



Shaping a Circular Sustainable Future

Training material for public procurers

How to procure circular construction skills?



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 101033740

How to use this slide deck?



This training material aims to help public procurers and policymakers better understand how they can **stimulate demand for circular construction skills** through public procurement.

This slide deck can be used as **a self learning tool**, with links to other resources to learn more about the topic.

This slide deck can also be **used and adapted as needed to help to raise awareness among your colleagues and partners** on how they can promote circular construction skills.



How to use this slide deck?



In each section of this training material for public procurers you will find:

- An introduction to **key concepts**;
- **Questions for discussions**, these are be used to stimulate discussion in pairs or small groups;
- **Case studies** from all around Europe;
- Lists of **resources** and other materials to learn more;
- A **checklist** to implement the measures in the municipality.



Overview of learning outcomes

Below is an overview of the structure of this learning resource and its learning modules. These outline actions that public procurers can take to stimulate demand for circular construction skills. These actions have been numbered from the most direct to the most indirect measure, these steps aren't necessarily a chronological step-by-step plan.





Introduction



How do you imagine the
future of the
construction industry?





What is circular construction?



- In a circular economy, buildings and building materials are **used, reused, adapted and rebuilt for as long as possible.**
- Circular buildings are designed to meet the **needs of people**, can be **adapted as needs evolve over time.**
- Circular buildings incorporate **reused, recycled, as well as bio-based materials.**
- Circular buildings are designed to be **deconstructed** (like pieces of lego) and their materials and components are reused, repurposed or recycled.
- They are **free of toxic substances** that could harm the environment, animals and people.
- In the next three slides you find examples that highlights elements of circular building design.



Example: Half a good home - an affordable modular design in Chile



Architect Alejandro Aravena designed affordable homes in Chile with a budget of \$7,500 per home including land. The architectural practice Elemental decided to spend the money on what they called “half a good house”, rather than a whole bad house, which meant providing a structure with the basics of plumbing and shelter, which residents could then expand using their own labour and skill. These affordable houses are be adapted as the needs and number of family members evolve over time.

[Find out more.](#)



Example: Villa Welpeloo, a house made from salvaged materials



Villa Welpeloo is a house in the Netherlands constructed from 60% salvaged material. The steel was sourced from machinery previously used in textile production, and the wood used in the façade was taken from 200 damaged cable reels, which gave pieces of a uniform size and shape. Across all of their projects, Superuse Studio, the architects that designed the house, aims “to change the process of design and construction in a way that it would use much less resources and optimally benefit from what a construction site and surroundings have to offer.”



[Find out more.](#)



Why circular construction?



- The construction sector is responsible for more than **40% of the primary energy consumption** in Europe, and **36% of CO2 emissions** in Europe (Eurostat, 2020).
- A circular approach in construction can significantly **reduce the embodied emissions of building materials and material consumption**.
- Multifunctional green roofs, façades and interior elements can help to **increase biodiversity** in our cities, **reduce the heat island effect** and **improve the well-being of people**.



Why public procurement?



- Representing **14% of the EU's GDP**, public procurement is a powerful market force that public authorities can use to stimulate circular construction skills.
- Public authorities are **owners of large building assets**, **big buyers** of construction and demolition services, and **employers** of practitioners responsible for building programmes and urban project managers.
- Public purchasers can **send a signal to the market** and promote the growth and acquisition of circular construction abilities by including requirements for certain building standards, certificates, or credentials in tenders.



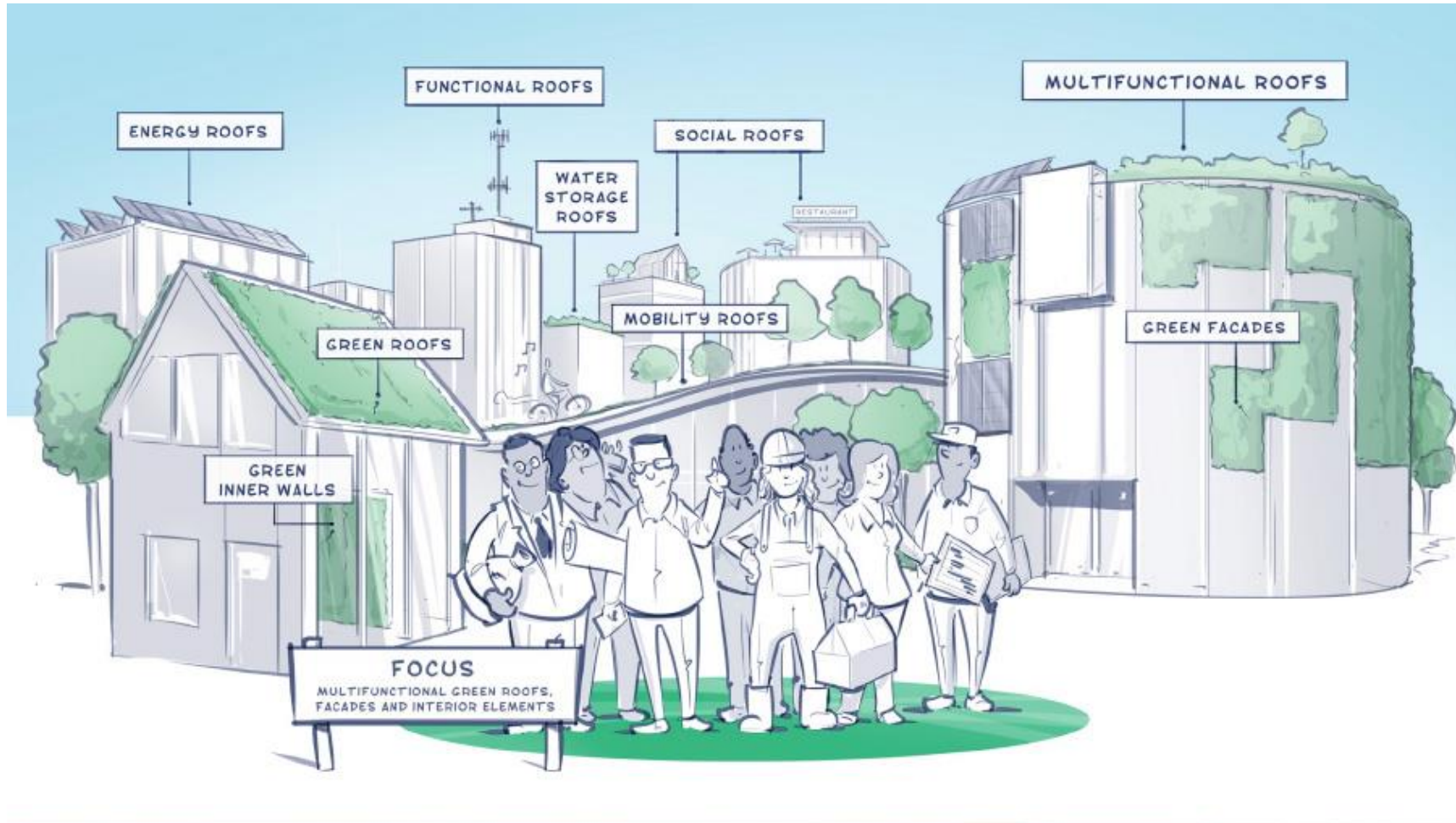
Why stimulate circular skills?



