Are architects ready for circular transition?
Continuous Professional Development tools for Europe

This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 101033740
11:00  BUILD UP presentation
Emily Coe-Bjorsell, Editorial Team of BUILD UP

11:05  Welcome and interactive session warm up
Larissa De Rosso, Project Officer at the Architects’ Council of Europe - BUSGoCircular project partner

11:10  Continuous Professional Development in Europe - Architects’ Council of Europe (ACE)
Joni Tyler, Head of CPD standards at RIBA and ACE CPD chairperson

11:20  Best practices in CPD training - BNA Academy (Netherlands) and RIAI (Ireland)
Caroline Gentner, Internationalisation coordinator at BNA The Netherlands
Anneleen de Jong, Senior policy at the Dutch Architectural Register Office
Sandra Campbell, Education Director at RIAI, Ireland
11:40  **BUSGoCircular project overview and main outcomes**  
Larissa De Rosso, Project Officer at the Architects’ Council of Europe

11:45  **European Framework for Circular skills in Design and Construction**  
Martin Breen, Researcher at TUS - Ireland - BUSGoCircular project partner

11:55  **European Fundamental training pack**  
Larissa De Rosso, Project Officer at the Architects’ Council of Europe - BUSGoCircular project partner
12:00  BUSGoCircular Train the trainer programme. Experience from the ground.
Pavla Dvořáková, Czech Technical University in Prague - BUSGoCircular partner
Michalina Joanna Fratczak, Architectural Designer at ENTREarchitecture, Portugal - BUSGoCircular Trainer
Karolína Barič, Co-founder ZERO Architecture & Rethink Architecture - BUSGoCircular Trainer

12:20  Q&A
Larissa De Rosso, Project Officer at the Architects’ Council of Europe - BUSGoCircular project partner

12:30  BUILDUP Closure
Emily Coe-Bjorsell, Editorial Team of BUILD UP
Welcome and interactive session warm up

Larissa De Rosso, Project Officer at the Architects’ Council of Europe - BUSGoCircular project partner
Join at slido.com #CPD
Where are you now?

① Click Present with Slido or install our Chrome extension to activate this poll while presenting.
Please indicate the type of your organisation(s) - max 2

Click Present with Slido or install our Chrome extension to activate this poll while presenting.
How did you find out about this webinar?

₁ Click Present with Slido or install our Chrome extension to activate this poll while presenting.
Continuous Professional Development in Europe
Architects’ Council of Europe (ACE) framework

Joni Tyler, Head of CPD standards at RIBA and ACE CPD chairperson
Who I am?
ACE Observatory
aceobservatory.com

ACE Observatory - Mitigating climate change

Select country
- All
- Europe

Select year
- 2022

Use recently 2022 Europe
Customer request or regulatory reason 2022 Europe

- Low energy buildings
- Nearly Zero Energy Buildings (nZEB)
- Plus Energy buildings
- Circular design

0 20 40 60

0 20 40 60
ACE CPD plans

- Mutual CPD recognition
- Grow the CPD register
- Highlight EU-funded CPD
- Update the guidance
- Find events in Europe (on website now)
- CPD schemes in every country?
ACE CPD Register

AUSTRIA
BULGARIA
CZECH REPUBLIC
FRANCE
GERMANY
IRELAND
ITALY
LATVIA
SPAIN
UNITED KINGDOM
EU learning

- BIMPLEMENT
- RENOVEB
- TRIPLEA-RENO
- BIMZEED
- BIM-SPEED
- DIGIPLACE

https://www.ace-cae.eu/access-to-the-profession/continuing-professional-development/eu-funded-projects-training-area/
The UK situation

- Massive changes since Grenfell fire
- Increased scrutiny on architects competence
- Continual regulatory and legislative changes
- Climate emergency and climate literacy
- Societal requirements: inclusion, access, equity
- Complex amount of necessary areas of knowledge
Climate action

View resources to help you complete the 2030 Climate Challenge

**Read the 2030 Climate Challenge guide**
Our 2030 Climate Challenge guide outlines the targets and baseline business as usual figures for different types of buildings, with a checklist to help you meet them.

**Find answers to our frequently asked questions**
We have responded to your questions about the 2030 Climate Challenge.

**Download our guide for working with clients**
To help you work with clients on meeting the 2030 Climate Challenge targets, we’ve collated a guide and some template communications.
5 year competencies

- Health and life safety
- Climate literacy
- Ethical practice

ANNUAL CPD CORE TOPICS

20 of the 35 hours
2 x 10 per year

Specialist registers

- Principal designer
- Conservation
- Client advisor
10 CORE ANNUAL TOPICS

1. Architecture for social purpose
2. Health, safety and wellbeing
3. Legal, regulatory and statutory compliance
4. Contracts and procurement
5. Business, clients and services
6. Sustainable architecture
7. Building conservation and heritage
8. Places, planning and communities
9. Inclusive environments
10. Design, construction and technology
RIBA resources

- Building and Fire Safety
- Climate action
- RIBA Academy CPD content from RIBA
- CPD from manufacturers
Best practices in CPD training
CPD practices in The Netherlands and RIAI framework in Ireland

