



The Future of Circular Buildings – Turning Policy into Opportunity

Your Speakers



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Seek Together™

What are the key policy drivers for a more sustainable construction industry?

Why Construction Ecosystem is key for EU Green Deal?

Building EU Industry Snapshot

Industry Facts



Construction products industry

430,000
EU companies

€ 800 billion
turnover

€ 240 billion
of gross value added

Current Baseline



- Buildings are responsible for approximately 40 per cent of the EU's energy consumption and 36 per cent of greenhouse gas emissions from energy¹



Construction products
30% of EU's annual waste generation



Buildings
40% of the EU energy consumption



Construction and construction works
9.4% of total domestic carbon footprint



Cement, steel, aluminium and plastics
15% of EU carbon emissions

(1) European Commission, The European Green Deal, [COM/2019/640](https://eur-lex.europa.eu/eli/comm/communication/2019/640)

Policy drivers for a Carbon neutral & Circular Construction Ecosystem

There's been an evolution in policy too

Green Deal



*...In order to make sure that **buildings are fit for the enhanced climate ambition**, as presented in the 2030 Climate Target Plan and reflected in the “Delivering the European Green Deal Package” in July 2021, the Commission’s new proposal aims to contribute to reaching the target of at least - **60% emission reductions by 2030 in the building sector in comparison to 2015** and achieve **climate neutrality by 2050**.*

Circular Economy Action Plan



*...The construction ecosystem needs to **quickly become more circular and improve resource efficiency**...Consider **setting reuse and recycling targets for construction and demolition waste**...including through the **possible introduction of recycled content requirements** for certain construction products, considering their safety and functionality”*

2020 Renovation Wave for Europe, strategy to renovate buildings to increase their energy efficiency

4Q21 Energy Performance of Buildings Directive

1Q22 consultation Scenarios for the transition pathway for a resilient, greener and more digital construction ecosystem

CPR revision proposal March 30th

What will the new construction policies bring?

High level novel elements

Key Objectives



- Harmonized single use market
- Enhanced the sustainability of construction products
- Introduce new requirements to improve protection of health, safety and the environment

Sustainable Design Requirements, design and manufacture of construction products targets to meet them more:

- Durable
- Recyclable
- Repairable
- Easier to re-manufacture (recycled)

01. Requirements for greener and safer construction products



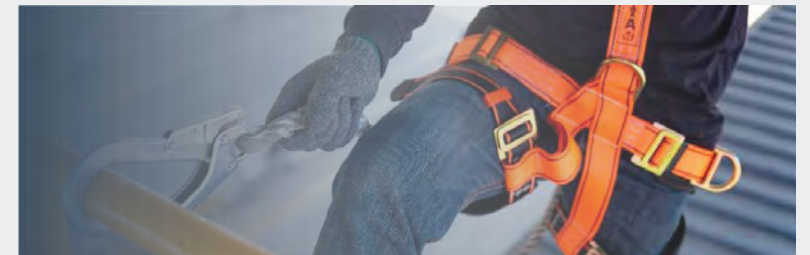
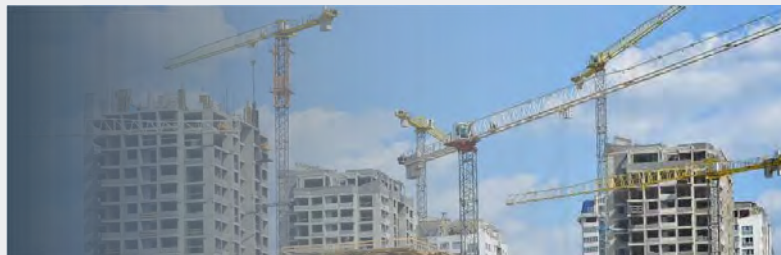
02. Improved digital product information for citizens, businesses and others



03. Easier delivery of harmonized standards on the performance of construction products



04. Rules to facilitate innovative business models such as 3D printing





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What new elements in key policies bring
in the building and construction industry?

Main Contrucion Policies Overview

Key themes: Energy Efficiency, Carbon Neutrality, Circularity & Safety



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Renovation
Wave

Energy
Performance
Building
Directive

Energy
Efficiency
Directive

Sustainable
Product
Initiative

Construction
Product
Regulation

Waste
Framework
Directive

Level(s) /
Bauhaus / other

Zero Pollution
for Buildings

ETS for
Buildings

Energy Performance of Buildings Directive (EPBD)



New buildings must be **zero-emission by 2030**



Targets set to increase targets of **Energy Performance Certificates** of existing building stock



Energy Performance Certificates extended to buildings in renovation, the ones with renew rental contact, all public buildings and the ones offered for sale or rent



Charging infrastructure for electric vehicles in residential and commercial buildings required



National Building Renovation Plans integrated into NECPs, including roadmaps for phasing out fossil fuels in heating and cooling by 2040



Building '**Renovation passport**' on information and lower costs for consumers to facilitate their planning and a step-by-step renovation towards zero emission level



Member States are invited to **include renovation considerations in public and private financing rules** and to establish appropriate instruments



No financial incentives for the installation of boilers powered by fossil fuels as of 2027 and **Member State are given the legal possibility to ban fossil fuel use in buildings**



Set a benchmark of **49%** of renewables in buildings

Increase the use of renewable energy in heating and cooling by **1.1 percentage point** every year

Raise the use of renewable energy in district heating and cooling by **2.1 percentage points** every year

