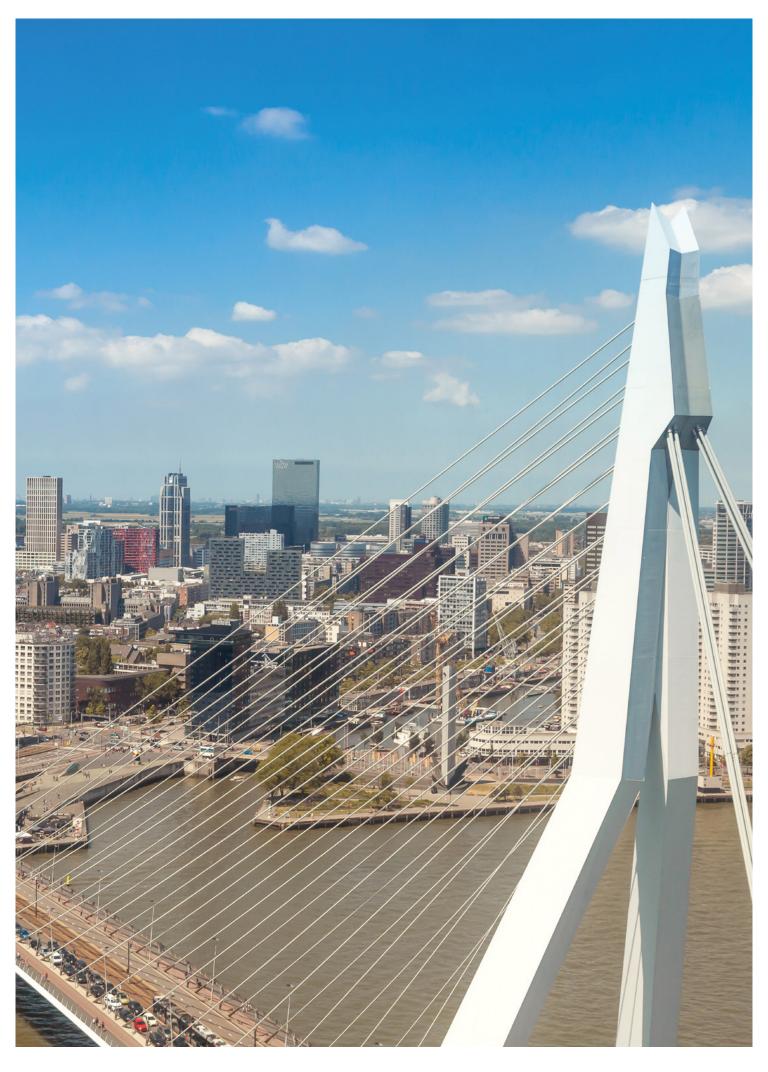




# The Dutch circular built environment



# **Table of Contents**

Foreword	5
Introduction	7
1. The Built Environment 1.1 The impact of the construction sector 1.2 Scope and international interest	<b>9</b> 10 12
2. A circular built environment 2.1 What is a circular built environment? 2.2 A circular construction value chain	<b>15</b> 17 18
3. The Dutch circular and sustainable practices 3.1 Circular and sustainable construction policy initiatives 3.2 The Dutch best practices	<b>24</b> 24 26
4. Let's collaborate!	31
Table of companies	32
Sources	116
Image references	119

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# Foreword

A sustainable and circular built environment is the future of our livelihoods. Transitioning to a circular and sustainable built environment is necessary and offers excellent opportunities. In the face of climate change, resource scarcity, an increasing world population and increasing urbanisation, we must rethink how we shape our built environment.

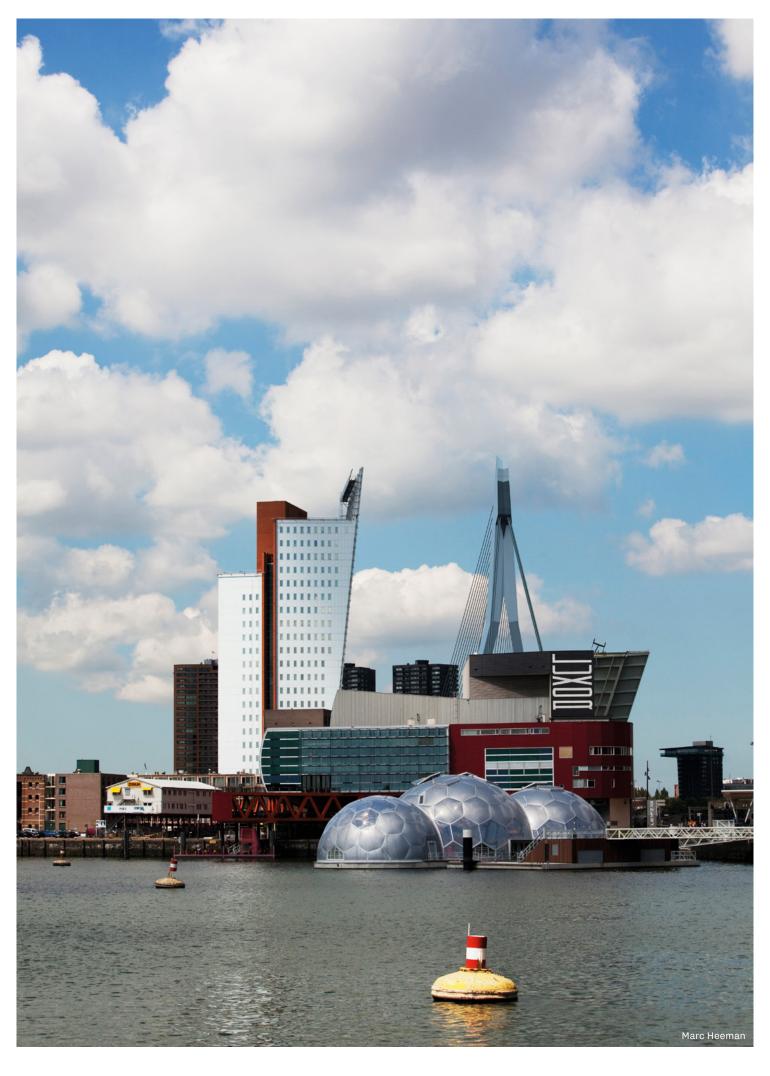
The built environment is one of the key sectors in our national circular economy strategy. The Netherlands is proud to be at the forefront of this movement, demonstrating that a circular built environment is not only theoretically possible but is already happening.

However, we also recognise that we cannot succeed alone. The challenges and opportunities in the built environment are global and know no borders. We are proud to share our Dutch Circular and Sustainable Built Environment Guide. We believe this is a gateway to the people, projects, and organisations driving change in our country, and a tool to foster new connections and shared progress across borders.

This guide showcases Dutch expertise, innovation, technology and commitment to a circular and sustainable built environment. It brings together inspiring examples, pioneering organisations, scalable solutions and large corporations. By sharing our knowledge and experiences, we invite you to join us in shaping a more resilient and future-proof built environment. Please feel free to explore opportunities for collaboration, whether you are working for governments, companies, NGOs, or knowledge institutions. Together, we can build successful and thriving partnerships.



Afke van Rijn
Director-General of the Environment and International
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# Introduction

The Netherlands' terrain offers unique complexities, as it is often situated at or below sea level making the land prone to flooding. This longstanding battle against the water has fostered a thriving Dutch building economy where circular infrastructure innovations are continuously emerging. This success can partly be attributed to the Dutch triple helix approach of close collaboration between the public and – private sectors and academia.

This guide showcases successful examples of close collaborations between the National government, knowledge institutions and companies. Examples include circular building materials, smart energy technologies and climate-adaptive solutions. This guide also contains a catalogue of Dutch organisations by their role in the circular value chain. The organisations and companies showcased in this sector guide look forward to collaborating globally.

This publication also explores how sustainable and circular economy concepts can shape the future of the built environment. We show how circular and sustainable principles enhance liveability and quality of life, foster economic growth, lower carbon emissions, lower energy consumption needs, and improve biodiversity.

The built environment is one of the cornerstones of our global economy. The availability and quality of infrastructure, buildings, and non-residential buildings directly affect a country's or region's GDP, employment rates, and its overall livelihood. The value of a safe and solid built environment in our lives is indisputable, as is its environmental impact.

The environmental impact of the built environment cannot be overstated. The construction sector is one of the largest consumers of (heavy) raw materials and consumes around 60%¹ of all materials in the world. Furthermore, the European construction sector is responsible for 50% of the primary energy consumption in Europe. Moreover, the global share of greenhouse gas (GHG) emissions from the construction value chain is estimated at 57%, much of which is attributed to the production and extraction of materials used when building².

Another challenge arises when factoring in a 20% worldwide population growth by 2080<sup>3</sup> and the fact that 70% of the world's population is expected to live in urban areas by 2050<sup>4</sup>. Additionally, many European buildings are ageing and must be replaced or renovated in 2050<sup>5</sup>. The upcoming renovation wave of existing building stock and forecasted growth of the amount and size of cities put pressure on the decisions we make now.

All these challenges also create momentum for circular economy solutions in the built environment. A circular construction economy could reduce global CO<sub>2</sub> emissions from building materials by 38% in 2050, by reducing demand for steel, aluminium, concrete, and asphalt alone<sup>6</sup>. Innovations and perspectives, such as carbon capture in buildings, can be a solution that improve quality of life and reduce the heavy toll the sector pressures on our environment.

To successfully transition from a take-make-dispose model towards a circular built environment, we need to search for an integrated approach to maximise the benefits of circular and sustainable principles. It is important to remember that the large construction sector, including buildings and infrastructure, is highly interdependent. For instance, a very high percentage of the construction and demolition waste from buildings is reused in the infrastructure. Furthermore, both subsectors share many similarities, such as digital logbooks, circular design, and measurement methods.

Rather than addressing energy use, materials, or waste in isolation, looking at the built environment as a complete system allows for more innovative resource use and the creation of regenerative systems that mimic natural processes, all while adding economic value.

By aligning urban planning, architecture, engineering, and policy under shared sustainability and circularity objectives, we can design more efficient, resilient, equitable, and adaptable spaces to future needs. Embracing this systems thinking ensures that interventions reinforce each other, maximising impact and enabling a transformative shift toward a circular built environment. Hence, in this sector guide, we focus on the built environment.

60%

The construction consumes 60% of global raw materials



In Europe the construction sector acounts for:

50%

of total energy consumption

33%

of total water usage

33%

of total generated

billion m<sup>2</sup>



The production of steel and concrete together accounts for 16% of global CO<sub>2</sub> emissions



The construction sector contributes to approximately

of the European GDP



The European construction sector employs

million people

and includes

million construction enterprises

Figure 1: Key figures of the construction sector (all data are derived from chapter 1).

# 1. The Built Environment

The built environment is a complete interaction system between (non-residential) buildings, infrastructure, and space. It entails all the human-made structures and spaces where people live, work and interact. The quality and effectiveness of the construction sector influence the strength of our infrastructure and the vitality of the environment in which we live. The built environment is more than just individual buildings; it's a network of buildings, infrastructure, people, and natural systems. Choices made at one level (such as materials in a building) affect outcomes at other levels (e.g. waste systems, urban heat islands, mobility patterns). Systems thinking helps align short-term decisions with long-term environmental, social, and economic goals. It requires alignment across:

- Urban planning
- · Architecture and engineering
- · Transportation and mobility
- Energy systems
- Waste management
- Water infrastructure
- Policy and finance

# The economic importance of the built environment

In the European Union, the construction sector is among the most significant economic sectors, with over 3.4 million enterprises<sup>7</sup> and 18 million jobs<sup>8</sup>. Furthermore, it is estimated that the industry contributes to approximately 9% of the European GDP<sup>9</sup>. As of 2023, the European building materials market was valued at approximately €121,8 billion. It is projected to grow at a compound annual growth rate (CAGR) of around 3.6% to 3.9%, reaching over €187,05 billion by 2033<sup>10</sup>.

Generally, the construction sector, and consequently the majority of the built environment, can be categorised into 3 primary subdomains: infrastructure, residential, and non-residential buildings. These are different market segments, each with its own dynamics, stakeholders, and rules. As a result, each requires a custom approach. Yet, despite their differences, each segment is highly interdependent and shares many similarities. It connects many sectors such as mining, industrial, energy, water management, waste – and mobility sectors.

## Residential and non-residential buildings

Residential and non-residential buildings represent roughly half of the construction sector¹¹. On average in European countries, the share of residential buildings in terms of floor area surpasses that of non-residential buildings. Unlike infrastructure, construction for buildings can be undertaken by individual landowners. Of the total estimated monetary value of €157,4 trillion, residential buildings hold the most economic value, with a market volume of around €130,5 trillion¹².

More than half of the existing European building stock is over 50 years old<sup>13</sup> and 97% of EU buildings need to be upgraded to comply with the 2050 decarbonisation vision<sup>14</sup>. Fortunately, it is estimated that making the current worldwide stock of dwellings more energy efficient (by up to 38%) could reduce global energy demand by 12%, decreasing dependence on old fossil-based energy systems<sup>15</sup>.

# The infrastructure sector

Infrastructure, also known as 'civil engineering works' or 'public works', is a region or country's basic physical system. Examples of infrastructure include transportation systems, waterways, communication networks, and electrical systems. In the Netherlands, more than 20 million tonnes of materials are used to expand and improve roads, canals, and underground infrastructure every year<sup>16</sup>. Materials used in infrastructure works include asphalt, concrete, cement, plastics, clay, sand, and steel.

Infrastructure has several specific features that differ from (non-residential) buildings. Infrastructure works are often not very complex from a technical perspective, but they have a very long lifespan (50 to 100 years). The sector is government-dominated and consolidated, and as a result, deals with public tenders in the form of long-term investments and a small number of (homogeneous) stakeholders.

In the global run-up to sustainable development, more flexibility is needed in infrastructure planning processes to incorporate new and sustainable approaches and technologies in the implementation of projects. The incorporation of such innovations should not be hindered by choices made many years before.

However, in the field of infrastructure, safety and availability are of significant importance, limiting its flexibility. Projects focus strongly on completion within scope, budget, and time, often resulting in risk aversion and less innovative and sustainable practices. Yet, for a successful circular transition, circular and sustainability practices must be implemented in procurement processes.

# 1.1 The impact of the construction sector

The construction sector is one of the largest consumers of (heavy) raw materials. It consumes around 60% of all primary raw materials in the world, making it the world's largest consumer of raw materials<sup>17</sup>. More specifically, in Europe, the sector accounts for 50% of total energy consumption, 33% of total water usage and 33% of total generated waste<sup>18</sup>. Subsequently, the construction sector is also a major consumer of intermediate products such as water, chemicals, and electronic equipment, as well as related services.

When we look more specifically at the (non-)residential building sector, it consumes around 32% of global energy and contributes to 34% of total global CO<sub>2</sub> emissions<sup>19</sup>. This enormous environmental impact occurs both during the construction and usage phases. The emissions resulting from the construction phase can be referred to as embodied carbon. This is caused by the production of building materials and the energy needed for construction. Emissions caused in the usage phase can be referred to as operational carbon, which is caused by the energy required for buildings in use. On average, the carbon footprint of building a house (embodied carbon) equals the emissions from 68 years of energy use (operational carbon)<sup>20</sup>.



The relative environmental impacts of copper and nickel are the highest per kilo. However, these materials are not as frequently used in comparison with concrete, steel and asphalt, which have a substantial environmental impact due to the large volumes used.

### Concrete

Concrete is the second most consumed resource on the planet, after water, and it is the most widely used man-made material in the world<sup>21</sup>. In the Netherlands, concrete makes 77% (in weight) of the materials in buildings<sup>22</sup>. This popularity is due to its inherent properties, such as flexibility in shaping, durability and high resistance to compression, fire and water, making it a perfect material for building structures. It does, however, come with some drawbacks. The production of cement, which is the primary binding material in concrete, is on its own responsible for around 8% of the world's CO<sub>2</sub> emissions<sup>23</sup>. Cement is highly water- and energy-intensive during its production phase and costly to recycle.

### Steel and iron

Steel is another fundamentally relied-upon material due to its durability, flexibility, stress resistance, and high density, which allows the realization of relatively lightweight structures. The construction of infrastructure and buildings is estimated to account for more than 50% of the world's steel demand, so the construction sector plays a significant role in steel and iron consumption<sup>24</sup>. Similar to concrete, steel and iron production is a major contributor to climate change. The production of steel and iron in 2023 accounts for 11% of global carbon emissions and steel alone accounts for around 8% of global CO2 emissions25. On the other hand, steel is 100% recyclable and keeps almost all its original properties when reused. The downside is that the recycling of steel is highly energy-consuming.

### Asphalt

Asphalt is a mixture of mineral aggregates, bitumen binder, and filler, used for paving roads, parking areas, railway tracks, ports, airport runways, bicycle lanes, sidewalks, and sports areas. Aggregates used for asphalt mixtures are commonly sourced from crushed rock, sand, gravel, or slag. Secondary materials in construction and demolition debris are often used as a filling layer applied underneath asphalt. The primary binding material in asphalt is traditionally bitumen, which is a non-renewable, petrol-based substance that is increasingly difficult to find.



### Future challenges

With a global population set to grow by 20% to nearly 10 billion people by 2050<sup>26</sup>, demand for buildings is bound to increase as well. Furthermore, macrotrends, such as increasing urbanisation, increased demand for products and services, climate change, and biodiversity loss, all put pressure on the built environment to future-proof its processes and activities. It is predicted edicts that the construction sector will need to realise 230 billion m² of new building stock over the next 40 years²7.

Moreover, three-quarters of the urban infrastructure in 2050 has yet to be built<sup>28</sup>. This presents a huge opportunity to shape more resource-efficient, healthy, low-carbon cities through better buildings. However, if we cannot make the built environment more sustainable, we cannot reach the climate goals, resulting in insurmountable resource challenges.

### A renovation wave

Another challenge arises when we factor in an extensive renovation and energy transition wave. Within the EU, 85% of the current building stock was built before 2001, and 85 to 95% of the existing buildings will still stand in 2050<sup>29</sup>. This indicates that a significant renovation wave has to occur between 2025 and 2050 to limit the building sector's impact.

Although many challenges are addressed, new innovations have the potential to substantially improve the environmental impacts of our built

environment. For instance, new design principles allow for a longer lifespan of buildings and reusability of materials. Furthermore, new biobased technologies allow us to build with much lower environmental impacts and recycling technologies can significantly reduce demand for primary resources.

Yet, it is important to consider that many polluting practices are still very common in the industry. Especially in regions where high demand puts time pressure on projects, unsustainable practices are widely used<sup>30</sup>. Moreover, the proportion of recycled and reused aggregates has slightly decreased compared to previous years. According to a 2023 report by the European Commission's Joint Research Centre (JRC), recycled aggregates account for approximately 8.2% of the total aggregates produced in the European Union, with significant variability between member states<sup>31</sup>.

The environmental impact of the building sector is substantial and will continue to grow if we keep building in the traditional linear way that we do now. Suppose the expansion and renovation wave happens at the expense of natural ecosystems, and without biodiversity integration plans in the built environment. In that case, the outcome can be detrimental to many natural ecosystems and therefore for the climate. It is up to policymakers, sustainable frontrunners, companies and politicians to act now and implement the necessary changes. We believe this change is possible and will foster economic prosperity and many ecological benefits.

# 1.2 Scope and international interest

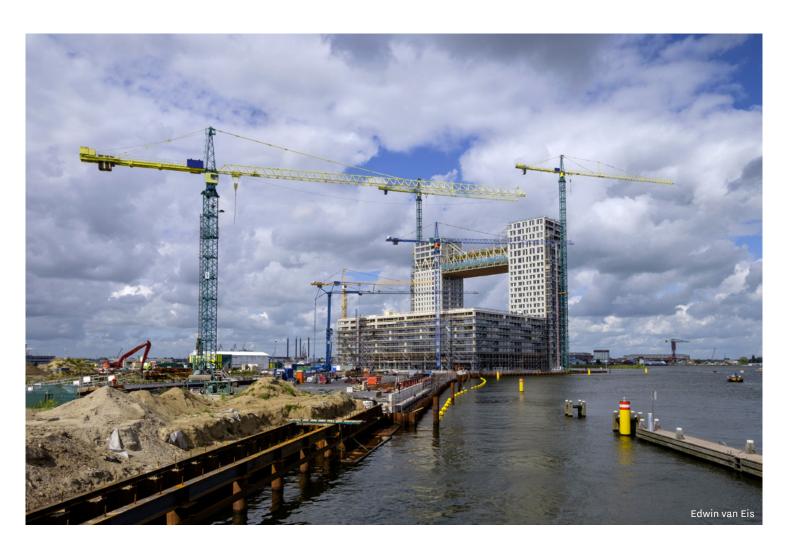
As illustrated in the previous part of this sector guide, the building sector's impact on our economies and environment is enormous. Yet, these risks are opportunities to mitigate environmental damage and climate change in the coming 20 to 30 years. CO<sub>2</sub> emissions in the Netherlands from infrastructure can be reduced by as much as 40% through more efficient use of energy and materials, extending the lifespan, more reuse, and innovative materials, products, and processes<sup>32</sup>. Many policies and regulations that will shape the future of the built environment are currently being set. Action is already happening on local, regional, national, and European levels, with policies impacting materials, products, and waste streams.

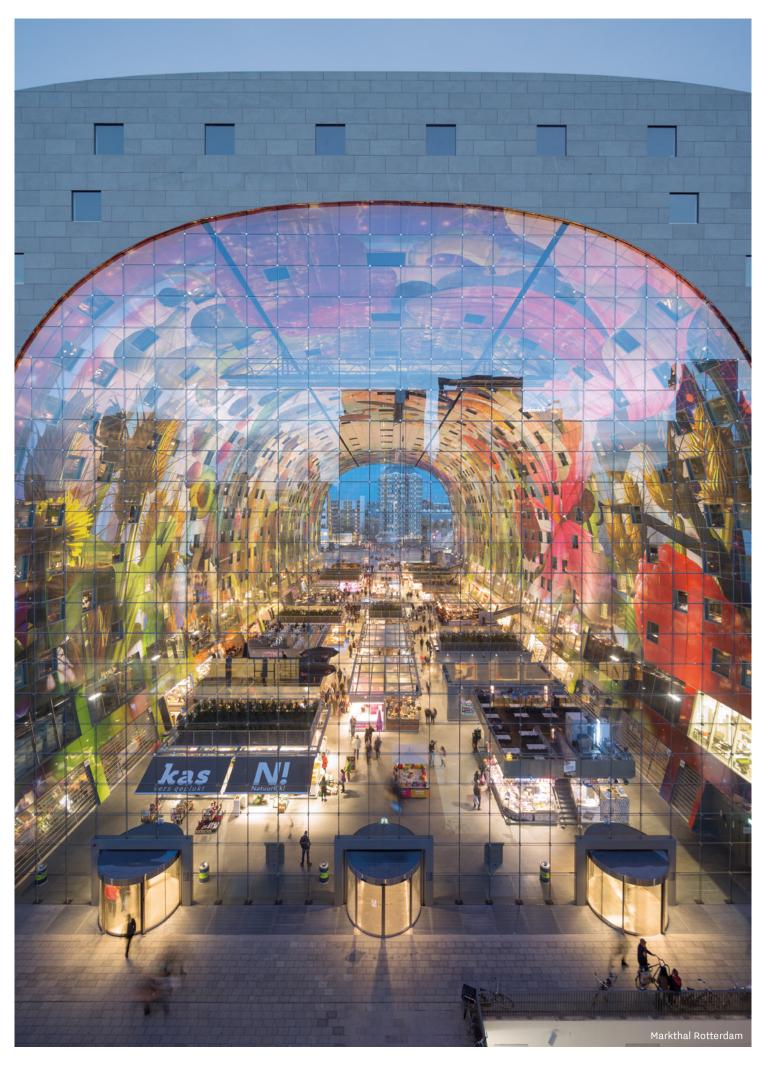
We propose that neither government nor businesses can take this action alone, and as primary and secondary resources flow over borders, we need to align policies and initiatives cross-border as well. International cooperation is paramount to achieving climate neutrality and a circular built environment. Cooperation across global supply chains of raw

materials and value chains of building products and installations will help the construction industry achieve climate and circular economy goals. National governments, the EU, and other relevant inter- and transnational organisations and forums should increase efforts to promote and support international collaboration for a circular shift in our built environment.

Besides international cooperation, an integral approach is best for a circular transition as materials from all sectors must be utilised as well as possible. Infrastructure works and buildings share many similarities, such as digital logbooks, circular design, and measurement methods. They are also highly interdependent regarding material flows, supply chains, standards, and norms.

In this sector guide, we want to inspire you to take action and collaborate with us. We do this by showing best practises in terms of policies and very practical approaches. The following chapters will further explore how circular economy concepts can play a role in future-proofing the built environment, limiting its environmental impact, following the sustainable development goals, and contributing to the prosperity of our planet and all its inhabitants.





"In the circular built environment, we design not just for today but for future generations. Dutch innovation leads the way, transforming waste into resources and buildings into material banks. Let's partner globally to build climate-resilient cities where sustainability and economic opportunity go hand in hand."



# 2. A circular built environment

### What is circularity?

The underlying objective of circularity is that materials should be kept at their highest possible value as they move and are retained as long as possible within a value chain. This results in the idea that there should never be 'waste' and that every resource has value. In order to transition from a linear economy to a circular economy, revenue must be decoupled from production and virgin resource use. This reduces and disconnects the use of natural resources and environmental impacts from the economic activity<sup>33</sup>.

"By applying the principles of the circular economy to the way we design buildings, infrastructure and other elements of the built environment, we can reduce greenhouse gas emissions, while creating urban areas that are more liveable, productive and convenient."

# Ellen MacArthur Foundation<sup>34</sup>

Another applied approach of circularity is the application of renewable and biobased solutions rather than finite materials. Biobased construction can make an essential contribution to the circular economy. On the one hand, biobased building materials are renewable in a relatively short period. On the other hand, they remove greenhouse gases from the air during growth instead of simply causing additional emissions. If biobased materials are handled properly, their application can lead to a GHG-positive result<sup>35</sup>. The Ellen MacArthur Foundation shows both approaches in Figure 2. The left side represents the biobased flow of materials, and the right side represents the finite material flow.

As Figure 2 demonstrates, a circular value chain is more complex than a linear one, with various cascades during its lifespan. Besides, it is also integrated with other products' value chains, especially when considering the built environment as a whole.

### The R-strategy model

Producing circular products is more than recycling as many resources as possible. Every step in a circular value chain matters, from design to the end-of-life stage. The R-strategy model is a great way of visualising the importance of every step. Each R-strategy falls under a hierarchy, and it is a valuable tool for visualising and understanding the different stages of resource use in a circular economy<sup>36</sup>. The 10 R-strategies in the R-strategy model are classified under 3 categories that demonstrate the length of the waste loop each represents. The shorter the loop, the more sustainable the strategy is. The higher they are on the ladder, the tighter the waste loop. This means the strategy requires fewer materials and is therefore more circular. The order of the numbers indicates the order in which the approach should be applied in the value chain<sup>37</sup>. Figure 3 represents a visual of the R-ladder.



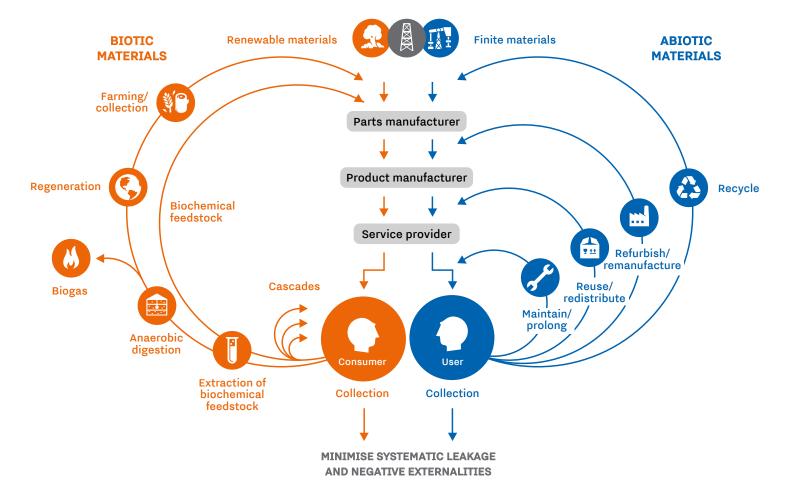


Figure 2: Circular economy systems diagram. Source: Ellen MacArthur Foundation (2019).