Anneleen de Jong, Senior policy at the Dutch Architectural Register Office
Caroline Gentner, Internationalisation coordinator at BNA The Netherlands
Sandra Campbell, Education Director at RIAI, Ireland
CPD in the Netherlands

NL: Protection of the title

4 disciplines

- Interior architecture
- Architecture
- Garden-landscape architecture
- Urbanism
CPD in the Netherlands

How to obtain the title?
Master degree
+ Professional practice experience (PPE)
+ Registration at AR

How to maintain the title?
Registration
+ CPD 16 hs/year (no enforcement)
CPD in the Netherlands

Current research project on CPD:

Long term vision on the integration of the PPE, CPD and Higher education curriculum based on the essential skills of the spatial designer of the future

- evaluate (and change) the current set of endterms
- align with EU developments
- adjust current regulations on CPD, PPE and other entry procedures
CPD in the Netherlands

CPD Offer

Link: Continuing Professional Development Agenda (architectenregister.nl)

BNA Academy
BNA Academy
Royal Institute of Dutch Architects

- National Institute for Dutch architectural firms
- Voluntary membership based
  - +-950 members - 5500 employees
- BNA stands for
  - Advocacy
  - Entrepreneurial support
  - Industry development

BNA Academy result of Law for Title protection

- 16 hours per year
What do we offer?

In class courses on different themes:

- Entrepreneurship
- Sustainability
- Technology
- Laws and Regulations
- Human Resources

Webinars
Blended learning with online tool
InCompany
Points and who can participate?

- CPD points based on hours of ‘work’
- Certificate at the end

Who is it for?

- All 4 disciplines
- Distinction in seniority and roles
- PPE route courses
BNA Academy in numbers

- 850+ participants yearly
  - Regular courses
  - Webinar
  - Masterclasses
- 40 courses in 2023
- Valued 8+ (out of 10) by participants
Royal Institute of Architects in Ireland (RIAI)

Registration body for Architects in Ireland

National Legislation: Register for Architects

RIAI CPD Policy

- **Protect** the public and the built environment
- **Maintain** knowledge, skill, and competence

Non-compliance = Removal from the Register

RIAI’s objective: **100% compliance**

https://www.riai.ie/
RIAI CPD Policy & Framework

Minimum 40 CPD points

incl. min 20 Structured CPD points

1 CPD point = 1 hour learning

CPD Cycle 1 December to 30 November

MyRIAI CPD online system

CPD relevant to practice

Standards of Competence

Section 8
Architect

Article 46
Training of architects

2. Architecture must be the principal component of the study referred to in paragraph 1. The study shall maintain a balance between theoretical and practical aspects of architectural training and shall guarantee at least the acquisition of the following knowledge, skills and competences:

(a) the ability to create architectural designs that satisfy both aesthetic and technical requirements;

(b) adequate knowledge of the history and theories of architecture and the related arts, technologies and human sciences;

(c) knowledge of the fine arts as an influence on the quality of architectural design;

(d) adequate knowledge of urban design, planning and the skills involved in the planning process;

(e) understanding of the relationship between people and buildings, and between buildings and their environment, and of the need to relate buildings and the spaces between them to human needs and scale;

Standard of Knowledge, Skill and Competence for Practice as an Architect

1. The top line shows the relevant element from Article 46 of the Professional Qualifications Directive (2005/36/EC).

2. The first column to the left shows the reference number and tag for the indicator. For example “a2 Design” means this is the second indicator under element (a) of Article 46 and that it is tagged as relating most closely to Design.

3. The second column contains the text of the actual indicator of knowledge, skill and competence.

4. The third column contains the Guidance Note if one is required.

<table>
<thead>
<tr>
<th>Reference</th>
<th>Indicator</th>
<th>Guidance Note</th>
</tr>
</thead>
<tbody>
<tr>
<td>Article 46 (a)</td>
<td>Ability to create architectural designs that satisfy both aesthetic and technical requirements.</td>
<td>This includes lateral thinking and the ability to think “outside the box”.</td>
</tr>
<tr>
<td>a1 Design</td>
<td>Ability to engage imagination, think creatively, innovate and provide design leadership</td>
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</tr>
<tr>
<td>a2 Design</td>
<td>Ability to create an ordered and holistic layout of spaces that uses light, mass and form in three dimensions, based on clear conceptual thinking, that satisfies aesthetically, functionally and technically</td>
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<table>
<thead>
<tr>
<th>Article</th>
<th>a</th>
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https://www.riai.ie/whats-on/events?keywords=&cat=cpd-events&month=all
RIAI CPD Policy & Framework

40+ RIAI CPD courses offered per year

- Majority webinar/blended learning
- Recording available after event

90+ Free RIAI CPD Network presentations

https://www.riai.ie/whats-on/events?keywords=&cat=cpd-events&month=all
Example of RIAI Guidance & CPD