- To have more circular buildings and to achieve the energy transition in the construction sector, we need **more people with the relevant skills to build and maintain circular buildings.**
- There is currently a skills gap in Europe, as estimates show that **more than three-quarters of companies across the EU** report having difficulties finding workers with the necessary skills.
- By stimulating demand for skills, public procurers can contribute to **sustainable growth, more innovation and improve competitiveness** in the construction sector.



What are circular construction skills?



Questions for discussion

- What skills does the construction sector need to have in order to enable circularity in the built environment, across different professions?
- What are the new skills that needs to be created? Which existing skills need to be enhanced to accommodate circular skills?
- What kind of experience, qualifications, or certifications does various construction professionals need?



What are circular construction skills?



- These refer to the **knowledge and competencies** that the construction workforce needs to **design buildings, optimise their materials and building components consumption across each step of the value chain in the built environment.**
- These circular construction skills include, for example:
 - **Design skills** that enable circularity the built environment
 - **Planning skills** that support material reuse and repurposing
 - **Construction techniques** that enable modularity and deconstruction
 - **Refurbishment, retrofitting and renovation skills** to prolong the materials and building use phase



Resources on Circular Construction Skills



Public authorities can draw on the following resources, among others, to better understand what are circular construction skills.



The [Circular construction skills qualification framework](#), by the BUS Go Circular project mapped circular construction skills and connected them to relevant professions throughout the construction value chain.



The [Applied circular construction skills qualification framework](#), by the BUS Go Circular project mapped circular construction skills and connected them to relevant professions throughout the construction value chain.



The op-ed on "[Skills Agenda - Towards a job-rich recovery with sustainable buildings](#)" looks at the importance of skills in the Renovation wave.



[Level\(s\)](#) provides a common language for assessing and reporting on the sustainability performance of buildings. It is a simple entry point for applying circular economy principles in our built environment.



Offer internal training to your staff





Questions for discussion

- Do public procurers in your city have a compelling understanding of the Circular Economy and Circular Built Environment?
- How often do you hold training programmes for the upskilling of your staff?
- Does your municipality have a roadmap, plan and agenda for the circular transition that includes circular skills programmes?
- What capacities do you have in-house to achieve your circular economy goals in the construction sector?
- And what capacities could be further developed?



Provide internal training for public procurers and relevant staff



To procure more circular demolition, renovation, construction and maintenance services, and the underlying skills, **public procurers need to be trained** on how to embed relevant circular criteria in tenders.

- These trainings may include:
 - An introduction to the principles of the Circular Economy
 - Circular construction
 - Circular Public Procurement
 - Circular criteria for tenders
 - Certification schemes for circular construction
 - C&D Waste audit trainings
 - How to embed requirements for certifications in tenders
 - The legislative framework about circular construction, refurbishment and building waste



Provide internal training for public procurers and relevant staff



The training on circular construction and procurement should be **extended beyond the procurement departments**, to also include the planning, building, construction departments and other relevant departments, as well as designers and project managers. Circularity is a **interdisciplinary work**.

You may be able to provide **training in-house**, or you might need to **hire an external consultant** or others to train your staff.



Example: A Masterclass for public procurers



The Dutch Ministry of Infrastructure and Water Management has developed a Circular Public Procurement Masterclass to train its staff on how to procure in a more circular manner.

The training covers a range of elements from collaboration, to procurement procedures, to contracting.



Circular Public Procurement Training

Masterclass for Champions

Joan Prummel, Take Padding,
Mervyn Jones

The Hague, 23-25 January 2018 | Block 1



Example: A Methodology to teach circular public procurement



INCIEN together with BIC Brno, and BIOAZUL developed a methodology for circular public and private procurement. They have also developed a methodology on how to teach circular public procurement.

[Find out more here.](#) [And also here.](#)



Example: The GPP training toolkit



The European Commission's [GPP Training Toolkit](#) is designed for use by public procurers and by GPP trainers for trainings and workshops.

It consists of six independent modules and ten operational modules, with PowerPoint presentations (including trainer notes) and accompanying guidance.

In 2022, the GPP training has been carried out in ten member states and is now available in ten languages.