Construction Products Regulation (CPR)

New Circular and Environmental Footprint Requirements



- Harmonized rules for the making available on the market and direct installation of construction products
 - rules on how to express the environmental, including climate, and safety performance of construction products in relation to their essential characteristics
 - environmental, including climate, functional and safety product requirements for construction products.
- Basic requirements for construction works, preparation of standardisation requests and harmonised technical specifications
- Commission can issue DA and establish, for particular product families and categories, voluntary or mandatory essential characteristics and their assessment methods in particular cases
- All products covered by this Regulation shall, **prior to their placing on the market or direct installation, satisfy the generic, directly applicable product requirements**
 - Safety requirements
 - Sustainable use of resources
 - Life cycle assessments (e.g. climate change effects, ozone depletion, etc)
 - Performance
 - Inherent Environmental Product Requirements – **durability, min GHG, recycled content, benign substances, resource and energy efficiency, reparability, etc.**
 - Environmental obligations to manufacturers (e.g. design for recyclability, durability, recycled content, reparability, etc.)
 - Labelling “traffic light”
- Role of Member States to assure harmonization
- Declaration of Performance, Declaration of Conformity and CE Marking
- Standards, Incentives & Data / Information sharing through Digital Product Passports

Ecodesign for Sustainable Products Regulation (ESPR)



Sets eco-design requirements to **all products in the EU**. Contains a list of **sustainability elements** to define specific product requirements, which will be done by **product groups** through delegated acts in the upcoming years.



Sustainability elements listed: durability, reusability, upgradability and reparability, the presence of substances of concern in products, **product energy and resource efficiency, recycled content in products, product remanufacturing and high-quality recycling, and for reducing products' carbon and environmental footprints.**



The delegated acts will be developed on the basis of impact assessments which will be carried out in consultation with relevant stakeholders.



The delegated acts should also include information requirements related to the substances of concern and their location in the product and their concentration.



Digital Product Passport - general requirements on how the tool should work and the type of information that could be there.



It mentions **labels** for consumers to compare performance of products easily. It also mentions affordability of products.



It tries to set incentives, including mandatory green public procurement criteria.



It sets obligations to the different players in value chain.



It sets enforcement mechanisms.

Accelerating circularity in the built environment

Luca De Giovanetti,
World Business Council for
Sustainable Development (WBCSD)