Join the RIAI for the CPD: Design for Manufacture and Assembly (DfMA), A Common Framework, 10 November

https://www.riai.ie/whats-on/events?keywords=&cat=cpd-events&month=all
# RIAI Specialist Accreditations

<table>
<thead>
<tr>
<th>RIAI</th>
<th>Registered Architect</th>
<th>Conservation Architect</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>G1</td>
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</table>

<table>
<thead>
<tr>
<th>RIAI</th>
<th>Registered Architect</th>
<th>Environmental Accreditation</th>
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<tr>
<td>2023</td>
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<table>
<thead>
<tr>
<th>RIAI</th>
<th>Registered Architect</th>
<th>PSDP Accreditation</th>
</tr>
</thead>
<tbody>
<tr>
<td>2023</td>
<td>P</td>
<td></td>
</tr>
</tbody>
</table>

RIAI 2030 Climate Challenge

https://www.riai.ie/discover-architecture/climate-change
Circularity: Irish Construction Sector
BUSGoCircular project overview and main outcomes

Larissa De Rosso, Project Officer at the Architects' Council of Europe - BUSGoCircular project partner
BUSGoCircular project overview

BUS-GoCircular is a 30 month-long project funded by the European Union’s Horizon 2020 Research and Innovation Programme. The project started in September 2021 and will finish in February 2024 with a team of 14 partners from The Netherlands, Spain, Czech Republic, Hungary, Bulgaria, Ireland, and partner with an European reach.

BUS-GoCircular understands the importance of a green energy workforce within the design and construction sector. BUS-GoCircular has developing and is implementing a circular construction skills qualification framework with a focus on multifunctional green roofs, façades and interior elements.
Circular skills qualification Framework

- 71 Subtasks
- 41 Professional profile linked to circularity
- 9 Tasks on circularity
- 84 Units of Learning outcomes
Training packs

BU-S GoCircular has created the "Training Packs" to enable SMEs to train their staff in a simple, attractive, short and low-cost way (Click HERE). In addition to the 7 national packs for the Netherlands, Bulgaria, Czechia, Spain, Hungary, Croatia and Ireland, an English Pack has been published for wider use in the EU.

EU
coming soon (Dec. 2023)

NETHERLANDS
coming soon

BULGARIA
coming soon

CZECHIA
coming soon

SPAIN
coming soon (Dec. 2023)

HUNGARY
click HERE

CROATIA
click HERE

IRELAND
click HERE
Train the Trainers
1st Training
Train the Trainers
2nd Training
Train the Trainers
3rd Training
Training materials for Trainers

The Circular Economy and its Application in the Construction Sector

What Is A Circular Economy? Overview

In our current economy, we take materials from the earth, make products from them, and then they become waste. In a Circular Economy, we try to keep waste being produced.

The circular economy is based on three key principles, driven by design:

- Eliminate waste and pollution
- Circulate products and materials (at their highest value)
- Regenerate natural systems

It is underpinned by a transition to renewable energy and materials. A circular economy describes a balance in the flow between economic activity and the consumption of finite resources. It’s a vision of a system that is good for business, people and the environment.

https://busgocircular.eu/training/
Mentoring Programme
European Framework for Circular skills in Design and Construction

Martin Breen, Researcher at TUS - Ireland - BUSGoCircular project partner
Skills Mapping and Results

