ELLEN MACARTHUR FOUNDATION

THE NATURE IMPERATIVE

How the circular economy tackles biodiversity loss

SECTOR DEEP-DIVE

Built environment

Biodiversity loss is widely recognised as a systemic risk that threatens not only our prosperity but our very future as a species. To halt and reverse this loss, a transformative change to its main underlying cause – our extractive, wasteful and polluting economy – is urgently needed. The circular economy is being rapidly recognised as a powerful framework to achieve this fundamental shift as it creates value in ways that rebuild biodiversity and provide other society-wide benefits.

Our 'take-make-waste' economy is increasingly recognised as the main underlying cause of the biodiversity crisis. Biodiversity has risen to the top of the global agenda as the planet faces its sixth mass extinction, with projections of the loss of more than a million species in the coming decade. More than 90% of this biodiversity loss is due to the extractive, polluting, and wasteful way we use resources in the economy.

To halt and reverse biodiversity loss, we need to fundamentally transform our production and consumption systems, and the circular economy offers an actionable framework for such transformative change. By decoupling economic prosperity from resource consumption and environmental degradation, the circular economy presents opportunities for new and better growth that not only help safeguard and rebuild biodiversity, but also provide other society-wide benefits, such as helping tackle climate change, improving air and water quality, and reducing the cost of accessing goods and services.

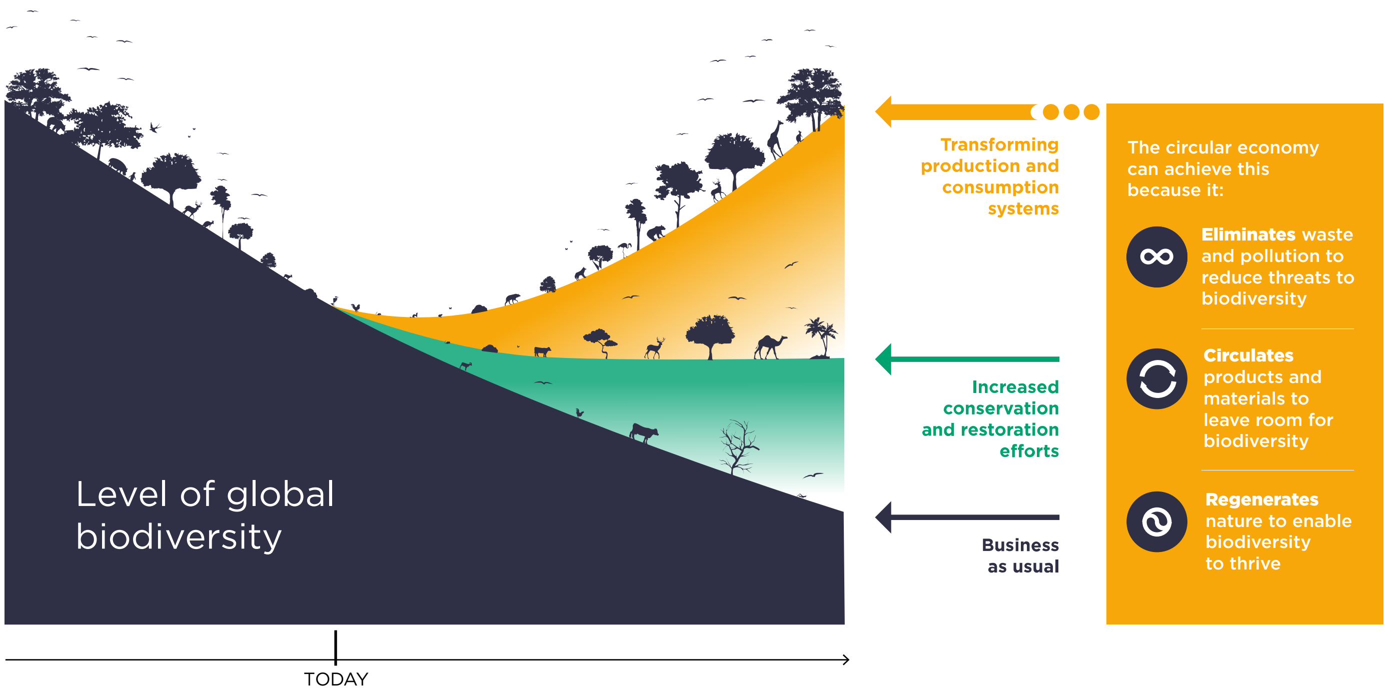
It is by applying the three principles of the circular economy together, that the root causes of biodiversity loss can be tackled:

- **Eliminating waste and pollution – to reduce threats to biodiversity.** Designing out problems from the start is crucial to reducing biodiversity loss. For example, eliminating unnecessary plastics and re-designing plastic products for reuse, recycling or composting allows them to circulate in the economy without being wasted and polluting the environment.

- **Circulating products and materials – to leave room for biodiversity.** Reducing demand for natural resources reduces biodiversity loss. In fashion, for example, business models that keep cotton clothing in use for longer will, all things being equal, reduce the amount of land needed to grow cotton. This leaves more space for other uses including the preservation of wilderness areas, which are crucial to the health of wildlife populations. In electronics, using recycled metals in devices means fewer mines need to be dug, leaving room for biodiversity, and avoiding emissions of greenhouse gases and other pollutants.

- **Regenerating nature – to enable biodiversity to thrive.** Economic activity can, and needs to, actively rebuild biodiversity. Regenerative agricultural approaches such as agroecology, agroforestry, and managed grazing sequester carbon in the soil and improve its health, increase biodiversity in surrounding ecosystems, and enable agricultural lands to remain productive instead of degrading over time, thereby reducing the need for land expansion..

FIGURE 1 **THE CIRCULAR ECONOMY PLAYS A CRUCIAL ROLE IN BENDING THE CURVE ON BIODIVERSITY LOSS** [I]



I This image is an adaptation of that presented by the Secretariat of the Convention on Biological Diversity's report Global Biodiversity Outlook 5 (2020) and the Nature article Bending the curve of terrestrial biodiversity needs an integrated approach (2020). It does not intend to accurately represent the impact of potential scenarios.

To effectively halt and reverse biodiversity loss, multiple stakeholders will need to be engaged. Businesses can join the dots between their biodiversity ambitions and circular economy plans, by assessing their biodiversity impacts and dependencies and setting targets, identifying circular economy opportunities that help meet those targets, and collaborating across value chains to develop innovative solutions. Meanwhile, policymakers can play an instrumental role in developing a conducive policy context for this transformative change by adopting a circular economy approach based on five universal policy goals.

To learn more about how the circular economy can be harnessed to halt and reverse global biodiversity loss, and get a deeper understanding of what this looks like across the Fashion, Plastic Packaging, and Built Environment sectors, visit the Ellen MacArthur Foundation page for the full paper The Nature Imperative: How the circular economy can help tackle biodiversity loss, or one of the other individual sector deep-dives, or explore our library of case examples.

Built environment

LEAVING ROOM FOR BIODIVERSITY BY REDUCING PRESSURES ON NATURAL RESOURCES

The built environment currently operates under a wasteful linear model that puts significant pressure on biodiversity. A circular economy for the built environment offers a comprehensive system-level approach to transform the way we source materials, build infrastructure, and use assets in order to create opportunities for better growth while halting and reversing global biodiversity loss. By planning for compact and biodiverse urban environments that optimise space, the sector can leave room for nature to thrive within and beyond urban areas. Keeping buildings and materials in use reduces the need for new construction and material extraction, thereby limiting the associated negative impacts on biodiversity. Where new materials are needed, switching to renewable materials produced regeneratively can help the sector actively rebuild biodiversity and safeguard the health of ecosystems.

