JOBS AND SKILLS TO DRIVE A CIRCULAR BUILT ENVIRONMENT

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ABOUT THE **CIRCULAR JOBS** INITIATIVE

Circle Economy is a global impact organisation with an international team of passionate experts based in Amsterdam. We empower businesses, cities and nations with practical and scalable solutions to put the circular economy into action. Our vision is an economic system that ensures the planet and all people can thrive. To avoid climate breakdown, our goal is to double global circularity by 2032.

Our Built Environment programme creates and activates circular ecosystems within the value chain with particular focus on regenerative practices, digital tools and solutions. We develop and disseminate knowledge and support businesses to scale and implement circular business models that operate within the boundaries of our planet. With our Circular Jobs Initiative, we help the industry to determine the jobs and skills needed for circular construction strategies as well as the socio-economic impacts of making changes to the value chain.



CIRCULAR BUILT ENVIRONMENT CONTEXT

The built environment—the lifecycle of buildings and the construction value chain—uses up a large amount of our planet's finite resources, generates massive waste and contributes substantially to global greenhouse gas emissions leading us to multiple planetary crises from climate change to biodiversity loss. Approximately 40% of materials extracted globally each year are used for construction¹. In the European Union (EU) alone, waste from construction and demolition accounts for approximately 25-30% of all waste generated². Many of the materials that make up this statistic, including concrete, bricks, gypsum, tiles, ceramics, wood, glass, metals, plastic, solvents, asbestos and excavated soil, can be reused or recycled - a missed opportunity to keep finite resources in circulation and in our build environment.

The recent global events of Covid-19 pandemic and the Ukrainian war have contributed to raw materials supply chain bottlenecks and labour shortages³ leading to high inflation in the construction market at the present time.

A circular economy approach to the building and the construction sector, not only lowers the environmental impacts of the built environment and creates a sustainable and futureproof sector that can respond to housing crises and growing populations, but can also generate huge economic opportunities for businesses and communities. A built environment that is regenerative by design can be decoupled from the use of finite resources and eliminate waste in ways that support jobs and sustainable development.

In a circular built environment, buildings are considered as building stocks or material banks which means the added value of existing assets are preserved, materials cycle and reloop, buildings are deconstructed at the end of life and building materials are upcycled. Approaches like renovation, reuse, repurposing of the buildings and components become central. In Europe and Northern America, secondary materials are abundant and the cost of labour is high. In emerging economies, raw materials are used intensively to accommodate high rates of construction for a fast growing population and the labour is relatively cheap. Across these different contexts, circular economy strategies and business models can create different opportunities for the built environment.





STRATEGIES AND BUSINESS MODELS IN THE **CIRCULAR BUILT ENVIRONMENT**

To successfully transform a linear built environment to a circular sector at scale, it is crucial that circular strategies and business models are put into practice. Many businesses, governments and cities have already recognised the competitive advantage of applying circular business models by leading cross-sector innovation, opening up new markets, capacity building⁴ and knowledge dissemination and creating ecosystems and platforms⁵. These strategies also help tackle inevitable linear risks, from price volatility and pressure from new legislation to supply chain failures.

Two broad groups of strategies and business models can be identified.

1. Circular strategies and business models used to preserve and future-proof the stocks held in existing buildings.

Examples include:

- Smart material management, in which buildings and building materials are [digitally] mapped, modelled, analysed and shared for reuse, and
- Product-as-a-service business models in which producers maintain ownership over products and have the incentive to make them last longer, easier to repair, and easier to disassemble to retain and capture value.

2. Circular strategies and business models that ensure that new building projects meeting the needs of communities for housing and infrastructure don't jeopardise the planet.

Examples include:

- Designing and building with bio-based materials, and;
- Designing for disassembly and alternative uses through offsite, prefabricated and modular construction methods.

Each of these circular strategies and business models has consequences for the labour market, and requires skilled workers to embed and drive them.

JOBS IN THE EU BUILT ENVIRONMENT

- The construction sector is a key sector for the EU economy and represents a major source of employment. It accounts for 9% of the EU's GDP and provides 18 million direct jobs⁶.
- Small and medium enterprises (SMEs)—employing fewer than 250 people—are responsible for 88% of employment and 80% of output in the construction sector⁷.
- In civil engineering—responsible for larger infrastructure projectsthe share of output of large companies—employing 250 or more—is much higher at 45%⁸.
- In Belgium, 17,000 jobs in the construction sector—6% of the total 280,000 construction jobscontribute to the circular economy⁹.

FOUR CIRCULAR CONSTRUCTION STRATEGIES AND THE JOBS AND SKILLS TO ENABLE AND ACCELERATE THEM

	Circular strategy	Jobs to enable
	l. Smart material management	Software engineers, BIM programmers, Data analysts, Material scouts, Deconstruction auditors, Urban miners, Asset and facility managers.
	ll. Product-as-a- service	Demand planners, Asset managers, Test engineers, Repair technicians, Leasing sales and marketing agents.
	lll. Bio-based materials	Architects, Engineers, Eco- construction specialists, Carpenters, Material scouts, Green roof installers.
	IV. Offsite, modular construction	Product developers, Assemblers, joiners and finishers, Quantity surveyors, Supervisors and technical managers

Skills to accelerate

BIM and data analysis, Building surveyance and quality assurance, Systems thinking, Collaboration.

Case study

From principles to practices : realising the value of circular economy in real estate¹⁰



Technical product knowledge, Planning and management, Repair, Sales and commercial.

Materials handling knowledge, Environmental awareness, Design, Innovation.

The circular façade¹¹



Building a future in timber¹²



Project management, Digital skills, Design, Machine operation, Technical installation and testing, Collaboration.