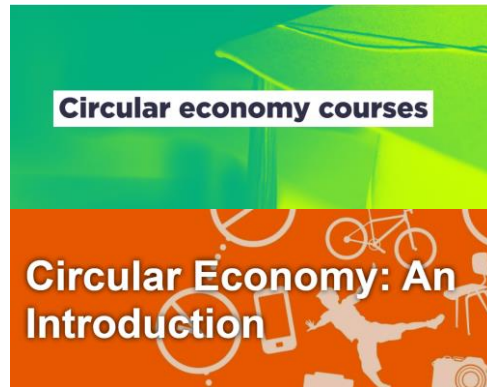
[Find out more here.](#)



Introductory courses and resources on the Circular Economy



Public authorities can draw on these learning materials and introductory courses, among many others, to introduce their staff to the concept of the circular .



The **Ellen MacArthur Foundation** offers a [variety of introductory courses](#), [learning materials](#), as well as [podcasts](#) on the circular economy.

The **Technical University of Delft** offers [an introductory MOOC to the circular economy](#)



The **REFLOW Academy** offers a [free online introductory course](#) about the circular economy.

Circle Economy's [Circularity Academy](#) (CAMY) and [Knowledge Hub](#) provide helpful resources on the circular economy



Introductory courses and resources on Circular construction



Public authorities can draw on the following resources, among others, to introduce their staff to the concept of the circular construction.



What is circular construction?

The Circular Economy in the Built Environment



INTEGRATING REUSE IN LARGE-SCALE PROJECTS AND PUBLIC PROCUREMENTS

The Ellen MacArthur Foundation's [factsheet on buildings](#) identifies opportunities for cities to embed circular principles in the urban built environment.

The [circular construction guide](#), developed by Circular Flanders provides an introduction to circular construction.

The [Circular Economy in the Built Environment](#) report by Arup outlines the economic, social and environmental advantages of employing circular principles in buildings.

A [guidebook on procurement strategies from the FCBRE project](#) on how to integrate reuse ambitions in the tendering procedures of construction and renovation projects

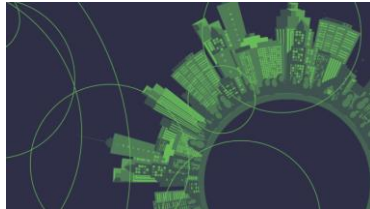
The Technical University of Delft also offers an introductory MOOC to [Circular Economy for a Sustainable Built Environment](#)



Introductory resources on Circular Public Procurement



Public authorities can draw on the following resources, among others, to introduce their staff to the concept of the circular public procurement.



The [Circular Public Procurement: A Framework for Cities](#), by the Ellen MacArthur Foundation is a guide to help practitioners adopt a more circular approach to public procurement.



The book [Circular Procurement in 8 steps](#) provides a practical 8-step approach to integrate circular economy principles into a procurement process. Starting with the 'why' of circularity, the following steps include internal collaboration, procurement procedures, developing criteria, and contract management.



Circular Flanders' [Circular Procurement Website](#) provides a series of tools to implement circular procurement.



As part of its GPP Training Toolkit (2019), the European Commission has developed a [module on the circular economy](#). It provides practical guidance to public purchasers for using GPP to support the transition towards a circular economy.



Checklist



- ☐ What kind of knowledge and competencies will you require your staff to have to include requirements for circular construction skills in tenders?
- ☐ Who do you need to provide training on circular construction skills and procurement to?
- ☐ Has anyone in your municipality already tried to include requirements for certain skills in tenders?
- ☐ Who would benefit from the training?
- ☐ Can you do the training in-house? Or do you need the help of an external consultant or similar to provide the training?
- ☐ Who is involved to be trained ?
- ☐ How does this training help to meet my local authority's strategic goals (Climate action/environmental/circular economy plan ?)





Engage your contractors



Questions for discussion

- What skills do your contractors need to provide circular construction services for new construction projects?
- What skills do your contractors need to provide circular services for refurbishment projects?
- What skills do they already have?
- How could we bridge the skills gap in the construction sector?
- What kind of training or course could your potential contractors do to meet your criteria?



Communicate your objectives at an early stage



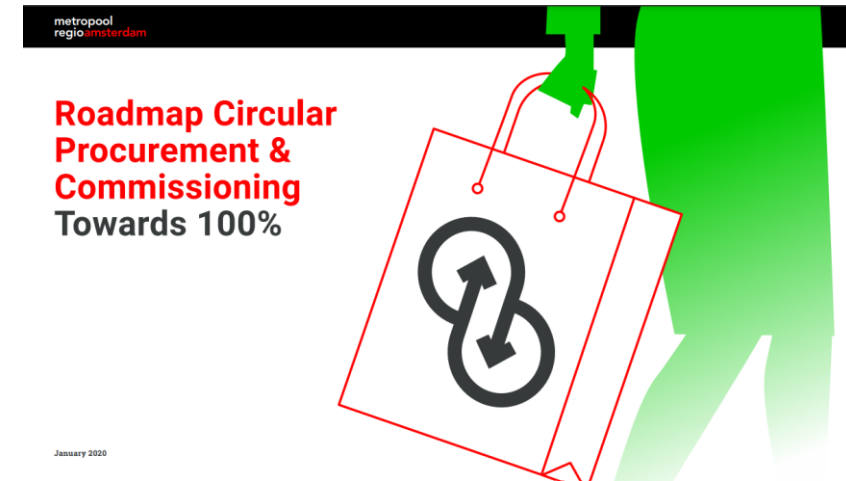
- To encourage construction companies and other stakeholders to become more circular and upskill their staff, they need to be **aware of their municipality's circular economy objectives**.
- Communicating upfront your circular economy strategy and its impact on skills, will provide businesses with an idea of **upcoming opportunity** and give them **time to hire or train staff with the relevant skills**.
- The municipality can provide construction companies and other relevant stakeholders a **list of relevant training opportunities** available in the region or online.
- This can be done through **communication campaigns, market dialogues, dedicated web pages, and events** such as "Meet the Buyer" events.
- Engaging an early dialogue can help to find the contractors who will meet your needs.