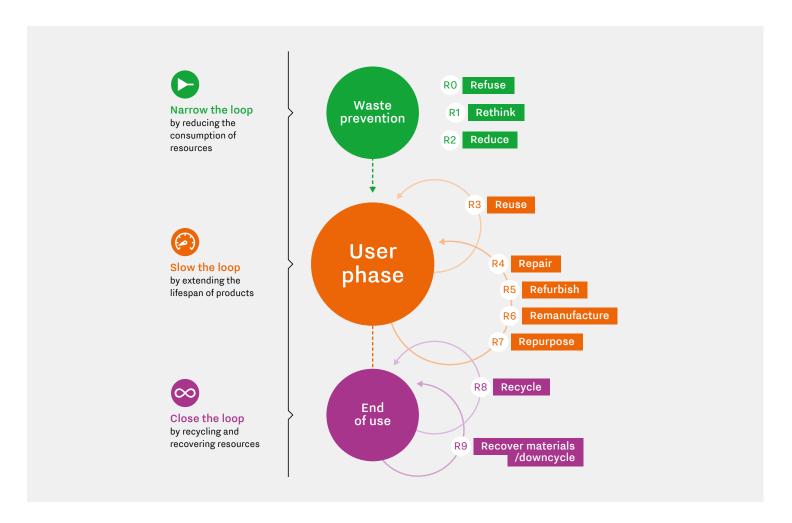


Figure 3: The R-ladder.

# 2.1 What is a circular built environment?

As we start to understand what circularity is, we now apply the concept of circularity to the built environment. We use the definition of circular built environment made by the Dutch Green Building Council<sup>38</sup> and understand it as "developing, using, and reusing buildings, areas, and infrastructure without unnecessarily depleting natural resources, polluting the living environment, or damaging ecosystems. It is about building in a way that is economically viable and contributes to the well-being of people and animals – both here and elsewhere, now and in the future."

Figure 4: Description of the circular built environment value chain.

### 1. Design

- Circular and/or sustainable design (architects)
- Urban planning (for circular/sustainable construction)

### 2. Digital support

- Software solutions to support sustainable and circular construction
- Materials passport, product passport and/or life cycle analysis
- · Planning, simulation and/or dimensioning

# 3. Building materials manufacturing and materials supply

- · Directly reusable building material
- Recycled/refurbished building material production
- Bio-based building material (such as wood construction or insulation material)

# 4. Construction of buildings, housing, earthworks, civil engineering, etc.

- Circular and/or sustainable contractors
- Resource-efficient construction (such as prefabricated or modular)
- Construction of circular and/or sustainable earthworks and civil engineering (major road construction, bridges, dyke works, etc.)
- Construction of circular and/or sustainable residential and non-residential construction
- Bio-based construction
- Sustainable and/or circular facade/skin construction

Simply put, a circular built environment serves 3 main goals:

- 1. Preserving material stocks
- 2. Protecting and restoring nature
- 3. Keep resources as long as possible in play

To better understand the definition of the circular built environment, we have developed a circular value chain in which we distinguish 8 main categories with respective subcategories in Figure 4. Each (sub) category represents the stage in which materials are processed within the circular value chain, starting with Design and ending with Construction waste solutions. The category 'Other' encompasses all types of relevant support for each category in the value chain. Every category within this value chain is essential for a functioning circular value chain and is related to one another.

### 5. Sustainability of the built environment



- Energy/resource efficient technology (such as thermal energy storage and reuse or water saving/reuse)
- Climate adaptive construction (such as climate resilient and adaptive, flooding, etc.)
- CO<sub>2</sub>-neutral innovations (such as insulation or green roofs)
- Sustainable and/or circular climate installations

### Lifespan extension



- Repair, renovation and/or maintenance
- As a service solutions

# Construction waste solutions (end-of-life solutions)



- Deconstruction
- Waste processing (collection, sorting and/or processing of waste streams)
- Refurbishment of existing (building) equipment (such as installations)

# 8. Other (facilitating the circular construction transition)



- Knowledge institutions
- Industry and/or sector organisation
- · Circular and/or sustainable procurer
- Supply of sustainable and/or circular mechanical engineering
- Circular/green financing
- · Measurement tools
- Consultancy

# 2.2 A circular construction value chain

In the previous paragraph, we introduced the principles of circularity, a circular built environment, and a circular value chain with its (sub)categories. In this paragraph, we will discuss each category in the value chain in more detail and elaborate on why it is relevant to consider for a circular and sustainable future.

1. Design

Circular design is about carefully considering an object's life cycle from the beginning to the end. It considers aspects such as the desired lifespan, the future (re)use of all parts and materials, and the usage of various types of (sustainable) materials. Circular design also considers maintenance and potential (functional) changes in the object's future. A design team should also determine in advance how to disassemble and reinstall the objects. Hence, design for circularity is crucial as it allows all processes to be more circular and more accessible to apply during their lifespan.

The Netherlands has various guidelines on circular design, such as the guidelines developed by CB'23, Circulairebouweconomie, and Dutch Green Building Counsel<sup>39</sup>. These guidelines underline that there is no "one size fits all" circular strategy, and that a customised approach is needed for each design challenge. The guideline identifies 6 main strategies, which, in varying composition, form a methodology for approaching specific design challenges.

- · Design for prevention
- Design for Life Cycle Impact Reduction
- Design for future-proofing
- Design with recycled objects
- · Design with secondary raw materials
- · Design with renewable raw materials

2. Digital support

Digital support is essential for a circular built environment ecosystem. To achieve high-quality reuse and recycling, insights into the quantity and quality of the materials and structures of a built asset are required. The digital information clarifies when parts of an old bridge, for instance, can be reused for a new bridge.

An example of digital support is a product materials passport, a digital database recording the objects in buildings or infrastructure. It allows one to track the journeys of products, components, and materials. It documents what they consist of (in both qualitative and quantitative terms), how they were built, where

they are located, and the ownership of the entire object and/or its parts. Digital support also involves digital solutions for most categories of the value chain. It can be used to reduce construction site waste and improve construction foundations in challenging terrains.

Another example of digital support is a Building Information Model (BIM). A BIM is a three-dimensional representation of a construction project that provides a comprehensive overview of all materials and their respective properties. The model enables various stakeholders, such as planners, architects, engineers, developers and other industry professionals to collaborate in the planning, design, creation and operation of buildings or infrastructure<sup>40</sup>. This collaborative approach allows project developers to reduce on-site material waste and enables prefabrication of objects, improving efficiency and sustainability of a project<sup>41</sup>. Additionally, relevant data such as material properties (e.g., a material product passport) can be added to the BIM, making it easier to disassemble and reuse components.

In the Netherlands, practical experiences in the built environment have been gained from the Materialen Expeditie (initiative that promotes reuse of construction materials), the Dutch Madaster (a platform for circular buildings and infrastructure), and DigiC (a platform that accelerates the transition towards a circular built environment through digitalisation). Learning from these experiences, strategies must be developed concerning what information is needed to enable and safeguard circular decisions. This information can differ for objects at different stages of their life cycle, ranging from new construction and maintenance to demolition. Finally, it is important to consider how data should be collected and stored.





# 3. Building materials manufacturing and the supply of materials

Circular building material manufacturing and supply involves fundamentally rethinking how materials are produced, distributed, and reused within the built environment. There are various means of applying circular principles to manufacturing processes. Firstly, it is important to look at what materials, such as biobased materials, can be used. Furthermore, it is possible to use reused, repurposed, or recycled materials in the manufacturing stage.

### **Biobased materials**

There are many examples of biobased materials, such as flax, wood, industrial hemp, and miscanthus (elephant grass and straw). We can apply biobased materials in various ways in our built environment. The main load-bearing structure of buildings can be made from (cross-laminated) timber, and timber frame construction is a viable option for roofs and facades. In addition, bio-based materials are particularly well suited for insulation, panelling, or partition walls. There are also opportunities in civil engineering, such as road and water infrastructure. For example, fossil-based bitumen in asphalt roads can be replaced with lignin, a natural adhesive from trees and plants. Furthermore, many concrete or steel bicycle and pedestrian bridges, and street furniture (such as traffic signs, light poles, and guardrails) can be replaced with bio composite alternatives from bio-resin-bound plant fibres<sup>42</sup>.

The usage of biobased materials contributes to solving several challenges. They can store CO₂ during their growth phase and can substitute the demand for primary abiotic resources, such as steel and concrete. Also, in the agricultural sector, the cultivation of biobased raw materials can help lower emissions by replacing emission-intensive activities⁴³. Moreover, growing biobased crops can support the transition to more sustainable agriculture, as fibre crops generally require little to no fertilisers, water, or pesticides. This, in turn, positively affects soil and water quality.

While biobased materials offer significant potential, they cannot entirely replace fossil-based materials in all applications. For certain applications, such as foundations and hydraulic engineering and installations, fully biobased solutions remain technically or economically unfeasible. Therefore, manufacturers must increase their use of renewable, reused, and recycled materials to meet the construction industry's demands. Collaboration with companies specialising in deconstruction and waste processing is essential to enable the recycling and repurposing of materials into new products. Addressing this challenge requires a multifaceted approach, with public and private stakeholders committing to various sustainable solutions to ensure a sufficient and responsible supply of materials.





# 4. Construction of buildings, housing, earthworks, civil engineering, etc.

The construction phase is pivotal in the transition to a circular built environment. It involves optimizing construction logistics and modular techniques, which can reduce environmental impacts and shorten project timelines. As a result, waste is minimised, and resources are used as efficiently as possible. For example, using prefabricated and modular components reduces material loss and enables buildings to be more easily adapted, deconstructed, or relocated later in their life cycle<sup>44</sup>.

Civil engineering and infrastructure projects, such as roads, bridges, and dykes, can benefit significantly from circular construction approaches. Reusing foundation materials, applying low-carbon concrete, and incorporating recycled aggregates are increasingly viable strategies. In the Netherlands, initiatives, such as Circulaire Viaducten (circular viaducts)<sup>45</sup> are already piloting scalable circular solutions in public infrastructure and CB'23<sup>46</sup> (Circular Building 2023) is setting up various circular procurement norms to futureproof the built environment.

Applying these circular principles during construction inherently means using reusable or recyclable materials, minimising on-site waste, and considering future disassembly and adaptability. For this transition, builders need the right skills to use these new circular techniques. It is important to organise proper schooling so construction workers know how to apply circular materials and use new techniques.



# 5. Sustainability of the built environment

With sustainability of the built environment, we mean all services that contribute to improving our current built environment's sustainability, adaptability, and durability. For instance, we can think about retrofitting, climate adaptability of neighbourhoods and building energy-neutral or even carbon-positive.

### Retrofitting

Retrofitting refers to upgrading existing buildings with new systems, technologies, or materials to improve energy efficiency, reduce environmental impact, and enhance performance or comfort<sup>47</sup>. These upgrades are done without demolishing or rebuilding the structure. Generally, retrofitting involves the following:

- Enhancing energy performance with insulation and by replacing windows and doors with more energy-efficient models;
- Improving or replacing heating; ventilation and air conditioning (HVAC) systems;
- Installing renewable energy technologies such as solar panels or heat pumps;
- Implementing water-saving fixtures and improving airtightness and moisture control throughout the building.

The retrofit market is projected to grow from €435 billion today to €3.39 trillion by 2050<sup>48</sup>. As 70% of the world's population is expected to live in urban areas by 2050, there is a great opportunity to create this expansion and renovation wave in our built environment in cohesion with natural ecosystems, worldwide CO<sub>2</sub> reduction targets and biodiversity gains.



# Climate installations (Heating, Ventilation and Air Conditioning – HVAC)

Climate installations play a crucial role in building energy performance and comfort. They are also a leading consumer of energy efficiency and resources. For instance, the demand for circular cooling systems will grow annually with an increasing global temperature. It is estimated that the number of air conditioners in the Netherlands will increase from 20% of total households to nearly 40% in 2030<sup>49</sup>. Furthermore, a new problem arises when F-gases (fluorinated greenhouse gases) are factored in. F-gases are synthetic gases used in HVAC systems and heat pumps, critical for energy-efficient buildings. However, leaks or improper disposal of systems containing F-gases can result in high emissions, often thousands of times more potent than CO2. Even small leaks from chillers or air conditioning units can offset the carbon savings. In a circular built environment, reducing or eliminating F-gases supports climate goals and safe reuse of technical installations. Moreover, most HVAC installations contain critical and rare primary resources, which increases prices and dependency on primary resources.

The European Union will phase out all F-gases in 2050<sup>50</sup>, creating opportunities for new sustainable and circular alternatives. Hence, it is important to consider various circular and bio-ecological cooling principles (e.g., passive house cooling or greening neighbourhoods), which can refuse the use of HVAC systems.

# Passive cooling, greening neighbourhoods and climate adaptability

Passive cooling is a building design approach that involves the use of natural resources to cool buildings. This can be achieved by using shade (orientation of a building), by insulation to keep heat out of buildings, by using heat-storage materials outside of the building, and by strategically using breeze and air-movement inside buildings<sup>51</sup>.

On a larger scale it is possible to apply this on neighbourhoods as well. For instance, through the addition of trees, parks, green roofs, and other vegetation heat stress can be significantly reduced. Vegetation cools cities through shading and evapotranspiration, helping to reduce urban heat effects. It is found that increasing tree coverage by 30% in European cities can lower temperatures from 0.4°C up to 5.9°C 52. As cities confront rising temperatures and more extreme weather patterns, urban greening is a cost-effective, nature-based solution that builds resilience and improves liveability. It also offers a solution during peak electricity hours in cities by reducing the need for energy-intensive cooling systems during heat waves. Beyond its temperature benefits, urban greenery also captures carbon, improves air quality, and mitigates climate risks by improving city drainage systems<sup>53</sup>.

# The different layers en their average lifespans are:

- Stuff 5-15 years
- Space plan 5-20 years
- Services 5-30 years
- Skin 30-60 years
- Structure 60-200 years
- Site > 200 years

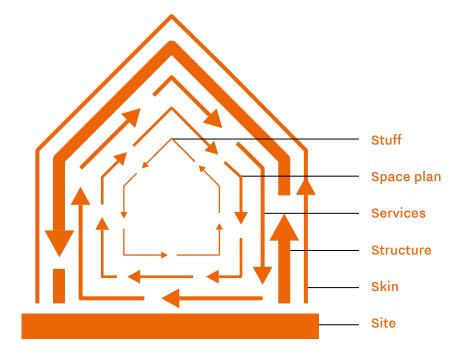


Figure 5: Layers of a built object and their respective average lifespans.

# 6. Lifespan extension

This category focuses on extending the lifespan of all existing assets within the built environment. While it is certainly possible – and valuable – to develop highly innovative technologies that enable the complete recycling of (critical raw) materials, equal attention must be given to maintaining our valuable building materials in functional use for as long as possible within the value system. The longer materials can be kept in use, the less reliance there is on extracting virgin resources. Paragraph 2.1 shows that these cascades are important for optimising our primary finite resources. For this reason, prioritising longevity and durability is of critical importance.

However, buildings' uses changes over time, and the different parts of a building do not all last the same time, as clarified by the 6S model of Steward Brand. Consciously considering the different lifespans of the different layers and separating the layers within the building ultimately allows for the application of various circular principles.

By developing circular maintenance and renovation strategies, asset managers can make choices to ensure that materials and structures in a built asset remain used for as long as possible. A circular economy approach not only enables a higher residual value but, above all, a far better total costs of ownership.

Interestingly, when designed correctly, each S-layer can be detachable and made more adaptable, with each S-layer in the model able to be replaced at the end of its lifespan. The S-layers of Brand allow one to design, maintain, and transform buildings that stimulate circular principles<sup>54</sup>. For instance, in 2022, 9,600 houses were created out of office spaces in the Netherlands. In this case, the site, skin, and structure were retained, but the services, space plan and stuff

changed. Currently, it is estimated that 8%-9% of the total office space in the Netherlands stands vacant<sup>55</sup>. In this context, effective data management is crucial in identifying opportunities for adaptive reuse and conversion, ensuring that vacant space is resource-efficient and socially beneficial.



# 7. Construction waste solutions (end-of-life solutions)

Many valuable resources end up in a landfill, incinerated or downcycled in a new product. It is estimated that 71% of demolished materials in Europe are recycled or backfilled, most of it being downcycled<sup>56</sup>. An example of unnecessary downcycling is concrete, as it is rarely reused in new buildings, even though its properties are perfectly suitable for reuse.

Construction waste solutions offer various opportunities to decrease the need for new primary resources. An example of construction waste solutions is urban mining, which entails the process of identifying, disassembling, reusing and recovering valuable resources extracted from buildings and infrastructure<sup>57</sup>. When applied successfully, urban mining allows for a reduction of primary resource use by 18% and CO<sub>2</sub> emissions by 40% in the Netherlands<sup>58</sup>. Furthermore, urban mining allows for less energy consumption than linear construction processes. Generally, the process of urban mining consists of 4 steps:

- map the possible reuse and deconstruction location by analysing its resource potential,
- 2. deconstruction of materials,
- waste processing (collection, sorting and/or processing of waste streams),
- 4. refurbishment of existing (building) equipment (such as installations).

To successfully apply urban mining techniques, it is required to accurately map which buildings are suitable for effective reuse and recycling. The map then allows one to understand which materials the 'mine' consists of. In the Netherlands, various cities have mapped their urban mine value, which displays buildings, infrastructure, critical raw materials and many more (sub) categories. In the Metropool Regio Amsterdam more than €300 million in annual value could be generated by repurposing and adding value to demolition materials<sup>59</sup>. Extrapolated to a national scale, this potential could reach approximately €1 billion annually across the Netherlands<sup>60</sup>.

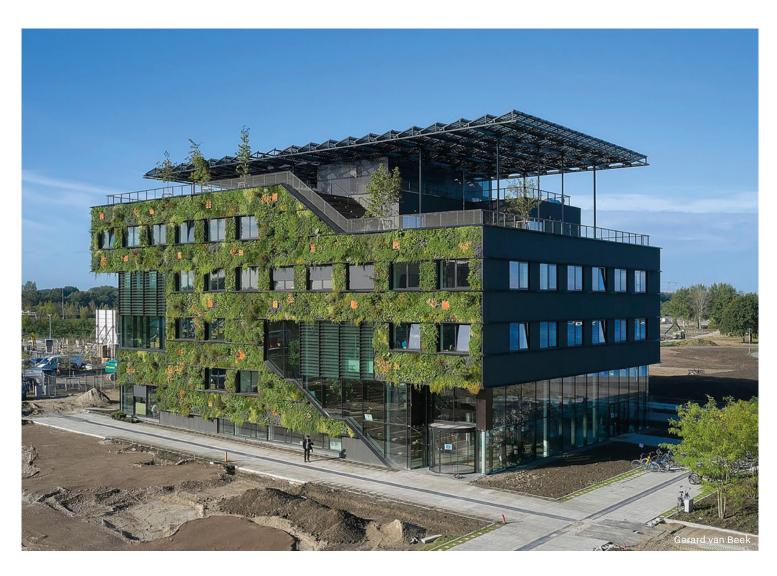
The next step is to collect, sort and process the different streams of materials extracted from buildings. An important aspect is to find a proper way of collecting, sorting and distributing the relevant materials. Then, it is possible to process the materials into new high-quality resources (or reuse/refurbish the extracted materials).



# 8. Other (facilitating the circular construction transition)

The 'other' category involves all the required preconditions to establish a circular built environment value chain successfully. This category influences – and is mutually influenced by every other category in the circular value chain. For instance, we need knowledge institutions to support our business sector with technological innovations. At the same time, we need measurement tools to identify the value of materials in our current stock of buildings. The procurement power of the government can also work as a lever by awarding offers with a better circular score, encouraging to develop more circular alternatives.

In chapter 3 various Dutch public-private partnerships will be discussed to showcase the importance of what we call the other category. Without consultancies, financial institutions, measurement tools that can calculate the environmental impact of our built environment, and circular procurement agreements to stimulate an innovative circular building sector we cannot make the transition towards a circular built environment.



"The future of construction is irrevocably sustainable and circular. This transition collaboration throughout the entire chain, from design to demolition. Businesses and other parties can accelerate this transition and seize tunities by collaborating with innovative partners. O together can we create cities with a pleasant living environment for current and future generations."



# 3. The Dutch circular and sustainable practices

The Dutch circulair and sustainable built evironment sector faces numerous challenges in terms of CO<sub>2</sub> reduction, scarcity of materials, productivity and sustainability. To tackle these challenges, and especially to turn these challenges into persuasive opportunities, several initiatives and collaborations have been launched in the Dutch built environment ecosystem. These initiatives show how public private partnerships between (non) governmental organisations, companies and knowledge institutions are committed towards a more circular and sustainable environment.

We showcase these by zooming in on policy and governmental initiatives, followed by initiatives for making the traditional built environment sector more circular, as well as best practices for measuring and applying new standards for circularity, circular procurement, and biobased construction.

# 3.1 Circular and sustainable construction policy initiatives

In 2016, the Dutch government published a governmental programme called 'A Circular Economy in the Netherlands by 2050'<sup>61</sup>. As one of the first countries in the world, the programme introduced an ambitious target for the Netherlands to become fully circular by 2050. This governmental programme aimed to develop a long-term strategy and create general awareness.

Subsequently, the support for the transition to a circular economy grew, as in 2017, the National Raw Materials Agreement was signed by 180 parties, including industry, trade unions, environmental, and governmental organisations. As a result, 5 detailed transition agendas were developed, including the construction sector.

Since then, the transition agenda 'Circular Construction Economy' has been translated into specific actions and projects in the Circular Economy Implementation Programme 2019 – 2023. The programme describes the Dutch strategy of transitioning into a circular built environment by 2050. Finally, the Dutch government published the National Circular Economy Plan 2023-2030<sup>62</sup> in the most recent phase of the circular transition. This policy programme continues to build on the groundwork that had already been established.

Besides these government-wide strategies, several circular construction implementation programs have been initiated in 2019. The Dutch Ministry of Infrastructure and Water Management and its 2 major executive agencies, Rijkswaterstaat and ProRail, developed the strategy 'Towards climate neutral and circular infrastructure projects' to be achieved by 2030. The strategy includes a 100% reduction of COz2 emissions, high-quality reuse of all materials, at least 50% reduction in primary raw materials, and minimal production waste. It also includes a proposal for a financial model to be incorporated in project plans (tenders) and budgets. The strategy aims to ensure that all public tenders are circular by 2030, cooperating with various local and regional authorities.

Furthermore, the Rijksvastgoedbedrijf (Central Government Real Estate Agency) plays a an important role in advancing the Dutch circular building market. As the owner and manager of all central government properties, including those used by the Ministry of Defence, the agency has a significant influence on the construction and real estate sector. To guide its transition toward climate neutrality by 2050, the Rijksvastgoedbedrijf launched two strategic roadmaps in 2023 and 2024, outlining a framework that integrates circularity, energy efficiency, nature inclusivity, and climate resilience into the government's real estate portfolio. For instance, an ambition within this strategy is to procure all construction projects in a fully circular manner by 2030, setting an example for the construction market.

The transition team circular construction

Aside from these policy programmes, the Dutch government established a multidisciplinary team that has been able to implement the circular construction transition agenda. The Transitieteam Circulaire Bouweconomie (Transition Team for a Circular Construction Economy) was established in 2018. The initial focus was on establishing a solid

foundation and implementing the essential tools, methods, legislation, and knowledge required for a circular construction economy.

Progress has been made under the leadership of the Transition Team. Roadmaps and guidelines for circular construction have been developed, as well as practical tools such as the Circulaire Bouwcatalogus<sup>63</sup> (Circular Building Catalogue). Widespread knowledge-sharing has been fostered through podcasts, digital magazines, and events. Following one of the team's recommendations, a legislative process has also been initiated to make the MilieuKostenIndicator (Environmental Cost Indicator) a guiding instrument in public procurement and permitting procedures.

The current, second Transition Team has been active since mid-2024 and is focused on scaling up circular construction initiatives and building upon the achievements of its predecessor. Furthermore, the team focuses on supporting practical initiatives and bridging the gap between frontrunners and the broader industry. A dedicated implementation agenda for 2025 – 2026 is in place, structured around 4 active working groups.



# 3.2 The Dutch best practices

As we have demonstrated, national policy has made a shift towards a more circular built environment in the Netherlands. This paragraph explores examples of various successful public-private collaborations towards a circular built environment.

# The concrete and steel construction agreements

In the first chapter we have shown the enormous environmental impact of steel and concrete. Hence, addressing traditional materials such as concrete and steel is an important step towards circularity and sustainability for the built environment. To make the whole concrete and steel sector for construction more sustainable, uniform performance indicators in building contracts are crucial<sup>64</sup>. In 2018 the concrete sector encourage the Dutch government to develop a legal framework for drastically lowering CO<sub>2</sub> emissions and fostering circular methods.

Subsequently, circular frontrunners in the concrete sector joined forces with the government, the building and recycling sectors, and research institutes to formulate the Dutch Concrete Agreement in 2018<sup>65</sup>. The aim was to reach ambitious environmental and social goals and steer the concrete sector into a sustainable future-proof direction. A network of partners has jointly developed roadmaps for CO<sub>2</sub> reduction, net positive value of biodiversity, circular design, and 100% circular use of demolished concrete. In due time, the sustainability results gained by frontrunners (expressed in the MilieuKostenIndicator) will be the standard for the rest of the sector. The MilieuKostenIndicator will be integrated into the procurement guidelines and become stricter over time.

Sanne Couprie

Subsequently, in 2022, the Steel Construction Agreement was signed by circular frontrunners in the steel sector66. The agreement was signed by a wide range of stakeholders from across the steel sector, including industrial producers, steel traders, construction companies, engineering firms, public and private clients, suppliers, as well as organisations involved in demolition, dismantling, recycling, and scrap processing. Moreover, new organisations are welcome to join the agreement, and a growing number have already signed on as participants. Their vision is to 'jointly implement a steel construction sector and value chain-wide commitment to improve the sustainability of their activities significantly by 2030'67. Furthermore, this steel agreement has led to a valuable roadmap with a perspective on actions and the application of the indicators in existing projects, varying from infrastructure projects, such as bridges, to buildings.



### Measuring circularity

A uniform and effective measurement method is indispensable to provide insights into the degree of circularity of a material, product, structure, or area. For example, it can play an important role in tenders or monitoring the circularity performance of a building, neighbourhood, region or country. The CB'23 Platform (Circular Construction in 2023 Platform) has worked on a core method for measuring circularity, harmonising and expanding on existing methods. CB'23 is part of NEN, which is the Dutch equivalent of EN (European Standard)<sup>68</sup>. The core method of CB'23 is based on the 3 key goals of circular construction:

- 1. to protect stocks of materials;
- 2. environmental protection; and
- 3. value retention.

This is described in the guideline 'Measuring circularity in the construction sector'<sup>69</sup>. The measurement methods for the first 2 goals are established and ready for use, while the third is being developed. The method will be implemented in the national environmental database (described in the 'circular procurement' segment above) and has already been tested in projects. It is currently being spread out between European member states and improved.

### 'Het Nieuwe Normaal' (The New Normal)

Another Dutch example of measurement and uniform standards for fostering a circular built environment is Het Nieuwe Normaal – HNN ('The New Normal'), which aims at a high-quality reuse of materials in the built environment. HNN was developed by an interdisciplinary team and initiated and powered by Cirkelstad, a national cooperative that brings together leaders in the construction sector to make circular construction the norm, since 2019.

HNN offers a new unified framework for the material transition with reachable and ambitious performances for buildings, infrastructure and urban areas<sup>70</sup>. It focuses on new and existing buildings, infrastructure and demolition. The framework defines 9 key indicators across 3 core themes:

- environmental impact (environmental costs indicator and environmental performance of buildings, CO<sub>2</sub> emissions and storage),
- 2. material use (origin materials, healthy materials and waste handling), and
- 3. value retention (adaptability, disassembly, potential for reuse).

This framework has created a common language and equal opportunities for the circular implementation and reuse of materials in the built environment. In this way, all partners in the ecosystem can uniformly develop policies, launch projects and tenders, and participate with circular products and concepts<sup>71</sup>.



Moreover, HNN offers a network of (non) governmental organisations, commissioning parties and contractors that exchange knowledge on circular principles for the material transition in the built environment and current developments. It also offers the service to evaluate building projects related to the framework standards and organises training workshops twice a year.

### Circular procurement

The circular transition is also stimulated by designing the (public) procurement processes. The Dutch government procures around €116 billion worth of work, services and supplies every year<sup>72</sup>. Most of this is invested in public goods such as roads, bridges, home care and school books. Circular procurement indicates the usage of the right purchasing instruments to drive the circular economy. For each circular solution, evaluating the most suitable contract form, award criteria, and contract requirements is important.