The built environment we live in today is designed around a linear 'take-make-waste' model that contributes to biodiversity loss. In fact, this approach has turned the sector into the world's largest consumer of raw materials and a major producer of waste and greenhouse gas emissions.[17] Overall, the built environment is estimated to impact 29% of the International Union for Conservation of Nature's (IUCN) list of threatened and near-threatened species.[18] As the global urban population is expected to reach 7 billion by 2050, the size of the built environment is set to double.[19] This expected expansion under a linear model would only magnify the sector's impact on global biodiversity loss.

The circular economy offers an approach to fundamentally transform the way we design, produce, and use materials and infrastructure to shift towards a built environment that protects and rebuilds biodiversity. A circular economy for the built environment reduces demand for virgin building materials by keeping assets and materials in use and, where possible, appropriately integrates nature in urban areas by design. In doing so, the sector can reduce the pressures on biodiversity related to urban expansion, the processing of materials, and the construction of buildings. Additionally, by leaving room for nature within and beyond urban areas, and by regeneratively producing renewable materials, the sector can have a direct beneficial effect on biodiversity. Such a circular economy approach helps create biodiverse, resilient, and healthy cities. This approach also has the potential to reduce emissions related to the production of four key building materials - cement, steel, aluminium, and plastic - by 2Gt CO_2 in 2050[20] and capture the approximately EUR 2.1 trillion (~USD 2.49 trillion) of annual lost value from depreciated building materials.[21]

In the built environment there are three principal circular economy opportunities to tackle the main direct drivers of biodiversity loss:

A **Planning for compact and biodiverse urban environments**

B **Keeping buildings and materials in use**

C **Switching to renewable materials produced in regenerative ways**

THE IMPORTANCE OF BIODIVERSITY TO THE BUILT ENVIRONMENT

Image: Fanny Breteau

The construction industry is one of the three economic sectors, with agriculture and fisheries, food and beverages, most dependent on natural resources for its raw materials.[22] When it comes to the built environment itself, higher levels of biodiversity in and around urban areas provide myriad environmental and socioeconomic benefits, including improved levels of mental health, better water quality, and increased resilience to climate shocks.[23] As an example of the latter, mangrove forests alone are estimated to protect 18 million people from annual flood risks and prevent damage to infrastructure worth approximately USD 80 billion.[24]

THE IMPACT OF THE BUILT ENVIRONMENT SECTOR ON THE FIVE DIRECT DRIVERS OF GLOBAL BIODIVERSITY LOSS[1]

Land-use change

- On current trends, by 2030 the global expansion of urban areas could threaten 290,000 km^2 of natural habitats – an area larger than Ecuador[25]

Overexploitation:

- The construction industry is the largest global consumer of natural resources for raw materials.[26] Sand and gravel are the most extracted materials in the world and make up about 79% of the natural resources used in the built environment.[27] Their extraction, sometimes undertaken illegally inside biodiversity-rich areas, exceeds natural replenishment rates and leads to the disruption of river and coastal habitats[28]

Pollution

- Poor design of the built environment hinders proper waste management, leading to the pollution of terrestrial and aquatic ecosystems, and increasing health risks[29]
- High rates of vehicle use, exacerbated by low-density urban planning, contribute to air pollution: in the US vehicles are responsible for almost 40% of national carbon monoxide and nitrogen oxide emissions[30]
- Higher temperatures and light- and noise-pollution arising from activities in the built environment disrupt the natural cycles and species dynamics of surrounding ecosystems[31]

Climate change

- Buildings and the construction sector account for 39% of global energy- and process-related CO_2 emissions, 11% of which result from manufacturing building materials such as steel, cement, and glass[32]

Invasive alien species

- Long-range transport of construction raw materials and products facilitates the spread of invasive alien species, which can have serious negative consequences for their new environment[33]
- Conventional urbanisation can create disturbed environments where invasive alien species can thrive, outcompeting native species[34]