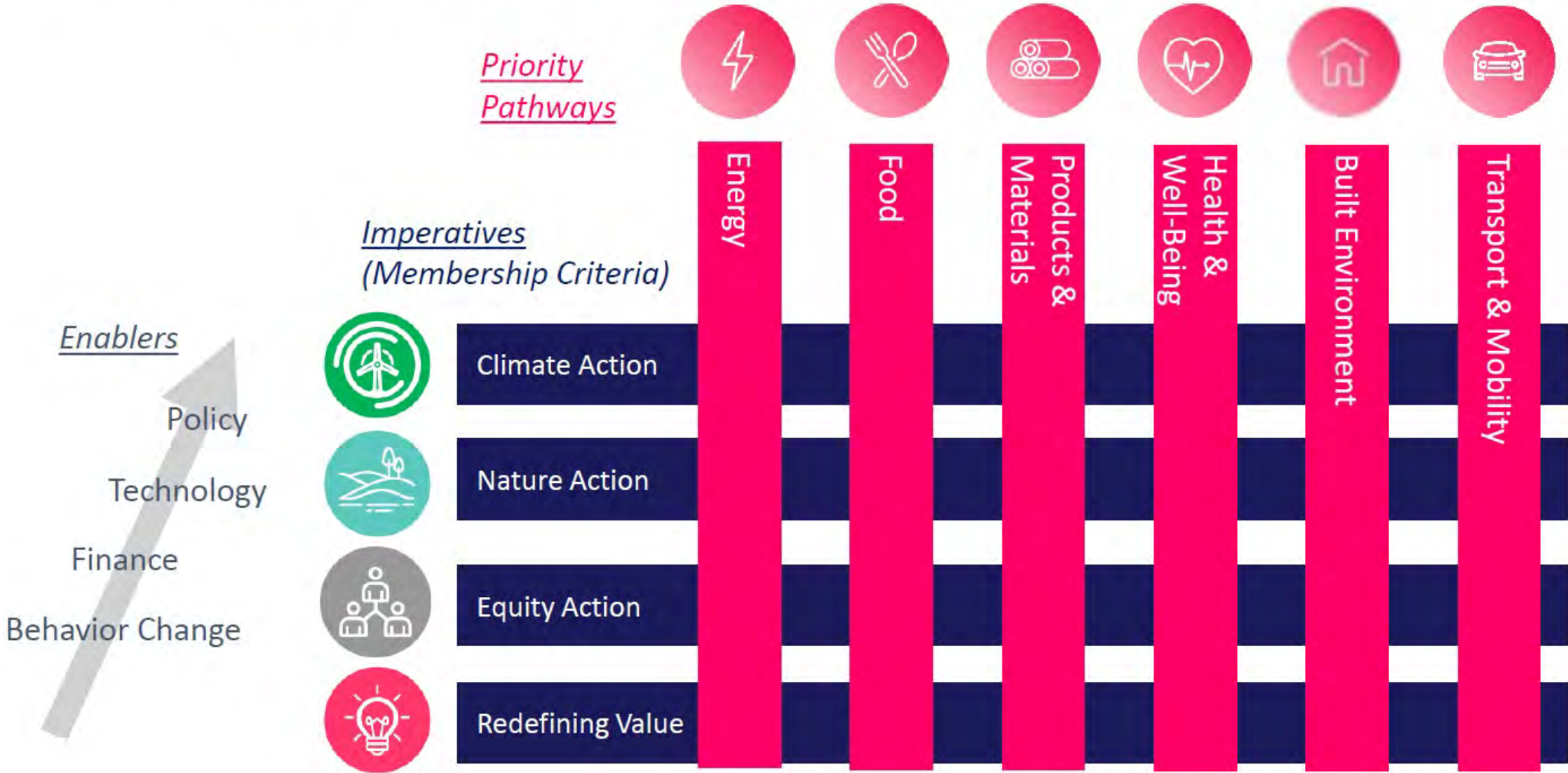


WBCSD – Business leadership for a sustainable future



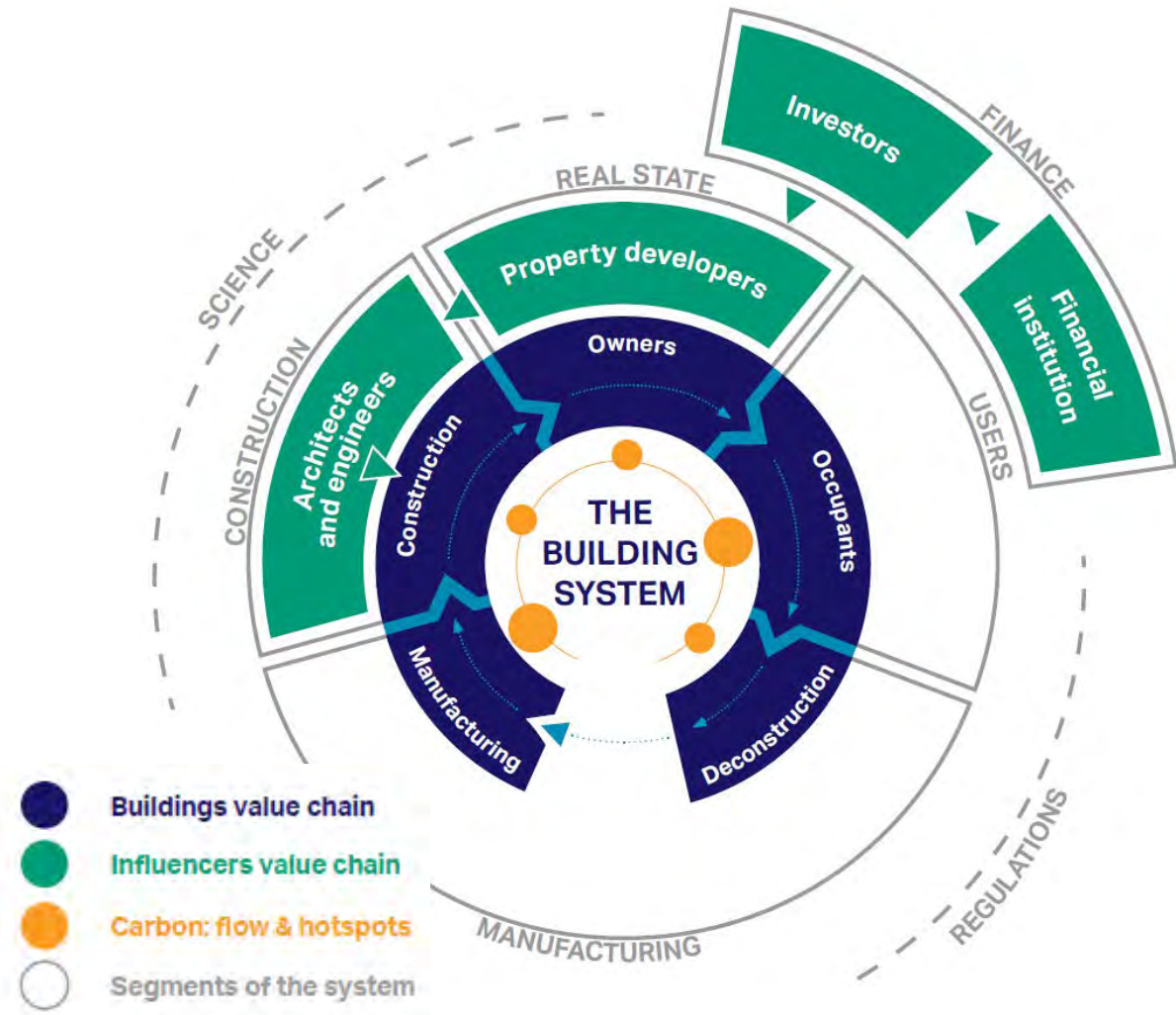
The premier global, CEO-led community of over 200 of the world's leading sustainable businesses working collectively to accelerate the system transformations needed for a net zero, nature positive, and more equitable future.

2022 WBCSD's Transformation Matrix links to Vision 2050



Built Environment @ WBCSD

- Leading companies from across the value chain work together to **drive system change towards a fully decarbonized, circular and nature-positive built environment**.
- Based on a **common language**, members share knowledge and develop guidance and tools of global relevance to take action and strengthen the business case.
- WBCSD helps all key system stakeholders collaborate to **transform the market**, including demand side actors such as developers, investors and end users, as well as cities and regulators (GlobalABC, COP-process, etc.).