Based on the Key elements shown here and using the PROF/TRAC framework, we mapped out 58 skills and 38 professions relating to Circle Economy and MGRFIE which we would go on to map in order to discover the skills gap existing within Europe.
<table>
<thead>
<tr>
<th>Specific to Circular Economy</th>
<th>Table including all relevant Circular Skills either solely related to Circular Economy or prominently related to CE.</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PRR</strong> Prioritise regenerative resources</td>
<td>Taking into consideration that renewable, reusable, non-toxic resources are used in the construction and production of the built environment.</td>
</tr>
<tr>
<td><strong>PRR1</strong> Bio-Based and regenerative material application</td>
<td>Design with/for the use of bio-based and regenerative materials such as bio-based concrete, crops, algae. Maximise, preserve and manage biological products for buildings lifecycle. Material Creation and innovation. Knowledge of material impact.</td>
</tr>
<tr>
<td><strong>PRR2</strong> Reusable material application</td>
<td>Design for the use of reusable materials. The application of reusable materials such as timber, metal, etc. Including knowledge of material impact.</td>
</tr>
<tr>
<td><strong>PE</strong> Preserve and extend what is already made</td>
<td>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.</td>
</tr>
<tr>
<td><strong>UWR</strong> Use waste as a resource</td>
<td>Utilise waste streams (Sewage, Trade waste) as a source of secondary resources and recover waste for reuse and recycling.</td>
</tr>
<tr>
<td><strong>UWR1</strong> Deconstruction for reuse</td>
<td>Use demolition materials as a resource for new and retrofitting buildings. Specialism in deconstruction, material recovery and deconstruction material innovation.</td>
</tr>
<tr>
<td><strong>UWR2</strong> Material Innovation</td>
<td>Experimentation and innovation with materials to discover new sustainable methods of construction.</td>
</tr>
<tr>
<td><strong>UWR3</strong> Reclaiming Energy</td>
<td>Reclaiming energy from waste materials wherever possible.</td>
</tr>
<tr>
<td><strong>UWR4</strong> Continuous reuse of energy with little or no waste</td>
<td>Understanding/use of closed and open loop knowledge of waste (Closed loop - all resources created or used are kept within a continuous cycle. Open loop - not all resources created or used are kept within a continuous cycle).</td>
</tr>
<tr>
<td><strong>DF</strong> Design/Build for the future</td>
<td>Designing for building adaptability and to design for extended future use.</td>
</tr>
<tr>
<td><strong>DF1</strong> Design/Build for Reuse</td>
<td>Designing for easy dismantling and re-use of built elements, equipment or materials.</td>
</tr>
<tr>
<td><strong>DF2</strong> Design/Build for repurpose of materials</td>
<td>The use of Circular materials. Reuse, recycle and repurpose of all materials in construction.</td>
</tr>
<tr>
<td><strong>DF3</strong> Apply material passports</td>
<td>Apply material passports to enable more timely upgrading and life-time extension.</td>
</tr>
<tr>
<td><strong>DF4</strong> Design/Build for material impact reduction</td>
<td>Reduction of the materials impact on the environment from the design to installation phase.</td>
</tr>
<tr>
<td><strong>DF5</strong> Reduce/Build reliance on critical raw materials</td>
<td>Design increased use of renewable and sustainable materials in construction.</td>
</tr>
<tr>
<td><strong>DF6</strong> Design/Build out waste</td>
<td>Use design as a tool to reduce or eradicate all waste at design phase.</td>
</tr>
<tr>
<td><strong>DF7</strong> Design/Build for Durability</td>
<td>Design so that products and installations are easy to repair. Design for longevity.</td>
</tr>
<tr>
<td><strong>DF8</strong> Design/Build for Cyclability</td>
<td>Design/Build for resource efficiency for all life cycle stages, prioritising material reuse and reduction.</td>
</tr>
<tr>
<td><strong>CCJV</strong> Collaborate to create joint value</td>
<td>Work together throughout the supply chain, internally within organisations and with the public sector to increase transparency and create joint value (Mutual benefit).</td>
</tr>
<tr>
<td><strong>CCJV1</strong> Collaboration for Circular Economy</td>
<td>To ensure GPP, construction networks, digital marketplace, innovation, Circular Procurement training and application of circular strategies to establish circular construction principals and demolition criteria are incorporated at design stage.</td>
</tr>
<tr>
<td><strong>RBM</strong> Rethink the business model</td>
<td>Consider opportunities to create greater value and align incentives that build on the interaction between products and services.</td>
</tr>
<tr>
<td><strong>RBM1</strong> Repairs as a service</td>
<td>Rethinking repairs as a necessary part of the business model rather than replace.</td>
</tr>
<tr>
<td><strong>RBM2</strong> Environmental costing models and carbon taxes</td>
<td>Rethinking costing and carbon taxes within construction.</td>
</tr>
<tr>
<td><strong>DT</strong> Incorporate digital technology</td>
<td>Track and optimise resource use and strengthen connections between supply chain actors through digital, online platforms and technologies that provide insights.</td>
</tr>
<tr>
<td><strong>SAK</strong> Communication, Education and information</td>
<td>Develop research, knowledge transfer, encourage innovation networks and disseminate findings with integrity.</td>
</tr>
<tr>
<td>Not specific to Circular Economy</td>
<td>Including all relevant skills involved in Circular Economy but not necessarily specific to CE within the construction industry.</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Prioritised regenerative resources</td>
<td>Building with sustainable sourced materials i.e. Wood, Hemp, Seaweed, Cork, Bamboo, Earth, straw, wool etc.</td>
</tr>
<tr>
<td>PRR3 Sustainable Sourcing</td>
<td>Measures to more efficiently use and store energy in the house.</td>
</tr>
<tr>
<td>PRR4 Energy storage and distribution</td>
<td>The understanding and operation of creating energy from renewable sources</td>
</tr>
<tr>
<td>PRR5 Production of Renewable Energy</td>
<td>Understanding/use of closed and open loop knowledge of water (Closed loop - all resources created or used are kept within a continuous cycle. Open loop - not all resources created or used are kept within a continuous cycle)</td>
</tr>
<tr>
<td>PRR 6 Continuous reuse of water with little or no waste</td>
<td>Prioritise regenerative resources</td>
</tr>
<tr>
<td>Preserve and extend what is already made</td>
<td>Sustainable Sourcing</td>
</tr>
<tr>
<td>PE1 Maintenance of building components</td>
<td>Building with sustainable sourced materials i.e. Wood, Hemp, Seaweed, Cork, Bamboo, Earth, straw, wool etc.</td>
</tr>
<tr>
<td>PE2 Upgrade of building components</td>
<td>Use expertise to upgrade elements. Knowledge specific to maintenance work.</td>
</tr>
<tr>
<td>Use waste as a resource</td>
<td>PRR3 Sustainable Sourcing</td>
</tr>
<tr>
<td>UWR5 Grey Water Collection and Use</td>
<td>Understanding/use of closed and open loop knowledge of water (Closed loop - all resources created or used are kept within a continuous cycle. Open loop - not all resources created or used are kept within a continuous cycle)</td>
</tr>
<tr>
<td>UWR6 Rainwater collection and use</td>
<td>Rainwater harvesting to be used for certain applications e.g. washing, toilets, gardening.</td>
</tr>
<tr>
<td>UWR7 Sustainable Drainage Systems</td>
<td>roofs, interiors and walls connected to sewage systems and water recovery systems to avoid flooding them. Sensor technology in green facades to facilitate water flow from roof when needed.</td>
</tr>
<tr>
<td>Design for the future</td>
<td>Design for Adaptable</td>
</tr>
<tr>
<td>DF9 Design for Adaptable</td>
<td>Modular Design</td>
</tr>
<tr>
<td>CCJV2 Collaboration</td>
<td>Rethink the business model</td>
</tr>
<tr>
<td>RBM3 Facades as a service</td>
<td>Technical Installation as a service</td>
</tr>
<tr>
<td>RBM4 Technical Installation as a service</td>
<td>Interior features as a service</td>
</tr>
<tr>
<td>RBM5 Interior features as a service</td>
<td>Incorporate digital technology</td>
</tr>
<tr>
<td>IDT1 Drones Use</td>
<td>To scan/image frontage and roofs of buildings for data collection and analysis for renovation.</td>
</tr>
<tr>
<td>IDT2 3D Printing</td>
<td>To avoid material loss and to allow for material innovation and experimentation.</td>
</tr>
<tr>
<td>IDT3 Prefabrication</td>
<td>This must include digital rendering leading to a further minimizing of waste from human error.</td>
</tr>
<tr>
<td>DT 4 BIM/Digitisation</td>
<td>Digitally track materials in order to maximise lifetime of products through BIM. Digital tracking and management of building systems and components. Allowing for material and building tracking (building tracking, collaboration and communication).</td>
</tr>
<tr>
<td>SAK1 Research and development</td>
<td></td>
</tr>
<tr>
<td>MF</td>
<td>Multi-functional Green Roofs Facades and Interior Elements</td>
</tr>
<tr>
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<tr>
<td>MF1</td>
<td>Solar power systems for electricity generation</td>
</tr>
<tr>
<td>MF2</td>
<td>Solar thermal systems for domestic hot water and/or heating generation</td>
</tr>
<tr>
<td>MF3</td>
<td>Heat Pump</td>
</tr>
<tr>
<td>MF4</td>
<td>Insulation Installation</td>
</tr>
<tr>
<td>MF5</td>
<td>Establishing the cooling and heating function of green roofs</td>
</tr>
<tr>
<td>MF6</td>
<td>Horticulture</td>
</tr>
</tbody>
</table>
The Levels

