



Overview

Built environment: Priority actions towards a nature-positive future

September 2023

Introduction

The built environment system is responsible for 40% of global CO₂ emissions, 40% of global resource use and 40% of global waste streams¹. It is also one of the four value chains - along with food, energy and fashion - responsible for approximately 90% of nature and biodiversity loss worldwide².

The system is set to double³ in size as the global population is expected to reach 9.8 billion in 2050⁴, putting high pressure on nature through increased use of water, release of pollutants and production of waste and the associated greenhouse gas (GHG) emissions. In particular, the growth in urban areas, already estimated to impact nearly one-third of threatened and near-threatened species⁵, has significant negative impacts on nature and biodiversity through land conversion, habitat fragmentation, disturbance and pollution during construction. Importantly, added to these are harmful indirect effects of upstream and downstream processes such as materials extraction and waste generation.

Fortunately, there are many opportunities for the built environment system to reduce its impacts and restore nature, including by taking a circular approach⁶ towards building material production systems and waste streams.

To complement ongoing sustainability initiatives, all businesses need to **Assess, Commit, Transform and Disclose (ACT-D high-level business actions on nature)**. They should acknowledge the value of nature to their business; assess and measure their impacts and dependencies on nature; set transparent, time-bound, science-based targets; take actions to address their key impacts and dependencies; and publicly disclose performance and other relevant nature-related information.

This overview provides a system-level summary of potential key impacts and dependencies on nature. Importantly, it also sets out the priority actions that all businesses should take now to **transform** and ensure the built environment system plays its role in halting and reversing nature loss by 2030 - the mission at the heart of the [Kunming-Montreal Global Biodiversity Framework](#).

Scope of this overview

For this overview, the built environment system ([SICS code: IF.2](#)) is defined as encompassing: buildings, urban infrastructure, transport infrastructure, marine and coastal infrastructure, and upstream mining and extraction activities. This classification is not based on official frameworks, but rather on the system's differentiating characteristics in terms of impacts on nature. For more details on the scope of this classification, see WBCSD's Roadmap to Nature Positive: Foundations for the built environment system.



Built environment value chain (as covered in this overview)



Nature-related impacts

To harness the system's potential to promote a circular economy and to protect and enhance the ecosystems on which they depend, built environment companies should direct their efforts towards addressing their most significant impacts on nature, namely:

- Land and sea use change** – Habitat loss and ecosystem degradation can occur at all stages of the built environment value chain but are predominant during materials extraction, production, design and construction. This is due to land and sea use change and the destruction or fragmentation of ecosystems - fragmentation being a particularly significant impact for transport infrastructure. Habitat degradation due to inappropriate management is a key impact for the operations and maintenance stage.
- Freshwater use** – Pressure on water sources through overexploitation are significant in all stages except demolition. This pressure is exacerbated by water-related hazards such as droughts and floods. For example, the effects of floods on water resources (e.g. aquifer recharge) are worsened by lack of soil permeability within the built environment.
- Pollution** – The pollution of water and soils is an important impact during the materials extraction and production stage, but can also be significant during construction, maintenance and operations as well as during demolition in the case of inappropriate waste management.
- Greenhouse gas (GHG) emissions** – High GHG emissions occur at all stages but are most prominent in material production and energy use in buildings where heavy machinery is used or in energy-intensive production processes. The energy production required for use in buildings or other infrastructure during the operation and maintenance stage also results in significant GHG emissions.