Example: The Metropolitan Region of Amsterdam's roadmap

In 2018, the 32 municipalities and 2 provinces of the Metropolitan Region of Amsterdam committed to applying circular principles for at least 50% of their total procurement by 2025 and reach 100% circular procurement as soon as possible. The “[Roadmap Circular Procurement & Commissioning Towards 100%](#)”, provides an overview of how the level of ambition will evolve over time and how this will affect tender requirements and criteria. The roadmap covers the construction sector.

[Find out more here.](#)



Engage your contractors



- **Market dialogues, circular economy fairs, and “get to know the buyer” events**, are good opportunities to engage businesses and make them aware of the need to promote circular construction skills.
- Through these events, public authorities can make potential contractors aware of the **municipality’s strategic and organisational objectives and goals** as well as outline how potential contractors could support these.
- It is also important to **understand what challenges businesses face**, what standards they can realistically meet, and whether they know how they can support their staff with acquiring circular construction skills.



Example: Market dialogues ahead of the renovation of a school in Gabrovo



When the St. Cyril and Methodius school had to be renovated, **Gabrovo Municipality engaged the market throughout the process.** Meetings between the municipality, energy auditors, experts and companies helped to define the first call for tender in Bulgaria that aimed to achieve a minimum energy class, and included design and construction works in one contract. The procurement resulted in a more energy efficient and healthier school for children.



[Find out more here.](#)



Resources on market engagement



Public authorities can draw on these resources, among many others, to gain insights on how to conduct market dialogues and engage suppliers.



The “[Dialogues with developers: unlocking circular construction in cities](#)” webinar which took place in the context of CE Week 2022, outlined the the key findings and recommendations from the CIRCUIT report on [instruments for dialogues with developers](#).



The Sustainable Public Procurement (SPP) Regions report on [Market engagement](#) provides examples of best practices on how to engage suppliers.



ICLEI Local Governments for Sustainability has developed a step-by-step guide on [how to engage the market](#) in public procurement processes.



Checklist



- ☐ Can you organise market dialogues with your contractors to identify the skills required to build circular buildings?
- ☐ Are your contractors open to reskilling and upskilling their staff on circular construction standards?
- ☐ How can you support the Construction contractors to facilitate the training of their staff?
- ☐ What skills gap are businesses currently facing?
- ☐ What strategies can construction companies use to ensure their staff have the relevant knowledge and skills to build and manage circular buildings?
- ☐ Can you raise awareness among your contractors of the importance of skills in the transition towards a more circular built environment?
- ☐ Can you show to contractors the potential impact that acquiring these skills can have on their companies, and the municipality's objectives?



The image shows the interior of a building during a selective demolition or deconstruction project. Two large, vertical metal support poles are positioned in the foreground, each with a yellow label that reads 'HG 20' and 'GC KN'. The ceiling is partially removed, revealing wooden joists. A window on the left is open, and a window in the center background is also open, showing some greenery outside. A ladder is leaning against the wall near the center window. On the right, a doorway leads to another room. The floor is covered with debris, including wood shavings and rubble. A large, curved metal tool, possibly a pry bar or crowbar, is leaning against the wall on the right. The overall scene is one of active construction or demolition work.

**Procure selective demolition
and deconstruction services**



0

Introduction

Prevent construction waste by design

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Offer internal training to your staff

Maintain, retrofit and refurbish

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Engage your contractors

Include training clauses in tenders

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Procure selective demolition and deconstruction services

Include circularity skills to recruit the design team for an urban project

7



What is a selective demolition and deconstruction?



A selective demolition project is one in which certain materials or portions of a building are removed and repurposed or reused for other construction projects.



Questions for discussion

- What skills do your contractors need to provide selective demolition services?
- How could we stimulate demand for selective demolition services?
- Have you already conducted a selective demolition project? Or do you need an external consultant to support you?



Develop a selective demolition and deconstruction action plan



- For the buildings that cannot be renovated or retrofitted, public authorities can ensure that these are **selectively demolished and deconstructed**.
- Public authorities can **map out the buildings across the city** that have reached the end of their functional-life.
- Public authorities can also develop a **policy or action plan** to prioritise the selective demolition and deconstruction of buildings that have reached the end of their functional life and cannot be renovated or refurbished.
- They can also put in place trainings on how to conduct a demolition audit.



Procure selective demolition and deconstruction services



- Public procurers can procure **pre-demolition audits** to identify the materials with the highest reuse and recycling potential.
- Embedding in tenders **requirements to demonstrate proficiency** in 3D visualisation tools, lifecycle calculation, material passports, and databanks can help to identify **potential new use for deconstructed materials**.
- Procuring pre-demolition services **encourages the construction sector to develop the relevant skills and capabilities to perform selective demolition and material reuse**.
- By also embedding **requirements for the on-site material reuse** or to be reused for other projects in tenders, public authorities can promote construction material loops.



Example: Preservation and selective demolition of Hall 11/12 in Roskilde



The City of Roskilde, Denmark, has procured the pre-demolition screening for the selective demolition of Hall 11. The building will be demolished and its materials incorporated into other construction projects. Concrete recovered from the demolition will be crushed for recycling into new concrete in the construction of a parking house.