In the Netherlands, circular procurement is often organised in circular buyer groups, in which contracting authorities in the public and private sectors work together to develop a shared market vision and strategy for a specific product category to make the market more sustainable or circular. This gives a clear signal to the market and encourages it to develop circular solutions that respond to a clear and common need. The members of the buyer group aim to implement this vision and strategy in their procurement practice within 2 years. In the Netherlands, PIANOo (the Dutch Public Procurement Expertise Centre) was set up to professionalise procurement and tendering in all government departments, and circular procurement is high on the agenda. Examples of buyer groups are:

- zero-emission building materials
- low-CO<sub>2</sub> concrete
- sustainable road surfacing
- circular signage
- · circular viaducts
- climate-neutral dredging

A powerful tool used for circular procurement in the Netherlands is the environmental cost indicator (ECI). This indicator is based on the European norm EN15804, which monetises environmental costs based on shadow prices. By awarding a virtual reduction for offers with a better (lower) ECI, the market is encouraged to develop and offer more circular alternatives. Another tool is Stichting NMD (the Dutch National Environmental Database Foundation). This independent environmental database stores environmental data about building materials and installations, and maintains and guarantees the quality of the determination method. This determines the environmental performance of buildings and infrastructure projects. These terminologies are constantly improved to create the best leverage for future generations.

### Financial institutions

Financial institutions play an important role in stimulating and accelerating circularity in the built environment. By offering financial incentives, they can make circular business models more accessible and attractive. Traditionally, financial institutions grant loans based on short-term returns, which can be a barrier to circular approaches that often emphasize long-term value. Therefore, a proper valuation of circular and sustainable materials, services, and buildings is essential.

The Central Bank of the Netherlands (De Nederlansche Bank), together with various major Dutch banks, established the Kopgroep Circulair Financieren in 2021. The Kopgroep Circulair Financieren is a Dutch public–private initiative with the mission to make circular financing the norm in the Netherlands by 2030<sup>73</sup>. In 2024, they released an open-source circular risk scorecard designed to assess financing proposals using a circular perspective<sup>74</sup>. Furthermore, they aim to promote the inclusion of both linear (e.g. resource depletion, environmental harm) and circular risks in financing analyses and the adoption of circular metrics within risk and valuation models.

On a regional level, the municipality of Leeuwarden and Alba Concepts have developed a method for the circular depreciation of real estate properties. With this initiative, circularity, defined per product group, is calculated in the residual value<sup>75</sup>.

### **Biobased construction**

As demonstrated in the previous chapter, biobased materials are of the substitutes for the traditional polluting building materials. The Dutch national government has also picked up on this potential. In 2023, the Nationale Aanpak Biobased Bouwen (National Approach for Biobased Building) was launched to showcase the ambition and goals for the coming years<sup>76</sup>. With this national approach, the Dutch

national government set goals for 2030 to scale up the biobased raw materials market. They reserved a budget of €200 million to stimulate the demand for biobased materials. They formed a broad coalition of public and private market partners, varying from farmers, manufacturers, procurers and knowledge institutions.

The Netherlands plans that at least 30% of all new residential buildings will consist of a minimum of 30% biobased materials by 2030. The exact target applies to insulation used for sustainability upgrades and to materials in utility construction. A significant share of materials in infrastructure, such as asphalt, street furniture, and bicycle bridges, should also be biobased. At least 25 production chains must be in place to support this transition by 2030. These production chains should collaborate with farmers, industrial processors, and construction companies. The aim is to expand fibre crop cultivation from around 2,000 to 50,000 hectares. Processing capacity should grow to at least 400,000 tonnes of fibre annually by 2030.

The plan also outlines how major public clients such as Rijkswaterstaat, ProRail, and housing associations can contribute to increasing demand for biobased materials, given the scale of their construction projects. Rijkswaterstaat is already advanced in developing asphalt, where biobased raw materials replace fossil-based components such as bitumen<sup>77</sup>. In collaboration with these stakeholders, the relevant ministries are exploring ways to accelerate the procurement criteria and to identify appropriate indicators for measuring progress.





The hemp-fibre deal

In Friesland, one of the Netherlands' northern provinces, over 30 organisations, including housing corporations, construction firms, developers, and local governments, have joined forces by signing the Frisian Hemp Fibre Deal. This pioneering agreement marks the creation of the country's first fully regional chain for biobased construction. The commitment to use locally produced hemp fibre insulation in at least 1,000 construction and renovation units over the coming 3 years is at its heart. The deal represents a close collaboration between farmers, builders, housing providers, and public authorities to accelerate the transition to a circular economy while strengthening the regional bioeconomy. The insulation material hemp wool is produced from hemp cultivated by more than 110 Frisian farmers.

A key strength of this initiative is its strong market backing. Housing corporations have all committed to using hemp fibre insulation in their renovation projects. They have engaged their construction partners to apply this innovative material in their projects. Public sector bodies, including local municipalities and the province, actively support the initiative by promoting the use of biobased materials in their procurement processes. The environmental impact of the deal is significant. Using hemp wool will save more than 1,700 tonnes of CO, over the lifetime of the materials applied. These savings will be certified, and the value of the CO, credits generated will directly benefit the participating Frisian farmers. This ensures that sustainability efforts also contribute to strengthening the local agricultural economy.

By using locally sourced materials, the initiative reduces transport emissions and movements, while creating new employment opportunities within both the agricultural and construction sectors. Hemp fibre insulation contributes to healthier indoor environments, and cooler homes during the summer months, and supports regional biodiversity.

A knowledge programme is being rolled out to facilitate the smooth introduction of hemp fibre insulation. This programme provides training and guidance to all stakeholders, ensuring that the material's advantages are fully realised in practice. This initiative aligns with the National Biobased Building Strategy of the Netherlands, and sets an inspiring example for other regions and countries seeking to develop circular, biobased construction chains. The Frisian Hemp Fibre Deal demonstrates how regional cooperation and shared ambition can translate into real-world impact for a sustainable built environment.

# Green deal biobased covenant Amsterdam metropole region

Another example of a regional agreement is the ambition of the Amsterdam metropole region to use at least 20% of wooden materials in the production of buildings, starting in 2025<sup>78</sup>. This covenant was set up by the regional authorities, the national government, real estate developers, investors and knowledge institutes. The signed parties aim to reduce carbon emissions by innovating, making the development and construction sector more effective and accelerating the housing construction projects. The building sector contributes to circularity through dismountable design and construction principles, renewable raw materials, and reusing existing materials. This leads to lower emissions as well as less building waste. The initiative will continue under the name of Houtbouw Pact 2026-2030 in the coming 5 years. Furthermore, if they meet the goal to use at least 20% wooden material in the production of buildings in 2027, they would like to increase that target to 30% by 2030.

Taken together, these developments position the Netherlands as one of the frontrunners in circular construction, with both technological expertise and practical experience in applying circular principles to the built environment. However, striving towards a circular built environment cannot be done only within the Netherlands. We believe that international cooperation is necessary. We can learn, share knowledge and best practices, innovations, and collaborate. In the following chapter, we highlight over 150 valuable Dutch organisations that are meaningful in contributing internationally to the circular and sustainable building environment. We hope you feel inspired and invited to collaborate with the Netherlands.

"This sector guide offers an insightful look at the shift towards a circular built environment, and highlights Dutch companies, research institutions, and expert groups leading the way.

It showcases the broad range of expertise developed since the 1990s—expertise that has truly flourished in response to growing concerns about resource scarcity and climate change."



Jacqueline Cramer, Former Dutch Minister of Housing, Spatial Planning and the Environment, chair of the Concrete Agreement and the Steel Construction Agreement

# 4. Let's collaborate!

The Netherlands is a country that is well known for technological advancement, knowledge sharing, and its international orientation and collaborative spirit. We believe international collaboration is the key to a future-proof, sustainable, circular built environment.

The transition to a sustainable and circular built environment offers great (economic) opportunities to make our future world a better place. Due to our practical experience, public-private collaborations, knowledge institutions and highly innovative companies, we have a strong ecosystem we would like to showcase. Together with public and private partners, we transition old linear practices towards sustainable and circular practices, whether on a local, regional, or (inter)national scale. To drive this vital change worldwide, we invite you to collaborate and explore opportunities in our current ecosystem. We encourage everyone to act and show 5 reasons why you should work with the Netherlands.



# What makes our built environment industry unique?

- Our expertise in circular practices and measuring circularity. The Netherlands is a frontrunner regarding of the applications of circular principles and measurement implemented in legislation and databases.
- 2. We are successful in making our built environment sustainable by retrofitting our buildings and greening our urban spaces. The Netherlands has the highest relative share of solar panels in Europe per capita<sup>79</sup>. Furthermore, we work on climate adaptive construction, many CO<sub>2</sub>-neutral innovations and sustainable climate installations.
- 3. We have an inspiring vision for circular and biobased construction. Although biobased building is an ancient technology, we set out ambitious goals with the National Approach for Biobased Building. We have created various functional ecosystems that bring together farmers, processing factories, and procurers who buy biobased construction material. Moreover, we have a unique cluster of companies that can build multilevel-sized buildings with biobased materials and reuse existing ones.
- 4. We offer the availability of data-support technologies. The Netherlands has a very innovative cluster of companies with the key to a circular future. They can assist recyclers, urban miners, procurers, and measurement institutions to successfully deploying circular strategies. We cannot guarantee circularity without knowing the impact, date, and origin of a building and its materials.
- 5. We are leading the way in effective reuse. In policy and in practice, we are doing everything we can to maximise the reuse of valuable (raw) materials. We are shifting from demolishing existing buildings and infrastructure to harvesting critical raw materials.

# Table of companies

In the following section, over one hundred fifty organisations introduce themselves and are labelled by their role in the value chain. We catalogue each organisation in the 8 categories we identified on page 17, figure 4. Please consult the table of companies on the following pages and use that to identify possible partners in your future endeavours!

Name of organisation									
	Design	Digital Support	Building materials manufacturing and materials supply	Construction of buildings etc.	Sustainability of the built environment	Lifespan extension	Construction waste solutions	Other	Pagenumber
Accu't					•	•	•	•	36
ACS		•			•				36
Aectual	•	•	•						37
Agrodome B.V.								•	37
Alba Concepts BV								•	38
Anker Stuy Coatings			•			•			38
Antea Group	•	•	•	•	•		•	•	39
Arcadis Nederland B.V.	•	•		•	•	•	•	•	39
ART-e							•	•	40
BCI Gebouw BV		•						•	40
Bio Bound		•	•	•	•		•	•	41
Bioblow			•						41
biosintrum			•		•			•	42
Blade-Made	•		•				•		42
Bork Groep – Tussenstation			•				•		43
Bouwbedrijf Ecohus Fryslan en LEVA	•	•	•	•	•	•			43
Bouwgroep Dijkstra Draisma			•	•	•	•	•	•	44
Bribus B.V.			•			•			44
Brlint Green Group (brlint.green)			•		•	•			45
Building Balance Limburg			•	•	•			•	45
C-creators								•	46
Chainable	•	•	•	•	•	•	•	•	46
Circl Impact Data		•							47
Circl Technologies					•				47
CIRCQ					•				48
CircuWall B.V.			•						48
Cirkelstad								•	49
CITYFÖRSTER architecture & urbanism	•	•						•	49
Cladding Point B.V.	•	•	•	•	•	•	•	•	50
Common City Development BV	•	•			•			•	50
ConverseArchitects by	•							•	51
Cooloo			•			•			51
Copper8								•	52

Name of organisation									
		port	Building materials manufacturing and materials supply	on s etc.	Sustainability of the built environment	Lifespan extension	Construction waste solutions		<u>_</u>
	Design	Digital Support	ding m ufactu erials s	Construction of buildings etc.	tainabi t envirc	span e)	Constructi solutions	e	Pagenumber
	Des	Digi	Buil mar mat	Con of b	Sus buil	Life	Con	Other	Pag
Cyclin B.V.			•						52
Daiwa House Modular Europe	•	•	•	•	•	•	•	•	53
De Bouwkringloop			•				•	•	53
De Jong Business Consultancy BV							•	•	54
De Lijnolieschilder						•			54
Deerns Nederland BV		•			•			•	55
DELVA Landscape Architects & Urbanism	•				•				55
DENS BV					•				56
Desah					•		•		56
Dutch Green Building Council								•	57
EBS European Building Supply B.V.			•	•	•				57
EcoReview		•						•	58
Efko Beton	•			•					58
elk groep				•	•	•	•		59
Equans Nederland					•	•	•	•	59
Europrovyl			•	•					60
Everox		•	•						60
Fiberplast Group			•						61
Fijn Wonen - Van Wijnen	•			•					61
Finch Buildings	•			•					62
Flowbox	•		•						62
FME		•	•		•			•	63
Friso Bouwgroep				•	•	•			63
FRONT	•		•	•			•		64
Future Insight	•	•							64
GEP Water B.V.			•	•	•		•	•	65
Goudstikker - de Vries	•			•				•	65
GreenInclusive			•						66
Greenroads Consultancy B.V.								•	66
Groene Bouwhekken			•						67
GSF isoMAX BV			•		•	•			67
Hans Moor Architects	•	•		•	•			•	68
Haskoning	•	•		•	•	•		•	68
Healthy Workers		•			•	•			69
Hegeman Industrieel Bouwen	•	•	•		•	•			69
Heijmans	•	•		•	•	•			70
Hekstra Bedrijven BV				•	•	•			70
Hendriks Bouw en Ontwikkeling			•	•	•		•		71
Herso circulaire houtbewerkers			•						71
Holland Circular Hotspot								•	72
Hydraloop Systems BV					•				72
Inno Watch		•			•				73

Name of organisation									
	Design	Digital Support	Building materials manufacturing and materials supply	Construction of buildings etc.	Sustainability of the built environment	Lifespan extension	Construction waste solutions	Other	Pagenumber
InSus B.V.						•			73
Inter Matter	•	•							74
Interface			•		•				74
Intermontage	•		•			•	•	•	75
Isovlas Oisterwijk BV			•	•		•			75
J. van Walraven Holding B.V.			•						76
JustNimbus					•				76
Kömmerling Nederland							•		77
Koninklijke Boon Edam - Global Export	•		•	•	•	•			77
KRFT BV	•								78
Leafy	•		•	•	•	•			78
Lj Solutions					•				79
MADASTER	•	•				•		•	79
Martens keramiek B.V.			•						80
Miedema Groep			•						80
Moos	•			•					81
MOSO International BV	•	•	•	•					81
MVRDV	•								82
Nabasco Products BV	•		•			•			82
Natrufied Architecture	•								83
Natural Plastics International			•						83
Nedcam Building Solutions BV			•	•			•	•	84
New Circle B.V.			•						84
NNRD B.V.				•					85
NORNORM	•	•				•			85
NXT Building			•						86
Oarshûs B.V.	•			•	•			•	86
OMRT	•	•							87
Oosterhoff	•	•		•	•			•	87
Pastoor Consult by					•		•	•	88
PEFC Nederland								•	88
Pretty Plastic B.V.	•		•			•	•		89
Protector Guardrail BV	•		•	•		•			89
Rainmaker Holland BV					•			•	90
RAWMAX			•	•	•	•			90
Rebrick			•						91
Recell Group			•						91
Reflect glasfilm					•	•			92
Renset B.V.					•	•	•		92
Respace	•	•	•	•					93
Riwald Recycling							•		93

Name of organisation									
					ē		Φ		
		<b>4</b>	Building materials manufacturing and materials supply	ദ്	Sustainability of the built environment	Lifespan extension	Construction waste solutions		
		Digital Support	Building materials manufacturing and materials supply	Construction of buildings etc.	lity	xten	v no		ē
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ROCKWOOL B.V.			•		•		•		94
Royal Vriesco			•			•	•		94
SAM Panels			•						95
Saxion - lectoraat SAST	•				•			•	95
Sempergreen				•	•				96
Sepawand BV	•		•			•			96
SGS INTRON B.V.		•			•		•	•	97
Silvaluxe				•					97
Smart Cladding Constructions B.V.			•	•	•				98
Solarge		•	•	•	•			•	98
Space&Matter	•	•							99
Stichting Insert		•						•	99
Streetlife BV	•	•							100
SunnyRain Solutions	•				•				100
Superimpose Architecture B.V.	•								101
Sustainer	•	•		•	•		•	•	101
Sustonable			•						102
Team V Architectuur	•	_	_	_	_				102
The Urban Jungle Project	•	•	•	•	•	•			103
The Urban Woods	•			•					103
Thinking Steel International BV				•		•			104
TKI Bouw en Techniek								•	104
TNO		•	•	•	•	•	•	•	105
TONZON BV			•						105
Trivec						•	•	•	106
UC Architects B.v.	•							•	106
UPCOURT	•		•		•		•		107
UPPACT BV Urban Mine BV	•	•		•	_				107
Urban Mobility Systems							•	•	108
van Dijk Advies BV			•	•	•				109
Van Dillen antieke bouwmaterialen							•		109
Van Vuuren Grou B.V.									110
Van Wijnen Gorredijk	•				•				110
Van Wijnen Gorredijk Vandersanden		•		•	•	•	•	•	111
VDL De Meeuw	•	_		•		•		_	111
VenhoevenCS architecture+urbanism									112
Vic Obdam Staalbouw			•	•	_				112
Wind Groep	•				•				113
WWIZ BV		•	•				•	•	113
Zantman Architecten	•								114

### Accu't

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At Accu't, we believe the solution to grid congestion is already driving on our roads. In the Netherlands alone, over 600,000 electric vehicles are in use by 2025. After their first life, EV batteries typically retain 80-90% of their capacity - no longer fit for cars, but ideal for a second life in mobile energy storage.

Batteries play a crucial role in enabling zeroemission construction, even where the grid falls short. But producing new batteries has a significant environmental footprint and depends heavily on overseas supply chains.

That's why Accu't builds mobile battery systems using second-life EV batteries. This approach offers unique advantages for sustainable construction:

Up to 84% lower CO, footprint compared to systems with new battery cells.

Automotive batteries are built for tough conditions - making them extremely robust, ideal for powering cranes and fast chargers on site.

EV batteries have high energy density, even after degradation. Our systems are up to 2x smaller and 3x lighter than conventional mobile batteries.

We offer our systems for both rental and purchase and can have them running on your project within a week.

### Organization profiles



















### ACS

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### Redefining Building Management

AI Control Systems BV is transforming the way buildings are managed with Climatics, a nextgeneration software platform that modernizes and optimizes every aspect of building operations.

Flexible, Scalable, and Hardware-Free

Fully compatible with any HVAC or building management system, Climatics eliminates the need for costly hardware upgrades by delivering a scalable, software-first solution. It's fast to implement, easy to expand, and ideal for everything from single sites to global portfolios.

### Smarter Decisions, Unified Control

By bringing critical tools together in one intelligent platform, Climatics offers organizations a streamlined, future-ready approach to managing buildings and assets more effectively. With real-

time data, centralized oversight, and actionable insights, it empowers facility managers and portfolio owners to make faster, betterinformed decisions.

### Proven Results, Global Vision

The platform meets the latest European BACS (Dutch: GACS) compliance standards and has helped users cut operational costs by an average of 25% through greater efficiency and control. With a proven trackrecord managing over 500 portfolios across Europe, ACS is now expanding globally to meet the rising demand for intelligent, data-driven building control. Climatics is more than an upgrade - it's the foundation for smarter, more sustainable operations at scale.

### Organization profiles























#### Aectual

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## **Aectual**

#### Aectual | The Future of Circular Architecture & Design

Aectual transforms waste into wonder. We are the leading platform for 3D-printed circular interiors, furniture, and architectural finishes — designed with smart algorithms and made from recycled materials.

Our end-to-end system empowers clients to customize, produce, and reprint design pieces made from waste, and with zero waste. A key innovation is our unique takeback service: products are fully recovered, shredded, and reprinted — ensuring a closed material loop. Forbes magazine called it "The Ultimate Upcycling Approach."

Headquartered in Amsterdam, Aectual manufactures locally in the Netherlands and operates from dedicated locations across Europe to reduce transport emissions and maximize circular impact.

Our technology is trusted by global brands as Tiffany & Co., Nike, and Hermès, and worldrenowned design firms including Patricia Urquiola, MVRDV, and Zaha Hadid Architects. In 2024, we proudly received the LVMH Innovation Award for Greentech & Sustainability.

We offer tailored solutions for architects, interior designers, and forward-thinking brands. With over 1,000 projects completed and more than 200 million kg of circular material in use, we turn waste into valuable, high-quality productscombining sustainability with design excellence.

#### Organization profiles



















#### Agrodome B.V.

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#### Agrodome B.V. – The knowledge partner in biobased and circular building

Agrodome is a consultancy and project developer specializing in the construction sector, with a strong focus on biobased and circular solutions. Based in the Netherlands, we operate internationally to support a futureproof construction industry.

#### Tailored advice and guidance

Following the principles of building biology, Agrodome provides expert support in construction projects, area development, natureinclusive solutions, and sustainable procurement.

## Life Cycle Analysis (LCA)

Agrodome makes Life Cycle Assessments (LCAs) and Environmental Product Declarations (EPDs)

following the European and national standards. With clients all over the world. Experts of Agrodome are certified verifiers for the Dutch National Environmental database (NMD) and MRPI | Ecoplatform.

#### Projects and collaborative innovation

Agrodome carries out projects with national and European partners, focusing on innovative developments in the construction industry (Interreg, Horizon, and other international programmes).

#### Development support for better construction products

Agrodome helps producers to enter or upscale in the market by selecting promising applications and improving the environmental footprint of their products.





















#### Alba Concepts B.V.

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Alba Concepts is an innovative consulting and knowledge Consutling & Management company focused on accelerating the circular transition in the built environment. With over 40 experts, they focus on advising on circular real estate and development, circular strategy for organizations. In addition, they are frontrunners when it comes to knowledge development in circular building and integrate circularity in all phases of projects.

With this integral approach, Alba Concepts helps all types of organizations realize circular ambitions and implement sustainable solutions in practice. They guide housing corporations, municipalities and developers in translating these ambitions into practical strategies and projects. And everything mathematically and financially underpinned so that it is actually feasible and doable.

One of their most important innovations is the Building Circularity Index (BCI), with which the degree of circularity of buildings can be objectively measured. They also developed a circular product catalog and calculation models for residual value of buildings.

The combination of technical, financial and policy expertise enables Alba Concepts to translate complex issues into feasible solutions. In doing so, they actively contribute to the realization of a sustainable and fully circular building sector in 2050.

#### Organization profiles



















## **Anker Stuy Coatings**

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Founded in 1898 and proudly rooted in the Dutch province of Friesland, Anker Stuy Coatings is a third-generation family-owned business based in Terwispel. Over more than a century, we have evolved into a trusted name in the national and international coatings industry, serving joinery's, the furniture and interior industry and professional painters.

#### Specialists in wood coatings

Anker Stuy Coatings provides tailored solutions for a wide range of applications within the joinery industry. Covering everything from windows, doors and stairs, to skirting boards. For the furniture and interior industry, our coatings are used on floors, furniture, and kitchen cabinetry. Our product range for professional painters includes interior and exterior paints, available for brushing, rolling, or spraying.

#### Leading through sustainable innovation

We are proud to lead the way with certified biobased coatings. A standout innovation is Aplex Aqua, the first biobased industrial joinery coating in the Netherlands, containing over 50% biobased content. This product range reflects our ambition to accelerate the transition towards greener coating solutions.

#### Wood as a sustainable building material

We strongly advocate for timber construction due to wood's renewable nature, aesthetic appeal, and recyclability. To support this, we have developed fire-retardant industrial wood stains that comply with EU regulations and contain 50% biobased content. Enabling safer use of wood in construction and addressing fire safety concerns.





















#### Antea Group Nederland

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Contractors, governments and project developers face a challenge: reducing CO2 emissions in the construction sector. In addition to the increasing use of electrical equipment in projects, the circular use of building materials offers the solution for CO2 reduction in construction. Circular construction and construction with wood or other bio-based materials ensures a lower environmental impact and timber construction has now become enormously professionalized.

Engineering and consultancy firm Antea Group provides support in many areas. We have all the knowledge in-house to make civil engineering and construction more sustainable: in the field of technology and legislation and regulations. We help clients with their circular ambitions at a strategic, tactical and operational level. From calculating and realizing a raw materials depot

and circular tendering of a building, to calculating the CO2/ECI savings of a project.

We have also developed the ReSource platform (www.resourcehub.nl): a marketplace where materials from government projects are exchanged, but which also offers space for construction companies to participate. With ReSource we limit transport distances and use materials more efficiently.

Antea Group is strongly committed to innovation. In this way we form our vision of the living environment of the future, in which the healthy living environment and themes of blue zones are reflected, and we integrate nature and climate adaptation into the neighborhoods of our future.

#### Organization profiles



















#### Arcadis Nederland B.V.

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Arcadis delivers innovative circular solutions that help clients transition to sustainable and regenerative practices for built and natural assets. Our circular services include material flow analysis, circular design strategies, lifecycle assessments, and the development of circular business models. We focus on optimizing resource efficiency to protect material stocks, eliminating environmental impact by using used or biobased materials and assigning value to what is valuable in a circular economy.

We take immense pride in our circular services. Biobased design is set to become standard practice in a circular economy, as demonstrated by our headquarters in Amsterdam - the first wooden high-rise in the ZuidAs business district. This exemplifies the feasibility of such designs today.

A standout feature of our new circular economy approach is designing with existing resources, such as repurposing train windows. Old train windows have been ingeniously integrated into the design of our national highways' workplace "Kuilwielenbank", proving that circularity and identity are harmonious.

What we deem valuable today may differ in 25 years. In a circular economy, we refrain from introducing new materials, thereby increasing the value of existing resources. Thus, amortizing real estate to zero becomes nonsensical. We are especially proud of our pioneering work in residual value calculations.



















#### ART-e

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ART-E B.V. is a pioneering consortium dedicated to accelerating sustainability in the infrastructure sector by validating and implementing the Asphalt Recycling Train (ART) as a circular maintenance solution. The ART-E enables 100% in-situ recycling of existing asphalt, transforming old pavement into new, high-quality asphalt directly on site. This innovative process drastically reduces the need for primary raw materials, minimizes CO2 emissions, and achieves a low environmental cost indicator (MKI). ART-E collaborates with leading partners such as Urban Mobility Systems to electrify and integrate hydrogen solutions, aiming for a fully CO2-neutral operation. The ART-E method is validated through pilot projects with municipalities and provinces, including Almere, Oss, Gelderland, and Heerlen, and is now included in the National Environmental Database for sustainable procurement.

The process involves cleaning, gradual heating, loosening, homogenizing, and relaying asphalt, all monitored and documented for quality and knowledge sharing. ART-E's mission is to make the ART available to all market parties, foster open collaboration, and consolidate best practices in a shared database. By doing so, ART-E sets a new standard for circular, climate-neutral road maintenance and inspires the sector to adopt innovative, sustainable practices. In 2025, ART-E proudly won the InfraTech Innovation Award for Sustainable Collaboration.

#### Organization profiles

















#### **BCI** Building

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BCI Building is the ultimate tool for the construction and real estate sector to measure, optimize, and report the carbon footprint, environmental, and circular performance of a real estate object or portfolio.

BCI Building is designed to provide insights 'from cradle to grave', meaning in all stages of a building: from design to construction, and from maintenance to dismantling. The tool provides insights in embodied and embedded carbon performances of construction materials and combines them with circularity insights as the origin of raw, bio based and recycled materials and disassembly potential.

and dismantling companies to meet both their social and environmental goals in construction and maintenance of real estate and related financial insight as carbon credit potential and residual value.

#### Organization profiles



















BCI Building is used by architects, developers, construction companies, property owners (housing associations, businesses), government,

#### Bio Bound

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Bio Bound produces circular, biobased paving materials and precast concrete products for use in public spaces, such as concrete paving stones, concrete curbs, concrete tiles, grass concrete tiles, seating elements, street furniture, park curbs, and stairs, as well as large paving slabs for cycling paths.

These circular, biobased concrete products are made using a sophisticated concrete recipe based on alternative cements and the reuse of residual materials such as concrete rubble granulate and elephant grass (miscanthus). Miscanthus is a fast-growing grass species that is cultivated under the flight paths of Schiphol Airport to deter nuisance geese in an animalfriendly way. During growth, miscanthus absorbs above-average amounts of CO, from the air and converts it into natural fibers. Every spring, the

grass is mowed, resulting in large quantities of waste grass. By processing this waste stream in a circular manner in the concrete, the absorbed CO2 is then stored long-term in these concrete products (carbon capture). Thanks to this circular, biobased composition, the environmental impact of Bio Bound products is significantly lower than that of standard concrete products. This is reflected in the low MKI value of the concrete products and the reduction in CO<sub>2</sub>.

Bio Bound products come with a take-back guarantee, laid down in a Take Back certificate. This means that Bio Bound's circular, biobased concrete products are not only sustainable, but also truly circular.

#### **BioBlow**

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Vestjens Straw Products Group (VSP Group) is a family-owned company based in Haelen (Limburg, the Netherlands) that has been active in straw processing for over 100 years. Each year, Vestjens processes approximately 40,000 tons of wheat, miscanthus, and rapeseed straw into high-quality products for the agricultural, construction, and food sectors, including chopped straw, straw meal, and ground rapeseed straw used as semi-finished or finished products. The products are low in dust, clean, and comply with European regulations.