A PLANNING FOR COMPACT AND BIODIVERSE URBAN ENVIRONMENTS

Planning for compact urban environments increases the density of urban settlements, reducing urban sprawl and helping to safeguard natural habitats around cities. Compact planning can apply as much to new urban developments as to regeneration or infill projects where disused, abandoned, or vacant lots are reintegrated into the city.[35] It can be achieved by, for example, repurposing or rehabilitating existing buildings, or promoting mixed-used development. In Europe, reducing urban sprawl by planning cities for increased density could save up to 30,000km^2 of land by 2050, compared to the current development scenario.[36] Such land savings are critical for biodiversity as many of the world's Key Biodiversity Areas are located in close proximity to cities and are therefore subject to land conversion from urban sprawl.[37,II] Additionally, it has been estimated that, by 2030, urban expansion under a business-as-usual scenario would destroy natural habitats that store over 4 billion metric tonnes of above- and below-ground CO_2 – equivalent to the annual emissions of 931 million cars.[38] Preventing the clearance or burning of ecosystems for urban expansion through compact planning could help avoid the release of the carbon stored in these ecosystems and safeguard their sequestration potential.

Strategically designed compact built environments also offer favourable conditions to reduce the greenhouse gas emissions and air pollution associated with urban transportation systems. For example, while Stockholm and Pittsburgh, have roughly the same number of inhabitants, the latter occupies five times as much land, which means longer journeys and transport emissions almost six times higher than in Stockholm.[39] Supported by technological and digital innovations, compact cities can also better integrate different modes of transport such as active mobility (e.g. walking, cycling) or shared mobility options (e.g. buses, trams, rideshares) running on renewable energy,[40] thereby further reducing greenhouse gas emissions and air pollution.[41] The adoption of such compact and connected urban environments is well underway with concepts like the 15- or 20-minute neighbourhoods, which aim to reduce emissions by enabling people to live close to jobs, essential services, and recreation and are being adopted by, among others, Paris and Melbourne.[42]

When planning for compact and biodiverse urban environments, it is crucial to appropriately integrate biodiversity within and around the city in order to shape more liveable, resilient, and healthy cities. Designing urban areas with more trees, parks, green roofs, and other green infrastructure – choosing species appropriate to the local context – not only increases biodiversity within the city but also helps mitigate the urban heat island effect, improves water quality, sequesters carbon, and increases environmental resilience, amongst other benefits.[43] Cape Town, for example, prevented major water shortages by protecting its watershed using nature-based solutions that restored vegetation and degraded land.[44] Globally, developing compact and biodiverse built environments that promote the reforestation of watersheds in peri-urban areas would improve water security and stormwater management and, at the same time, could reduce the risk of extinction for 5,408 species around the world.[45] Overall, according to the World Economic Forum, building compact and biodiverse built environments could create over USD 3 trillion in business opportunities and 117 million jobs by 2030.[46]

II Key Biodiversity Areas (KBAs) are sites contributing significantly to the global persistence of biodiversity, for more information on KBAs see http://www.keybiodiversityareas.org/

THE CITY IN NATURE
(Singapore)

Singapore is an example of a city that has adopted a compact and biodiversity-friendly approach to urban planning. Despite its population density increasing from 3,538 residents per km^2 in 1970 to 7,810 residents per km^2 in 2020,[47] the city managed to expand green areas from 36% to 47% of its total land area.[48] In fact, since the early 1960s, Singapore has had a strong ambition to green itself in order to become a highly liveable and competitive city. For example, high-rise greenery has increasingly become an essential component of the city's development plan, in part due to the limited amount of land available. The government now requires property developers to replace any greenery lost during construction and covers 50% of the costs of installing green roofs and walls on existing buildings.[49] As a result, the city's 72 hectares of rooftop gardens and green walls are set to triple by 2030.[50] These, combined with 4,172 hectares of green space (parks and park connectors), reduce the city's heat-island effect, help absorb stormwater, provide space for recreation, and increase urban biodiversity.[51]

Biodiversity Benefits
By promoting a compact urban environment where biodiversity is integrated, Singapore's development has been able to leave room for nature within and beyond its built-up area. Singapore is home to an estimated 23,000–28,000 species of terrestrial organisms and 12,000–17,000 marine organisms.[52]