We worked with professionals within each partner country which allowed us to
- The current and future skills levels in each country
- A common level across Europe
- Map the skills gap which exists
- Identify gaps across all sectors and skills

<table>
<thead>
<tr>
<th>Level</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Not applicable / no knowledge and skills required</td>
</tr>
<tr>
<td>1</td>
<td>Has little knowledge and skills with respect to the relevant field / technology</td>
</tr>
<tr>
<td>2</td>
<td>Understands basic knowledge and has practical skills within the field, is able to solve problems by selecting and applying basic methods, tools, materials and information</td>
</tr>
<tr>
<td>3</td>
<td>Has comprehensive, factual and theoretical knowledge, is capable of solving problems within the field</td>
</tr>
<tr>
<td>4</td>
<td>Has advanced knowledge involving a critical understanding of theories and principles and skills, required to solve complex and unpredictable problems in the field and is aware of the boundaries</td>
</tr>
<tr>
<td>5</td>
<td>Has specialised knowledge and problem-solving skills, partly at the forefront of knowledge in the field, in order to develop new knowledge and procedures and to integrate knowledge from different fields</td>
</tr>
</tbody>
</table>
Future Skills Levels
How to Use Skills Levels

Identify your target profession or professions.
Note the skills levels of these professions.
Highlight how you would or can upskill in relation to these skills.
Task-based qualifications

Why?

Practical perspective on required skills for circular construction

Increased recognition of learned skills

Learning outcomes for development of training

Circularity applied to different fields in construction
Scope of circular construction skills qualifications

**Included**
- Integrating circular principles in existing work activities
- Focus on working as a member of the construction value chain
- Including interdisciplinary skills:
  - Collaboration
  - Research and evaluation
  - Education

**Not included**
- Detailed skills and knowledge
- Technology specific (e.g. details of installing heat pumps, specifics of designing pre-fabricated structures)
## Task-based qualifications: How?