Building on this expertise, Vestjens also developed a circular construction solution: BioBlow, a 100% biobased blown-in insulation made from straw. BioBlow is used in timber frame construction, renovation, and biobased

housing. It is vapor-open, CO2-negative, and fully compostable. The product is listed in the National Environmental Database and has an MRPIcertified Life Cycle Assessment (LCA).

Vestjens collaborates with partners on innovations in fire safety, adhesive technology, and circular construction. In doing so, the company makes a tangible contribution to the transition toward a sustainable and future-proof construction sector.





















#### Biosintrum

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The Biosintrum - located in Ooststellingwerf, a municipality committed to sustainability and climate mitigation - provides the ideal basis for shaping the transition to biobased building. As a leading biobased building (80% biobased materials) and incubator for the biobased economy, we want to play a central role in this social task.

Together with governments, farmers, education, researchers, citizens and companies, we want to develop knowledge: In particular, we are conducting research on wet crops, soil processes and climate-adaptive agriculture; We are working on several Pilots for circular applications of wet crops in biobased construction. We are establishing physical living labs and field trials in and around the Biosintrum. We are also

developing a pilot biobased dry production line to make and test biobased (construction) products for market introduction.

#### Organization profiles



















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Blade-Made supplies high-quality products made from repurposed wind turbine blades. Our aim is to have a positive climate impact by reusing this material, which becomes available in large quantities, and to help customers in their ambition to do the same.

We supply and co-produce

- sound barriers and industrial fences
- tiny, compact houses
- pedestrian and bicycle bridges
- applications in utility construction, like facade
- urban furniture such as benches, planters, insect hotels and bicycle shelters
- playground equipment and playgrounds We invite customers in construction, infrastructure and outdoor space to work with us

on sustainable eco-systems.

Blade-Made objects help to

- Save virgin material
- Buy conscious products
- Save 60-90% on carbon footprint

Due to the energy transition, repowering of existing windfarms and End of Life of firstgeneration windfarms, will cause large quantities of potential waste to turn into secondary material. Repurposing is the option highest on the R-ladder of circular economy, after reuse in the original function. Even when, in due time, chemical recycling becomes a ready to use option.

Blade-Made is an impact driven, steward-owned company.



















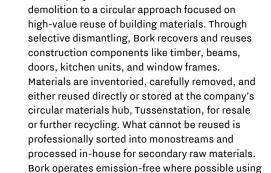


#### Bork Groep - Tussenstation

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electric trucks, cranes, and tools powered by its

Bork Groep is a leading Dutch expert in

demolition, circular deconstruction, recycling,

and environmental remediation. Since 1946,

the company has evolved from traditional

Recent circular projects include the dismantling of 20 homes in Sleen and Schoonoord, ceiling panel reuse for Actium in Assen, and material contributions to eight circular homes in Valthermond. Bork also supports circular innovation in education, such as the Minerva Hub pavilion built from reclaimed materials.

With expertise across the full chain, demolition, reuse, logistics, and materials sales, Bork Groep delivers practical and impactful solutions that reduce waste, emissions, and the use of virgin resources.

#### Organization profiles

















own solar park.

#### Bouwbedrijf ECOHûs Fryslân

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The family business ECOhûs Fryslân was founded by Jouke Abe Tilstra and Siebe Baints in late 2017. After Jouke Abe and Siebe built a concept house together from the need for a different way of designing, constructing, assembling and working together, ECOhûs came into being.

ECOhûs Fryslân builds ecological, low-energy, vapor-permeable prefab homes with maximum design freedom. Specifically, this means a fixed construction system with infinite possibilities. Within the company, the "future" is central. What are we leaving to the next generation? The construction industry is one of the largest manufacturing industries and therefore also produces a lot of waste. For us it is only logical that we take our responsibility in this. We design and build vapor-permeable and energy-efficient

homes with healthy building materials and a healthy indoor climate.

We often get to turn a dream into reality. Building with pleasure, from confidence for the future together with the client is for us a core value with the aim of healthy and resource-conscious building for the future.





















#### Bouwgroep Dijkstra Draisma

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Bouwgroep Dijkstra Draisma believes true value can be found by taking responsibility throughout the total value chain, from designing to constructing and even monitoring, maintenance & service of a project. Located in the Northern part of the Netherlands, BGDD operates an automated and robotised production factory of modular biobased construction components such as facades, frames and rooftops for (non)-residential buildings that are reusable and recoverable.

BGDD has evolved from a traditional and local construction company to a digitally-enabled supplier of energyproducing and CO2 neutral buildings. The company maintains a leading position in the market by taking end-to-end responsibility throughout the construction value chain, enabling BGDD to guarantee pleasure of living for its end clients.

#### Organization profiles

















#### Bribus B.V.

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Bribus has been a leading innovative Dutch kitchen manufacturer for almost a century, specializing in durable and affordable kitchens for the business market. From the modern factory in Dinxperlo, Bribus supplies high-quality kitchens for renovation and new construction projects throughout the Netherlands.

Sustainability is central to the company's operations. Bribus uses as many bio-based materials as possible, such as 95% recycled chipboards and chipboards with biogenic gluing to reduce environmental impact. In addition, production runs on 100% green energy and Bribus is certified at the highest level of the CO2-Performance ladder.

A striking example of the innovative approach is Bribus GEN. A kitchen that uses the Threespine system makes parts easy to replace and extends the lifespan up to 40 years, ultimately lowering cost of ownership.

With Bribus you choose durable and affordable quality kitchens that last for generations.





















#### **Brlint Green Group**

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BrlInt (BrlInt Green Group) creates smart, circular solutions that redefine construction and agriculture for a sustainable future. With a bold focus on bio-based innovation and material reuse, BrlInt empowers clients to build and grow responsibly.

Key innovations include:

- Brilint Organic premium organic fertilizers and soil enhancers made from renewable resources. These products restore soil vitality, improve yields, and support climate-resilient farming.
- Circular paint systems ultra-low VOC, water-based coatings engineered for durability, full recyclability, and easy removal ideal for circular buildings.

BrlInt leads impact-driven projects

worldwide, such as:

- Circular paint factory initiatives in Asia, Africa, Europe, and the Middle East
- The Biobased Smart Village project in Bosnia and Herzegovina (smartvillage.rs.ba/etno-selo-knezica)

By integrating bio-based materials, circular coatings, and design-for-disassembly principles, Brilnt helps shape the sustainable structures and ecosystems of tomorrow.

#### **Building Balance Limburg**

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Building Balance Limburg is a regional frontrunner in accelerating the transition to biobased and circular construction. As part of the national Building Balance network, we focus on connecting supply and demand for renewable building materials by bridging the gap between agriculture, processing industries, and the construction sector. Our services include regional chain coordination, project development, knowledge transfer, and support for scaling up biobased insulation in renovation and new builds.

We collaborate with municipalities, housing associations, contractors, and farmers to create sustainable, circular building chains based on locally grown raw materials like hemp, flax, and straw. Notable initiatives include the 30-30-30 pledge to realize 30% biobased

materials in 30% of buildings by 2030, and large-scale pilot projects under the National Insulation Programme.

With strong ties to educational institutions and frontrunning companies, we contribute to innovation and circular impact — building not just homes, but a resilient regional future.

















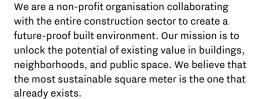


#### C-creators

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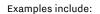


Our core activities include connecting stakeholders across the construction chain, accelerating change within projects and organizations, and challenging the sector to embed circularity and long-term thinking in every initiative.

In each project, we work toward transition accelerators - concrete outcomes that are openly shared to inspire others and scale impact across the sector.







- The Biobased Booster, a practical guide focused on the application of biobased insulation materials to a single building element per project - such as the roof, façade, or floor.
- Roadmap for Future-Proof Area Development, containing tips on how to make each phase of area development future-proof.

Are you working on a project, policy, or innovation where circular thinking could make the difference? Let's explore how we can work together. Visit our website to learn more and join the movement for a circular built environment.

#### Organization profiles

















#### Chainable

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#### Cero: a circular kitchen for a regenerative built environment.

Chainable is a Dutch pioneer in circular kitchen systems, offering fully demountable, repairable, and remanufacturable kitchens designed to retain maximum material value. Cero kitchens are produced using 90% reused and circular materials, manufactured with 100% Dutch wind energy, and sourced within a 200 km radius to minimize environmental impact.

Our products are built for circularity by design featuring biobased and reversible components. Every kitchen is linked to a digital material passport, enabling traceability, reuse, and highvalue recovery throughout its lifecycle.

In collaboration with social enterprises such as the Diamant Groep, we promote inclusive

employment while realizing large-scale rollouts for housing associations and institutional real estate owners. Recent projects include circular kitchen implementations for Woonpartners Helmond (234 kitchens) and a project for Poort6 (76 kitchens).

With Chainable, kitchens are no longer disposable assets but scalable, service-based components in the circular built environment.

Want to know more about circular kitchens? Get in touch with us!



















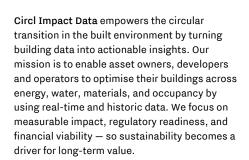


#### Circl Impact Data

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We support clients with a modular platform that maps resource flows (e.g. energy peaks, water use, material degradation) on a per-building or portfolio level. This makes it possible to assess renovation potential, monitor circularity KPIs, and flag opportunities to reduce emissions and increase independence.

Our analytics suite includes digital twins and advanced scenario modelling, helping guide decisions across the building lifecycle from initial design to operation and retrofit. Circl Impact Data is currently involved in multiple housing projects, a national museum redevelopment, and commercial offices.



#### Organization profiles





















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## Organization profiles























To meet today's energy and water challenges, we urgently need decentralized, local solutions that reduce pressure on central infrastructure, absorb usage peaks, and create a more resilient, self-sufficient system. Circl Technologies offers an integrated approach that combines proven technologies in both energy and water management, coordinated by a smart E&W (Energy & Water) management system.

On the energy side, Circl enables local generation through high-quality solar panels-roof, façade, ground -optionally enhanced with wind, wave and/or geothermal for consistent performance. These systems can also integrate existing installations. Circl offers various technologies for year round thermal and electrical energy storage, depending on the characteristics and specific situation.

Circl purifies rainwater to microbiologically safe levels using stable, low-maintenance technology, making it suitable for uses such as showering. Additionally, greywater and blackwater are treated and reused for applications like toilet flushing and plant irrigation. All solutions are modular, future-ready, and designed to support a sustainable and adaptive infrastructure. The intelligent EWMS guards the systems quality, guarantees its continuous performance and optimizes both energy and water usage, all available through an own continuous data- and reporting platform.

Client projects Circl is involved in vary from several hotels, residential areas, business parks, a museum, and various mixed use (residential + office) buildings.

#### CIRCQ

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Circq gives building materials a second life and makes reuse the norm. In this way, we save raw materials, reduce waste and build a circular future.

The range of circular building materials consists of: Ceiling panels, plasterboard, insulation material, acoustic wall panels, system walls, baffles and wooden ceiling panels.

We have registrations in the NMD and can demonstrate that our products have up to 90% less CO<sub>2</sub> impact compared to new products.

All the wood we use is FSC 100% recycled. So from demolition wood, post-consumer.

Circq buys from demolition companies, keeps its own stock and can also supply large projects.

Our stock products are for sale at every specialized wholesaler.

#### Organization profiles













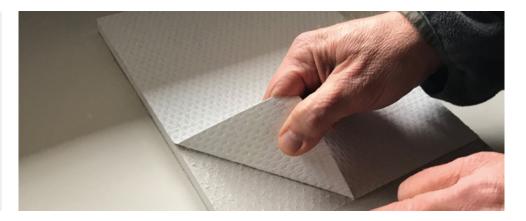




#### CircuWall B.V.

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CircuWall is making the building process accessible for everyone to make circular products and projects with detachable glues and primers named CircuGlue.

#### Why CircuWall?

Approximately 98% of the used products find their way to the incinerator or landfill. We are aiming to reuse or recycle these products. This will save valuable sources and prevent unnecessary CO<sub>2</sub> emissions.

#### CircuGlue

A liquid, solvent-free, and removable glue made from a recycled binder, suitable for any sucking product and easy to apply with a brush, roller, sprayer, or rolling machine. An easy adjustable solvent and formaldehyde free elastically

detachable glue, appropriate for all sorts of products. Based on a recycled waterborne binding agent with no added toxic or irritating chemicals. Detaching is easy by nodding the glued products. The glues are usable on all kinds of absorbing products such as stone, wood, plasters and more. Additionally, a removable primer has been developed that is suitable for a variety of products, including wood, ceramic tiles, plasterboards, and cast floors.

#### The team

An experienced entrepreneur and chemical labs developed the products in 2019. With the ambition to become a provider of circular solutions. The focus on circularity stays the guideline for future developments.



















#### Cirkelstad

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Cirkelstad is a national cooperative that brings leaders in the construction industry together to make circular construction the norm. For 17 years, we have connected public and private parties - from companies to municipalities - with one shared mission: to build without waste and without waste. This means extracting materials from natural resources, encouraging reuse, and ensuring an inclusive, social working, and living environment.

With more than 250 members, an extensive network and our regional Circle Cities, we support the entire building chain with practical tools, valuable knowledge and inspiration. We develop programs and projects that contribute to a circular construction economy and help with government policy issues. This is how

we work together towards a future where circular construction is not the exception, but the standard.

#### Organization profiles





















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# cıtyförster

architecture + urbanism

#### Who we are

CITYFÖRSTER is an internationally active, interdisciplinary partnership of architects, engineers and urban planners, with team members from over ten countries. Led by six partners, we operate permanent offices in Hanover, Rotterdam and Tirana. Through a cross-border competence network, we collaborate with partners across Europe.

We see the city as a forest — a complex (eco)system. Our work spans the design and realization of buildings, urban structures and public spaces. We focus on compact, socially and functionally mixed, well networked climateadaptive cities.

#### Circular Practice in Action At CITYFÖRSTER, we pioneer circular building

across multiple scales. In the Recycling House in Hanover, we used recyclable materials and designed for disassembly. In Zambia, we codeveloped modular school prototypes using locally sourced, renewable materials like clay bricks - adaptable and repairable by the community. In Frankfurt's Climate Quarter, we applied circular strategies at the neighbourhood scale, facilitating shared mobility and promoting local cycles of materials and energy.

Our research Carbon-Based Urbanism expands this approach by addressing the full spectrum of urban emissions to shape climate-positive cities aligned with the Paris Agreement. We're excited to collaborate with partners who share our ambition to rethink the city as a catalyst for climate-positive living.





















#### Cladding Point B.V.

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Cladding Point develops and supplies sustainable sandwich panels, accelerating the shift toward circular construction. This mission led to the creation of Cirpa®: a circular façade panel that is reusable, demountable, and fully traceable. In partnership with Hans van der Meijs B.V., we offer a complete solution including a materials passport and take-back guarantee.

At the end of their lifecycle, the panels are carefully dismantled, valued for their residual worth, and reused — ensuring they remain in the loop. This enables clients to meet circular construction requirements and achieve high BREEAM-NL and LEED ratings.

We focus not on recycling, but on high-value

or performance.

we are setting a new standard in circular façade

solutions — without compromising aesthetics

#### Organization profiles







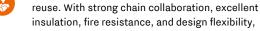












#### Common City Development B.V.

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Community-driven real estate for a circular future Common City believes in community living as a path to a healthier future for people and the planet. With projects like Schoonschip, Jardin and Wij\_Land, we co-create close-knit neighborhoods that balance collective values

with individual needs.

Common City also develops outstanding Circular projects. A prime example is De Ceuvel: a cultural hub created on a former wasteland, developed through participation and upcycling. Old houseboats were transformed into studios and workplaces, fostering creativity and sustainability.

We specialize in guiding Communities from idea to realization. Through workshops, ideation and online advanced tools, we provide structure and expertise. Whether our clients are dreaming of a new way of living or already have a concept in mind, we offer the tools, knowledge and support to bring your vision to life.

Together, we build not just homes and thriving workplaces; we realize sustainable, social and resilient communities.





















#### ConverseArchitects

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masters of new creations

Organization profiles



















ConverseArchitects is a Rotterdam-based architecture and design practice led by Machiel Hopman, specializing in sustainable, circular, and climate-resilient design across all scales from urban plans and buildings to furniture and materials. The firm is known for its integrated approach, combining spatial quality with ecological and social responsibility.

Current projects include the design of a fully circular sports hall, constructed entirely from laminated timber using biobased adhesives. The building integrates biobased structural panels made from regenerative agricultural residues, 100% circular concrete, and a green roof with biobased plastic cassettes and native herbaceous plantings to support biodiversity. Nesting boxes for birds and bats are integrated into the eaves, and rainwater is collected for toilet flushing. The

façade uses recycled and fully recyclable plastics.

ConverseArchitects believes that real transition starts with genuine collaboration. Rooted in the Dutch tradition of collective effort, the firm positions itself internationally not only as an architect, but as a strategic partner and advisor to clients, developers, contractors, architects and manufacturers alike.

We are committed to co-creating a truly sustainable built environment, working integrally across all scales - from urban design and architecture to the materials in our interiors.

#### Cooloo

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Organization profiles



















Cooloo transforms local waste into sustainable furniture, interiors, and construction materials for flooring and facades with its Endless Life® technology.

By combining bio-based binders with residuals from fibers like leather, cork, jeans and olive pits, minerals such as limestone and bricks or even metals like copper, iron and aluminium, Cooloo creates durable, flexible and circular materials. These materials can be sprayed or applied onto any surface, shape or material. Turning waste into tactile, eye-catching surfaces, enabling a more sustainable future without compromising on aesthetics. The result: beautiful materials and products designed for a fully circular life cycle.

Their internationally awarded and recognized materials, products and solutions have been

applied in high-profile projects like Red Bull, DPG Media, TU Delft, Osaka World Expo, and Botanic Tower Brussels. Upcycling more than 10.000 kilograms of waste materials in the process with CO2 reduction of 69% - 94% compared to classic alternatives like re-upholstery or casting floors.

Cooloo materials are alternatives for;

- Upholstery
- Wall and facade finishing
- Casting floors / micro cement
- Beton cire

Using a Product as a Service approach, Cooloo offers Endless Financial Advantages. End Users will face lower TCO and partners like manufactures, (interior) architects and service companies can get income and profits over the product lifetime. Feel free to challenge us.

#### Copper8

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Copper8 is a Dutch consultancy, accelerating the circular economy transition through systemic research and purpose-driven consulting.

In our consulting work, we help organizations move towards circular strategies and develop circular business models. For example, we assist real estate developers in implementing circular strategies to build within their carbon budget. And we advise the national government on regulatory frameworks for circular interventions.

In our research work, we focus on the conditions that enable systemic change. We investigate the fundamental dynamics that hinder the circular economy transition. This systems perspective allows us to identify leverage points, where strategic interventions can create positive impacts and change the level playing field.

Circular construction is one of our key focus areas. In addition to helping architects, real estate developers and construction companies, we also work on initiatives to accelerate the transition across the sector. We contributed to a national framework (The New Normal for circular construction), identified the carbon budget for the Dutch construction sector and investigated the fiscal policies required to create a business case for circular projects.

We collaborate extensively with both private sector and policy makers - as we believe all are required to make the transition work. With the combination of our research output and consulting work, we support decision-makers in bringing the circular economy into practice.

#### Organization profiles















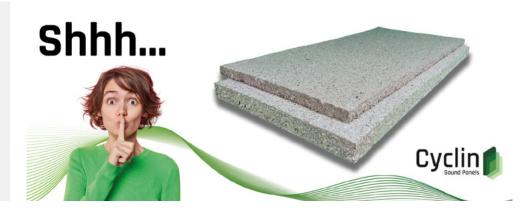




#### Cyclin

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The influence of sound on our daily lives is often underestimated. This is easily explained when you consider that sight is our most important sense and as we all know, sound and its effects are hardly ever visible.

Yet, prolonged exposure to high levels of noise can lead to stress, reduced focus and can ultimately lead to physical ailments. Fortunately, awareness of this is on the rise in modern (interior) architecture and construction.

#### Cyclin®

Cyclin produces high-end sound-absorbing materials and products using recycled newsprint as feedstock. Choosing Cyclin means choosing 100% circularity, an ultra-low carbon footprint and exceptional sound-absorbing performance.

Cyclin's acoustic solutions can significantly contribute to an increased sense of sound comfort and health, while also contributing to a more environmentally friendly, circular world.

Leading projects make use of Cyclin's acoustic materials and products.

#### Interesting facts:

- · There are hardly any places left in urban Europe without excessive noise levels.
- 90% of Europeans live in urban areas and almost 100% of them will eventually suffer hearing damage.
- Hearing damage is cumulative and therefore always increases.
- A comfortable acoustic work environment will significantly reduce sick leave.



















Daiwa House Modular Europe

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50% faster and with 50% less CO2 emissions than

We believe everyone deserves a sustainable, comfortable, and affordable place to live. Our modular homes are designed with circularity in mind: not demolished but disassembled and reused at end-of-life.

traditional construction.

We reuse materials wherever possible and aim for fully circular production in 2050. To achieve this, we optimise the use of steel, concrete, and wood. By analysing the environmental impact across our entire value chain, from production to use

and end-of-life, we continuously improve our sustainability strategy.

Innovation and partnerships are essential to this ambition. We deliver smart housing solutions tailored to clients' needs, while offering residents a comfortable home developed in harmony with people, society and the future. Daiwa House offers not only attractive returns, but also the chance to make a meaningful contribution to solving Europe's housing crisis and making the built environment more sustainable.

Projects like Befu in Utrecht and Bloemkwartier in Tilburg show how modularity and circularity go hand in hand. We welcome the opportunity to explore partnerships and shape a more sustainable future together.























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policies. These networks connect supply and demand for used materials, supported by digital tools and hands-on logistics. Our services include materialflow analysis, stakeholder coordination, temporary storage solutions, and community engagement. Bouwkringloop has supported several Dutch municipalities in setting up practical, scalable systems for circular material

flows, often in combination with local reuse hubs. We believe that the construction transition requires both systemic change and local action. De Bouwkringloop delivers both.

























De Jong Business Consultancy B.V.

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Building Measurable Circular Impact
Circular construction is the future. But how do
you make it concrete, feasible, and profitable?
That question is the starting point for De Jong
Business Consultancy BV. Since 2013, this
Rotterdam-based consultancy has helped
companies in the construction, real estate,
and recycling sectors develop and implement
sustainable business models. The focus lies on
two pillars: the use of secondary construction
materials and compliance with increasingly strict
ESG guidelines.

Where others get stuck in policy ambitions, De Jong translates those ambitions into practice from strategy to implementation, from MKI calculations to competitive advantage in tenders.

#### From Conviction to Action

Founder Edward de Jong started the company from a clear belief: circularity should not be an add-on, but the foundation of future-proof business. "The construction and real estate sectors hold enormous leverage to bring sustainability into practice," he explains. "But that only works if we dare to break old patterns and intelligently integrate new applications."

Instead of offering generic sustainability advice, De Jong Business Consultancy takes a hands-on approach—with a sharp eye for the sector logic of builders, developers, and recyclers, and a keen understanding of legislation and regulation.

#### Organization profiles

















#### De Lijnolieschilder

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## Painting with linseedoilpaint

Linseed oil paint is a 100% natural product which ensures that your wooden frames, doors, gutters etc. stay good 10 times longer. Because the oil paint penetrates the wood and has a rust-inhibiting effect, it prevents wood rot.

This is in contrast to modern paints that put a hard plastic layer around the wood, which dries out the wood and makes it very sensitive to wood rot. In addition, modern paints are responsible for 58% of all microplastics.

Where with modern paints the paintwork has to be done once every 5/6 years, with linseed oil paint once every (at least) 15 years is sufficient.

#### History, production and future goals

Linseed oil paint is a beautiful product that was produced in the Dutch provinces Friesland and Zeeland in the past. At De Lijnolieschilder we work with sustainably produced linseed oil paint from Sweden.

Ultimately, the goal is to produce this locally in the Netherlands again and thus not only make the wood and paint more sustainable, but also to offer arable farmers a good option for sustainable crop rotation. Linseed oil is pressed from seeds of the flax plant and this plant is a soil improver.

For people and nature, linseed oil paint is the best option because it is not harmful, 100% natural and unmatched in durability.



















#### Deerns Nederland B.V.

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Deerns is a highly experienced multinational engineering consulting firm designing state-of-the-art building systems and manufacturing facilities.

We specialise in the design and engineering of mechanical, electrical and piping systems (MEP) and sustainable and smart solutions for real estate, healthcare, airports, data centres, electronics and life sciences. We provide services to tailor our approach to every client's unique needs and specifications across these sectors.

Deerns plays a crucial role in executing sustainable, circular projects for critical performance and has a strong track record in delivering engineering consultancy for high profile projects such as De Parel in de Polder, Kantoor vol Afval, and various healthcare projects including Bravis Hospital.

Using frameworks like Whole Life Carbon, Deerns designs buildings that add value, close loops, restore rather than disrupt and engage with the environment. We strive for a future where we build not just for people, but also for the planet - and we always go the extra mile to create outstanding experiences.

At Deerns, our team of 750+ experts, designers, engineers and project managers combine deep technical knowledge with a clear understanding of our clients' needs and operations to deliver solutions that make buildings work optimally. With 17 offices in 10 countries, and a track record in over 60, we have an in-depth understanding of what it takes to deliver global expertise locally.

#### Organization profiles



















#### **DELVA Landscape Architecture** & Urhanism

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DELVA Landscape Architecture | Urbanism is a leading design office based in Amsterdam, Antwerp and Stockholm, operating at the intersection of landscape, architecture and urban transformation. DELVA believes in designing with, rather than against, the existing landscape placing soil, water and ecology at the foundation of every project.

With a strong commitment to circularity, DELVA integrates nature-based solutions, adaptive reuse, and regenerative strategies in complex urban environments. Our portfolio includes landmark projects such as the transformation of the Marineterrein in Amsterdam into a futureproof, climate-resilient innovation district, and

the redevelopment of the Groene Gordel in Brussels with a focus on restoring ecological and social value.

We work across scales and disciplines — from material reuse in public space to climate-adaptive urban planning - always seeking to unlock the spatial potential of circularity. DELVA builds the landscapes of tomorrow by rethinking today's systems with nature as co-designer.



















#### DENS B.V.

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DENS: Clean Battery Power for Construction
At DENS, we develop battery systems that
replace polluting generators with clean, silent,
and circular alternatives. Our mobile and modular
battery systems are designed for heavyduty use in construction, infrastructure, and
remote operations.

The construction sector faces growing demands for zero-emission solutions. Reliable, off-grid power is often the missing link. DENS fills this gap with plug-and-play battery systems that deliver instant energy without noise or emissions. From building sites to temporary facilities, our batteries make sustainable power simple.

All systems are developed and produced in the Netherlands' Brainport region, at the heart of Europe's high-tech industry. With advanced technology, high energy density, and smart safety features, our systems offer broad possibilities for powering and optimizing operations.

Circular by design, mobile and built to last DENS represents Dutch innovation in clean construction technology.

DENS - Power where you need it.

#### Organization profiles

















#### Desah

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Desah designs, constructs, implements and operates biological decentralised wastewater treatment systems for domestic wastewater, all of which are modular and flexible. We have the following decentralized wastewater treatment solutions:

- · Source separated wastewater treatment
- · Containerised, mobile wastewater treatment
- · Black water treatment
- Operation and maintenance

Our solutions are applicable for the following markets: (new) neighbourhoods, holiday villages, hotels, office buildings, remote settlements, combined sewer overflow and hospitals.

With our systems we treat the water in such a way that you can safely discharge It or reuse It for different purposes like toilet flushing or as irrigation water. It results in drinking water savings and the recovery and reuse of water, energy and nutrients. Energy and heat can be recovered to supply the neighbourhood and the treatment system. Sludge and struvite can be recovered and reused for agricultural purposes.



















#### **Dutch Green Building Council (DGBC)**

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Dutch Green Building Council (DGBC) is a national network organization for sustainable building and renovation. With nearly 400 partners, the foundation promotes sustainability through tools and products that make sustainability concrete and measurable. DGBC focuses on themes such as CO2 reduction (Paris Proof), circularity, health, climate adaptation, social sustainability, and biodiversity. DGBC is also responsible for the sustainability certification BREEAM-NL.

Within the Circularity program, DGBC focuses on three pillars:

1. Making it measurable: DGBC develops methodologies and indicators to make circularity in the built environment concrete and verifiable. These are integrated, where possible, into existing sustainability standards such as BREEAM-NL and Het Nieuwe Normaal.

- 2. Transitioning to a circular (construction) economy: DGBC works to identify and openly discuss the barriers to a circular construction economy. Solutions are sought in collaboration with the entire construction chain, with attention to viable business models.
- 3. Making it applicable: As the national focus is currently primarily on architectural innovations and circular developments in new construction, DGBC is committed to expanding circular solutions across the entire construction sector, including the existing building stock - such as circular maintenance, renovation, and circular installations.