Image: Daniel Welsh on Unsplash

B KEEPING BUILDINGS AND MATERIALS IN USE

Using buildings more and for longer can displace the need for new construction, thereby reducing the overexploitation of natural resources and greenhouse gas emissions. Extending the active life of buildings can be achieved through circular business models like sharing and rental, together with repairing, refurbishing, and retrofitting existing buildings. Such strategies offer more cost-effective, less resource-intensive, and less greenhouse gas-emitting solutions than demolition and new construction. This approach is particularly interesting for OECD countries, where 65% of the projected building stock required by 2060 already exists.[53] For example, as a consequence of the Covid-19 pandemic in London, more than 1 million square feet of office space (approximately 92,900m^2)[III] was given up by companies between March and September 2020, with many properties earmarked for conversion to residential use.[54] Such office-to-residential conversion can meet new housing needs while limiting the conversion of natural areas in the city's periphery and reducing natural resource demand and greenhouse gas emissions. Globally, extending the lifetime of existing buildings could reduce greenhouse gas emissions by 1 billion tonnes of CO_2 per year beyond 2050.[55]

Once buildings can no longer be used, circulating the materials they contain – instead of landfilling or incinerating them – can avoid the impacts on biodiversity associated with the unnecessary extraction, processing, and disposal of natural resources.[56] Reusing and recycling four key materials in the built environment sector – namely steel, plastics, aluminium, and cement – can reduce global greenhouse gas emissions by at least 0.6 billion tonnes of CO_2 per year in 2050.[57] Examples of recycling and reusing materials can already be found in the sector. For example, the construction company Mace collected 200 tonnes of timber in 2016, 79% of which was reused – saving 117 tonnes of carbon emissions and displacing the need for new logging.[58] Furthemore, increased policy attention is being given to material circulation strategies with, for instance, in Australia, the Victoria State government's 'Recycled First' programme for infrastructure requiring the prioritisation of recycled and reused materials for new construction projects.[59] Additionally, a built environment that circulates materials at the local level would, in theory, require less movement of materials – reducing the potential spread of invasive alien species through transport.

Design will play a crucial role in ensuring that buildings and materials are kept in use, thereby alleviating the sector's pressures on biodiversity. By selecting longer-lasting materials, applying modular designs, and increasing the intensity of use, for example through building sharing models, the sector can bring greater flexibility to new constructions and make better use of resources – minimising the waste and emissions associated with construction and building use. Companies like DIRTT are embracing this approach by working with interior building components that are modular and standardised, allowing for maximum efficiency in changing the use of a building and supporting sharing and mixed functionality.[60] These designs must be aligned with the intended end-of-use materials circulation strategy. For example, design for disassembly can facilitate the recovery of components for their reuse in new projects, once the original building can no longer be used.

The sector can leverage technological developments to facilitate the circulation of materials. Applying digital technologies, such as building information modelling (BIM) and material passports, to the built environment can help turn buildings into material banks.[61] This approach ensures that information on which materials and components were used, where they were sourced from, and guidance on their potential future use is easily available. Combined with a design-for-disassembly approach, this technology makes reuse and recycling significantly easier at the building's end-of-life, which is key to reducing future natural resource overexploitation and greenhouse gas emissions.[62]

III This area equates to over 1,250 three-bedroom apartments for four people, calculated based on the dwelling space standards guidance of the Greater London Authority, where a three-bedroom apartment with four bed spaces requires a minimum gross internal floor area of 74m^2; see Greater London Authority, Housing design quality and standards (2020), p.49.

ADAPTIVE REUSE OF AN EXISTING BUILDING

Reducing demand for virgin natural resources to leave room for biodiversity

Quay Quarter Tower (Australia)

Image: 3XN

Quay Quarter Tower, originally built in 1976, has been the centrepiece of Sydney's harbour area revitalisation.[63] Since 2018, the building has been undergoing a redevelopment which will see a height increase, the construction of additional floorspace, and a modernisation of the building's entire design. Instead of demolishing and constructing a new building, which usually occurs with any major urban development and leads to waste generation and resource demand, Arup and Danish architects 3XN took an adaptive reuse approach to convert the existing building and change it to a new use.