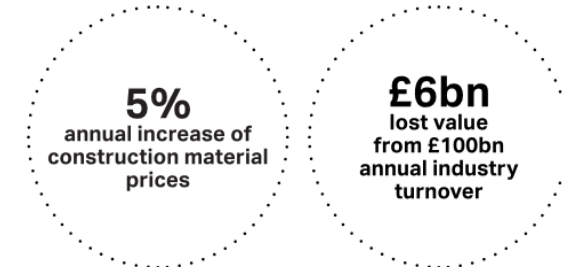
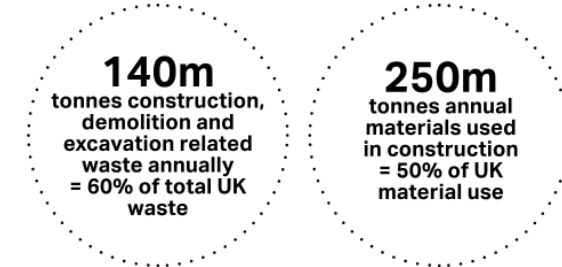
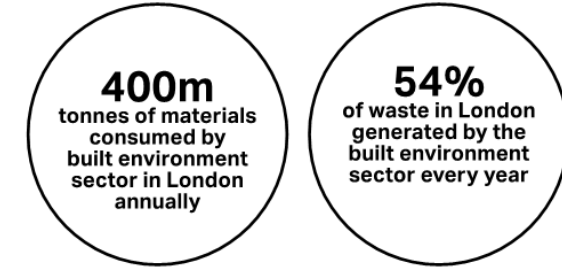
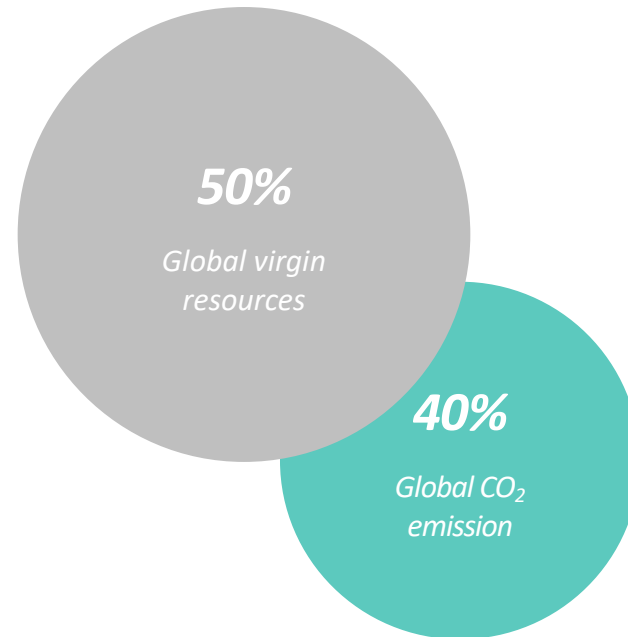
“A system is a configuration of independent parts connected by a web of relationships”

WBCSD Vision 2050 “Unlocking systems transformation”

Why a circular built environment?

Our world is still only 9% circular...

...and the trend is negative*



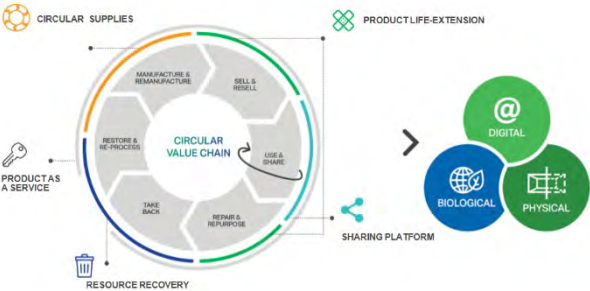
EXAMPLES OF CONSTRUCTION WASTE IN THE UNITED KINGDOM

*<https://www.circularity-gap.world/updates-collection/our-world-is-still-only-9-circular>

The base line of “The business case for circular buildings”

Moving towards a circular built environment involves a shift in roles and business models for stakeholders active in this sector. However, barriers related to culture, regulations, market, technology and education are slowing down the transition.

2017



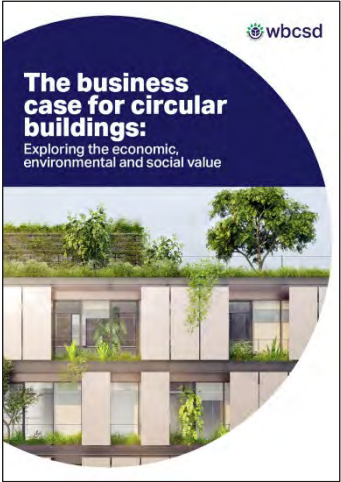
[WBCSD CEO Guide to the Circular Economy](#)

2018



[Scaling the circular built environment](#)