#### Organization profiles



















#### EBS European Building Supply B.V.

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European Building Supply (EBS) develops and supplies high-quality circular roofing materials for both flat and pitched roofs, and also operates as a wholesaler for a selection of other construction materials. We offer both standard and tailormade roof systems and, where possible, opt for bio-based raw materials, such as sugarcane. Our systems are often modular, demountable, and designed for reuse, which minimizes residual waste and environmental impact.

Based in Enkhuizen, EBS actively contributes to the transition towards a circular construction sector. We are deeply committed to chain collaboration and actively participate in various circular partnerships. EBS works closely with municipalities, housing associations, and contractors to realize future-proof roofs that offer social value in addition to environmental benefits. EBS delivers sustainable impact: ecological, economic, and social.

















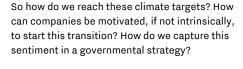


#### **EcoReview**

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By 2050, Europe wants to be carbon neutral.

The Netherlands is ahead of the curve, having integrated environmental impact into tenders for over 15 years. The Environmental Cost Indicator (ECI) rewards sustainable projects with tangible value. EcoReview is at the heart of this system.

EcoReview engages with the entire construction ecosystem - from policy to product: contracting authorities, contractors, suppliers of building materials (concrete, cement, steel), and chemical products. With multiple recognized verifiers in the Dutch National Environmental Database (NMD), we specialize in LCAs, ECI, EPDs, circularity,

and sustainable procurement. Furthermore, EcoReview helps organizations through practical training to make more sustainable choices that also deliver economic value.

In the Netherlands, the ECI-score allows sustainability to be weighed alongside price and quality. This proven approach is now gaining ground internationally.

Our mission is to make reliable and transparent environmental data widely available, so better decisions can be made throughout the ecosystem by any party capable of doing so.

Interested in how we can help your organization pave the road to the future? Please contact us.

#### Organization profiles



















#### Efko Beton

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Efko Beton is a family-run company that manufactures concrete products for the civil engineering sector. Sustainability, circularity, and innovation lie at the heart of everything it does. Since 2022 both the office building and concrete plant has been fully energy neutral. Its concrete mixes have contained 50% less cement for several years, incorporating recycled aggregate and water-based release agents. A strong focus on circularity is also evident in its product solutions - such as nature-inclusive river walls, modular bridges and circular paving slabs.

Efko Beton develops circular paving slabs with decorative patterns for pavements and walkways. These slabs stand out due to their circular production process, reduced labour requirements during installation and minimal maintenance over their lifespan. Thanks to their design, less material is required, and the use of hybrid cement and reclaimed concrete as raw materials lowers the environmental impact. Hybrid cement is 50% free of traditional Portland cement, resulting in a reduced CO<sub>2</sub> footprint. With a design life of 50 years - more than twice that of conventional paving - the slabs are long-lasting. They are highly resistant to damage and require little maintenance, as their design prevents uneven surfaces and the growth of vegetation between joints.

Through intelligent design and conscious material choices, Efko Beton contributes daily to a sustainable future in which liveability takes centre stage.





















#### elk groep

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Organization profiles















#### elk® groep - Innovating Circular and Vital Neighborhoods

At elk® groep, we believe circular construction is the key to creating sustainable, livable neighbourhoods where everyone feels at home. Through our social and technical innovations, we make real impact in renovation and maintenance projects, with circularity and CO2 reduction at the core.

Our unique approach starts with the harvest map, a detailed analysis that assesses the conditions of buildings and the materials that can be reclaimed. This allows us to maximise the reuse of building materials within projects or locally, drastically reducing construction waste. A sustainable winwin for both the community and the environment.

We also focus on innovative solutions, such as bathroom panels made from recycled PET bottles and fully circular, detachable kitchen walls. In addition, we actively incorporate biobased materials like hemp and flax in our projects to further reduce environmental impact and promote natural resource cycles.

With tools like the Building Circularity Index, we accurately measure the circular performance of our renovations, enabling us to build smarter and more sustainably every time.

We collaborate closely with partners and suppliers who share our passion for sustainability, and actively participate in initiatives such as Cirkelstad and Het Nieuwe Normaal. Together, we set standards for circular renovation and build neighbourhoods that are future-proof and vibrant, today and for future generations.

#### Equans

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Equans is a knowledge partner for organizations aiming to accelerate their energy and digital transitions.

We collaborate with companies, governments and institutions to develop solutions that contribute to sustainability, circularity and operational reliability.

Our experts take an integrated approach to major societal challenges such as CO2 reduction, electrification, energy efficiency and digitalization. We combine technical and digital expertise with circular strategies such as lifetime extension, reuse, refurbishment and high-quality recycling. From strategy to execution and long-term management, we help our clients make informed choices that

reduce environmental impact and support the responsible use of raw materials.

Sustainability is a fundamental principle in our approach. We continuously improve and tailor our circular practices to the specific needs of each client and project. This includes minimizing waste, preserving value in material flows and designing solutions that reduce emissions and support climate goals.

As strategic partners, we help our clients shape resilient and future-proof operations that make a meaningful contribution to a low-carbon and circular economy.





















#### Europrovyl B.V.

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Europrovyl B.V. is a leading Dutch manufacturer of PVC window frames, recognized as a pioneer in sustainability. This is evidenced by our low MKI scores in the Dutch National Environmental Database (NMD). Continuously we innovate for circular construction.

A world-first is our use of bio-attributed PVC, a fossil-free alternative that drastically reduces reliance on fossil raw materials and cuts CO2 emissions during the production phase (A1-A5) by 60-90%.

Furthermore, we integrate recycled materials into the core of our PVC profiles, creating a recyclate corein products like the K-Vision Trend.

Another innovation is the introduction of a biocomposite reinforcement core that replaces traditional steel. This lowers CO2 emissions in the production phase by 60-90% and the MKI by over 20%. These sustainable window frames have already been applied in projects.

Europrovyl strives for 100% CO<sub>2</sub>-emission-free production and 100% circularity, making an essential contribution to the circular economy.

#### Organization profiles



















#### everox

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# everox

#### everox - smarter upcycling, stronger foundations

everox is phasing out virgin materials in concrete by transforming waste concrete into high-quality drop-in substitutes for aggregates, sand and cement. Their patented, cutting-edge process combines crushing, ballistic separation, thermomechanical separation, and activation of fines. It has the potential to upcycle over 3 billion tons of concrete waste generated annually worldwide, significantly reducing CO2 emissions and enabling the creation of circular building materials. Successfully demonstrated in 2023, this scalable technology operates reliably in all weather conditions and accommodates varying input quality. It produces sustainable building materials close to the point of use, thereby substantially reducing logistics-related emissions. With strong investor support, including €10 million raised in

everox 2024 Series A, the company plans to open its first full-scale facility in the Netherlands by Q1 2026. The global market for recycled concrete is projected to reach €70 billion by 2030. Led by experienced management and supported by academic partnerships, the diverse everox team offers a pioneering solution that addresses major environmental challenges while creating value and supporting a circular economy.



















#### Fiberplast Group

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Sustainable building materials with character: circular and biobased from Fiberplast Group

As a pioneer in circular building materials, Fiberplast Group from Drachten has been developing and producing innovative solutions based on residual streams for almost 20 years. For us, circularity is not an aspiration, but the starting point. Our products are made from 100% recycled materials, by which we actively contribute to the responsible handling of raw materials and waste.

In fact, Envirodeck's decking boards are among the most sustainable biocomposites on the market. They are composed of 52% hardwood dust (residual material from furniture production), 45% recycled HDPE (a.o. old Kliko's) and 3% organic additives. The material is strong, durable

and available as standard with fire class Cfl with option to Bfl — making it suitable for such applications as decking, jetties, terraces and galleries, even in escape routes with increased fire safety requirements.

For facade applications, RIWOOD offers a futureproof alternative. This second generation rice husk composite contains 15% rice husk (waste stream from the food industry), 26% calcite (residual product from drinking water preparation) and 52% recycled plastic (including from window frame production). The material has a lifespan of at least 80 years and largely achieves fire class B in practical application (EN 13501-1). In addition, it is recyclable up to eight times.

Fiberplast Group — building for tomorrow with today's waste streams.

#### Organization profiles



















#### Fijn Wonen - Van Wijnen

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skilled labour.

Fijn Wonen builds differently

In our fully electric CO2-neutral housing factory - the largest in Europe - we produce complete factory-built terraced homes in a sustainable and efficient manner. Using fewer materials, shorter construction times, less disruption, reduced construction waste, fewer transport movements and smart robotics, we achieve 25-50% lower CO2

With our industrial method of construction, we

reduce our climate impact, contribute to solving

the housing shortage and address the scarcity of

The factory runs on 100% green electricity. Usage of groundwater, heat pumps and advanced robots ensure an energy-efficient production

process. Our terraced homes are reusable, with an average Building Circularity Index (BCI) of 69% and an average disassembly rate of 80%, and can optionally be nature-inclusive. They achieve an energy label of A+++ or higher, even without solar panels. In our living lab 'De Loskade' in Groningen we test innovations such as watersaving technologies, home batteries, for further development of our housing products.

Skilled labour shortage and rapid construction

With just 50 employees, we deliver the output

of 1350 skilled workers. Within a single day we

build a wind- and watertight shell, complete with emissions compared to traditional construction. bathroom, toilet and installations. This enables us to quickly deliver clean, sustainable and high-quality homes, making the current housing market accessible to everyone.



















#### Finch Buildings

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We envision a world where the built environment is part of the solution, rather than the problem. Solid timber buildings from sustainably managed forests are the natural solution, providing a healthy living environment for people and the planet.

At Finch Buildings, we have developed a stacked construction system consisting of prefabricated timber modules suitable for every target group and application. As a studio, two-, three-, or fourbedroom apartment, office, care flat or hotel.

Finch Buildings modules are made of solid timber, the circular building material of the 21st century. Cross-laminated timber (CLT) is durable and eco-friendly and lends itself perfectly to the prefabricated development and construction of apartments. With our modules and working method, we help

housing associations, developers, municipalities, architects and builders, to build faster, better and more sustainable.

Since our establishment in 2014, our high-quality 3D modules have already been used to build almost 1,000 healthy homes in many projects in the Netherlands (status 2025). In doing so, we have saved more than 30,000 tonnes of CO<sub>2</sub>.

We believe that modular timber buildings are the answer for both the climate and the housing crisis.

Just be part of the damn solution.

#### Organization profiles



















#### Flowbox

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FlowBox develops and produces high-quality planters, pedestals, and custom objects made from residual wood from the Dutch timber industry. By giving new life to leftover materials - such as thermally modified Fraké and Radiata Pine - we reduce waste and turn surplus into value. Every FlowBox product is designed and crafted locally in collaboration with a social reintegration workplace, combining sustainability with social impact.

Our approach goes beyond products; FlowBox represents a story-driven concept rooted in circular design, high-quality aesthetics, and practical application in urban and green architecture. We work with architects, municipalities, and housing associations to create tailored solutions for sustainable spaces indoors and outdoors.

From modular planters for rooftop gardens to robust pedestals for community spaces, every FlowBox is built with character and a conscience. Our work helps to reduce CO<sub>2</sub>, support local jobs, and bring circularity into the built environment one planter at a time.



















#### FME

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FME plays a key role in advancing sustainable circular building practices by pairing innovators across the Dutch industry. Our strength is in connecting the providers of circular building solutions to the construction sector, ensuring Dutch-made products and systems end up in all sorts of infrastructure here in the Netherlands and abroad. We strive for a Dutch leadership position in circular building technology in Europe.

Through events for FME members, and collaboration with like-minded organizations, we provide all sorts of practical solutions for businesses. Together with our partner branches we are here to provide your business with advice and opportunities to grow and expand in the field of circular building solutions and systems.

# Organization profiles



















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# Elske Nissen

#### Friso Bouwgroep | De betrokken bouwer ('The committed builder')

Friso Bouwgroep was founded in 1946 and originally comes from Sneek. In recent years, Friso Bouwgroep has developed into a multidisciplinary construction company with offices in the provinces of Friesland, Groningen, Flevoland, Gelderland and Overijssel. Because we have almost all the expertise in-house, we can build almost anything. Think of houses, offices and schools, but also bridges and factories. We are also developers of our own housing projects. In addition, we have two factories where we produce building elements from concrete and wood. We do this sustainably and responsibly. We are a reliable, competent and sustainable partner in the Dutch construction sector. We are at the heart of society and we take our impact seriously. We are

committed to our industry because we believe it is important to pass on the knowledge and love for the profession to new generations. In this way, we literally build the future. Responsible and safe construction of a sustainable living environment is our top priority.



















#### **FRONT**

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#### FRONT

FRONT® is a curated platform for sustainable building materials made from waste, biobased and renewable resources. We work with innovative European producers to bring forward scalable, design-driven products that help the construction sector reduce its environmental footprint-without compromising aesthetics or performance.

Our current product collection includes:

- WasteBasedBricks®: facing bricks made from 60% waste
- Pretty Plastic Panels: façade and roof cladding made from 100% recycled PVC
  - BioBasedTiles: tiles grown with the help of bacteria

- Skip Tile: ceramic tile made of 95% waste, using 50% less CO, and water
- Cornwall: decorative wall panels made from corn husks
- Paper Waste Panels: acoustic panels made from paper industry waste

We serve architects, developers and contractors by providing not just products but project support-offering technical data, documentation, samples, and advice throughout the design and construction process. Our platform helps clients meet circularity and CO2 targets in line with CSRD and future-proof regulations.

FRONT® materials have been used in over 200 projects across 18 countries. We bridge the gap between innovation and real-world application.

#### Organization profiles















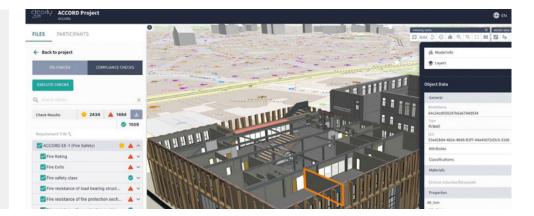




#### **Future Insight**

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Future Insight drives digital transformation in the built environment, fostering smarter collaboration and sustainable practices. We develop web-based software that delivers crucial insights to stakeholders in construction and infrastructure projects.

Our platforms leverage open data standards and prioritize end-users. Clients include public authorities, engineering firms, and contractors such as the municipality of Rotterdam, the municipality of Leeuwarden, the Ministry of Economic Affairs of Estonia., and contractors as Heijmans and Siers.

Our solutions support circular construction by simplifying complex processes:

Clearly. Hub: A central, secure platform that connects data and applications - such as BIM, 3D models, and simulations — enabling integration of geographic, environmental, and material data. This synergy supports better decisions and accelerates the transition to a circular economy.

- Clearly.Projects: An online platform for living environment projects, facilitating seamless collaboration and information exchange.
- Clearly.3D-City: Enables advanced 3D city visualizations, aiding circular urban planning.
- Clearly.BIM: Web-based BIM software that automates design assessments and promotes reuse and resource efficiency from early project stages.

Our tools help track material passports, repurpose construction waste, and optimize logistics for circular infrastructure. We enable clients to meet sustainability goals through better data, design, and execution.



















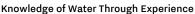


#### GEP Water B.V.

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With 25 years of expertise, GEP has become a key supplier of systems for rainwater, greywater, drinking water, and wastewater.

GEP Water Management offers a wide range of climate-adaptive solutions for the use, buffering, infiltration and delayed discharge of rainwater.

With locations in Belgium, Germany, and the Netherlands, we combine innovation, market knowledge, and strong product development. Under our brands - Varitank Rainwater Tanks, Trident Rainwater Filters, and IRM Water Managers — we deliver a full range of products for water-efficient projects.

GEP also supplies systems for wastewater, greywater and drinking water such as, for example, Break tanks, all you need for decentralized water management.

Moreover, GEP continues where others stop: we are constantly working on new products and systems to provide innovations for the ecological needs of today and tomorrow.

A recent example is Hoost, a unique apartment complex in Knokke-Heist (Belgium). It features a large rainwater reservoir, used for toilet flushing and stormwater buffering with delayed discharge. To ensure steady water pressure, a GEP pressure booster with a triple water pump is installed. The system is managed by the IRM-7H Watermanager, which monitors water levels in both the break tank and the reservoir.

Hoost is not just a striking building, but also a showcase of smart, sustainable water use. This reflects GEP's core belief: "GEP harnesses the potential of rainwater!"

#### Organization profiles









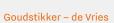












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• goudstikker | de vries

At Goudstikker-de Vries we have been providing structural engineering services since 1954. Our team consists of structural engineers and draftsmen across offices in Almere, Amsterdam, Assen, Emmen, s 'Hertogenbosch and Valencia (Spain).

Our expertise ranges from designing traditional solutions such as concrete and steel to more innovative and bio-based solutions such as timber structures for residential and industrial projects such as office buildings. Our projects are mainly realised in The Netherlands, with some projects overseas.

In the last ten years we have moved our focus to the design of sustainable structures. This can be achieved through flexibility and adaptability in structural design, but also through the efficient

use of materials like timber, recycled steel and recycled aggregates in concrete.

Additional to the focus on recycled materials, we also aim on re-using materials like columns and beams. Hence, we challenge ourselves to design circular structures with re-used materials like the Upcycle Centre in Almere and the ROC Friese Poort in Leeuwarden (both NL) or timber structures that can be completely dismantled and reassembled.

In the last few years, we have completed a variety of circular and timber structures, and the additional efforts, convincing stakeholders, and innovation are well worth it. Our team is thriving in this field!





















#### GreenInclusive

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## GREENINCLUSIVE

Natural products

GreenInclusive develops local, circular value chains for the built environment by transforming Dutch-grown industrial hemp into high-performance building materials. Our flagship product, Hempwool, is a biobased insulation material that stores CO2, improves indoor air quality, reduces energy consumption in buildings, and is fully recyclable. Working closely with farmers, processors, housing corporations, and builders, we bridge agriculture and construction to enable low-impact building at scale.

Our services range from cultivating natural raw materials in partnership with the agricultural sector to regional processing, product development, and market activation. In 2026, we will open the first hemp processing hub in the Northern Netherlands, where we will process fiber hemp and produce biobased building materials.

Projects include the Fryske Vezelhennep Deal, where over 30 stakeholders committed to insulating 1000+ homes with Hempwool, and the use of our materials in biobased housing and public buildings. GreenInclusive is a frontrunner in driving systemic change through nature-based materials and strong regional cooperation.

#### Organization profiles



















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# GREENROADS

Greenroads Consultancy B.V. is a sustainability consultancy based in The Hague, the Netherlands. We specialize in translating complex European sustainability regulations into practical, actionable strategies for companies in the construction and real estate sectors. Our expertise lies in helping organizations align with the EU Taxonomy, implement the principles of EU LEVEL(s) and develop circular building strategies that focus on responsible material selection, design for disassembly and long-term value creation.

With a strong understanding of both technical building processes and evolving regulatory frameworks, we act as a strategic partner for developers, asset owners and construction firms navigating the green transition. From portfoliowide ESG strategies to project-specific support, our work bridges the gap between policy and

practice. Greenroads is committed to accelerating circularity in the built environment by making sustainability measurable, manageable and profitable.



















#### Groene Bouwhekken

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Groene Bouwhekken integrates circular construction principles with measurable social impact. As a PSO 30+ certified enterprise, the company provides employment pathways for individuals facing labor market barriers. Through partnerships with social workshops, participants receive training in production, assembly, installation, and maintenance of fencing systems generating social value across the supply chain.

The modular systems exemplify ecological design: manufactured from PEFC-certified Douglas fir, engineered for reuse, repair, and minimal waste. Configurations incorporate integrated planters introducing vegetation to construction environments while supporting urban biodiversity.

Implementation spans diverse sectors and applications:

Construction: long-term urban projects benefit from green perimeter solutions transforming construction sites from visual nuisances into community-positive installations, reducing complaints while maintaining efficiency. Infrastructure: street-level utilities requiring frequent reconfiguration utilize modular systems designed for rapid deployment, creating organized pedestrian flows while minimizing disruption. Renovation: multi-story projects in dense contexts employ integrated planting systems to soften construction impact, demonstrating community commitment during displacement periods.

The company delivers construction environments that are more inclusive, ecologically enhanced, and aligned with circular economy principles - achieving performance through integrated social and environmental value.

#### Organization profiles



















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isoMAX

GSF is the world's first glass company to develop a fully circular production method for insulating glass. Under the brand name isoMAX, we give high-quality used insulating glass a second life, significantly reducing the need for raw materials and energy-intensive production. Our innovative isoMAX Circutherm system combines top-tier thermal performance with a drastically lower environmental footprint — up to 70 — 95% less CO<sub>2</sub> impact compared to traditional glass.

Our circular glass solutions are CE-certified and meet the NEN-EN 1279 standard, ensuring the same quality and durability as new glass. We work with housing associations, contractors, municipalities, and property managers to deliver glass projects that are 50-100% circular, depending on the required insulation value (U-value).

By harvesting and reprocessing old glass, we close the loop and contribute to the transition from a linear to a circular economy. With isoMAX, GSF is shaping the future of sustainable construction by transforming yesterday into tomorrow.















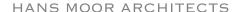




#### Hans Moor Architects

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Engineering is orchestrated by harmony, serving the citizens with sustainable solutions. Architecture shapes the energy of the human heart.

Hans Moor Architects is pioneering new visions in architecture with the comprehensive concept of Smart Hood Architecture. This vision embodies a contemporary spatial and economic circular concept for sustainable buildings, representing a unique emotional connection for both individual and public spaces. The key to this renewal lies in the innovative, circular and technical solutions integrated into architecture, which can drive people's spatial, economic, and emotional progress. The vision represents space, not only in terms of material reuse, but also in terms of consciousness and connection with design. One of our missions is to build concepts of Smart

Hood Architecture in the Gulf Region, as one of the founding partners of the PIB cluster Climate Neutral Real Estate. In our opinion, the cooperation of high-quality innovation partners is crucial for developing new circular and CO2-neutral buildings.

#### Projects:

- Designing sustainability and lifestyle buildings using wind and water machines for architecture: 2025-2026, engineering a prototype in the UAE of a public space with heat reduction in a combination of food
- Collaborating with master students of Utrecht University of Applied Sciences on Data Driven Design, 2025-2026, developing a queryable AI-chatbot for cooperation and energy flow in Smart Hood Architecture.

#### Organization profiles



















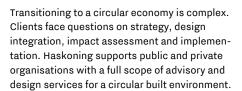


#### Haskoning

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Our experts help define ambitions, contribute to policy making, map material flows, and translate sustainability goals into feasible concepts. We integrate circularity in spatial planning, infrastructure, real estate and water systems. Services include whole life carbon and CO, footprint analysis (scope 1-3), design impact studies (MPG, BCI, embodied carbon), material passports, urban mining and circular business cases.

In our projects, we focus on creating resilient and low-carbon solutions. For Maastricht UMC+, we mapped CO<sub>2</sub> impacts across the hospital portfolio. An integrated circular design was delivered for Tilburg University's new education building. Together with Rijkswaterstaat, we develop reusable bridges, sluices and viaducts. We also lead by example: our new office in Delft sets a high standard for circular workplace design and puts our principles into daily practice.

Our strength lies in systems thinking, stakeholder engagement and data-driven advice. We empower clients to act on circularity, with measurable results.



















#### **Healthy Workers**

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Measure → Monitor → Improve

We make every building smart, healthy & sustainable.

## healthy workers

Healthy Workers manages over 3,000,000 m<sup>2</sup> of real estate across Europe, with 200,000+ connected data points, including portfolios from VORM Holding, NL Asset Management, Equity

97% of our clients achieve a positive ROI within the first year — simply by improving how buildings are managed.

Estate, and Schroders Capital.

# healthy workers

## Healthy Workers — Smart, Sustainable, and Healthy Buildings

At Healthy Workers, we believe every building can be smart, sustainable, and healthy. Our software-first ESG platform gives real estate owners and managers real-time insight and control over energy use, climate performance, and building operations — helping them reduce costs, meet ESG standards, and drive impact without costly renovations or complex integrations.

We take a full-service approach: from implementation to impact, we align all stakeholders and actively guide clients throughout the process. This is how we accelerate time-to-value — not just through technology, but through partnership and ongoing support.

#### Organization profiles

















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Hegeman Industrieel Bouwen is part of Hegeman Bouw & Infra, a Dutch construction company with a strong track record in circular and industrialized building. We specialize in modular timber schools and demountable office buildings, with a focus on flexibility, reuse, and future value.

Our approach to circular construction is both strategic and hands-on. We design systems that can grow, shrink, or be relocated as needs evolve. In doing so, we reduce material waste, limit emissions, and create healthier environments for users. Recent projects include Mandemaat in Assen, a fully demountable wooden office building, and several modular school buildings that prioritize climate-conscious design, quick on-site assembly, and adaptability over time.

Our mission is to industrialize circular building — not by copying the past, but by designing for the future. We believe in smart collaboration, open innovation, and long-term value for society. That is how we build what matters.

## Selected projects using 2D industrialized timber construction:

- Het Schoolvoorbeeld: circular schools in Amsterdam — Azalea (3,400 m²) & NDSM (3,600 m²)
- Mandemaat, Assen: demountable office building (16,000 m²)
- Temporary traffic control post: flexible government facility (700 m²)



















#### Heijmans

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# heijmans

Royal Heijmans N.V. is a listed company combining property development, construction & technical services, and infrastructure in the fields of Living, Working and Connecting. Founded in 1923 as a family road-building business, we have evolved into a leading Dutch developer and builder, creating projects for home buyers, companies, and government entities. With around 5,500 employees and a network of dedicated partners, we design and deliver integrated solutions that shape the spatial environment for generations.

Circular construction is a key pillar of our sustainability strategy. We aim to reduce our own CO2 emissions, use raw materials and resources as efficiently as possible, and reuse them wherever feasible. From modular and demountable buildings to bio-based materials

and urban mining, we embed circular principles into our projects and supply chains. We actively collaborate with colleagues, clients, and partners to achieve shared climate goals—building not only for today, but for a future where living, working, and connecting can thrive within planetary boundaries.

#### Organization profiles

















#### Hekstra Bedrijven BV

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We are Hekstra. A healthy family business where everyone feels at home. We achieve this by amazing our customers, connecting with the right partners, and doing things differently in our work. But above all, by doing business from the heart and delivering true craftsmanship. Our team is made up of doers, risk takers, and real go-getters. Daring minds full of creativity who amaze us every day. Go-getters who think outside the box, occasionally stumble, but always get back up. And doers who roll up their sleeves every day and take responsibility for themselves, for each other, and for the future.

In 2025, Hekstra celebrates its 100th anniversary, and it's time to return to our roots. The foundation of our company was laid in 1915, when roofs were first covered with locally sourced thatch.

Since then, we have grown into a full-service construction company for building, renovating, roof restoration, and thatching. By using honest and natural materials, we're not only building sustainable homes, but also a healthy future for our family business.

In recent years, we've made great steps as a construction company. We've completed numerous bio-based roof renovations, using hemp fibre insulation. We also reuse materials and collaborate with partners who share our values. With a strong focus on sustainability, Hekstra aims to be a leading example in the construction industry for the next 100 years.





















#### Hendriks

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Hendriks builds sustainable, circular living environments for current and future generations. We design and build affordable, sustainable homes using circular and biobased materials such as wood, hemp and bamboo. By scaling up modular production in our own factory in Oss, we make sustainability accessible for everyone - today, not just tomorrow.

At this facility, we manufacture façades, dormers and storage units from reclaimed materials, sourced through careful demolition analysis. These components are directly applied in our own housing projects, proving what's possible when innovation meets practice.

We help clients achieve their sustainability goals through buildings with minimal CO, emissions,

maximum reuse and high disassembly potential. Collaborations with partners like NXT Building enable large-scale circular construction: concrete is recycled, roof tiles become new facade bricks, and demolition becomes innovation. This allows us to build faster, cleaner and smarter - in harmony with nature, people and the climate.

We are proud to co-develop the TerugWINwoning in EcoFab — a national collaboration focused on biobased, circular and scalable housing. Through smart design and digital workflows, we reduce CO, and maximize reuse.

At Hendriks, we believe future-proof construction starts now. That's why we make sustainability both affordable and scalable. Our ambition: a fully waste-free construction process by 2030.

#### Organization profiles





















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Herso Circular Woodmakers craft stunning biobased, circular furniture, floors, staircases, window frames, and wall panels-all made from pure waste wood. Our timber comes from recycling centers where it's harvested, demolition sites, industrial scrap wood-and yes, we even give new life to the interiors of sweet old ladies who've moved to assisted living and couldn't take all their furniture with them.

Normally, this wood would be burned. But with 750 cubic meters of it in our hands, we could easily support four full woodworking careersor, if you did burn it, it would power a city like Amsterdam for two and a half hours. That's the drive behind everything Herso does.