Biodiversity benefits

This adaptive reuse approach retained 68% of the building's structure, which reduced the need for virgin material extraction and retained a part of the tower's embodied CO_2 equivalent to 10,000 aeroplane flights from Sydney to Melbourne.[64] In doing so, the renovation was able to reduce its contribution to the overexploitation of natural resources and to climate change, thereby minimising the project's impact on biodiversity.

C SWITCHING TO RENEWABLE MATERIALS PRODUCED IN REGENERATIVE WAYS

Switching to renewable raw materials, where appropriate, can help decouple the built environment from finite, carbon-intensive materials. When making use of existing materials is no longer possible, the sector can alleviate its impact on biodiversity by favouring renewable materials over sand, gravel, and other finite resources – the extraction and production of which are associated with ecosystem disruption and high greenhouse gas emissions.[65] Timber, in particular, is increasingly viewed as a compelling alternative to concrete. Switching to timber for 75% of new residential and 50% of new commercial buildings in a selection of 96 cities around the world could cut their total greenhouse gas emissions by 6% between 2017 and 2050.[IV] Additionally, unlike conventional concrete structures that are more likely to be downcycled, wood beams can more easily be reused or repurposed if designed for disassembly.[66] Relevant stakeholders are already promoting the adoption of timber as a construction material because of its potential to reduce pressures on biodiversity and the climate. The French government recently mandated that all new public buildings must contain 50% wood or other organic materials from 2022 onwards.[67]

An example of this directive in action is the timber-based swimming pool pavilion designed for the Paris 2024 Olympics Games, following the organisers' pledge to be the first climate-positive Games.[68]

Regenerative production can ensure that the switch to renewable materials has a positive impact on biodiversity. For example, if sourced from well-managed forests that employ continuous cover techniques, promote mixed stands, spare veteran trees, and leave deadwood behind, timber production can limit habitat disturbance, reduce erosion, and improve soil health.[69] By contrast, damaging practices such as planting trees in ecosystems that have not historically been forests or monocultures – particularly with exotic tree species – must be avoided.[70] Ultimately, the specific set of practices used to grow renewable materials need to be adapted to the particular context, geography, and climate in which the production takes place in order to successfully rebuild biodiversity.

IV This research drew on data for 96 cities, from within the C40 cities network membership at the start of the research project in June 2018. C40, Arup, and University of Leeds, Building and infrastructure consumption emissions (2019).

A TIMBER-BASED OFFICE LEVERAGING THE CIRCULAR ECONOMY

Using innovative solutions that allow biodiversity to thrive

Triodos Bank Office (The Netherlands)

The timber-based structure of Triodos Bank's new headquarters in the Netherlands demonstrates the potential of switching to renewable materials.[71] The building reduces the pressures on biodiversity associated with the overexploitation of finite, greenhouse gas-intensive raw materials. The five-storey office building, with a surface of 12,994m^2, contains 1,615m^3 of laminated wood, over 1,000m^3 of cross-laminated wood (CLT) and five tree trunks.[72] Only the basement uses concrete due to the high-water table. The timber for the structure came from a German manufacturer using spruce from PEFC-certified managed European forests*.[73]

The application of circular economy principles in the building's design goes further as its structure was designed for disassembly by joining the timber components using screws instead of glue. This means the building can be taken apart simply by unscrewing the components, which can then be reused in other projects. The office is also conceived as a materials bank, with all its materials monitored using a public online repository so they can more easily be reused in the future.[74] Built in 2019, the building achieved a BREEAM Outstanding Certificate for its environmental, social, and economic sustainability thanks to, among other factors, making use of sustainable materials and natural light, and carefully regulating its climate.

Biodiversity benefits Using timber instead of concrete allowed the construction process to reduce its dependence on the extraction of finite resources like sand and gravel, which are associated with detrimental effects to biodiversity,[75] and stored the equivalent of 1,633 tonnes of CO_2 in the building's structure.[76] Moreover, thanks to being designed for disassembly and to using digital technology to record its materials, the circulation of components at the building's end-of-use will be able to further reduce greenhouse gas emissions and resource extraction.

