFFEE BREAK					
MORNING 2B	10:30	2:00	12:30	INCIEN (Ben), TUS (Martin), UZ-FCE (Bojan), FEVEC (Laura)		Design of the Programme	In facilitated groups, begin the process of creating the training program.	Group work - 4 groups	
	12:30	1:00	13:30	LUNCH					
AFTERNOON 2C	13:30	2:00	15:30	Jan (ALL)		Presentation of training programs (estimated 4 by 30 minute presentations)	In groups, presentation of the programme that has been designed.	Interactive presentations including feedback from a panel discussion	
	15:30	0:30	16:00	Jan + Karel		- Presentation of certificates, close			
	END OF DAY 2								

Table 1: Train the Trainer meeting programme

3.2. Training Material

The 11 modules and module topics are shown in the table below. These correspond to training content which is to be shared on the BUS-GoCircular and PROF/TRAC websites. This material is to be available for use by all our trainers going forward.

Module Title	Module Topics
Module 1 - Circular Economy and its Implementation in the Design and Construction Sector	The Circular Economy and its Application in the Construction Sector <ul style="list-style-type: none"> ● Introduction to the Circular Economy ● Circular Economy in the Construction Sector ● The Key Elements Framework
	Multi-functional Green Roofs Facades and Exterior Elements and the Circular Economy <ul style="list-style-type: none"> ● Introduction to Multi-functional Green Roofs Facades and Exterior Elements ● Types of Green Roofs ● Benefits of Multi-functional Green Roofs Facades and Exterior Elements
	Link to materials - https://docs.google.com/presentation/d/1etFevQxvHqUI_qvWxm1_Q-NltjPZocLK/edit?usp=sharing&oid=112148808974461842163&rtopf=true&sd=true
Module 2 - Implementing Circular Practice in the Design, Build and Deconstruction Phase of Construction	Modular and Adaptable Design and Construction
	Design For Disassembly (DfD)
	Product-as-a-service (Paas)
	Design and build Multi-functional Green Roofs Facades and Exterior Elements
	Link to materials - https://docs.google.com/presentation/d/1pg1YtK

	0QEg7A84bNJ4il8H9yzobrBTK/edit?usp=sharing&oid=112148808974461842163&rtpof=true&sd=true
Module 3 - Bio Based Material Implementation and Application in Circular Economy	Bio-based Materials
	<p>Existing Bio-based Materials and Techniques</p> <ul style="list-style-type: none"> ● Earth ● Timber ● Straw ● Wool ● Hemp ● Stone
	<p>New Bio-based Materials and Techniques</p> <ul style="list-style-type: none"> ● Bio Plastics ● Mycelium ● Biochar ● Bio-based Concretes and Cement ● 3D-Printing
	Bio Based material opportunities for Multi-functional Green Roofs Facades and Interior Elements
	<p>Link to materials -</p> https://docs.google.com/presentation/d/1K0X-ovgKkdl-eUgeAMAP10OTWk0g0fFh/edit?usp=sharing&oid=112148808974461842163&rtpof=true&sd=true
Module 4 - Upgrades and Maintenance for Sustainability in the Design and Construction Industry	Repairs and Maintenance
	Upgrades and Retrofits
	nZEB, Passive Houses and Environmental Certification Schemes
	Sustainable Neighbourhoods

	Upgrades and Maintenance for Multi-functional Green Roofs Facades and Interior Elements
	<p>Link to materials -</p> <p>https://docs.google.com/presentation/d/1Uw8dxjYL7FwMjDfenG_Sq3YU_ppuaLBk/edit?usp=sharing&oid=112148808974461842163&rtpof=true&sd=true</p>
Module 5 - Water and the Circular Economy	<p>Water in Construction</p> <ul style="list-style-type: none"> • Water and the Circular Economy
	<p>Water and Sustainable Use in Construction</p> <ul style="list-style-type: none"> • Sustainable Drainage Systems • Rainwater Harvesting
	Water Management Plan
	Application for Multi-functional Green Roofs Facades and Interior Elements
	<p>Link to materials -</p> <p>https://docs.google.com/presentation/d/1_4IRjD7MaW21uCSS3mwHfvh6R8wpu_Fl/edit?usp=sharing&oid=112148808974461842163&rtpof=true&sd=true</p>
Module 6 - Energy and the Circular Economy	<p>Energy in Construction</p> <ul style="list-style-type: none"> • Energy and the Circular Economy
	<p>Energy and Sustainable Use in Construction</p> <ul style="list-style-type: none"> • Renewable energy sources
	Application for Multi-functional Green Roofs Facades and Interior Elements
	<p>Link to materials -</p> <p>https://docs.google.com/presentation/d/17yZzYn3otrLtXgUX8nXw7YQQUoT6KVAN/edit?usp=sharing&oid=112148808974461842163&rtpof=true&sd=true</p>