When processed through our circular method, the wood can last another 140 years, earning

its title as "the antique of the future." Waste wood is never uniform, so working with it always demands a different approach. That's why we craft everything by hand—and it's also why we're so incredibly flexible in our production, as well as in the diversity of the pieces we create. Until last year, we had never made a single window frame. Fast forward six months, and we've produced and installed over 10 kilometers of them-using reclaimed glass panes salvaged from old office buildings.

Herso was the first in the world to earn the FSC 100% Recycled certification, proving that we use nothing but waste wood-absolutely nothing else.





















#### Holland Circular Hotspot

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## Our Mission: Creating Circular Opportunities Across Borders

We foster circular opportunities between the Netherlands, Europe, and the wider world.

What We Do: Scaling Circular Impact Globally Holland Circular Hotspot is a public-private initiative that accelerates circular economy solutions worldwide. We connect businesses, governments, and knowledge institutions, offering tailored support based on deep sector expertise, international experience, and a strong global network.

Looking to scale your circular innovation globally? The built environment is one of our top priorities - and crucial to achieving climate-neutral cities. We champion circular innovations in building design, materials, and digital tools

like building passports. Our approach includes R-strategies such as repurpose, remanufacturing and recycling, alongside scalable practices like bio-based construction, high-value reuse, circular renovation as well as industrialised building methods.

We also help shape enabling circular and climate policies and support practical, on-the-ground action - empowering stakeholders across the value chain to build more resilient and futureproof environments.

Let's build the future, together!

#### Organization profiles



















Timo Sleegers Oostergoweg 9 8911 MA Leeuwarden

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#### Enjoy comfort. Save water. Act smart.

Hydraloop is an internationally recognized, multi-award-winning leader in certified water recycling and circular water solutions. We empower households, businesses, and residential communities use water sustainably, without compromising on comfort.

Our mission? To transform water use by making recycling simple, efficient, and a natural part of daily life.

Hydraloop's smart, app-connected water recycling systems collect and treat greywater from showers, baths, washing machines, and condensation water. This enables 25-45% savings on domestic tap water use. The treated water is safe, certified reusable water that can be used

again for toilet flushing, laundry, garden irrigation, and/or pool top-up.

The Hydraloop Upfall Shower delivers a luxurious rain shower experience of 35 litres per minute, while using only 2-3 litres of fresh water per minute. Thanks to real-time recirculation and purification, it reduces both water and energy consumption by up to 80% - lowering total household water use by 25-35%.

Hydraloop makes sustainable living both easy and comfortable. You use every drop more intelligently, avoid waste, reduce energy costs, and contribute to a future-proof living environment, without sacrificing daily comfort.

#### Organization profiles











**HYDRALOOP** 











#### Inno-Watch

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Inno-Watch, developed by Urban Mobility Systems (UMS), is an advanced digital platform designed to optimize battery management and sustainability for electric vehicles and energy storage systems. Inno-Watch provides real-time monitoring, in-depth analytics, and proactive notifications, empowering end users, fleet managers, and technical experts to maximize battery performance, reduce maintenance costs, and minimize environmental impact. The platform features user-friendly dashboards tailored to different user groups, offering insights into battery status, CO2 savings, lifecycle, and predictive maintenance needs. Inno-Watch is built as a scalable web application with a robust back-end architecture, ensuring secure data processing and flexible integration with various battery and drive systems. The roadmap includes phased development, starting with a

Minimum Viable Product (MVP) and expanding to include AI-driven predictive analytics and mobile applications. By consolidating operational expertise and best practices in a shared database, Inno-Watch enables organizations to make informed, sustainable decisions and supports the transition to a circular, climateneutral future. With a strong focus on privacy, security, and compliance, Inno-Watch sets a new standard for smart, sustainable battery management in the mobility and energy sectors.

#### Organization profiles















#### Insus B.V.

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#### Insus B.V.

At Insus B.V. in Duiven, we believe that real innovation begins with a challenge. For us, that challenge was the growing mountain of PU (polyurethane) waste. We kept asking: who's going to solve this? When no one else did, we took the lead. The drive that sparked our journey back then still powers us today. Because at Insus, we are motivated by materials and by the urgent need to use them more responsibly.

Our clients don't just choose us for our insulation boards. They choose us for our mission. We are the first company in the Netherlands to recycle PU foam on an industrial scale. That makes us not only a producer, but a pioneer in circular building. And yes, it's a bold ambition: to turn waste into value while remaining commercially sound. That's why we developed our own closed-loop

recycling system: recovering PU rest materials (post production, installation and end-of-life) and transforming it into renewed raw materials. To be used in full recyclable insulation products.

We take responsibility for the entire chain, from waste collection to delivery of new boards, ensuring consistent quality and a significantly lower environmental impact. At Insus, we're not just making insulation. We're building towards a future where circularity is the norm. It may still be early days, but the foundation has been laid, and we're ready to scale up.

















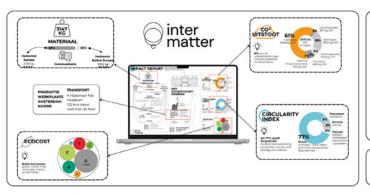




#### Inter Matter B.V.

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shows you how.





Inter Matter is a Dutch platform that supports circular interior and construction practices by making the impact of materials visible and actionable. We connect supply and demand for reused materials and highlight sustainable new materials through our online library, helping professionals make informed, responsible choices.

We offer impact measurements that quantify environmental savings (CO2, Ecocost and material use) and visualise this data in clear, compelling formats - used in both public and private sector projects. For example, in the Food for Thought exhibition at the Scheepvaartmuseum, we visualised the impact of material choices to engage visitors and stakeholders alike.

Our Impact Calculator supports circular strategies in office interiors, cultural projects, and pavilions - including for the Rijksmuseum, Teylers Museum, and the biobased Growing Pavilion by Company new Heroes.

Inter Matter works closely with platforms like Jutplaats.org and provides strategic, creative, and technical support to scale circular construction - in the Netherlands and internationally.

#### Organization profiles













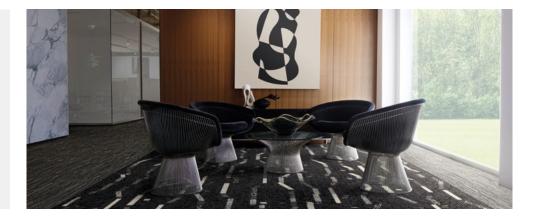




#### Interface

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## Interface<sup>®</sup>

Interface is a global flooring solutions company and sustainability leader, offering an integrated portfolio of carpet tile and resilient flooring products for commercial spaces. A decades-long pioneer in sustainability, Interface is "all in" on direct carbon reductions and carbon storage, not offsets, as it works toward achieving its verified Science-Based Targets by 2030 and its goal to become a carbon negative enterprise by 2040.

#### Circularity in Product Design

Carpet Tiles made in Scherpenzeel contain on average 88% recycled and biobased materials. Some even already reach 93%. With this Interface Carpet Tiles have the highest circularity in product design which is connected to the carbon footprint of the product. Interface offers the lowest carbon footprint Carpet Tile products from resources through manufacturing, in the industry,

independently verified via Environmental Product Declarations (EPDs). Considering modularity Interface has been leading with the invention of the TacTiles®; a glue free installation system. An important element considering Circular Economy as well is quality. Interface Carpet Tile products have 15 years of warranty.

#### Reuse, Recycle

Since 1995, we offer our ReEntry take-back program, this is how we handle and reprocess our used flooring in the best way possible. Either via ReUsing the Carpet Tiles with local business and charities, or recycling our CQuestbacked products into new Carpet Tiles or high performance engineered plastics that can be used for new products.



















#### Intermontage

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Intermontage is a leading company specializing in creating total interior solutions, with a focus on partition walls, system ceilings, and custom interior construction. We offer a range of products and services, all under one roof.

#### **Products and Services**

Intermontage sells, produces, and installs:

- Luxury partition walls
- Glass partition walls
- Metal stud walls
- System ceilings
- Custom interior elements

#### Sustainability and Circularity

SLIM Program: Second Life Intermontage focuses on circular construction by reusing existing system walls, custom interior, and furniture.

Sustainable Materials: We use sustainable wood with certification and reuses materials from construction via the circular marketplace Insert. Innovation: Intermontage works on recycling waste products into new products. Certifications: We hold various certifications that underscore the CSR policy, including ISO 9001:2015, ISO 14001, VCA\*\*, SCL level 3, FSC®, PSO level 2 and PEFC™.

SDG Netherlands: We have signed the SDG Netherlands manifesto, committing to a sustainable supply chain and achieving the Sustainable Development Goals.

Net Zero: Sbti goal is to be emission free by 2030.

#### Organization profiles



















#### Isovlas Oisterwijk BV

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Isovlas is a leading Dutch supplier of biobased insulation solutions, with over 25 years of experience in developing high-quality building products for roof, wall, and floor insulation made from flax fibers. Rooted in nature and driven by innovation, Isovlas delivers healthy, highperformance materials that support circular and sustainable construction.

Our flax-based insulation is breathable, moistureregulating, and fully recyclable - ideal for energy-efficient and environmentally responsible buildings. In addition to insulation, we offer modular interior systems that enable fast, flexible, and low-waste construction methods. These systems can be delivered with a high-quality finish, tailored to the customer's demands.

Isovlas solutions are suitable for both new builds and renovation projects. We work closely with public and private property owners, architects, maintenance contractors, builders, and roofers to provide certified, proven products that meet leading sustainability and building standards. Our materials are widely available through an extensive network of building materials dealers across the Dutch market.

We aim to link local cultivation of (flax) fibre crops to large-scale application of biobased insulation in the Dutch market.

At Isovlas, we believe the future of construction lies in regenerative materials and smart, naturebased design. With a strong focus on quality, comfort, and ecological value, we help create spaces that are better for people—and the planet.





















J. van Walraven Holding B.V.

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walraven

Walraven is a solution partner in the global installation market. Its purpose is making a sustainable difference by building a multinational with a heart. As a family-owned business founded in 1942, long-term thinking comes naturally. Today, Walraven operates globally while maintaining its original mission to develop, manufacture and sell simple, yet smart product systems and services. Many of Walraven's product solutions are designed to be modular, allowing for easy assembly and disassembly to enhance the health and safety of installers on construction sites. Walraven products may be small compared to the often large projects they are used in, yet these small parts can make a significant difference. When designed, manufactured, and supplied with care, they can save time, enhance durability, and generally make the work of installers much easier and more efficient.

Steel production requires substantial energy, yet it contributes to the circular economy through its durability and recyclability. Moreover, the modular Walraven Yeti® rooftop solutions, used for the installation of e.g. heat pumps, chillers, and solar panels, comprise 98% recycled plastics. Walraven's starQuick® modular clamps contain cutting waste. Environmental Product Declarations (EPDs) are available to demonstrate the impact of Walraven RapidRail® and Walraven RapidStrut® steel rail systems. In 2024, Walraven received an EcoVadis Bronze medal in recognition of its sustainability efforts.

#### Organization profiles

















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JustNimbus helps make buildings more sustainable by collecting and reusing rainwater in smart and simple ways. Our system captures rainwater from roofs, stores it in flexible water tanks, and uses it for everyday purposes such as flushing toilets, doing laundry, and watering gardens. This helps reduce drinking water use by up to 50% and supports more circular water use.

Our solutions can be applied in both new construction and existing buildings, making them suitable for a wide range of residential and commercial projects. We have installed systems in countless homes and support large-scale developments across the Netherlands. One example is a new neighborhood in Harderwijk, where 170 homes are equipped with our rainwater system, saving thousands of liters of water each year.

JustNimbus is part of Joosten Groep, a Dutch company specialized in water management and climate-adaptive infrastructure. Together, we contribute to greener, more resilient urban areas through practical and scalable solutions.

Our rainwater systems are low-maintenance, fully automatic, and easy to install. With smart monitoring tools, users can track their water savings in real time. We offer future-proof technology that supports circular building and reduces the strain on public water systems.





















#### Kömmerling Nederland

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Circular Construction with uPVC Window Frames Kömmerling Netherlands is part of the globally active profine Group, a specialist in uPVC window systems. In addition to supplying high-quality systems suitable for every architectural style, we have been pioneers in sustainable and circular business practices for many years.

This means: responsible use of materials, closed-loop, in-house recycling facilities, use of renewable energy, and material innovations aimed at reducing the depletion of natural resources. Together with our Dutch partner window frame manufacturers and recycling partners, we have established a true closed-loop recycling system. This process is certified under the Kiwa Covenant for Circular Entrepreneurship. In 2024, the Kömmerling Recycling Program collected 1,851,411 kg of uPVC from old window frames and offcuts. This resulted in a savings of over 3 million kg of CO<sub>2</sub> compared to using new material. All of this material is reused in our own window profiles.

We continue to innovate with bio-attributed PVC, transparant material flows via Madaster, and circular strategies in collaboration with Turntoo. Our life cycle analyses and environmental cost indicators are included in the National Environmental Database (NMD) and demonstrate not only that we are ready for the new Construction Products Regulation, but also that Kömmerling products have a proven low environmental impact.

#### Organization profiles



















Bas van Vroonhoven Ambachtstraat 4 1135 GG Edam

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At Boon Edam, we create entrances for life. With over 150 years of experience, we are leaders in secure, sustainable, and energy-efficient access solutions. Our innovative products, including revolving doors, security gates, and turnstiles, serve industries such as government, healthcare, banking, and data centres. Combining safety, ease of use, and elegant design, our solutions integrate advanced technologies like biometrics and facial recognition for optimal security. Our commitment to sustainability is reflected in our retrofitting services, which extend the life of existing installations and contribute to a circular economy. By playing a fundamental role in a healthy building's ecosystem, we ensure that access management remains secure, comfortable, and sustainable for the future.

















#### KRFT BV

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# **KRFT**

Architecture studio KRFT combines sensitivity and pragmatism with radical sustainability. Our projects are transformative. Rooted in their environment and building on the existing context, they are robust, timeless and future-oriented. We work in the public domain as well as in the commercial sector. Driven by social and environmental urgencies, we create symbiotic places to live, meet, learn and play. By encouraging architecture to outgrow its context, we create living environments that are made to stand the test of time.

KRFT operates in the United Kingdom, Belgium and the Netherlands on a divers portfolio. Next to public, cultural buildings we design residential projects and mixed use buildings in existing complex urban context.

Thanks to our diverse portfolio and international experience we are able to implement our broad knowledge of our team into every project making sure we design flexible, adaptive, sensitive yet bold future proof buildings.

Due to our experience in designing Paris Proof buildings and our knowledge in BIM we are able to monitor the carbon impact of our designs from the first stage on throughout the whole process.

#### The joy of making

Our design process is a search for the magic in materials and their composition. We are constantly researching their potential and their sustainable impact. In our workshop, we place the act of making at the core of our practice, aiming for maximum craftsmanship and minimal environmental impact.

#### Organization profiles



















#### Leafy

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Leafy develops modular, biobased green façade systems that transform buildings into living ecosystems. Our living walls are designed for both new and existing buildings and consist of biobased materials such as bamboo fiber composite or FSC-certified wood. Each panel contains a regenerative substrate with active soil life (microorganisms, fungi) and a passive irrigation system that requires no pumps or sensors. This circular system promotes biodiversity, retains rainwater, captures CO2, and reduces urban heat.

Leafy collaborates with municipalities, research institutes, and housing corporations to implement and test its façades in real-life conditions. Ongoing pilots in Amsterdam (Marineterrein), Rotterdam (Experimentendak), and Delft (The Green Village) demonstrate the system's

performance and scalability. Designed for disassembly and future reuse, our panels are lightweight, low-maintenance, and adaptable. By integrating ecological intelligence into building skins, Leafy redefines façades as climate-adaptive infrastructure with long-term environmental value.



















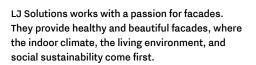


#### LJ Solutions B.V.

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LJ Solutions steers on products that are reusable, upcyclable and maintenance free. Contact is paramount in their cooperation: "We consider social sustainability enormously important towards our partners, clients and colleagues and towards our living environment."

#### Cladding

Neolife facade systems consist of a naturally pure wood composite that contains hardly any plastics. The panels are protected by lignin, a natural substance from the wood itself. The use of mineral pigments provides deep color and UV resistance. Aluinvent facade panels are made

of foamed aluminum and a perfect solution for modern, durable facades. These innovative panels offer a lightweight and corrosion-resistant solution. The panels are 100% made of recycled cans! Bluetek offers a wide range of aluminum composite and aluminum facade panels, available in different sizes and formats. The panels are detachable and can be finished in all possible colors and finishes.

#### LJ Innovate

DAMWAND

Smart ventilation systems ensure proper ventilation of the cavity wall and thus healthy, ventilated facades. Without damage to the stucco and suitable for new construction and renovation. The smart plugs, anchors and device holders ensure a sturdy attachment to or in the facade insulation; fire-safe and without thermal bridges.

#### Organization profiles

















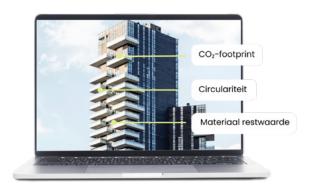




#### **MADASTER**

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#### Madaster is the cadastre for materials.

The platform enables building owners, developers, and other stakeholders to register and manage materials in the built environment through so-called material passports. In doing so, Madaster promotes a circular economy in which materials can be endlessly reused, waste becomes a thing of the past, and transparency in material usage takes center stage. Buildings thus become material banks filled with valuable resources, offering both ecological and economic benefits. A Madaster passport adds measurable value to real estate.

Madaster was co-founded by architect and visionary Thomas Rau. He is an advocate of the circular economy and a pioneer in thinking in terms of material value. With his vision that "materials have rights," he laid the foundation for the creation of Madaster. His mission - to create a world where materials have an identity and therefore no longer end up as waste - remains at the core of Madaster's work.

The company is rapidly evolving into the leading player in Germany, the Netherlands, Belgium, Switzerland, the UK, and Scandinavia.



















#### Martens keramiek B.V.

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**AA Martens** keramiek

For over 140 years, the Dutch construction industry benefits from the customer-oriented approach of our family-owned business, the Royal Martens group. The Subsidiaries of the Martens group stands for reliability, innovation, and sustainability.

Driven by this commitment to sustainability, Martens keramiek was established in 2018. Martens keramiek focuses on manufacturing a circular building material: Kerloc, which is mainly applied in ventilated façade cladding. Kerloc is made from natural minerals and poplar trees that are felled as part of the Dutch road network maintenance.

#### Kerloc façade cladding offers the following unique properties:

- 1. Favorable CO<sub>2</sub> footprint: The production process utilizes an exothermic reaction of the material mix instead of using external heating.
- 2. Fire resistance class A1: in combination with a timber substructure: A2-s1, d0.
- 3. A lifespan of 50 years: with little to no maintenance.

Kerloc façade panels have a standard size of 1500 x 450 mm. Panels can be custom-cut, pre-drilled, and coated to meet specific project requirements.

#### Organization profiles



















#### Miedema Groep

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Miedema is a wholesaler of wood and construction materials and a manufacturer of custom wood components, with a clear focus on supporting construction professionals in the transition to circular building. With over a century of industry expertise, we offer a broad portfolio of certified and reusable products, including FSC® and PEFCcertified timber, biobased insulation panels, and precision-cut wood cladding. Our focus lies in sourcing, processing, and delivering materials that support reuse, disassembly, and waste reduction across the building lifecycle.

#### Our circular initiatives include:

Promoting biobased and circular construction by sharing knowledge, advising clients, and supplying timber and wood-based products alongside natural insulation such as Frisian hemp, flax, wood wool, and recycled cotton

- Reclaiming wood for reuse and exploring second-life applications
- Embedding sustainability in operations through solar and wind energy, circular partnerships, and reusable building systems

Our logistics hub in the Frisian capital optimises stock flow and reduces emissions. By combining deep material knowledge with practical logistics, Miedema empowers professionals to choose responsibly sourced, durable, demountable materials - ready for reuse.





















#### Moos

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Moos is disrupting the construction industry with a circular and socially responsible approach to housing. We build social and mid-rent housing where people from all backgrounds feel at home, while respecting the boundaries of our planet. Our modular, demountable buildings are designed as "material banks," ensuring that every componentfrom entire modules to individual materials-can be reused, repurposed, or recycled, minimizing waste and resource consumption.

Our system is built on principles of modularity and long-term partnerships, backed by contractual agreements to ensure circularity throughout the value chain. We use a flexible modular construction method that supports diverse floor plans and buildings up to eight stories high. Modules are designed for easy relocation and reconfiguration. When reuse

of modules isn't possible, they are disassembled into elements or raw materials, enabling a true closed-loop system.

Key aspects of our circular approach:

- Sustainable materials: bio-based materials like CLT keep our CO2 footprint well below the Paris Agreement targets and maximize carbon storage.
- Tracking: digital twins and material passports track every component's lifecycle, ensuring transparency and optimal reuse.
- Cascade of reuse: from relocating entire homes (3D+) to recycling raw materials, we maximize value at every stage.

Moos proves that solving the housing crisis can go hand in hand with climate action and social responsibility.

#### Organization profiles

















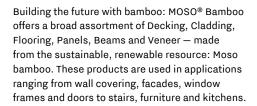
#### MOSO International BV

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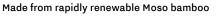






#### Continuous innovation

Furthermore, MOSO® Bamboo is able to develop unique, customised bamboo solutions for industrial clients, meeting exceptionally stringent requirements. With an international team and partners in more than 60 countries, MOSO® Bamboo is continuously looking for new applications and solutions that can be made with the fastest growing plant of the world.



MOSO® Bamboo products contribute to a higher certification score for green building projects (e.g. LEED, BREEAM). The bamboo stem can be harvested in 4-5 years and doesn't die after harvesting. This means no deforestation takes place while enormous amounts of CO, are captured in the bamboo forests and products.

#### More than 25 years' experience

With more than 25 years' experience in the relatively young bamboo industry, MOSO® is recognised as the global A-brand in bamboo because of its focus on product quality, innovation and sustainability. Deze laatste zin veranderen in: Proof is the impressive list of references such as Madrid Airport, Kempegowda International Airport, Guggenheim Museum and United Nations (FAO).



















#### MVRDV

**Business Development** Achterklooster 7 3011 RA Rotterdam

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# **MVRDV**

MVRDV — founded in 1993 in Rotterdam by Winy Maas, Nathalie de Vries, and Jacob van Rijs — is a globally renowned architecture practice known for its innovative approach to contemporary urban challenges. The firm's commitment to sustainability and circularity is reflected their projects, which prioritise demountability and the reuse of materials.

One example is Matrix ONE - a laboratory and office building in Amsterdam — is designed with circular principles at its core. The building's structure uses prefabricated concrete slabs for its floors, with no fixed connections, allowing these elements to be easily detached and reused. Simple connections such as screws and bolts further facilitate disassembly, ensuring that parts of the building can be repurposed when the building undergoes updates or is

decommissioned. This approach ensures that over 90% of the building's materials can be reused at the end of its lifespan.

Similarly, Portlantis – an exhibition centre in the Port of Rotterdam — is designed with sustainability in mind. The building's modular components can be easily dismantled and reused, and the façade panels will be returned to the manufacturer at the end of their life. The building's foundation avoids the use of concrete piles, leaving no lasting environmental footprint.

Both projects showcase MVRDV's dedication to integrating circularity into architectural design, minimising waste, and promoting sustainable construction practices.

#### Organization profiles



















#### Nabasco Products B.V.

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Nabasco Products develops and manufactures high-performance biocomposite materials used for circular facades, road signs and outside furniture. Our flagship material, Nabasco 8012, is composed of renewable resources such as reed, flax, and recycled cellulose fibers, combined with partially bio-based resins. This results in durable, lightweight, and aesthetically versatile products that store CO<sub>2</sub> and minimize material waste.

We can produce small batches in our factory in Delft and work with partners for larger projects. A notable project is our collaboration with ProRail, the Dutch railway infrastructure organization, where we developed modular, nature-inclusive façade panels for transformer stations. These panels incorporate nesting spaces for birds and insects. A true showcase of the versatility and scalability of Nabasco's bio-based composites.















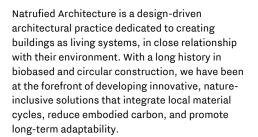


#### **Natrufied Architecture**

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Our projects demonstrate how architecture can foster positive impact for both communities and ecosystems. Notable examples include De Warren, a cooperative housing project in Amsterdam realized with recycled and biobased materials, green/blue roofs, and a participatory design process; and the HATO office building in Curacao, which combines remountable, modular and circular timber structures.

We offer architectural and urban design services, alongside research and consultancy, helping clients develop regenerative strategies that align with circular principles. Through workshops, lectures, and publications, we also contribute to a broader cultural shift towards sustainable and resilient design.



Organization profiles



















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Director is Ing. Bert van Vuuren. Active in the biobased and circular economy since 2010. We develop, innovate, produce and market biobased and circular products made from raw materials from renewable sources. When you apply our products in your projects, you contribute to the Sustainable Development Goals.

In our portfolio we have a good number of biobased and circular products such as:

- Biodegradable tree root ball anchors;
- Biodegradable drainage;
- Biodegradable water vapor sheet;
- Biobased mowing protection for light poles;
- Biobased faunarasters;
- Biobased road furniture such as traffic signs and hectometer signs.

For more info see our website.



















Nedcam Building Solutions BV

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#### Nedcam - Shaping Technology for a Circular Future

Nedcam specializes in the production of moulds, models, prototypes, and complete products using advanced 5-axis CNC machines and large-scale 3D printers. Working from digital 2D and 3D designs, Nedcam offers a full-service approach — from consultancy and project management to production and innovation.

Through large-scale 3D printing, Nedcam significantly reduces waste from non-recyclable materials, advancing both internal sustainability and that of its clients. The company is pioneering the transition from thermoset to recyclable thermoplastic materials to enable a fully circular manufacturing process. By combining 3D digital manufacturing with precision 3D milling, Nedcam is developing next-generation techniques for plug and mould production, aiming for 100% circular tooling by 2030.

Nedcam Building Solutions provides sustainable alternatives to concrete by offering recyclable, lightweight materials that greatly reduce CO2 emissions. One such material is Acrylic One (A1), a water-based composite widely used in various applications. A1 combines the advantages of composites - lightweight, strong, and formflexible - with outstanding fire resistance and zero smoke development. When reinforced with glass fibre, it allows for the creation of thin, complex, and durable structures.

#### Organization profiles



















#### New Circle B.V.

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New Circle drives innovation in biobased building materials - especially for roofing - developing products that pave the way for a fossil-free, circular future. Rooted in robust research and product development in Heemskerk, with additional locations in Enkhuizen and Standdaarbuiten, we create high-performance, circular roofing solutions made from renewable biological sources, designed for reuse and continuous resource cycles.

Our mission is clear: accelerate the transition to a construction industry where biobased becomes the norm. By pioneering materials that enable circularity - bridging demolition and new construction — we preserve valuable resources through full lifecycle thinking. Through ongoing product innovation and transparent collaboration, we ensure every material we develop meets stringent environmental, social, and economic standards.

Key focus areas include:

- Biobased formulations that replace fossilbased roofing components
- Modular and demountable designs to maximise reuse potential
- True-cost accounting to reflect full environmental impact

New Circle partners with pioneers across demolition, product development, contractors, and municipalities — making sure our solutions are tested in real-world conditions and scalable across the industry.

Ecologically sound, economically viable, and socially responsible innovations - New Circle redefines what roofing materials can be.





















NNRD B.V.

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NNRD (Noord Nederlandse Reinigingsdienst) is the regional specialist in circular waste collection and logistics in the northern part of the Netherlands. We support construction and demolition companies in reducing waste streams, improving source separation and maximising material reuse.

From a practical approach and with knowledge of the construction sector, we offer:

- On-site waste scans;
- Tailored collection solutions for diverse waste streams:
- Advice on separating mono-streams (such as concrete, wood, insulation, metals);
- Complete logistical support, focused on CO<sub>2</sub> reduction and transparency;

Reports that provide insight into waste performance, CO2 reduction and comply with CSRD requirements.

NNRD is part of GP Groot, an independent and family-driven company with more than 100 years of history. GP Groot is active in waste collection, recycling, fuels, energy and infrastructure. Thanks to this connection, we have access to a broad network of knowledge and facilities - and we contribute daily to a circular and future-proof construction sector.

We believe in the power of source separation and work every day to maximise the return of valuable raw materials. This way, we turn waste back into raw material - locally, efficiently and sustainably.

#### Organization profiles



















Djoeke Tuinte Fred Roeskestraat 115 1076 EE Amsterdam

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NORNORM offers a Furniture-as-a-Service model that transforms the traditional office interior into a fully circular, sustainable system. Through a flexible subscription, companies gain access to high-quality, timeless furniture, including electric desks, chairs, storage, and lounge furniture, without the upfront investment or long-term commitment. Every item is designed for modularity, durability, and repairs. When no longer needed, furniture is collected, refurbished, and reintegrated into new offices to keep it in use for up to 30 years, compared to a typical three-year lifespan, reducing carbon emissions by up to 70%.

cycles. A smart Circular Passport (via QR code) tracks each item's lifecycle, enabling transparent impact monitoring and easy management. Advanced AI-driven logistics deliver and install furniture within four weeks, optimizing route efficiency and lowering transport. Operating in over 17 countries — including the Netherlands - with offices for many thousands of users, NORNORM stands at the forefront of circular office interiors.