** To secure an overall positive impact on biodiversity, forest managers and certification schemes must ensure timber is grown in regenerative ways, meaning biodiversity is rebuilt by, for example, proactively limiting habitat disturbance and improving soil health and water quality.*

Images: Bert Rietberg

CIRCULAR ECONOMY ACTIONS BUSINESSES IN THE BUILT ENVIRONMENT SECTOR CAN TAKE TODAY TO ACHIEVE THEIR BIODIVERSITY AMBITIONS

The table below highlights three key steps that businesses can take to help kick-start their journey:[V]

1 Assess impacts and dependencies on nature

Measure impacts and dependencies on biodiversity to help identify priority areas to focus on and help deliver biodiversity-positive outcomes	• Measurement approaches such as the IUCN Species Threat Abatement and Restoration (STAR) metric, the Natural Capital Protocol, Biodiversity Impact Metric, and the Global Biodiversity Score offer companies useful methods and resources to help assess, act, and report on progress towards meeting biodiversity targets[77] • Draw inspiration from examples such as Acciona's biodiversity impact measuring tool, developed together with PwC
Set biodiversity targets that are aligned with the best available science	• Set targets for biodiversity: The Science-Based Targets (SBT) for Nature has for example recently developed an initial guidance for companies looking to set biodiversity targets that are aligned with globally agreed goals

V To make sure these steps are successfully implemented and achieve a positive outcome for biodiversity, businesses can benefit from bringing in technically competent biodiversity and circular economy expertise, fostering a culture of innovation within the organisation, and allocating sufficient funding to circular economy plans and innovations.

2 Identify circular economy opportunities that help meet biodiversity ambitions

Assess the circular economy potential by leveraging the framework and searching for best practices on how circular economy solutions can help businesses preserve biodiversity, at the same time as generating economic and social benefits[VI]

- Throughout this chapter, examples have been provided of how the circular economy framework can help tackle the key drivers of biodiversity loss most impacted by the built environment sector. For deeper insights on the circular economy in the built environment see Ellen MacArthur Foundation's Built Environment Factsheets as well as Arup's comprehensive reports highlighting the first steps towards a circular built environment, the business models, and how to best realise its value in real estate
- The Biodiversity Case Study library showcases circular economy business examples in the built environment industry that help safeguard and rebuild biodiversity.
- Circulytics is one of the most comprehensive circularity measurement tools available for companies. Going well beyond assessing products and material flows, it informs businesses on their circularity level across their entire operations

Shape a circular economy action plan to help tackle a company's most urgent impacts and dependencies on nature, with the circular economy acting as a key delivery mechanism

- Examples of circular economy and biodiversity commitments:
    - Balfour Beatty has committed to generating zero waste and going beyond net-zero carbon emissions by 2040, while enhancing biodiversity
    - In its Biodiversity Policy, Saint-Gobain commits to reducing its environmental impact, and the group is also working towards a circular economy and a carbon neutral business by 2050
    - Grosvenor Britain and Ireland has committed to a significant net biodiversity gain by 2030, while achieving a net-zero carbon state from its buildings, developments, and supply chain, and adopting circular economy strategies

VI The circular economy directly aligns with the SBTN's Action framework – Avoid; Reduce; Regenerate and Restore; Transform – in helping to deliver on biodiversity targets.

3 Stimulate collaboration to find solutions that can deliver transformative change

Design for the circular economy to ensure products are designed, accessed, and used in ways that eliminate waste, pollution, and environmental degradation

- The circular design learning pathway, toolkit, and guide highlight how and why design sits at the heart of the circular economy, and what steps businesses can take to help rethink their products or services
- Heta Architects developed A guide to designing for material re-use
- Arup shows the importance of facade design for the circular economy
- MI-ROG's procurement guidance shares how circular economy principles can be embedded into infrastructure operator procurement activities

Stimulate collaboration by identifying key stakeholders within and outside value chains to collaborate and innovate with, and find circular solutions that help tackle biodiversity loss