Nature-related dependencies

Like many systems, the built environment is dependent on a number of ecosystem assets, flows and services to function and grow. Businesses in the built environment mainly rely on:

- **Natural habitats (extraction stage), production processes and regulating services** – The built environment system is very dependent on the provision of raw materials such as sand, gravel, timber, metals, etc. Protecting natural habitats to enable the production and/or replenishment of natural resources such as timber is crucial. However, many of these natural resources are finite and cannot be replenished fast enough to meet the current built environment consumption demand. Destruction or degradation of natural habitats to access new sources of raw materials means losing valuable natural capital and ecosystem services like climate or water flow regulation, erosion control or storm protection.
- **Natural habitats (construction stage), regulating services** – Increasing urbanization to meet housing and infrastructure needs of a growing global population means balancing land intake for urbanization and infrastructure with conservation of valuable habitats. As space becomes scarce, the built environment may increasingly compete with undeveloped lands, risking the loss of natural capital and its regulating services.
- **Freshwater** – Many value chain stages of the built environment system depend on functioning water flows and water reserves. Freshwater resources collected from precipitation and water flow from natural sources are often critical and irreplaceable for extraction of raw materials, production of building materials and water use during operations.
- **Flood and storm protection, erosion control** – The built environment system heavily depends on regulating services that protect against flooding or storms and control erosion. Increased soil sealing and removal of vegetation decreases nature's capacity to provide these regulating services and increase the risk of natural hazards.
- **Climate regulation** – The built environment system depends on healthy ecosystems at a local, regional and global scale. For example, in urban areas, forests can mitigate the impacts of extreme weather events, counter the urban heat island effect and promote the well-being of local residents and employees.

These dependencies strengthen the business case to invest in the protection and restoration of nature.

Priority actions and opportunities

Through its impacts and dependencies on some of the world's most valuable ecosystems, the built environment system has a key role to play in the transition to a nature-positive economy. As a business in this system, you can reduce your company's negative impacts on nature, mitigate risks to your operations and unlock commercial opportunities by prioritizing five key actions:

- 1. Avoid further terrestrial, freshwater, and marine habitat conversion** – Site new buildings and infrastructure responsibly by locating them in previously-impacted areas to prevent further loss of natural habitat. In all cases, avoid locations in protected areas and internationally recognized areas, and ensure no critical habitats are affected. Consider impacts on nature at design stage, for example using space efficiently to minimize impacts on land and water. Where modifying natural habitats or affecting wildlife is unavoidable, commit to strategies aimed to achieve measurable positive outcomes for biodiversity (i.e., biodiversity net gain).
- 2. Prioritize re-use and retrofitting over demolition** – Minimize the demolition of buildings and infrastructure to eliminate supply chain impacts and site-based impacts associated with land conversion and construction. Seek opportunities to adopt circular approaches for new builds – with a focus on designing new buildings and infrastructure to maximize their lifespans.
- 3. Select materials with nature in mind and invest in circularity** – Include nature-related criteria in the procurement of raw materials. Developers and designers are very influential in the choice of building materials. Through better planning, companies in the built environment system should gradually shift to more sustainable sourcing including green procurement and/or certified commodities – with full attention being paid to the long-term impacts on nature. For

example, the implications of a global increase in demand for timber – considered one of the most sustainable building materials available – must be fully understood and accounted for, with a focus on the regenerative use of forest resources to avoid the loss of key ecosystem services that forests provide. In parallel, drive transformative change by adopting circular material practices across the various material value chains by matching supply and demand for secondary raw materials. Carefully select construction materials and maximize their reuse.

- 4. Apply Nature-based Solutions (NbS)** – Promote NbS as an alternative for, or in addition to, grey infrastructure at design stage. Start by assessing biodiversity and ecosystems in the local landscape and/or seascape and integrate natural features in the design of new and existing projects. Invest in 'greening' new and existing buildings and infrastructure to address the urban heat island effect, thus **addressing climate change and nature simultaneously**. The heat absorbed by buildings, roads and pavements, especially in summertime, can be reduced by investing in urban forests and tree planting and by incorporating green roofs and green walls in buildings. Another example is applying NbS to mitigate the risk of flooding, which is exacerbated by impermeable soil in urban areas and transport infrastructure. This could, for example, include investing in wetland restoration instead of building concrete dikes or installing sustainable urban drainage systems for better infiltration.