#### Organization profiles



















Built on five circular design principles prioritizing reuse, multifunctionality, reparability, enduring quality, and timeless aesthetics -NORNORM's ecosystem reflects nature's efficient

#### **NXT Building**

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NXT Building develops innovative, sustainable construction solutions for circular and modular building. Our product range includes NXT Bricks, patented building blocks that enable fast, cement-free, and fully reusable wall construction using either traditional methods or a smart click system. We also offer NXT Concrete, a circular concrete with significantly lower CO<sub>2</sub> emissions than traditional concrete. NXT Concrete provides high strength, long lifespan, and is fully recyclable. With NXT Building, construction becomes more flexible, efficient, and futureproof. Together, we are creating a circular construction sector where every brick counts.

#### Organization profiles

















#### Oarshûs B.V.

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Oarshûs B.V. is a Dutch company founded in December 2023 by energy expert Nicolaas van Everdingen, architect Doeke van Wieren, and meteorologist Gerrit Hiemstra. The company provides comprehensive solutions for sustainable, climate-neutral, biobased housing, integrating spatial design, parametric home design, consulting, and project management in collaboration with partners and prefabricated builders.

Its first project, "Sliepe yn 'e Takomst," which launched in 2023, explores the use of circular and natural materials in recreational home design. In 2025, Oarshûs formed strategic partnerships with Groenerbouwen in Germany and TWA Architects. These partnerships focus on modular prefab homes with minimal ecological impact that use materials such as wood, hemp, and straw.

Oarshûs serves housing associations, developers, and private clients seeking affordable, energyefficient, nature-based homes. Emphasizing innovation and ecological responsibility, Oarshûs builds the homes of the future by combining modern techniques with traditional materials.

















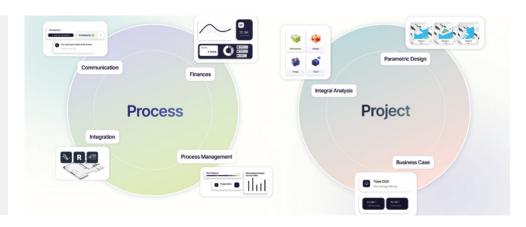




#### **OMRT**

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OMRT is reshaping real estate development with one bold aim: halving development time by 2030. Their parametric design platform stands out by bringing everything real estate developers need together in a single, interactive interface, empowering them to take control at every level.

On the Process side, OMRT centralises designs, calculations, and data so you always have realtime visibility and can share knowledge across your portfolio. Dynamic financial analysis and scenario testing help you monitor budgets and test outcomes instantly, while smart system integrations and live dashboards streamline every action. Seamless collaboration is supported through a 3D workspace that invites teams to connect, provide feedback, and accelerate project decisions.

On the Project side, OMRT delivers parametric design, building physics, and robust business case analysis, so you can evaluate options at speed, optimise for sustainability and profitability, and capture maximum value on every project. This integrated approach means workflows are smoother, risks are lower, and results are consistently high-quality.

OMRT is growing rapidly, expanding its presence in Dubai, Canada, and Germany. The company is leading the shift to faster, smarter, and greener buildings around the world, equipping developers with the tools to move confidently and build a truly sustainable future.

#### Organization profiles



















#### Oosterhoff

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# Oosterhoff

consultants & engineers

Consulting and engineering for circular value For Oosterhoff, circularity is not a trend – it's a principle. From advising on the reuse of donor materials – like glass in The Natural Pavilion and steel in Theater Ogterop in Meppel – to the realization of the fully circular Natural Pavilion itself and the circular redevelopment of the municipality building in Roosendaal, circularity is

embedded in every layer of our work.

Within the Oosterhoff ecosystem, this principle takes many forms. One notable example is CircleWood, an Oosterhoff company that specializes in circular timber construction. In its school and housing projects, circularity is applied through the use of biobased materials, modular design, and disassembly strategies - reflecting our belief that circular construction must be integrated from concept to completion.

#### Who we are

Oosterhoff is a pioneering ecosystem of engineering and consultancy firms, united by a shared mission: to create living environments that add value - for people, nature, and the economy. We design and realize places that matter: houses that feel like home, schools that inspire growth, healthcare spaces centered on care, and public buildings that foster connection.

Our projects embody sustainability, innovation, inclusivity, and the creation of safe and healthy environments - not as separate ambitions, but as interconnected principles.

So, connect with us - and discover how we can shape meaningful environments, for today and tomorrow. Because the challenges may be great, but we believe the possibilities are greater still.



















#### Pastoor Consult B.V.

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Pastoor Consult is a distinctive connector, consultant and broker in the area of new energy and circular raw materials. Our knowledge and expertise is in the sale and purchase of circular waste. Driven by our professional inquisitiveness and pioneering mentality, we operate as business developers at an operational and practical level. We are inspired by innovative methods within existing and new sales markets and develop completely new sales markets for raw materials.

We are both client and contractor and make frequent use of our large international network, guaranteeing quality and scope in cooperation. Pastoor Consult is proud to call itself a specialist and authority in the area of sustainable energy and circular raw materials.

Pastoor Consult by is since six years partner of Lorenz Gmbh.

At Lorenz Systems machine-prefabricated wood-straw system is suitable for the construction of new buildings and for the thermal and cold insulation of existing buildings. Thanks to machine prefabrication, DD24 combines consistently high dimensional accuracy with a precisely specified straw compression – right into the corners. Our wood-straw elements are far superior to conventional building materials in all building physics parameters – thanks to nature. The product lines include floor, wall, roof, and gable elements for the quick and easy construction of new buildings, for the insulation of existing properties, and room dividers for a significantly improved indoor climate.

#### Organization profiles



















#### PEFC Nederland

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#### About the PEFC label

By using PEFC certified wood for your project, you are building a circular, carbon neutral and healthier living and working environment. In a PEFC-certified forest, the forest owner ensures that what is harvested also grows back again. As a result, CO<sub>2</sub> is continuously absorbed by trees and PEFC-certified forests therefore have a climate positive impact.

PEFC Chain of Custody certification for companies in the value chain is a transparent way of tracing wood from a certified forest to the construction project. Only companies with a PEFC certificate can pass on a sustainability claim of PEFC certified wood on the invoice and/or delivery note.

#### Choose PEFC.

By specifying and purchasing PEFC-certified wood and wood products, you are helping to protect forests around the world.



















#### Pretty Plastic B.V.

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Pretty Plastic produces façade and roofing tiles made from 100% recycled PVC construction waste. Our cladding system offers architects, designers and developers a circular, lowcarbon alternative to traditional materials without compromising on aesthetics, quality or performance.

Our mission is to turn problematic plastic waste into high-quality, architecturally appealing building materials. The tiles are manufactured in the Netherlands using discarded window frames, pipes and other PVC components that would otherwise be incinerated or landfilled. They are fire-safe, UV-resistant and fully recyclable, suitable for both permanent and temporary façades.

Available in a range of natural colours and three product types - First One, Second High and Basic Third — the tiles offer visual character, design flexibility and lasting durability. This makes Pretty Plastic a versatile solution for both new construction and renovation.

Notable examples include the renovation of the national swimming facility De Tongelreep in Eindhoven and MONACO, a circular office building in Munich designed by MVRDV. By transforming waste into high-quality, design-

To date, our tiles have been used in more than

80 architectural projects across seven countries.

driven cladding, Pretty Plastic contributes to a built environment where circularity is visible, scalable and future-proof.

#### Protector Guardrail B.V.

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#### Protector Guardrail D228:

#### Powerful modular roof edge protection

The Protector Guardrail D228 is a flexible guardrail system for collective roof edge and fall protection on roofs. Three versions are available with a single post: upright, inclined (70°), and folding. Lightweight, durable aluminium makes quick installation easy and safe working at height accessible to everyone.

#### Working safely on the roof

Due to the increase in solar panels, heat pumps, air conditioning systems, green roofs, more and more people are accessing roofs. The D228 offers a permanent, safe solution for anyone working at height.

#### Innovative patented ballast frame The unique ballast frames ensure stability,

even in confined spaces (only 500 mm required). Intelligently designed for quick installation and maximum safety, ideal for a wide range of roof applications.

## D228 complies with EU building regulations

The designs are carried out using proprietary software, integrated with EUROCODE wind load assessment for each EU country

#### Sustainable and Environmentally Responsible (CSR)

Made from 95% recycled aluminium from the EU with high corrosion resistance. Standard roof tiles can be used as ballast, not plastic blocks. Transport on reusable steel pallets prevents waste. Complies with CSR guidelines for sustainability and corporate social responsibility.





















#### Rainmaker Holland B.V.

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RAIMAKER

Rainmaker Holland was established by visionary Dutch engineer Piet Oosterling, who was inspired by nature's own water cycle. Rainmaker Holland is committed to sustainability for local water production. With Our technology we can produce safe and clean water in an environmentally friendly manner. Rainmaker Holland will provide its high end, innovative technology to retrieve water from locally available non scarce and sustainable water sources.

The Air to Water system provides the opportunity to tap into a water source that is all around us and produces fresh water daily from the humidity in the ambient air. The Air to Water unit pushes air through a heat exchanger. Here the air is cooled, and condensation takes place. The Air to Water unit lowers the temperature until the temperature falls below the dew point and water droplets will

form. These droplets are then collected in a water storage compartment. The actual amount of water that can be produced varies from location to location and depends on average ambient temperature, and humidity.

#### Organization profiles



















## RAWMAX

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RAWMAX - redefines paint with smart, sustainable paint powder solutions RAWMAX is transforming the paint industry with one bold idea: the world doesn't need more paint, it needs smarter paint.

Founded by innovators Paulus Ninaber and Willemijn Ninaber Wortelboer, RAWMAX builds on over a decade of expertise to offer a next-generation solution: high-performance paintpowder® that is water-free until use. Traditional paint is inefficient, up to 60% water, heavy to transport, containing VOCs and often wasted. It pollutes our oceans, clutters storage with expired cans and contributes to poor indoor air quality. RAWMAX fixes all that.

Our paintpowder® is clean and built to last. Mix only what you need, when you need it.

With no harmful additives, no preservatives, and no shelf-life limitations, RAWMAX reduces waste, cuts CO2 emissions and supports healthy indoor environments.

This isn't just theory — RAWMAX is rigorously tested in real-world conditions: UV exposure, moisture and temperature swings. It adheres strongly to even the toughest surfaces, from porous surfaces to outdoor façades. The powder format makes it ideal for export, easily mixed with local water anywhere in the world.

RAWMAX is more than a product. It's a practical, scalable solution for eco-conscious architects, contractors and homeowners who care about performance, sustainability, and health.



















#### Rebrick

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Rebrick: Pioneers in Sustainable Facade Bricks At Rebrick, we believe that aesthetics and sustainability can go hand in hand. As a leading company in the Netherlands, we supply recycled facade bricks for large-scale construction projects. Our innovative approach reduces CO2 emissions by a remarkable 95% compared to traditional methods.

#### Our Services:

- Harvesting: We carefully collect reusable facade bricks from demolition projects.
- Palletizing: Each brick is efficiently packaged for transport and storage.
- Storing: We offer secure storage facilities for our high-quality facade bricks.

is on large-scale demolition projects, where we supply between 50,000 and 500,000 bricks. Additionally, we have a Life Cycle Analysis (LCA) documented in the National Environmental Database (NMD).

At Rebrick, we demonstrate that sustainability does not have to come at the expense of beauty. Together, we are building a greener future, brick by brick.

#### Organization profiles

















Every brick undergoes thorough testing and is delivered with a detailed test report. Our focus

#### Recell Group

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The Recell Group is a clean-tech and sustainable resource creation company. It pioneers the development and scaling of cellulosic wastebased technologies to create new capacities of sustainable industrial fiber and glucose resources for construction, infrastructural and green chemical markets.

Every year Europe discharges 20 millions ton cellulosic waste, losing potential, at large CO2 emissions, and billions of cost.

Recell's technologies reduce cellulosic process waste, associated discharge costs and CO2 emissions while the resources created allow manufacturers to produce the greenest materials competitively. These bio-based resources extend material life and decrease carbon footprint - 1 ton applied ≥ 2 ton CO, reduced.

Cellvation is the clean-tech for cellulosic sludges from waste water treatment plants converting these into Recell's Fiber which are applied into bio-composite products and serve as a functional additive in asphalt production.

Cellforce is the clean-tech for typically larger capacities of contaminated paper and coverts the cellulose into a glucose DE95 that acts as a platform resource for bio-plastics, fermentation chemicals as well as bio-fuels.

Sparked your interest? Please reach out to Recell.





















#### Reflect Glasfilm

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Turn Your Windows Into a Powerhouse of Comfort and Efficiency

#### Why Reflect Glass Film?

Climate change, rising energy costs, and stricter regulations demand smarter, safer, and more sustainable buildings - without costly renovations.

#### Reflect Glass Film delivers.

Since 1992, we've transformed existing glazing into a powerful shield against heat loss, overheating, and security risks. With 37 years of expertise, we know exactly what works technically, practically, and financially.

#### Our solutions:

Summer: Reflect Hyperion™ reflects solar heat before it enters the glass, reducing cooling costs while keeping clear views.

Winter: EnerSaver™ boosts insulation, even on single-pane glass, cutting energy use and CO, emissions instantly.

Safety: Our Safety Film strengthens glass against impact, forced entry, and blast effects - ideal for public, educational, and healthcare spaces.

#### Why choose Reflect:

- · No demolition or maintenance
- No energy consumption
- · Immediate, lasting results
- Expert in-house installation
- Suitable for nearly any building

#### Reflect Glass Film - Smarter sustainability that works.

Contact us today for a free glazing analysis of your workspace.

## Organization profiles



















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Renset, short for Renewable Generator Set, is a clean-tech company based in the Netherlands, transforming how Europe powers its construction sites. Our patented mobile power station offers a sustainable, cost-effective, and quiet alternative to traditional petrol generators, without compromising on performance.

Designed in collaboration with construction professionals, Renset delivers one of the most robust power solutions on the market. Its modular battery system allows for seamless on-site swapping, minimizing downtime and enabling continuous operation of high-powered tools such as drills, saws, and welding machines.

Integrated with our digital platform, Renset CONNECT, users gain real-time insights into energy usage and CO<sub>2</sub> savings. This supports smarter site management and transparent carbon accounting.

Rooted in circular design principles, every Renset system is built to extend product life and keep materials in circulation. Components are modular and upgradeable, making them easy to repair and adapt over time. Through our Battery as a Service (BaaS) model, clients lease high-performance batteries to lower upfront costs while enabling reuse, refurbishment, second-life deployment, and eventual recycling.

In collaboration with The Green Village and VolkerWessels, we are developing a charging infrastructure to expand our BaaS network and accelerate the transition to a cleaner and more resilient construction industry





















#### Respace

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Respace transforms vacant buildings into high-quality living and working spaces with a self-developed, bio-based and circular interior construction system. Fully tailored to each project, the system is prefabricated in our factory and assembled on site at remarkable speed.

Through adaptive reuse, we give new purpose to buildings such as churches, industrial halls and offices. The modular design adapts to almost any space and can be installed with minimal disruption. Using digital fabrication, parametric design, smart engineered-wood joinery and industrial production, we create scalable, durable solutions that help address building vacancy.

By combining industrial prefabrication with biobased materials such as engineered wood and hemp-based composites, Respace offers a lowembodied-energy solution with strong thermal and acoustic performance. The result: affordable reconfiguration of space for both temporary and permanent use.

In collaboration with architects, project developers, and public authorities, we contribute to an adaptive and sustainable built environment, with the aim of creating future-proof living and working spaces within the existing building stock.

#### Organization profiles



















#### **Riwald Recycling**

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## Riwald Recycling

As one of the world's leading metal recycling companies, Riwald Recycling - member of ArcelorMittal — plays a pivotal role as a supplier in the circular chain of sustainable material use worldwide. With over 35 years of history and multiple locations, we serve the global demand for metal for different types of industries. Our experience, wide range of recycling options, and commitment to environmental, social, and corporate governance criteria places Riwald Recycling among the most advanced, respected, and trusted recycling companies in the Netherlands and around the world.

Riwald Recycling recycles many hundreds of thousands of tons of waste materials each year — ranging from e-waste, industrial high-value residual streams to railcars and airplanes. By using our high-tech granulator in combination

with our high-tech equipment - double shears, eddy currents, drum sieves, wet separation tables, Infrared (NIR), X-Ray, metal sensors, NF fines processing and color sortings - we enhance raw material efficiency, resulting in no need for 'new' raw materials. In addition, we transport all metals with our sustainable transport fleet for minimal CO, emissions

Given its position, expertise and separation technologies, Riwald Recycling plays an active role in finding solutions to global environmental issues. We link our sustainability strategies to the Sustainable Development Goals (SDGs) and integrate innovative technologies for maximum recovery from raw materials.





















#### Rockcycle service by ROCKWOOL B.V.

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Tests of ROCKWOOL stone wool recovered from old buildings have shown that stone wool retains its performance characteristics over decades. This reduces the need for replacement and minimizing waste. When it is finally disposed of, it can be fully recycled and reused in new products.

In addition, ROCKWOOL plays an active role in closing its own material loop. With the recycling service Rockcycle, we have developed an initiative together with Renewi to take back stone wool waste and process it into secondary raw materials for new insulation products, minimizing waste and conserving natural resources.

Thanks to these circular properties, ROCKWOOL contributes to a more sustainable construction and a future in which efficient use of materials is central.

#### Organization profiles

















#### **Royal Vriesco**

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Royal Vriesco, with among others the brand A House of Happiness, designs and produces made-to-measure curtains with a strong focus on sustainability and innovation. Its product range includes over 1000 sustainable fabrics-many with acoustic, thermal, or fireretardant properties-crafted in its own studios. Key offerings include 100% circular curtain collection, made from post-consumer polyester and production offcuts and 100% biobased curtain collection. Royal Vriesco also provides customized curtain solutions for homes, public buildings, hospitality, and healthcare.

Royal Vriesco is certified B-corp and Global Recycled Standard (GRS). The conviction "true beauty in curtains is only created when they are beautiful for people and the planet". As the sustainable market leader in the curtain industry,

Royal Vriesco has started in 2025 a return policy for curtains, named 'curtain return'.

In circular construction, the company has partnered on projects like The Workcafé of Municipality Opsterland, County Hall Friesland and the library of University NHL showcasing sustainable curtain solutions and waste-toproduct innovation.



















**SAM Panels** 

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SAM (Sustainable Advanced Materials) is a completely sustainable fibre panel produced in the Netherlands. It is made entirely from recycled organic residual material. SAM is completely free of toxins such as formaldehyde and Volatile Organic Compounds. This makes it an exceptionally attractive alternative to HDF, MDF, LDF, chipboard, plasterboard, plywood, and OSB (Oriented Strand Board). Our panels can be easily used for furniture, displays, walls, signs, and a wide range of products where fibre boards are used.

The production of SAM panels is environmentally friendly and takes place in the production facility in Venlo. The panels are made from cellulose fibres, examples of which are grass, hemp, processed cow manure, denim fabric, and paperbased fibres such as label paper. Only (cellulose) fibres, water, pressure, and heat are involved in the production process. The used water is recycled up to 99.5 percent.

SAM Panels are composed of 100% biobased materials and 100% recycled residual materials. At the end of its life cycle, SAM Panels or sawing remnants can be returned to us. In this case, we are paying back the raw material value of the returned material stream. The composition of the panels makes it entirely recyclable.

SAM technology enables residual materials, which are typically burned or discarded, to be integrated into a strong and exceptionally versatile composite panel. This panel serves as the foundation for producing high-quality, ecofriendly, non-toxic, and clean products for a wide range of applications and markets.

#### Organization profiles



















Bram Entrop M.H. Tromplaan 28 7513 AB Enschede

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The Sustainable Areas and Soil Transitions (SAST) research group at Saxion University of Applied Science conducts practice-oriented research for businesses, government, and education. We focus on four research areas:

- Circular Transition in the Built Environment;
- Sustainable Energy Transition;
- Climate and Droughts, and;
- Value of Heritage.

In our research projects, SAST collaborates with Saxion's educational programs. Regarding circular transition, for example, we collaborate extensively with the Civil and Architectural Engineering programs, as well as Public Administration, Spatial Planning, and Urban Planning. In the past, we have assisted European municipalities in the circular transition regarding the design, tendering, and execution

of construction projects. We have also designed and realized a circular holiday home for a local entrepreneur. Unique to the SAST research group is its integrated approach to both above and below ground level. We combine three mutually reinforcing perspectives: technology, governance, and area development. True sustainability lies in the smart interplay between them. If you have practical and/or research questions regarding the circular transition, we would be happy to help in translating them into practice-oriented research projects.



















#### Sempergreen

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# sempergreen®

#### Sempergreen - Replanting the planet

Sempergreen is a global supplier of sustainable green roof, living wall, and ground cover systems that actively contribute to climate adaptation, urban biodiversity, and circular construction.

Our solutions are designed for long-term performance and minimal environmental impact. We use as many recycled and recyclable materials as possible, and our production processes focus on reducing waste, water use, and emissions.

Sempergreen green roofs retain rainwater, reduce heat stress, and lower the ambient temperature — resulting in a cooler indoor climate. When combined with (vertical) solar panels, our Solar Green Roofs generate renewable energy while enhancing biodiversity.

Our living wall system, the SemperGreenwall, is Cradle to Cradle Certified™, underscoring its contribution to a circular, regenerative built environment. Designed as a modular system, it is easy to install, maintain, and disassemble ideal for reuse or reconfiguration.

We are continuously developing our systems to be as sustainable as possible. As part of this commitment, we are working on validated Life Cycle Assessments (LCAs) to further quantify the environmental impact of our products.

Sempergreen solutions are applied in circular and climate-adaptive building projects worldwide, helping to create healthier, more resilient cities one facade, roof and public space at a time.

#### Organization profiles

















#### Sepawand B.V.

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Sepawand has been developing, delivering, and installing internal wallsystems for more than fifty years, produced in-house.

These movable walls ensure the perfect layout of spaces within companies and institutions. Our range consists of walls made of glass, wood, and plasterboard, which can be processed with photo prints or whiteboards.

These products are used in offices, schools and industrial buildings.

The walls are easy to dismantle and are reusable anywhere or remanufactured for new walls.

Organization profiles



















Sepawand has a separate department, Sepa-Circular, where old walls are prepared to be reused or recycled.

#### SGS INTRON B.V.

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#### SGS INTRON: specialist in circular building materials and innovation

For over 50 years, SGS INTRON has been active in the research and development of construction materials. We assess materials for environmental impact, mechanical properties, durability, optical characteristics and more, for both raw materials and (semi-)finished products. All is done whilst using international standards or tailored methods.

Our expertise lies in the technical and environmental assessment of building materials and the application of secondary raw materials. With this, we support product development and contribute to more sustainable construction processes. For example, objectively verify the product properties of alternative concrete additives and recipes to improve the CO<sub>2</sub>-footprint.

In addition to material testing, we provide guidance on construction products and processes. We also perform life cycle assessments (LCA), or we function as reviewers, to help quantify the environmental impact of products and projects. Enabling distinction between renewable building materials and traditional products based on sustainability for products like roofings and isolation materials.

We work in accordance with applicable standards and hold the necessary accreditations to certify products and processes. For instance, certifying the biobased content of facade cladding for one of our clients.

In doing so, we contribute to a built environment that values sustainability, quality, and innovation.

#### Organization profiles



















## Silvaluxe

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At Silvaluxe we are not just craftsmen. We are innovators. Creating stylish, low impact wooden sockets.

We are constantly seeking out new techniques and materials to improve our products and minimize our impact on the environment. That's why we use (circular) wood and carefully measure our products in order to use as little wood as possible and avoid material waste.

The production process is fully in the hands of Silvaluxe. From design of the sockets to the last layer of oil.

We take great care in selecting the finest materials and look with precision at the quality and finishing, so that we create products that will stand the test of time.

We believe that by staying true to our craft and our values, we can create products that are not only beautiful, but also leave a positive impact on the world.

At Silvaluxe we are passionate about crafting high-quality products that can (literally) brighten your space with a single touch. Our love for detail and sustainability is rooted in the tradition of woodworking. Which we learned from generation to generation.



















#### Smart Cladding Constructions B.V.

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Smart Cladding Constructions (SCC) is a leading Dutch developer and supplier of integrated solar structures for the built environment. We specialise in designing, engineering and realising solar carports and solar façades that contribute to circular construction through modularity, multifunctional land use, and local energy generation.

We have realised numerous projects across the Netherlands, including large-scale carport systems for business parks, municipalities, and logistics centres. By integrating energy management systems, battery storage, and EV charging, SCC accelerates the transition toward climate-neutral and circular construction.

Our solar carports offer more than just energy production - they combine shelter, smart energy use, and CO2 savings. SCC applies prefabricated and modular construction methods using reusable and recyclable materials. We also collaborate with partners to explore biobased alternatives like laminated timber structures. Our approach includes long lifespan design, demountable systems, and low-maintenance

materials, allowing for future reuse or relocation.

#### Organization profiles

















#### Solarge

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Solarge develops and manufactures lightweight, PFAS-free and fully circular solar panels in the Netherlands. Designed for commercial rooftops with limited load capacity, our panels are significantly lighter than conventional alternatives and meet the highest environmental standards. They are made from fiber-reinforced polymers and produced with up to 80 percent lower carbon emissions compared to traditional panels, supporting sustainable building practices from the start.

Solarge panels are suitable for a wide range of applications, including industrial and logistics roofs, sustainable new construction, carports and agricultural projects. Their modular and recyclable design ensures full recovery and reuse at the end of life, enabling a truly circular solar value chain. Installation is straightforward and compatible

with standard mounting systems, making them easy to adopt at scale.

We work closely with industry leaders such as SABIC and ENGIE to deliver responsible and future-ready solar solutions. One of our key milestones is the realization of the world's largest circular PV installation in Genk, Belgium. Solarge also supports developers, EPCs and asset managers across Europe in meeting both energy goals and circular construction ambitions.

With Dutch engineering, European production and a take-back commitment, Solarge empowers clean energy with circular impact. Solarge is Endless Energy.



















#### Space&Matter

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## space&matter

We are an Amsterdam-based architecture studio that designs with a circular, social, and adaptive approach. Our work combines conceptual creativity with pragmatic solutions, integrating architecture, urbanism, and strategic thinking to tackle complex spatial challenges.

We see architecture as a catalyst for positive change, aiming not just to design buildings but to initiate broader ecological and social transitions. Circularity, inclusivity, and adaptability are central to our practice—reflected in our focus on reusability, shared spaces, and future-proof structures. We excel at navigating multi-layered briefs and balancing diverse interests and scales.

Our collaborative, research-driven process involves early engagement with stakeholders and the use of visual tools to inform decisions. The result is flexible, sustainable environments that grow with changing needs, strengthen communities, and add lasting value. Our strength lies in transforming complexity into opportunity through thoughtful, integrated design.

#### Organization profiles

















#### Stichting Insert

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We are Insert, an NPO that launched the Insert Marketplace in 2018 to enable the reuse of construction materials, trees and shrubs at the highest possible quality level. We cannot do this alone. Together with the market, we work on the transition from a linear to a circular economy. To support this, we provide insight into circular opportunities, make circular ambitions visible, and connect various stakeholders. In this way, we work together towards a sustainable world.

Our initial goal was to make circular materials visible, enabling the connection between supply and demand. To achieve this, we launched the Insert Marketplace, which we have continued to develop over the past few years. Currently, with support from the Ministry of Housing and Spatial Planning we are developing plugins and connections to enable all suppliers of

circular materials to show their products in our Marketplace, developing it into the National Platform. We also enrich data on our platform by providing additional data on the environmental impact of reusable materials, supported by the Dutch Environmental Database.

We have also established two circular material flows in collaboration with our core demolition partners: one for the reuse of ceiling tiles and another for the reuse of tropical hardwood. For the latter, we developed a process with our core partners to collect, clean, and repurpose the wood into new window frames, certified with the SHR quality mark.



















#### Streetlife B.V.

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## **STREETLIFE®**

#### Streetlife: Aesthetic Circular Design for **Public Spaces**

Streetlife is an innovative leader in the design and production of urban furniture, tree products, and small bridges. Characterized by a minimalist and timeless aesthetic, Streetlife designs focus on durability and sustainability. We use natural materials such as FSC®-certified hardwoods, which age gracefully over time, and recycled plastics (TWIN versions), ensuring long-lasting products that can withstand the elements.