[Find out more here.](#)



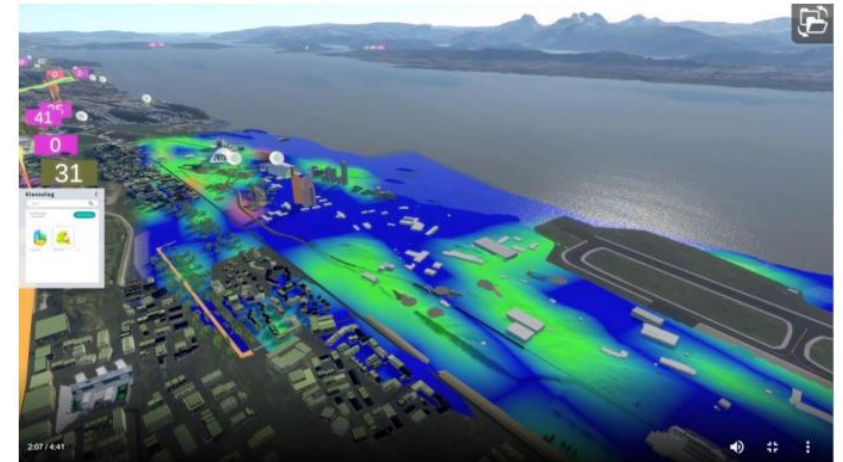
Example: Circular material management at Bodø's military airport



Bodø's old military airport is being demolished and the current civil airport will be relocated on the old military site. A new city district will be built on the site of the current civil airport.

The project maximises the repurposing of existing structures, and selective demolition and reuse of construction materials where this is possible. The project used 3D visualisation and lifecycle CO2 tools, construction material passports, as well as a Pre-demolition audit to map the structures and materials to be reused.

[Find out more here.](#)



Example: Circular demolition of a hospital and healthcare centre



Mikkeli is demolishing two public buildings using circular management methods, including digital tools: Pankalampi Centre and Tuukkala hospital.

The sites will be scanned and a pre-demolition audit will identify recoverable materials and their characteristics. Following demolition procedure, salvaged materials will be incorporated into a databank and construction materials marketplace.

[Find out more here.](#)

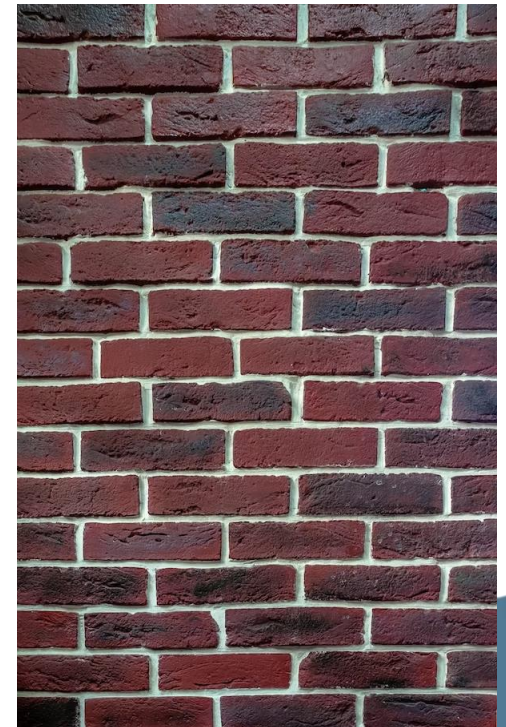


Example: Reclaiming bricks in Hjørring Municipality



Hjørring Municipality procured a demolition service which aimed to recover and recycle the bricks from two municipal buildings. Following a feasibility study and thorough screening of the buildings for toxic substances, the requirements for dismantling bricks were developed in collaboration with the municipal waste disposal company who agreed to purchase the reclaimed bricks. Around 16,000 bricks were reclaimed from the two buildings. The project has resulted in total savings of 10,950 kg of CO₂.

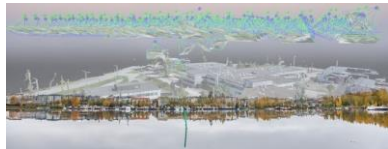
[Find out more here.](#)



Resources on selective demolition



Public authorities can draw on these resources, to train their staff on selective demolition audits and tenders.



[3D modelling to track onsite CDW flows](#): This tool uses a camera drone with a photogrammetry software to model and to monitor demolition sites by image-based scanning. The tool produces point clouds to be used for 3D visualizations and 3D calculations of buildings and material quantities, as well maps and other GIS data about the site.



[Pre-demolition screening procedure](#): explains how a pre-demolition inventory and material audit can be conducted to identify building components and materials with reuse or recycling potential. The screening procedure details how to identify and evaluate the residual value of a component. The first key step is the identification of materials (as containing harmful substances, or having residual value).



[Selective demolition procedure](#): explains how a selective demolition can be conducted to select and preserve value of building components and materials with reuse or recycling potential, following a series of chronological steps to dismount components or materials without damaging them.



A [reclamation audit method](#) from the FCRBE project about how to identify reusable materials in a building scheduled for demolition



Checklist



- ☐ Can you procure a pre-renovation audit to ensure that construction waste can be reused?
- ☐ Can you procure pre-demolition audits for all buildings that have reached the end of their functional life or that require major renovations?
- ☐ Can you include in tenders requirements to reuse construction materials for other projects?
- ☐ Can you procure services to selectively demolish the building by taking care of not damaging materials in order to reuse them ?
- ☐ Can your tenders be more inclusive, to encourage SSE (Social and Solidarity Enterprises) to apply to the tender ?