Importantly, efforts to deliver these priority actions and transform the system must be delivered in alignment with a just and equitable transition, including meaningful dialogue with affected groups, such as employees, local communities, Indigenous Peoples and marginalized communities.

Adopting the priority actions can help businesses contribute to societal and environmental objectives, including the Global Biodiversity Framework (GBF) and the Sustainable Development Goals (SDGs). [Read the GBF-SDG mapping to see how the priority actions can contribute to these objectives.](#)

Resources

This summary was derived from the WWBCSD's Roadmap to Nature Positive: Foundations for the built environment system.

The following built environment system-specific guidance and tools are currently available to companies:

- [Biodiversity Net Gain Fact Sheets](#) (UK Green Building Council, 2023)
- [Circular Transition Indicators \(CTI\) v.04 - Metrics for business by business](#) (WBCSD, 2023)
- [Get Nature Positive - Buildings and Infrastructure Construction, Nature handbook for Business](#) (Accenture, Council for Sustainable Business and UK Department for Environment, Food and Rural Affairs)
- [International Good Practice Principles for Sustainable Infrastructure](#) (UNEP, 2021)
- [IUCN Global Standard for Nature-based Solutions](#) (IUCN, 2020)

- [Nature positive and net zero: the ecology of real estate](#) (Urban Land Institute, 2022)
- [The nature imperative: How the circular economy tackles biodiversity loss – built environment deep dive](#) (Ellen MacArthur Foundation, 2021)
- [The role of Nature-based Solutions in strategies for Net Zero, Nature Positive and addressing Inequality](#) (WBCSD, 2022)
- [The Routemap for Zero Avoidable Waste in Construction](#) (UK Construction Leadership Council, 2021)
- [Wastewater Impact Assessment Tool \(WIAT\)](#) (WBCSD, 2023)

For additional **sector-agnostic resources**, please refer to Business for Nature's [High-level Business Actions on Nature](#).

Contributors and credits

Written by

Claudia Schweizer Liégeard, Manager, Built Environment Pathway, WBCSD

Daisy Hessenberger, Global Subject Matter Expert, Nature & Biodiversity, Arcadis

Johan Lammerant, Lead Expert, Natural Capital & Biodiversity, Arcadis

Wouter Dieleman, Consultant, Business & Biodiversity, Arcadis

Contributors

Maria Campos, Nature Action, WBCSD

Nadine McCormick, Nature Action, WBCSD

Acknowledgements:

We thank the following WBCSD members for their input: Arcadis (lead consultant), Acciona, Arup, KPMG, Holcim, Ingka Group, Johnson Controls, PwC, Stora Enso and Swire Properties.

Thanks also go to the many leading academic, industry, NGO and government experts who provided invaluable perspectives, listed by alphabetical order: Acciona, AECOM, Business for Nature (BfN), Capitals Coalition, MVO Nederland, Science Based Targets Network (SBTN), Taskforce on Nature-related Financial Disclosures (TNFD), The Nature Conservancy (TNC), UNEP Finance Initiative (UNEP-FI), UN Environment Programme World Conservation Monitoring Centre (UNEP-WCMC), World Economic Forum (WEF), World Green Building Council (WorldGBC), World Resources Institute (WRI) and US World Wildlife Fund (WWF US).

References

¹ [2022 Global Status report for buildings and construction](#) (UNEP and Global Alliance for Buildings and Constructions, 2022)

² [Environmental risks go far beyond climate change](#) (BCG, 2022)

³ [First steps towards a circular built environment](#) (ARUP, 2018)

⁴ [World population projected to reach 9.8 billion in 2050, and 11.2 billion in 2100](#) (UN Department of Economic and Social Affairs, 2017)

⁵ [The future of nature and business](#) (World Economic Forum, 2020)

⁶ [City-level circular economy interventions to protect and enhance biodiversity](#) (ICLEI, 2022)

⁷ [The Swiss Example: Using Recycled Concrete](#) (Global Recycling)