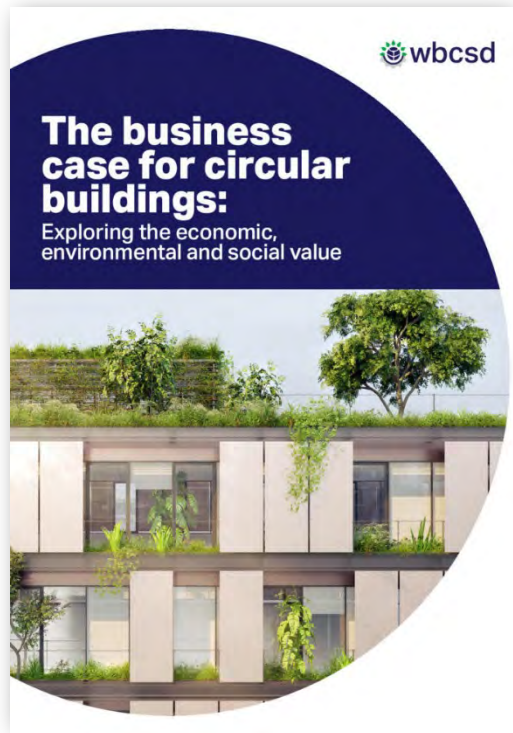
2021



[The business case for circular buildings](#)

2022

The business case report: Addressing 2 key barriers



[Download Report](#)

Webinars:



Key messages

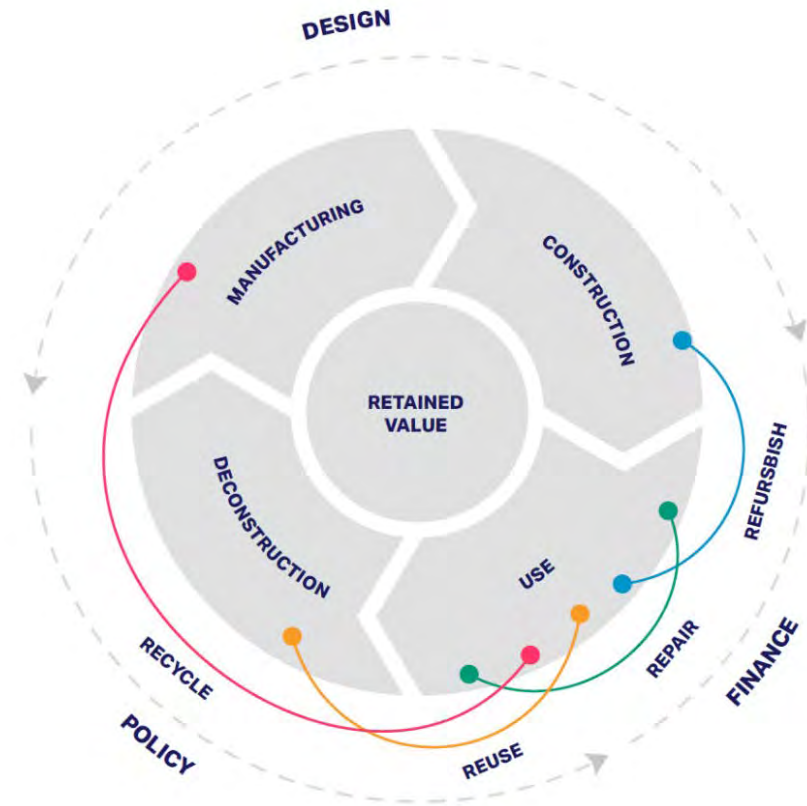
- Case studies to support the positive impact of the use of CE model
 - Avoided costs from new land acquisition and landfilling costs
 - Rapid sales
 - A demonstrable lease price advantage
 - Significant reductions in CO2 emissions for developments that prioritize circular economy approaches.
- Lack of quantitative data
- Virgin material cheaper than reusable material
- The legislation is not supporting the implementation of the model in the built environment system

Circular buildings – Project definition

Report definition

A building designed and operated using:

- Durable products and services
- Space efficiency over time
- Longevity
- Reused, or recycled components that can be disassembled
- Whole life cycle assessment and life cycle costing
- Digital tools e.g. building material passports



The value case

Economic Value Case

- Cost savings
- Increased prices of products and services
- New business opportunities
- Financial flexibility
- Value retention

Broader Value Case

Social value

- Local job creation
- Strengthened brand
- Stakeholder satisfaction
- Cultural identity
- Knowledge sharing

Environmental value

- Lowered CO2 emissions
- Minimized waste
- Lower use of virgin material
- Improved material transparency

Conclusions and recommendations

While the report highlights a broader value case, there is clearly a **lack of consistent quantitative data** supporting the business case for circular practices.

To catalyze the transition, **we recommend that the use of established industry tools such as whole-life carbon assessment and life-cycle costing also measure and account for the benefits of circular solutions**, such as e.g., accounting for residual value of solutions, components and materials, and reductions in operational expenditures, demolition or (future) carbon costs.



What next with the Circular Built Environment project?



Reduce CO₂ emissions and prevent nature loss



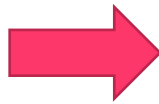
Reduce supply chain material risks



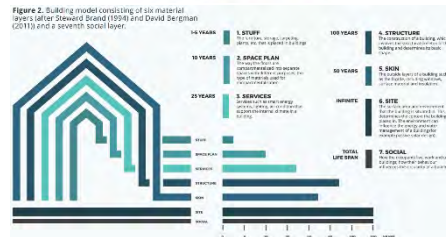
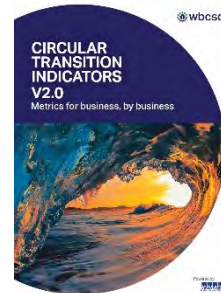
Create a business case for CE