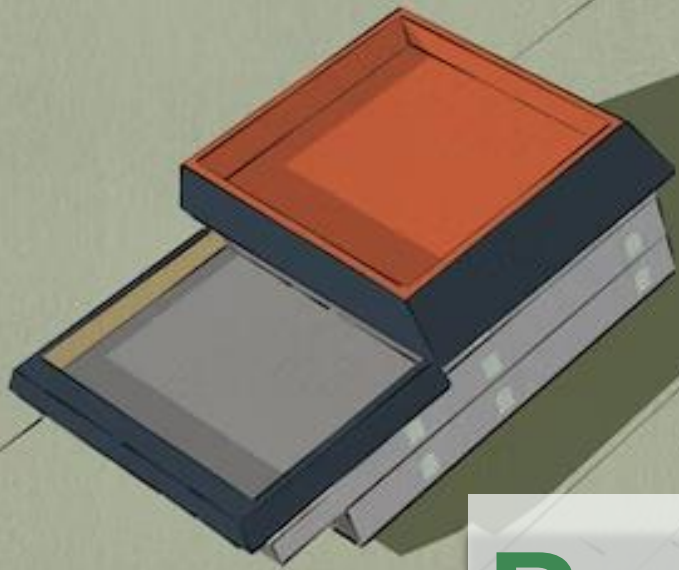


Checklist (continued)



- ☐ Can you provide sufficient support to the selective demolition contractors to tackle challenges such as the high cost of labour and/or exposure to toxic materials during deconstruction?
- ☐ Can you require your suppliers to store secondary raw materials and reuse them for other projects?
- ☐ Can you require on-site reuse of materials? Or that materials are reused for other projects?
- ☐ Can you include in tenders requirements to demonstrate proficiency in competencies that support material reuse? (e.g. proficiency in 3D visualisation tools, lifecycle calculation, material passports, and databanks)



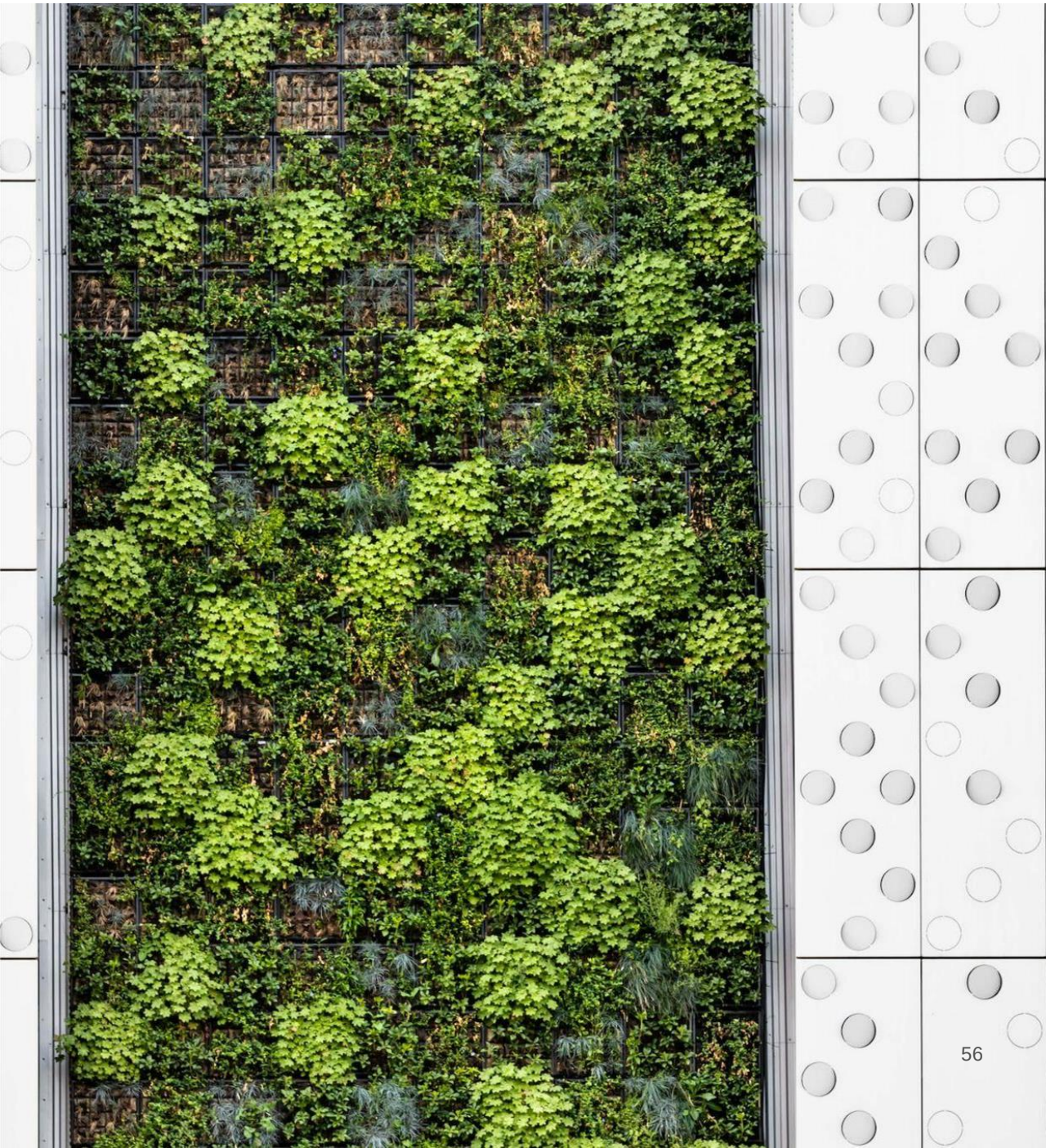


**Prevent construction waste
by design**



Questions for discussion

- What are the benefits of circular design?
- What skills are needed to prevent construction waste by design?
- How could we design a building thinking about its different lives over time, and its end-of-life ?



Prevent construction waste by design



A building with a circular design has considered the end-of-life phase from the planning phase and limits resource consumption by using secondary or bio-geo-sourced materials.

Public procurers can procure buildings that:

- Have a modular design;
- Are designed for multiple purposes;
- Designed for durability;
- Have include green roofs and facades;
- Integrate reused or recycled materials.

Integrating requirements for circular building design and preventing the extraction of virgin materials is also a way to **boost demand, for materials but also for skills.**



Example: Reusing materials by design

- Les Canaux in Paris



When the City of Paris renovated Les Canaux, a building aimed to host social and solidarity companies, it aimed at incorporating 100% reused materials, bio-geo-sourced and/or containing 15% recycled material. It has involved over 40 local companies to handle and transform the different materials (metal structures, floors, sanitaries, interior elements...).