Modular Construction: from projects to products13



JOBS AND SKILLS TO ENABLE AND ACCELERATE A CIRCULAR BUILT ENVIRONMENT

Planning, commissioning, designing, and delivering works for a circular built environment requires changes in how we work. The ILO predicts¹⁴ that a circular economy will change global employment in four ways:

- New job opportunities in emerging areas, such as urban miners and green roof installers, will be created (~29 million);
- Jobs will emerge that replace existing jobs, such as the reprocessing of secondary steel and wood into new materials (~49 million);
- Jobs in sectors such as mining and extraction will decline without vacancies in the same occupation opening up in other industries (~22 million); and
- The tasks, activities and skills needs of many more existing jobs will be redefined as they adapt to new business models, regulations, and patterns of demand.

Circular construction to reduce the value chain's environmental impact is a significant driver of these changes. A labour market that anticipates and plans for this change can help accelerate it, while also safeguarding jobs. But, the workforce will need the right competencies to put circular economy strategies into practice. Workers, employers, and education and training providers play a central role in the circular economy, but their role is often overlooked. After all: without engineers and tradespeople buildings cannot be renovated or built. But what kinds of jobs and skills will a circular built environment require?

Most of the jobs needed to drive circular strategies and business models already exist in the workforce but may require upskilling to learn new knowledge and skills. For some new functions - such as digital modelling or the sourcing of sustainable building materials - different approaches can be taken. In some cases the new work is taken on by existing roles; in some, the new function is split across different jobs, and in some cases new specialist occupations with

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specialist training to fulfil these tasks are created. A carpenter on a small renovation project, for example, is likely to be responsible for procuring the bio-based materials to carry out their work while also being responsible for dealing with waste materials. On a larger project, the sourcing of materials and waste management may instead be handled by specialist staff - material scouts, deconstruction auditors.

The energy transition has shown that the availability of the right skills at the right time can limit progress in the built environment. Without enough skilled architects and engineers, buildings' energy performance may suffer and high quality designs may be prohibitively expensive. Without enough high quality trades and construction workers, high prices and uneven quality may significantly slow the progress of retrofitting initiatives or reduce the lifespan and reusability of buildings, their components and features. Plans to promote a circular built environment may also fail to achieve the potential material, energy and cost savings if facility managers, developers and policymakers lack the required knowledge and skills to implement strategies efficiently.



PRACTICAL LEVERS TO DRIVE **CIRCULAR CONSTRUCTION**

EDUCATION AND TRAINING

A strong supply of skills, will help to mitigate labour and skills shortages that would otherwise slow down progress of a circular built environment. Multi-country initiatives, such as BUSGo Circular¹⁵, that develop circular skills among trainers of trades and professionals can help to create pools of skilled workers with a strong interest in selling and delivering circular building projects through broadening their own services, establishing new business models or forming new collaborations.

Such programmes can also help to foster the necessary culture for lifelong learning in which workers continually learn and update their knowledge and skills to deliver on new innovations coming to the market and can contribute to new standards, technologies, materials and circular construction practices.

POLICY AND PROCUREMENT

A supporting policy environment can help ensure there is demand for workers with the skills needed for circular building projects. Public spending, which accounts for an average of 12% of GDP in OECD countries¹⁶, and up to 30% in some lower income countries¹⁷, wields enormous purchasing power. Shifting that spending towards more sustainable goods and services can help drive markets to innovations and business models that can enable the transition to a circular built environment.

Procurement can be a powerful tool¹⁸ for creating demand for these skills. By factoring social and environmental value into public procurement contracts that, for example, place additional value on the use of local, secondary materials or seek to repair existing equipment, it encourages businesses to develop the knowledge and skills needed to deliver such contracts within their workforce, or new enterprises to work in this space to meet demand.

OUR OFFERING

Our Built Environment Scan

is designed to provide insight into the supply and demand of (circular) building stocks in a country, region, city or a neighbourhood in order to enable and scale the local markets for secondary materials use and exchange and to match supply and demand, as well as identify the jobs and skills needed to get there.

The scan can also **identify and analyse** the policies and interventions required to maximise social and economic, as well as environmental, impact, and support with building capacity in the value chain to implement the recommended circular strategies.

OUR PROJECTS

Circularity Gap Report - Built Environment, the Netherlands

This report uncovers the state of circularity in the Dutch Built Environment. Maps four scenarios for a bold, transformational shift, and identifies the workforce and skills needed to make it happen.

Read more

Build Up Skills (BUS)-Go Circular

As part of this EU project, Circle Economy developed a framework of circular construction strategies that maps the impacts on jobs and skills to shape qualification frameworks. The project is also designing and delivering training and mentoring for trainers, and guidance on circular procurement.

Read more

Baseline employment analysis and skills pathways for the circular economy in Scotland

This study assesses the number and range of jobs contributing to the circular economy across Scotland, and investigates the job roles and skills requirements of construction, capital equipment and bioeconomy value chains.

Read more

A Future-Proof Built Environment

A systemic view over the built environment sector, the report is colaunched by ABN AMRO and Circle Economy. This report highlights reallife and practical examples on how to rethink the way we create the built environment that surrounds us.

Read more

Circular Kongsvinger Region - Circle Region Scan

Cities and regions represent a key enabling environment for the circular economy. This Circle Region Scan is designed to reveal where opportunities lie for the circular economy in the Kongsvinger region (Norway), especially within the scope of the built environment value chain, a key area for regional development.

Read more





DO YOU WANT TO **DEVELOP A STRATEGY** TO DRIVE A CIRCULAR **BUILT ENVIRONMENT**?

Get in touch to explore how we can collaborate.



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