Sustainability is deeply embedded in our design process. We prioritize low-maintenance, durable solutions by choosing materials like Corten steel, which further minimizes the need for upkeep. Our commitment to circularity is evident in the use of recycled and biobased composites, reducing environmental impact and promoting reuse. For

example, our TWIN-concept leverages recycled materials, extending product lifespans and enabling future recycling, allowing old products to be reintroduced into the production cycle.

In addition, we conduct ongoing research on recycled materials and have developed Environmental Impact Sheets (EIS) to assist our customers in understanding their environmental impact. By combining form and functionality, Streetlife actively contributes to enhancing public spaces with high-quality, sustainable solutions that align with our circular economy goals.

#### Organization profiles

















#### SunnyRain Solutions

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In 2009, I (Harry den Hartigh) discovered on behalf of SunnyRain Solutions that smart, suitable solutions were lacking that would make the living environment more resistant to both excess precipitation and long periods of precipitation shortage with high temperatures. The only way to counter these problems is to temporarily store large quantities of excess rainwater and use it in periods of

Knowing that behavioral change is a difficult process, SunnyRain Solutions was aware that it had to become a smart, modular and very accessible rainwater storage system for a wide audience. Ultimately, this was achieved with the concept of the 'rainwater fence', called the "Rainwinner".

Due to its accessibility and resolving capacity, the Union of Water Boards awarded the 'Rainwinner' with the 'Water Innovation Award.

The product group 'Rainwinner' is now frequently used in new construction and renovation projects.

In addition to being able to take care of the realization, we ensure with the 'Rainwinner' that the municipal policy and management plan is complied with, residents become aware of the sustainable use of rainwater and apply more 'green' in their gardens.

#### Organization profiles





















precipitation shortage.

#### Superimpose Architecture B.V.

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Superimpose Architecture is an international architecture and interior design studio based in Rotterdam, Beijing and Hong Kong, committed to circular design that reduces waste, preserves resources, and extends building life cycles. Since 2015, Superimpose has worked on a wide range of projects, mostly transformations and public buildings in Europe and Asia. With our international team of innovative designers, we create meaningful and sustainable spaces through architecture and interior design.

For the Eurostar UK Terminal at Amsterdam Central Station, we prioritized reuse over rebuilding. Existing structures and systems were retained, while bio-based insulation, recycled felt, and CO2-negative terrazzo were selected for durability and low impact. Modular wall elements enable future adaptability.

At TU Delft's CiTG campus building, we are adding only when necessary and used solely biobased or upcycled materials. A material comparison based on GWP guided our choices. Furniture elements are upgraded with circular materials; all new interventions are demountable.

The Micr-O Education Center in rural Hangzhou, our first project is entirely built from salvaged timber and recycled canvas, engages local craftsmanship while minimizing emissions.

#### Organization profiles



















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Sustainer was founded to accelerate the transition to sustainable construction. For that, we have developed a biobased modular building system for industrial residential construction called .home. By using extensive engineering automation and AI optimized design, .home uses extremely little material. Furthermore, all building materials are biobased, prefabricated, and completely demountable.

Over the last 10 years, we have developed world class parametric design software that enables automated design of extremely detailed digital twin production models with groundbreaking flexibility, with up to 20 billion different module sizes.

Rather than starting our own factory, we have adopted the business model of ARM holdings (semiconducter), where we license the system to numerous developers, contractors, assemblers, producers/suppliers, architects and engineers. This scalability is shown in our 40% yoy growth, 400 completed homes, and 2500 homes currently in development in 2 countries.

With our unique building system, supply chain and business model, we can facilitate anyone in construction to adopt a world-class, sustainable and cost-effective system, right now.



















#### Sustonable

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Sustonable is a circular design surface made of post-consumer recycled PET from bottles, recycled glass and natural stone. Sustonable is used for wall panels, countertops and other furniture. After life time Sustonable can be recycled again. Sustonable is a surface that combines elegance and durability, to meet the needs of architects and designers who demand more than just aesthetics. It inspires creative visions while minimizing environmental impact, delivering a material that redefines sustainable design.

#### These are the main benefits:

- Sustonable is the perfect Circular Design Surface, available with a recycled content
- 100 PET bottles used for the production of 1  $\mathrm{m}^2$ Sustonable.
- Carbon Impact 70% lower than other materials. Free of Hazardous Chemicals (VOC).
- Thin, lightweight and practical.
- Custom Designs are possible.
- Besides its original Large (80x330 cm) and Unique (80x260 cm) sizes, custom-cut sizes are possible.
- More of Sustonable design is possible in mosaics and vanity tops.

#### Organization profiles



















#### Team V

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## TEAM V

Jeroen van Schooten and Do Janne Vermeulen, together with partners Irène Horvers and Frank Bouwman. Team V comprises sixty creative professionals: architects, technical designers, interior architects, urban designers, historians and modelmakers working closely together as one solid team. We have been working on a wide range of projects since 2013, including public and cultural buildings, high density housing, university buildings, private homes, public transit hubs as well as complex renovations and transformations. This allows us to cross-reference between

We are Team V, an architectural firm in

Amsterdam, founded in 2013 and directed by

Team V is known for the innovative timber hybrid residential building HAUT in Amsterdam - one of the first and highest timber towers in the world.

different scales and social perspectives.

Media - one of the largest timber-hybrid office buildings in Europe — was ,Team V is currently working on a new timber tower, Amstelwood - a nature-inclusive and climate-adaptive residential timber tower in Amstelveen. And also in Amsterdam, residential building NDSM kavel A7-2 will have a timber hybrid structure, and a façade that is mostly demountable and made out of circular materials. Team V is involved in various circular and sustainable initiatives, such as Built by Nature and Building Balance. We have an internal sustainability group that organizes meetups, including a biobased study week with external speakers. Team V also gives annual lectures and keynotes to promote sustainable, durable, and circular architecture.

Recently, the new media hub Mediavaert of DPG



















#### The Urban Jungle Project

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The Urban Jungle Project develops innovative solutions to turn unused urban space into jungle territory. Our lightweight and modular landscaping systems enable trees, shrubs and perennials to be placed in almost any location. By marrying nature to technology, we unlock the potential of existing roofs, balconies and other places where conventional planting is not an option.

Our Jungle Blocks, 3D-printed from recycled consumer waste, are plug-and-play elements designed for rooftops with limited load capacity or to eliminate extra construction requirements. And unlike fixed structures, Jungle Blocks can be temporarily removed in case of maintenance. And with our smart remote monitoring services, we increase irrigation and maintenance efficiency. By bringing nature into our cities, we create resilient urban climates. And by reconnecting people to nature, we increase the quality of life.

- Maximum saturated weight: 250kg/m2;
- Modular: plug & play installation, removable in case of maintenance;
- Circular: 3D printed out of recycled consumer waste.

#### Organization profiles



















#### The Urban Woods

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TIMBER HIGH RISE without concrete core, partly from waste wood, built for what's next We are The Urban Woods, we bring a new way of housing construction. We use technology to create happy renters and self-learning highly efficient buildings.

#### **GLOBAL IMPACT**

We create smarter systems, fewer delays, and full control from idea to delivery. It's not just a project—it's a shift. We share weekly learnings, in many channels, and reach millions. "Housing is the underestimated key to multi-impact. We invite the world to copy us," says co-founder Sebastian Monteban.

In Delft rises the first modular timber tower without a concrete core. The bio-based construction elicits sustainable habits,

birdsong, and social cohesion. The other kicker: it is partly made of used pallet wood.

- High-rise, low impact In Delft we build the tallest timber tower in the Netherlands without a concrete core. The 10-storey buildings — even the balconies, elevator shaft - are made of wood. 85% reusable materials. Built 30% faster. More modular. Each home goes up in just three days.
- Circular -CLT (CLT from waste!) The building in Delft is the first in the world to use Circular CLT: cross-laminated timber panels made from discarded pallets and demolition wood. Locally sourced, upcycled, and built to last. "Around 1 million pallets are thrown away or burned. They can now be used to build great projects." - Tim Vermeend, co-founder. It's just a small part of the building -but a big leap for circular construction.



















#### Thinking Steel International B.V.

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thinking steel

making the impossible

possible with steel

www.thinkingsteel.com

But we build for more than today. Steel is one of the most circular materials available. It is strong, efficient and endlessly recyclable. Our buildings are designed for disassembly, relocation and reuse. That means longer

lifespans, less construction waste, and smarter use of resources. Circularity is not an add-on to what we do, it's embedded in every layer of our design approach.

Thanks to smart engineering, we reduce material waste, cut transport emissions, and shorten on-site building time. That's how we combine sustainability with commercial efficiency.

From our own factory in Gilze, we serve clients across the world who are ready to build smarter, cleaner and more responsibly. Thinking Steel combines craftsmanship, innovation and a futureforward mindset To create steel solutions that last, adapt and inspire.























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TKI Bouw en Techniek acts as a catalyst for scalable innovation in the design, construction, and engineering sectors. We accelerate change by coordinating knowledge development among companies, knowledge institutions, and government bodies by removing barriers and creating the conditions for breakthroughs. This generates the knowledge and innovation needed to improve productivity and to realize a CO,-free, future-proof built environment by 2050.

One of our key Mission Driven Multi Year Innovation Programs (MMIPs) focuses on circular construction and infrastructure. This program addresses three major challenges:

How can we build 1 million new homes and renovate 8 million existing ones using circular principles?

- How can we ensure infrastructure remains safe and sustainable through circular solutions?
- How can we create healthy, future-proof buildings through circular design and construction?

We approach these challenges programmatically, developing and scaling innovations that enhance circularity through digitalization, industrialization, and cross-sector collaboration.

An example is the Dutch National Growth Fund program "Toekomstbestendige Leefomgeving". This initiative brings together over 100 partners and represents a €200 million joint investment, demonstrating the power of partnership-driven innovation in shaping the built environment of tomorrow.



















#### TNO

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#### TNO is a driving force in circular and industrial construction innovation.

Our mission is to accelerate the transition to a fully circular construction economy by collaborating with suppliers, contractors, property owners, and engineering consultancies. We develop, scale, and implement safe, sustainable, and affordable solutions.

#### Our focus areas include:

- Bio-based materials: Promoting renewable, low-impact building resources.
- Industrialized construction: Enhancing prefabrication and automation.
- Asset lifecycle management: Ensuring longterm efficiency and sustainability.

#### Key initiatives:

- Smarter design to reduce raw material use.
- Optimizing real estate in education and healthcare.
- Developing eco-friendly concrete alternatives.
- Improving structural safety assessments.

With over 3,500 experts across various disciplines, TNO leverages its multidisciplinary collaboration and state-of-the-art research facilities to deliver groundbreaking solutions. Our commitment to excellence and innovation makes us a trusted partner in the journey towards a circular construction economy.

#### Organization profiles



















#### TONZON B.V.

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TONZON 45 jaar!

## **TONZON**





Organization profiles

















## impact, minimum footprint

TONZON is a Dutch innovator in thermal insulation, offering smart, foldable solutions that use very little material or space. Instead of thick panels or heavy blankets, our insulation is based on the power of air, captured and held still on-site within specially engineered reflective foils. This radically reduces the need for raw materials and transport, while delivering top-tier performance.

With only 60 grams of material per m2, our floor insulation achieves an Rc value up to 7.0 m<sup>2</sup>K/W. And with an MKI of just €0.10 per m2, it outperforms biobased alternatives on the Paris Proof Indicator.

For over 45 years, TONZON has been the trusted choice for circular, low-carbon insulation. We've insulated hundreds of thousands of homes and buildings across the Netherlands and beyond, including projects in Africa with Médecins Sans Frontières.

Our product is 99.98% air, freely available, reused after removal, and nearly waste-free. At TONZON, we rethink insulation for a sustainable built environment. We use what nature already provides - air - and combine it with minimal yet smart design to create thermal comfort that doesn't cost the earth.

In a nutshell: We create high-performance insulation that's light, compact, and circular.

#### Trivec

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Trivec Equipment Solutions develops and supplies innovative, sustainable solutions for the paint processing industry.

With a strong focus on circularity, Trivec Equipment Solutions offers sustainable solutions for processing paint-contaminated wastewater into purified water that can be disposed of in an environmentally friendly manner. This concerns wastewater released during the cleaning of painting tools and machine parts.

The Trivec wastewater treatment systems efficiently separate paint particles from the water, preventing harmful substances from entering the sewer system or surface water. The purified water can be reused several times in the cleaning process. This prevents unnecessary consumption and reduces the environmental impact.

The systems are made of high-quality polyethylene (PE), partly from recycled material, and are fully recyclable at the end of their service life.

Trivec also manufactures and supplies sustainable machines for surface treatment and ergonomic equipment such as drying racks, spray tables and other solutions that contribute to a more efficient production process. By combining smart technology with sustainable materials, Trivec helps companies reduce their ecological footprint and meet the requirements of the circular economy.

Trivec is based in Sumar (NL) and internationally provides customised solutions. In 50 years we have grown into a reliable knowledge partner, focusing on innovation and development in close collaboration with our customers.

#### Organization profiles



















#### **UC Architects B.V**

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### urban climate architects

#### URBAN CLIMATE ARCHITECTS - Our vision At Urban Climate Architects, we envision a future where everyone can live, learn, work, and play in a healthy and safe environment. We design inclusive spaces that foster well-being and allow people of all ages, backgrounds, and means to thrive.

#### Urban, responsibly

We approach urbanization with care, aiming to improve city life while preserving nature. Our goal is to intensify existing urban areas in a way that protects ecosystems and supports circular, inclusive communities. This goes beyond materials - it's about creating fair, accessible environments for all.

#### Climate, with respect

We recognize climate as a powerful force requiring respect. Our sustainable approach prioritizes local energy generation and renewable biomass materials over concrete and steel. Wood, for instance, stores CO2, is reusable, lightweight, and central to our design strategy.

#### Architects, with an eye for detail

We believe in timeless design over trends. Our work emphasizes tranquility, durability, and sensory experience - through human-scale proportions, high-quality materials, and details that engage the senses. From the feel of timber walls to the sounds of nature, every project blends form and function into a lasting experience.

We are Nature Loving Architects & Urbanists.

#### Organization profiles



106

















#### **UPCOURT**

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UPCOURT develops and operates mobile, modular padel courts that can be installed on any surface without permanent foundations or material loss. Our innovative 'Padel as a Service' concept allows for short- and long-term deployment, from one day to several years, offering a full-service model that includes transport, installation, maintenance, and dismantling and more.

We support temporary use of underutilised spaces in urban developments, business parks, and public areas by introducing sport as a flexible, low-threshold intervention. Our courts are fully reusable and designed with durability in mind: every component can be dismantled, relocated, and rebuilt without waste. This makes our solution highly suitable for circular development projects.

Recent pilots include locations in Rotterdam (Port of Rotterdam) and Hoofddorp (New Terra), both focused on circularity and placemaking. Production of our newest courts takes place in the Netherlands, in partnership with VDL.

#### Organization profiles



















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UPPACT develops and implements innovative technology that transforms hard-to-recycle mixed plastic and textile waste into high-quality, circular building products. Based in the Netherlands and active within the Chemport Europe circular cluster, UPPACT's unique system — the UnWastor — is capable of processing unsorted, unwashed, mixed waste streams without pre-treatment.

Through a low-energy, high-impact friction-melting process, UPPACT produces durable, reusable construction elements such as planks, beams, and fenders. These products are 100% recyclable and suitable for long-life building & infrastructure applications as well as in outdoor/public space applications. UPPACT prefers to work with circular business models and offers end-of-use and end-of-life solutions for it's 100% recyclable materials.

Mid 2025, UPPACT will commission its 4,000-tonne demonstration plant at the Chemport Innovation Center in Delfzijl, supported by public and private investment. In the second half of 2025 high quality planks, poles and beams from this factory will enter the market at competitive prices.

By targeting waste fractions that are currently incinerated, UPPACT delivers a scalable, local solution with measurable CO<sub>2</sub> savings—enabling regions and industries to meet both circularity and climate goals.

















#### Urban Mine B.V.

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Urban Mine pioneers the industrial scale recovery of high-quality raw materials from end-of-life concrete. As the first company worldwide to implement this process at scale, we transform demolition waste into certified circular aggregates, sand and recycled cement for new concrete applications. Our mission is to decouple construction from virgin resource use and we're doing so with patented, in-house developed technologies.

At the heart of our process are the Smart Liberator and Smart Refiner. Part of our systems that selectively separate (hydrated) cement paste from aggregates, enabling the recovery of functional cementitious material. This allows us to recycle cement and achieve unmatched substitution rates in new concrete mixes, something long considered impossible.

By reusing both aggregates and cement, we drastically reduce CO, emissions and the need for virgin raw materials, without compromising structural performance. For several years, we have operated at industrial capacity, supplying verified circular materials to projects across the Netherlands.

Urban Mine enables the built environment to close its material loop. Measurably, reliably, and at scale.

#### Organization profiles

















#### **Urban Mobility Systems**

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Urban Mobility Systems (UMS) is a cleantech engineering company specializing in the development and production of zero-emission powertrains, battery systems, and charging infrastructure for heavy-duty construction equipment, transport vehicles, and industrial applications. Founded in 2016, UMS partners with OEMs, fleet owners, and distributors to accelerate the transition to sustainable, circular construction and mobility. Our modular battery-electric and hybrid solutions enable the electrification of machinery and vehicles, reducing CO2, NOx, and particulate emissions on construction sites and in logistics. UMS offers scalable, swappable LFP battery packs (130-200 kWh), fast-charging solutions, and energy storage containers for off-grid and peak management. We also provide comprehensive EV safety training and consulting to ensure safe operation and maintenance of

electric equipment. Recent projects include the electrification of excavators for emission-free construction sites, the deployment of mobile energy storage units, and the integration of circular battery systems in collaboration with leading industry partners. UMS is ISO 9001 certified and committed to driving innovation, safety, and circularity in the built environment.



















van Dijk Advies B.V.

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van Dijk Advies B.V. is a strategic consultancy firm focused on sustainable success, guiding organizations, particularly in the infrastructure (GWW) sector, towards sustainable growth, innovation, and data-driven transformation. Our mission is to support clients to become futureproof with expertise in strategy, project and program management, business development, product innovation, and data & BI. We turn complex challenges into hands-on support rooted in real-world impact rather than theory.

van Dijk Advies works across the whole sector, serving contractors, material producers, developers, and public authorities with tailored (tender) services, specializing in LCA, EPD and Environmental Cost Indicator.

We combine strategic insight with operational know-how, ensuring effective execution and measurable results, due to our founders bringing deep industry experience and a strong focus on transformation and data-driven working. van Dijk Advies is a trusted partner in addressing modern challenges like biobased materials, asphalt pavements and the circular economy, turning strategy into action.

## Organization profiles



















## Van Dillen antieke bouwmaterialen

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Van Dillen Antique Building Materials specializes in recycling antique building materials, particularly old bricks, floor tiles, and roof tiles. We are currently the largest company in the Netherlands specializing in this field, with over 1,000,000 bricks and 100,000 floor tiles in stock.

We aim to process around 3 million kilos of material this year and plan to continue scaling this up in the coming years as far as our current workspace allows for it.

In short, we purchase materials from old buildings that are being demolished, ensuring the process is carried out with care, and have them transported to our workshop in Bolsward. There, we make sure every usable piece of material is fully prepared for reuse, giving it a second life.

We are a relatively young company with only five years of existence, but we still have managed to grow from nothing into the biggest company in this (niche) market. Just imagine what we can achieve in the coming years with the knowledge, experience, and network we've built so far!



















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Van Vuuren specializes in manufacturing fire-, smoke-, sound-, and burglar-resistant doors with a strong focus on sustainability and circularity. Instead of waiting, we are getting the market moving and proving it! Van Vuuren is the first Dutch door manufacturer to be Cradle to Cradle (C2C) certified. Based on the C2C pillars of healthy and safe materials, energy and climate policy, water and soil management, and social policy, Van Vuuren is committed to a sustainable construction sector.

In a safe and healthy work environment, Van Vuuren promotes innovations such as formaldehyde-free materials and the circular use of raw materials. By embedding sustainability throughout the organization and collaborating with partners in the supply chain, Van Vuuren is making a concrete contribution to Europe's

circular economy goals for 2030 and 2050. An inspiring example of Van Vuuren doors in action is the Van der Valk Hotel in Venlo, the most sustainable hotel in the region built according to Cradle to Cradle principles.



#### Organization profiles

















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## Van Wijnen Gorredijk — Building Circular Futures in Friesland

Van Wijnen Gorredijk is a regional branch of the national construction company Van Wijnen, dedicated to creating sustainable, futureproof environments. Deeply rooted in the Frisian community, we focus on development, construction, renovation, and real estate management. Circular construction is central to our mission. We design for disassembly, use renewable materials, and collaborate across the value chain to reduce environmental impact. This is reflected in several key projects.

In Drachten, we built the Firda education building using timber and a materials passport to ensure traceability and future reuse. The building is largely demountable, allowing components to be reused or repurposed in

future projects. It supports adult education in healthcare and hospitality, directly linked to Nij Smellinghe Hospital.

Through our biobased chain collaboration, we work with partners like HempFlax and Kingspan to integrate natural materials into mainstream construction. We use hemp-based insulation that not only stores CO2 but also improves indoor air quality and supports local agriculture. This collaboration strengthens regional supply chains and demonstrates that circular, biobased construction is both scalable and economically viable. By aligning innovation with ecological responsibility, we accelerate the transition to a regenerative built environment. At Van Wijnen Gorredijk, we don't just build – we regenerate, reuse, and rethink.





















#### Vandersanden

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Vandersanden is Europe's largest familyowned brick manufacturer. We produce facing bricks, CO2-negative facing bricks, clay pavers, brick slips, and insulating (prefabricated) façade systems. Through our Together to Zero sustainability programme, we aim to be fully CO2neutral by 2050. Founded in 1925, Vandersanden employs more than 850 people across ten sites, producing over 600 million bricks annually for the European market and beyond. We provide full transparency on our environmental footprint: LCA and EPD data are available for all our products.

## Our circular solutions include:

- Pirrouet® the first CO2-negative and circular facing brick: a groundbreaking innovation
- Pirrouet® Prisma dry-stacking systems no mortar or adhesives required, fully reusable
- Brick slips reduced use of raw materials,

lower emissions in production and transport, and more room for insulation

- RoboBrick® a tailor-made prefabricated solution for industrial builders, used in combination with our brick slips
- Clay pavers with a proven average lifespan of 135 years and approximately 90% reuse, they are a highly circular asset for local authorities. Includes climate-adaptive solutions such as green paving (Greenflow®) and water-permeable paving (Drainflow®)
- River clay in facing bricks and pavers -Dutch river clay is officially recognised as a renewable raw material and scores positively within the indicators of the widely supported Dutch standard for circular construction 'Het Nieuwe Normaal'

## Organization profiles





















## **VDL** De Meeuw

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VDL De Meeuw is a modular construction company and full service provider of flexible housing solutions. We offer high quality housing to life, provide quality care, for education and to work. Organized from A to Z and completely tailored to your needs, wants and budget. We are based in Oirschot and part of VDL Group.

## Waste is a design flaw

Waste generation is a consequence of poor design choices rather than an inevitable outcome. By by rethinking product design and construction systems, we can significantly reduce or even eliminate waste. At the moment, our housing solutions achieve a 55% reduction in CO, emissions, a 75% reduction in NOx emissions, and a 95% reduction in waste — all compared to conventional construction.

## Simplify

By simplifying construction, we can create any type of building using a single modular building block. We have combined our 95 years of experience with plug-and-play and unplug-andreplay intelligence in this versatile solution called "One Platform" – an construction platform to design buildings with an endless life cycle.

#### Ownership

We dare to stay product owner at all time. Or at least for the technical life span of 75 years. Isn't this the ultimate form to responsibility? We stay owner of all materials used and offer a life time buy back guarantee.

Do you want to learn more about our company? Please visit our website!





















#### VenhoevenCS architecture+urbanism

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## **VenhoevenCS** architecture+urbanism

## VenhoevenCS — Designing for a Circular and Regenerative Future

VenhoevenCS architecture+urbanism is an internationally active design firm working at the intersection of architecture, infrastructure, and urban planning. We see design as a powerful driver of sustainable and inclusive transformation, combining ecological thinking, technological innovation, and a strong focus on human wellbeing. Inspired by natural ecosystems, we embed circularity at every level of our work, from material reuse and modular design to energy loops and spatial planning. Our approach delivers resilient, future-ready solutions that support regeneration at scale. In Saint-Denis (FR), the Centre Aquatique Olympique features biobased timber construction, one of France's largest solar roofs, and seating made from 100% locally recycled plastic. The design also supports biodiversity,

healthy living, and social connection. In the Netherlands, Het Platform in Utrecht is a selfsufficient, closed-loop building. Through urban mining, we repurpose materials for projects like Haven student housing (TU Eindhoven) and the Sports Building at Erasmus University Rotterdam, significantly reducing resource use and emissions. Through the VenhoevenCS Academy, we drive innovation and share knowledge to accelerate the circular transition. With deep expertise and a collaborative spirit, we work with public and private partners worldwide to tackle the urgent challenges of our time.

## Organization profiles



















## Vic Obdam Staalbouw

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environmental change. At Vic Obdam Staalbouw, we believe that reuse of steel constructions should be the standard, we call this donorsteel. In multiple projects, we have been reusing entire steel structures from existing buildings. This means we do not just recycle scrap, but take whole beams and columns, check their quality, make adjustments where needed and use them again in a new construction. It is a way to significantly reduce the environmental impact of steel in buildings without compromising on safety or quality. By avoiding the production of new steel, we save a large amount of energy and reduce CO2 emissions. We have had our process independently evaluated with Life Cycle Assessment (LCA), both included in the Dutch National Environmental Database (NMD): Staal2030, which uses 50% reused and 50%

Steel production is a highly contributing factor to

green steel, and Staal2050, made from 100% reused steel. These allow us to calculate and prove the environmental benefit per project. It makes the impact of reuse visible, in numbers. We believe that using donorsteel is the future but cannot change the building industry on our own. This is why we continuously work together with different actors in the ecosystem, from demolition companies to end users, to find out how we can increase the use of donorsteel in our industry.



















#### Wind Groep

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Wind Groep is a forward-thinking project developer actively contributing to the transition towards circular construction in the Netherlands.

In the residential development "Hof fan Lemmer," we implement advanced water-saving technologies to significantly reduce water use. Our circular approach is also demonstrated through the reuse of demolition waste from previous projects, such as the repurposing of materials from the former sports hall "De Drait" in Drachten. By integrating biobased construction materials throughout our projects, we not only reduce environmental impact but also stimulate innovation in the building chain.

demolition and reuse. Our collaborations with municipalities, housing associations, and local partners ensure scalable impact and long-term value. Wind Groep continues to grow by example in implementing circular strategies to our core businesses that contribute to a more sustainable built environment.

## Organization profiles

















Wind Groep seeks to create sustainable, futureproof living environments by embracing circularity at every stage of development; from design to

## WWIZ BV

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## Smart networks for effective reuse of building materials

WWIZ (Want Weggooien Is Zonde) is Dutch for: 'because throwing away is a waste'.

Reuse of building materials only really works if the supplier and buyer can find each other in a timely and efficient manner. Because every company, project and individual meets different requirements and circumstances, this requires customisation in the connections between 'disposers' and reusers. WWIZ organises this customisation by setting up local networks of cooperation agreements, in close cooperation with governments, companies, recycling centers, circular craft centers and residents. This creates a fine-meshed web through which building materials can be exchanged quickly and efficiently.

These agreements are digitally supported and automated via the AI-driven platform and app CIRQO. This creates direct, real-time, truly working connections between supply and demand, without the delay and generality of generic marketplaces. This also ensures continuity of the network and continued flow and circularity in the long term. With this fundamental circular approach, large quantities of valuable building products are saved from the waste stream and all local parties remain connected in a smart and future-proof way. In this way, WWIZ makes a concrete contribution to the acceleration of the circular economy in the built environment.



















#### Zantman Architecten

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Zantman Architecten focuses on creating a future-proof environment, with a deep awareness that our surroundings have been shaped by geological eras, natural developments, and the influence of our ancestors. This calls for a respectful attitude in everything we do. We have our planet on loan, which compels us to continually pursue a circular approach.

Zantman Architecten is actively committed to this principle in every design project. We apply a circular design methodology based on a careful analysis of context, historical roots, and the available space. We promote the reuse of existing structures and materials, bio-based construction techniques, and long-term sustainability. We challenge conventional construction methods by advocating low-tech, thoughtful solutions.

We believe that collaboration is essential for discovering optimal, integrated spatial solutions. Dialogue fosters layering, dynamism, and new insights in our designs. By combining research, craftsmanship, professional knowledge, and technology with a degree of design intuition, we bring meaning and personal value to every project.

A building should take a modest place in space and time, responding naturally to its immediate surroundings. The uniqueness of each place must be preserved — but that doesn't mean a building cannot inspire surprise or wonder. We strive to build without overpowering, and to innovate without forgetting.

















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