[Find out more here.](#)



Example: Buildings As a Material Bank or BAMB



The EU-funded BAMB project worked on ways to drive a systemic shift towards sustainable buildings. The project fostered a paradigm shift where materials, components and buildings are conceived and evaluated based on effective circularity requirements. It covered design protocol, materials passports, and tools for circular building assessment.

By requiring construction sector to learn these BAMB skills, more buildings can become circular by design.

[Find out more here.](#)



BAMB
BUILDINGS AS MATERIAL BANKS



Example: The “New office building” pilot project in Essen



The RAG administration building in Essen (Germany), was constructed with circular economy principles in mind. The project was intended to be a pilot for sustainable design with a special focus on the Cradle to Cradle design principles focusing on transformable and recyclable design, healthy materials and the use of a “Material Passports”. To fulfil the project's requirements, a tool that enabled a very detailed acquisition and documentation of all the materials integrated in the building was developed.



[Find out more here.](#)



Example: A modular extension design for a City Hall



When the City of Brummen procured the extension of their city hall, the winning proposal offered a 20-year service contract for a modular extension that could also pilot “[building as material banks](#)” practices. The extension was designed for disassembly and reuse, and made use of high-quality, renewable, and re-fabricated materials. At the end of the contract, building components can be returned to their suppliers.

[Find out more here.](#)



Example: Venlo City Hall - a C2C building design



In 2007, Venlo decided to build a Cradle-to-Cradle city hall to be an example of a pleasant and healthy workplace for employees of the municipality. Design began in 2009, and it was constructed between 2012 and 2016.

The building produces more renewable energy than it uses. The building enhances improves indoor and outdoor air quality (within a 500m radius) and biodiversity. It is built with materials that can be reused and the building enhances water quality.



[Find out more here.](#)

Resources on circular design



Public authorities can draw on these learning materials and introductory courses, among many others, to introduce their staff to the concept of the circular economy.



The ["Circular Economy - Principles for Building Design"](#) by the European Commission helps to inform and support actors along the construction value chain to adopt circular design principles.



The [Circular Economy in the Built Environment](#) report by Arup reflects on the economic, social and environmental advantages of employing circular principles in buildings.



The [Circular Design learning pathway](#) by the Ellen MacArthur Foundation provides an introduction to the concept of circular design.



The [Circular Design Guide](#) by Ideo and the Ellen MacArthur Foundation provides an introduction to design thinking



Checklist



- ☐ Can you require architects and building designers to demonstrate knowledge of circular construction design such as Cradle-to-cradle, BAMB, modular design, etc...?
- ☐ Can you require that architects and building designers to have knowledge and/or show experience with integrating reused construction materials in their projects?
- ☐ Can use require that your contractors integrate secondary raw materials in the construction project?
- ☐ Can you procure construction materials that enable circularity?
- ☐ Can you develop a list of recommended qualifications and certifications available in your region on circular construction design?
- ☐ Can you incentivise the use of circular construction techniques?



A man wearing a grey t-shirt, a camouflage baseball cap, and safety glasses is operating a yellow and black DeWalt miter saw. He is standing in a room that appears to be under renovation, with a white ceiling fan visible above him. In the background, another person in a red shirt is partially visible, also working. The room has light-colored walls and a large window on the right side. A semi-transparent grey box with green text is overlaid on the lower half of the image.

**Maintain, retrofit and
refurbish**



Questions for discussion

- How can you prolong the life of public buildings through different circular strategies?
- What skills do your contractors need to upgrade municipal buildings to circular standards? What kind of training do they need?
- How could we stimulate demand for circular renovation services?
- How can you repurpose public buildings for various public and private functions?
- How can you include fast-track permit issues for projects where adaptive reuse is the main strategy?



Maintain, retrofit, refurbish



- Retrofitting and refurbishment works can help to reduce the energy consumption of buildings and upgrade them to new building standards.
- Public authorities can fast-track permits for renovation projects that meet certain circular standards.
- Procuring retrofitting and refurbishment works can help to ensure that **buildings meet the highest standards**, while encouraging construction workers to upskill and be competent in the latest refurbishment and retrofitting standards.



Example: Energy rehabilitation of a social housing façade



In Catalonia, a social housing building managed by Agència de l'Habitatge de Catalunya (AHC) showed problems with condensation, humidity, and thermal comfort. The rehabilitation works aimed at implementing an innovative ADBE façade system which helps to increase building insulation and energy consumption. The project increased the circularity and energy efficiency of the social housing building.

[Find out more here.](#)



Example: RenoZEB project plug and play facade.



In Voru, Estonia, the Rannaliiva apartment association was refurbished using prefabricated plug and play solution facade developed by the project RenoZEB. The facade refurbishment has improved the insulation and airtightness of the building, reducing the energy consumption for heating the flats.

More information [here](#)



Resources on circular renovations



Public authorities can draw on these resources, among many others, to introduce their staff to the concept of the circular renovation works.



The webinar "[CITIES – BUILDINGS – SKILLS: Energy Renovations in Historic Areas at Different Scales](#)", organised by the Cyprus Energy Agency (CEA) presents renovation projects in Cyprus that help to upskill professionals.



The European Environmental Agency has published a briefing on [Building renovation: where circular economy and climate meet](#), which examines potential renovation activities that could improve the sustainability of existing buildings and the implications for embedded greenhouse gas emissions and resource use.



Checklist



- ☐ Can you procure renovation works to upgrade municipal buildings to circular standards?
- ☐ Can you procure the installation of green roofs and facades on municipal buildings?
- ☐ What skills do contractors need to have to be able to undertake these renovation ?
- ☐ Can you develop a list of trainings and certifications that contractors or potential bidders can attain in order to show they have the competencies required to undertake these ?