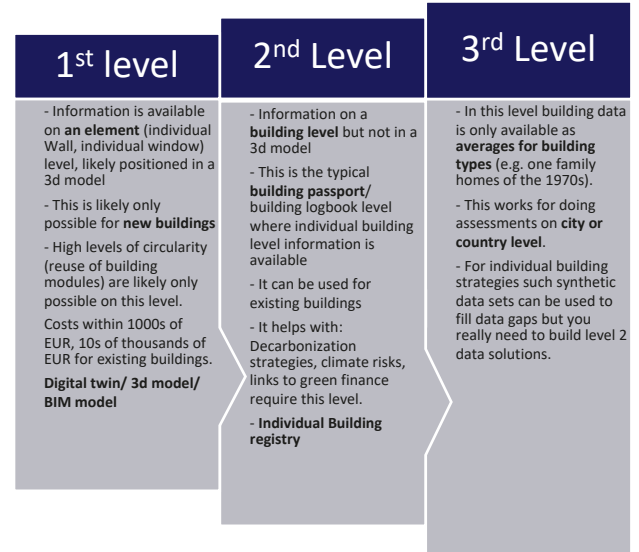
Keep the license to operate (legislative and financial requirements)

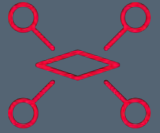


Standardization of a framework to measure the circularity of buildings



Aligning material and building passports





OUR ROLE IN THE INDUSTRY

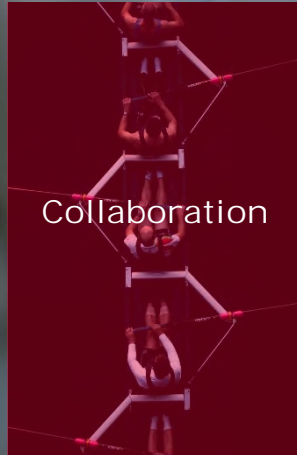
Dow is looking at every stage of the lifecycle and the vast range of applications to accelerate reductions in environmental impacts and to ensure we can continue to play its part in future solutions.



Innovation



Sustainability

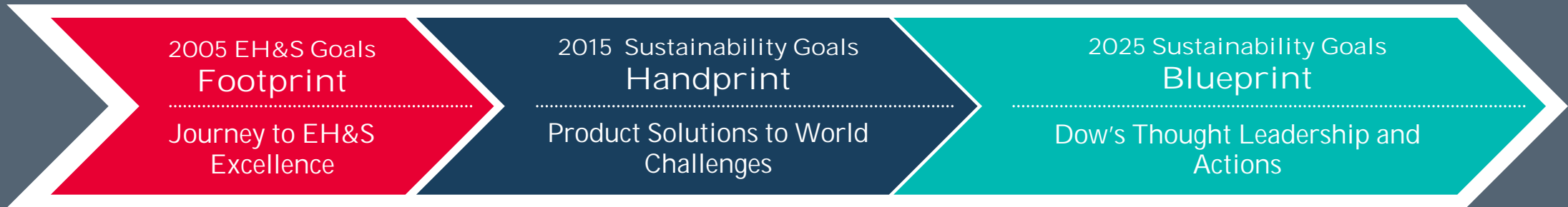


Collaboration





OUR COMMITMENT



PROTECT THE CLIMATE

By 2030, Dow will reduce its net annual carbon emissions by 5 million metric tons versus its 2019* baseline (15% reduction). By 2050, Dow aspires to be carbon neutral (Scopes 1+2+3 plus product benefits).



STOP THE WASTE

By 2030, Dow will help “stop the waste” by enabling 1 million metric tons of plastic to be collected, reused or recycled through its direct actions and partnerships.



CLOSE THE LOOP

By 2035, Dow will “close the loop” by enabling 100% of Dow products sold into packaging applications to be reusable or recyclable.



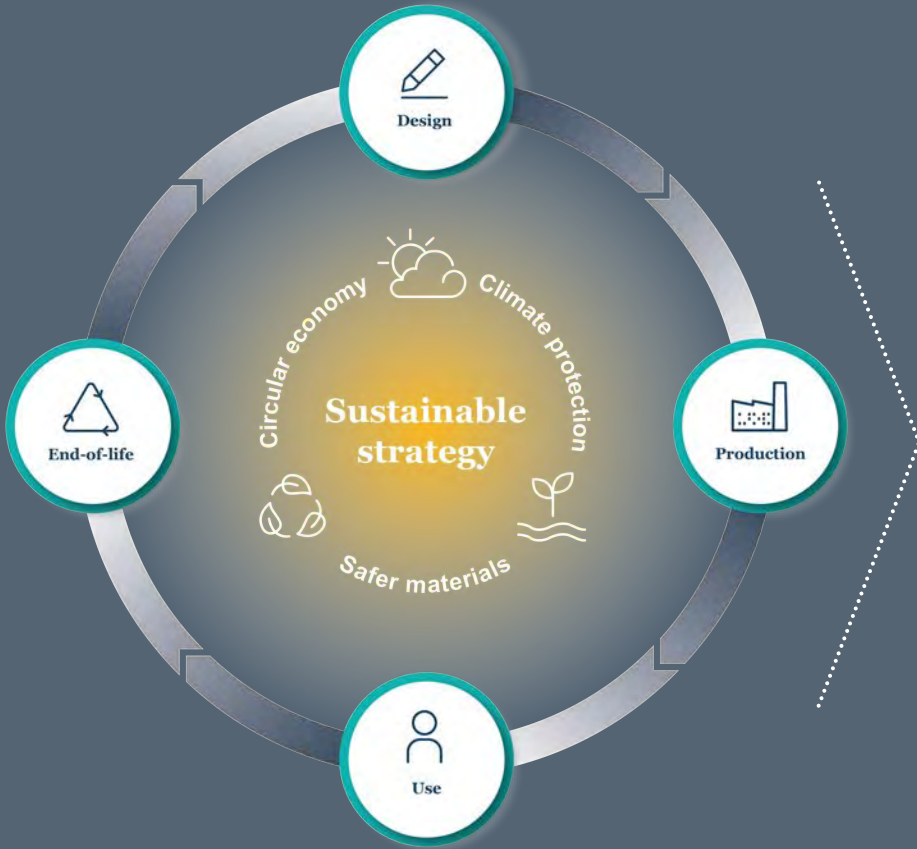
Visit corporate.dow.com/en-us/science-and-sustainability to learn more about our goals, actions and ESG report*