- Major-Infrastructure - Resources Optimisation Group (MI-ROG) is the first forum of its kind in the infrastructure sector. It has inspired and facilitated workflows on asset life cycle, carbon performance, circular economy planning, critical materials availability, materials exchange, and sustainable procurement and supply chains. The group benchmarks approaches, shares best practices, and collaborates across projects – seeking greater resilience and efficiency in the planning, development, and delivery of major programmes
- The UK Green Building Council (UKGBC) is an industry-led network uniting over 400 organisations across the construction value chain. Its mission is to radically improve the sustainability of the built environment by eliminating waste and maximising resource efficiency, and embracing and restoring nature and promoting biodiversity, among other goals
- The Spanish Business and Biodiversity Initiative provides a cooperation framework for infrastructure and construction companies as well as businesses from other sectors, NGOs, associations, and the government to integrate natural capital in business management, with an emphasis on circular economy measures
- Grosvenor's Materials Re-use Network connects built environment professionals and organisations like HETA, ARUP, Orms, and Elliott Wood to explore the barriers and enablers to accelerating material reuse in the building and construction sector

GLOSSARY

Agroecosystems
Natural ecosystems that have been modified for the production of food or of materials such as fibres.[2] They include managed forests, plantations and orchards, pastures, rangelands, and croplands, and the organisms, including cultivated ones, living in them.[3]

Biodiversity
The variability among living organisms from all sources including, inter alia, terrestrial, marine, and other aquatic ecosystems, and the ecological complexes which they are part of. It includes diversity within species, between species, and of ecosystems.[4]

Direct drivers
Drivers (natural and anthropogenic) that unequivocally influence biodiversity and ecosystem processes (also referred to as 'pressures').[5] The five direct drivers with the greatest global impact on biodiversity are: land-use change, climate change, pollution, natural resource use and exploitation, and invasive species.[6]

Indirect drivers
Drivers that do not impact nature directly, but rather affect the level, direction, or rate of direct drivers and are also referred to as 'underlying causes'.[7] Indirect drivers can also influence each other. Examples include socioeconomic and demographic trends, technological innovation, governance, and culture.[8]

Ecosystem
A dynamic complex of plant, animal, and microorganism communities and their non-living environment interacting as a functional unit.[9]

Ecosystem services
The benefits people obtain from ecosystems. These include: provisioning services such as food and water; regulating services such as flood and disease control; supporting services such as soil formation and nutrient cycling; and cultural services such as recreational, spiritual, religious, and other non-material benefits.[10]

Invasive alien species
Animals and plants that are introduced accidentally or deliberately into a natural environment where they are not normally found, with serious negative consequences for their new environment.[11]

Land use
The human use of a specific area for a certain purpose (such as residential, agriculture, recreation, industrial, etc.). It is influenced by, but not synonymous with, land cover.[12]

Land-use change
A change in the use or management of land by humans.[13] For example, clearing a natural forest area and converting it into an agricultural field.

Nature-positive
Nature-positive means halting and reversing nature loss by 2030, measured from a baseline of 2020. This Global Goal for Nature calls for no net loss of nature from 2020, a net-positive state of nature by 2030, and full recovery of nature by 2050.[14] It has become a movement, with leaders from governments, businesses, and civil society committing to action.[15]

Overexploitation
The harvesting of species and extraction of natural resources at rates faster than natural replenishing cycles.[16]

Regenerative production
An approach to managing agroecosystems that provides food and materials – be it through agriculture, aquaculture, or forestry – in ways that create positive outcomes for nature. These outcomes include, but are not limited to, healthy and stable soils, improved local biodiversity, improved water and air quality, and higher levels of carbon sequestration. They can be achieved through a variety of context-dependent practices and can together help regenerate degraded ecosystems and build resilience on farms and in surrounding landscapes. Farmers may draw on several different schools of thought –such as regenerative agriculture, restorative aquaculture, agroecology, agroforestry, and conservation agriculture – to help them apply the most appropriate set of practices to drive regenerative outcomes in their agroecosystems.

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