### Tasks and subtasks

<table>
<thead>
<tr>
<th>Task</th>
<th>Subtasks</th>
<th>Code</th>
<th>Notes</th>
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<tbody>
<tr>
<td>2</td>
<td>Design for the future</td>
<td>81</td>
<td></td>
</tr>
<tr>
<td>2.1</td>
<td>Design to reduce waste during production and use</td>
<td>2, 26, 27, 28</td>
<td>ME, CE, EL, AR</td>
</tr>
<tr>
<td>2.2</td>
<td>Design with materials that enable multiple uses</td>
<td>5</td>
<td>ME, CE, EL, AR, BS, HS</td>
</tr>
</tbody>
</table>
Task-based qualifications: How?

Tasks and subtasks

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<thead>
<tr>
<th>2</th>
<th>Design for the future</th>
<th>81</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>Design to reduce waste during production and use</td>
<td>2, 26, 27, 28</td>
</tr>
<tr>
<td>2.2</td>
<td>Design with materials that enable multiple uses</td>
<td>5</td>
</tr>
</tbody>
</table>

ULOs are statements regarding what a learner knows, understands and is able to do (including responsibility) on completion of a learning process, which are defined in terms of knowledge, skills and attitude/responsibility.
## Task-based qualifications: How?

### Unit of Learning Outcomes (ULO$s$)

<table>
<thead>
<tr>
<th>ULO Nr.</th>
<th>Competence</th>
<th>Skills</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design with bio-based materials as an alternative for conventional construction materials</td>
<td>Select bio-based materials for the construction project at hand. Consider the purpose of the building and the context of the entire building solution, as well as construction requirements. When bio-based materials are not an option, select proper low impact materials. Integrate use of the Material Circularity Indicator (make sure it is not higher than X). Ensure use of materials that have little to no volatile organic compounds (VOC) emissions.</td>
<td>Types of bio-based materials in construction such as hemp, seaweed, cork, bamboo, sustainably sourced wood, agricultural residues. Advantages and disadvantages of bio-based materials. Seven functional requirements of building walls. Alternative forms of concrete.</td>
</tr>
<tr>
<td>2</td>
<td>Exact measures that optimise material use to strive for material efficacy</td>
<td>Apply measures that optimise material use to construction projects. Combat underutilisation or surplus of materials by sharing products, or assets and optimising their use.</td>
<td>General knowledge about measures that optimise material use in construction, such as 3D printing or accurate structural design/industrialized prefabricated products.</td>
</tr>
</tbody>
</table>

What competence does one need for performing the subtask?
Task-based qualifications: How?

Unit of Learning Outcomes (ULOs)

<table>
<thead>
<tr>
<th>ULO Nr.</th>
<th>Competence</th>
<th>Skills</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design with bio-based materials as an alternative for conventional</td>
<td>Select bio-based materials for the construction project at hand</td>
<td>Types of bio-based materials in construction such as hemp, seaweed, cork, bamboo, sustainably</td>
</tr>
<tr>
<td></td>
<td>construction materials</td>
<td>Consider the purpose of the building and the context of the entire</td>
<td>sourced wood, agricultural residues</td>
</tr>
<tr>
<td></td>
<td></td>
<td>building solution, as well as construction requirements</td>
<td>Advantages and disadvantages of bio-based materials</td>
</tr>
<tr>
<td></td>
<td></td>
<td>When bio-based materials are not an option, select proper low</td>
<td>Seven functional requirements of building walls</td>
</tr>
<tr>
<td></td>
<td></td>
<td>impact materials</td>
<td>Alternative forms of concrete</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Integrate use of the Material Circularity Indicator (make sure it is</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>not higher than X)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ensure use of materials that have little to no volatile organic</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>compounds (VOC) emissions</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Exact measures that optimise material use to strive for material</td>
<td>Apply measures that optimise material use to construction projects</td>
<td>General knowledge about measures that optimise material use in construction, such as 3D</td>
</tr>
<tr>
<td></td>
<td>efficacy</td>
<td>Combat underutilisation or surplus of materials by sharing products,</td>
<td>printing or accurate structural design/industrialized prefabricated products</td>
</tr>
<tr>
<td></td>
<td></td>
<td>or assets and optimising their use</td>
<td></td>
</tr>
</tbody>
</table>

What competence does one need for performing the subtask?

What should one be able to do in order to gain competence?
Unit of Learning Outcomes (ULOs)

<table>
<thead>
<tr>
<th>ULO Nr.</th>
<th>Competence</th>
<th>Skills</th>
<th>Knowledge</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design with bio-based materials as an alternative for conventional construction materials</td>
<td>Select bio-based materials for the construction project at hand; Consider the purpose of the building and the context of the entire building solution, as well as construction requirements; When biobased materials are not an option, select proper low impact materials; Integrate use of the Material Circular Indicity (make sure it is not higher than X); Ensure use of materials that have little to no volatile organic compounds (VOC) emissions</td>
<td>Types of bio-based materials in construction such as hemp, seaweed, cork, bamboo, sustainably sourced wood, agricultural residues, Advantages and disadvantages of biobased materials, Seven functional requirements of building walls, Alternative forms of concrete</td>
</tr>
<tr>
<td>2</td>
<td>Draft measures that optimise material use to strive for material efficiency</td>
<td>Apply measures that optimise material use to construction projects; Combat underutilisation or surplus of materials by sharing products, or assets and optimising their use</td>
<td>General knowledge about measures that optimise material use in construction, such as 3D printing or accurate structural design/industrialized prefabricated products</td>
</tr>
</tbody>
</table>