OUR FOCUS



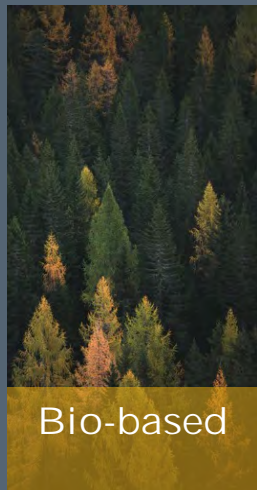
How is Dow accelerating its sustainability commitments?



CHANNELING DOW'S MATERIALS SCIENCE EXPERTISE AS WE COLLABORATE AND INNOVATE WITH CUSTOMERS AND PARTNERS TO
CREATE SOLUTIONS THAT POSITIVELY IMPACT THE WORLD

<p>PACKAGING</p> <p>Providing solutions to keep foods fresher and deliver high-performing, durable, lighter-weight and recyclable packaging</p>	<p>INFRASTRUCTURE</p> <p>Enhancing energy efficiency, circularity and durability in building and construction, appliances, adhesives, lubricants, and wire and cable</p>	<p>CONSUMER</p> <p>Meeting consumers' needs for innovative, convenient and more sustainable home and personal care solutions</p>	<p>MOBILITY</p> <p>Delivering solutions for lighter weight, longer range, comfort, safety and lower carbon footprint for vehicles that are connected, autonomous, shared and electric</p>
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Materials with Purpose



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Sustainability in Circular Cities through 3 Success Stories



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Innovations Europe Webinars Connect Help More resources

1) Turf **Revoloop**
recycled plastics resins by **Dow**

2) Paving **Elvaloy**
copolymers for alloys

3) Photovoltaic **Engage**
polyolefin elastomers

Facade & Performance Glass

Infrastructure

Interiors

Weatherproofing

Fire Safety

Sustainability

Windows & Doors

Building Science



Resource Efficiency with D4R and Mechanical Recycling Clever design & Integration of post-consumer materials



Design for Recyclability

Recycle

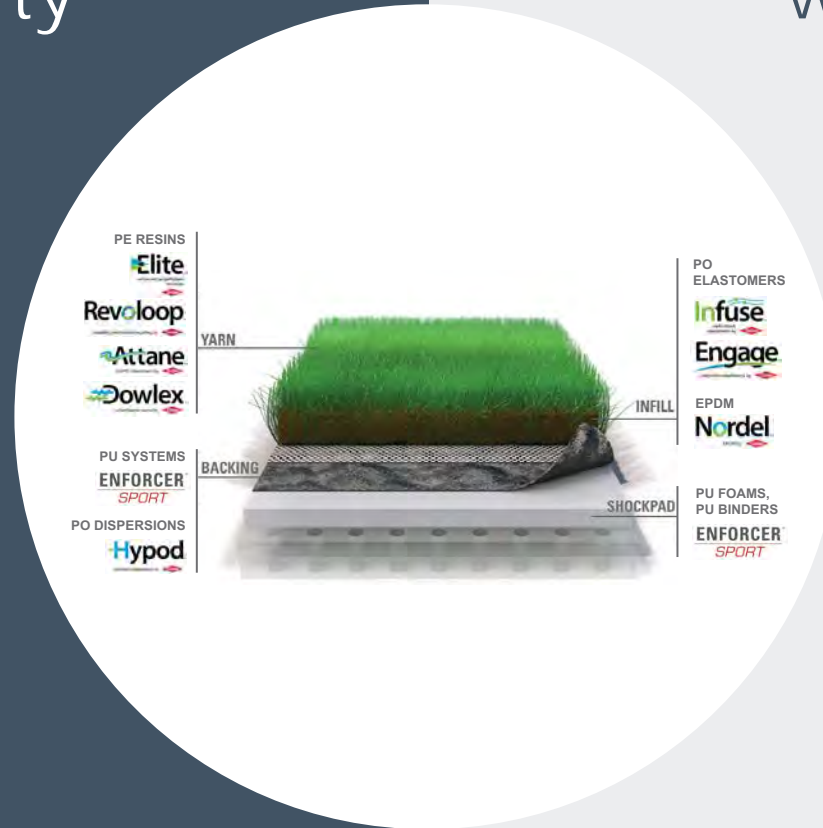
Complete olefin-based system for enhanced end-of-life recyclability

Reduce

up to **50% less** coating materials needed to achieve the same performance of conventional backings

Re-use

enhanced wear resistance, therefore extending the lifetime of the pitch; suitable for repurposing in similar applications



with Integration of PCR

Advanced technologies that enable the incorporation of post consumer materials in the yarn