Module 7 - Digitalisation and Material Passports in the Design and Construction Sector	Digitalization in Design and Construction
	BIM
	Drones
	3D Modelling <ul style="list-style-type: none"> • VR (Virtual Reality)Headsets
	Exoskeleton Suits
	Digital Twins
	Material Passports
	3D Printing and Prefabrication
	Application for Multi-functional Green Roofs Facades and Interior Elements
	Link to materials - https://docs.google.com/presentation/d/177A0su4-jfPygkycE8eY9_gE-P4BHAXW/edit?usp=sharing&oid=112148808974461842163&rtpof=true&sd=true
Module 8 - Material Impact in Relation to the Circular Economy	Material Impact Reduction
	Green Public Procurement
	Life Cycle Analysis
	Life Cycle Costing
	Level(s)
	Application for Multi-functional Green Roofs Facades and Interior Elements
	Link to materials - https://docs.google.com/presentation/d/1msl_m39Mj2az3PYUpH1BYyZLqPJUkpGc/edit?usp=sharing&oid=112148808974461842163&rtpof=true&sd=true

Module 9 - Waste as a Resource in Circular Economy	<p>Waste as a Resource</p> <ul style="list-style-type: none"> • Implementing material reuse
	Digital marketplace
	Material Banks
	Application for Multi-functional Green Roofs Facades and Interior Elements
	<p>Link to materials -</p> <p>https://docs.google.com/presentation/d/1isC-ZmeH3YJvCpGzCE_9qc0CMYt_bWqD/edit?usp=sharing&oid=112148808974461842163&rtpof=true&sd=true</p>
Module 10 - Deconstruction as an Element of a Building Life	Pre-demolition survey
	Circular Deconstruction
	Urban mining
	Application for Multi-functional Green Roofs Facades and Interior Elements
	<p>Link to materials -</p> <p>https://docs.google.com/presentation/d/1mQYnbNcVxECIjD_ZJcCwpfGZzIsRpBau/edit?usp=sharing&oid=112148808974461842163&rtpof=true&sd=true</p>
Module 11 - Circular Economy Across the Value Chain	Collaboration and Knowledge sharing
	Integration and implementation of Circular Economy in the workplace
	Regulation and definition
	Multi-functional Green Roofs Facades and Exterior Elements
	<p>Link to materials -</p> <p>https://docs.google.com/presentation/d/1VUM_hgP4W9Hk_ifvAwJqbFraD4BeJ9cM/edit?usp=sharing&oid=112148808974461842163&rtpof=true&sd=true</p>

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Table 2: Training Modules

4. Future development and applications

The frameworks included herein provided a basis for informing the required skills and current skills needs associated with the different roles required to fulfill circular strategies (task 2.2), and the development of circular construction qualifications framework (task 2.3). Together the tasks in WP2 enabled the consortia to design a Train the Trainer programme in WP3 that addresses the application of the frameworks developed (task 2.3), contributing to capacity building activities in WP4 to provide formal and informal skill recognition on the qualification developed combined with the national implementation plans in WP5.

Based on the initial train the trainer meeting, the programme will be edited and utilised in further programmes in the upcoming months. The training material will also be uploaded to the BUS-GoCircular and PROF/TRAC websites and Build Up Skills mobile app where it will be freely available to trainers for upskilling in the construction industry. Furthermore, the lessons from applying circular economy methods to the case of multifunctional green roofs, façades and interior elements provides valuable lessons on how the training can also be applied to other more specific circular built environment related focus areas, such as circular heat pump and ventilation installations.

5. References

BUS-GoCircular. D2.1 Framework for circular interventions in the construction value chain. 2022.

<https://busgocircular.eu/framework-for-circular-interventions-in-the-construction-value-chain/>

Circle Economy. Key elements of the circular economy.

<https://knowledge-hub.circle-lab.com/circular-jobs-initiative/frameworks/9?n=Key-elements-of-the-circular-economy>

BUS-GoCircular. D2.2 Mapping of required skills and skills gaps

<https://busgocircular.eu/mapping-of-required-skills-ad-skill-gaps/>

BUS-GoCircular. D2.3 Circular construction skills qualification framework


<https://busgocircular.eu/circular-construction-skills-qualification-framework/>

BUS-GoCircular. D2.4 Applied circular construction skills qualification framework

<https://busgocircular.eu/applied-circular-construction-skills-qualification-framework/>

BUS-GoCircular. D3.1 Report assessing available training material

<https://busgocircular.eu/report-assessing-available-training-materials/>



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Colophon

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