**What competence does one need for performing the subtask?**

**What should one be able to do in order to gain competence?**

**What is prerequisite knowledge to become competent?**
## The main Tasks

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Prioritise regenerative and efficient use of resources</td>
</tr>
<tr>
<td>2</td>
<td>Design for the future</td>
</tr>
<tr>
<td>3</td>
<td>Assemble/construct for the future</td>
</tr>
<tr>
<td>4</td>
<td>Rethink the business model</td>
</tr>
<tr>
<td>5</td>
<td>Stretch the lifetime</td>
</tr>
<tr>
<td>6</td>
<td>Use secondary resources</td>
</tr>
<tr>
<td>7</td>
<td>Incorporate digital technology</td>
</tr>
<tr>
<td>8</td>
<td>Collaborate to create joint value</td>
</tr>
<tr>
<td>9</td>
<td>Strengthen and advance knowledge</td>
</tr>
<tr>
<td></td>
<td>Prioritise regenerative and efficient use of resources</td>
</tr>
<tr>
<td>---</td>
<td>-----------------------------------------------------</td>
</tr>
<tr>
<td>1.1</td>
<td>Design with bio-based, non-toxic and/or non-critical materials</td>
</tr>
<tr>
<td>1.2</td>
<td>Replace energy sources with less impactful alternatives</td>
</tr>
<tr>
<td>1.3</td>
<td>Apply suitable energy efficiency measures to the building design (taking into account building purpose and climate)</td>
</tr>
<tr>
<td>1.4</td>
<td>Generate energy from renewable sources - e.g. solar, sustainable biomass</td>
</tr>
<tr>
<td>1.5</td>
<td>Apply measures that replace freshwater with less impactful alternatives</td>
</tr>
<tr>
<td>1.6</td>
<td>Enact water efficiency measures</td>
</tr>
<tr>
<td>1.7</td>
<td>Source bio-based, reusable, non-toxic and non-critical materials</td>
</tr>
<tr>
<td>1.8</td>
<td>Source local and lightweight materials</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Pre-selection of relevant Tasks

Based on your target profession/professions select:
- Identify the principles (key elements) you want to train on
- Identify the relevant tasks
- Review the ULO’s provided (on usability on first sight)
European Fundamental training pack
Larissa De Rosso, Project Officer at the Architects’ Council of Europe - BUSGoCircular project partner
Training material for public procurer

Questions for discussion
- Do you regularly send your staff to training programmes on the Circular Economy and Circular Public Procurement?
- How often do you hold training programmes for the operating or your staff?
- Does your institute have a roadmap, plan and action for the circular transition that includes circular tender programmes?
- What empirical do you have evidence to achieve your circular economy goals in the construction sector?
- And what opportunities could be further developed?

https://busgocircular.eu/training/
National Training packs

BUS-GoCircular has created the "Training Packs" to enable SME's to train their staff in a simple, attractive, short and low-cost way (click HERE). In addition to the 7 national packs for the Netherlands, Bulgaria, Czechia, Spain, Hungary, Croatia and Ireland, an English Pack has been published for wider use in the EU.

https://busgocircular.eu/training/
EU Training pack - Module 1

What is circular building and why are we doing it?

Circular building refers to a design approach that prioritizes circular economy principles in the construction of buildings. This means that materials and products and flows (energy, water, waste) continue to circulate in a cycle ("closing the loop"). Every effort is made to preserve the value of materials and products for as long as possible. This reduces waste and reduces new resource extraction.

Impacts of the construction sector in Europe

In Europe, in recent years, the data on the impact of the construction sector are as follows, starting from 50% of total extracted materials, 45% energy and 39% water consumption above the total, 39% waste produced and 35% greenhouse gases emitted compared to the other emitting sectors. For more information you can look into the report on circular economy in building, in this case of Spain, here: Informe_Sinapme-Circularidad.pdf (dobe.es)

The need for circularity

Circular construction is crucial to mitigate climate change and not deplete resources. Its benefits includes:

- Reduce waste
- Reduce energy consumption
- Reduce their associated CO2 emissions
- Sustainable and responsible business practices as in the extraction of material
- Avoiding material and water scarcity
- Saving costs (material, waste management, operation)

https://busgocircular.eu/training/
EU Training pack - Module 2

**BUS GoCircular**

**TP – Policy framework in EU**

**European Green Deal**

The European Green Deal presented in December 2019 aims to make Europe the first continent to achieve climate neutrality by 2050, meaning that all of its member states are committed to reduce emissions by at least 80% by 2050. The deal is expected to drive a green industrial revolution in all sectors of the economy, not only to reduce emissions but also to create jobs and growth, raise energy security, reduce energy poverty, and improve the health and well-being of citizens.