XZ 98612.00 ⁽¹⁾ with
30%
recycled material

For high-performance pitches



¹ Developmental product of The Dow Chemical Company

Visit Dow.com → Search "REVOLOOOP" to learn more about our offering



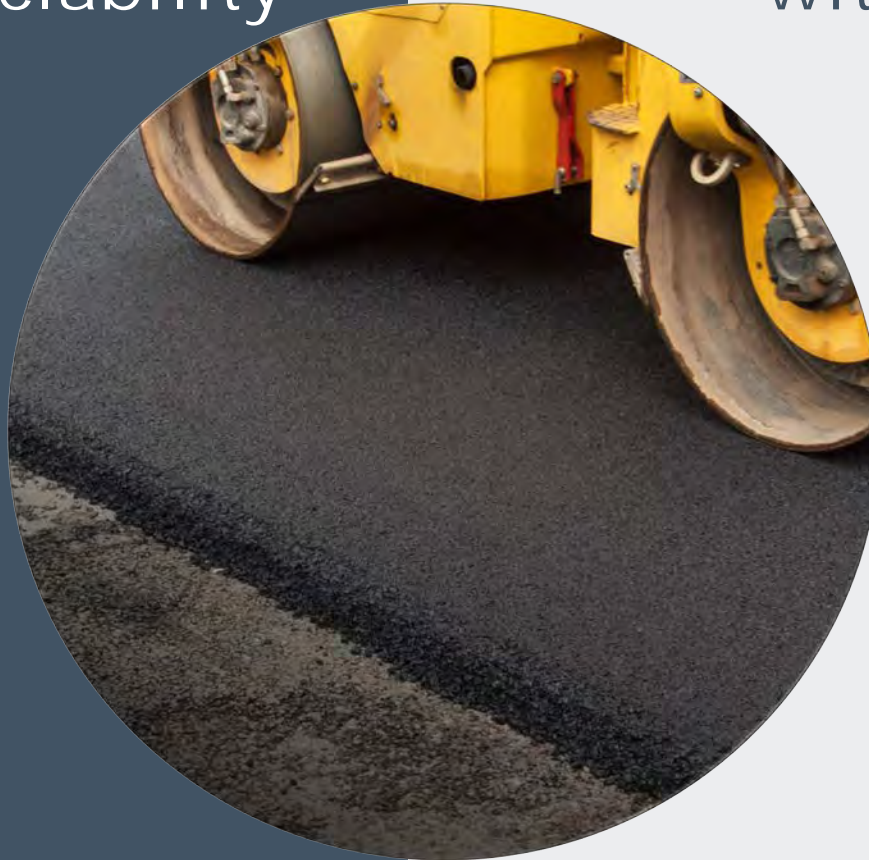
Resource Efficiency Enabling Long Service Life More durability & recycle content in roads



Design to Enable Recyclability

Polymer modified asphalt (PMA) pavement with Dow ELVALOY™ Reactive Elastomeric Terpolymer result in long service life and lower life cycle costs compared to conventional, neat asphalt.

Recycled PMA takes pavement in a new direction by adding plastic recycle content to the mix. To make RPMA, the base asphalt binder is modified by adding ELVALOY™ RET



with Integration of PCR

Advanced technologies that enable the incorporation of recycled plastics in pavement

ELVALOY™ RET

enables more than **50%**
of recycled plastics

For high-performance pavement



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Resource Efficiency with Renewable Energy Optimized long-term module performance



Seek Together™

Enabling Lower Carbon

Performance

Increase power generation, electrical efficiency and reliability

Longevity

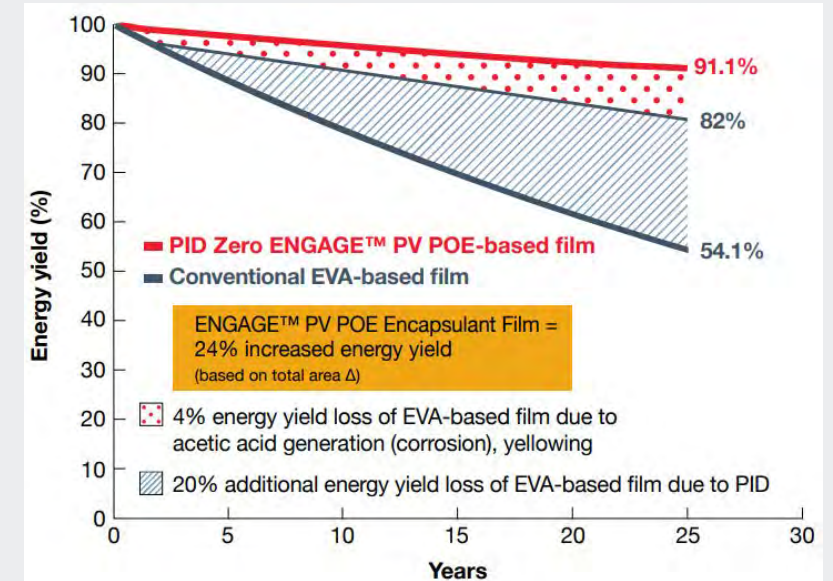
Improve resistance to potential induced degradation (PID) with “PID Zero” performance

System cost

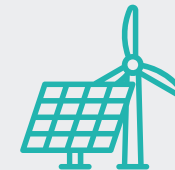
Reduce the levelized cost of electricity (LCOE) as well as total system costs



with higher Performance



For high-performance solar panels



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