A photograph of two men in construction gear. The man on the left wears a yellow hard hat and glasses. The man on the right wears a white hard hat and is pointing his right index finger upwards. They are outdoors under a blue sky with clouds. A semi-transparent grey box with green text is overlaid on the bottom left.

**Include training clauses in
tenders**



Questions for discussion

- What training or certifications do construction companies need to be able to provide circular construction services?
- How could we promote the reskilling or upskilling of construction workers?
- How could our tenders be an opportunity to upskill and reskill the building workforce ?



Include training clauses in tenders



Including training clauses in tenders is one way that public procurers can have a **direct impact on stimulating demand for circular construction skills**. When the winning contractor is awarded a contract, these clauses ensure that they **commit to training their staff during the project on a specific topic**.

Contractors have to dedicate some time, budget, and means to train their employees (construction workers and site supervisors), possibly directly on-site.



Example: the Circular building pathways training in Paris



The City of Paris developed a “[Circular building pathways](#)” training programme. The training supports the objectives of the city’s Climate, Air, and Energy Plan. The training aims to develop material reuse, and construction waste management skills among construction professionals.

The City of Paris has also developed its own training programme during the “Les Canaux” worksite.

[Find out more here](#), and [here](#).



Example: Energy efficiency training clauses in Ireland



Dublin City Council piloted a Passive House project in St. Bricin's Park. To achieve the EnerPhit standard, Dublin City Council embedded in the tender a requirement to complete a Passive House Tradesperson's training. The winning contractor construction team undertook a bespoke Passive House Tradesperson's Course, along with members of Dublin City Council's design and maintenance staff.

[Find out more here.](#)



Resources on training clauses in procurement



Public authorities can draw on these resources, among others, to gain a better understanding on how to include training clauses in public procurement processes.



[Using Public Procurement to Incentivise Upskilling – Best Practice Guide](#): presents some examples and best practice of how public procurement can be used to incentivise (directly and indirectly) energy efficiency upskilling in the construction industry



The report on [Main barriers to incorporate “Energy efficiency/nZEB” training clause into Public Procurement](#) summarises the main challenges faced by public bodies who want to use public procurement to better incentivise energy efficiency upskilling.



Checklist



- ☐ Can you require that your contractor trains their staff on-site to help professionals develop circular construction skills?
- ☐ How can you ensure that your contractor will commit to training their staff during the project?
- ☐ How could you show to construction companies to benefits of upskilling their staff?
- ☐ How time, budget, and resources does your contractor need to upskill their staff?
- ☐ Are there agencies or consultants that could provide that training?





To go further...
Include circularity skills to
recruit the design team for
an urban planning project



0

Introduction

Prevent construction waste by design

4



1

Offer internal training to your staff

Maintain, retrofit and refurbish

5



2

Engage your contractors

Include training clauses in tenders

6



3

Procure selective demolition and deconstruction services

Include circularity skills to recruit the design team for an urban project

7



Questions for discussion

- Do the urban and spatial planning documents include circular requirements ?
- How could we promote circular construction in the tenders for private developers ?
- How could we recruit a urban planning team with circular skills ?
- How can you utilise cadaster and other urban planning tools to reflect material stock data?



Include circularity skills to recruit the design team for an urban project



Defining **clear objectives on the types of buildings and their environmental requirements within urban planning and zoning documents** is a key action to upscale circular construction, and therefore, to increase demand for skills.

These documents impact the way that buildings and construction materials are used and reused as well as their physical character. They also define which areas of a city or region will be repurposed.

By means of spatial planning, the municipality can divide and classify the physical environment in a way that **promotes circular resource management**.



Example : the "Smart District" RE:Špitálka in Czech Republic



City of Brno, Czech Republic, wants to plan, design and build a "Smart District" RE:Špitálka which will serve as a pilot to test fulfilment of the city's environmental goals for 2050. The plan is based on the principles of redesign, rebuild, reuse, resource, resilience, responsibility and responsiveness.

To implement these principles, the procurement authority emphasises preliminary market consultations and tries to manage the project from the beginning (e.g, before selection of the contractor for design and construction), Therefore, they test what is viable in the field of circular economy on a regional level.



[Find out more here.](#)

Example: Amsterdam's Buiksloterham district

Buiksloterham is a post-industrial district in Amsterdam. Together with the City of Amsterdam, housing corporations, utility companies, and residents, Metabolic analysed the area's resource flows and developed a 20-year vision for holistic circularity in Buiksloterham. Buiksloterham in 2034 is projected to be a completely revitalized, new city district in Amsterdam. Buiksloterham in 2034 is projected to be a completely revitalized, new city district in Amsterdam.

[Find out more here.](#)



Resources on circular and sustainable urban planning documents



Public authorities can draw on these resources, among others, to gain a better understanding of circular urban planning



The [Smart Sustainable Districts](#) (SSD) report by Climate-Kic provides insights into how to develop a more sustainable city district



The Discussion paper “[Creating Circular Neighbourhoods](#)” by UNEP and partners is meant to inspire city actors (communities, governments, and businesses) to initiate circular economy activities at the neighbourhood level.



Checklist



- ☐ Have you established a internal working group that brings together the different departments to work on environmental and sustainable urban planning documents ?
- ☐ What skills and knowledge does the urban planning department need to tackle circularity ?
- ☐ Who do you need to provide training on circular and sustainable urban and spatial planning documents to?
- ☐ Have you sourced consultant agencies that could support you to incorporate more circularity within the urban projects ?



Develop your action plan



Now that you have completed the training this template can be used to help you and your colleagues develop an action plan to stimulate circular construction skills

	Target audience	Identified skills gap	Training and resources available to bridge that gap	strategy or criteria to include in tenders	desired impact	timeline
action 1						
action 2						
action 3						



Thanks!

For more information about the BUS Go-Circular project, [visit our website](#)

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Colophon

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