Considering the building design and construction sectors, the European Commission made a commitment to increase the share of renewable sources in the EU energy grid. The potential reduction of CO2 emissions in the construction sector is one step towards achieving climate neutrality by 2050. The initiative also requires that public buildings to be constructed by 2030 be highly energy-efficient, with 40% or more of the non-commercial area of public buildings being renovated, and 40% of renewable energy being used in the building stock by 2050. A decrease of 7% in the non-commercial area of public buildings is expected by 2050, and a decrease of 4% each year in renewable energy for heating and cooling by 2050.
EU Training pack - Module 2

EU Training Pack - Module 2

Time to know more about your country

Group work:
- Form a team of 4 people
- Each member chooses a topic from the list below
- Each member should make a brief research on the national legislation for each topic:
  - Each member should give a short presentation of his/her findings to the group.

List of topics:
- EPD
- Building Passport
- Social Readiness Indicator
- National Building Renovation Plans

New European Bauhaus - NEB

The information about New European Bauhaus Initiative can be found in the "New European Bauhaus: a handbook", developed by the EU-funded NEB Alliance. This handbook aims to provide an overview of the New European Bauhaus Initiative, addressing topics such as:
- The NEB concept
- NEB sites
- NEB dashboard
- NEB handbook
- NEB Compass (NEB by design)
- Funding programs, and
- NEB priest.

The document also includes a number of NEB project examples, organised along the three NEB core values: “Beautiful”, “Sustainable”, and “Inclusive.”

https://busgocircular.eu/training/
BUSGoCircular Train the trainer programme.
Experience from the ground

Pavla Dvořáková, Czech Technical University in Prague - BUSGoCircular partner
Michalina Joanna Fratczak, Architectural Designer at ENTREarchitecture, Portugal - BUSGoCircular Trainer
Karolína Barič, Co-founder ZERO Architecture & Rethink Architecture - BUSGoCircular Trainer
Train the Trainers

• 1st TtT – face to face in Prague, Jan 18-19, 2023
• 2nd TtT – June 6, 13, 20, 2023 - online - 3 consecutive sessions, 2,5hrs
• 3rd TtT- Oct 31, Nov 7, 14, 2023 - online - 3 consecutive sessions 2,5hrs

● Overview of useful tools, materials, useful information and the outputs of the BUSGo-Circular project.
● The opportunity to reflect on circularity in the construction industry and especially in the sector in which participants are involved, with the possibility of discussing the topic and sharing their experience with people from other countries.
● The creation and presentation of a training program.
1st TtT
2\textsuperscript{nd} TtT
3rd TtT

Ranking of presentations

1st: Group 5 Pavla
2nd: Group 3 Siewa
3rd: Group 4 Glova
4th: Group 2 Sylben
5th: Group 1 Martin
Building up on the knowledge
Train the Trainers Courses

<table>
<thead>
<tr>
<th>Situation in Portugal</th>
<th>Comparison between mainland and Azores</th>
<th>Similarities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mainland</td>
<td>Azores</td>
<td></td>
</tr>
<tr>
<td>circular construction courses for architects</td>
<td></td>
<td></td>
</tr>
<tr>
<td>crucial role of architects and their collaboration with engineers, scientists and authorities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>research and education about biobased materials, in situ materials and respective constructive systems</td>
<td></td>
<td></td>
</tr>
<tr>
<td>resistance of the clients and contractors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scarcity of qualified contractors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>big sector of building rehabilitation and retrofitting</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Situation in Portugal | Comparison between mainland and Azores | Differences

<table>
<thead>
<tr>
<th>Mainland</th>
<th>Azores</th>
</tr>
</thead>
<tbody>
<tr>
<td>lack of legislation supporting circular architecture</td>
<td>as an autonomous region the Azores implement its own regulations regarding sustainable architecture</td>
</tr>
<tr>
<td>no existing database of residual materials</td>
<td>creation of a database of residual materials</td>
</tr>
<tr>
<td>Multidisciplinary projects on a small scale-collaboration between architects, engineers and scientists</td>
<td>creation of database of endogenous materials by the order of engineers</td>
</tr>
<tr>
<td>viability for construction in bio based materials due to the favorable climate</td>
<td>introduction into the multidisciplinary public projects - collaboration between architects, engineers and scientists, eg. School to be constructed in earth in Ponta Delgada, São Miguel Island</td>
</tr>
<tr>
<td></td>
<td>reduced viability for construction in bio based materials due to the climate, the risk of an improper execution versus climate</td>
</tr>
</tbody>
</table>
Question and Answers

Larissa De Rosso, Project Officer at the Architects’ Council of Europe - BUSGoCircular project partner
Join at slido.com #CPD
Would you be interested in take a CPD on Circular skills?

① Click Present with Slido or install our Chrome extension to activate this poll while presenting.
Would you be interested in CPD courses recognised in different member states in Europe?

Click **Present with Slido** or install our **Chrome extension** to activate this poll while presenting.
Do you think a European CPD framework can facilitate the professional mobility between European countries?
This project has received funding from the European Union’s Horizon 2020 research and innovation programme under grant agreement No 101033740
Thank you!